PROVISIONAL APPLICATION COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION under 37 CFR 1.53(c).

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LAST NAME	FIRST NAME	MIDDLE INITIAL	RESIDENCE (CITY AND EITHER STATE OF FOREIGN COUNTRY
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TITLE OF THE INVENTION (280 characters max)

ELECTRICALLY CONTROLLED AUTOMATED DEVICES TO OPERATE, SLOW, GUIDE, STOP AND SECURE, EQUIPMENT AND MACHINERY FOR THE PURPOSE OF CONTROLLING THEIR UNSAFE, UNATTENDED, UNAUTHORIZED, UNLAWFUL HAZARDOUS AND/OR LEGAL USE, WITH REMOTE CONTROL AND ACCOUNTABILITY WORLDWIDE

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ENCLOSED APPLICATION PARTS (check all that apply)

[X] Specification (including cover sheet and appendices) Number of pages [596] [ ] Small Entity Statement
[X] Drawings Number of sheets [35] [ ] Other (specify):______

METHOD OF PAYMENT (check one)

[ ] A check or money order is enclosed to cover the Provisional filing fees [ ] The Commissioner is hereby authorized to charge filing fee and credit Deposit Account Number: 50-0436	PROVISIONAL FILING FEE AMOUNT ($)	$75.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

[X] No.

[] Yes, the name of the U.S. Government agency and the Government contract number are:______

[] Additional inventors are being named on separately numbered sheets attached hereto.

Respectfully submitted,

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APPLICATION

FOR

UNITED STATES PROVISIONAL PATENT

To all whom it may concern:

Be it known that I, Richard Clark Walker, have intended certain new and

useful improvements in:

ELECTRICALLY CONTROLLED AUTOMATED DEVICES TO OPERATE, SLOW, GUIDE, STOP AND SECURE, EQUIPMENT AND MACHINERY FOR THE PURPOSE OF CONTROLLING THEIR UNSAFE, UNATTENDED, UNAUTHORIZED, UNLAWFUL HAZARDOUS AND/OR LEGAL USE, WITH REMOTE CONTROL AND ACCOUNTABILITY WORLDWIDE

Of which the following is a full, clear and exact description:

ELECTRICALLY CONTROLLED AUTOMATED DEVICES TO OPERATE, SLOW, GUIDE, STOP AND SECURE, EQUIPMENT AND MACHINERY FOR THE PURPOSE OF CONTROLLING THEIR UNSAFE, UNATTENDED, UNAUTHORIZED, UNLAWFUL HAZARDOUS AND/OR LEGAL USE, WITH REMOTE CONTROL AND ACCOUNTABILITY WORLDWIDE

Related Applications

This application claims priority from U.S. Provisional Patent Applications 60/122,108, filed February 26,1999 and 60/089,783, filed June 18, 1998, and PCT International Patent Application No. PCT/US99/00919, filed January 15,1999, incorporated herein by reference.

This application is related to U.S. Provisional Patent Applications Nos. 60/071,392, filed January 15, 1998, incorporated herein by reference. This application is related to U.S. Patent Application No. 08/975,140, filed November 20, 1997 and PCT Application No. PCT/US97/21516, filed on November 24, 1997, both of which claim priority to U.S. Provisional Patent Application No. 60/032,217, filed on December 2, 1996, all of which are hereby incorporated by reference.

Background of the Invention

Field of the Invention

These innovations and technology have been designed to improve the public's safe use of vehicles, equipment and machinery. They have been first designed to improve on the already deadly and destructive situations of out of control vehicles due to operator incapacity, and/or car theft and carjackings. The objective has been to help limit and/or restrict as many fatalities, personal injuries and property damage as possible. This will basically be accomplished by reducing the amount of time and space these horribly uncontrolled and irrational events exist for and/or take place in. These innovative systems and devices are not a panacea. The invention is simply designed to improve on an already poor public safety situation by limiting the time and involved area of these irrational events (e.g., out of control machinery).

It is the full intention of this technology to ultimately support and help provide fully automated robotics systems that can remotely control vehicles and equipment in a responsible and accountable manner in the future through the best and most optimum progression of commercial developments, first, from uniquely combined Commercial Off The Shelf C.O.T.S. products, and secondarily, as a condensed, consolidated set of hardware, firmware, and coordinated software programs in accountable, protected system of products that will become multi-industry standards and insurance requirements and rate qualifying devices for remote control and robotics.

In an effort to initiate a collaborative process and be a part of any dialogue along these lines either already in progress or planned for in the future, this technology will develop and continually augment, its preprogrammed controls, communication systems, and functional peripheral devices, sensors and systems to be a part of the diverse equipment and systems already merging, communications with programmable control circuits and electrically controlled devices, like those detailed in this application. It will also continue to offer the most needed solutions for a progressive accountable process of remote control and device deployment as well as increase and enhance computers and software to ultimately run, safe, accountable robotics vehicles and highways as has been discussed earlier in all the related patent applications.

The programs of the present invention will first structure acceptable accountable remote control protocols in a progressive layer of commercial enhancements to best marry their social, economic, environmental, and technical presence through commercial markets. This is a necessity because, there actions will be governed by the individual systems capabilities. "Triage" control will be programmed for the best option at any given time to control a vehicle and responsive systems in the safest manner through any available equipment on the market at a given time and/or outfitted on any particular host piece of equipment. Because, there will be such a wide variation of individual equipment capabilities, a great deal of effort has been taken to backward engineer, as well as, accommodate present engineering and future engineering in this process to develop acceptable modalities and standards for accountable aggressive remote control at various levels. There will be many versions of "Triage" that will first have as a goal to slow, stop and secure a vehicle stationary position.

The next progressive development detailed in this application will control the steering in degrees. And finally the speed control either using OEM cruise controls modified for this purpose or any of the acceleration controls detailed in this application and/or related patent innovations that will be responsive to the interface data commands given by any onboard control circuitry. A protected Primary Focal Node a (PFN) will house this control circuitry and communication circuits to receive transmissions and/or directions supplied by GPS signals and interactive highway transmitters, RF signals, or infrared beacons and/or any cell phone locating technology, along with distant sensors to remotely guide and control speed and direction remotely in robotics scenarios. Ultimately this inventions Primary Focal Node a (PFN) will manage preprogram travel plans for long and even short travel, as well as, handle completed vehicle operations, if so desired.

This invention will first commercialize these devices for specific use with law enforcement stressing the need for responsible supervised optimally physically visible scenarios first. So any technical bugs can be worked out and the learning curve for the rest of humanity can be plotted and develop with proper progressive guide lines and instructions for the safest public use. This also needs to be done progressively to equip the individual vehicles with these devices. Either for the new vehicles and/or for any after market or retrofitting of old ones. This will be initially accomplished through Commercial Off The Shelf parts or C.O.T.S. innovations, a process already described in earlier related applications. Secondly, this invention will strive to commercialize these devices along with its electronic control systems to be as much a part as possible in developing the interactive highway systems in any collaborative effort that presents itself. As this process progresses, the original third modality, described in PCT/US97/21516, a private, public and/or commercial monitoring and control system of any size will be created and combined to fulfill the scope of this invention for not only the automobile industry but also, for many community public safety programs, which, are termed Green Eyes and Spider Eyes program and detailed in this and related patents and involve machinery and equipment. This commercialization will interface its technology and any other associated technologies through the 1000 series devices along with the 1100 controller systems and the 1200 network to ultimately create fully automated and robotics public transportation systems that will produce more individual freedom for all the public, increase its safety, security and develop accountably for society to transact its mechanized business responsibly and with fair exchange to each other individually. (The time question is: when and how long?) And this question finds its answer in how well all work with one another in any joint ventures, with real genuine cooperation from the individuals, businesses, and governments involved. Time estimate, circa 2015, for fairly extensive and sophisticated social transportation and environmental control systems. This is a modest estimate for full robotics in an acceptable, accountable and/or societal form for personalized transportation. But there will be a vast amount of changes in any personal transport vehicles.

Background of the Related Art

Humanity is already married to its technology, and like all other marriages it will only be as functional as those in the relationship. The vehicles, machines and equipment are here in this human existence. This technical automation, communication, and control of machinery has already been proven to be a real present day need for humanity as it strives for its own individual social emotional development. So all that remains is to make this technology available, affordable, and perfect it, to be as secure, reliable, responsible, respectful of and as accountable to the individual, to any business and to the government it will be serving. This is the goal of this technology for remote control of humanity's equipment and the responsible development of robotics.

The invention has been designed to work with all willing technologies to develop a secure and accountable communication and control systems for every piece of Machinery through a Machine Messaging Network (MMN), detailed in PCT/US99/00919.

There are many other commercial interest in this area, as well as different technologies. These technologies have very specific and finite focuses with their remote control and/or automated vehicle systems in which they do **not** address aggressive remote control and accountability . While there is a great deal of similar developments, this technology and the innovations detailed here and in the related applications are unique and were created to achieve real time aggressive and accountable remote control though as versatile means in communications, control circuitry, and peripheral devices and systems and to provide these qualities as part of any **standard** developed for automated and remote control.

One other already issued U.S. patent, incorporated herein by reference, to Prince Corporation, now merged with Johnson, controls claims after a car's ignition has been turned off and the fuel pump has been deactivated.

The experimentation on this invention's technology to restrict fuel to the power plant to create an effective slow down was an unknown parallel development of similar concepts but without question resulting in uniquely different modalities and vision of purpose. There is no intention of this invention to compete with any already existing business, manufacture, government agency, and/or public interest at this time. Only a genuine and very real desire to be cooperative, supportive, informative and a real worthy partner to do good and fair business jointly for the betterment of humanity and its responsible machine use whenever and wherever possible.

With that stated, similar parts of this technology already exists in piecemeal (i.e., C.O.T.S.) products. But it is abundantly clear and obvious that the invention has its own unique devices, modalities, systems and C.O.T.S. innovations developed into protocols to complete the total task of automating for accountable remote control every piece of equipment in the world. However, it is also abundantly clear that this technology has been specifically designed to couple and interface with all existing technology in all stages of remote control development to enhance their systems and complete a far greater remote control system product then ever imagined before. This application and related applications detail clearly the most unique development for accountable controls over humanities equipment and its social, economic and environmental impact and functions.

This invention develops the monitoring and control system (i.e., this application's 1000-1100-1200 series devices and systems, Coyote Tricksters, interactive highway Helping Hand, and Spider Eyes as well as Green Eyes Programs), either as isolated monitoring, control and/or management systems or as part of a massive reporting system that incorporate the World Wide Web (WWW). This is created by merging data collected by PFN boxes on the equipment, through their data transmissions to servers that post this data on public web pages, or on any level home web pages, or e-mail boxes, through either cooperating government agencies, commercial corporations, social organizations, and individually set up and/or owned and operated web sites. These phone node gateways and/or RF signal gateway terminals can be interfaced to any computer network system of any size for monitoring, analyzing and/or remotely controlling equipment. This creates the real-time link for the machine messaging network by utilizing the world wide web to make some of the larger and longer connections (MMNWWW) and RF equipment and telephony technology to send the control signals.

To continue the early development of these most sensitive law enforcement protocols this technology will try to seek out companies already doing responsible business, such as Lojack, who use special police radio frequencies in tracking stolen vehicles for law enforcement in a limited but responsible manner presently. This invention will also seek out telecommunication companies (i.e., pager and cell phone companies) as well as any radio equipment manufactures and make a strong attempt to combine this technology's accountable and protective features with the efforts of existing products and programs like the GM "On Star product. Most definitely this technology will seek out all the automobile manufactures and their supply line manufactures to coordinate the development of peripheral controls accessories and sensors to interface with this technology's protected primary focal node as part of any industry **standard** for automotive electrical systems.

This technology recognized early on the absolute need to coordinate and create **standards** for accountability in any automotive altercations involving machine messaging from remote locations with insurance and governmental regulations and approval, which greatly enforces the need for a standard. This is very much needed for risk management insurance with the 911 system and law enforcement today, and most necessary to continue with this technology's purpose to provide accountable aggressive remote control, analytical data acquisition, and robotics, to more adequately serve all of the public's needs. This is being done to more rapidly fulfill the public's needs with responsible remote control devices in all of the industries and not run into the same growth problems AOL experienced. The plan has always been to create this technology, first as a combined effort with existing C.O.T.S. products and systems as has been detailed within all of the related applications, and then secondly to coordinate and consolidate these combined products and services into new safe service products for the public good, ease of use, safety, and an improved quality of life.

The OnStar program has already made important passive, but responsible inroads in reporting and/or contacting 911 in possible automobile emergencies when there is an SIR deployment, through their control centers. This invention welcomes any possible collaborative arrangement and/or interface links with OnStar in the development of this technology (MMNWWW), or in any interactive highway projects, and in this technology's unique accountable, and aggressive remote control, management and/or security systems at any level of willing involvement.

In developing these security protocols, this technology provides all the appropriate encrypted codes needed to provide secure transmission of sensitive data from any equipment's PFN if that might be needed or a requirement for personal, monetary transactions or sensitive data.

The invention is designed to combine and coordinate all vehicle machine and equipment technologies. And it is designed to be a natural and good commercial consolidation for space and cost to jointly interface and finally locate all hardware and control circuitry along with the software into a safe and protected area, legally and physically on each piece of equipment, which will be termed a (PFN) for protected primary focal node. This has always been the stated purpose and goal of the invention to help make humanities' equipment safer, more accountable, more efficient and economical with responsible remote control for the public, for the individual, and for commerce. As always maintained with any and/or all of the devices or components concealed and/or protected to maintain data that is or are stored on location in as pristine a state as possible, and also to maintain a capability to report this same data to at least one remote location for application specific management and redundant storage. Which is the basic nature and scope claim of this technology in this application and all the related applications. This is accomplished with the PFN and this technoloy's Trust Remote Activity Controller Software (TRAC).

It has also been a conscious intention to create these innovations from the first as C.O.T.S. parts to bring about their deployment in the most easy, rapid and efficient manner as commercially possible by cutting manufacture time and cost in developing them and to make available safer vehicles and equipment in a timely and affordable fashion for the public, and thirdly to make available these systems to more easily retrofit older vehicles, and other machines and equipment. There is no need to reinvent the wheel when it is not a necessity, just make the wheel better by adding new innovative technical spokes and uses. In all of these innovations, C.O.T.S. applications are addressed first to bring all influenced technologies, their products, the varied industries and people to an interactive commercial setting. So that involvement and incorporation of these technologies can best be severed while the public is serviced appropriately with good commercial offerings. This means coordinated good and real services and products that will be good business for all.

The major reasons this technology is first developed from C.O.T.S. products are for better public familiarity and market acceptance by the consumer, the small investor, and the sophisticated investor, and because of the natural collating and combining effect for all the different manufactures in these merging industries, and also to provide some backward and forward engineering capability to the process of developing a **standard** for responsible remote control devices and systems, and finally to point the way to the most logical and acceptable use of this technology's consolidated and integrated circuitry choices. This process also helps the software production to be interfaced into the most concise and efficient PFN's for every application and for every piece of equipment, as product evolutions either as circuit and device products or as other C.O.T.S. evolved products used in these unique ways for new purposes.

As the automation of controls for equipment, vehicles and machinery continue to advance to robotics from present day remote control and machine messaging though artificial intelligence, the need for accountable machine activity is as important as the development of the actuating devices that complete these remote and automated actions.

Therefore, much time and detail has already been devoted to this in this invention's related applications, and to the creation of redundant data record memories and a secure protected interface structure to preserve an accurate record, while protecting electrical control circuits simultaneously.

Even though this application extensively describes the controlling actuators to perform remote and automated control functions for most any manufacturer of vehicles, equipment and/or machinery, it will also describe and detail an extensive sensory and data acquisition feedback system to the protected primary focal nodes (PFN), to account and confirm all essential command communications and responses, both on location and/or redundantly sent to at least one remote location or gateway terminal for any desired network options. This is managed by this technology's TRAC software and any system monitoring PFN's TRAC software.

As has been extensively described in all the related applications, the use of C.O.T.S. products will first be employed for a number of reasons. Obviously, it is the quickest most efficient, inexpensive way to rapidly merge existing technologies, their manufactures, and components to achieve an accountable remote control for aggressive situations in machine use presently. Also, the invention has been designed to accommodate future development for accountable sophisticated remote and automated control scenarios for everyday pieces of equipment and machinery as well as, help meet the social, science needs for these merged technologies to best perform these robotics functions. The invention is capable of providing a record to appraise, value and judge any equipment action and/or its components for societies organizations, the public, insurance concerns etc. (e.g., for manufacturer's risk management, completed operations, product liability, etc.). This application will concentrate on the devices to affect remote and automated control and their monitoring system.

Brief Description of the Drawings

Figure 1 is a drawing to basically give location to all the innovative devices on standard internal combustion equipment with a high emphasis on the automotive fields. The description for Figure 1 is very extensive as it completely explains all the innovations as to their physical locations and how they mechanically fit, interact and work with all the standard mechanical systems. This drawing will serve to organize the following drawings, which will give even more complete descriptions and illustrations to the standard part or device augmentations that are needed to complete all the individual modalities for these functions of the invention.

Figure 2 is an electrical description for the first prototype of the standard pager activated remote control system. Control Hardware And Telecommunications (CHAT) box system. It is included here in its completed prototype form, because it is being used to demonstrate and experiment with these onboard automated device innovations and show that they can be interfaced with any and all remote control technologies (i.e., RF equipment, cellular, phones, pager chips (digital and/or analog variations)), and are presently ready for market. The power requirement to operate this one-way PFN prototype is 12vdc for automotive applications. However, in-house current and automotive application a transformer and rectifier would transform the current to operate this circuit and charge the emergency batteries.

Figure 2.1 shows the one-way and two-way PFN prototype categories. This is determined if they can only receive a one-way system, or if they can receive and transmit a two-way system. The figure shows an off-board remote control and monitoring computer network with memory storage for the two-way systems, and an on-board memory storage at two levels for the one-way and two-way systems as well as a fair amount of the peripheral remote control devices sensors, accessories the PFN system can control monitor and make accountable.

Appendix 1 lists some of the present prototype C.O.T.S. components used in the one and two-way PFNs. These prototype parts demonstrate the feasibility and capability of all the systems interfaced through a PFN. Items 1,2,3, 5, 7, 8, all camera systems, are being experimented with for the different industries to see what application they are best suited for.

When these cameras are utilized for automated guidance in the mobile management patent a system using a laser light beam will be targeted on a lane marker or the road edge. Once the laser light is locked on the line or road target a software algorithm will compare the electrical signal from any camera(s) viewing the roadway to detect the cars position by the relationship of the laser dot on the road and how far away from the lines the dot is, as well as the direction the dot has moved from the line during movement. This is determined through the electrical signals digital pixel representation identifying the road target and the laser dot an activating the automated steering stepper motors to turn the steering linkage to maintain the correct lane position for the vehicle. This might require two camera angles and two reference laser spots. For optimal accuracy, of course, the PFN will be receiving distance data as another electrical signal transduced from sound echoes and/or infrared systems to be compared in software protocols for proper travel spacing between vehicles which will adjust the speed of the vehicle through the many modalities detailed in this application for automated acceleration and braking processed through the PFN 4 and 6 in this figure are a video card and converter for laptops to be used in a plug and play modality with personal laptops for sending images via the web and for any personal reasons or business. Web functions can also be performed by the PFN computers.

Figure 2.2 is a general drawing showing the double wall construction of this technology's prototype PFN's Protected Primary Focal Node for the many varied applications. The concept of a protected memory and/or a protected encasement for any of the electrical components is not intended to be limited by this drawing. PFN structures can be of any configuration or structure and will be application specific even as any standards are determined to help universalize an accountable protected interface for any particular remote control technology.

Figure 2.3 is an illustration showing the remote monitoring and management of data functions. This figure shows the three basic components communication equipment, processors, and data storage designed in to the PFN prototypes in a double wall protected encasement. In mobile applications, GPS as well will probably be interfaced and stored in the PFN. The network monitor in and data storage 1208 is the system and hardware components to support this technology's "spider eyes" and "green eyes" program. Also, at the bottom of the page, two squares that say interface connector and PCM, Direct, and/or HPC. PCM means Powertrain Control Module, Direct means that the PFN controls the components directly on the host piece of equipment, and HPC means Host Programmable Controller.

Appendix 2 is a set of three pages numbered A. B, C out of Grainger Catalog 1996 No.387, listing some typical programmable controllers that are available for preprogramming control functions on factory machinery or stationary equipment etc. They are by no means the only ones and this technology can interface and protect any controllers on the market. These are examples of host programmable controllers (HPCs). The PFN will interface with these controllers like it would with the powertrain control module in automobiles or it would control all the machine functions from this technology's many varied processors and/or controllers, or the PFN could utilize one of these programmable controllers as its primary processor. Whatever is the case ultimately these processors should be afforded the protection of the PFN if possible. And of course, application specific software programs would be written to process the data to and from the input out put pins for remote control and automated functions as well as activate any memory storage devices to track the machine messaging, telemetry, or audio or video data. This is accomplished by this technology's managing accountability software, TRAC.

Appendix 3 is a set of ten pages numbered lettered A,B,C,D,E,F,G,H,I, J straight out of the Grainger Catalog 1996 No.387. These pages are used to provide all the varied gear motors available to activate any machine and/or equipment controls and/or their functions with electrical energy. These pages provide to anyone skilled in the art all the specification and data to determine which gear motor best meets the physical and mechanical requirements to perform any application specific control function on a host piece of equipment along with the operation currents they operate on (e.g. automotive voltage, house current, industrial and/or commercial currents). Along with gear motors controlled by relays mechanical and electrical the PFN invention can be configured to operate any electrically energized devices, solenoids, electromagnets to control valves for hydraulics oil , water or fluid and/or gasses, air, water, fuel flows, etc. and control other electrical device motor controllers. Pages I and J are only two DC motor pages for variable speed. These are some of the DC motors used for the automotive industry for steering. Page K is some of the straight DC motors for 12- and 24Vdc with out gear reduction to drive fans, pumps and compressors. Page L and page M are dc variable speed controls that can be interfaced with the PFN processor or in many cases is already connected to a OEM programmable controller.

Appendix 4 is the first one hundred eighty-six pages in Grainger Catalog 1996 No.387 of ac motor selection information with all the motors and their specifications are included here. This data is for Daton motors, however, there are other manufactures, GE, Baldwin, Westinghouse and many of the configurations are standardized (frames, shaft sizes, HP, and mounts, etc.). This list is being provided so that anyone skilled in the art can determine the correct motor to use in any automated or remote control function as well as the necessary components to interface it with this technology's PFN systems whether it run's on house hold current, or if has to run on industrial and/or commercial currents. The mere fact that some countries have to have motors configured for different current (e.g., 50hz) that may not mentioned in this document does not exclude their being controlled by a PFN. This technology is meant to be utilized on a global level. The following 20 pages display more gear reductions and gear transfer cases these motors can be attached to slow the motors rotational speed and increase their torque for power.

The effort in providing as much data here is to prove the feasibility, reduce the cost for research and development by providing C.O.T.S. products and to create an organizational tool to automate and remotely control any and all machinery through he PFN by readily providing the products to fabricate an application specific actuator or automate a function for anything. Of course, the electrical interfaces will require the correct relay and hard wire component for the PFN control currents, current controls, and protection for the host machines electrical system.

Appendix 5 is thirty-five pages out of Grainger Catalog 1996 No.387. These relay pages detail out a versatile group of electrical control relays that can be utilized to interface this technology's PFN control circuits with the motors detailed in Appendix 4, and also a way to control current to solenoid valves and other electrically controlled devices on a host piece of equipment. Also in this section are some push/pull solenoids box type and other solenoids that can be configured to activate a control levers on a piece of equipment or control latch mechanism or to interrupt a function, so that anyone skilled in the art can readily pick the electrical components to activate and either fabricated a basic automated device function or to develop an isolated command function processed by a PFN to a preexisting OEM accessory.

Appendix 6 is another 25 pages out of the same Grainger catalog lettered A through Y because, of the different areas of hydraulics devices covered in this section which are used so diversely to work and control functions through out all the industries. A, B, and C are electrically controlled solenoid valves and only a sampling of many that control valve mechanisms to direct hydraulic flow and pressure to do work, either by pushing or pulling in piston applications, rotational functions as does a hydrostatic motor and/or hydraulic motors used in track machines like skid steers and some robots and/or automatic product feed applications, saws grinders vehicles etc. D and F are DC motors for hydraulic pumps F, G are AC power pack for hydraulic pumping. There of course is much larger systems however most hydraulic control functions can easily be achieved with the components detailed here. There electric hydraulic pump systems can also be controlled by the PFN utilizing the appropriate and previously listed relays. And the hydraulic pressures these systems develop will be diverted by the electrically activated sandwich valves. Figure 28 depicts, which of course is a DC application but the same can be achieved for an AC application as well. Parker and Vickers are two major manufactures of hydraulic control devices and Gates is a major hose supplier, however, there are many, and the fact that all suppliers/manufacturers are not named should in no way exclude them from the use of the PFN or when these components provide automated and remote controls in any accountable process.

Appendix 7 is another group of pages taken from the same Grainger catalog and put together so that anyone skilled in the art could utilize air or compressed gas to activate automated and remote control actuating devices electrically through the PFN processors. These same functions can be achieved for water, fuel flow and/or steam as has been stated, however, there would be application specific parts and sealing surfaces to handle the product's properties being governed, to energize a work function. The first twelve pages deal with the electrical solenoid diverting valves A through L. The next nine pages, M-U, give all the possible cylinders that can be used to physically activate functions for automated and remote control functions for more push pull applications. Pages V, and W show the air motor devices that can perform rotational activities by air.

An effort has been made in Appendices 2-7 to provide all the different actuating devices by the medium and/or force that energizes them either to push and/or pull and with or without spring returns and also into rotational devices from a ½ a RPM to 3000 + RPM to be utilized in any basic mechanism to automate controls by electrical signals processed in this technology's PFN and TRAC software. These electrical signals will be recorded in the system's memory devices and marked with a time, date, geographic location if need be, and the command string record. This technology has provided more than enough detail for anyone skilled in the art to produce any necessary controls to automate any operator controls or to complete any interface with any onboard power control systems and devices to perform PFN functions in any automated and/or accountable manner.

The primary goal here is to restrict equipment for any unlawful or unauthorized use and to provide accountability through TRAC and the physical means to develop full remote control and robotics for every vehicle, machine and piece of equipment world wide. This is to be done commercially to receive fee for use and control safe equipment use, assess risk, and help establish insurance rates in every industry and analyze the impact on the environment and the world's infrastructures.

Appendix 8 is another section out of the Grainger Catalog No. 387. This section has more DC motors Pulse generators, motor controllers, gear motors, modular drives AC and DC actuators, electric clutches and brakes, speed reducers, inline speed reducer, and more gear drives.

Appendix 9 is another section from the Grainger Catalog with wash down drive components, sprockets, chain and rollers, pulley and sheaves, belt drives, belts, gear belt pulleys, multi grooved pulleys or sheaves, roll pins and key ways.

Figure 3 is an exemplary list of the software control commands for the standard pager remote control system that activate the prototype slow down, stop and secure functions for the automotive applications for these systems. This is done through a stamp II computer and self contained relays as well as other on-board relays and electrical control devices. This is the basic one-way PFN modality and the Slow Stop and Secure functions are detailed in plain English in Figure 2. However, it is important to remember that these same energized output pins can be interface with any peripheral devices on any host machinery so long as the electrical signal given from the stamp II computer activates a 12vdc control side solenoid or motor to direct the host equipment's remote and automatic shut down functions no matter what type equipment the PFN is on. However, any voltage or current requirements for any machine can be met. Either transformers and/or inductors or rectifiers would be configured to provide any voltage requirements from 5vdc, and the like. Of course, any number of software control commands may be used in the present invention.

Figure 4 (1000 series) displays a typical motor revising relay circuit that is used in the prototypes to change motor polarity and direction. This relay circuit in the prototypes is energized from the pager remote control package in Figure 2 and is responsible for energizing the innovative devices in this application.

Figure 5 (200 series) illustrates, in detail, all the C.O.T.S. parts and their components, as well as the variation and augmentations that the invention does to the seat parts to utilize this mechanism to tension the brake system. It also shows with more detail the locations with isometric drawings that this device would use to perform the stop and secure function. And another piston system modality is illustrated.

Figure 5.1 is a drawing of the traditional emergency brake locking ratchet pedal that has been an automated and motorized.

Figure 6 (100 series) is a drawing of the pedal stop accelerator device mounted and concealed under the carpet. While it is not shown presently, this device has been experimented with the center hand pull emergency brake system.

Figure 7 (100 series) is a drawing that shows the prototypes used to interrupt cable controls and it has seen experimental use basically to interrupt the accelerator function, which it performs very well, and also reinstates cable action to the throttle, when programmed to. It should be mentioned that this system can be used effectively anywhere cable controls are employed and that any quick release cable system specifically made to basically interrupt a normal cable function would fall with in the nature and scope of this innovation, when used to automate controlled shutdowns or to disengage a cable functions through electrical mechanical means.

Figure 8 (100 series) shows some other simple accelerator cable release systems that are being experimented with presently. Also shown here is the interruption of the pedal assembly linkage. Many of these cable releases can be designed into any manufacture line with relative ease to provide cost effective remote control actuators for automated shutdowns in emergency situations.

Figure 9A (100 series) displays a standard GM throttle assembly for fuel injection with a electromagnetic clutch disk system. When energized it pulls in and locks solid with a mating disk to turn the throttle through shaft.

Figure 9B shows an air mixture solenoid in another isometric drawing that is controlled electrically by the invention during some slow down modalities.

Figure 9C is an isometric of the throttle assembly having a servo motor attached to its through shaft that can also be controlled by the inventions control hardware and soft ware in other slow down modalities. This is a form of drive by wire where the motor has a cam or gear reduction, or worm gear reduction that correlates to the amount of depression of the accelerator pedal or operator controls.

Figure 10A (100 series) continues to show other modalities to release the cam from the through shaft to throttle down a power plant electro-mechanically and allow it to free wheel leaving the butterfly valve in the idle position. The 10B section shows the latest throttle position sensor and this is one sensor that is interrupted by the unique trickster circuits to deceive the power train control module PCM if need be in certain circumstances. These are used in many variations that require electrical augmentation to slow down a vehicle and kill the ignition and fuel injectors directly. This can be easier to retrofit because it requires no change to any of the OEM software that times the spark and fuel injector solenoids. 10C shows a sensitive vacuum switch, which is being used to also cut off a cranking circuit for remote starting by signaling that the engine is running so that the crank current is then interrupted.

Figure 11 (300 series) shows three locations for an additional butterfly valve or gate to control air flow into the engine. This is accomplished by either solenoid or servo motor controlled butter fly gates on the air intake duct, air cleaner system, and/or air horn.

Figure 12 (300 series) deals with the latest standard power brakes on Chevrolet and Oldsmobile products, but there is also descriptions on how to automate other manufacturers' standard brake systems in the first drawing and in the description for the 300 series brake innovations. However, because of the latest ball screw piston modulator valve having the ability to be innovated to automate the brake system this valve will be described in complete detail as to how the invention will utilize it to automate braking for these systems. The top drawing shows the brake system components. The isometric at the bottom shows all the electrical connectors for the modulator valve, solenoids, and motor pack.

Figure 13 (300 series) shows how the modulator valve looks, its motor pack, its drive system, and the standard physical hook up to the master cylinder above.

Figure 14 (300 series) The first three drawings on Figure 14 show a cross section of the modulator pump with top left (14A) one front wheel control and with the piston in the down position. Center (14B) cross section another front wheel control with the piston all the way in the up position and the upper right of figure 14 (14C) a dual assembly that controls both the rear brakes together. Lower left (14D) picture is a front wheel speed sensor and the (14E) picture is a rear wheel speed sensor.

Figure 14F shows management of PFNs for other vehicles and machinery diesels.

Figure 15 (400 series) deals with the fuel system and most especially in these drawings the standard fuel injection systems of today. Once again, the drawings are of GM parts but the augmentations and innovations do apply to all vehicles that have these parts as displayed and easily reconfigured to achieve the remote control goals to slow and control speed through fuel availability. Also, there is description given during this section and other filings that deal with the carburetor and the throttle body injection types of fueling. The top drawing is the entire system and the lower picture shows the regulator and connection pipes for the quick disconnect hoses.

Figure 16 (400 series) illustrates 16A as the injector rails for one type of system. 16B shows an injector in a cross section view and 16C shows a regulator that has been innovated to make it a dump valve as well to starve fuel from the power plant. This is a achieved by combining the regulator and the inventions dump valve system that was detailed in the first application. There are 3 separate systems and modalities displayed in this drawing, one is motor driven, two pressure driven, and three solenoid driven but all controlled electrically.

Figure 17 (500 series) This shows the standard transmission switch for another GM part but any transmission and/or transaxle that uses solenoid shift spools can be controlled in the same manner and is therefore pretty generic for many of the standard hydromatic power transfer systems today that rely on their PCM's power train control modules for shifting instruction. These two pictures show the switch the cable link up for park function and the electrical connections for the switch.

Figure 18 (700 series) This figure has 3 pictures showing the standard rack and pinion GM steering with the innovative changes to automate the racks gear box by motorizing its rotation which is done through automated controls (i.e., motors cables, jack shaft, etc.).

Figure 19 (700 series) is more of the rack innovation and description.

Figure 20 (700 series) shows how the motorized system can be attached anywhere alone the steer shaft linkage and the many possible column mounts. Also, throughout this section will be other figures on other automated steering systems. They are extensively described and detailed in this formal filing. While many of these steering systems see use in the automotive industry and these innovations them will help to more widely serve all the different steering systems used by the varied automotive manufactures, they are also going to be widely applied in other industries, that use vehicle platforms to navigate.

Figure 21 (700 series) is an exploded view of the steering column out of a GM car to show the drive pulley on the steer shaft linkage and the column mount for the first prototypes.

Figure 22 (900 series) has been used to detail the three major components to controlling engine timing for the spark and fuel in the GM cars. The top picture is the PCM. The second is the coil pack and the third harmonic or a crank shaft sensor.

Figure 23 (900 series) shows the cam shaft sensor location, and the lower figure shows another type of crankshaft sensor. These are also engine timing controls that are interrupted by the 1000 trickster circuits which send a pre-tuned current level or generated digital pulse to fool the PCM or any control circuits they are interfaced with.

Figures 24 and 25 (1000 series) are trickster circuits. 24A is an electrical diagram for the relay and variable resistor that can be turned on to a pre tuned voltage to deceive an analog logic circuit like a PCM or any other control circuits including the invention that it is receiving a particular signal from a sensor when in reality it is created by the trickster circuit. 24B is a digital pulse generator coupled to a relay that can give a digital signal to deceive the control circuitry, both 24A and 24B are hooked to a double throw double pole relay so that they can maintain the original signal in the deactivated state NC (normally closed) and deliver the trickster manufactured signal when the relay is energized. These electrical innovations allow the invention to perform these above stated functions without a lot of reprogramming concerns to the software. Just install the simplistic inexpensive tricksters between the OEM sensor or signal device and the electronic monitor and control hardware and deceive the normal running software program. Most all augmentations can be achieved for all these modalities that require timing and fuel mixing to achieve a smooth even engine deceleration for a slow down function and/or ignition cut off.

Figure 25 (1003 COYOTE Circuit) is used to activate the automated brake systems when the doors are opened. This circuit has many other uses to be detailed.

Figure 26 (1100 series) is a handy device for motorist who run out of fuel. It is the fuel caddie which allows for the quick connection to the fuel system with cars that have electric fuel pumps.

Figure 27 (1100 series) is a drawing of how the helping hand tow and train coupler will be placed on vehicles.

Figure 28 (1100 series) is a drawing of the hydraulic circuit that will run the helping hand pistons.

Figure 29 (1000 series) is a drawing of the electronic security seal.

Figure 30 (1000 series) is a drawing of the security sealed area for the PFN.

Summary of the Invention

In this application the invention details automated devices for, equipment, vehicles, machines and their systems to complete, preprogrammed and remote control functions. Initially for vehicles, and specifically cars and light trucks are the focus to start developing the mobile management innovations of this remote control technology. The first aggressive remote control is used to slow, stop and secure vehicles that are being used in an unauthorized manner, either intentionally or unintentionally. This software program is termed PASSS. This stands for Proprietary Automated Slow Stop and Secure vehicle software. The next evolution of this aggressive software for TRAC is Proprietary Automated Guidance Slow Stop and Secure (PAGSSS) vehicle program. Secondly, guidance is aided to the mobile management systems for vehicles to increase remote control capability and help provide more physical devices to make more robotics for the smart cars and interactive highways. Finally, in this application other types of control devices are detailed for industrial, commercial and home machine and equipment management. In this application many systems are described and their hardware detailed extensively. The basic goal of this application is to provide all the hardware devices and circuitry to remotely control every piece of equipment worldwide.

Slow Down Systems are designed and detailed to restrict throttling, first to slow down any vehicle made by most every major manufacture of vehicles worldwide. Most of the systems have been designed from every manufactures own commercial off the shelf products C.O.T.S., or their supply line manufacture to help for a responsible but economic commercialization of remote control, and the future robotics, of the smart cars and interactive highways.

This first sequential remote controlled shut down leaves the vehicle engine running for driver steering and braking control. Initially, only acceleration is eliminated from the driver's control. Then there is a timed brake application, which performs a controlled-stop, with the vehicle finally resulting in a secured stop in a stationary spot, with the engine left idling. Then the engine has its electrical ignition killed of fuel supply interrupted in a number of modalities. In fact, there is a number of modalities for all these sequential functions (i.e., to slow, stop, secure motionless, and finally turn off the power plant). This is the first remote control protocol that the invention features to counter the unauthorized use of a vehicle (first it eliminates acceleration only, second it slowly applies the emergency, service and/or regular brakes, third it maintains a brake application with the vehicle held in a stationary position, and then it finally kills the power plant). The first prototypes merely complete this task to slow, stop and secure the vehicle in a stopped position, then kill the power plant. These functions can be performed in a number of ways. Either timed preprogrammed responses initiated and controlled by programmable control circuits solely and/or control circuits coupled to communication devices and systems for remote machine messaging and control. These variations will accommodate less sophistication in either the communication device and/or processors employed to complete these tasks. This first system has had much experimentation and has set up optimum times for each phase to take place in a vehicle slow down scenario, but any sequence that performs the same functions are all considered to be within the nature and scope claim of the invention. Also, upon the activation of this emergency shutdown sequence warning lights (Flashers) and taped messages or information devices are activated to inform any surrounding vehicles and the driver of the shut down event. Additionally activated are recording devices that can store all forms of data recovered during the event. While, these systems are designed to be activated by any communication system and the average citizen, they are recommended and, intentionally, designed to be used and/or coupled with the proper protocols and/or law enforcement personnel. This is PASSS, this technology's Proprietary Automated Slow Stop and Secure shutdown protocol.

The second automated vehicular remote control enhancement detailed in this application will add guidance through automating steering components like (motors, valves, and cylinders, etc.). And they will be controlled by interactive environmentally conscious software monitoring the vehicle operation, through vehicle sensors and operator sensors, e.g., distance sensors, cameras and road edge detectors, along with in the cabin, the nose, breathalysers, head tilt, pulse rate, pupil response sensors and software, etc. This second variation will be termed PAGSSS, and this automated protocol will also, be able to be initiated through simple remote control communications for the emergency take over situation and/or for the unauthorized use of a vehicle scenarios. The same protocols that control larger land based wheel outfitted platforms, trucks, semi's, buses, etc., will be detailed as to the devices and systems necessary to automate these same unique functions to slow, guide, brake and secure them in a stopped position in this application. However, this application documents this technology in great detail to initiate and accomplish, while progressively commercializing for society accountable remote control. These progressive steps and developments for responsible remote control and robotics in mobile management are considered unique as commercial product protocols that address acceptable modalities for legal and insurance rules, regulations and concerns for man and machine accountability and liability. The mobile management application will further advance the systems to detail all the devices for a vast variety of transport equipment that will be remotely monitored, controlled and provided robotics systems.

The truck and car industry has recently been plagued with car and truck jacking and these minimal control scenarios are a very needed improvement in public safety and they will only be the first step in acceptable accountable remote and automated vehicle control. As the programming and tracking of vehicle movement utilizes the most sophisticated and accurate GPS, digital cell phone technology and computer highway management and smart car software programs and systems the amount of collaborative human and machine driving control will develop to where full accountable systems will be a social necessity. This application will detail many of the actuating devices that will be used to perform these functions on the vehicle and how they will be monitored and made accountable for these remote, robotics, and automated control scenarios.

As stated earlier, the invention will develop its technology and commercialize it with other technologies to completely automate accountable controls for vehicles, equipment, and machines through C.O.T.S. products and cooperative commercial agreements that utilize designs and/or technology to complete this goal, all of which is detailed within this application and all of this technology's related patent applications, incorporated herein by reference.

An Electronic Steering Control Module ESCM module will be constructed and/or dedicated as a steering control interface circuit which will have some burned in software (firmware) to complete automation and provide basic remote control steering protocols for an improved controlled shutdown (PAGSSS). This function may also be completed by the inventions computers entirely as detailed in the related patent applications and/or accomplished through the vehicle OEM PCM or any programmable control circuitry if so developed in the future as a consolidated development of this technology's continual effort to combine control functions and circuits or the above mentioned ESCM module physical circuit can be controlled through the Primary Focal Node or (PFN) software, TRAC, and circuitry interface (the inventions computers) or (the OEM's PCM or comparable control circuits) to involve complete robotics as a system development. Any and all of these circuits may also, enjoy a protected status inside the PFN or in another suitable location; either, provided total or partial physical protection or not. However, the ESCM control system as well as, any computerized steering controls designed to safely guide a vehicle in an emergency shutdown are considered to be within the scope of the present invention, when used for and combined with remote and automated control and/or part of any accountable system or protocol requiring this kind of protected integrity for any of the named reasons in the related applications (interactive highways, and smart cars, etc.), this technology's PFN with TRAC and PAGSSS . These circuits and programs will be described in the series 1000 innovations. This will also be accompanied with the complete description of C.O.T.S. parts and innovative components that make up the 4 part sensor array 909 in Figure 1, which also contains a target for receiving specialized law enforcement remote control signals (913 variations). 912 is a combined antenna that will pick up a wide band of different radio signals that will be part of a combined communication network in the securely contained control center, termed the PFN. These antennas may be separate as part of functional C.O.T.S. products presently, even though the products are combined in only one secure and/or secluded location and finally these variations will be integrated (with a few exceptions) and be serviced by a universal antenna system or bus.

Part 911 is the distance sensors that will send and receive signals, compare them to a known rate of speed, process the amount of time of travel in relation to the distance, thereby calculating the distance traveled by the signal between the vehicle and another object and assign an electronic signal to value that distance and time so that the onboard software can equate speed, time and distance of the vehicle in relation to other environmental objects. First, through the inventions computer in the present prototypes, but ultimately combined with OEM controllers, other distance and environmental data will be provided, as well as augmented, by the video and digital, cameras part 910 (i.e., Nanny Camera, etc.) that will be directed, through on-board programming, to impending impact and/or recognize road surfaces and/or conditions to give data back to the control systems. Also, the PFN's will be in contact with any highway information systems that will be alerting and setting off program flags for altered operational instructions. These instructions to the automated host vehicles control systems will direct the ESCM for automated controlled steering. And any number of already described automated steer controls and brake system, either, C.O.T.S. interfaced or specially designed to first take control of a out of control vehicle and deactivate it as rapidly as possible by PASSS or PAGSSS. Of course, ultimately these sophisticated TRAC systems and innovations will operate the vehicle through a fully robotics set of on-board and off-board devices interfaced through these extensively described systems for automated accountable interactive highway and smart car scenarios, which are all TRAC-based. Much of these systems and innovations is detailed in this application. These systems will also allow individual personal transport vehicles to be totally accessible to most all impaired persons, the aged ,and the young ,as well as, be drivable by those, who are capable, enjoy and/or freely choose this option. This will improve the individual's personal freedom of travel to any place a vehicle can go as well as, make these travels safer for all.

This is the progressive commercial development of remote control to more complete robotics systems to include the smart cars and interactive highways for the car and truck industries. While, this application specifically details the hardware to perform these remote control functions for all equipment, it will also, describe all the protected accountable systems PFN/TRAC, detailed in all the other related applications, that are needed to marry up to society's laws, rules, and regulations, as well as, society's institutions, organizations and capital economy to best commercialize acceptable remote control and/or future full robotics systems.

This summary has concentrated on land vehicles with wheels. This will also be the case throughout this application in giving examples of remote control capability, but in no way are the related systems and innovations confined only to the auto industry. The innovations contained in this application will provide remote control capability for every piece of equipment and machinery anywhere, as well as, provide systems to monitor control and provide accountability. Most all physical actuating components that will perform remote control functions on any piece of equipment will be described, illustrated and/or detailed with their part numbers if applicable along with their altered innovations in illustrations.

Since the future is destined to have people living longer it is going to be necessary for robotics systems to provide needed services to keep individual freedom at a maximum for all. With the use and development of these innovations there are many decisions and provisions that have to be accounted for by society. In this application, these issues are addressed as pertinent statements along with much consideration as to the necessary elements to provide responsible remote control and accountable systems. However, the use and control of these innovations will always be decided by the ones that employ them and this will always be their responsibility.

Best Modes of Carrying Out The Invention

Controlled Automobile Shut Downs

This initial goal, as stated earlier, is to first slow a vehicle down, then stop it, and most importantly secure it, in the stopped state. To accomplish this, this technology incorporates and combines presently manufactured commercial off the shelf (C.O.T.S.) parts in innovative ways to allow for the most rapid development and inexpensive deployment of these new remote control systems to increase public safety. These first named parts are all General Motors (GM) and are presently used for the automation of a standard automobile seat. However, most every vehicle and equipment manufacturer will be detailed with a commercial off the shelf configuration or supply line set up to easily support these automated and/or remote control functions.

The GM application will primarily use seat controls. Some others will use automated seat belt restraint motors, as well as, other varied automobile servo motors and varied powered actuators either motors diaphragm canisters, and/or cylinders powered by vacuum, air and/or hydraulic fluids ,etc. to complete remote controlled functions. In the event suitable C.O.T.S. parts can not be configured for a particular piece of equipment from its own manufacture product line a innovative configuration from other available C.O.T.S. products or this technology will probability provide an inexpensive alternative to automate and/or remote control any such particular function.

These presently detailed parts were chosen for their universal supply line manufactures and commercial connections to most all the major automobile manufactures around the world. They were also chosen, because some of them have flexible cables, and/or flat or strip gear drives of different length and applications, which allows their motors to be installed in another place from where the actuator device and/or physical structure and action is needed. Another important consideration for some of the GM configurations was their high torque capability.

These first GM parts are a 12 volt motor PN (listed in fig 6), which has a gear reduction right angle worm drive as part of its assembly. There is also varied length cable drives, PN (listed Fig 6) that give some flexibility to the drive, which allows for the placement of the motor in another location from where the work that is to done by the next two parts. They are 2 drive actuators, one is a Ball nut device PN (listed in Fig. 6) attached to the cable drive that normally is responsible for raising and lowering the seat through electrical switches on the door panel which reverse the polarity of the motor. The motor is attached to the other end of the cable. This motorized ball nut device has been designed with some physical reconfigurations, electrical circuitry and has been re-deployed on and through the floor board and under the carpet to serve as a secluded accelerator pedal stop (in the prototype). This will be incorporated and protected in the floor for final products. When the circuit is energized, the accelerator pedal cannot be held down and is raised all the way up so the car can only idle which slows the vehicle down gently while still providing power for operator steering and braking. This only removes the operator's ability to accelerate a vehicle. This can be done incrementally, however, in the present prototype it has been designed to completely eliminate any acceleration by depressing the pedal when this innovative device is activated. In this first phase to restrict acceleration many different modalities are detailed in this application to complete the slowdown in the PASSS shutdown program. All the different manufactures parts are named, identified and detailed as to how they have been altered to make available versatile devices to complete this acceleration block function as well as, for all the following remote and automated control functions. However, most of the prototypes have been created from GM parts and vehicle to date.

The second actuator drive is also taken from these same seat controls. It is the horizontal right angle gear drive PN (in Figure 6), which is responsible for the forward and backward movement of the seat. It is connected to the opposite end of the same kind of cable and motor system already named, however, here the gear drive is fix mounted to an outer channel so that its drive gear meshes with a strip gear that is attached to an inner channel. So when the motor is activated the entire seat also mounted to the outer channel move together either forward and/or backwards as the polarity of the motor is changed through seat control switches. It is this dual sliding motorized channel system that has been employed in the timed and controlled deployment of the standard mechanical emergency brake pedal system for the prototype. However, the inner rail is outfitted with a slide bar hook bracket that allows for the normal usage of the emergency brake in the slide area. The slide bar also acts like a hook that applies the foot pedal when it is activated to completely stop the vehicle and secure it in a stationary position. For this slide bar hook attached to the inner rail to have something to pull against the outer channel, it has a turn buckle bolt system that has one end fix mounted to it. On the other end the adjustment bolt passes through either the wheel well and/or floor board so it can be properly adjusted for the throw of the pedal to apply the emergency brake and then it is locked down in that position.

Once again, there are many modalities for this Slow to Stop and Secure function of braking the vehicle with new parts and innovations to C.O.T.S. parts and combinations. It is the explicit purpose of this application to completely detail every possible modality for every variation of vehicle to provide these remote and automated control functions. While this system in the prototype is activating the foot pedal lever, these systems are also deployed in other locations to activate the emergency or manual brake system to initiate the second phase of this technology's PASSS shutdown protocol with the vehicle secured in a stationary position. Also, in this application are various other motorized and powered automated brake application and accelerator stop or elimination modalities .So, in no way should any different combination or variation of the same or similar devices and/or systems used to slow, stop and secure the vehicle in a stationary position (this technology's protocol) be considered different and/or unique. They are all a form of PASSS.

For the automation of the steering, the motors, gear reduction and cable drives are the same for the GM prototypes, these same drives, or similar ones, are proposed for the Chrysler, and Ford, vehicle prototypes, as well as, for their brake and accelerator functions. The innovated device for the prototype will incorporate a similar cable hook up to its own jack-shaft drive system that can be mounted parallel to the normal steering parts and rotating shaft or surfaces so that it can drive a 1/4 inch belt around two pulleys in this steering modality. One pulley is on the jack shaft and the other on an accessible area of the rotating steer shaft linkage, so that when the motor and cable system is activated it will rotate the steer shaft in the appropriate direction to turn left or right. This belt system is accompanied with a standard solenoid activated tensing system to allow for an operator to defeat it under appropriate circumstances. The prototype example system are GM Delco parts, that can be utilized even on other vehicles if so desired, but in no-means are they the only parts that can be utilized in this innovative manner. This Guidance System is the physical guidance system to create the second generation of PASSS and PAGSSS.

Once again, it is the primary purpose of this application to provide all the major vehicle, truck , industrial trucks, track vehicles, ATV's, and other land based vehicle manufactures with innovative designs and simple solutions using their C.O.T.S. parts, where ever possible to complete all the remote control functions described through out these patent applications. So any reducing of engine RPMs and/or Controlling Powertrain Components and/or their functions as well as controlling any Braking and/or steering systems in a controlled fashion for the purpose of restricting a vehicles speed and controlling guidance and/or its use through remote control, and/or preprogrammed means (i.e., electronically through any electronic control system, programmable controller, computer and/or control circuits either IC or relay switching or series switching that can interface either with any RF signal) at any frequency and/or utilize any type of cell phone technology (i.e., digital or analog, pagers, paging chips, and/or any components that can either transmit and/or receive information) and data either alpha-numeric or voice commands or any data stream (i.e., analog or digital including infrared, laser or light wave transmission) or any modulation of these types of signals for the purpose of electrically activating from a remote location any solenoids, servo motors and/or electric pistons or controls for fluid air or vacuum driven motors, valves, and/or any pistons and strip gears (i.e, hydraulic and/or motorized ball screw type of power transfer mechanisms) as well as, hydraulic or air driven either on-board an OEM host vehicle or added to the vehicle machine equipment for the purpose to control the following standard mechanical components (i.e., cables, linkages, air flow gates, and/or valves, i.e., butterfly valves and/or valves that control gasoline, propane, and/or natural gas or diesel fluid flow lines) as well as any, hydraulic (i.e., power steering, transmission, pressurized plumb) circuitry either OEM or redirected that can serve as a controlled energy source, and/or any add on bottled pressurized gaseous systems or compressed pumped air systems either OEM and/or added on that are used for the express use to energize and/or de-energize any and/or all the above mentioned and application devices parts and/or components for the expressed purposes of either to slow down, guide, and/or stop completely in a secure stationary position a mobile vehicle, as well as, limit and/or control any functions from any remote control devices as have been described herein, and/or effecting any components by gating or regulating and/or redirecting or reducing and/or stopping the flow and varying any flow and/or pressure in any fuel components, braking mechanisms or systems and/or steering components and/or functions or any of their component mechanisms fall within a PASSS and PAGSSS scope. Also, any enabling and/or disabling of any of the standard manual components (i.e., pedals for acceleration, and/or braking systems, either service and/or emergency systems and steering systems as well as any levers handles catches, latches and latch releases) that can be made to effect the engine and/or motor RPM's, or vehicle speed and/or stopping and steering activities and/or effect any general usability of a vehicle machine or a piece of equipment affected by preprogrammed functions and/or from a remote location through any of the above mentioned transmitting and/or receiving devices that can be interfaced with a host vehicle for these purposes no matter what the range and type of RF signal phone or communication technology, light transmissions or pager transmissions.

These complete descriptions of the mechanical design and configuration are being given to make clear that this invention and any and all of its configurations existing as C.O.T.S. parts presently are considered unique, when used to control vehicle speed, braking and/or steering in these automated PASSS and PAGSSS shutdowns or in any other automated function described within this referenced application in any vehicle, machine, or equipment applications if it is done for remote control applications and/or any preprogrammed and/or for any safety consideration described herein with and/or with out accountability and/or security protocols and/or in any protective encasements. Even though the invention seeks to meet the public's immediate needs economically with these readily achievable C.O.T.S. products in as quick and safe a manner as is possible, it also, maintains and claims completely that any automation or remote control of any of these aggressive functions stated herein, that are performed by present or future remote control, and/or preprogrammed controls be they interfaced C.O.T.S. circuits or devices and/or any integration of circuitry to be still part of this technology, when the same mechanisms and systems, e.g., for: speed control, steering, braking and power plant disablement's perform the same:

I	II	III
Warn\Guide\Slow,	Stop and Secure in one position,	Kill the Engine

This three-phase shutdown protocol for an automated and/or remote control deactivation of automobiles or vehicles is a major part of this technology's nature and scope claim for all the applications involving remote control vehicles, this technology's Mobile Application Specific Management Program (MASMP).

Of course, at this point it is important that any device that can increase the speed of a vehicle whether mechanical or through any electrical means if only a electrical transdusive device, i.e., potentiometers, field weakening systems, silicon circuit relays SCR systems and/or any controlled chemical and/or molecular interaction that yields and controls the provision of energy to a power train and/or controls that power trains delivery of power to propel and/or restrict and/or detain a vehicle or any stationary equipment control for any and all the above purposes, reasons and the scope of all the related patents and/or any controlled device to control a vehicles speed function falls within the nature and scope of the invention when it has been automated for any of the already described reasons and most especially if it is done with memory storage for accountability and/or is enhanced by a secure and/or secluded encasements, like this technology's PFN and TRAC software systems. (Note: Because the nature of these inventions is to combine and universalize the use of all associated technologies; any and all compatible and/or unique designs by others that either parallel these inventions and/or add some versatility and/or uniqueness will be given every opportunity to commercialize their product and/or incorporate and/or merge their business as might be possible to full fill the public's best interest if there can be a reasonable and mutual commercial and financial venture agreements.)

Presently, in this application, complete descriptions of all these developments will be given by the mechanical systems they involve as described and depicted by the following drawings. These diverse remote control and automated claims of interface is being done to help commercialize responsible remote control and to give value to all of this invention's devices.

These are the present systems and parts that are being used in the prototypes and demonstration units to automate slowing, guidance, stopping and securing functions for the automotive industry as part of the PFN invention. Presently the slowing, stopping and securing functions are coupled to the remote control pager system already disclosed in U.S. patent application No. 08/975,140. In that application there was also described a fuel control valve system and the invention has developed a prototype of this unit as well; along with many other prototype systems and shut down protocols through experimentation. All have different qualities and properties and mechanisms, that will serve to automate control systems as they can be applied to all kinds of equipment and machinery not just the automotive industry.

Figure 1

(THIS FIRST DRAWING IS DONE TO COMPLETELY ILLUSTRATE WHERE THESE AUTOMOTIVE DEVICES WILL BE LOCATED AND THE SYSTEMS THEY WILL BE COUPLED TO AND THE MANNER IN WHICH THEY ARE CONNECTED). The following number system will be used throughout this application of drawings to be consistent with the systems these devices effect. Throttle control components will be numbered in the 100 series, the emergency brake system will be coded with the 200 series numbers, the service brake will be represented by the 300 series, the fuel system will be 400, and the transmission and transaxle will be 500 numbers, additional and accessory brake systems will be 600, the steering and guidance components will be numbered in the 700's, the rear axle will be 800 numbers and on-board electrical components sensors and control circuits will have 900 numbers, also the electrical components will have a lighting bolt indicator line in this figure while all other devices will be indicated by a standard curved indicating line to the number. And finally the reason there is duplicated numbers in this drawing is because this drawing represents the two most popular standard drive train systems, which are the front wheel drive and the rear wheel drive. This was done to give the most complete and exact description of these innovative device deployments 100 which is a throttle servo motor and/or a solenoid that can be energized to create a specific aperture or orifice opening of the throttle throat to directly effect the cubic feet of air allowed into the power plant, i.e., gasoline or diesel motors.

101 is the accelerator and/or throttle control cable that connects the pedal to the throttle valve, i.e., butterfly (This gating or blocking process) of the air flow can be accomplished by a number of devices and any such devices, e.g., even expandable bladders are considered within the scope of the invention, when any such device is used to control the engine rpm or are a part of any automated control system or shut down. 102 is a standard cable with a junction box that interrupts the cable from actuating the throttle valve. This is done by a solenoid releasing a seesaw lever, or a set of interlocked double discs or cam devices that is completely described in an additional drawing figure 7. Also, in this drawing there is a standard cam system housed in a similar cable junction containment which accomplishes the same lever action result.

103 shows a pedal stop mechanism that restricts the driver from depressing the accelerator pedal and/or activating any linkage to increase engine RPMs, i.e., gear-nut drive, worm gear, ball screw or screw drive, angle or right angle gear drive, piston mechanism, i.e., hydraulic, air either from a compressed gas bottle and/or accumulated

bottle system or energized by any such on-board pumps and/or compressors and/or any electric memory metal device, servo motors and/or solenoids that can activate any blocking mechanism and/or catch and latch devices to hold or make stationary any moving parts that control the throttle by restricting movement. All these same devices also could be used as part 100 to control throttle position by anyone skilled in the art with very little to have these devices activate the throttle linkage or through shaft to control air flow or any earlier mentioned means that can restrict air flow to the power plant.

The activation of any of these above mentioned parts will completely eliminate a driver from accelerating the vehicle by the regular accelerator controls. And also if cruise control is present it would be either electrically de-energized through the brake switch circuit with a series circuit relay or by using the same kind of series circuit relay to interrupt the main power supply to shut down the cruise control entirely. Also, the power train control module PCM could be directed to de-energize the cruise control on most all vehicles and/or simply be mechanically disengaged from the cruise control's capacity to accelerate the vehicle though interfering with any of the physical control mechanisms, i.e., linkages, cables cams, valves with the same modalities described for the standard acceleration and throttle system interruptions. This is the FIRST modality sequence to slow a vehicle down for either remote control or preprogrammed automated controls and it will be completely described and illustrated in this application, along with all the ways to SLOW and STOP a vehicle, as well as, secure a vehicle by either of the brake systems which are automated to be applied through an electrical current or signal from being sent from above referenced control systems termed as a PFN. There will also be other locking systems that keep the vehicle in a stationary position and/or also slow and stop the vehicle by engaging or disengaging drive train components electrically. And, of course, all these functions can be performed in real time with accountability through this technology's TRAC software.

The 200 series parts and/or innovative devices, in Figure 1 comprise the standard emergency and/or parking brake system, which when coupled to the 100 series parts will comprise a complete detainment and securing system - first slowing the vehicle by eliminating any acceleration through the (100 series parts) and then implementing and applying the brake through the (200 series parts), bringing the slowing vehicle to a complete stop with the brake secured and applied so that the vehicle can not even coast or roll while unattended and/or under any improper control and/or unauthorized control. There will be additional drawings showing the circuitry and mechanical parts of all the 200 series parts and innovative devices.

However, at this time it is important to point out another uniqueness to this automated braking system and protocol, which will be incorporated in this automated series circuitry described for this brake application if so desired. It is that the brake will automatically be applied if the drivers seat switch reports no person present by opening a circuit and/or the driver's door and/or any door is opened while the wheel sensors and/or any motion sensing device is reporting vehicle movement and/or if the engine is running. A driver warning will also be given as is standard in many vehicles today, however, this technology is capable of providing this driver notification in verbal warnings, as well as, IP lights, LCD displays, buzzers and bells. It is also possible to activate these braking systems by the seat belt switch but it is possible a driver might just be readjusting the harness an falsely activate the warnings and brake slow down. The proper protocol or safe program for these and additional uses will take into consideration specific vehicle configurations and real life circumstances. Experimentation thus far for this protocol has demonstrated greater safety for the Off loading of passengers in the rear seat of the standard sedan, by preventing movement of the vehicle, while any door is open. Also, the car is immediately sent into emergency brake application mode if the driver or occupants are bailing out of the vehicle. This was designed to for the unsafe unattended auto theft scenario when the irresponsible thieves generally leave the stolen car running in drive as a mobile distraction to tie up police pursuit while they make a getaway on foot. With this technology's shut down protocol, when the thief bails the car stops, allowing the officers to mindfully pursue the culprits only. Once again, this protocol is accompanied with audio warnings and verbal warnings and hazard lights and information signs as well to inform law enforcement of the process. In most cases law enforcement will be knowledgeable of this protocol and be responsible for the activation of this shut down protocol command, whether it be initiated by the police or some cooperating commercial monitoring and remote control service.

The emergency Brake (200 series parts) are: part 200 displayed as a cable tension mechanism comprised of an inner and outer channel where the inner channel has a strip gear attached to it and meshes with a rotating gear either attached directly to a motor shaft or a gear transfer box as the systems mentioned earlier that is attached to the outer channel. With the rotation of the gear attached to the outer channel the inner channel will move back and forth as the rotating gear travels across the strip gear that is connected to the inner channel. When one of these channels is attached to part 207 the rear wheel parking bake cables and the other channel is attached in a fixed mount to the car chassis - when this mechanism is activated in this scenario it can either tense the cables applying the brake and/or relax the cables releasing the brake (for a motor application this would be accomplished by reversing the polarity on the motor and the same seat controls are used for this prototype).

For a solenoid application with just sliding guide channels this would be accomplished by energizing and/or de-energizing the solenoid and having spring tension to accomplish the reverse function. Of course, methods and parts to be decided by the specific vehicle and any leverage consideration to achieve this electrically energized mechanical activity. 201 is representative of either a hydraulic or an air and/or compressed gas driven piston system. Its ram and the cylinder base would be attached to the same attachments points as the part 200 strip gear channel tensing system which is also true for part 202 and 203 which all share piston configurations, but rely on different mechanisms and power sources to complete this task. That is why these parts are displayed in parallel in Fig 1. Only one of these parts would be necessary to complete this tension function of both rear brake cables in a simultaneous manner. This is a push/pull action.

It is to be noted that all these parts 200-203 could be designed to work in the 100 series part functions and to alter and/or effect changes to the cars throttling system as well. Presently, some air piston throttling is done in car racing sports with a compressed gas bottle to energize a piston that effects the throttle. It is conceivable to use these mechanisms reconfigured for these functions to control a vehicle and to restrict its use and/or remotely control its speed using these devices as actuators; and solenoid valve to electrically energize desired flow. It is equally important to remember that most all types of vehicles can utilize either this modality and/or one of the other modalities detailed in this application to apply any of the cable brake systems on a vehicle and throughout all these application specific effected parts and their numbers will be named whereever readily known. However, the detailed modalities described herein and used are the uniqueness even without any detail with specific affected OEM parts and their numbers accompanying the drawings.

First, the 100 series systems will slow the vehicle and the 200 series will stop and secure the vehicle in a stationary position. Part 201 could receive its energy to function from either an emergency canister of a safe compressed gas as already mentioned, e.g., CO_2 or dry air or its energy source could be provided by a small air compressor system like the ones used on cars that have air ride suspension systems for a softer and/or more responsive suspension, e.g., Olds Ninety-eight from the year circa 1987 to present. This is only meant as an example, any standard on-board compressor system could easily be regulated and electrically directed through 12 volt solenoid valves, i.e., Bellows corp style and Air equip. to complete these desired tasks. In fact, specific parts and part lines are only mentioned here to demonstrate the easy commercialization of these needed advancements through the readily available C.O.T.S. parts that can be easily obtained and reconfigured and combined to complete these unique functions, but this should in no way be considered the only way to complete these functions. These all can be reconfigured to work with remote control systems and/or be electrically controlled.

Part 201 if energized hydraulically could be served by the power steering pressure and/or an automatic transmission hydraulic pressure and, of course, regulated with pressure relief valves and electrically controlled valves, e.g., Vickers products, and/or the Waterman valves used in the industrial truck of fork lift industries which have 12 volt solenoids for the auto and applicable industries as well as many of the solenoid valves already in use in the auto industry for many of the transmission applications, etc. 201 could also be energized by the standard service brake system where through normal applications of the brakes an accumulator or blatter is pressurized to an adequate pressure to work the piston with specialized seals for brake systems and regulated by relief valves and controlled solenoid valves, i.e., Micro lock company line, also there are a lot of specialized racing companies that manufacture electric wheel locks energized on brake pressure.

201 could receive its service brake fluid pressure from a modified ball screw piston modulator valve like the ones used in the new GM cars to control brake fluid pressure to each wheel in their antilock brake system. This modulator valve is referenced in Figure 1 as part #301 and the modification and all other uses as they apply to these innovations of this ball screw piston valve system will be described completely when part 301 is described. However, to develop the pressure to work the 201 piston and any other automated pressure needs that have not been created by the master cylinder an electronic micro lock would be placed between the valve and master cylinder so that when energized will block the return of brake fluid back to the master cylinders reserve as illustrated in Figure #14 as part 397 which will allow the motor pack when energized to raise it respective pistons to compress the fluid in their cylinders. This is a fairly simple manufacturing change to an already existing part to achieve automated pressurization of the service brake system. There are other manufactures using brake modulators that can be converted to an electrically controlled automated brake pressure system to apply the brakes in a remote control scenario.

Another simplistic way to achieve this pressurization of the service brake is to install an automated master cylinder either incorporated through the power brake system and use either vacuum or hydraulic assist, i.e., power steering or transmission as is often done in the fork lift industry for power assisted braking and activate any of the actuator devices already described in the manner in which they are described, i.e., pistons, etc. The activation of the master cylinder and/or any additional automated parallel master cylinder installed in the circuit, specifically for any of these automated purposes, can also be achieved electrically, i.e., solenoids, electric cylinder, i.e., memory metal pistons, motor driven ball nuts ,ball screws gear drives or gear transfers, as well as, any worm drive affixed to the master cylinders piston plunger directly and/or through activating any of the pedal linkages and/or cables to compress the fluid in the cylinder chamber. All of these devices have been and will be completely described but are being referenced here as varied applications that can be employed to achieve electrically controlled push pull functions and later rotation functions for the automated steering and other rotation functions.

Part #202 represents a motorized mechanical ball screw-nut-worm gear piston application for this cable tensing function there is many such devices and manufactures of these devices and systems. Many of these product lines can be found through companies like Invetech American Bearing corporation along with complete literature to there specifications and functions. Part 203 illustrates some new electric pistons sold through Tech magazine and Digit Key Corp.; both are large mail order houses for electronic components. These are memory metal pistons which are not practical at this point for the brake tensing function, but might be in the future. They are mentioned at this point for their pulling action and piston configuration. And they are mentioned here because they have other functions involving this invention, primarily to electronically controlled catches, locks, and/or latch releases for the PFN and secure containments where these pistons will operate access panels and doors electrically through command codes given and received by the inventions communication and/or control circuits. Part 204 pictures a gear nut drive mounted under a hand pull parking brake lever which pulls part #208 which has a cable that is connected normally to the two rear wheel emergency brake cables where part #200 through 203 are positioned and illustrated in Fig. 1. Any of the other devices displayed earlier, i.e, pistons, worm gears, ball screws, solenoids gear drives and motors can also be configured and ultimately displayed and described to complete this function as well as activate this lever from different angles and/or attachment locations and chassis or frame mounts making any such device that automates the manual function of the hand held lever parking brake lever within the nature and scope of the invention. The pedal stop gear nut numbered 103 in figure one and is completely detailed in figure 6 which is also the one used in the first prototypes for the hand lever.

Part 205 is shown to also connect to part #208 and it is an illustration of the standard foot applied emergency brake that assembly that has been modified with the same strip gear tensing device depicted as part #200. 205 's function would be to pull the pedal down to apply the brake and also to return the pull down arm to release the brake so that when a responsible operator releases the brake cable it will relax releasing the rear brakes, another push/pull function. It is this mechanism that has been chosen and will be used in the prototype and demonstration units to commercialize these technologies. Once again all other earlier described systems can be most easily configured to achieve the automation of this standard foot pedal parking brake assembly. Also, the regular emergency brake ratch assemblies can be motorized with a gear drive and controlled electrically in the same manner. Note that in most vehicles only one of these innovations would be used with respect to how the OEM has set up their parking brake system. The OEM's set up would dictate the appropriate modality for the least expensive and most ideal configuration for these innovations to be employed.

The 200 series parts and innovations are responsible for continuing and controlling the slow down process and ultimately securing the vehicle in a stationary position. The 100 series parts and innovations eliminates any acceleration of the vehicle and begins the controlled slow down. It is the use of these two combined systems that the first prototypes and demo units will be constructed from. This will employ the 100 series device of the pedal stop ref # part 103 in Figure 1 by using a typical seat control motor, drive a gear nut cable which in turn drives the gear nut to elevate a stop on a shaft off the floor board which is concealed under the carpet to stop the accelerator pedal in its highest position to keep the engine at an idle state. The elevation could be controlled to allow a specified certain capability to accelerate through the earlier mentioned control systems 900 series and onboard sensors on the vehicle, i.e., speed sensors 900 series parts, i.e., wheel and/or transmission. As referred to above the second stage 200 series will continue the slow down to a complete stop and secure state of the vehicle. This will be accomplished in the prototype and first demo units by applying the foot brake with a strip gear and inner and outer set of channels driven by another seat control motor and drive cable connected to a power transfer worm gear drive, i.e., like the one used in GM cars as a horizontal adjuster drive, in fact this whole mechanism, channels, slide buck bushings, cable drives, horizontal adjuster drive gear, are the C.O.T.S. parts for the first prototype. This and the nut drive that is the pedal stop for the accelerator are all C.O.T.S. parts and are used through out the auto industry as automated seat controls. However, when used for these unique uses to slow, guide and/or detain a vehicle either remotely, preprogrammed and/or by any series circuit relays activated by on-board switches and/or sensors to increase any safer operational level for vehicles machines and equipment as well as, control any of their use for any financial economic and/or environmental reasons, are all considered unique as thoroughly detailed and made to all fall within the nature and scope of these innovative patent applications for accountable remote control and robotics. All these already existing C.O.T.S. parts and devices will be described, illustrated, identified and named in these applications. The C.O.T.S. approach has been done deliberately to more quickly deploy these systems to save lives today.

The 300 series parts and components involve the service brake system and how it could be used in a similar manner as the emergency brake to complete a controlled slow down to a stop and secure the vehicle in a brake applied stationary position. The advantages and disadvantages will be described and illustrated completely as well as, all the parts and innovative mechanisms in Figure 1 and subsequent drawings. Part #300 illustrates the master cylinder and brake pedal location. This part and assembly has already been described in the automated state by using some of the 100 and 200 components and will subsequently be described in greater detail with drawings to illustrate and name the specific parts and innovations for each of those systems in this formal application. 301 was also mentioned earlier and is the brake modulator valve body that has 3 motors in a motor pack and is currently being installed on late model GM cars form 1997. This system will be modified in accompanying drawings to activate the service brake system without using the master brake cylinder pressure which is not the case in the present version of this ball screw 3 piston assembly.

Presently the valve only can utilize whatever pressure the master cylinder creates and will go into bypass mode at any pressures greater than what is generated by the pedal being applied. As for normal service situations this would remain the same, but in the event that the vehicle needed to be slowed down through the service brake's system the return bypass relief would be blocked as the ball screw pistons were activated and a regulated flow controlled through either a preprogrammed EBCM electronic brake control module for the current anti-lock system and/or channeled through another valve body and controlled by other control circuitry either on-board or added on as the devices described throughout these applications for the invention. After 301 the modulator valve, parts 302, 303, 304 and 305 illustrate the brake fluid lines going to each wheel, respectively. 302 is the right front wheel brake line. 303 is the right rear wheel brake line. 304 is the left front wheel brake line, and 305 is the left rear wheel brake line. In reference to these brake lines if an add-on system was to be employed that created brake pressure either by accumulating pressure and storing that pressure in an accumulator or bladder or canister controlled by electric solenoid hydro-locks or if an additional automated master cylinder was employed and activated as described earlier the equalized pressurization of brake line part 303 and brake line part 305 would be the best mode for completing a safer controlled brake system application.

306 shows rear disk brakes. These disk brakes could be outfitted with an electrified magnet with an abrasive wear surface disk or plate that is supported from the caliper anchors and rides close to the disk and works by trying to hold the wheel disk fast and stop the wheel rotation. A C.O.T.S. substitute for this would be the electric trailer brakes set up made by Bendix, which would be configured to be equally effective on the rear two wheels rotation through matching the wheel rotation and individually energizing the braking magnets. Once again speed sensing devices on the car along with the OEM control and the invention's control circuits will be interfaced for the least expensive most effective modality for any specific vehicle and will be continually describe throughout these applications as specifically as possible. 307 the standard drum and brake shoe set up. These drum and shoe brakes could be modified to accept any of the earlier described mechanism to activate and expand the shoes out to the drum surface by, i.e., cams attached to gear drives, pistons, solenoids, as is done with electric trailer brakes and pulsed through a preprogrammed circuit that receives vehicle speed data and equates the on/off time or amount of current to be applied. These will also be completely described in subsequent drawings. They would be fix mounted on the backing plate dust cove on the stationary end and the actuator portion of any of these devices would be fixed to the emergency cam lever free to travel normally when not in the active state.

Electrical Vehicles and Machines

In this 300 series section, the invention foresees a use for different kinds of braking systems as a possibility to conserve weight in the emerging electric car industry. The use of a wheel generator attached to each wheel could accomplish a number of functions as its fields would be energized for a braking mode. First the inertia of the car would be slowed by the load it will take to generate electricity which would also charge any electrical power storage system, i.e., battery. As a result the distance an electrical vehicle can travel will be lengthened in an efficient use of the inertia from the car to generate and store additional electrical power. To take this one step further, it is well understood that DC electric motors can be electrically configured to generate electricity as well in a reverse function. So the advantage here is that the same drive motor could be configured to be part of a generating braking system through switching fields thereby creating a complete electrical drive train and braking system, which saves parts and weight with the switching controlled by the accelerator and brake pedals. This will allow for an easy conversion to automated and remote control scenarios electrically.

In an all-wheel-drive, four, two, three motors and the like could be employed. Four motors if each wheel is to be outfitted separately for some all-terrain applications with their own final drive gearing. It is also possible to use a three motor configuration if just the front two steer wheels are outfitted with motors to give drive traction and the rear two wheels would have posi-traction or a limited shift drive axle with both wheels powered through a standard differentials with a single motor attached to the input shaft of the differential. Just two motors could be employed if the motor drives were on the input shafts of the final differentials for the front and rear drives. For standard two-wheel-drive, just one motor that either drives through a differential for the front or rear set of wheels, but in this case and the last one mentioned. The two motor four-wheel-drive for the braking function properly the differential would have to be either a limited slip and/or fixed differential. For front wheel drive at least a limited slip to allow for tuning and in this case probably other braking systems described in the invention will be incorporated cost effectively to assure a smooth control in the braking process to accomplish the stop and secure scenario and sophisticated remote control. Of course, any number of motors may be used, depending on how many wheel systems and power/torque is desired.

These standard final drives are detailed in this technology with electrical motors, and controls because, this is the evolution of the auto industry to utilize a drive by wire technology. So the control of these circuits and components was foreseen early on that will control speed, braking and steering will all fall with in the nature and scope of this technology to provide responsible and accountable remote control through any electrical and/or mechanical means. Also, with the electronic OEM wheel sensor controls and modules, e.g., electronic brake control module anti-lock system of today only the voltage considerations should be reconfigured and instead of activating any modulator valve it would just send its directions to an EVC module. An electric vehicle control module mini computer or controller that through silicon relays diode thyrister field weakening systems and field switching system would through its preprogrammed soft ware would direct the sending and retrieving of power discharged from the battery and generated from the vehicles inertia. This will save parts and conserve energy by the EVC1070 ability to direct current and the polarity from the motor generator switching circuit through readily available current sensing IC circuits available today. This EVC1070 control module will have this technology's PFN/TRAC system.

Many of the familiar standard driver controls of today, i.e., accelerator and brake pedals and steering wheel will be apart of the electric cars of tomorrow and other energy alternative vehicles. These innovations completely and fully describe and detailed in this application and the preceding ones can also be used on these new vehicles.

This next section, the 400 series, will presently be completely given extensive description and illustrations. Part 400 is the standard fuel pump assembly for today's vehicles. It comprises an electric fuel pump with a strainer and fuel level float sensor and in some cases a bypass valve. The control of the fuel pump is performed by controlling the power train control module circuit to the pump and not either though the interruption of the fuel pump relay and/or any other direct interruption of electrical power sources to the pump. There is in most cases two circuits that can supply power to the pump. While it has not been the intent to utilize the pump as a primary slow down mechanism and/or the direction for the experimentation and development of this invention technologies, the invention does discuss in detail certain technology unique to controlling the fuel pump and pressure related devices and timing control devices in a fuel injection system and throttle body injection system in a safe manner and presently claims them as . This filing of the invention's technology concerning the control of the fuel pump that was developed through the testing of other unique circuits and devices that interface with an OEM's electric pump and the vehicles onboard control systems and which are effectively used to slow and stop the engine are going to be described completely. These will be shown to do so in a unique way to anyone skilled in the art. These unique innovative methods are completely described and will be forthcoming.

This invention's unique process allows the interruption of the fuel pump and/or injectors without running any specific separate engine timing software program that times the injectors to achieve the smooth slow down of the vehicle. In one modality it employs the above-mentioned 1000 series trickster circuits to control the fuel and spark timing through simple inexpensive relay controlled pre-adjusted resistors and/or preset pulse generating IC chips to send the desired electrical signal from an interrupted sensor to trick the OEM electronic module system. But makes no changes to its hardware and software, i.e., power train control module, injector control module theft deterrent module, and the ignition module. The desired signal is determined by taking a reading of a sensor in the RPM and RUN state desired. Then adjust the variable resistors to a multi-meter readings for analog voltage and/or tune the pulse and/or width of the signal with an oscilloscope for any digital data streams to the desired respective frequency or voltage level. The resistor or chip is wired most generally to a double pole double throw relay, that either gives the OEM sensors signal for normal operation or disconnects the OEM sensor and sends the trickster signal that makes the module software adjust to a predetermined desired level.

The sensor circuits interrupted most generally for this slow down process and specifically in this modality are shown in Figure 1 as 900 series part locations and are normally OEM sensors. These sensors will be detailed later along with circuit designs displayed so presently they will only be named and referenced to Figure 1 for locating their function and purpose. 920 is the throttle position sensor that gives a electrical signal data as to the aperture of the throttle valve to the power train control module and ignition module for the purpose to adjust the mixture of fuel. 921 is MAF mass Air Flow sensor most time located in the air horn and not appearing in Figure 1, but in subsequent drawing #11 part 142 it also provides information to the PCM for fuel and emissions controls. 905 represents the camshaft sensor and also sends its signal to the ignition module and the injection control module. 906 is a distributor induction pick up and also is used to control engine timing function ignition and fuel. 904 is a standard fly wheel sensing design used frequently on Jeeps 907 is a harmonic balancer sensor once again both of these sensors are used for engine timing. In most cases, only two of these sensors would require the 1000 series trickster circuits to achieve the correct electrical setting to achieve the slow down. This has been coupled to the earlier fuel valve system 403 or any of the unique ways to interrupt fuel flow by tricking the ICM and the PCM to send less fuel by the 1000 series trickster signals. As an augmentation to this system there can be an automated gate valve controlled by solenoid or servo motors and/or any of the actuating devices already referenced either mounted as an addition to the front of the air horn or anywhere in the air horns intake passage to gate and thereby restrict the cubic feet of air to a preprogram level that is electrically controlled by the invention and activated in conjunction with the 1000 series trickster circuits to control the spark and/or fuel to keep a balance mixture with the restricted air flow. Alternatively, any of the above described air flow controls effecting the OEM throttle could be employed.

In continuing to describe Figure 1, 401 is the fuel tank, 402 the fuel supply line, 403 depicts an in-house innovative accessory an earlier design of a valve which has already been explained and described, and therefore, will only be referred to as it pertains to interface with other new innovations or as might be necessary to clarify its uniqueness from any other related patents granted and/or any pending applications making claims involving fuel system parts. 404 is the injector control module and will be discussed and how this invention if employed uniquely alters the modules functions and injection system. 405 in the front wheel drive motor location is the injector rail. 407 in the rear drive motor configuration is an injector of which there is usually 4, 6 or 8 to equal the number of cylinders. 408 is the fuel regulator on the return line to the tank to maintain adequate fuel pressure. Another unique device that has been developed in the testing and experimentation of the fuel valve part 403 is an automated fuel regulator that, through an electronic solenoid or motor or pressure activated, can be a variable relief valve that when it is activated and deactivated can dump or increase the fuel rail pressure that result in slowing the vehicle down. Experimental units have been used with the earlier discussed add-on air horn gate valve to better balance air fuel mixture for yet another smooth slow down, and/or in other device couplings used with the 1000 series circuit to augment timing irregularities for yet another smooth slow down. This automated and/or variable regulator will be illustrated and described in further detail as a possible augmentation for some vehicles to achieve a smooth slow down.

The 500 series innovations will be parts and devices that control transmission and/or transaxle (i.e., front wheel drive vehicles) functions that can first slow a vehicle down and ultimately engage the park pin through solenoids and hydraulic dump valves for hydromatic/hydraulic/fluid drive and/or hydrostatic and/or automatic transmission. Also, this section will describe how a standard or manual transmission with a hydraulic clutch, and/or a mechanical clutch assembly with cables and/or linkage can be disengaged and engaged to first slow a vehicle and stop its motion if detected by any vehicle wheel and/or transmission speed sensor. The complete slow down and stationary stop protocol of this technology will be completed with the motor shut down and the clutch will be engaged to use the motor to brake the vehicle. The transmission is locked in gear from a solenoid latch which is activated, when the clutch was disengaged to slow the vehicle. So now when the clutch is re-engaged after the motor has been disabled at a creep speed it will hold the vehicle in a stationary position. With the automated engaging of the clutch in most all manual transmissions, today cars will be prevent from re-cranking their starter motor, because of the safety switch on the clutch which will be operated in the appropriate manner physically or simulated with a trickster circuit from this technologies of trickster circuits 1000 series.

These devices and innovations are the same design as those used for the 300 series service brake system to activate and/or create brake pressure as these hydraulic clutch mechanisms usually use brake fluid. However, if they are hydraulically assisted as is the case in some instances the earlier hydraulic device actuators and electronic controls would be employed. If the clutch is a mechanical either cable or linkage controlled device the 100 and 200 seat controls and other earlier described actuator devices would be employed. For other vehicles already using electronic signals to control shifting and/or transmission functions through OEM solenoids and/or servo motors. These signals would be interrupted and/or augmented through either any on-board control module PCM and/or any add-on control circuitry and preprogrammed software already discussed extensively but will be further illustrated and explained as to the transmission function to slow and to stop a vehicle.

Slip Disk Drive Train Interrupter

Part 500 represents a solenoid or servo motor to automate the functions on a transmission in fig 1. 501 depicts another innovation that will for the most part be comprised of C.O.T.S. parts. It is an electromagnetic surface magnet grooved clutch disc that is attached to the fly wheel which is bolted to the crank shaft of the motor. The motor flange housing that mates with the bell housing has brush paws that make two circular rotation contacts on an separated circuit insulated disc that is attached to flywheel with the magnetic clutch device so positioned so that it can easily be repaired through standard access ports for a part failure and/or bolts can be installed to return the vehicle to an attached flywheel to torque converter configurations for any reason. The torque converter has bolted to it a flexplate and/or an acceptor plate with a matching grooved surface to accept the electromagnetic clutch disc and engage the torque converter transmission hydraulic pump, and input shaft to the transmission. The earlier mentioned brush paws would be connected to ground on one brush paw and an interruptible 12 volt service from this inventions control circuitry would be supplied to the other brush paw which would energize the electromagnet clutch disk and drive it with the rest of the above-mentioned powertrain. Other applications are for fly wheel inertia vehicles and the electric wheel technology not just for remote control function but to better control the transfer of energy to the wheels and/or other industrial applications. Racing applications for quicker starts and definitely in engine repair as to easing the extraction and installation labor in removing all the standard torque convert bolts from the flex plate, for this system. There will be complete drawings and descriptions of parts and innovative design modifications. This also is a unique device for other machinery and equipment to disengage any power transfer system.

Part 600 is an illustration of add-on brake system to slow and lock up the drive shaft. This configuration balances the internal drum to function well at the RPMs that the automobile requires. However, this drawing is another ideal place to show the position of such a standard braking device which is extensively used in industrial settings such as heavy equipment fork lifts, and even stationary machinery that have shaft to gear and cam drives, i.e., presses, paper cutters HI Die's and metal stamp machinery. Part 601 is a more practical application of an add-on drive shaft brake system and is used by some truck manufacturer and especially in the past. It is a disc that is attached to the drive shaft which is much easier to balance for high revolutions with the caliper mounted to the frame or more preferably the differential to ride more consistently with the suspension and stay more true to the disk and the shaft it is mounted on. However, the best location on an automobile and/or truck would be close to a center shaft and bearing and/or fixed rear mount transmission. Once again this braking device gains most of its uses in the heavy equipment, material handling and industrial settings. Because these brake devices share many of the mechanical and hydraulic components as the service and parking brake systems already described they too would use the 100 and 200 series actuating mechanism with the control circuitry that has been explained.

The 700 series involves a detailed description and development of remote control steering that will be commercialized in a specific manner and over a period of time. These device innovations to be automated for remote and preprogrammed controlled steering will be discussed in the progression that they are to be commercialized in the safest manner possible especially in the automobile industry, first PASSS, then PAGSSS, then robotics driving. There is a great need to control vehicles that are operating in a dangerous manner and along with slowing and stopping them an automated guidance system can increased some margin of safety to these already destructive situations in a lot of circumstances.

Along with the automotive applications some of the other types of power steering used industrially that will be automated will be describe in figure one briefly and covered in more detail with illustrations in the formal application. Presently in figure one these elements will be named and described clearly enough that anyone skilled in the art can easily visualize and create these innovations for the most part from the C.O.T.S. parts already in service in different applications today as described presently in the following modalities.

700 series steering systems

Because of the many different steering systems, manual and power steering for vehicles and equipment, a little time is going to be taken presently in this introduction (Figure 1) to detail the steering systems that will be in this formal application. And all the provisional and experimental devices and prototypes will be given some detail.

Part 700 represents a standard pinion, or a steering gear. It also could be a standard orbital valve that guides the hydraulic fluid to one side of the cylinder to dive a ram with a center mounted piston in a desired direction to steer the wheels, i.e., forklift industry and highlifts. Or, once again, as a pinion steer gear would drive the rack in the cylinder mechanically, while directing the fluid flow to power assist the piston rack in moving the tie rod ends to steer the wheels. In the industrial truck and forklift industry the orbital valve or the hydraulic control flow assist valve could be part of a steering wheel gear box assembly like 703 a power steering gear box, i.e., Saginaw ball screw steer gear box with a directional valve and is hosed to an assist cylinder to aid in a mechanical steering system. 701 represents a piston. Also, 703 is a power steering box that is assisted hydraulically.

However, in the normal automotive rack and pinion steering the steering gear will be all one piece with the rack within the cylinder and it is this system that will be most extensively be detailed and illustrated to show how automated steering can most easily be achieved not so much by altering the OEM's systems but by adding the automated controls to them. This is why some detail is given to describe the operation of the systems they are connected to. So, throughout this application extensive descriptions on how all the other steering systems will be automated will be described in as much detail as possible.

These 700 parts and locations named and illustrated are where the innovative prototypes are designed to be attached. The prototypes will provide remote and preprogram sensor control of the rack and pinion, steering gear, steer shaft , any linkage, steering wheel, and/or steer column assembly with some or all of the following parts, as they are present, altered or modified and/or innovatively provided for any and all the vehicles and equipment for remote guidance through this technology. These areas for automation will be described in detail. The first modality chosen by the invention involves the use of the 100-200 series seat controls cable drive motor electrically connected to a controlled reversing circuit as displayed in this application similar to the ones employed for the accelerator stop and the emergency brake actuator mechanisms. Which in turn is controlled by either a 900 series onboard controller (ESCM) through any controller, computer system, or comparable similar control technology, which can either be interfaced with this invention's processor circuits, computers, their sensors arrays, i.e, distance and camera communications, i.e., and control relays.

The 1000 series through 1200 series interface of these innovations will all energize the motor in either direction, with varying degrees of sophistication and responsibility. The 900-1000-1100-1200 series parts and systems will be discussed in full and in sequence later in this application. Only the vehicle steering automation will be discussed presently. However, all of these series will ultimately become a part of an intricate automated steering system. With the reversing of the motor being addressed completely in Figure 4 and the motor assembly and the cable drive changing direction through electrical control circuits it is necessary to discuss an experimental innovation that has shown some promise for automated steering applications. It utilizes the same seat control device the emergency brake pedal uses the right angle horizontal adjuster drive. This drive has been mounted on the steering gear housing and/or supported on a bracket from the steering gear rack mount bolt so that it is in alignment with an add on gear 712 figure 23 on the stub shaft of the pinion gear. There also is a pivot end mount on the horizontal gear activated by a solenoid to tilt the gear down and mesh it with 712. Otherwise, the stub shaft will free wheel, i.e., normal steering There also is some experimental work with small Air Condition system of electromagnetic clutches attached to a stub shaft with the inventions gear a variation of 712 that meshes with the horizontal drive being held in contact with the electric clutch surface, so when energized and pulled away from the inventions splined slip sleeve or collar which is connected to the steer shaft column linkage with a special column mount. All variations of the 712 part will be fully detailed and drawn in the formal application. Both these systems will work in automated steering applications.

A second modality to automate the standard rack and pinion power steering is to access any section of the steering wheel shaft and mount a gear or a sprocket or a pulley around its circumference and connected to a drive that would either mesh or be chain linked or even belt driven to the same or similar type of drive motor assembly, i.e., seat controls/horizontal adjuster drive with electric clutch, as described above and controlled in the same manner, and/or instead of a chain a cogged belt or v-belt with a shive mechanism or a locking cogged hub that is solenoid activated or electromagnetically locked in, e.g., electric clutch which gives control of the engagement as described and employed above already. There is another completely different steering modality.

This third modality for automated steering involves the hydraulic piston system of steering, and in this case the hydraulic delivery lines that activate the directional throw of the center attached piston to the ram would have their fluid flow controlled through a electronic solenoid shuttle valve circuit that is energized only for remote functions through a series of Waterman solenoid control valves first to activate the remote control circuit and also to control the directions. The shuttle valve could be a dual-sided spindle type valve that would control the flow through the orifice by degrees, this function could also be activated by a ball screw piston drive that would pass thorough the center of the double pointed piston to control the flow to each side of the piston. Also these types of control valve systems will work to turn directionally any hydraulic motor system to drive a strip gear in either direction. Most of these hydraulic systems are used in industrial slow speed applications like, e.g., lift trucks, hi lifts articulating loaders. All these parts and components will be detailed itemized and completely described and for the most part are comprised of C.O.T.S. parts for the initial offerings and prototypes.

The 800 series parts are various modalities to disengage rear ends and/or differentials, transaxle final drives, and rear axles to deactivate an automobile from accelerating through the final transfer of power to the wheels. And, then, secondly lock up the differential and/or final drive systems after the vehicle has been stopped and the motor has been disabled so as to secure the vehicle in a stationary state. 900 series parts-- 916-17-18-19 and/or 908 would serve as the monitoring devices, i.e., these standard speed sensors will report on the stopped and/or slowing condition so that the stopped state could be achieved and secured. The first modality for this altered differential would be to have a internally splined slip collar that is circumferential grooved to accept a fork lever arm that is either connected to an internal solenoid or servo motor or has a sealed shaft to an outside actuator mounted to the housing like the high low differential shifters on many trucks today. Another embodiment of this modality would be to have an engaging disc that normally road with the Bull gear and was connected to the planetary assembly which transferred the energy to the axles either by a solenoid that shifted out of the splined center hub of the receiving bull gear or servo motor and/or electromagnetic clutch, or in this case interlock. 801 displays the solenoid and/or servo motor external placements. As for the internal placements and types they will be fully describe and detailed as will these shown in figure one. The final modality 802 involves a slip sleeve either to an axle and/or in any wheel hub that will allow one wheel to free wheel as if a axle has been broken and can not torque against the other to propel the car in either direction. Once again these devices would be controlled electrically but could also be actuated hydraulically or any of the ways described extensively throughout this invention.

Introduction to the control devices, on and off the vehicle, include some which are already existing prototypes with their accompanying drawings and others will be described in their experimental and present design state. Also as they are described they will be explained as to how they are planned to be commercialized to maintain the safest and efficient marketing of these innovative devices to automate vehicle control. These devices described within this application or ones very close to them will most probably be the automated devices that remote control and computer systems will be governing to some degree everyday from the present long into the future. That is why this technology's product developments have been designed and developed first from this primary remote control device application and will be expanded to encompass every needed remote actuator to accountably control humanities equipment worldwide, from the PFN through TRAC software, a programmable and modular software system.

Those functions by onboard robotic systems and interactive highways, commercial and, governmental and/or industrial system, computers will complete the ultimate robotic interface of artificial intelligence for societies machine use through controllable machine messaging as has been detailed throughout all the related patents. This will involve all the series devices from 900-1200 electrically and electronically hardware, hardware imbedded software firmware a, software and encrypted systems. For this reason it is necessary to discuss the remote control devices and systems that will be utilized by law enforcement to control most especially the steering function but will also allow them to detain a vehicle through the slow, shut down, stop and secure device; protocols PASSS and PAGSSS, through all the specialized communication and control systems that will direct these automated controls of a vehicle, i.e., laser guided modulate signals, microwaves, receivers and transmitters set to respond to specific police controlled frequencies and provide instant vehicle identity (ESN), so that a vehicle can be singled out specifically, that is speeding or more importantly requiring immediate remote deactivation for public safety concerns.

In Figure 1, 902 is a new innovation the electronic control steering module (ECSM), part of PAGSSS program. This module will receive its data from the computer which relies on the video systems and distance sensors on-board to give eyes to the vehicles guidance system. The electronic steering module will receive some of its sensor data from the EBCM the electronic brake module as to the coordination of controlled braking and the effortless control steering in GM cars. A Pintle valve in the power steering pump and controlled by the OEM EBCM relying on the steering wheel sensor data retrieved and processed to control ease of steering vs road sensitivity at higher speeds will be interfaced with the new innovative ESCM which will control the pindel for pressure and a second control valve system, e.g., electro solenoid Waterman valve will, control the hydraulic flow and direct it through electrical circuitry to energize either the oil flow to energize either a piston direction or hydraulic motors. ESCM (electronic steering control module) also can serve as a two way switch to direct the seat control type motors to rotate the steer shift linkage and stub shaft parts to steer left and right for the rack and pinion steering, modality, etc.

The 909 sensor array multi-antenna and target system is coupled to long and short range transceivers or crystals in the 900 control center. These transceivers will be completely described in the 1000 series devices. It is these devices coupled with police operated transmitters with special security measures that will allow an officer to point and stop a specific vehicle and/or control its automated systems. The law enforcement officer using this device will have his badge number or Social Security Number encrypted as part of the signal given to detain and/or control a citizens vehicle, which will be recorded in the inventions permanent record device as well as any accumulated sensor data from 909 and in the cabin audio video recorded data regarding the incident. The hand held device probably later consolidated as part of a radar device will be able to verify the officers identity before a chip inside the device will allow the device to work in stopping a vehicle, i.e., Lockheed Martin fingerprint system or the new system that can identify a gun owner and only let that person discharge the weapon with the needed accompanying identity wrist band, etc. All the possible identifying systems that prove good C.O.T.S. candidates for this purpose; and the stated purposes of the invention, i.e., earlier filings and driver identity systems, will be named and described as to how they can be utilized. Also earlier in prior applications interactive highway systems and commercial servers can be used to confirm logged on officers in a particular patrol area to authenticate an officer for the worried motorist through the various communication devices on-board their vehicle and these interfaced systems.

The 900 series is all the OEM's electrical components and others manufacture's add-ons along with this technology's peripheral sensing and control circuits to interface everything into accountable remote control systems. They are the primary electrical components and major computer controls, including the communications and GPS components, record keeping devices and sensors, all initially as C.O.T.S. innovations, which have always been a claim of this technology as well as, any type of physical secure interfacing for these devices and components on either a host vehicle or any piece of machinery or equipment. These initial 900 series C.O.T.S. products are thoroughly interfaced through many innovative 1000 series circuits and control systems, which are uniquely evolved to consolidated and integrate into a multitasking solid state system that will also benefit from this technology's claim of physical and legal protection with a secure environmental encasement to meet society's need and requirements to provide accountable data storage in the remote control scenarios and to protect other vital and expensive electrical components in a PFN containment. This claim for accountability and protected circuits including any and all of the necessary types of record keeping devices/systems and identification equipment/systems detailed is considered to be of a great and unique societal importance and value for the responsible development of automated remote control systems and robotics, along with the TRAC system, to authorize and authenticate commands and activities. And has been so stated as one of three most important and unique properties of this technology, with special emphasis and recognition here on any protected record keeping, locally and remotely, for society's accountability as unique to this technology. However, any and all attempts to protect any circuits to provide accountable and/or responsible remote control no matter what the specific circuit design and/or application and/or function should all be considered to fall with in the nature and scope claim of this technology.

It is immediately apparent that this technology has been expressly and inclusively designed to easily couple and provide technical interfaces and cooperative commercial settings to quickly and efficiently support any existing manufacture efforts in all of the effected industries with valuable commercial technology, plus a real responsible direction and insight to achieve accountable and acceptable automation and remote control for mans machines around the world. While, these control, communication and record keeping innovations are discussed and detailed at some length in this application the real focus of this filling is to detail the actuating devices on the host machinery. And also, to detail the on-board accountable sensing devices and systems that will report back to these above mentioned control, communication and data storage circuits and devices with data about the responsive actions from any of the remote and/or automated monitored activities that are a result of commands given and/or received from these same circuits and devices contained within a PFN as the most ideal setting.

Part 900 is on the vehicle command center or Protected Primary Focal Node a (PFN) which will ultimately be a protected and secured in, for example, a single location housing, but presently will also take the form of a series of equipment interfaces possibly housed in a number of locations on the vehicle to best combine all the present OEM, and C.O.T.S. devices, (some of these are protected and shielded and some are not, however, the accountable recording devices will all be protected from environmental damage, and tampering, as well as the accomanying TRAC software). All the OEM control systems, communication systems, geographic location systems, and trouble code data storage systems, will be interfaced with this technology's control devices, communication systems and sophisticated data storage to provide and fulfill the inventions stated purpose and capabilities, which is to be a sophisticated and accountable record keeping system capable of recording and reporting back on all vehicle operation, operator activities, and environmental data recovered, as well as, directly control the vehicle functions through these presently described automated devices, innovations and adaptive modalities of C.O.T.S. and products and OEM equipment.

920 is the powertrain control module. 940 through 959 is this technology's computers, programmable controllers and/or simple control circuits (also detailed in patent applications PCT/US97/21516, U.S. Provisional 60/122,108 and PCT/US99/00919) to control all the desired automated functions in this application. The reason the invention has 19 numbers allotted to its own control circuits is because it will have many various designs for all the specific vehicles and/or equipment as all these systems interface, and merge with. However, basically there is only 2 levels of computers. The 940 series and the advanced 950 series. 940 is the first inexpensive (Parallax) Stamp I, Stamp II and the 188 euro-board 100 programmable controller and/or computers for the present prototypes of this accountable remote-control invention. These have been planned and configured to evolve as either a series of stamp computers to complete all the necessary functions for most any vehicle automation and communication routing, as well as, data storage routing desired. Of course, other computers may be used.

Most likely, the invention will seek to consolidate as much as possible through 949 into a more sophisticated mini computer like the 188 mentioned earlier, that can be tailored for the desired functions through a limited amount of hardware connections and software programs, so as to consolidated all the functions more efficiently. 950 is the advanced total equipment computer and/or programmable controller (with 386, 486' and/or Pentium processors on 100 euro-cards with plug in edge connectors that can run all the robotics and accessory functions driven by other plug in cards that function also function as communication modems and that can incorporate all the crucial OEM control software or can even replace the OEM circuits as well as, handle all radio and cellular phone interfaces and modems (with the appropriate firmware and software to even function as a mobile work station PC for the automated commuter). All will run TRACT software to be made part of any accountable process, as determined by application specific standards.

With respect to 920, Philips Corporation in Europe is one of many companies developing sophisticated automotive electronic controls to handle a lot of these accessory duties. There are many other manufacturers in the electronics and automotive industry that are doing the same. However, this technology has been designed to do all these functions in different and unique inexpensive ways to drive this development with real responsible commercial direction and to combine any and all existing manufacture efforts, as well as, enhance any and all of them through this technology's vast versatility. This has been done to insure the most complete and accountable development in all the remote control fields for all types of equipment including all forms of machine messaging, communications, control circuits and computer networks as well as all the detailed peripheral devices. 951 personal computers (laptops, organizers and notebooks) 952 and 953 voice recording devices 954 equipment data record device. 954 video record log inside cabin 955 outside video record log 956, i.e., with all records burned into condensed or compressed on Disks or comparable storage system or held in RAM chips and/or a hard drive device.

Either and/or all the systems will be able to preserve and protect software determined relevant as application specific data for authorized retrieval from a physical and legally protected area. Even though the functions are given different numbers here for easier understanding; the data will be stored primarily in two forms on any vehicle and/or piece of equipment. (a temporary real time limited storage and a application specific permanent storage that will have a redundant off-board storage by being reported to at least one remote location in any of the two way communication systems. All these devices to 955 will ultimately be part of the 950 series vehicle computer with the capability to support keyboard operations, along with this technology's steering wheel mouse control device. Also, all systems will be voice recognition and command capable with basic learned operator commands (in any appropriate language). The system will also provide dash displays and other cabin displays including being capable to support the electrical and computer service for a hologram wind shield or screen display, i.e., like the Pontiac Grand Prix for partially and fully automated travel and to provide a work station if so desired. Drag, point and speak and other programs are detailed in the PCT/US99/00919, however, all these systems will be detailed more in this application and in all the other related applications. 960 has been reserved as an interim area to cover C.O.T.S. record storage and communication systems. GPS is included here as a data receiving communication system and the computer systems will ultimately run the software right on-board through programs like Delorme's "Street Atlas" rather than rely on a gateway control computer link like that used by many of the car manufactures monitoring and service programs (e.g., GM's "On Star' program). However, this technology can marry well with any of these monitoring systems and still offer more accountable aggressive remote control enhancements to their existing systems. All these systems will ultimately be consolidated into this technology's 950 Equipment Computer Control Communication and Records unit. This 950 "ECCCR" sophisticated unit will contain the electrical guts for the most desirable protected PFN components and will have universally compatible hardware and TRAC software to create the brains of the invention in one location on each piece of automated equipment. It will be accompanied with all the described sensors and communications systems, as well as, a sensing system for these described automated motorized innovations.

With the 950 control circuits combined together with this patent application's electrical actuators a system, similar to the neuro-muscular functions in humans, can be created for most all of machine use, and it will be made completely accountable for robotics through a machine messaging network that can perform and review performance responsibly for any and all desired remote and automated functions, through TRAC system software. It is a primary goal of this technology to provide a secure electrical interface platform and containment for accountable remote-control and to established it and certify it as a standard for all the industries. So that all of its designs and uses can be regulated and written to by the appropriate governing agencies, institutions, industry associations and/organizations when they are developing their rules, laws and regulations that will control remote control and robotics activities for humanity. This is the purpose of the PFN and a major goal of this technology.

The 960 numbers have also been issued to more easily describe the 1000 series trickster circuits and specifically designed connectors and fasteners to interface these computers and all the other systems till they evolve into one hardware device and one system with more consolidated and compatible TRAC software for the 950 ECCCR. The earlier 900 numbers will be kept for all sensors and the normal auto electric devices generally in use on most all of the equipment or vehicles today. 920, the powertrain control module and/or vehicle PC or computer, ideally and ultimately be protected in the secure box or PFN and so legislated as a standard by congress with regulations from DOT, DOD, Highway Safety Commission, Law Enforcement (justice department and insurance concerns and companies, as well as, to maintain fair trade and commerce for equipment and vehicles for the life and use of these machines in society). And every effort by this technology will be made to coordinate with any standards effort for these merging technologies (i.e. control circuits, communication, data storage, environmental monitoring, remote control device for vehicles and machinery etc.) with their manufactures to commercialize the best product offerings for the public, while helping to structure their safe and legal use.

The 900 thru the 1200 series starts with the 900 series onboard devices and control systems to achieve a full interface with the off-board 1100 and 1200 control, monitoring and service systems, as referred to in U.S. Provisional patent application No. 60/032,217. The 100-900 on-board automated systems and the OEM's electrical components interfaced with all the inventions, sensors, recorders control systems and communication links will form this most ideal focal node and mobile interface platform for this technology to perform its function. This PFN function was described at some length to show the full scope of these innovations as needed elements to automate humanities machinery for responsible remote control and robotics.

The 909 sensor array assembly that is responsible for gathering a lot of video data, for recording and also responsible for retrieving distance data and receiving communication data is going to serve as an introduction to the 1000-1200 series devices and systems. This introduction is meant to accomplish two things: first, to show how these automated devices in this application will evolve in their usage with this total technology invention, and second, to give a collage description of how the devices will all interface to achieve the stated purposes of the invention and the full potential of these new innovations. This is by no means a minimal effort. It will be very descriptive and easy for one skilled in the various arts to see that the interfacing of these C.O.T.S. systems are well with in the grasp of the invention's technology and its capability and design to develop these systems commercially.

The 909 has an inexpensive camera, 910 which will be continually running, while the car is in motion. There is also auto run software to operate the camera when the vehicle is in a parked mode which will be detailed later ("Spider Eyes"). However, normal monitoring software in the invention's computer will pick up input from the distance sensors part #911 and direct external cameras to snap picture of impending contact and record data that is valued by the inventions software (application specific for a crash or traffic altercation, etc.). The computer will have certain powers to discriminate on the storage of records to save space as defined by application specific software. It will also imprint on any valued record the video camera ID location F_R_B_L_ which will identify the recorded view from the front, right side, back, and left side respectively thereby displaying on the video record the moment of impact and any other vehicle image as well as the angle of impact. There is also another video or digital camera system detailed in earlier related applications with only one roof mounted camera location. This drawing shows four locations for the 909 sensor array system, however not this many cameras are necessary at first or ever. Figure 1 is descriptive of the views not the specific camera locations, however, permanent distance sensors, and the short range communication link or police targets 913 and interactive highway communication or combined antenna systems 912 also have fixed mounted locations.

For example, one modality needs only one standard (monitor or Cp) camera to be mounted on the roof (mentioned earlier). This camera is placed in an aerodynamic one-way transparent but stealthfully concealed dome, which allows it to rotate invisibly on a position plate outfitted with a contact arm that rides on an accessible variable resistor coil's windings to sense different current levels or on a sensing disk that will send a different digital electric signal that the control computer can delineate as a specific camera position. The first design is analog but the second is a digital system that can do this function as well. The computer then correlates the signal sent as a set degree of vehicle view where the camera is pointed to by comparing the distance sensors electrical signals showing the closest object and fastest moving object approaching the vehicle, which are optionally prioritized by a compare list in the application specific computer software for, e.g., auto altercations, etc. The computer then electrically operates by servo motors the camera to view this incident while recording the degree angle of impending contact. 0 angle being relative to the vehicle which will always be dead ahead or pointing to the front, perpendicular right 90 degrees, directly behind 180, and directly left 270 degrees as reference. Other reference angles may also be used.

As mentioned earlier, this data is processed through a compare list function in the TRAC and MASMP software from the position disks electrical signal as it correlates to increments of a full 360 degree circle sending different electrical signals (levels of voltage or digital pulses) as it is guided by the distance sensor signal and compared by the computer software. The more sophisticated the computer, the longer the software compare list and the more discriminatory and efficient the camera angle views and the speed they are run. The computer will record, optionally, in snapshot mode to save storage space or record in real time video movement with the computer's software determining which mode is required for the record and/or by the capability of the system on-board. Of course, recorded impacts will be prioritized by any software as reported by crash deployed protection devices or specific sensors for surveillance for the purpose to best record as long as possible all the contacts and preserve them in the inventions protected storage area, all managed by TRAC software.

The invention will employ the C.O.T.S. devices presently available, i.e., the many automated camera systems, and computer monitoring programs used for surveillance and seek to incorporate and interface with them and then consolidate and sophisticate these systems as this inventions unique use and function for these devices are developed into the most efficient and inexpensive system for the public. Also the invention will seek to combine the emergency 911 system through its telecommunications and police radio frequency companies like LoJack , On Star, and all the other supply line law enforcement suppliers with their electronic components into using the protected containment and unique interfaces to organize and combine, as well as create a mobile vehicle platform that can fully service the public without over duplicating functions and creating more unnecessary equipment cost for the providers, servers, and the individual public.

These records will be maintained until they are removed or downloaded by the proper authorization (part of TRAC protocol) and will trip a trouble code to show their presence in the PCM module or in any other appropriate control circuitry onboard and energize a light on the drivers instrument panel as well as either energize a small colored light in the exterior license plate areas and/or ultimately send a short range RF signal that is received by area police receiving nodes or interactive highway systems that might be called to respond by sending services to an accident scene or provide law enforcement. The RF signal (possibly a Lojack device or cell modem dialer) to a 911 node or non emergency police phone node a function determined by the invention software determining impact or reason for the transmission. Any communication will also give the vehicles electronic serial number modulated with it, i.e., same as a VIN # all vehicles are given through government guidelines and correlates to any specific vehicle storing possibly related records. This signal could also be retrieved by any interactive highway system or off-board monitoring service that can store for the authorities in a buffer for later review if more information is required to analyze an incident, then clear the vehicle TC (trouble code) with the information saved either in a remote location or physically recovered in a portable data storage system, all managed by the TRAC software, programs and protocols. The 1000 series on-board communications and interfaces will have a section that completely describes the racking or stacking of transmitting and receiving devices along with the refined PFN product development that combines a universal amplifying system, as well as, a combined antenna system to consolidate, conceal and save space. However once again the C.O.T.S. systems will also be described and how they will be interface and connected at varying degrees and diversity which is an advantage in the C.O.T.S. modalities, but normally means a trade off for space and time of use for these assorted devices. C.O.T.S. systems are also good for building a vehicle or machine system incrementally for specialty needs, which in some cases might be the correct choice economically and especially for retrofitting older equipment.

1100 series is basically the combination of the smart car devices for automated and remote control of a vehicle to interface with and communicate with other vehicles and the interactive highway's. The vehicles will be able to communicate with the Interactive highway control center through the specially protected and regulated PFN's or areas which will house at least some form of recording equipment and monitoring equipment to make all these automated devices and control devices as accountable as any driver must be for any control actions, when either any onboard and off-board control devices perform, automated vehicular control . Because this is ever so important as humanity computerizes its vehicular traffic patterns and controls that movement through these computer systems and remote control devices to achieve fully automated robotics travel as detailed in figures 27 and 28 of this application as well as all the related patent applications.

With the introduction for the 1100 transportation and 1200 Public service Net or Web system to describe the 910 on-board camera system and its alternative public functions and uses, the present invention can call 911 automatically, when the vehicle has been in an accident and notify the 911 system of its location and the vehicle speed that the car was going, when it had the accident. The invention has this capability as well and it has always maintained it is capable of reporting and recording vehicle function in the event of an accident as well as preserve an on the vehicle record or report this data to preserve a record off-board though any provider and/or server system desired or authorized as a solo system or as a gateway to larger networks. This has always been an integral part of the earlier Black box system as has been described in U.S. Provisional application No. 60/032,217. Where the 911 system has been discussed as part of the public net work that would be involved in the black box and billing box vehicle units that were designed to interface and network with these commercial public servers and government provider systems. In PCT/US99/00919 and U.S. Provisional application No. 60/122,108, these companies and agencies are detailed as part of the worldwide web to handle the accountable PFN data as servers and providers for remote-control and monitoring purposes, both for individual and private applications and also for gross commercial and mass or public monitoring and control by consensus through the public provided web pages as detailed in all the related applications. All of these functions will be managed by TRAC software.

A moment will be taken presently to describe more fully the law enforcement section of the 1200 series systems, which is a network this technology calls (SPIDER EYES). This is one of the areas that will be termed a provider area, because it will be providing services for and to the public directly controlled by the government with duly appointed and/or elected agents to work collaboratively with the public to improve public safety. Throughout this technology an effort has been made to define the term **"provider"** as more than just a commercial service. It may well be a commercial server that provides a public service link up or interface or acts as a server for a public safety service, however, when this is done as a public safety service it should be recognized as such by society and exempt from tax and even remunerated for any operational cost by the community. This opens the door for these presently expensive communications system and commercial companies to provide highly specialized and regulated contract monitoring systems to defray the total consumer and citizen cost to provide greater public safety and remote control services. All these commercial support provider services should be commercialized at the very least like utility companies so they have to answer to the public's concerns, through periodic reviews and public board meetings or forums. These contract providers would have to be bonded licensed, and be able to meet any needs to track communications and machine messaging to maintain accountability in reporting and recording any and all transmissions (like through TRAC system software), and there would be bidding for any specific area that limits or has limits on how it can process its emergency communications (e.g., 911, etc.) so that the qualified commercial providers would have a fair and equal chance at the business. The TRAC software provides for a federal standard, which is termed FACT, Federal Authorization Control Technology.

There can be coordinated and licensed commercial servers that can supplement and expedite many services for the populous and aid in keeping government cost down and developing and improving the technologies. However, when they are handling legally sensitive and/or personal data they have to do it according to the laws of the country and any prescribed rules or regulation of the jurisdiction and/or combined jurisdictions they are being operated in. (This is a given, but an important public accountability issue.) The invention seeks to make accountable these technical developments by addressing science, technology and society as the invention's full scope and nature, as well as, deliver invented and innovative devices that can achieve this automation responsibly and accountably for humanity and be equally responsible to the earth's environment that supports humanity.

These on-board recordings and redundant reporting start in the vehicle along with the devices to communicate the data, whether they are in the vehicle as a transceiving device or transmitter and/or part of a physical or close in scanning tool invented especially for this purpose to recover the record, e.g., the invention seeks to construct with other C.O.T.S. technologies already commercially available in this field a hand held device for the police that combines radar, a close range vehicle remote control communication device, and a record scan device, that will send its data back to the vehicle cruiser computer via com port or protected transmission. These could be infrared com ports for quick transfer and all these system options are detailed in PCT/US97/21516 and PCT/US99/00919. Also, the information could be gathered as described initially when a vehicle has an activated record ready to be reported and/or retrieved it would energize the record trip light and flag the trouble code mentioned above. This record along with the video recording will also have audio recordings inside and outside the cabin on separate tracks that are dated and give the time as well as the geographic location of their tripped state in a statement message. There will be many convenient data retrieval devices as part of the invention ability to develop new commercial enterprises and services. One such new enterprise will be certified retrieval and data transfer stations or receptacles that will be able to transfer the data to law enforcement, whereever law enforcement is unable to retrieve it or adequately store it. This will also be wirelessly reported to authorized service providers through TRAC and FACT, to be stored in mass data facilities.

1100-1200 Spider Eyes and Green Eyes programs are to be responsible and respectable public safety programs that will have great data collection capability and remote control in most all life situations. So it will be governed with the strictest rules and regulations that respect individual's right to privacy. (The highest standards of professionalism a necessity at the very least). In fact, this technology will work very diligently to help insure that the strictest penalties are in place and readily applied for those who abuse these systems and the personal rights of the individual. This is an absolute necessity for this great data collection technology to serve humanity in a democratic fashion and to maintain the most important elements of life in America, which is maximum human freedom, liberty and dignity, while providing the greatest individual public safety ever known to man. This can be done with respect, responsibility and a mature understanding of real freedom. Then this technology and all the other great data collecting technologies could truly serve humanity and possibly reduce the chance for misuse for selfish reasons. So much time is given here not only to how the technology can be built but also how it can be responsibly used.

Now, to return to the retrieval of Traffic Data or Incident crime recorded data as determined by application specific PFN software detailed in all the other related applications. To make the recovery of this data convenient for the public there will be responsibly licensed persons or commercial business, i.e., notary of the public. Most dealerships, banks, or law offices have such people in there employ. And these devices should be in there charge for this purpose or under their direction and responsibility as they have to take an oath to perform their functions in a legal manner as prescribed and licensed by the state. Other such professions that are charged by the public such as the judicial system also take oaths and could offer this commercial service, i.e., law offices can set up retrieval scan devices and forward them on to the proper law enforcement data storage centers through standard telephone data nodes in their area. Licensed insurance agents and companies could also review them. This could be done to serve a dual purpose for the insurance companies. One for adjusting rates for driver performance all within the scope of commercial accountability for the invention. And two to help lower government cost in reviewing these records for other criminal activities. So it can be earmarked for further consideration by law enforcement. These records could be filed in the same manner that the electronic tax filing is done today, where they are stored on mass data cassette like Sony Peta Systems which are described in PCT/US99/00919, and further detailed as Incident base reporting for the Justice Department.

More ways to achieve easy retrieval of such information including automated retrieval scanning machines at service stations that are connected to standard telephone land lines which transfer it to law enforcement nodes (local police, state, or the UCR, FBI and/or any instantaneous retrieval of the record reporting through cellular phone systems and all similar technologies directly from the vehicle as has been continually referenced and completely described in all of the applications. Also commercial server industries like, i.e., banks and credit card companies that want to offer these services. When remotely transmitted by wire or wireless RF equipment or telephony technology TRAC software, FACT will encryp the data.

In direct retrieval modalities, the data would be prioritized by a screening process in the TRAC vehicle software as to if it required an emergency response or if it was to be transferred over the non emergency telephone node for law enforcement review where the off-board TRAC system would process it through its automated comparing soft ware which will look for, three significant components, location, time, and the numerical characters that will comprise earth coordinates from any onboard locating device, i.e., GPS System. These latitude and longitude and date and time coordinates will be easy to run in a quick mathematical compare list algorithm software program in a gateway, or central computer or from any network data running or stored for computer access. Computers sharing this specific police report data base and/or DMV data base will be able to readily respond with warrants not only on tags and vin numbers but also give a registry of electrical serial numbers of equipment operating on-board any piece of equipment listing its command path. This will provide greater indentity information and less chance for undetected unauthorized use of vehicle and equipment. These other alpha-numeric number will be the electronic SN's and/or vehicle Fed VIN ID number of the recording vehicle. Ultimately the computers on-board a piece of equipment will synchronize its on-board clock to the time zone it is in geographically if this proves advantageous in a legal setting where a vehicle has recorded an incident in question and it has crossed a time zone in that process. The Clock updates are easily provided by any of the GPS systems on-board as well as any of the other cell phone and locating programs. Another option is the Zulu time system for all around the world. However, at this time it is important to point out that this new system HAS TO BE 2000 YEAR COMPLIANT -- MILLENNIUM AT LEAST.

In summary, this application specific software would search for a recorded location that coincides with a reported crime and/or traffic altercations under investigation. The second search would be to match the date and time to the first location match from the stored law enforcement reports in the database. All this matching data would be stored somewhere in a law enforcement file or buffer or readily available mass data phone node connection which is automatically dialed if there is a high correlation flag on these factors for a prescribed period of time or forever if it witnessed or evidenced any place that was considered significant to any reported unsolved crime or capital offense. Or till the responsibly charged law enforcement individuals deemed there is no further need to preserve a record.

Once again, the recovery of this information for the law enforcement officer could be immediate and ultimately would be combined in one set of devices, i.e, the short range transmitters, remote control device combined with a radar system. Then this innovation could stop and detain a suspect vehicle while retrieving any tripped records on that vehicle and with the speed of electricity send all this data to the officers cruiser computer screen and communicate the same data back to law enforcement's data base monitoring the stop. The officer could also store this data in the cruiser's computer recording storage file system to aid in filing reports taken from the cruiser's RAM or hard drive when the shift was over. By downloading on a daily event disk along with the officers comments, this data would be downloaded at the end of the vehicles daily use or as its daily fluid checks and safety equipment checks were being performed. The officer can also bring up the file on the law enforcement's data base as it was sent instantaneously. However, to do any of these transfers or processing or to even view any record on file in any stage and/or location of this system a badge number or special ID number must be given and software approved which will be recorded as to who processed it or accessed it or simply viewed the file and from what organization along with when and at what terminal during any move or copy transfer process. This will be logged as part of its electronic paths and held in a header or footer statement. This TRAC and FACT software technology is a necessity for these records. This will be done in part to secure data in as pristine and accountable state for legal use and also for accountability for individual privacy. The goal is total accountability and quick authorized access with individual privacy maximally respected and protected. This system could either be a part of the ever growing computer system that already exists in many computerized cruisers. And this will be the first deliberate commercialization of the invention to marry these law enforcement innovative tools to the commercial companies offering technology in the law enforcement area presently.

The 1100 and 1200 series systems are not dealt with in this application because they involve the processing of data with off-board systems, and are covered in PCT/US99/00919. However, the invention has as a goal throughout all these technology applications and innovations to look for companies like Lojack, OnStar and any of the cellular phone and land based telecommunication companies, e.g., security monitoring companies, as well as, any computer companies that can work well in these areas to develop this technology in the most efficient manner to limit any needless duplication for the 1100 and 1200 systems while fulfilling and creating an integrated machine messaging set of networks with varied levels of data. The law enforcement system coupled locally and nationally will have access to the highest levels of gathered data to evaluate. They will include the UCR, IBRS, FBI, Justice Dept., etc., and local police agencies. Then this same data will be minimally screened and disseminated to provide public safety information in the public media and web pages on the WWW. The crime event databases will be interfaced with the emergency 911 phone system along with all the police band RF systems, i.e., Lojack OnStar and any others. TRAC and FACT software encryptions, protocols and interfaces will be determined by all of the above in a standard effort.

These innovative law enforcement tools provide real-time data through secure accountable devices, termed PFNs, to better organize the physical electrical components and specific technology to accomplish these specific and appropriate tasks, i.e, communication systems, or special RF frequencies needed, and all other necessary equipment onboard to provide the services for all the commercial markets available and detailed in these applications for this level of communication, monitoring and aggressive remote and automated control. The inventions focus in the vehicle is to create PFN, an individual consolidated data gathering and primary processing center as a mobile platform with the added ability to receive short range transmitted data and serve as a repeater station to report through the telecommunications systems on-board in real time, managed by TRAC software. This will be part the interactive highway and the 1200 spider eyes web. The individual driver with this primary communication and data processing system on-board their vehicle will be unencumbered and if deemed desirable even unaware of any particular automated social functions being performed by the SPIDER EYES program. This capability will be easily provided because all the devices will be utilized to create a workable and operate the interactive highways planned for, and the accountable PFN with its sensors and cameras is ideal to complete the "Spider Eyes program". This recovered PFN data at the highest levels is to be considered high and medium security protocols, when it is recovered by governing agencies, etc., through FACT, for discrimination and dissemination. But when the data is sanctioned for public use and/or when it is sold for presentation on public media devices such as, TV, Cable, the WEB, etc., then it is considered regular everyday security and management data and information and a functions of public news, gathering, which can conceivably be individually negotiated by the owner of the vehicle \ machine with the PFN and the a news agency ,etc., with any and all the profits and liabilities thereby contained. However, due to the real time coverage capability the driver will be able to provide for TV news coverage, editing protocols will have to be in place for high and medium security reasons, either a time delay system or stop and divert software program and/or editing staff for any data for immediate public presentation will have to be provided prior too utilizing this technology's PFN data. This technology recognizes the need for F.C.C. and other federal regulations on these practices to develop guidelines and FACT, as well as the citizen's right to free speech and their free access to information, along ,with the driving forces of free enterprise to fuel this technology and economy as the latest Milieu for humanity.

There also will be a logged access path and time records for this use by the public and government on each individual vehicle and thereby there can be an accounting to the private owners when their unit and/or vehicle is serviced or sold by prorating sale tax for example for government use, etc.. This way the invention can run software in the vehicle that will prioritize the data and save needless transmission time and storage space. Also recently the 911 system land based lines are being used to notify local residents of a crime incident in their locality by automated dialing to their homes and giving public information as to specific criminal activities in their area or neighborhood, i.e., Fairfax, VA. The invention will seek to create a public service system with cell phone servers and police agencies as detailed through out the related applications. Part of this technology will be to provide reception for these same bulletins through cellular geographic announcements as part of the roam announcement functions in most cellular phones systems today. This will allow the citizen driving to be alert while triggering a preprogrammed response for the camera system to be searching for specific characteristics like an erratic speeding car in the area color and identity characteristics and the receiver section of the PFN to pick up a specific distress radio signal transmissions, etc. And with the most sophisticated equipment, in the PFN computer center to spot a suspect on foot from electronic data received from law enforcement on the individuals physical characteristics (digital snap shot picture by zoom focus with high probability and compare soft ware down loaded and sent to the PFN computer). This will be especially effective through the onboard in the cabin cameras for stolen or unauthorized vehicles, or an electronic signature either artificially sent by RF broadcast attached to the individual as in the case of an escaped or guarded or person, e.g., criminal, child or mentally disoriented individual, etc. Alternatively, the use of sophisticated sensors like the nose that can transduce odors to electrical signal and sense these odors 2000 times greater than that of the human nose may be used. The nose sensor will be on-board all vehicles through this technology at some time in the future for environmental sensing anyway, so it is conceivable that with the proper download software specific odor markers the PFN would be able to add this data to increase the correlation that the correct individual is being identified through all the other PFN sensors and cameras, etc.

All of this data will be sent back in real-time, accompanied with the spotting vehicle location and time so the monitoring system can activate other PFN units in the geographic area to maintain surveillance till the appropriate officials advised and arrive on location if so needed. Also, the system could do the standard function of tracking a vehicle that is jeopardizing public safety so that the automated 911 could alert a geographic area while shutting it down.

Another device innovation, involves the microchip used in Europe to track vehicles that have had their frame or serial numbers removed physically. These chips could be installed by the manufacturer in a number of places on the vehicle and the police scanning tool or device for records would have the proper circuitry to ID the vehicle through these electronic VIN s/n number chips that are factory installed to be confirm by computer stored data as to the identity of the vehicle in an instant. These chips are used to track stolen items in Europe already. This rapid integrity check of VIN numbers can be run through a comparing encrypted software local program to see if the tags, electronic serial number and Vin numbers all match the ones displayed. This would be a guide to further investigate a suspect vehicle. However readily available would be the last known owner as all states record by the vehicle VIN number and tag, and/or assign a chip and VIN for specific circumstances (custom vehicles or off the road equipment) as this is something the states could charge to install for tax, automated tolls, or vehicle and equipment verification and tracking purposes, and check while they monitor the road worthiness of the vehicles they are registering, especially if any contact has been detected and/or any accident safety equipment has been deployed which might have tripped a trouble code to retrieve PFN data as evidence of authorized information.

SPIDER EYES crime watch will be described with another modality of onboard video systems in the experimental state but spider eyes can be used with the earlier described camera system. This function involves using the vehicle as a viewing station, and a repeater device for monitoring. When in a parked state, the vehicle sensors responsible for tampering if they are triggered by an accident contact and/or from any anti theft sensor set off; the cameras will pass through a surveillance mode and record any object and/or activate motion detected by the sensors. The computer will fix the cameras to the moving object first and second the closest objects. Most all the devices exist today as C.O.T.S. including the digital recording devices that will work in the laptop. The 1000 series devices will describe the software and hardware to combine these devices and the varied computers, i.e, 945 series and 950 series that will be on-board and interfaced, and how these easy to connect C.O.T.S. systems will in a very short time be at a level that much of the monitoring and control devices today have taken years to get to. 956 is a global positioning device, there are many different types with scores of different capabilities and in the detailing of theses C.O.T.S. products the 956-957 series of numbers will be assigned as to whether they have accompanying OEM soft ware that can be run through any of the onboard computers 945 and up or any personal computers, or future OEM consolidated equipment. Alternatively, they require report back transmission and off-board computers and software to process there satellite received coordinates and provide information back to the vehicle and/or to track the vehicle. Once again the connections and interfacing for these completed operations will be fully described and detailed in the 1000 series section.

Software comparison priority system. This is a simple basic verbal outlined description of the logic that the system would operate off of for a law enforcement retrieval and comparison investigation tool. This is covered in greater detail in PCT/US99/00919.

The first flag = a high correlation rating geographically for an incident area under investigation. Go to list I = unlawful incidents locator block of coordinates -- then check t = the software would compare the time factor the vehicle record triggered at. Go to list tip = tip would first check time to the time frame of the location flag and, then flag in sequence other known time and location coordinates that might have investigation importance. If the appropriate conditions to review a record were met regarding an ongoing investigation, the file would be downloaded and reviewed. All files would be stored for a reasonable time to allow review for missing persons and/or crimes that are not always reported in a timely fashion. Also for the benefit of insurance companies all impact triggered recordings would be reviewable to lower and/or increase rates as to obvious driver handling. This process could allow for closer review of the recordings to report any other criminal activity that has been recorded and gone unreported to the proper authorities. This will help from overtaxing the law enforcement agencies. However, for this to happen the reviewers should be sworn in prior to taking this job not to relate any information at anytime unless in the proper legal setting and done through the advisement of their legal department. Big insurance companies should have a legal staff to oversee this process and the stiffest of penalties should be in place for any unlawful invasion of privacy, with all unrelated and inconsequential activities erased and/or destroyed immediately.

The above-mentioned software could be run in the insurance companies as they are already linked with most DMV departments in most states and with the municipalities that are sharing data bases between departments. This data exchange with law enforcement would be relatively easy to arrange.

This has been a good law enforcement practice the sharing of information so long as it is done in an accountable manner by responsible and socially mature individuals. This is all considered part of the 1200 spider eyes innovation and will develop servers and providers in a commercial business that serve with accountability for all of societies actions and interactions with its machines vehicles and equipment. This invention develops telecommunication services, insurance services, law enforcement communications and computers into an accountable network database that can report and control events in real time to better protect and serve the public.

This has only been a brief description of the 1200 series network for recording and reporting and accounting for the use of equipment, machines, and vehicles and that impact on humanity and the environment. The 1200 network systems: Green eyes, Spider Eyes, Helping Hand, and Fair Play are all described in PCT/US99/00919 and related applications.

The other camera modality that can be used with the 1200 spider eyes system and requires a little more description. There is a special mobile mount system that allows the 909 camera and sensor array system to roam to different locations to view the side wall of the wheel and wheel well areas and also to wide focus out at road surfaces and edge. This is controlled through monitoring application specific guidance software for this system. Along with all of the video or visual camera systems running on-board to pick up and record physical data (which is transduced to an analog and/or digital signal for software comparisons and/or algorithms) with other additional guidance information. Also, the off-board transmissions or data links to alert the PFN or control center computer of specific upcoming environmental and/or road conditions or hazards so that the vehicle's performance may be altered to make the appropriate guidance and speed option adjustment for the interactive highway. These will include GPS, travel advisories automated bulletins and warning systems. The control center in the PFN might be OEM computer circuits or they may be run by the inventions own preprogrammed guidance software, PAGSSS and MASMP, and hardware. GM, Lockheed Martin , other large corporations and Department of Defense (D.O.D.) in San Diego were working on a seven mile stretch of interactive highway. It is another goal of this technology to join this effort, by providing social accountability, through the TRAC software programs, to this automated personal travel as well as, physical tramming or training of vehicles (later described) to failsafe some of the existing systems and also offer many other automated enhancements to achieve responsible and aggressive remote and automated control. This is a major reason for the development of these systems.

The 909 roaming system has two modalities. The first is a pre-formed track system with a flat slotted flexible tape and motorized gear inside it that drives a trolley or truck mounted 909 through the reversing of polarity of the electric motor in either direction. As the camera sensor array is in motion the camera is angled in a protected cleaning wiper strip that accompanies the guide track so that the camera will always be deployed with a clean clear view and in the proper position. This flat belt drive system is the same as the C.O.T.S. automatic seat belt application used in some Japanese cars and domestic cars like the 93 ford Tempo today, when the door is closed and the belt is drawn up the door frame to be in the appropriate shoulder restraint position. For example, Toyota cars of the late 80's have employed such a system. Of course, there are many ways this mobility can be achieve for the roaming of the camera, e.g., another such modality for this will also be described. Still using a track system, a truck or trolley has its own motor and is energized through the flex tension wire input that will either be a part of, or impregnated in, the plastic guided flat flex tape drive thus timing the two to travel without having wire and drive entanglements jamming up their mobility. Also, the pre-formed track could be outfitted with segregated contact strips that a brush paw system could make contact with, or the electrical wires needed to service would be pre-tensed in the form of a molded coiled much like a flexible phone cord which would expand and contract with the movement of the 909 truck on the tape drive. Another service line modality will be timed reels on the drive motor side of the flex tape and guide fasteners on the tape drive will also work. Returning to the focus of this application to deal only with the automated personal, public, and commercial vehicle and machine devices, but keeping in mind in doing so it has proven necessary to describe their responsible use and potential goals.

908 in Figure 1 is a transmission speed sensor and already mentioned 903 the Ignition control module and an important OEM component that the PCM circuitry will be interfaced with to either secure the ignition system when the automobile is stopped or to augment the timing to effect the smoothest shutdown to reduce any improper detonation of the cylinders of the traditional internal combustion power plant. This may be necessary in some engines to balance the fuel to air mixture in some of these innovative systems to slow stop and secure the vehicle as well as to ultimately kill any ignition. Also, the ignition module can alternatively be controlled though any of the engine timing sensors and/or pickups, i.e., 905, 906, 907, 904 and/or the PCM power train control module 920 as is described in these applications. All of this is accomplished through the 1000 series trickster circuits or by one of PFN computers and software programs designed to deceive the OEM circuits if so desired and as is detailed. 915 is the door switch. 14A is a seat switch that can tell if it is occupied. 914 is the seat belt switch that will indicate electrically the belt is home in the secured coupled position.

All or some of these in a series circuit this invention will use to create a dead man seat switch system first simply to determine if a driver is present in a seat behind the wheel. This is done, because, carjackers try to leave an unmanned running vehicle to make an escape. This unmanned state will be a software condition or the simple series safety switch signal for the emergency stop and secure function for the vehicle. It will set the emergency brake when a driver leaves the car and kill the cars ability to crank or run in a number of ways. This will help remedy the accidents from the unsecured vehicle of today where children can release a brake and/or shift a gear lever when the vehicle is left unattended and/or in an idling state. The inventions secured state for a no driver situation. And ultimately this system will be combined with diagnostic driver sensors and software to determine the capability of a driver.

The 1000 series circuits purpose is to create the most inexpensive universal linking of unrelated processor units and microprocessors, IC circuits and computer circuits and/or any logic circuits and not only with one another, but also with traditional electrical circuitry. And/or any and all analog circuits along with any confining soft ware and/or digital considerations even for any support circuitry to allow for the quick combining, cohabitation, and interfacing of all these C.O.T.S.

systems and/or any manufactured systems and devices that have been specifically designed and/or by accident of incidence made to be and/or deliberately designed to be . The universal combining of machine technology and communication technology in an accountable way is another major goal of this innovative technology. To be a standard and a cohesive link in this automated robotics development is the prime reason for the creation of the 1000 series interface systems and circuits.

To complete this purpose the 1000 series parts and devices will comprise, e.g., connectors of all types as detailed in PCTUS99/00919, and all of the other applications innovatively configured interfaces and different devices. Communication links and/or comports not requiring hardwiring like infrared technology, simple electric circuits that can be instructed to send a specific signal to another software controlled device to allow for a quick interfacing where there is a software incompatibility and/or none commercially available, i.e., the trickster circuits 1001-1002-1002A-1003. Also in the 1000 series circuits is the many innovative sensing circuit devices, like the one used in the first embodiment and prototype for the first application to sense the vibrators activation in the pager.

Figure 2

The 940 “CHAT BOX” (COMPUTER HARDWARE AND TELECOMMUNICATIONS)

This system is disclosed in PCT/US97/21516's prototype control circuit system to activate a vehicle’s peripheral control devices through one-way remote control paging. This circuit displays the 940 single Stamp II computer to accompany drawing three software commands and that is why it is the second drawing and not back in the other 900 series drawings. This technology is the first control circuits from the first patent application and is still part of the one-way remote and combined automated preprogrammed systems that can perform inexpensive remote control commands.

Presently displayed and described as Figure 2 is a complete illustration of a one-way communication and control system with prerecorded voice announcement and recording capability showing the non invasive current sensing of the vibrator circuit of the standard pager as described in PCT/US97/21516 and an accompanying description for the prototype and/or demo unit. Also, in dotted lines are shown for the optical sensing and non-invasive system detailed as the second option and embodiment to read the alpha numeric message data displayed by the pager. The parts to read the LCD displays are produced by Texas instruments and they are liner pixel sensing arrays, that transduce the specific application messaging into an electrical signal (some analog but mostly digital). Then this data signal is routed by hardwire to an input pin on a mini computer of the PFN where a compare command is accomplished by a preprogrammed software list compiled of application specific signals that will determine if a signal match is appropriate and correct enough and then perform the preprogrammed task assigned to the specific signal. There has been a great deal of improvement in the pixel sensing arrays and even better reading devices for bar code reading. Many of these devices are and will be suitable with the only limiting requirements being space and some power support circuits. The 125 pixel array sensor by Texas Instrument has been the one being experimented with presently.

Because the numbering of the drawing is so difficult to do with all the lines in the schematic, only the initial devices will be described and referenced as to their commercial part numbers and description. The schematic lines and electronic symbols are already self explanatory to anyone skilled in the art and has already been referenced and described thoroughly in the related applications. At the top of the page the 12 little squares labeled B with a + and - at either end are 1.20 volt AA Nicad batteries with 8 in series for a total of 9.6 volts and the remaining 4 to the left are 2 sets of 2 AA Nicads in series of 2.40 volts that are in a parallel circuit which in turn has the first 8 batteries added to its 2.40 volts to make 12 volts for standard automobile voltage functions. This is an emergency power for the PFN or the secure stop box prototypes if the vehicle power source is compromised on the host piece of equipment. This emergency power source would be different but appropriate for whatever piece of equipment the PFN was placed on as well as be able to support any internal PFN current requirements. So it could even provide AC current and in this case the circuit might well contain an inverter for the power source to energize AC peripherals and/or any necessary transformers as needed and/or a rectifying bridge for charging of any DC emergency storage batteries.

However, the 2 sets of 2 in parallel equaling 2.4 volts have a diode that reduces their voltage when it is tapped off the battery packs to 1.6-1.9 vdc, which goes to a standard current sensing 8 pin chip made by Analog Devices PN/ AD626 and is illustrated as CS in figure 2. From here power is served to the battery peg system to allow for the non-invasive immediate coupling of the standard pager to the chat box control circuitry for sensing pager activation, as well as, supply continual power to the pager from this emergency power supply that is continually recharged as has been described in the first application. Also, there are 3 voltage regulators one is employed to stabilize power to the computer and protect it from vehicle power surges. The other two are used to convert the 12 volts of the system down to 5 volts to support TTL logic functions and to interface with the computer. The 12vdc regulator Radio Shack number is 276-1771A and the two 5vdc regulator # is Radio Shack 276-1770A.

The following will be a verbal description of the software command string in Figure 3, as well as how the electronic parts that work in the program. For this reason only, the software command string will be displayed for figure three with this verbal description serving both figures. So when the current sensing chip detects the pagers activated vibrator motor (by current draw) for the first time it sends a logic high signal to, for example, the 14th pin on the Parallax Stamp II computer that reads this pin to see if it stays high for at least 3.5 seconds, for example. 3.5 seconds constitutes a page received and not just a reminder activation which is only 2 seconds. If pin 14 is energized for 3.5 seconds one of two preprogrammed sets of responses will takes place. If the car is on it goes into shutdown mode. It detects the car on condition by the presence of the ignition voltage of 12 volts on input pin 12 on the stamp computer. If there is no power on pin 12 it will first remotely start the car and apply all stop and secure devices.

On the second vibration (new incoming call) the motor is turned off, and the doors are unlocked. At this point in this preprogrammed response the proper pin code or other such security check must be completed or the vehicle will not start run or release any of its stop secure lock down devices.(this would logic high input pin 15) Now if pin 12 is hot with ignition current the preprogram run sequence will be: First vibration (incoming call) will initiate all slow down functions, e.g., to disengage all acceleration capacity through any of the modalities described through out these related applications, turn on hazard lights and parking lights with any special flasher, e.g. white strobe, and information bar, as well as, any alarms buzzers and sirens. A cabin recorder is started to record the voices in the car and a prerecorded audio chip device message is given to the driver, notifying them that: "The car is in an emergency shutdown mode and that they are to pull to the side of the road immediately." They are also informed that this event is being recorded. Any number and/or types of recording devices with any predetermined function or purpose, e.g., audio video, vehicle data, i.e. speed, throttle position, etc. can be activated at this point. If an authorized driver has had this activated through some error they can punch in their correct pin code and the invention will reset to stay to the ready run state and monitor for an incoming signal (first call in this scenario). For accountability purposes in these simple prototypes a Sony Memory stick or flash memory will record any pertinent vehicle and snapshot video and when used will also record audio incident input.

At the first vibration or page, a countdown is started that lasts for 37 seconds and the braking system is applied in a gradual manner (there are also other parallel systems described with in these applications that would and/or could be activated at this point and are detailed in their separate descriptions. The last phase of turning off the ignition or deactivating the power plant in any of the numerous modalities described in the applications could be another timed deactivation from preprogrammed software in the computer or it could wait for a second page to complete the stop and secure detainment. Once again the program would leave the car in this detained and deactivated state till the proper secrete signal was given either on location or remotely as is described in other embodiments and modalities. The modality chosen for the prototypes and demos thus far involve the emergency brake application controlled and powered by the seat control devices, e.g., motors, direct square key shaft and/or cable drives and strip gear channel and horizontal gear drives. And for the acceleration eliminator the same motor and cable drive system with a gear nut seat elevator adjuster as an accelerator pedal stop. It should be noted that it is very easy to motorize the emergency brake pedal ratchet system itself and this modality of applying the emergency brake is the chosen present modality.

The parallax Stamp II computer was chosen and not merely a micro controller and EPROM because of its mathematical capability and easy to adjust p-basic programming which can support a multitude of applications. While this is not going to be the ultimate computer performing onboard vehicle functions in the sophisticated PFNs for one and two-way communication capabilities, it is a worthy C.O.T.S. product to support the first and second embodiments through this type of development, for the first application and all but the steering programs and complex video devices and preprogrammed functions in this application. The stamp II can support the keypad functions, as well as, generate telephone dial out tones to more easy interface with some less capable cellular and land based phone technologies for stationary machinery by only having to turn on, and initiate the transmit and/or send function to be externally commanded through the preprogrammed software placed into the Stamp II. This allows this simple one-way PFN's to generate the dial tone command strings for remote reporting, while inexpensively and simultaneously controlling simple relays to send preprogrammed digital and/or any data signals back to a remote location through the regular existing phone technology that is on-board the host piece of equipment ideally protected ,secured and interfaced in the PFN or stop and secure box system. This would support an interface with a cellular or regular phone system and/or data modem to activate their send command. This is essential and the first chosen modality to report back in real time to support any locating function performed by, i.e., either hand held GPS like Magellan, etc.- and/or any locating devices, or GPS chips set systems like Phillips, and Motorola and/or a whole device and software systems like Delorme's Street Atlas. Some of these systems have their own software to attach and interface them with computers. These GPS systems that will be interfaced with the inventions second embodiment can also read the GPS display in the same manner as described for optically retrieving data from the pager display in the first application and subsequent filings and/or interfaced through already existing C.O.T.S. software that work with and through any personal computer (laptop, organizer, etc.) and either hook up to a mobile modem and/or hookup through any of the inventions modem interfaces to transmit this interfaced data to provide the geographic coordinates through predetermined electronic data stream, to an already established remote location or gateway, i.e., as have been already described in the first application and further detailed in the related applications. The GPS systems are described and detailed in PCT/US99/00919.

In Figure 2, when the software runs it will send a logic high to the 2-4 channel Toshiba Darlington drivers PN/TD62064P/AP from the stamps out put pins 1, 2, 3, 4, 5, 9. The first 4 pins go to the driver chip lettered DR to the left of the stamp computer which activate the relays 1 through 4 by delivering a 12v ground to the relays that are already energized and wired to the 12 volt + bus lead. When the computer sends a logic high to the DR chip. All these relays are standard C.O.T.S. off the shelf automotive relays SPST either 20 Amp Siemen's PN/A1001-a 303 and/or 30 Amp Radio Shack PN/275-226 and in some cases other 12vdc computer double pole double throw mini relays sold by Radio Shack Pn\275-249 and/or machine control relays 12 volt DC manufactured by Potter Brumfield Radio Shack PN/275-206 and 275-218. The relay employed is considered for the load it must carry and its physical size as to this purpose. Space is always a second consideration when interfacing C.O.T.S. products as is the electrical capability of each part. The other 2 output pins 5 and 9 that activate relays 5 and 6 go through the DR chip to the right of the stamp II computer and function the same way. Pin 8 output supplies a ground through the right DR chip to the voice chip which activates the in cabin message for this prototype. This can be done directly to the voice chip as shown in the drawing. The voice chip is another standard C.O.T.S. device. These all have all been experimented within the Prototype: Radio shack PN\276-1325 and 276-1324 but the one presently being used to deliver the cabin announcement is the circuit from a Voice Memo Key Chain Cat. #63-945 which is amplified by a Mark II portable toy music Amplifier #M.A.-55 that also supplies the speaker and the speaker enclosure. The Radio Shack voice activated pocket recorder is Cat #14-1061and this constitutes the simple RAP box system of the present prototype and proves feasibility of function. All of these voice ICs and amplifier parts are either sold as components at Radio Shack in a number of formats or are already incorporated as the mini memory key ring recorder and the toy Amplifier. Experimentation with all these devices have been used effectively in the prototypes. The Voice Chip Recording chip, also, receives output pin 10 signal from the stamp computer, which recycles the message by giving a momentary ground for this purpose as has been described for #10.

Connection 1, shown to the extreme right center of Figure 2, is the output connections for relays 5 and 4 and a negative ground. The activation of relay 5 gives one set of 12 volt lines positive and negative and the deactivation of relay 5 gives another set of positive and negative line, e.g., for different door lock systems and the option to operate a host of automotive ground switch braking circuits, e.g., horn relay and many others. Number 4 relay is a 12 volt line that supplies current to the starter motor solenoid circuit for nine tenths of a second that can crank the motor till the vacuum switch signals the engine is running and opens this circuit. There are many different vacuum switches that are C.O.T.S. that have been employed to do this function but for the prototype, i.e., EGR valve, MAF sensor, etc. This is accomplished by the stamps software merely timing the activation of relay 4 for the nine tenths of a second till the engine is running in the prototype. This is altered to get the proper cranking time in different vehicles in the software program. Also any number of other engine sensors, i.e., oil pressure, i.e., ignition firing etc., can supply data to the invention's control circuits to signify a running engine. All of these systems and/or parts have been described as to how the invention interfaces with them and it is clear and easy for anyone skilled in the art to see that sensing a running engine in all the ways possible are already with in the scope of the invention and to recount all those possibilities would be redundant and unnecessary. Connection 1 also has a ground lead.

Connection 2, represented in Figure 1, shows relays 1, 2, 3, and a ground. These have already been described and referred to in the program that runs in the computer and will be referred to through out the innovative device circuitry to follow and the program software to follow on the following drawing figure 3. However, in short these are the slow down ,stop, and secure the vehicle relays, responsible for controlling the automated devices and systems detailed in this application. There is also a ground in this connector and in most cases these connectors have been outfitted with a ground for three reasons, one to bond all device to the same ground and two to cut the noise and or interference. In some cases the ground will be a coaxial configuration for this purpose and thirdly, because, many of the vehicles today are made of non conducting materials. The prototype or first demo unit has used standard phone connectors with 6 contact wires as they were small and readily available

C.O.T.S. products. However, many different multi pin connectors would work effectively. Any of these connections along with there wiring should be completely protected and will be when manufactured as detailed in all the related patent applications.

The third connector would normally only have 2 speaker wires, an input battery positive wire, a ground and that's it for the simple prototypes. These protected wires would service a hidden speaker to give the emergency advisement to the cabin, the run tape system to record the audio video equipment functions and actions along with all the external recorded data which would be stored in either the secured secluded and protected confinement of the control center of the black box ,secure box, and/or accountability box or billing box, (PFN), i.e., as referenced from the first related application because as mentioned earlier the protection is one of the most important claims of this invention. However, it has always been pointed out that this is the ultimate optimal goal for the invention and more easily achievable through the obvious consolidation of hardware and software systems interfaced for the invention protective encasements (PFN's). However, but for this prototype, the cabin recording as already described is a C.O.T.S. standard pocket recorder that can be voice activated ,which saves recording space and has been placed in a child's toy guitar amplifier and speaker box to more easy display the varied functions, of the innovations, and devices to create this present C.O.T.S. version of the invention. Also, to make it easy for those investors not skilled in the arts to see its commercial reality in their every day used devices. This will help to commercialize and market the invention, because instead of a lot of up front designing cost it allows manufactures to be brought together through combining their technologies to assemble the invention's new innovative technology which opens more developmental cooperation in these new markets for everyone quickly.

Finally, because the prototype was divided this way for demonstration purposes, there is also a 2.40 + voltage that is optionally supplied through connection #3 which is activated when relay 6 a mini 12 volt double pole double throw mini P.C. relay is activated (Radio Shack #275-249A) which turns on this standard pocket recorder to tape all the conversations and sounds during the incident including the activation of the warning message given from the voice chip. The consolidation of these 2 recording devices is an obvious evolution of the invention. Also, a 12 volt service is activated simultaneously when the number 6 relay is activated which amplifies the waning message in the cabin. And once again a ground service accompanies these other wires to the speaker and/or recording box, which has been given the name RAP box for Record And Play System, which is also a popular word as in rapping for commercialization. However the 940s 950s computer controller series rap systems will be evolved into a complete record storage system as has already been stated and consolidated in a protected containment either in the PFN location or in another secluded area. The sole protection of the recording system and/or data storage system even as the only secured and/or secluded and/or protected device on-board is still considered within the nature and scope claim of this invention and technology. Even if it is only a special access area inside the PFN.

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System prototype 1st embodiment is adequately described to explain all the circuits connections, innovation and interfaces involved in this application and the one preceding it and to leave no question as to the intent or the capability of the inventions total technology to remotely control peripheral devices and accessories o vehicles or any other piece of equipment. Also, any variation of the basic design of these C.O.T.S. innovation to do the same things is still considered within the nature and scope of the invention especially if it provides accountable memory storage and/or protected encasements. In addition to the circuitry in figure 2 is the software program designed for this first prototype of the CHAT box or PFN System. CHAT is a name for control hardware and telecommunication equipment but all PFNs don't utilize telecommunication technology.

The software has been written in this prototype and demo configurations and designed to make quick and easy changes and/or augmentations for the optimal deployment and safe performance of the invention as ongoing continual adjustment have to be made for testing to determine the optimal protocols. All of the functions performed by the PFN stamp II for these embodiments could easily be accomplished by simple truth table switching or transistor to transistor logic or IC processor's and/or electromechanical switching for the most part and just as inexpensively. However, the stamp II was chosen for other reasons that addressed the smooth evolution to the PFN's to more sophisticated control systems. With the PFN incorporating more sophisticated computers systems detailed in PCT/US99/00919 that can and will be more easily interfaced with host machines electrical and/or electronic systems, as well as, any and all already mentioned devices it can interface with first as hardware C.O.T.S. components, e.g., personal computers organizers palmtops minicomputer and of course any and all of the electronic storage devices hard drives, disk drives and flash memory devices, that can be utilized to manage and store application specific data and/or perform versatile computing functions that can network and give more state of the art capability to the vehicle and its occupant in universal plug and play modalities, as well as, support more environmental, commercial and public functions as it is operated Ultimately as OEMs seek for special commercial value savings to serve the public. The OEM manufacturers will want to consolidate hardware and reduce the unnecessary duplication of circuits, components and/or mechanical devices when ever possible and it is the claim of this invention that this is the desired goal of the PFN invention and to be an active part in creating a protected electrical universal interface to support a wide variety of electrical components and devices with simple plug and play interfacing while supporting accountable automated and remote control of vehicles and machines.

Figure 2.1

This figure displays the two main types of PFN's. This drawing has been added in at this point because it gives a better understanding to the reader how the remote control capabilities of this technology are achieved for its automated devices, and how they have been specifically planned for, designed for and how the PFN systems are structured to include any and all other remote control devices by this technology.

Figure 2.1 shows the two basic PFN communication categories which are being developed as prototype. There will be one-way transmission devices and there will be two way transceiver devices with varied peripheral capabilities and protective containment's. The drawing also illustrates the monitoring and remote control system and network from the local level to the global level. The figure also shows all the management of peripherals as well as moderate security systems for conditionalizing any two way transmissions.

11-1200 is the monitoring and remote control system network that can be part of any interactive highway or government gateway land line node, commercial server to phone node for a private system or for web access, and any number of servers or providers could be contacted by the PFN to transfer data for remote control, management OD data and the reporting of data for memory storage in at least one remote location. Number 108 representing the off-board PFN data storage. Directly below that is the two dotted lines representing wireless transmissions. The two directional dotted line on the right has the letters ASS on the left side which is an acronym for application specific security and PGP on the right which is an acronym for Pretty Good Protection. PGP is the C.O.T.S. products out today to encrypt a signal so that only the one with the appropriate key would be able to decipher the data. This technology recognizes that for its billing box function to be able to card swipe credit cards special banking encryption systems and verification protocols might well be required and that is the meaning of the ASS application specific security. It is possible that other high security encryption might be required as well (e.g. government and military which might well require hard ware as well as software change). These systems are not detailed in this application, but are considered.

Security system protocols would basically be reserved for the two way transmissions capable PFNs, and any of their remote computer terminals or gateways, including any and all network data storage and access to that data storage . Programs like this technology's spider eyes and green eyes or green watch would utilize protected data protocols to preserve individual privacy, track access and provide data to the public as prescribed by societies laws and via its institutions media, and the inter net and the (WWW). So **standards** will be set for the handling of sensitive PFN data transfers whether it was removed physically in the one-way capable PFN or the two way communication system that can transmit sensitive data streams in real time.

PGP is the commercial versions of encrypted data. And as explained earlier there is a great number of such systems that can afford reasonably good protection for many security programs. Some of these are just software down loads and can be part of the software in a PFN capable of running a encryption program as well as the software to delineate restricted data from unrestricted data if so desired. Chip sets with imbedded software are another possibility. With both ASS and PGP both ends of the transmission must be equipped to cipher and decipher the encryption key no mater which technology is used and in what form of hardware , hardware embedded software firmware, or solely software added to any existing hardware either in the processor or computer section , modem circuitry, and/or as part of any of the communication devices circuitry.

When security protocols are used effectively they must be in place in every retransmission through any connectable system including throughout any of the 11-1200 networks or web connections for wireless and land wired systems and this is why the phase "Same Security Protocols" (with arrows) parallels the horizontal 1100-1200 network labeled ------world ---local---and sectional blocks illustrating networking.

The basic reason the encryption protocols are only shown on the two way transmission PFNs is because they can be broadcasting personal and/or private owned information video and other sensitive telemetry data. It may not be as necessary to protect one-way directional remote control communications with additional security applications, because, there will be less signals transmitted to them and no return signal so it will be more difficult to figure out their purpose. However, in the higher security applications this encryption may be required as well for one-way command level remote control.

940+2 is the two way communication device with the ASS and the PGP systems on each side showing the options of encryption and the small arrow to the right of PGP points to the right block is the 2 stage memory on-board the two way PFN which are parts numbered 951-956 in Figure 1. Number 2-100-900 is a line list of possible accountable functions for full remote control and remote monitored robotics. At least one variation of this two way PFN will completely support all of these functions including any special sensors, identification systems environmental sensors, audio video systems, all machine controls and will monitor all machine sensors.

940+1 points to the simple one-way receiver PFN. The dotted line coming down from the top depicts the one-way communication for one-way remote control of equipment. However, 940 +1 also can support a 2 stage memory storage and can also, support and be constructed with any of the processor's capacity to do all the same functions as the more sophisticated two way PFN with one important exception; it by itself can not report back its data to the remote control and/or monitoring system by its own transmission. The 940+1 one-way system must have its data recovered physically through a secure download communication port. This interface communication port can also be in place on the two way PFNs if so desired. However, remote control functions can be specific preprogrammed responses and/or guided or warranted through other two way PFNs on location that are videoing a one-way PFN or reporting other telemetry data about the one-way PFN that warrants specific remote commands be sent to the one-way PFN thereby providing complete remote control of the one-way PFN. Total accountability is still provided in two levels in the one-way PFN (re-writable and permanent memory). Also, this technology provides a piston extendable\retractable connector either hydraulic, air and/or electrically activated and controlled which will connect the one-way PFN to any of the communication ports on same equipped two way PFN to report back any pertinent data that needs near real time consideration. In fact in a confined local setting only one two way PFN mobile device could recover data from all the inexpensive one-way PFNs and report it back to the remote monitoring and remote control system. This mobile two way PFN could also accompany any one-way PFN to give report back data for real-time remote control of the one-way PFN equipped machine whether it was a stationary or mobile one-way PFN.

However, any accountable aggressive remote control with one-way PFN's for the automotive applications will have specific preprogramming ,protocols laws and standards for their shut down procedures and most always will involve law enforcement and accountable TRAC software.

1-100-900 illustrates all the same functions that are listed for the two way PFN and states that it has only a physical retrieval accountability for any data stored. 900*s is a block at the bottom of the page and its functions can be performed by both the one and two-way PFNs. 900*s is the special sensors section that will be gathering application specific data for any application specific requirement, e.g., hazardous materials, or anything that can be detected qualified and quanitized and transduced into an electronic signal for the processor software to evaluate through compare lists programming in any application specific software running in a PFN or as burned in firmware on simple device where simple PFNs are set up as environmental specific sensors and are powered by solar cells and backed with batteries. 900*s special sensors will be many different application specific sensors that send an electrical signal to applications specific software programs in the PFNs (e.g., like hydraulic weight sensors). Many of these peripheral devices and sensors exist as C.O.T.S. products and there are flexible software products that can be easily adapted to support these applications. Another 900*s special sensor is the nose, which is a sensor that can identify odors 2000 times more accurately than the human nose and is capable of discriminating substances at a molecular and even atomic level. This sensor is already designed to deliver unique electronic signals for its application specific software compare list library of known substances will serve well in many applications to identify biological and chemical toxins explosives, e.g., potassium nitrates etc., and leaks in regular chemical containers in any commercial or governmental installations when coupled to a mobile PFN preferably a two way PFN. Also, the PFNs could be programmed to operate electrically controlled military devices in unmanned equipment that was damaged or unmanned either due to the loss of life or to prevent the loss of life by using the machinery and equipment through remote control and/or full robotics (based on the level of PFN computers and on-board programming). The options are vast and varied to improve security and safety for all facets to include high security protocols, more adequately covered in U.S. Provisional application No. 60/122,108.

The PFN and TRAC software systems could help world order and nation building by monitoring equipment and material movement while robotically controlling terrain and police it for aggression without risking personnel any more than is absolutely necessary. To help enforce treaties so that the assignees and their constituents are on the same dotted line with the non-emotional objective cold hard reality of equipment that stands fast to the terms that have been agreed upon. Of course, this technology's audio recordings in the native language would be remotely activated or sent as an automated message to precursor any automated physical intervention. First, more of a persuasive nature actions would be used (e.g., water cannon, safe but annoying gases, rubber bullets and as a final option lethal weapons activation) only as a last resort and to save lives. These PFN armored machines and/or equipment would be all terrain like tanks track vehicles, humVs wheeled vehicles, hover crafts. Even drone aircraft, etc. and basically the PFNs would be added to all equipment And of course the peripheral accessories could be all of the same and more military weapons could either be automated or their automated controls could be interfaced with the PFN systems. Eventually, special peacekeeping PFN controlled equipment would be created to help maintain order in an unstable area, but first the PFNs should be a part of every piece of equipment networked and remotely controlled and made accountable to the public the individual and government and commerce.

This alternative with the PFNs would allow the United Nations and NATO to take its nose and face out of troubled areas and those malcontents faces while restricting the amount of harm they can inflict on one another. To insure better tranquillity while reverberating there own commitments and better insuring fair play. The use of this device by the military that is trained for nation building might better keep respect for the military as a fair intermediary rather than just a brute face to face hand to hand combat force as has been the previous option for the military. In tremendously hostile areas where there is no agreement the automated weaponry can be deployed as part of any military maneuver and in place for any rocky social reconstruction time period. The 1200 Spider Eyes program is designed to be used in policing a normal at peace society with respect for individual privacy. The **laws and standards** and punishments for violating an individual's privacy have to be addressed by the public and its government before its implementation and any protocol of use, but ultimately it will improve life and the management of machinery, society its economy and the environment.

Recently, another new device has been developed, the "car plane" designed by Moller for future three dimensional transportation for the individual. The technology exists today to set up a guidance systems with the three coordinates delivered by the current GPS systems. There is latitude, longitude and elevation and when used with the military's accuracy achieved with an additional correction signal for the ionosphere distortion of satellite signals the GPS accuracy is within centimeters and instantaneous on a hot reading. So most probably this invention will see government use for a while before it is a general public individual transportation tool. In any case the FAA could more readily organize and develop the car-plane technology with this invention. And the PFN will be invaluable in consolidating the accountable black box, communication systems and locating equipment all in one concise system that is easily tailored for monitoring and controlling an ever increasing numbers of these car planes in the future.

Appendix 1 lists some of the present prototype C.O.T.S. components used in the one and two way PFN's. These components are more extensively covered in the related patents. However these prototypes parts also demonstrate the feasibility and capability of all the systems interfaced through a PFN. Items 1,2,3, 5, 7, 8, all camera systems and are being experimented with for the different industries to see what application they are best suited for.

When these cameras are utilized for automated guidance in the mobile management patent a system using a laser light beam will be targeted on a lane marker or the road edge. Once the laser light is locked on the line or road target a software algorithm will compare the electrical signal from any camera(s) viewing the roadway to detect the cars position by the relationship of the laser dot on the road and how far away from the lines the dot is as well as the direction the dot has moved from the line during movement. This is determined through the electrical signals digital pixel representation identifying the road target and the laser dot an activating the automated steering stepper motors to turn the steering linkage to maintain the correct lane position for the vehicle through an algorithm in the TRAC software program, PAGSSS and MASMP. This might require two camera angles and two reference laser spots. Of course the PFN will be receiving distance data as another electrical signal transduced from sound echoes and/or infrared systems to be compared in software protocols for proper travel spacing between vehicles which will adjust the speed of the vehicle through the many modalities detailed in this application for automated acceleration and braking processed through the PFN. 4, and 6 in this figure are a video card and converter for laptops to be used in a plug and play modality with personal laptops for sending images via the web and for any personal or business reasons. Web functions can also be performed by the PFN computers through TRAC software.

Figure 2.2

The PFN is a Protect primary focal node ideally housing communication technology with control circuitry and memory storage devices that can accurately locate and remotely control a piece of machinery in an accountable manner through TRAC software that authorizes and authenticates remote activities with local and remote memory storage. This is an important quality to make any **STANDARD** for any automated and remote control and robotics for any piece of equipment.

Figure 2.2 , taken from another related patent application, depicts a double wall structure with an insulated center to protect from heat, moisture, impact, etc. The outer wall 940+5 will most probably be constructed out of a difficult to penetrate metal AR plate at least with its 940+7 thickness being application specific and detailed greater in the individual related patent applications for industry markets and products ,but they will all confirm to any industry **standard**. The 940+6 inner wall will also be application specific and be determined by the standard set for the PFN device as well as the components that must have these protected encasements and the persons that will be permitted access and at what level of access persons will be permitted. The specific encasements are detailed greater in the specific industries and other related patents, however, this technology claims all protective encasements for the stated purposes as part of this technology. Of course military applications and hazardous materials will demand special enclosures. As will curtail areas that will have laws written to protect their access from the general public even if it is a privately owned piece of equipment. For example, this technology calls for at least permanent memory storage for accident related records which will be inaccessible to the general public and a crime to willing tamper with the compartment and the data stored as a standard and as law for its accountable automated and remote control and robotics protocols.

While it is a necessity for the PFN protective structure to provide a protected memory, these same protective enclosures could be found to have application specific importance for any and all electronic parts and components including peripheral devices. In no way should it be limited in structure(s), size, composition, and/or components. 940+4 is in most cases a product called **solid smoke** which was developed for NASA the space tiles. As a solid vacuum they do not transfer thermal heat. There are many good non-volatile insulators and a suitable replacement that meets any standard will be acceptable. The general description of the PFN structure at this point is only done to be inclusive. For example, in related patent application PCT/US99/0919, an entire dash mount PFN structure is detailed to accommodate all the necessary components and other personal electrical components that are interfaced with the vehicle and also afforded protection. These PFN structures would be scaled back because they enjoy a protected cabin in regular automotive applications.

Figure 2.3

Figure 2.3 explains further the remote control relationship between the PFN/TRAC software and its off-board monitoring computer network possibilities through TRAC. The local 1208 box is a remote monitoring gateway computer capable of receiving data managing it and storing it either locally and/or transferring it to other locations the local or other parts of the net work are reached either through wire or wireless communication components housed in the protected PFN. PE is to indicate its double wall structure. The comlinks a, b, c, represents cellular phones one and two way pager systems and any long and short range radio signal equipment one and two way of any frequency. They are all responsively connected to the different computer systems detailed in PCT/US99/0919. The communication devices and technology including land line hookups for stationary equipment, all the varied computers 940 thru 950 series and all the euro board mini computers, and the rewritable hard drives writeable CD's flash memories and MO drives for on-board memory storage 951-956. Of course, these memory devices are likewise responsively connected to the 940-950 computers. Also the Mass storage is detailed for 1208 the off-board storage, as well as feasible protocols for government and industry to refine into **standards**. The networks linked to create the machine messaging network interfaced to the worldwide web though gateway phone node servers and providers makes this technology's MMNWWW monitoring system for accountable remote control, and web access through TRAC's CEW and FACT encryption 128/64 bit software. The communication links in all systems, but most especially in the two-way systems, allows for the real time commands to the video and data received in the remote location virtually anywhere and everywhere around the globe. This makes a real need for protected memory and control and communication circuits and encrypted signals. All of which is part of this technology.

At the bottom of the page, the PFN connector provides signals on-board to the PCMs in cars or directly to peripheral devices and receive signals from microphones video and/or digital camera devices, and other sensor devices that send their data as an electrical signal, and/or the PFN will be connected to a stationary piece of equipment that has a programmable controller HPC host machine programmable controller or computer. Once again, the PFN can be connected directly to electric motor starts variable motor speed controls any solenoids, etc. through relays mechanical or silicon relays for any automated machine control with compatible control currents. The PFNs are application specific in their components and their interfaces and their connections, but are the basis for any **accountable standard** for remote control and automated functions. And this technology is dedicated to standardize and universalize its PFNs for easy to provide easy to understand inexpensive machine messaging systems and automated controllers that are completely accountable for every facet of machine use in the world. However, this technology will first seek to utilize all commercial software and hardware available for its 1200 onboard and off-board software requirements for the 1100 spider eyes program and interfaced computer network systems as detailed in other related patent applications. This use to combine C.O.T.S. and incorporate already existing commercial interest is traditional for this technology to make available as quickly and easily as possible for the mutual interest and benefit of the public and the commercial entities involved these needed accountable automated and remote control products. However, this record and report back system of audio and visual information, machine and operator data streams are considered the nature and scope of the invention, as well as any use to assign accountability for obligation and liability, legally and/or financially for any use or abuse incurred from any machine.

Although all of the following automated and remote controls have always been claimed to be done in a unique manner, they are only a part of the present technology's total system. The invention was not designed merely and/or only as a personally owned anti theft system, vehicles that can activate remote door locks or auto start a car or as a diagnostic tool, or as a tracking device to locate a vehicle by geographic position; it has been designed to be a responsible remote control management system, securely protected, legally approved and accountable to society and for any pay for use claim, with even varying degrees and levels of improper use by monetary fee, which is to be controlled monitored and assessed such as levels of environmental impact, conditional drivers use, etc. governed through the proper authorities and authorization with respect to any laws that govern any standard pay for use commercial enterprises. Rental companies, insurance companies leasing companies, loan companies, banks, regulating government agencies, automobile companies, equipment manufacturers, etc. any fee for use or operational time of any piece of equipment, machinery, and/or vehicle where remote control is employed to insure payment and make accountable. The PFN/TRAC system software Financial Transaction Program (FTP) will be web capable with 168/64 bit encryption for secure bank card transactions. Society lives by the laws and rules of government so if legal commercial contracts are violated and these innovative remote control devices are used to enforce financial obligation they fall with in this nature and scope claim of this technology and its PFNs. Also, if legal but unfair commercial, governmental or individual contracts are a practice they will be reported and recorded in the servers. Network and people will be made aware of these unfair practices.

Robotics in many other machine and equipment applications is anything but new, i.e., automated warehouses and/order picking devices police bomb squad robots and automated hospital delivery carts. The list could go on and on. However, when they are linked or interfaced, for control and accountability either through these innovative devices and systems or in any other fashion they fall within the nature and scope of this invention as described in any of these related applications and the series 1000 through the 1200 devices and net system and/or any other systems that perform these functions with or for any accountability purpose.

Appendix 2

Is a set of three pages numbered A,B, C out of Grangers catalog 1996 No.387 listing some typical programmable controllers that are available for preprogramming control functions on factory machinery or stationary equipment, etc., they are by no means the only ones and this technology can interface and protect any controllers on the market. These are examples of HPC's Host programmable controllers. The PFN will interface with these controllers like it would with the power train control module in automobiles or it would control all the machine functions from this technology's many varied processors and/or controllers, or the PFN could utilize one of these programmable controllers as its primary processor. Whatever is the case ultimately these processors should be afforded the protection of the PFN if possible. And of course application specific software programs would be written to process the data to and from the input out put pins for remote control and automated functions as well as activate any memory storage devices to trach the machine messaging or audio or video data.

Appendix 3

Is set of pages numbered lettered A,B,C,D,E,F,G,H,I, J,K, L,M,N,O straight out of the Grainger Catalog 1996 No.387. These pages are used to provide all the varied gearmotors available to activate any machine and/or equipment controls and/or their functions with electrical energy. These pages provide to anyone skilled in the art all the specification and data to determine which gearmotr best meets the physical and mechanical requirements to perform any application specific control function on a host piece of equipment along with the operation currents they operate on for, e.g., automotive voltage, house current, industrial and/or commercial currents. Along with gear motors controlled by relays mechanical and electrical the PFN invention can be configured to operate any electrically energized devices, solenoids, electromagnets to control valves for hydraulics oil, water or fluid and/or gases, air, water, fuel flows, etc. and control other electrical device motor controllers. Pages I and J are only two DC motor pages for variable speed. These are some of the ones being experimented with for the automotive industry for steering. Page K is some of the straight DC motors for 12- and 24VDC without gear reduction to drive fans, pumps and compressors. Page L and page M are DC variable speed controls that can be interfaced with the PFN processor or in many cases is already connected to a OEM programable controller.

Appendix 4

The first one hundred eighty six pages in the Grainger catalog 1996 No.387 of ac motor selection information with all the motors and their specifications are included here. This data is for Dayton motors, however, there are other manufactures, GE, Baldwin, Westinghouse and many of the configurations are standardized (frames, shaft sizes, HP, and mounts, etc.,) This list is being provided so that anyone skilled in the art can determine the correct motor to use in any automated or remote control function as well as the necessary components to interface it with this technology's PFN systems whether it run's on house hold current, or if has to run on industrial and/or commercial currents. The mere fact that some countries have to have motors configured for different current (e.g., 50hz.) that may not mentioned in this document does not exclude their being controlled by a PFN. This technology is meant to be utilized on a global level. The following 20 pages display more gear reductions and gear transfer cases these motors can be attached to slow the motors rotational speed and increase their torque for power.

The effort in providing as much data here is to prove the feasibility , reduce the cost for research and development by providing C.O.T.S. products and to create an organizational tool to automate and remotely control any and all machinery through the PFN by readily providing the products to fabricate an application specific actuator or automate a function for anything. Of course, the electrical interfaces will require the correct relay and hard wire component for the PFN control currents and the host machines electrical system.

Appendix 5

Is thirty five pages out of the Grainger catalog 1996 No.387. These relay pages detail out a versatile group of electrical control relays that can be utilized to interface this technology's PFN control circuits with the motors detailed in Appendix 4 186 pages and also a way to control current to solenoid valves and other electrically controlled devices on a host piece of equipment. Also in this section are some push pull solenoids box type and other solenoids that can be configured to activate a control levers on a piece of equipment or control latch mechanism or to interrupt a function, so that anyone skilled in the art can readily pick the electrical components to activate and either fabricated a basic automated device function or to develop an isolated command function processed by a PFN to a pre-existing OEM accessory.

Appendix 6

Is another 25 pages out of the same Grainger catalog lettered A through Y because, of the different areas of hydraulics devices covered in this section which are used so diversely to work and control functions through out all the industries. A, B, and C are electrically controlled solenoid valves and only a sampling of many that control valve mechanisms to direct hydraulic flow and pressure to do work , either by pushing or pulling in piston applications, rotational functions as does a hydrostatic motor and/or hydraulic motors used in track machines like skid steers and some robots and/or automatic product feed applications, saws grinders vehicles etc. D and F are dc motors for hydraulic pumps F, G are AC power pack for hydraulic pumping. There, of course, are much larger systems, however, most hydraulic control functions can easily be achieved with the components detailed here.

There electric hydraulic pump systems can also be controlled by the PFN utilizing the appropriate and previously listed relays, and the hydraulic pressures these systems develop will be diverted by the electrically activated sandwich valves. Figure 28 depicts a DC application but the same can be achieved for an AC application. Parker and Vickers are two major manufactures of hydraulic control devices and Gates is a major hose supplier , however, there are many and the fact that all are not named should in no way exclude them from the use of the PFN or when these components provide automated and remote controls in any accountable process.

Appendix 7

Is another group of pages taken from the same Grainger catalog and put together so that anyone skilled in the art could utilize air or compressed gas to activate automated and remote control actuating devices electrically through the PFN processors. These same functions can be achieved for water, fuel flow and/or steam as has been stated, however, there would be application specific parts and sealing surfaces to handle the product's properties being governed, to energize a work function. The first twelve pages deal with the electrical solenoid diverting valves A through L. The next nine pages M through U give all the possible cylinders that can be used to physically activate functions for automated and remote control functions for more push pull applications. Pages V, and W shows the air motor devices that can perform rotational activities by air.

An effort has been made from Appendix 2-7 to provide all the different actuating devices by the medium and/or force that energizes them either to push and/or pull and with or without spring returns and also into rotational devices from a ½ a RPM to 3000 + RPM to be utilized in any basic mechanism to automate controls by electrical signals processed in this technology's PFN. These electrical signals will be recorded in the system's memory devices and marked with a time, date, geographic location if need be and the command string record. While these descriptions and information is sufficient to produce any automated device needed to slow stop and/or secure any type of equipment, machinery, and/or vehicle through remote control for any reason ,more devices will be detailed in the application specific patent applications. However this technology has provided more than enough detail for anyone skilled in the art to produce any necessary controls to automate any operator controls or to complete any interface with any onboard power control systems and devices to perform PFN functions in any automated and accountable manner. The primary goal here is to restrict equipment for any unlawful or unauthorized use and to provide accountability and the physical means to develop full remote control and robotics for every vehicle , machine and piece of equipment worldwide. This is to be done commercially to collect and receive any fee for use and to control equipment's use, while assessing risk and helping to establish fair insurance rates in every industry, provide evidence for legal settings and analyze the impact on the environment and the worlds infrastructures.

Appendix 8

Appendix 8 is another section out of the Grainger Catalog No. 387. This section has more DC motors Pulse generators, motor controllers, gear motors, modular drives AC and DC actuators, electric clutches and brakes, speed reducers, inline speed reducer, and more gear drives.

Appendix 9

Another section from the Grainger Catalog with wash down drive components, sprockets, chain and rollers, pulley and sheaves, belt drives, belts, gear belt pulleys, multi grooved pulleys or sheaves, roll pins and key ways.

Figure 3

Is the software program for the first prototype chat box and demo unit and has already been described verbally earlier in Figure 2. This is the program Command string in P-basic for the slow, stop and secure in a stationary position functions (PASSS program), plus the activating commands to give the appropriate warning messages and start the recording devices which are controlled by the Parallax Stamp II computer. Then this mini computer drives through peripheral circuits the appropriate actuating devices on an automobile to perform the physical remote control functions with onboard monitoring and local data storage. This is not the only variation or software for this protected stop and control box invention or the only remote control purposes or functions performed by this simple one-way PFN prototype. Even this system can be configured to control most all machinery and equipment with the appropriate support circuits and peripheral actuating devices, that are detailed in this application and the related applications as innovative devices. So this software program is merely to display a first aggressive, but, responsible step in remote control. This prototype is a first example of what this technology is designed for; which is to perform protected and accountable remote control at every level of system in size, variation and sophistication.

This one-way system and all the systems (one and two way variations) are designed and have been chosen to inexpensively meet software needs generally and specifically so that they can be changed easily. The application specific software in most of the C.O.T.S. products will rely on commercial software programs and operating systems, e.g., basic, MS windows, etc., however, be individually application specific written. And the greatest detail and software components for this technology will be to provide accountability logs and systems to show access and entries to secure data files and use of the files. So even when the one and two way PFN's are outfitted and used in higher security applications, they will have special encrypted hardware and software command capability so that only the authorized contacts will be a possibility.

The specific command strings, like the one written for Figure 3, will be verbally described and the specific command string software will be detailed. The software will vary in large degree by the different types of systems and devices used, how they are employed and interfaced together to create the present needs of this diverse network; and the tasks or functions they will perform. Whereever possible and when ever a working prototype software is in place it will be fully detailed in all the related pending patent applications. There will always be a maximal effort by this technology to universalize and standardize all the systems, simplify them, and consolidate them, while, expanding this technology commercially, technically, socially and environmentally to help create a sound economic market for accountable remote control.

Any software that is written to provide the accountability and signal protection for remote control along with the devices and systems detailed in the first three applications even if it includes worldwide use, application and impact and especially if they are operated within a secure encasement fall within the nature and scope claim for this technology. This is, and has always been, a major claim of this technology, protected memory storage of operator and vehicle temetry.

Figure 4

900 - Is the electrical circuit that is used for the 100 / 200 series seat control drive mechanisms and actuators employed for the deactivation of the accelerator in a car which slows the vehicle initially, and continues the slow down to a stop of the vehicle in its final stationary state with the emergency brake system. This circuit is

either attached, concealed and/or secured right to the protected device either the sliding channel device depicted in Figure 5 as the brake tensing system or the vertical adjusting seat nut drive as illustrated in Figure 6. The line going from the letter I in the upper left hand side of Figure 4 to the little number 8 on part 161 a Potter Brumfeld double throw double pole relay K1OP-110512 12VDC is the input voltage from the invention that activates the brake in Figure 5 by contracting of the channels and tensing the cable system through energizing the horizontal strip gear system in one direction by the polarity of the motor energized until a limit switch is forced open by the fully contracted channel to appropriately apply the emergency brake. This is the resting or stop and secure mode of the vehicle that can be activated through remote control directives preprogrammed directives, and/or a dead man safety seat or door switches to secure the vehicle if there is no one behind the wheel or if a door is open by activating the brakes for any or all of those 900 switches or sensors, i.e., 915-914-916 already discussed in Figure one.

Little number 7 in 161 is ground and one through six wired to the relay 161 complete a polarity switching function for the motor part 150. The parts 160 are the limit switches (for the brake system Radio shack PN\275-017A). Ls1 is adjusted to stop the motor when the proper position to tense the cable with the proper force without over taxing it has been achieved. And Ls2 is the limit stop in the drive mode direction when the shut down system has been deactivated and the invention is set to monitor. Different limit switches are used for the nut drive in Figure 6, but the circuit is essentially the same. This switching circuit could have been performed in side of the control box or PFN, but this is the system that was chosen to best display the mechanical and electrical functions clearly to help influence the commercial interest and understanding and to demonstrate the ease at which the invention can be put into production.

The basic assembly, with the self contained relay system coupled with the braking system can easily be a safety mechanism with no more necessary control circuits than to be connected in series to the above-mentioned driver seat or door closed conformation sensors, i.e, 914, 914A, 915, etc., and would be able to apply the brakes automatically to insure emergency brake deployment every time the vehicle was without a driver and would require the driver to consciously release the brake before driving if connected to the pedal assembly or hand lever as is the modality used in the first prototype and demo. This also works for all the doors as well. Not quite as important, but, as part of any safety mode that is also using the accelerator pedal stop as described in Figure 6, the pedal would be kept in the highest position to make sure acceleration can't take place till the person driving first puts his foot on the brake and then shift the car into drive. And when the car is in drive, the elevated nut drive is retracted to its lowest point on the floor board so that the engine can be accelerated. However, the present demo or prototype retracts the accelerator pedal block on a legitimate keyed ignition with all the doors closed. It is important to remember that any number of different circuit configurations and components can be designed to complete this task of motor control for these functions and any such variations all fall with in the nature and scope of this invention when so used for these stated purposes.

Figure 5

152 displays a gear reduction drive that is a right angle transfer worm gear transmission for rotational force as is used through out many industries to day. It does not have to be 90 degrees and it can be configured to meet any angle and gearing specifications, i.e., pitch and ratio as well as be perfectly in line and/or directly attached, however 152 and 150 -- DIRECTLY REPRESENT THE EARLIER REFERRED TO C.O.T.S. SEAT CONTROL DRIVE MOTOR ASSEMBLIES AND -- are used in the prototype. This is the already existing and previously described C.O.T.S. product made for GM DELCO as their product and/or part #20489380 motor drive part number and utilized in at least GM cars for seat control drive motors to power cable driven ball gear nuts and/or perpendicular, worm gear drive parts for horizontal seat motion of the car seat. Their specific part number identification will be listed and completely described with in this application as is all this inventions uses of these C.O.T.S. parts employed for theses unique purposes.

151 displays a quick connect cable that has a quick coupling mechanism to hold a square drive or any interlocking set of mating surfaces from one cable end to mate with the internal rotating receiving surface of part 152 and do likewise with part 257. This coupling and transfer of power can be accomplished either by direct shaft drive of compatible mating surfaces and housed in a sleeve that can easily be attached

in a fixed manner to parts 152 and 250 the receiving worm or screw input surface in part 257 with compatible mating surface. 151 can also be a cable drive of any length necessary to position all these parts for their most favorable deployment in regards to the nature and scope of the invention, which will have and can employ any and all secure coupling technologies, e.g., screw sleeving mating, set screw points, detent ball interlock, any clamping system and the system used in the seat controls to quickly grasp and lock in on a double beveled receiving male surface on both parts 152, 150 assembly and 257 which when forced inside of 151 cable ends holds the cable in place by a pre-formed nylon or polyethylene plastic fitting that flattens and drops its outer rim created by slotted sections to secure and create an interlock holding system instantaneously, because the receiving bevels protruding through the slotted sections designed to receive them which sends home the square male drive and/or compatible male drive securely into the compatible receiving female rotating surface of part 152.

250 is a worm gear 251 mating perpendicular drive change to mating gear on the strip gear part 256. Part 250, 251, 253 bushing blocks and 256 are all included in part 257 the horizontal adjuster drive in the seat controls and is the part #16776157 in the prototype to apply the foot pedal for the emergency brake system. 252 is the outer rail or channel 258 is the inner channel that in the prototype is attached around the brake pedal arm, which allows the arm to slide freely in this part 255 as shown in part as a solid line and doted line as one variation for a mere cable tensing application. 254 is a reconfigured 3/8's turn buckle that has had the left hand threaded bolt removed and the slotted travel section which has a bolt passed through it to attach it to 252 with part 259 the bolt and washer assembly the other end of the bolt is used to adjust the different throws necessary to achieve the effective pedal application range illustrated as part location 205 in figure 1, also shown as 206 is another adjusting screw and jam nut to further finely adjust the throw of the device for any specific vehicle if need be. This adjustment bolt not shown in figure 5 would be in part 255 and go through 255 from left to right. And this same device can be used for cable tensing if it is used in other earlier described locations such as under the car as is the case for part 200 in Figure 1.

255 referencing solid and short dotted line are indicative of the type configuration that would be used for this purpose in Figure 5. 262 is a jam nut for the

turn buckle and 252 is a cross section of the floorboard or wheel well wall that the adjusting bolt passes through to meet the turn buckle part 254. For the 200 location attachment the bolt would pass through an accessory bracket attach under the car a frame or floor pan component or have a bolt pass through the slotted turnbuckle area and attached underneath the car to allow movement to adjust the throw and then be tightened to create a fixed anchor mount for the part 252 and allow the necessary travel for part 258 to carry attached part 255 with it and tighten the two rear cables as referenced in the 200 part location and modality in figure 1. Optimally all these bolt and jam nut systems would either incorporate a special tool or have to be accessed through some protected covering to restrict any unauthorized adjustment in any easy manner. 261 is slide buck bushings that ride on 258 and keep true and provide smooth travel for part 258 inside of part 252. 160 is the limit switches Radio Shack 275-017A that have been described electrically in figure 4 that are mounted on brackets on 252 and are struck by 258 to open the circuit energized through the relay 161 in Figure 4.

This innovated device has been chosen for many other automated applications where pulling and pushing by finely controlled but high torque applications are a real consideration. Most are detailed completely in the these related applications. Also, there are 3 isometric drawings showing the different applications and one I-200 with the tensing device under the car and the motor in the car cabin and the cable passing through the floor. I-205 which is the prototype configuration where the foot brake lever is depressed from the tensing channels- and another tensing device in the I- 201 position which is a piston application for the pulling or pushing of the cables powered either by air, brake fluid, or hydraulic oil, i.e., power steering fluid, transmission fluid (pressure sides). Here the PFN control circuit would open and control solenoid valves to regulate cable tension pressure in the system in relation to sensors in the system that transduce a specific pressure to a recognizable electrical signal for the PFN compare software. Instead of activating a motor direction relay. The relay will open and close the valves and energize the piston or dump the pressure back to the reserve in what ever system is being utilized or allow the pressurizing agent to escape and/or be wasted if it is a one time application system such as a compressed air canister.

Figure 5.1

This is a drawing showing the emergency brake pedal assembly being motorized to combine the automated application of the emergency brake with the OEM's typical circumferential ratchet strip lock gear assembly or system. A similar system is designed for the center mount hand pull emergency brake system found in a number of cars to consolidate mechanisms and functions which are integral to the invention's nature and purpose.

150 is the motor in a simplistic side view of the assembly. It will be a gear reduction motor to slow its speed down and better control the application of the emergency brake system and its release. The release will be accomplished by a momentary push button after the doors have been closed and the car's motor is running or accomplished with the foot on the service brake and the transmission shifted into drive. The circuit will be basically the same as the one described in figure 4 for the motor reversing function or a solenoid activated raising of the drive gear assembly 171 to disengage it from the circular or arched strip gear 170 attached to or part of the pedal arm assembly used to place even tension on the cables to the rear brakes in most cases.

Another release modality will be a free wheel capability of the drive gear to just rotate with the arched strip gear when electrically (energized) or (de-energized application specific) (solenoid locking pin or magnetic interlocking meshing surfaces as detailed for the through shaft on the butterfly valve for the air control throttle in figure 9-A of this patent application), and/or mechanically disengaged as is the standard presently, but in many vehicle specific cases accomplished by releasing the above mentioned parts electrically controlled parts in a manual manner with spring returns to reset them for automated applications.

Of course, in an automated authorities controlled shutdown these manual functions would be locked out of the operator's control. 171 is the drive gear on the gear reduction that meshes on the beefed up arched strip gear. 170 is the arched strip gear that replaces the saw tooth catch surface of the ratchet catch system for the standard emergency brake pedal system in use today by many automotive and equipment manufactures. Similar arched ratchet and locking paw catch systems are also used to hold the emergency brake for the hand pull brake systems as well. So the motorizing of the hand pull will be in many vehicles accomplished similar and considered detailed here in an adequate manner so that any one skilled in the art would have no problem in constructing electrically controlled and driven hand pull brake system for automated and remote control. However, space in this application will most probably will require the use of the cable component of the seat drive systems as has already been described for a more convenient motor placement.

172 is the articulating bolt or point for the brake application bar. The cables would be attached to this lever in the traditional OEM manner employed by the individual vehicle manufactures for their ratchet devices, and/or, a generic or universal system which are product designs of this technology will be standardized by application specific vehicle type needs (e.g, minivans, regular sedans, pickups, etc.) and utilized to insure a vast amount of alternatives to deploy this safety enhancement and important automated and/or remote control device (slow, secure and stop component). And any OEM systems used in the manner and for the purposes described herein to accomplish responsible automated and/or remote control to slow stop and/or secure a vehicle in a stationary position fall within the nature and scope of this invention and technology. 173 which in this case is a pedal rather than a handle for a hand pull brake device. Because of the varied cable attachment and adjustments differ so from manufacture to manufacture they are not shown here. And the picture depicts the motor in a fixed location, however, the prototype designs are planned to lift the motor from the 170 gear as a quick release mechanism of the emergency brake. This will be accomplished in the same manner detailed for disengaging the motor drive for the steering and guidance 700 series systems. The motorized geared brake assembly will also be built with this solid motor mount configuration as depicted in this figure for a lot of experimental systems where this release time is rapid enough, because it is the least expensive, easiest to manufacture and efficient, and unless the release time is a real issue in any real life situations this system will be the one of choice. Any devices that are designed to automatically apply the emergency brake systems or any of these systems for remote control and/or for any standard safety concerns as described in these applications are all within the nature and scope claim of this invention.

Figure 6

150 is the motor and the same kind of seat motor as described in figure 5, this is true for the cable 151 and 152 the drive transfer. 154 is the accelerator pedal and 158 illustrates the carpet covering up the nut drive and helping the aesthetic appearance while concealing its presence. 157 is a worm screw shaft with a broad flat washer or plate that is attached to the floor carpet and then blocks the pedal from being depressed when it is totally elevated. 155 is the nut drive section for this shaft and is powered by 156 which is perpendicular across the part 155 and both have geared surfaces to mesh with one another and transfer their rotational force which is supplied by a cable snapped into 156 in the manner described for Figure 5. 252 is the floor board of the vehicle. Once again, this is the modality chosen for the prototype for its readily available C.O.T.S. However, the placement of these systems for the pedal stop when configured for installation at the time of manufacture would be more securely combined and concealed as part of the vehicle structure as is understood by anyone skilled in the art. However, these are the parts and quick commercial adaptation into this present market place that these experimental systems use to slow, stop, and secure the standard vehicles on today's highways. This has been the primary focus. So these systems are detailed here to provide understanding, real feasibility technically and collaborative commercial opportunities through this responsible remote and automated technology.

All part numbers are as follows for drawings 5 and 6. Also, the motors and cables and some drives are the same for Figures 18-21 the automated steering section. However, they will be configured slightly different for all the versatile uses as displayed in Figure 1 and described for the individual drawings.

These GM part numbers are for the '97 Chevrolet Lumina, Monte Carlo and Cutlass Supreme, so the cables given may be specific for that year. Most of these motors, the gear nut drives and the horizontal drives are the same from the late 80's however, any use of these types of seat controls or any other C.O.T.S. motors and servo motors, cables and drives that can perform these same automated functions should all be considered within the nature and scope of the invention. The rails are the standard aluminum rails from the seat adjustment assembly for this automated seat. They are, however, cut and configured differently and have all their OEM brackets and mounts removed and/or replaced with innovative parts to do their stated functions. The strip gear is the same, but cut shorter for a some of the brake tensing applications. Essentially all parts are from the GM seat adjuster assembly for the experimental prototypes, but other manufacture servo motors will be named and identified in all the related applications for the industries they provide equipment in. However, the mere use of another motor or drive part (different part numbers, or supply line manufactures etc.) or any minimally reconfigured designs are not unique if they perform the same physical tasks.

C.O.T.S. PART NAME	GM NUMBER
Front gear-nut drive	1660 7860
Rear gear-nut drive	1660 7861
Horizontal adjuster drive	1677 6151
Horizontal adjuster Motor	2213 8353
GM DELCO #20489380 product. From late 80s.	296 85
Front vertical gear-nut motor	1660 7859
Rear vertical gear-nut motor	2213 8358
Front vertical drive cable	2065 1072
Front vertical gear nut cable	2048 9051
Rear vertical drive cable	2065 1135
Horizontal drive cable	2065 1135

Controlled Speed Limit Function for Accelerator Stop Modality

Before leaving this modality and even though the most effective shut down is the complete elimination of the accelerator function this technology has always recognized a limited driver acceleration capability might prove of value in certain situations where supervised shut downs are not immediately possible to provide visual control by responsible persons or automated video equipment.

For these situations, the invention can achieve a limited operational speed of say 40 mph (this speed could be any speed, and this is probably best left to DOT, law enforcement input, industry test organizations, governmental agencies and insurance testing for real life situations to determine any controlled speed levels for any specific protocols to set **standards**). The objective here is to limit the speed of a vehicle on the first page, phone of RF signal received by the invention's PFN to allow for law enforcement to locate the suspect vehicle and complete a controlled shut down with law enforcement present. However, initially remove any high speed capabilities as a first step to making a carjacking safer for the general public.

Until the police are in the appropriate position the suspect vehicle will be drivable at a reduce speed level. This would be the minimal speed for highway driving or a little less (probable about 40 to 35 mph max). This has already been claimed in earlier applications as an optimum way to control a slowdown until the ideal personnel and authorities were on location for the final deactivation of the vehicle. However, this procedure is achieved and described through many different modalities but is also possible through the adjustable pedal stop (Seat control systems being used in the prototype presently) to raise and lower the stop in accordance with vehicle speed sensor input provided via coyote 100 series circuits diverted to the PFN or direct connection to the sensor or the PCM of the vehicle, or wheel sensors. And responsively connectable to the pedal stop motor via PFN relays (electro mechanical and/or silicon).

There are three separate electronic ways this is being accomplished and all three are equally as good. First, the stamp computer and/or any (PFN) with one designated input pin will count the digital pulses form the PCM of the car and in the cars of GM cars will cut power to the relay for the pedal stop which energizes the pedal stop and eliminates the accelerator when the car goes over 40 miles per hour which = 160,000 pulses (there are 4000 pulses per mile per hour with most of the new GM sedan cars. Of course, if this was found to vary from manufactures the pulse count would have to be changed accordingly in the Stamp II software or PFN computer configuration. Once again, if the count fell below 160,000 pulses the relay would once again be energized and the pedal stop lowered to allow for acceleration this maximum preprogrammed speed level can of course be changed remotely with additional remote or on-board authorized commands and it can be employed for many other speed control modalities and it is considered another modality to this technology.

The second way this is accomplished is by using any speed sensors analog AC voltage at a matched desired speedometer reading and when this voltage exceeds the desired speed level the PFN will open a silicon relay or relay circuit removing power to the relay which will energize the pedal stop motor to restrict acceleration. This program will energize this circuit on the first call through the inventions #1 relay. This adjusted speed level can also be achieved by a trickster circuit adjusted to accept a certain current level through a variable resister connected to the input pin of a darlinton Toshiba driver. The resister would be adjusted by elevating the cars drive wheels and accelerating the vehicle while watching the voltmeter connected to the driver out put and watching for when power was present to energize the pedal stop relay or any other accessory. This can be controlled through the PFN or used as an automated speed control. A silicon relay will function the same way with a resister to set gate voltage.

These first two ways employ the Trans axle or the transmission sensor to determine vehicle speed. The third way of determining vehicle speed data and cutting the accelerator capability of a vehicle is through the wheel sensors and their AC signal to the EBCM in the same way that is used in the second way for the transmission or to retrieve the digital signal as it is converted in the EBCM brake module and/or sent to the PCM.

As for the deployment of the in cabin warning and/or a dashboard signal to allow the driver to know that the vehicle is in a restricted mode, this will be left up to the manufactures and all the above commercial groups, and governmental agencies. However, flashers and outside info bar will be deployed to notify the surrounding vehicles as part of any phase one shut down and any outside megaphone or speaker system could be activated. It may prove beneficial to deploy the directional in cabin message with law enforcement present with a second signal pager or Rf signal, or this second final slow stop and secure in a stationary position will be a timed deployment ideally with law enforcement present. In any event, this presents no problem for the inventions technology just responsible decisions made by the proper people in the commercialization of the invention and the use of it to set up standards and apply law rules and regulations.

Figure 7

CABLE JUNCTION BOX

Basically this figure shows two ways to interrupt the accelerator cable from activating the throttle assembly. It is understood there are many other obvious ways to achieve the deactivation of the throttle assembly by a great many mechanisms that can disengage the cables and linkages as well as different stops locks and latches that could be employed to defeat these standard mechanical physically controlled acceleration parts on a vehicle. However, presently the experimental plans and prototypes will be totally described and explained. Most likely the automotive OEMs and their supply line manufactures will try to develop their own specific cables having catches and releases and electrical actuators to achieve an interruption of the mechanical controls to the throttle for deceleration purposes. However, any such alterations to deactivate the accelerator for these same purposes would still be the same innovation and fall within the nature and scope of this invention.

101 is the throttle cable to the cable junction box 102 which major purpose is to create a cable release and reattachment system to interrupt any mechanical acceleration that accelerates the vehicle from depressing the accelerator pedal. This is achieved through the activation of solenoid 126 or 109. These two other entirely different systems that interrupt the accelerator cable to deactivate any acceleration are an alternative first step for a controlled slow down to detain like, i.e., the gas pedal stop already described in complete detail and illustrated in figure 6. The reason for this complete description is that this is another proven system and has been experimentally used effectively.

104 is the cable that goes to the cruise control from the throttle cam while this to could be interrupted through a mechanical means involving the cable. It will be easier to deactivate the cruise either through the continual activation of the service brake switch and/or circuit or the electrical de energizing for the whole cruise system or in some cases cut the vacuum through a solenoid for some old cruise control systems. The modality chosen will be determined by all the variables such as vintage and types with regard to all the vehicle applications. This deactivation of the cruise control for the purpose to detain and/or control a vehicle is very simplistic, but a necessary and unique way to limit this accelerating device. There are a number ways

to deactivate the auto increase speed function of the cruise control. One is disrupting the power supply to the cruise control with a relay another by deactivating it through the Service Brake safety switch by representing a brake depression with simple relay that gives an appropriate signal or current when activated through the inventions automated slow down phase from the onboard computer (PFN) With this completed the throttling up of the power plant has been completely nullified. Cable interruption is another mechanical option and the deactivation of the cruise control is done in a similar manner for the pedal stop variation described for Figure 6 modality as well. There is and will be a large list of modalities and it can go on and on. However, any such augmentation to the cruise control for remote or robotics control are within the scope of these applications.

105 is the accelerator in-feed cable to the junction box. If this system is a OEM construction the many varied pictorials to the left will illustrate several cable interruption control systems, to clearly show that any cable interruption and control system ,when used for these stated purposes are obviously a part of this same invention. And if any OEM and/or any supply line source and/or any after market manufacture wishes to use cable releases and linkage disengagement's for these stated purposes then Figure 8 will show the already standard conceived interruptions for these mechanisms to restrict and/or reduce a power source and/or plant's out put to propel a vehicle. These same systems can reinstate the mechanical means to increase power from the power plant in a standard application and also, if desired in automated degrees. 101 is the cable that goes from the junction box to the throttle butterfly valve120 lever or cam in Figure 9. And under a normal uninterrupted mode will transfer the exact one for one movement of the throttle as to the depressing on the accelerator pedal, however, in 102 a box , the lever system is released from its articulating point (a spring loaded shaft from perpendicular solenoid part 126) is energized which lifts the metal plunger shaft up inside the solenoid and the levers 118 fulcrum is removed to the second circle where there is a second solenoid to allow for some tensioning of the cables but not enough to accelerate very much. The pedal goes almost to the floor and when the second solenoid indicated by another circle is energized the lever moves with 105 cable; but has no effect on the 101 cable to the throttle to in crease acceleration. There is a return spring 107 that pulls the lever all

the way back so that when the solenoids are deactivated and releases the articulating shaft the original one to one articulating position is re-instituted for normal acceleration, which, when the accelerator pedal is released one time , will allow the lever to return to this highest articulation position. So when the invention is reset the pins will drop in to reinstate cable function.

This system can completely, in one activation, merely eliminate totally all ability to accelerate a vehicle or merely reduce pedal throw by having set articulation positions which are controlled by the PFN's software commands. However, prototype experimentation has proven for the unauthorized shut down, specifically ,the slow down is best accomplished with the total elimination of the suspect driver to accelerate, while under police observation and radio contact with the remote control, or totally controlled by the police on location with a report back and redundant data stored on-board as a record to insure authentic and proper authorized shutdowns. These records as stated through out the related applications are to be prepared and processed to be of evidence level quality for use in legal and judicial proceedings. This technology also, provides for remote reactivation of the acceleration capacity in real time of the suspect vehicle to avert traffic problems when a this is a wise decision, which can be accomplished either through distant remote control authorized commands or in short range (local command from the trailing police cruiser), while both vehicles are in real time movement. Many modalities for this short range remote control communication are detailed in the related patent applications; especially, for the special law enforcement (traffic control hand gun tool). All of these systems are capable to be responsive to legitimate law enforcement remote commands in real-time through this technology's PFN system of responsible and accountable remote control.

102b illustrates the interlocked cams system with one on top of the other fix mounted on shaft 111. 109 is a solenoid with a drop pin that passes through the top cam disc to an interlocked position in the bottom cam disc and 100 is a spring that returns both top and bottom cams to the best alignment for the solenoid pin to drop in. In 102B the discs are not interlocked as signified by the dotted circle to the right of the 109 solenoid position. This action will allow the 105 cable to pull and rotate the bottom cam without pulling the upper cam or disc thus leaving 101 not effected and keeping the throttle in the at-home position and/or idle. Of course the electrical service is on a flex wire to absorb movement or alternatively accomplished with a double semi-circle set of contact strips directly connect to the motor that is supported on the top cam. The contact strips have mating paws mounted in the top of the box with electrical energy directed from the PFN computer. Both of these variations are designed to provided current without interruption from their movement). These systems will vary greatly from these experimental designs and are presented here to establish the basic versatile technical pathways to aid all manufactures to complete these simple first steps to provide responsible remote control functions for the unauthorized vehicle in the most inexpensive manner as standard equipment functions for legal and appropriate highway safety, and insurability in aggressive remote and automated control situations. These have just been presented as experimental devices for the prototype in this modality, however, any alteration to the manual mechanical cable especially to achieve a slow down is considered a natural evolution of this innovation and a primary element of this slow down.

Figure 8

Figure 8 displays cable end anchor releases. The above figure 8A shows either a hinge drop plate 106 that when solenoid 117 is energized the secured cable end is allowed to fall towards the throttle cam so the inner cable has no fixed point outer casing to be pulled through. However, the actuator system could be configured in the reverse where there is not enough distance for the device to function properly. Also plate 106 could be mounted on a slide bar not using a hinge at all so that when a solenoid catch release the entire plate would slide the cable anchor plate forward not allowing the throttle to be effected, because the fix mount for the cable casing would be to close to the throttle and the slack in the cable would be to great to activate the throttle. It is held fast by a solenoid and allowed to slide forward, when de energized in slow down mode. The return to home position is accomplished with return springs either part of the solenoid or as in the case for the slide bar system in front of the sliding plate and mounted on the slide bars with a stop on the other end, or just a mounted piston with a spring around the ram and before the anchor plate that holds the fixed cable end at an actuating distance will return the anchor plate to a locked position.

These springs are never strong enough to defeat the throttle return spring only able to return the anchor plate and cable to its fixed position for normal acceleration when the pedal is released. Any obvious cable constructions to allow for any detachment or deactivation of throttle cables and linkage for any of these stated purposes fall within the nature and scope of the invention.

In figure 8B the accelerator pedal mount has been chosen as a good location to illustrate a linkage disengagement system. Here, 105 goes directly to the throttle cam from linkage 116 which mates with 115 the other end of the pedal linkage which in the normal state travels with each other as one bar and allows the accelerator to pull 105 cable and open the throttle 120 in figure 9. 114 is a out line of a box or encasement where 116 inter locks with 115. This can be accomplished in a number of ways, but for the first prototype a mini solenoid with a retractable latch pin on 116 that is electrically serviced by a small flex wire to the fire wall section of the 114 box mount and when energized will release 116 from 115 as the pedal is depressed both 115 and 116 will have return springs to return them to their natural position at an idle state so that when the automated release solenoid is de-energized the parts 116 and 115 will interlock to function in the normal state once again. The solenoid and flex wire is only minimally shown here sacrificially to show the separation of the pedal linkage once again these detailed drawings showing parts and locations will be in the formal application but the nature and scope of this device and its function are clearly explained presently so that anyone skilled in the arts can read easily construct and/or locate C.O.T.S. parts to complete this device in many different configurations, but essentially create the same device.

In Figure 8C, Cable 105 is where the cable is interrupted and this also has a multitude of different configurations, however, the one illustrated for figure 8 will be described presently so that any one skilled in the art could easily make these devices. 105 connects to part 116-115 which is one part in the uninterrupted standard pedal linkage and it passes into 119 which houses a flat contact disc that has the cable 105 attached to its center, also in 119 which is a cylinder there is a electromagnet plug piston that has two contact strips that are guided to make contact with brushes to energize the electromagnet when the cable is to provide the flat contact plate a firm connection thus allowing the pedal to activate the throttle through cable 101. 119 is anchored to the firewall and spring returns allow for the coupling when 112 is energized. 113 is the contact brush paws. It is important to remember that these different cable anchor releases and disconnects can be placed on either end of the cable or anywhere in between as is determined by application specific needs of an individual vehicles engineering.

Figure 9

Figure 9A shows a throttle body that has been modified for the same purpose to primarily disengage any acceleration capacity and/or control that capability through these automated device innovations for the purpose of controlling a vehicle though electrical service and components. 130 shows an augmented cam that has an small electric clutch attached to it and is mounted on a shaft that slides inside the throttle through shaft and when energized slaps against the throttle cam flat surface 125 and rotates the entire assembly to open the butterfly plate 120 in the throat of the throttle body. 123 is an electrical service that snakes around the throttle body with a flex loop to energize 125 electromagnetic clutch. When de-energized, the electromagnetic clutch disc 125 releases from 124 throttle cam receiving plate ever so slightly only to allow for the free rotation of 130 and flex wire 125 for as slow down function. This is more exaggerated here to best display the separation and because all these isometric drawing are from actual automotive C.O.T.S. parts on the latest of GM vehicles and have been altered to show the experimental prototypes and keep all the configurations as close to the commercial parts available today, but automate their mechanical functions for these purposes to quickly allow for their adaptation and use in commercial markets.

While many of the illustrations involve GM parts, any automobile manufacture as well as many other equipment manufacturers, who employ accelerator pedals and cables and/or internal combustion engines will have parts like these that can be easily modified and reconfigured by those skilled in the art. 121 in this drawing is the throttle position sensor and it is responsible for sending a signal to the powertrain control module shown in figure 20. It is being mentioned at this time as to where its physical location is because it is referred to later in the 900 series "Trickster" innovative device circuits and later drawings. While the throttle position sensor is displayed here as having a fixed mount in the housing earlier and other manufactures have them on the exterior of the throttle body housing but they all perform similar function and the 900 series description will completely describe these different electrical signal from voltage levels to digital pulses generated to supply different electrical data to the power train control module for engine performance and drive train controls. Most older ones were simple variably resisted currents to signify the throttle position from a potentiometer. This entire throttle release mechanism will also have a molded encasement that will prevent accessibility without damage when tampered with if deemed desirable as a commercial and safety enhancement to insure its use. This will also be a consideration for all these safety controls as has been previously stated.

122 is the air volume solenoid mixture valve and will be detailed as to the invention innovative activation and deactivation of this part in controlling a smooth slow down. 9B part 122 shows how the throttle body mechanism is attached to the engine. This drawing is being used to show a servo motor attached to the throttle through shaft 131 and controlled electrically from either a potentiometer speed pot mechanism or digital sensor attached to the accelerator pedal which inputs a signal to a silicon circuit relay system that will be a motor controller in direction and speed for the motor on the throttle shaft. It will change the polarity for the direction of the motor (to accelerate and de accelerate) and the amount of current to control the speed of acceleration. The speed control will be a one to one response for the throttle butterfly valve, which will require no physical linkage or cables. This is this technology's form of drive by wire either with these (SCR) circuits, which will be in the PFN or in many cases embedded as part of the solid state computer in the PFN or as a euro board 100 motor control circuit for the PC computers detailed in the related patent applications. This will become an electrically controlled motor through the invention's PFN computer or car computer to throttle the car either for a safer operation and/or road handling (through its automated onboard software program or as a device to deactivate the cars ability to accelerate to complete the first slowdown modality for the unauthorized use function.

If done to deactivate the vehicle to detain it through any drive by wire system falls with in the same nature and scope claim made for this invention. As to help drive-ability in high performance vehicles for the, i.e., the new Corvettes for inexperienced drivers of muscle type vehicles this device has already been experimented with by GM for this purpose and the invention makes no claim here. However, the invention has been in experimental stages incorporating speed pot technology and digital AC signal positions circuits some from the forklift industry to develop an electric signal as to pedal depression position and activate the 135 throttle servo motor to a specific position instead of using the above mentioned mechanical cables. Another drive by wire modality that incorporates a gear reducing C.O.T.S. product for 135-137 throttle motor drive actuator is the prototype for this application employing a 1989 Chevrolet pickup heater vent servo motor and gear drive. This motor gear drive is not required to turn 360 degrees In fact, it will only rotate 90 degrees to close the butterfly valve.

Because this technology foresees the use of other energy sources that will create an inevitable and commercial turn towards the electric vehicle development in the near future, the need for a mechanical accelerator pedal transducer to convert physical pedal position into an electrical signal will have increased value. It will be the most ideal way to send a signal through a module or circuit to control drive motors or an Electric Wheel Configuration or electric flywheel transferring final drive system etc. to control motor RPMs and/or a power-train's RPM output in vehicles and/or any other so configured piece of equipment. This technology is presently stating and making the claim here that these new electrical vehicles controls for propulsion can be accomplished through these above described systems and the PFN computers in the most ideal setting, which should be the protected, accountable, automated and remote-controls for regular acceleration, de-acceleration, the cruise control functions and all the controls needed to slow stop and secure a vehicle or piece of equipment in the most optimum manner for any reason. All of this will also be controlled through TRAC's programmable and modular software in the PFN.

The PFN technology should be used with these new vehicles from the inception as it can be inexpensively combined and designed directly in and with these electric car systems. As detailed earlier the slowing or stopping process will be accomplished through motors, that can be generators in the braking function (in some cases) to convert the vehicles inertia into electrical energy as well. This technology has already been detailed at some length earlier and in the other related patents as well as, how to accomplish these innovations with C.O.T.S. products and many of the solid state motor controller circuit board arrangements contained either within and/or outside of the PFN. So the speed potentiometer or digital signal circuit for electric cars, e.g., regular DC motors and these new Electric Wheel systems will have the silicon circuit relay system with a field weakening capacity and/or a power engagement controller circuit for the inertia transfer systems, or for the electrically controlled transmissions, etc. that will be responsive to a pulse generated signal from the accelerator position, which will energize proportionately to this generated signal and the present speed of the vehicle (wheel sensors) the appropriate current to a electric motor, if present; or in the case of the transfer controlled drives the proper rotational force needed to rotate the wheels by either controlling the magnetic fields to engage whatever inertia force transfer system is present; or any electro-magnetic clutches or solenoids for the more traditional vehicle power-train transmissions, e.g., manual and hydraulic, etc. attached in this case to these above-detailed electric power plants.

Figure 10

Figure 10A shows another throttle body adaptation, where 120 a point of origin is the butterfly valve. 133 is a mini push/pull plunger type solenoid mounted in a drilling in a HUB that is fixed to the throttle through shaft 131 so that when it is extended it passes through a hole in 130 which when the cable 101 is pulled down in the de energized state rotates the shaft and opens the throttle in a normal function to increase the engine rpm's. When energized the pin is retracted into the solenoid allowing the 130 part to free wheel on shaft 131 not opening the throttle thereby deactivating any acceleration. 131 the throttle shaft that has a electro- magnetic hub or solenoid winding attached to it. 133 pin retracts into a slide bushing hole that is off center from the 131 through shaft. The hub and shaft assembly has a return spring that encircles it or is parallel to it on the shaft and the spring is attached on one end to the hub and the other end is anchored into a hole or drilling in the throttle housing. This always returns the hub and throttle shaft assembly to an idle position and/or home position or un-accelerated state. An accelerator pedal and/or cable return spring returns part 130 to an idle state stop to align its hole with the plunger pin 133 for the purpose to re-engage it to the through shaft hub and provide normal acceleration form the foot pedal and cable. This can be reversed and have the solenoid on part 130 and just a hole in the hub for some carburetors throttle body injection systems and throttle mechanisms. Also in any of the energized and de-energized functions can be reversed and/or adaptively changed in programming or control circuitry, and parts are readily available, i.e, mini solenoids Jensen Products. 10B is another view of the throttle position sensor and it shows how it sits on the other end of the though shaft 131 and is rotated on the internally housed potentiometer to send the appropriate signal to the power train control module figure 20A.

10C part 141 is a vacuum switch which can also serve to disconnect the cranking current in the remote start function of this invention, when the engine is running. These systems are being shown here as they are refereed to different control systems and protocols throughout this technology and these devices are refereed to as to how they are augmented in function from their standard operational use.

Figure 11

Shows the entire air horn and air cleaner assembly and 3 different air butterfly valves 136 A, B, and C locations that can be used to reduce air flow as either add-on devices for older vehicles and/or new specific devices for OEM's. 140 is the hose that connects to the already talked about throttle body, but it could be connected to a carburetor or TBI system. 142 is the MAF or mass air flow sensor and it gives an electronic sign back to the PCM power train control module to tell the system what the flow of air is into the engine. This signal in some fuel shutdown applications might require the trickster circuit to the PCM as have already been described for the earlier fuel valve shut off part 403 in figure 1 and detailed in earlier related filings. There also is in many cases a need for physically regulate the air to the popper level; which the trickster circuits are asking the PCM and IM ignition module to control ignition firing and injection firing in some cases through the injector module ICM part 404 in Figure one. For the physical control of the air not done through any OEM throttles and carburetors as previously described. Parts 136 A, B, and C are additional butterfly valves that can be placed any where in the air intake system and connected to a solenoid or servo motor 137 that when activated are adjusted to a pre-determined dampening positions to only support minimal acceleration and/or only enough air to sustain an idle. 136 C is shown in front of the air cleaner, as a piece before the MAF sensor 142, but could just as easily be made part of the MAF sensor assembly like 136A for easy electrical supply service with 142 and/or even part of part 140. 136 shows 136B location in a coupler in front of the MAF 142. The experimental prototype was constructed out of 3" PVC 136Cp with a 3/16th rod through the diameter of the pipe to hold a mounted round disc to make a butterfly plate, gate or valve and mounted on the front of the air cleaner with a flex rubber plumbing coupler in a 1987 Olds 98 and also the earlier detailed fuel valve was used in some of these successful modalities and not needed in others. Only timing and air augmentation through interrupting sensor input, i.e., 904, 905, 906, 907 in Fig. 1 to the PCM, the ignition module and/or the injector module.

There are many different combinations that may alternatively be used to create an even slow down by adjusting the air, fuel and timing through these totally detailed modalities within the inventions, e.g., with the trickster circuits on the TPS throttle position sensor and MAF sensors with the fuel valve and a 136Cp air throttle, another by interrupting the crank shaft sensor with an intermittent relay (trickster) with the fuel shut down and/or air throttling (fuel and air devices) or the OEM software tricked by the inventions Coyote trickster circuits, 1,000 series, or just air throttling, or just fuel throttling. Alternatively, more universal and simplistic mechanical interruption devices for the accelerator as earlier described could be used in the first prototype and for its ease of installation and repairs for most technicians. Some more detail will be given to the fuel shutdown systems in the 400 series.

11.1 Cruise control for acceleration and speed control

The obvious modality to control a vehicle speed is through the present and past C.O.T.S. OEM cruise control systems. They are electrically controlled throttle systems that are particularly easy to control through the PFN interfaced with the vehicles electrical system in any number of ways. However, thus far the only augmentation to these systems needed to create the most ideal slow down scenario has been to de-activate the cruise control by using a trickster circuit to simulate the brake switch depression for the cruise control module and/or interrupt main power to the cruise control or send a disengage signal from the PCM to eliminate the drivers ability to increase acceleration of the vehicle during an authorized shutdown, while mechanically eliminating the unauthorized driver's ability to accelerate the vehicle.

During prototype experimentation the complete absence of acceleration by a suspect driver proved to be the single most important element in creating a safer way to slow down present vehicles by remote-control. It is essential to be able to completely eliminate the physical motion of the throttle body by any driver activity as the easiest way to accomplish this smooth controlled slow down. Because, all these modalities leave the power plant idling to provide power steering and braking, etc. through the slow to stop phase while they eliminate the more dangerous vehicle acceleration time the high impact inertia which is the major cause for the massive amount of death, injury and destruction presently can be significantly reduced. In this scenario the present and past OEM cruise control C.O.T.S. products were not capable of this function without having the other augmentations like those detailed in this technology to eliminate the standard throttling modalities. These are all PASSS software programs with different device modalities.

This technology has focused strongly on developing accountable remote-control for the present varied automobile industry to play a major part in universalizing all these electrically performed automated functions into a standard at least for the automotive industry; and hopefully for all remote and automated operations and equipment worldwide. Also, another goal of this technology is to provide backward engineering for all of the already existing vehicles and equipment in all the other related industries, so that they too can immediately partake in these newly emerging remote control automated functions and services in a accountable manner, socially, environmentally and commercially.

Returning to the present and past OEM cruise controls with a few minimal augmentations provided by this technology will help them function well in speed control for the remote and automated control scenarios. As a lead into the changes of these systems one last way to disengage these cruise controls during the slow down functions is provided via a trickster circuit responsive to the PFN or similar system. (In the case of the present GM solid state digital Cruise control units with a stepper motor a 4000 pulse per mile digital signal is sent to the PCM from an interrupted vehicle speed sensor PCM input). This normally OEM preprogrammed signal for inhibiting the cruise function prevents the operator from increasing the speed through the cruise control as well. It is not the most ideal system, solo for this function but does work. The reason it was not mentioned until now is that it has another purpose in more sophisticated remote and automated controls for the present automotive technologies. This same signal sent to reduce speed by the PFN along with a sustained resume current or signal sent to the Cruise control module for accelerating the vehicle will initially supply the two necessary electrically controlled pathways to accomplish variable vehicle speed controlled by the PFN and its application specific software for this purpose, or this cruise control adaptation could function in this manner with any number of comparable onboard controller systems that are accountable through TRAC software MASMP. However, in addressing the use of present C.O.T.S. cruise control systems for sophisticated remote and/or automated control of vehicle speed, e.g., interactive highways and/or smart cars the present stepper motors, and vacuum systems will be reconfigured to complete rapid acceleration tasks either with assist solenoids that are disengaged, when the desired speed and/or distance have been achieved, or by some other reconfiguration of the standard cruise control mechanics and/or firmware or software to achieve these rapid acceleration requirements for automated derivability .

Throughout this application much of the drawings and descriptions are of the prototypes and experimental units. For the most part these have been GM modified systems. However, most all the modalities detailed herein for these cruise controls can be modified by anyone skilled in the art to be easily configured for other manufactures cruise controls and the same is true for the throttle body and/or any carburetors and/or any air throttling system for (Gas, LP, and Diesel). And as was mentioned earlier for the motorized pedal and throttle system (a drive by wire system), which will be controlled by the a SCR system and software in the PFN and provided the software and firmware to handle all the commands with even greater application specific data storage. The present trouble codes stored in the power train control module, and/or if so desired, the PFN will be configured to interface with a PCM. With this technology's automated throttle system the PFN software will replace the need for a separate cruise control module and stepper motor. Because this function will be performed by the motorized throttle system, as well as the elimination of any throttle in the emergency shutdown system detailed throughout this application. And of course this will be an ideal system for the cruise control, over the regular motor controller operational control for the electric vehicles, and to complete emergency shutdown scenarios for electric vehicles.

Throughout this application much of the drawings and descriptions are of the prototypes and experimental units. And for the most part these have been GM modified systems. However, a great deal of effort has been taken to design these innovative enhancements to address basic mechanical principles and systems found on every vehicle no matter, who is the manufacturer and from any country. Also, a great deal of time has been spent to cover all the varied vehicle propulsion systems, power transfer devices, braking systems, vehicle accessories and vehicle controls to establish clearly to anyone skilled in the art that this technology can provide automation for any remote control vehicle function. And finally, this technology has been expressly developed to do it all if need be or to enhance any existing technology in any collaborative effort to provide secure and/or accountable remote control for any and/or all of these functions detailed this application, as well as all machine messaging services detailed in the related applications.

Figure 12

This is another simple and clear drawing that GM has put out for their electrical components on their antilock brake system and it shows a new device they are using to control brake pressure so the wheels do not lock up in a skid mode with the loss of traction. This GM ABS VI system is designed to work off the existing pressure developed through the master cylinder (pedal application); and GM itself states that the ABS VI modulator motorized ball screw piston system can not increase brake system pressure on its own and/or apply the brakes. However, this is exactly what this technology is going to detail to automate this type of braking system for PFN remote control scenarios. First Figure 12 will show more accurately, where all the GM C.O.T.S. devices are located (part location and use for similar systems by different manufactures may vary). And the subsequent drawings that will completely describe the augmentations will be detailed here in a general manner; so that anyone skilled in the art can create these same unique changes in comparable systems through the application of obvious and basic mechanical and electrical knowledge, principles and technical skill. This technology as always will continue to provide additional unique detailed descriptions for the individual manufactures, where ever possible and also maintain an open door policy for collaboration, whenever feasible.

In the drawing 916, 917, 918 and 919 are the wheel sensors for the antilock braking system 921, 922, 923, and 924 are the harness connections for these individual sensors. 391 is the brake solenoid valves. OEM 301 is the brake modulator. 330 is the vacuum brake booster. 901 is the EBCM the electronic brake control module. 931 is the instrument panel cluster and 930 is the body harness to the instrument panel. The reason for mentioning these electrical connections, sensors and components and using this illustration is to provide an easy means to locate these devices. They will be utilized and referred to in the many different automated service brake modalities described presently and through out these unique innovative augmentations of C.O.T.S. products and systems. 900 series numbers have been given to most of these OEM parts because they are part of C.O.T.S. electronic control systems already existing on vehicles. 397-398 shows the electrical connectors for the solenoids on the modulator valve and 394 shows the electrical connector for the motor pack that drives the pistons in the modulator valve.

Figure 13

Figure 13 is another ideal GM drawing showing the modulator valve in a 3D isometric with the master cylinder and motor pack assembly positions exploded for parts detailing. This view gives a clear look at the changes this technology provides this application to apply the regular brakes through an electrical signal. 300 is the master cylinder, 301 the ball screw piston modulator also shown on the very bottom of the picture with the bottom of the modulator valve and gear drive exposed. This is where the rotational force of part 390 the motor pack drives the three lower meshing gears and attached ball screw driven pistons in two opposite directions by changing the polarity in the motors which in turn creates the pressures of the brake fluid in the above triple cylinder block assembly. 394 is the electrical connector to energize the motors from the Electronic Brake Control Module EBCM module which is primarily energized through the electronic brake control relay and circuits. 388 are two anchor bolts that would be extended as necessary with bushing sleeves to allow for enough distance for a electric micro lock or electric solenoid valve to be outfitted with the same insert flare and seal fitting ends to replace the connecting fluid transfer tubes between the master cylinder and the modulator piston block assembly as 395 displays in figure 13. These tubes are the supply for hydraulic pressure to the modulator, as well as, returns to the reserve passages in the master cylinder. They supply diagonal front wheel and a rear wheel circuits, which are energized from the master cylinder's double piston shaft. A double throw master cylinder with two circuits (usually front and back circuits with an equalizing shuttle valve system) has been a fail safe since he late sixties.

At part 395 that the modulator function of the anti-lock system functions as an automated pressuring system to slow stop and detain the vehicle. And to accomplish future automated braking through electrical control if this is so desired and/or needed for any vehicle so equipped for any automated driving on any interactive highway system, or for remote control scenarios and/or robotics system needs.

Figure 14

Figure 14 shows different cross sectional views of the ball screw piston modulator valve listed as (14A) representing the figure to the top left, (14B) figure in the center of the page, and 14C upper right corner figure on the page. 14A shows one front wheel ball screw piston all the way down to hold a higher volume of brake fluid. And in 14B in the center of the page shows another front wheel piston all the way up in its home position.

These two front pistons also have solenoid valves part 391A-391B which function in the antilock system to control and create more brake fluid pressure until the cylinder pressure exceeds the master cylinder normally with the check balls 316 lifting it off its seat at a higher cylinder pressure to equalize. It would be possible for the OEM to re program their micro controller, or EPROM, to deploy these valves altering their seating and blocking the check ball galley with an inner electronic poppet device and re-machine the housing slightly to have 391 and 391B do the same as the invention's innovative implementation of C.O.T.S. add-on parts 397A and 397B. The invention has also outfitted all these cylinders with 2 micro lock offs as the drawing shows 2 transfer tube in-puts so all pistons can be pressurized in the same fashion as is done for the antilock. However, the brake fluid would not by pass back to the master cylinder which would make the brake application from the EBCM or the electronic control relay possible; controlled from the invention (PFN and/or automated through the OEM electronics). However, accountability and cost will figure into some of this decision and that will be ultimately resolved by a standard for this automated function. The point here is, that this technology has innovated this system so that it can provide electrically controlled hydraulic braking. The software will tract and store data with date and time markers, as well as special sensed data from the system and the vehicles operation (e.g., brake systems pressures, vehicle speed, wheel sensor speeds, etc.) in its running record and will permanently store application specific data as required by any **standards** set for this **accountable automated brake application** with accountable protected memory storage managed by PFN/TRAC software M-ASMP.

The software functions of this automated braking system and any parts activated electrically through this technology's PFN will be part of this technology's electronic brake control system (EBCS), part of Mobile Application Specific Program and Pass (M-ASMP), even if an OEM's ECBM, computer or controller is desired, and ideally housed and interfaced in part or entirely with this technology's protected accountable enclosures.

Presently the complete C.O.T.S. modality description for this system will be given and all parts, plus more automated systems, for more specific manufactures will be in all the related patent applications. The first function for the (EBCS) is to provide commands to any existing EBCM 901 module which is done through the (PFN/TRAC) software to energize the 4 modulator pistons. When the EBCM receives this technology's preprogrammed instruction from the multi-tasking EBCS or is responding to some other on-board control system ideally housed in a (PFN). The four pistons drop off from the all the way up or raised position or whereever they are; and they will be motored down to their lowest position drawing as much brake fluid as their cylinders will accommodate. Then 901 will energize both 397 series electronic valves (i.e., micro lock there are many of these devices on the market to day in the forklift industry and racing) once all 397 valves are activated by the EBCM and/or presently planed for the invention's EBCS the master cylinder is out of the hydraulic brake circuit and the electrical activation of the 390 motor pack's three individual motors are directed by the EBCM and/or the PFN's computer/EBCS software system with data synthesized from vehicle and brake system sensors. The vehicles brakes at this point are completely controlled through the electrical activation of these motors by changing their polarity which reverses motor direction and either compresses the fluid in the cylinders to pressurize the brake system and applies the brakes or retracts the cylinders reducing brake pressure to release the brakes. Rotation of the wheels are sensed as well as the vehicle speed along with distance data, vehicle inertia, road edge, and any special command data provided by any interactive highway communication equipment as to special road conditions which are received via a common RF band/or radio station designated as a standard for the purpose of making remote control adjustments and providing driver warnings.

Ideally the EBCM 901 should call the shots here, it just needs to be reprogrammed and connected and interfaced to the control signals and a communication system like the inventions or the preprogrammed software program can be run from the invention or any other comparable control device. Here if the EBCM is to be bypassed the PFN will supply the operational current directly to the brake control relay system or strail to the motors with standard 20-30 amp VOC relays, (Siemens or Potter Brunfeld, if needed) while the invention monitors the OEM wheel sensors for speed and lock up, or the invention can also control todays EBCM and/or PCM software with its trickster circuits sending the correct electronic signal to either of the them (with the most appropriate by application specific choice) to activate the pistons in this closed hydraulic brake circuit. And once again monitoring wheel speed, vehicle speed and any other application specific data to determine the appropriate braking pressure as additionally monitored data. In the deactivated state 397 will allow all the braking systems to run normally. This lock out will still allow for master cylinder application. In this limited slow down and/or stop function, there would not be any need for more brake fluid. However, if the vehicle was operated on this system a one-way valve with a regulated bypass mechanism to the reserve would be needed to insure proper fluid pressure if there were minor leaks so as to give adequate warning to a brake problem while the system was still able to supply brake pressure. The parts still numbered and need to be named here are 317 expansion spring brake, 315 ball screw modulation piston, 311 ball screw nut, 312 ball screw spindle, 310 piston, 320 for the rear brakes yoke on ball screw drives both rear circuits. 300 is from the master cylinder and the out arrows go in 14A and 14B to the front wheels and in 14C to both rear wheels 14D shows a front wheel sensor 917 and Figure 14E shows a rear wheel sensor 919. As has been already explained in the earlier section the use of a secondary master cylinder and/or a pedal activated system as is used for the emergency brake and even an automated plunger and/or pistons are all within the nature and scope of this invention. Some of the experimental microlocks are: "MICRO-LOC" company electro solenoid type 12 volt, "Hurst"-Roll control Jegs Cat. # 530-174-5000, "TCI's" roll stop Jegs. Cat. #890-861700) and Jegs Cat. #021-LC, Line lock solenoid, master cylinder. Experiments are using the "Tilton 1" Cat. #454-74-1000U to plunger activate, for add-on brake pressure systems.

Figure 14A

In Figure 14A, for ships and boats, the final slow down and stopping for part of phase two and part of phase three is accomplished by reversing engines and/or changing the rotation of the propeller(s) through any transmission. This may already be an electrically controlled system and in this case the controls would be interfaced and coupled direct to the PFN and supported with the compatible components and connectors. Or it may be a mechanical system with linkage and/or cables and any of the already detailed devices for the automobile could also be employed for these applications and managed and/or controlled by the PFN. However, in the large truck and buses, this technology will automate the application of air to the rear brakes in the PASSS shutdown through electric solenoid valves, fuel valve with an additional pinde valve to give an nice smooth and gradual application of the service brake side. Once the vehicle is stationary, determined by wheel or transmission sensors, the PFN TRAC system will release air pressure for the maxi can and apply the maxi brakes to hold the truck in a stationary position. There are, of course, many slow down modalities already detailed by this technology to slow vehicles down including the entire power train and braking systems, however these are the prototype systems, so therefore, they are detailed a little more.

Truck guidance will be accomplished through the same modalities detailed for cars with servo motors and stepper motors, ect. and/or the direct application of hydraulic fluid in the appropriate systems. PAGSSS will provide a great service as a backup systems for compromised drivers, fatigue, ect.

For the trucking industry PFNs of varying levels will be on every vehicle section. They will be on the truck and the trailer eventually and the accountable TRAC software will provide service readiness data to the tractor pulling on its systems, and any number of trailers attached to it . These checks will be able to determine the throw in the slack adjusters to apply a brake sense wheel seal leaks, report malfunctioning lights and/or wiring through current sensing algorithms in the firmware, adjust tandem positions while sensing the load for ride and handling, report tire pressures and report on location through the PFN/ TRAC system, if so desired. This will allow for the tracking of loads by trucking firm's customers through the trucking company's web page or the PFN can be sent a command to notify the customer automatically as it approaches their destination. Of course, all is maintained in a protected environment and also capable of supplying trusted accountable data.

When PASSS or PAGSSS is activated in a truck or bus, the diesel power plant has its acceleration eliminated most probably at the injection pump levers,or by solenoid valves that restrict fuel flow, either OEM or this technology's priority valve, or through the air horn and/or duct. Then the PFN applies the air to the service side of the brakes in the rear most axle as determined by the PFNs establishing the presence of any trailers. These PFNs can be configured to communicate through their wireless systems if they are two-way but most generally they will be coupled with their light connections.

Trains and rail systems already are well set with monitoring and control systems, however, the PFN/TRAC system will ultimately couple all machinery equipment and vehicles and keep track of their movements if they are mobile. This is primarily done for managing traffic patterns and avoiding altercations in conflicting paths. Better movement of vehicles trucks and ships can be achieved on the surface of the earth through this technology's "Trip Controllers" as part of any interactive highway and/or emerging automated traffic control systems and/or interfaced with this technology's "Spider Eyes and "Green Eye" protocols. These management and control systems with their mass data and data storage automated and manned will provide many more jobs for not just managing traffic but also for giving health care, policing the community , ect. However, the Trip Controller will keep track of vehicles, trucks, trains and shipping and ultimately provide three dimensional car plane travel and air craft coordination.

And finally for the trains' solenoid valves are planned for the braking of the rail cars and the coordinated PFNs can be interfaced physically or by wireless. Most trains are built by companies like General Electric and are diesel over electric powered so the diesel motor controls are triplicated here however the PFN/TRAC system will interface with the processors and current controls for the electric drive motors and the same for the trams and trains applying brakes electrically whether they be shoes or disks.

Figure 15

This the fuel injection system and some of the fuel system shut downs have been detailed in earlier related patent applications, but because of all the experimental work done in this area for these applications it is important to state for the record, what this invention has been employing and experimenting with in these areas. Figure 15 shows another standard GM set of parts to get fuel physically from the tank to the injectors and presently described here is where 403 the inventions fuel valve has been used on the newer GM cars. 401 is the tank. 400 the electric fuel pump and the wires to energize the pump come out of the tank with the 2 fuel lines one a supply 402 to the fuel rail 407 and the other 405 is a return of fuel from the fuel rail regulator 408. 410 is the injectors, and 406 is the test port and where 1110 emergency fuel caddie attaches (detailed later). The dotted box 403 is a unique fuel valve that has many different places, applications and other industrial uses. However, the quick disconnects on the shutoff adapters for the diagnosing of fuel problems on this vehicle were chosen as the best deployment for the prototypes of this valve system on these vehicles. The automated shutoff valve system of the invention can be configured to perform these tests and if desired and report back data from the electronic transducer to provide pressure readings, either to become part of the control circuitry PCM or to perform the test in a service environment; or also as another automated diagnostic device for remote servicing and/or control. Another reason this location was chosen is because a standard manual valve already exists on the invention's prototype and test unit for variable adjustment requirements to control fuel supply and dump functions as previously described. The bottom section on figure 15 is a picture showing the hard metal connections for 405 and 402 coming and going to the power plant. These are being displayed only to show where the quick connects are and have been first connected to maintain a balance with the standard fuel regulator 408 pressure as fuel is rerouted and dumped back to the tank. However, Figure 16 will show another fuel rail system presently being used and this forces the invention to supply one rail and return on another, so configurations will vary by make, model and year of manufacture.

Figure 16

16A Fuel Rail 405 is an injector, 407 the rail, 408 regulator, down below on B is 405 injector which has its electrical connection marked 491 which receives current from the 404 which is the injector control module and can activate the injectors either directly by the crank or cam sensors input or by the PCM which determines how to augment firing of the injectors through its preprogrammed software with respect to the electrical signals sent by the cam sensor and the crank sensors as well as other sensors in Figure 22 and 23. This has been explained this way to describe a number of fuel changes and modalities to control speed. As has been mentioned earlier and will be described later in the 900 series along with the first of two 1000 series trickster circuits. Either fooling the OEM electronics or interfacing with it becomes easy and apparent to anyone skilled how this technology can provide the smooth shut down for any gasoline or diesel power plant by limiting fuel and/or controlling the ignition spark all of which is detailed in numerous ways. From the beginning of the invention this automated and remote control function can be achieved with a lot of versatility to accommodate all makes and manufacturers. And it has been the intention here to show all of the innovations and automated devices and systems utilized by this technology to first control a slow down, stop, and securing of a vehicle in a stationary position, and/or to do the same for any other piece of equipment and/or machinery by providing the real products to make good commercial steps in the development of responsible and accountable remote control and robotics for these electronic fuel and spark control functions for internal combustion engines.

These are the ways presently being done to slow a car by this invention that involves the fuel system. The invention's fuel valve system has been coupled with the add on air horn valve 136Cp and137 (various car starter solenoids) and a mini relay from Radio Shack 275-249A and resistor 279-343 that sends the right electrical current or signal by interrupting the electrical line from the throttle position sensor TPS to the power train control module PCM to signify an idle state. The mass air flow sensor MAF, controlled physically through the 136Cp air throttle did not require a trickster in the limited experimental vehicles tested but if necessary this signal can also quite easily be mimicked to deceive the PCM as can any electric signal sent to the PCM and/or any other OEM electronic module, including the anti-theft resister chip key signal.

Of course, for this to happen it is activated from the inventions PFN control box computer once the box receives its first communication. At this point the car cannot be accelerated over idle and the mass air flow is already reading the properly reduced air flow from part 136's effect on available incoming air from the air cleaner, (this was achieved by the solenoid 137 on 136 setting 136 butterfly valve to an idle position for the air intake system all by the computer sending 12 volts to the relay and solenoid on the first page or remote control signal received). The MAF sensor only reads the air flow across it and does not know where it is being restricted from, which further substantiates the electronic data and/or conditions for the idle state in any PCM and OEM electronics.

The most effective modality for a smooth slow down with partial fuel system restriction or redirection is accompanied with one small relay switch on the cam sensor pickups and/or crank sensor signal leads with just a set air horn throttle like 136Cp in Figure 11. This combination has worked fairly well as it governs the electrical and fuel timing simultaneously by controlling the ignition control module

ICM and the PCM simultaneously. The air horn can be set at two different predetermined positions however one position set from the first signal has been proven more than adequate to slow the vehicle smoothly. However, the sensor relays are controlled and closed at idle RPM as reference by the alternator signal in some vehicles and/or any other rpm sensor signal sent to the PCM. This simultaneous killing of the spark and fuel injector removes any back firing or excess fuel that may be improperly ignited and the air horn restriction has eliminated the coughing and chugging so that a smooth slow down can be achieved.

Many vehicles will not require all three of the combustion components controlled (air, spark and fuel) for a smooth deceleration of their gasoline models. And most certainly only air and probably just fuel control for diesel motors will be all that is necessary to slow and kill the motor. In fact just controlling the fuel throttle position on a diesel motor to an idle position by interrupting the mechanical linkage levers cables or driver controls or any electronic solenoid or servo motor controls, valves and/or governors either existing OEM equipped , C.O.T.S. parts or innovations of this technology. The mechanical devices will be automated as has been already detailed with electric over mechanical actuator modalities, to provide this smooth slow down. These will be the automated diesel modalities of choice to control engine RPMs and/or vehicle speed (with application specific consideration) for most all large trucks buses, heavy equipment, construction equipment, material handling equipment agricultural equipment, diesel powered rail vehicles, military equipment and government diesel equipment and/or any industrial large stationary diesel applications, or commercial diesel use of any kind, e.g., emergency power, hospitals , land line phone systems and/or for any electric generation even in the home or private use. A drawing is not provided for these simple diesel fuel injection pump control levers with idle stops because the actuator devices for the injection pump's levers, cables, and linkages will be operated by pistons solenoids, steeper motors and/or gear reduction systems with the very same modalities detailed earlier for any of the throttle body assemblies and components. The attachments and mounts will be different and the system will first be adjusted to perform a controlled slow down by returning the accelerator fuel throttle lever on the injection pump to idle position to perform the first phase slow down. For those diesels that provide a static fuel pressure and accelerate on air availability with mechanically camed injectors on a fuel rail the air throttle will be controlled in the same manner as earlier detailed for the gas throttle controls in drawings 10 and 11 with the control of any air horn gate valve, etc.

Returning to gasoline automotive Figure 16B shows a standard GM injector with connector point 491 is where the electrical connection is made for an individual injector to provide 12 volts to energize the solenoid valve with current sent by the injector control module ICM 927. Simplistically a solenoid relay switch 492 can be placed before this connection to interrupt the injector current in each injector by making the relay switch 492 open when the relay is energized by the ICM 927, or if the invention's controller or computer or any other control device is responsively connected to the relays 492 it can either totally interrupt injector current to kill the motor for another 3rd phase modality of this technology's three phase shut down or as its first phase slow down is preferred through a preprogrammed software and/or firmware sequence that stages the injector functions either through the PCM 920 the ICM 927 or directly. And, for some already existing systems the theft detection relay can be tripped and it will signal the PCM to run a preprogrammed vehicle compromise program. Part of which can be reconfigured to retime injector firing as well as ignition or spark if necessary. The PCM coupled with other signals that the OEM software would be written for and sensing, would control a slowdown by controlling the firing of the injectors and if done through the PCM it could also adjust the electrical timing as well or it could be initiated and controlled from the inventions software which in one modality ignores the spark and adjust the air and fuel as described above in a balanced mixture or in some vehicles if necessary control the spark through interrupting the crank and/or cam and/or fly wheel sensors, as is also thoroughly described in this application but being repeated to show the combinations and modalities clearly. However, rarely does all of these sensors require trickster circuits to achieve a smooth slow down and shut down of the power plant for any one vehicle. The reason for addressing all of the OEM possible changes and all the modalities is for this technology to demonstrate a willingness to couple its automated slow down, stop guidance, control, communication and recording technologies with any and all of the OEMs pieces of equipment machinery and vehicles in every industry to provide simple but reliable and responsible automated and remote control options to be interfaced with any accountable remote control system and/or network of any size through secure protected and accountable focal nodes PFNs on every piece of equipment, and to provide the flexible TRAC software that has PASSS, PAGSSS, MASMP for total accountable vehicle control and CASMP, HASMP, CST for accountable control with all other applications.

Figure 16C shows a modified fuel regulator 480 (a 408 replacement) which illustrates 3 different fuel control mechanisms that should prove to be a good set of modalities for OEMs to further automate and change their fuel pressures, i.e., for future needs to meet any fuel chemistry to run a power plant more universally or on more diverse fuel products. And presently to combine the regulator with the inventions fuel valve to decrease fuel in the rail and dump the decreased volume more conveniently into the return to slow and/or control and/or deactivate the vehicle (phase two and three of the shut down).

420 C1 S-M in a dotted square represents either a small servo motor or a solenoid, which are 2 of the ways that 480 has its pressure transfer disc 431 raised to lower rail pressure and lowered to raise rail pressure. The third is through pressure port 430-C2P where either hydraulic or air pressure would be increased in the top chamber to press 431 down to raise pressure in the rail or 430's pressure would be reduced which will decrease the pressure in the fuel rail. 431 has a high pressure seal with an O ring to support a pressured power system in this C2P version. In the motor or solenoid version C1, the seal could be reduced in its physical structure to be merely a wiper and guide device for the motor or solenoid applications. The pressure power could be provided by any number of systems but the sealing surfaces would naturally have to chemically and physically comply to the system chosen to perform this operation, e.g., coolant, power steering, automated brake systems, shock absorbent compressed air systems, and/or any compressed and/or accumulating system that can provide a safe regulated pressurized energy source and can be electrically controlled to deliver the power source by a specific electrical signal and incrementally in both directions, i.e., spindle and solenoid valves, motorized valves So 431-- C2P will have attached to this port a electrically controlled valve (that is compatible with the pressure source), and that will deploy pressure to 480's top pressure chamber in the

proper increments as prescribed by the appropriate sensor data processed by the PCM or the inventions processor circuits and electrically controlled and directed.

In Figure 16C, 421 is a fixed plate to the outer wall with a threaded center hole that accepts a screw drive or spindle that is rotated by a motor in the C1 servomotor or stepper motor application. In 430 C2P modality the plate does not exist and this is why it is displayed with dotted lines and is slightly shaded, in these pressure systems. This chamber is vacant with no 421 part. However, in the motorized system, the internal nut drive armature rotates the threaded screw or spindle down to increase pressure in the rail and then changes its polarity to rotate the nut armature up to lower pressure in the fuel rail.

431 is placed in the standard position by the control circuitry for 433 spring to tension the 432 spring receiving hub like in the standard diaphragm device in the standard regulator 408 to maintain a within tolerance seat on the fuel return valve surface to create the proper system pressures in the fuel rail, as activated from port 409 which is the standard vacuum used to adjust fuel regulated pressure with respect to manifold and barometric pressure.

Also in Figure 16C, the S configuration solenoid application 421 is not used and nothing is treaded but only a spring loaded shaft attached to 431 which has only 2 positions either down to allow 409 to adjust the vacuum draw on 432 diaphragm to regulate the fuel in the standard described above fashion or all the way up to remove most all the tension on the 432 part which once again allows for the fuel pressure to be dumped from the rail. Push/pull solenoids with internal springs exist for both to apply continuous current and for momentary activation in either direction may be used, such as solenoids found in Jameco catalog and many other electrical supply houses.

The fuel pump could be interrupted easily through its direct service and a relay controlled electrically through any of the four control systems constantly referred to throughout the invention or even its own fuel pump relay by tricking oil pressure switches or other engine protection devices on some equipment and vehicles and/or directly by controlling the fuel pump relay itself or de-energizing the power source directly with relay interrupt system. Alternatively, the invention could work with any and all such theft deterrent systems that have this capability already as a design by any

OEM already. Also, as discussed earlier the stopping of fuel flow through interrupting the injector module which has been done experimentally by eliminating and/or controlling its timing signals and/or cutting the power supply to the ICM. There will be more detail on these modalities in the discussion of the electrical components specifically the trickster circuits to allow for retrofitting older vehicles and other equipment and the linking of some modules software without having to change it to interface these innovation to automate a smooth slow down to a stop or kill of the power plant (phases one and three of the shutdown).

Of course, much more individual manufacture detail of all the C.O.T.S. innovations will be in the individual management and security applications for these automated vehicle, equipment and machinery systems. Hopefully the present discussion is adequate enough to familiarize those skilled in the art to refer back to this section in the electrical description section and reference all the parts by numbers and the above description of their mechanical innovative functions as they are controlled electrically to achieve the many successful means accomplished here in this automated systems application. Most all experimentation was done on the readily available GM products for all these systems but the innovative devices used can be fabricated for most all OEMS because most device innovations for all the systems in this applications were taken from supply line manufacturers that basically supply all the major manufacturers. Once again C.O.T.S. devices.

Figure 17

Figure 17 involves the 500 series parts and it displays the transaxle switch and the cable end. The first point to be made here is that any and most all the already cable interruption devices discussed for the throttle section can be augmented easily to control the cable action to shift the trans axle into neutral And there by eliminate vehicle acceleration but not power plant acceleration. The car would merely be sent into a coast state and would come to a rest at which time either the transmission speed sensor and/or wheel sensors would signal the slowed or stationary state and shift the transaxle into park.(this would accomplish phase one slow down and phase two with the securing the vehicle in a stationary position of the shut down) This can also be accomplished with shifter solenoid like Shiftnoid Jeg's Cat. #254-SN 5000FC and/or by air by utilizing Jeg.'s Cat. #302-AS IK. This is a compressed gas bottle system, etc.

If a more controlled slow down and stop is desired through the transmission, the electric solenoids for first second and third along with the solenoid torque, the converter clutch lock can be deactivated either through software programs placed into the PCM that will shift down from any speed when the program is activated simultaneously disengaging of the torque converter clutch lock solenoid in progressive descending gear deactivation to slow down the vehicle by deactivating the above mentioned OEM shift spool solenoids in the transmission to dump their fluid flow into the reserve rather than energize their respective pressure plate packs or drums to drive the final drive and out to the axles and wheels. If the invention was to be employed to run a simple software program to count down and deactivate these solenoids it would utilize the same circuitry as described in figure 2 and software program in figure 3 with some augmentation time pauses for a smooth shift down, and it would access the electronic circuits by interrupting the contacts ABCD in the GM products for front wheel drive through connector 523 and the circuits and connectors entering the transmission from the PCM or onboard computer of any other vehicle for this purpose. To deactivate all at once the E terminal would be interrupted as this is the common side terminal for all of the above-mentioned Shift Solenoids. This last E terminal is the best modality for this transmission slow and stop sequence modality, from an experimental perspective for a smooth slow down to accomplish the phase one of the shut down.

For rear drive cars with electrically controlled shift transmissions the same interruption and electronics would be possible, however there are still a great deal of cable and linkage shift vehicles. For these vehicles the above-mentioned cable automated control innovations and linkage devices could be employed and fabricated application specific to shift the vehicle into a neutral position. All these modalities have been well covered and would vary in mounts and attachments per application, but their same push pull function would be adjusted to shift the transmission out of gear as a phase one PFN instruction to slow down a vehicle of this technology's unique shut down procedure. However, as was earlier detailed a solenoid's throw with a spring return and/or servo motor or stepper motor with appropriate attachment guides and/or gear configurations can be attached to any mechanical control linkage and levers directly to create the electrical controls to automate shifting for most all mechanical control shifter transmissions, the automatics or hydromatic systems. But also, an easy configuration for manual transmission to solely shift the transmission into a neutral position to accomplish another slow down modality for this technology's emergency shut down protocols, which always includes a secure stop in a stationary position and at least an auto record of the event.

This application's primary goal is to detail all the possible ways to deactivate a vehicle and/or pieces of equipment or machinery with improved safety.

Figure 18

A second level to this technology's responsible and accountable three stage shut down adds automated and remote control guidance to most all land based vehicles. This is managed by TRAC program protocols (PAGSSS). Once again GM parts and systems are displayed in this application, but these components are typical generic driver controls systems and linkages for power steering in most all vehicles so that anyone skilled in the art can construct the application specific parts and/or reconfigure existing C.O.T.S. products presently being made for other uses by each of the manufacturers and/or supplied to them by their supply line manufacturers as is done in for these next four figures and their descriptions.

Figure 18 shows a traditional rack and pinion power steering piston assembly for the present day GM cars. This is the 700 series automated steering parts and devices to automate the power steering of today's automobiles and for the most part the present discussion will revolve around the GM rack and pinion system and the column shaft drive system. The column shaft displayed is also a GM Chevrolet and Oldsmobile type steer column with a exploded parts view in figure 21 and it shows a way to automate almost any vehicle with a steering column. This means that most all vehicles irrespective of make, model, or year can be provided at least one of the configurations displayed in these sections.

Part 710 is a motor with an in-line gear reduction to provide more normal driver steering movements in speed when the motor is activated. Any number of drive systems can be utilized and affixed to the stub shaft of the steering gear. Part 712 outfitted on the stub shaft which can be either a pulley, sprocket, gear or cogged hub to accept a cogged belt or any kind of belt, i.e., V and/or chain or even a direct gear mesh so long as these mechanism can be configured to slip when engaged to allow the driver to defeat there control if he so desires and there has been no legal enforcement reason for the automated steering to be activated. This is also true for the figure 21 where a gear is shown as part 713 on the steer shaft just after the swivel joint for the tilt steering as it passes through the steer column. On the outside of the column is shown a motor assembly which will be a gear reduced motor assembly part 710 again and/or some form of a stepper motor assembly. These functions can be performed by the cable drive system for the seat controls with various reconfigurations. This technology provides one such innovative modality with a jack shaft and belt tensing solenoid system to be described presently. In fact, these following drawings show a motor assembly which would be designed with a automated sliding adjustment, to disengage and reengage the automated steering by an electrical signal sent from the PFN to, i.e., a Solenoid or worm gear with some spring tension as part of a defeatable steering consideration, held directly against to the steering system parts in one modality.

The ASP700A diagram in figure 18 shows the motor placed away from the work area and provides more room to deploy a defeatable steering drive device that will steer the vehicle unless the operator overpowers the automated steering control system.

Three drawings are from the prototypes and designs being experimented with and are labeled ASP7000A, ASP700B on figure 18 and again ASP700B and ASP700C on figure 20. All three of these prototypes could be mounted any where that it is convenient on the steering linkage and drive shaft section, either on the column or on the steering gear box stub shaft. The following drawings will illustrate and describe how the system works. (ASP stands for automated steering prototype).

On drawing 18, in ASP700A, 151 is the seat control cable drive 257, which is the horizontal seat shifter gear. 724 is a pivot pin or bolt or clevis pin. 723 is an anchor strap that can go around either a section of the steering column tube or be attached to the pinion gear input shaft housing 730 or any other gear box for that matter. (There will be different anchor brackets and straps to be fabricated to make this configuration as universal as possible which will enable this modality to be custom fitted to the many different vehicles.) 730 illustrates the center of the pinion gear housing or the steering column as viewed from the top end. 712 and 713 are meshing gear as shown in diagram ASP700A and also shown again in figure 21 on the steering shaft. However another variation of has 712 and 713 as pulleys and part of a belt drive system, but no matter which variations 722 a tensing or meshing solenoid would be present to control engagement of the automated steering form the PFN.

Still on Figure 18, and again shown for reference on figure 20 a pulley modality and belt system is displayed as ASP700B. This time the cable drive is not employed but the same 150 right angle geared seat motor assembly is used and the output drive is outfitted with a pulley 715APB in a direct hook up and motor mount system that holds the gear reduction bushings and support to furnish a rotation point for pulley 715APB which is driven by a square key drive as the male cable drive ends that normally are inserted in this motor transfer drive gear assembly. 723 is the anchor and mounting strap and the 722 part is a tensing solenoid used to apply the belt that can be defeated by the driver. 711 is the belt.

This is a right angle motor mount system, however the rest of its belt system will work the same as any belt system set up for a parallel motor mount or cable driven parallel jack shaft with belts and pulleys.

The rack and pinion illustrations 710 A and 710 B and the middle figure depict an inline stepper motor parallel mount on the pinion gear housing. This whole inline motor and gear reduction assembly would be mounted parallel to the piston input shaft on two equally spaced eccentric pivot points along the length of the motor that are held in place by adjustable constricting band(s) that have an actuating solenoid mounted perpendicular to the pivot points on a parallel pivot point attached to the band to provide tensing and the engaged position to apply the automated steering forces when the appropriate signal is sent by the PFN, instead of solenoid a piston or motorized worm or screw drive can perform the same tensing function with different mounts. The application of the automated steering is part of the second level of this technology's accountable shut down. The first steering and guidance functions are performed by an automated preprogram software protocol that determines the road surface only and just guides the car enough to stay on the road surface as the shut down stops and secures the vehicle in a secured position. Audio warnings and hazard lights are all going as well as all recording equipment and data storage. This automated guidance as part of the shut down function will function with police and with out the police in the event of an unconscious or incapacitated driver. Even the first level automated shut down procedure will activate without this guidance feature if a driver is sensed to be unconscious or not in command of the driver controls with the warnings, hazard lights, and recording devices storing all data at the time of the event. This automated deployment of the shut down system can be reversed or abated by an alert authorized driver unless it is initiated and controlled by law enforcement. Even though the automated shut down is less than ideal without guidance, it is an improvement on a bad situation regarding the incapacitated driver. And as a general rule this procedure will lessen the time and distance that the vehicle will have to produce fatalities and damage in the out of control state while still moving. This is the first level above PASSS and the software for this TRAC program (PAGSSS).

Figure 19

Figure 19 illustrates the different planned locations for the prototypes and it shows them in a parallel gear reduced in line motor configuration. These positions however are going to be done with the right angle seat control motors as have been detailed through out this application. So just the locations and part makings for a better understanding of the entire system are relevant to see the versatility. These will be updated and illustrated with the entire prototype configurations.

Figure 20

Figure 20 shows another belt or chain drive configuration being used on the steering column inside the cabin. This system is showing the same inline gear reduction or stepper motor configurations, with the exception of the two latest prototype configurations being experimented with presently. They are shown as ASP700B a right angle motor mount on the column with a belt drive the illustration left of center; and ASP700C right of center which is a rubberized friction wheel drive used on the column. Once again, these modalities can be configured to attach with mating surfaces (splines, key ways, set screws and roll pins, etc.) their rotating interface component (gears pulleys sprockets and wheels) can be placed any where along the steering linkage tilt wheel shafts parts 731 and 732 in figure 21, where permissible. From right under the steering wheel all the way down and including the input shaft of any connectable steer gear box.

All of these prototypes might be best served if mounted in the interior of the cabin to best protect them from the elements, and to reduce cost for extra shielding to protect them against harsh service environments. But, because, these devices are used in aggressive remote control scenarios for the unauthorized use of a vehicle; this technology claims for any protected coverings that are designed strong enough to double as harsh environmental and tamper resistant shields for theft deterrents protocols. Because this all falls within the nature and scope of this technology's protection of peripheral devices, all the modalities described and detailed here in are being experimented with presently, both in the cabin locations and in the exterior locations with whatever protective measures they will require to insure their safe reliable and accountable operation.

ASP700C is another end view showing the rubberized friction wheel modality. This time the rubberized wheels, part 715APC, mounted on a tube with bearings to raise the wheel up so it can spin freely without striking the motor gear reduction housing. This might have to be done for the pulley 715APB in ASP700B in fig 18. In this case the square drive would run up in side the tube and drive the friction wheel or pulley. However, a 3/8 drive shaft has been outfitter with 5/32nd squared extensions and made the appropriate length raise the wheel or pulley and drive it. 712APC is mounted on the steer shaft linkage inside the column (or on the gearbox mount). This system is best on a thin diameter column application with a figure 8 design covering shielding or cowling with one circle area encasing the column and the other circle area encasing the motorized friction wheel motor drive assembly as viewed from the end looking down the column. The rubberized wheels are used in paper converting operations and printing as pick up or gripper wheels to deliver the paper to the machine to be processed. These are neoprene wheels that are being experimented with in the first prototypes for this modality. 150 is the seat drive motor and the parts are named and numbered in drawing 5. The changing of the motor polarity changes the steer direction from left to right as the motor rotates 712APC off of 715APC. 722 is a continual run push solenoid with an internal spring. This could be done in the reverse as well and experimentation with this part of the device is still in process, a small piston is another consideration as well a nut drive or worm gear or motorized screw device. However, the pressure applied to pivot motor and wheel assembly must be adjustable to allow for the driver to defeat its drive force if this is a desired condition.

The on-board driver will have priority in these earlier systems, but in the future coupled with law enforcement aggressive remote control will advance and help to use these innovations forcefully to guide a suspect vehicle to a safe location where it can be stopped and detained. However, this technology's PFN software will recognize, any attempt to guide even these earlier versions and will record the drivers attempt to control the vehicle over the PFN control. This happens when the vehicle is guided away from the computer controlled program which recognizes this by the sustained motor drives and steering wheel position sensor that are giving contrary data to the desired program through these sensor results. Trouble codes will be set in the cabin the PCM and on the public information bar (see PCT/US99/00919) another innovative device as well as give any preprogrammed messages inside and/or outside of the vehicle as to the state of the compromised vehicle program.

Figure 21

Figure 21shows an exploded view of a GM tilt steering column for a Lumina and the internal parts. It also shows where the prototype is going to be first tried in the cabin. This drawing will be either the same with the final prototype installation or it will change to show the exact location and best prototype combination of parts to complete this automated steering along with any other detailed system drawings if necessary.

In some of the other experimental prototypes with a remote cable drive, the cable 151 will couple to the motor on one end 150,152 from the earlier figures and on the other end to a thin jack shaft drive, part 716. This coupling has already been extensively described in figure 5. The jack shaft's other end will have part 715 which is a pulley that has a 1/4 inch V belt which also goes around 713 area, but is a pulley like 712. Depending on both the jack shaft mount and the steer shaft mount, they could be could be a sprockets and chain or some cogged belt system with a slip center hub or the gear 713 with a mating gear on the jack shaft.

If a belt system is used either on the column or down on the steer gear box the belt is held in a guided but normally loose and disengaged state around these two pulleys by the shield or shrouding either as part of the column or attached as an assembly like the rack and pinion steering gear in figure 18 . The belt might work better if it is a composite. This is done through the same brackets on the steering gear that clasp either the entire motor assembly or any thin jack shaft and tensing solenoid modality. Of course the tension control solenoid engages the belt drive, either with any of the motor gear reduction systems to turn the steer linkage shaft directly or the stub shaft on the steer gear box or drive either one rotating shafts with the jack shaft drive, which is similar to the direct motor mount system described as part 710 in figure 18 in how it functions. The amount of steering control given to the automated system will rely on the presence of a conscious driver and law enforcement considerations. It will be possible to take complete control over the steering, but this will not be done until the correct safety equipment is onboard along with the appropriate software, all of which will be sanctioned by DOT, NTSB, ANY INDUSTRY STANDARDS LAW ENFORCEMENT AND THE INSURANCE INDUSTRY, so that the calculated risk to utilize automated steering to increase safety is weighed against the unavoidable dangers for any compromised driver scenario. These systems will be evaluated by the above organizations, government agencies and commercial industry to set guidelines and standards rules regulations and laws for the use of these aggressive automated remote controls to slow, guide, stop and secure a vehicle in order to create standards, and to achieve this goal it will be very necessary to use this technology's protected accountable box to interface the automated remote controls and memory storage to assess liability and accountability as well as to evaluate and improve the systems performance.

There is a set progressive order that this technology has foreseen as responsible commercial developments for aggressive remote control of a vehicle:

1. First; all automated and remote control deployments must be accountable and made through protected memory storage. (onboard optionally off-board)
2. All automated and remote control functions should be done and/or coordinated with law enforcement whenever possible.
3. First Level of this technology's vehicle shut is:

Level One

I	II	III	TRAC Software
Warn\Record\Slow,	Stop\Secure in a Stationary Position	Disable Power Plant	PASSS

Level Two

I	II	III	TRAC Software
Warn\Record\Guide\Slow,	Stop\Secure in a Stationary Position,	Disable Power Plant	PAGSSS

The level one protocol without any guidance will still be utilized without law enforcement in cases, where no driver is determined to be in control of the vehicle by on-board responsive TRAC software to specific sensor data from the operator and the vehicle (e.g., unconscious or ill or a driver panic button has been). The legitimate in control driver can abort the automated shut down with his/her pin code or retain control signal. Even this unmonitored accountable automated shut down is considered a better option to the out of control vehicle with no warnings or no controlled end in sight, as the first commercial step to improve this hazardous condition. This first modality granted is no panacea, but at least it will be slowing and reducing the most harmful impact of a head-on collisions, as well as, the amount of time and space the vehicle will have to do damage. In this sense this first shut down modality can provide measurable improvements to an already inherently dangerous situation.

As this technology's more sophisticated, monitoring equipment and programs are deployed with these automated and remote control devices in more vehicles, much more driver identification and driver capability protocols will be employed. These level two commercial enhancements with accountable automated remote control will encompass simple dexterity checks or exams, breath evaluation through atomospheric sensors, for the eye, iris and pupillary response, measured for identification and the size and response time to compare this data to the automatically collected healthy normal state ones stored in the software compare files for the same person and for variable environmental light conditions. This preprogrammed function will be performed through the inside cabin cameras and atmospheric sensors and/or fingerprint and pulse sensors in a steering wheel assembly and cabin mount for cameras and sensors (this way data will be continually updated for current authorized and the capability of the drivers). Many of these vehicle and operator monitoring systems have been discussed in the related applications and will be further detailed in this application. They are being described here in the automated steering section to better detail this technology's automated shut downs in their commercial deployment levels One and Two for smarter car development, and level Three, which will be full robotics driving and interactive highways (TRAC's MASMP and RPV programs for Remotely Piloted Vehicle). When these levels are married with this technology's secure protected accountability functions in its PFN societies requirements for legal liability can be addressed for any shared control of a vehicle during automated remote control and/or robotics driving. This technology recognizes this necessity for the insurance industry needs and for the public's laws. These are the responsible remote control commercial devices, system developments and deployments considered by this technology as appropriate steps to develop standards, laws and law enforcement protocols to improve public safety presently and into the near future, as well as, distant future for the technically evolved use of the personal automobile.

For the level Two automated steering protocols the first priority will be to massively reduce and/or eliminate unconscious head-on accidents by maintaining motion in the same traffic flow direction and not leaving the road surface. Head light sensors and distant sensors will provide reference data continually in which software algorithms will be able to detect a normal mean state, also any magnetic or road edge sender data will be utilized by the software program wherever available. Otherwise, the onboard distance sensors will be reporting side front and back relative to movement data which will also be processed through the onboard software algorithm(s), and the onboard cameras will have their image transposed to a digital data signal or specific signature that can be identified more specifically as objects, like the different surfaces of the road, lane and line markings, barriers, other vehicles and/or persons, or animals, etc. So all of these data streams are processed through specific algorithms in the PFN/TRAC software to synergistically guide the vehicle in the most optimum path initially for an improved level two shut down protocol (PAGSSS) and ultimately for robotics driving and a level three accountable automated and remote control. In the level three remote control and robotics guidance system the PFN software will also be synthesizing phone and/or communication systems, GPS or location equipment, and RF signal data input from long and short range transmitters and/or transceivers from warning highway transponders or radio beacons, or receiving instructions from special law enforcement traffic control guns and/or devices, all of which is detailed in the 1100 and 1200 series, detailed as the Green Eyes or Watch and Spider Eyes program, from the TRAC system.

However, in a level One to level Two intermediate control modality this technology's shut down provides another enhancement for limited automated guidance. The driver will be allowed to over power any of the automated steering controls, but the activation of the automated steering if unattended will result in the immediate shut down protocol warning all surrounding vehicles of the compromised vehicle and announce that the vehicle will be moving and shutting down to the right side of the paved surface sending out a distant sensor signal angled down out in the front and right side till it locates a space large enough to accommodate the car 2 times and the vehicle at a creep speed will remove itself from the traffic lanes and stop and secure the vehicle all the while sending out a distress signal to the proper authorities. Many such inexpensive distance sensors exist on the market as C.O.T.S. products. And a set of their electronic signals would flag the proper condition for the vehicle to nose off the highway, and stop.

Returning to the locations of the automated steering actuator components the above mentioned mounting locations are not the only ones that this motorized system could be used in. Along with mounts anywhere along the steer shaft, linkage including steer gear box configuration different steering modalities like an orbital valve type system used in heavy equipment and industrial trucks might require this same automation of the input shaft to control the directional vein pump. Alternatively, it may prove easier just to interrupt and connect with electric water man and pindle valves any hydraulic lines to redirect and control the fluid control for any double throw center piston system depicted in figure 1 as part number 701, and/or to change direction and RPM for a hydraulic motor part 700 and rotating gear on a flat or strip gear in Figure1. 704 in Figure 1 is the electric control over hydraulic flow control valve. Special considerations would include any standard junctions like rag joints universals or collapsible sections for a impact or crumple zone along any steering linkage. The many modalities detailed within would be placed so as not to impair and/or defeat the normal use and purpose of these standard safety parts.

Presently the cars have a steering wheel speed sensor for their effortless steering. The prototypes will innovate this sensor that sends its signal to the EBCM. Presently this is utilized for effortless steering through the EBCM software program that adjusts electronically a pindle valve in the power steering pump to change the power assist for better road handling at higher speeds and increases pressure to ease the steering at slow creeping speeds. This resisted sensor system is first to be converted to give steering rotation and degree to correlate to an exact wheel position or wheel angle through electronic signals, i.e., digital or analog current (ideally digital). This data will be compared in a compare list software function (an algorithm) formulated from the degree of movement detected by the sensor array 904, in Figure 1, which also sends its data as electronic signals to the onboard computer and/or controllers, thereby allowing the software in the computer/controller to compare and compute the effects of steering and/or stepper motor activation's on the true guidance of the vehicle.

The steering data recovered is compared to the distance and camera signals recovered through the movement compare list as to the real time progress and results in guiding the vehicle in its fully automated state. Distance sensors would sense objects front back and side and slow the vehicle or speed it up for front and back and swerve left or right for side to side closeness, as well as, guide the vehicle to an unobstructed path and stop it unless it was being controlled in the fully automated state or level Three (Mobile Application Specific Management Program (MASMP) and/or RPV). At any time that any automated steering has to be done the car horn and all warning notices would be activated if it is a level one or two shut down. The cameras will first be used to recognize lane markers, road edge and surface (there are some experimental interactive highways planned with magnetic lane makers. If this system was chosen and used the invention would employ magnetic sensors to interface with this highway system along with the proper accompanying MASMP and RPV software) or as visual recognition systems hardware and software become more sophisticated and reliable it will be used to perform more discriminatory functions and be responsible for more automated vehicle guidance control, managed by the PFN/TRAC software. However as was stated earlier these systems will first see their use in remote control under the direct visual control of trained people like law enforcement as a evolution of the [warn\slow \(guide)\ stop and detain\ and kill the power plant, shut down function] for the unlawful and immediately unsafe use of automobile scenarios, or to control equipment operated in a hostile environments to humans, these cold even involve more comprehensive robotics applications and are extensively detailed in U.S. Provisional application No. 60/122,108. However, even though the fully automated guidance controls will be forthcoming with the interactive highways and smart cars development in U.S. Provisional application No. 60/122,108, the PFN invention will develop a short preprogrammed guidance system using the distance sensors headlight detectors and the advent of driver monitoring devices as the second commercialization of the automated guidance system the level two protocol. This second level will warn slow with guidance, while preprogrammed software monitors the environment all the way to a creep speed (determined from wheel rotation sensors, hall effect, ect.) and nose the vehicle off the highway, then stop and secure the vehicle, when a driver is detected unfit to handle the vehicle or is unconscious. The TRAC software will provide accountability with the redundant memories for remote and automated activities as it authorizes activities and authenticates them.

While it will be possible for this system to still be involved in accidents it will be relatively easy to keep the vehicle on the road surface going the right direction and not be involved in any head-on collisions, generally, which is the most fatal drunken driver accident. Hopefully by keeping an out of control vehicle slowing down in the same direction as the surrounding traffic it will minimize injury and damage. Of course all the warning and advisories would be going off from the time any automated shutdown or emergency automated guidance went in to effect. Optimally the alert drivers would brake and move clear of the automated vehicle and allow it to make its way to the right side of the road, find and determine a vacant road edge and stop. The public will need training here as to the proper use of equipment no matter how sophisticated and/or simplistic. This will require people to have knowledge of how to interact with automated systems and the people that are in a compromised state, i.e., heart attack, illness or intoxication. The invention and other systems will be able to alert the proper authorities automatically as already described, however public education will always be a necessity, and equally important this technology's PFN/TRAC system will provide secure AV and telemetry data records for society to analyse, appraise, and legally address any altercations or incident..

These detailed electronic communication systems and controls are in all of the related applications referenced above and the completed prototype components along with all control network systems including the interfacing with 911 systems and other commercial systems like OnStar, and law enforcement and emergency response personnel, etc., as well as Internet and web interfacing.

Figures 22-23

These figures have been used to display the three major components to controlling engine timing for the spark and fuel in the GM cars. The top picture is the power train control module or PCM. The second is the ignition coil pack and the third harmonic or a crank shaft sensor. These standard parts are used to time fuel and provide spark for internal combustion gasoline engines and are the sensors that will be interrupted and electrical components most effected by this technology's 1000 series trickster circuits to augment injector timing and spark plug firing in the controlled phase one slow downs and phase three power plant deactivations for TRAC software PASSS and PAGSSS.

900 series

This set of drawings shows the cam shaft sensor location and the lower figure shows another type of crankshaft sensor. These are also engine timing controls that are interrupted by the 1000 trickster circuits which send a pretuned voltage level or a generated digital pulse to fool the PCM or any control circuits that they are interfaced with. There is not much more needed to be stated presently for figures 22 and 23 because these drawings are being used to show the electrical senor locations , however, the system effects that the trickster circuits do will be detailed more. This electrical process has been described numerous times already, however in the specific applications there may be additional information that may alter and these illustration and descriptions are only used to show the technology not to limit its versatility. Most of the description has focused on the inventions automation of the OEM standard vehicle, equipment and machine systems. Therefore, it is important in this discussion of the 900 series devices to clearly describe the electrical OEM devices that will be a part of performing these unique functions, while still doing their OEM job.

Other 900 series vehicle electrical parts under PFN control

In Figure one 915 is the door switch. 914A is a seat switch that can tell if it is occupied. 914 is the seat belt switch that will indicate electrically the belt is home in the secured coupled position. All of these devices and/or any of them will be incorporated to create a 900 series deadman seat switch system. First, simply only to tell if a driver is present in the car or the seat or behind the wheel (e.g., because the carjacker is trying to leave an unmanned running vehicle to make an escape). This unmanned state will initiate the inventions auto shut down sequence either level one, two or three, determined by TRIAGE, a TRAC program that surveys onboard devices and capabilities and employs the correct program to deploy the appropriate devices. This is also being used to set the emergency brake when a driver leaves the car or when any door opens and kill the cars ability to crank or run in a number of ways after the wheel sensor detects a stopped and stationary condition. This can also help stop children from releasing a brake and/or shifting a gear lever when the vehicle is in an idle state. This is the invention's secured state for a no driver situation. Of course the legitimate driver can override the engine shut off. But the vehicle cannot be put into gear without a driver nor can the vehicle have any of its automated braking released unless override commands are given by the appropriate authorized personnel to the PFN and TRAC software that authorizes commands and authenticates and records them. Ultimately, this system will be combined with diagnostic driver sensors and software to determine driver capability prior and during any operation.

This technology believes that the privilege to operate anything is not violated along with the individuals rights when unbiased standardized performance protocols can determine a public danger in the operation of a piece of machinery, whether it be a vehicle a piece of equipment and/or a machine of any kind. This technology also recognizes a greater aging population that will require assistance in operating personal vehicular transports and is designing versatile assistance protocols that can insure the greatest individual freedom at the same time it improves public safety. This technology's PFN/TRAC system is the ideal accountable automated and remote control setting to accomplish primary private operator performance assessments and give auto-tutor advisement's to compromised drivers of their errors while respectfully performing any graduated automated and/or remote control necessary, where safe proper control is absent or improper for any moving vehicle and/or operating piece of equipment. These accountable management and control systems allow insurance to rate operators with real time data, help improve operator performance and resolve legal disputes.

The PFN's Billing Box function designed to bill for any equipment use, adjust insurance rates for proper and improper driver and equipment use, assess fuel utilization, provide a commercial work station to conduct secure financial transactions from, as well as, do most all kinds of automated transactions and data transfers and to evaluate the environmental impact is well detailed throughout all of the related patent applications. Here, however, in talking about the peripheral devices in the 900 series the environmental protection agency EPA systems on the vehicle devices include application specific environmental sensors at the end of any exhaust system as well as a monitor on all OEM sensors, already in existence, like O_2, hydrocarbons, H.C., Evap systems, Nitrous Oxide (NO_x) on-board devices, fluid level monitors for leak detection, battery compartment monitors for leaks and gassing. Basically, the system for environmental project will have levels of acceptability. First, when any power plant does not have a stoichiometric condition, which will be recorded from time to time as the vehicle is operated and monitored by application specific software (MASMP) in the PFN a trouble code flag is recognized and stored in the PCM and PFN/TRAC system. If deemed necessary, the trouble is reported immediately to an off-board monitoring phone node for a local or regional computer gateway either EPA\DOT\ monitoring state or federal hazmat program, etc. If the vehicle is emitting toxins at a severe enough level to concern public safety, immediate operator/owner notification compliance and enforcement measures are possible in real time. And the invention software, TRAC, will first notify operator/owner and determine when the vehicle receives the proper service for any bad fuel mixture operation or emissions and make sure it is reported if left unattended. The standards for the Stoichometric condition will be set by the Federal Government as per geographic location, population and environment. However, the TC will be triggered at the California Air Resources Board levels for the invention's initial "Green Eyes" Mobile Application Specific Management Program (MASMP) software settings in the prototypes.

Application specific standards will be set for the varied type of fueling and energy systems by all the involved government agencies, industry groups and involved public organizations and concerned individual citizens, provided in this technology's related patent applications PCT/US99/00919 and U.S. Provisional application No. 60/122,108. All the computer networking, including the use of the world wide web, is detailed. These patent applications detail how to use the existing government agency's gateways and computer networks with accountable TRAC software, for the PFN operation and the mass data management and storage systems (TRAC's interface) for these large agencies. This technology foresees the need to monitor at this individual equipment level to meet the needs of society, the economy, and the worlds environment; and also, sees the opportunity that these combining and merging technologies present to accomplish and create this PFN/TRAC device and system to meet these needs for humanity; i.e., to have a protected accountable remote control interface and memory systems for automated and remote control, which this technology terms a the PFN. A protected primary focal node for all control, communication, tracking circuits and devices and (most especially if only to solely protect the memory storage circuits) to which **standards, and law** can be written and applied in every industry application and for every electrical component used, including their hard wiring, connections, interfaces, software programs, maintenance and operational use. The PFN in the automobile and trucking industry has been designed in the related patents to double as a protective interface and/or dash mount compartment for electrical necessities, expensive accessories, and an area of secure and secluded placement for personal items (a safe and fire box) as an improvement and replacement to the standard glove box. This multi-function protective capability or quality for the PFN is also claimed for any other types of equipment or applications, if so desired or deemed necessary by any standard.

Figure 24 – 1000 series

These mechanical and electrical protection components along with all the other sensors and reporting devices to the power train control module, ignition control module, injection control module, brake control module and any or all of the OEM 900 parts are the focus areas of these 1000 series coyote devices. They are also referred to as the trickster circuits. They are intended to interrupt and interface with C.O.T.S. and OEM control and processor products to augment normal operating data streams and provide specific electrical signals as a automated and/or remote control PFN response to initiate a desired OEM function without changing the OEM's software and/or system in general. This is an interface system of this technology and the PFN protocol to easily combine electrical processing components and their peripheral sensors and devices.

The next drawing is of 2 trickster circuits being used experimentally at the present time, but the whole concept of having an inexpensive electronic device designed to fool a controller or control module or computer and their software is unique to this technology, especially, when it is done to help interface other electronic system without reprogramming their software or re-burning firmware. There are many more of these circuits and devices that can be specifically set up to provide these false or pseudo signals for any number of standard performed functions by the

OEM processors and their peripheral components, so the mere fact that they are not specifically detailed at this point should not make them unique from this technology. These innovative devices will have a lot of use in the present changing automobile industry and especially for older vehicle retrofitting, as well as find great use in a lot of other industrial and heavy equipment areas where diverse software or changing it for limited use applications can be very expensive. These necessary coyote circuits will provide a great value in rerouting signals from C.O.T.S. devices for interfacing other processors controllers and/or computers to OEM peripherals and/or any onboard accessories.

Figure 24 depicts 2 inexpensive trickster circuits. The top left circuit, marked A, is the 1001 coyote and it is for changing analog current signals. It involves only 2 parts a relay and a resistor (fixed or variable). These parts will change for the different current demands of any particular piece of machinery or application but, because they are only working with lower control currents and signals from processors and computer circuitry to send and receive a particular data signal the parts will be in most cases the same and in expensive. However, if coyote circuits are supplying service power to an accessory or a peripheral function as is the case with some of the add on or OEM actuators then these relays (solid state or mechanical) parts would be composed of the suitable components to handle any current requirements, as well as, be compliant with any applicable electrical standards. These circuits are going to be changed and varied greatly to meet the application specific needs of other industries, as well as, the current demands in different parts of the world . This technology has always maintained a strong commitment to forward and backward, as well as, providing as much diverse engineering as possible to meet basic accountable automated and remote control requirements at a worldwide scale for all machinery to help provide organization and technology to universalize access to this vast MMN. These trickster circuits can help to complete those diverse controls needed inexpensively and rather rapidly for all industries to automate machine controls.

The parts used in the 1001 prototype are 12VDC PC relay DPDT Radio Shack 275-249A and the variable resistor is 15-turn Cermet Potentiometer 10k Radio Shack 271-343. And in the drawing 24A they are parts 1010 for the relay and 1011 for the variable resister. This circuit is designed to send an adjusted but specific voltage level to simulate an analog OEMS senders signal. The purpose in this applications is to have the electronic engine controls adjust the timing for fuel injection and ignition to a specific desired engine RPM level without having to interfere with the normal OEM Software, when the invention changes the physical air and/or fuel supply. This allows for one previously detailed modality to coordinate a smooth slow down with no improper cylinder detonations for improper mixtures, or to trick the security module to believe the ignition key is in the switch to allow for a remote start if the key has a resister chip in it like the '96 Lumina and most all GM cars. The reason that both these trickster circuits have a double pole and double throw relay is so that the OEM sending device signal can supply the normal running signal on one set of poles to the OEM control modules and when the invention PFN energizes the relay the signal is interrupted, and the pre adjusted potentiometers or fixed resistors in one of the trickster circuits send the appropriate signal or slow down signal to the OEM's PCM or control module or security module or any desired control circuit for that mater. The automobile is the focus of this discussion but the same procedure can be performed in any application or equipment with the specific requirements met to perform any automated or remote control deception of any processor circuit by meeting the on-board software and firmware requirements or criterion to perform responsively connectable tasks.

Drawing 24B 1002 digital coyote tricksters for digital signals also uses the same relay 12VDC PC DPDT Radio Shack 275-249A and same resistor 15-turn Cermet potentiometer 10k Radio Shack 271-343 along with the I C 555 timer Radio shack 276-1723 to create an automated switch pulse generator for a digital signal. For digital signal replacement to be sent in place of the OEM sending devices like, some e.g. MAF sensors, RPM signals, etc. When it is necessary to have different pulse widths another 555 in series is used to divide the frequency differently and further adjusted by another potentiometer. This is 10002a trickster circuit.

In both drawings 24A and 24B INVIN is the inventions volts in signal that energizes 12 volts + to the Relays part 1010. On part 1010 the OEM SI terminal is the OEM sensor signal coming into one set of poles on the relay and on to the OEM control module in the normal state. When the signal is sent for slow down by the PFN invention the relay 1010 in both has its coil energized along with the circuit that goes to the resistor in 24A and in illustration 24B which goes not only to the variable resistor, but also to the 555 timer in the illustration 24B. In illustration 24A it just continues on to the OEM controls with the adjusted voltage, from the resistor, i.e., the analog current systems. However, when the invention sends 12 volts in the 24B drawing (the digital application) it also energizes the 555 timer on pin 8 +Vcc and pin 4 reset as well as the potentiometer. The drawing is standard for a pulse generator and the pulse from terminal 3 goes to the control module with a ground lead. If this signal is sent to another 555 timer and input pin 2 with another potentiometer and just 2 capacitors the frequency coming out of #3 pin on the second 555 will be divided to the preadjusted desired signal. This is accomplished with an oscilloscope and RPM tacho, meter or scanner for a signal reference for the slow or idle state, or a known signal desired can be adjusted with the scope. These circuits have many other uses in all kids of industries to link and net work, as well as, interface with software of a particular manufacture by providing any signal by varying the pulse width and frequency, etc., or employing other circuit components to mimic any desired signal. With a good study or reverse engineering of any functions, while observing the desired result to determine the proper signal that initiates a function is all that is required for anyone skilled in the art can create a false input signal to trigger the desired function and construct one of these coyote circuits to interface software systems. Many times where ever possible these same functions will be performed by integrated circuits and preprogrammed as limited software and/or firmware signals sent from either the PFN computers used by this technology and extensively detailed through out the related patents or any other mini controller computers and/or processors (e.g., Parallax Stamp I II computers). However, if these signals are sent to deceive another pre existing processor as a deliberate attempt to create a preprogrammed response from its pre existing software or firmware it falls with in the nature and scope claim for this technology's coyote and trickster circuitry.

Figure 25 10003 circuit

This is a circuit that replaces the striker switch for the modern cars that have auto dim to off circuits for the over head dome light when the car door is opened and closed. For the older vehicles and any piece of equipment employing striker switches the striker switch circuit would be monitored on a processor's in put pin to detect the door open and closed position. This is done because, this technology foresees in many case a real necessity to know when the doors are in a closed or open position to apply the brakes in responsible remote or automated control scenarios. This is another function to its emergency shutdowns for brake deployment protocols when compartment doors are opened, as well as, sounding driver and surrounding car warnings. Standards and procedures will have to be set and written to by the same government agencies, industry groups and related insurance and public organizations as referred to earlier for the (e.g., a bail out done by the carjacker, etc., or on and off loading of slow passengers from rear doors).

This simple, easy to install circuit was designed to sense current draw in the dome light circuit and not to interfere with any OEM programming. However, for this automated brake and/or steering function OEM's could reprogram their processors to directly apply any automated onboard brakes, when the correct data warranted this activation of the automated braking or steering system (e.g., open doors with a running power plant, in gear out off gear with wheel sensor data, etc.). Of course this current sensing circuit can be configured to accomplish this same function for any other circuits as well. If an OEM vehicle manufacture reconfigures their processors to perform these automated and/or remote controls of any braking, steering or speed control it falls within the nature and scope of this technology's shutdown protocols PASSS and PAGSSS, as well as MASMP and TRAC (RPV). The deactivation of the accelerator function of a vehicle can be eliminated by this technology for this purpose simultaneously if so desired and mandated by any **standard** protocols.

Early experimentation of this has proven that given the proper early warning with loud enough sirens, bright enough lights and the information bar all three of these functions can be performed with reasonable safety. However, further testing refinement and education will all play a role in the use and acceptance of these protocols and for any aggressive automated and remote control. And this is another reason that onboard accountability is so important to these developments. This technology plans to work closely with all the automobile manufactures, government agencies, and the insurance industry to develop the proper **standards and protocols** needed for government to write and approve specifications, **standards and law.**

Once again, this is another 1000 series coyote trickster circuit and is numbered 10003. Its function is to take any electrical signal minimal voltage, TTL, or digital and received it on its input pin and energize a ground side power up of a high current relay to effect any high current function. Like in the 1001 and 1002 tricksters, they can be switched on by a relay, as well as, activate one. And these circuits can energize other devices as well, i.e., motors, solenoids, lights, etc. These present circuits will incorporate the Toshiba TD62064/ap 4 channel high current Darlinton sink driver, however, there are other drivers on the market and application specific requirement might change any parts used. One uniqueness here is that with the OEMs all going to digital and solid state electronics with very low voltage so the automotive electrical accessory after market will find it hard to find the right control circuitry to activate their devices with these low current small wires to handle a load and/or off time digital signals. With the Darlington coupled to a relay or in the case of this 4 channel driver connected to 4 different relays to energized 4 different circuits if need be. This becomes another inexpensive way to interface digital and analog systems without a massive amount of combining software programs for add on devices to any particular circuit if this is all that is desired. These designs are also to help put the do-it-yourselfers and mechanics back into the repair business in the high tech world.

This technology is determined to provide more user friendly circuitry and plug and play modalities for all electrical accessories and peripheral devices to help in any standardization effort and/or provide more versatile options for interfacing electrical components for all industries, but especially for the automotive industry. So the first focus will be to provide help and support for any industry standards, for automotive electrical systems, combining their processing circuits with telecommunication systems, and other RF devices and electronics devices for GPS or locating modalities, data storage, and/or other computer, and processors, and to universalize interfaces and connections for multi component use installed by the skilled and average skilled individual. This invention will develop many of these types of circuits for this purpose in the 1000 series electrical innovation and many will be a major part of interfacing automated and remote controls in all the various vehicles, machines and equipment throughout all of the varied equipment applications around the globe.

The drawing 25 is very simple to understand and all the components are well marked and labeled. Only one channel is being used to recognize the door is open in the new GM cars. It is the first channel on pin 3 of the four channel Darlinton driver in the center of the page for figure 25. These new cars do not employ the traditional door strike switch as mentioned earlier to turn on the dome light. They have a security module that turns on the light with the door opening sensed through the lock mechanism and monitored through the module. When the door latches it sends a low current 12 vdc signal to the security module to start the dimming process in the dome and the courtesy light system. Most of these coyote circuits can access a circuit on a piece of equipment easily by standard connectors (e.g., crimp-ons, etc.) however, this technology holds as these interface circuits to also be constructed in application specific connectors for industries and specific manufactures as products to interface peripherals, accessories and processors to help standardize and universalize electrical components.

In this current sensing instance for Figure 25 the technology's objective was to apply the emergency brake, whenever a cabin door was opened so that the car could not be moved when people were entering or exiting the vehicle. This is all part of this technology's shut down and safety feature. This is one safety feature of the automatic emergency brake application, and provisions are provided for it to be defeated by an authorized driver override through the application of a panic button, or pin sequence, or finger print random light contact pad, in the event a driver feels compromised, which releases the brake and allows for fast free acceleration.

For the door switch open and close position the basic circuit in the GM vehicles ('96 Lumina) is the dark blue small wire to the door harness on the driver side as all doors are in series in this circuit. So the dark blue small wire is energized when any door was opened. This was the line used to made the trigger for the emergency brake deployment by energizing the 1003 trickster circuit. This signal on the dark blue line was only a control signal and not of a current sufficient to support any normal relay switching. This is the exact reasons these circuits were designed. To help provide adaptive alternatives for the major manufacture's loyal customers and their favorite after market suppliers of products. The invention can perform this function through its PFN communication hardware and control box or CHAT box control systems of the first embodiment, however, it was decided to also have a simple control system for the automated brake so that this safety system could be put on any vehicle by itself and be coupled to any electronic system.

The circuit operates by supplying a high current ground to the 12vdc Potter Brumfeld relay at the bottom of the picture 25. The hot side of the relay is a fused battery positive that is deactivated by the limit switches in figure 4 when the brake is applied. The emergency brake circuit is always energized to be put on. So only the inventions control system (not used here) or the limit switch or the ground interruption through the 1003 circuit can release it. The battery positive is connected to the number 1 pin a common on the driver. Pins 4, 5, 12 and 13 are heat sinks or the ground. Output Pin 2 is connected to the ground side of Emergency brake relay. And pin 3 the input pin is connected to the dark blue 12vdc low current signal from the door latch. Before the line is connected to the number 3 pin the current is resisted by a 180 ohm resistor and passed through a one-way diode 1N 004. This is done to fool the security module so it does not sense the draw of the activated ground in the Darlinton or received any back feed or sense an open circuit. If the security module senses this circuit it will not perform its auto dimming function.

The 1000 series trickster or Coyote circuits will continually create these possible commercial and technical merging and interfacing possibilities, as well as, increase the speed of new developments by individuals with the versatile linking of devices and circuits through relatively simple means. While 1000 series parts have been spawned for the interfacing of these C.O.T.S. devices to automate vehicles, machines and equipment they are a unique and a new innovation. And there are many different onboard parts, devices and software in the 1000 series; however, the only ones discussed presently pertain to these automated controls on a vehicle and in all the formal fillings for the first three applications of devices and control systems. There will be more circuits completely detailed for the application specific management systems and their respective pieces of equipment. The application specific management areas are for mobile, commercial, home, management (MASMP, CASMP, HASMP, and CST, Control Security Technology).

Figure 26

1100 through 1200 is being reserved for devices that can be highway devices or gadgets that can help a troubled motorist on the highway, along with and as part of the "Green Eyes" and "Spider Eyes" programs of PFN/TRAC and its monitoring and control network software TRAC. However, this figure is of a device that has home and commercial value as well. The fuel link has been done as a useful little tool to accompany the fuel injection cars of today. Its purposes is to make available gasoline or fuel through the easy to connect fittings used for the test port on the fuel rail with a hose and valve long enough to fuel up a disabled car due to it running out of gas on the highway. It also has a home use, in that now there is no need to store flammable gas in the house garage or shed where its volatile dangers are obvious and the poisoning of pets and kids is an on going problem. Of course the connection for this innovation on the hot engine is also an obvious hazard. However, the invention will seek to get manufactures to reroute a connection fitting away from the engine and any electrical components under the hood, out by the fender with caution instructions and warnings for fire hazards and road side assist safety procedure placards and labels.

It is also possible to have better quick connect fittings with protective cover caps made to better achieve this connection. In this drawing the device is being illustrated as a fuel caddy reel.

1101 is the reel that holds a 2-5 foot length of 3/8 reinforced fuel line that has heat protective covering the first 4.5 feet to protect it from engine heat. 1102 is a swivel fitting standard for the test port on the fuel rail. However there may be different ones for different manufactures and if so the caddy would have these assorted fitting adapters snapped on to the carrying and hanging handle. 1108 is a self sealing valve that closes when the hose is removed in the same manner as does the needle valve stem on 407 the fuel rail. 1103 is a site glass to see if fuel is passing through the hose, this will be made of plastic capable of handling petroleum products and capable of handling the fuel pressure as must the fuel line be, as well as, heat. 1107 is an end cap that will seal the hose when out of use and protect the fitting and the valve from contamination and damage. 1105 serves the same purpose on the tank insertion tube end part 1106. This shows an external thread, however it will most probably be internal to allow the tank filler tube to slide by the unleaded flapper in the neck of the tank. 1111 is a shut off valve (ball cock type). 1109 is a snap in clasp for the filler tube section for consolidated transport. The 1102 end is knocked up in a jig fitting in the reel.

Figure 27 1100 series

The device is similar to part 201 the hydraulic cable tension piston in Figure 1, and has been chosen for the first modality to hook vehicles up on the road in a fast, efficient and safe manner to improve traffic patterns from the present and to be a part of the evolution of the robotic and computer interactive highways to come. The first purpose for linking automobiles is to give all motorist the capability to rapidly hook their vehicles with no real skill necessary on the part of the driver. And then to remove another disabled vehicle and its occupants from a travel lane without having to get out of the vehicle. This auto link also provides for the continual approval of both vehicle operators or there will be an immediate disengagement as a option (rules for moving and/or travel lane disengagement for public safety will be set by DOT and NTSB and **standards and law** will be written). The targeting of the helping hand piston for coupling is done through a magnetic sensor that will complete a coupled docking without any other out side guidance. And the electromagnetic surface plates with electric catches will find themselves and hook up directed by a electric servo motor that has a tracking disc on its final gear drive that only allows the piston a total of 14 degrees pivot for the front mounted piston. The rear is held almost completely stationary with the exception of very strong centering springs that are designed to absorb some side to side force to reduce damaging the piston rams. The front piston can pivot 7 degrees to the left and 7 degrees to the right. This front sensing plate sends turn angle data in the disabled car to its ESCM to set the wheel angle (in the same manner as for the cameras by an electric signal) and the battery in the disable car will activate the automated steering motors in the disable car to turn the wheels to keep the tow piston and cars in a popper line for trailing or towing. The key is turned on to free the steer wheel lock, but the engine need not operate if the disable car has a low battery when the coupling is made the electrical service from the good towing vehicle can charge the disable car and/or supply power to the dedicated steering circuit and/or any that display no trouble codes through the helping hand accompanying electrical coupler, and if there is a severe electrical problem in the hook up; current sensing circuits and heat breakers in both vehicles will detect this condition protect both vehicle and give warnings in the instrument panel of both vehicles.

The second cylinder on the back in most cases will not turn to offer a fixed position for articulating the 2 cars to accommodate turning and trailing. This coupling with the pistons extended will reduce the need for a driver to get out of the car if they get as closely as they can to a direct alignment with the car they are going to be coupling to. The helping hand will have a hard wired comport on a flex cable which will allow the linking of all the electronic modules and the control of all the brakes and any automated systems functioning. The standard for years for the bumper height was 17 inches. It might be necessary to standardize vehicle classes by height and/or have a variable universal piston tongue mount and coupling surfaces And just because, the most ideal modality for this first prototypes is a hydraulic piston with magnetic interlock this technology considers any and all coupling designed to first expedite disabled vehicles in a simplified way for any and/or all of the above stated purpose to be within the nature and scope of this innovation.

Presently this first generation hook up for the universal coupling of vehicles to help stranded motorists and ease disrupted traffic patterns is a simplistic electro-mechanical device, called the "helping hand". This name will be used for a number of innovations that help the individual be a service to other individuals. This name is also listed in the 1200 series as there it will pertain to automated communication devices that will also help the individual and vehicle to be more of a part of the public's safety. There will be much more detail on this system and all that it will be able to do.

GM has a system to tram vehicles on an automated seven mile highway stretch in California in which they have experimented with a system that has no physical link ups and is done by distance sensing, however, at this point in the development of tram systems for vehicles on interactive highways this technology sees a double service performed by physical links. One to quickly remove disabled vehicles and also to provide a more economical use of energy with combined power plants cycled for driving the train, and also improved communication and coordinated braking with all the PFN's interfaced through direct connections and all able to monitor off-board transmissions and accountable record all interface actions. However this technology is set up to work with any effort to automate personal transportation in a responsible and accountable manner. This direct connection or com and power port is important to point out at this point as a standard for automobile electrical systems is long overdue and any such standard cold easily provide for universal exterior connectors for this purpose and for the earlier detailed law enforcement connections, etc.

Figure 27

1130F is the front piston. 1131F is the piston pivot servo motor drive and position disc assembly. 1130B is the back the sensor disk will be using the same technology as is used for the camera location, cylinder and 1131B is the centering spring assembly. This system can be configured to provide more of a radius in turning, but it is believed that this is all that is necessary with the trailing cars steering activated by the sensed turn on the position dick1 130B along with its limit points to give warnings as well as automated programs to help control the inexperienced driver in these scenarios.

Figure 28

2 cylinders and the hydraulic circuit along with the valve body and hydraulic sensors transduce pressure fluctuations into electrical signals when the cylinders have been extended for travel. This data will be used to apply brakes in unison for multiple link ups and trains. 1132 has the ram extended, 1133 is a pilot pin and when coupled to the other piston it creates a universal joint. These pistons will rotate naturally to create the piviton for side to side and up and down. 1134 is electro- mechanical catches energized by and with the energized fields in the contact and/or coupler plates. 1135 is the electromagnetic coupler 1136 is the hydraulic pressure transducers. The transducers are responsible for proving data back to any control circuits as to the acceleration inertia for each vehicle and automated the power plants and braked according to the desired rate of travel or circumstance as determined by the PFN

software running for the tram hook up either solely automated or remotely controlled.1137 is the solenoids on the valve body 1138 is the valve body. The electric coupler, servo motor sensing plate and spring loaded alignment assembly.

Figure 27-28 uses for the car tram and tow systems

One whole section of the 1100 series will be devoted to the car tram system, where the vehicles communication and transmission center will be in contact with other vehicles and the interactive highway system and notify each vehicle that has logged into the interstate trip programmer a travel plan destination (like a flight plan). The Travel or trip controller will search out all other logged in destination coordinates per travel time periods each day and locate others with similar time and destination coefficients and match their present GPS coordinates retrieved periodically for the purpose of a link up.

The Travel or trip controller system searches for the presence of other vehicles in close proximity that are traveling the same roads for similar or close time frame specific destinations. It then notifies them of the economic long distance train approaching them and gives them a choice to hook-up. The system communication for the coordinated long distance trains are described in PCT/US99/00919 and in part more detailed in this application. However, presently this application is focusing on the specific devices on individual vehicles and their controls and communication systems. There will, however, be considerable description on the interaction of vehicle com links to the basic communication nodes of the interactive highways with TRAC software for MASMP and RPV..

In summary, if a driver decides they would rather rest and at the same time travel in a more economical less frustrating environment, they can notify the travel controller system that they will be linking up and they will receive directions as to speed to maintain and lanes to be in till the train passes them and they attach or are connected to from the rear or they increase speed as directed to attach from the rear all through radio or cell phone communications to finally physically link up though the "helping hand" link. This is an innovative physical device for the vehicle that will be marketed as a road service tool to aid disabled motorists and remove their disabled vehicle from the traffic lanes so that there is no waiting for tow trucks.

Later this same device of the invention will be used as earlier mentioned to make long distant car trains that will all interface with each other and energize their power plants to most economically run these car trains on the innermost left lane in right hand drive countries. They will be linked together with 2 communication systems. One, a direct hard wiring through a comport directly part of a hydraulic cylinder that is in the center mounted to the frame in the front and a second in the rear. It will swivel to allow on its frame anchor mount the most optimal angle for the ultimate automatic guidance through the on-board 905 sensor array and the first device magnetic sensor along with a servo motor to initially guide it out for hook up. Prior to the hook up the short range transmitter that will be responsible for interactive vehicle contact, as well as, local highway nodes will do a diagnostic on the vehicles to hook up to the train to see if there is any trouble codes. If so, the coupling is denied to the defective vehicle. (Single tows should optionally handle disabled vehicles with this invention running all the hazard lights and the unique info bar stating the car is in tow and any audio announcements that might prove useful and informative).

It is through the short range transceiver systems that the vehicles will time their in transit coupling either by radio, light and/or sound signals for distance data from the respective distance sensor modalities for separation and to provide another modality to coordinated team braking and turning as one of the cars in the train has decided to leave or break off and/or conversely join the train. Speed will be set by the interstate programmer or designated by the interfaced PFN's or vehicle computers that can in route be able to read the amount of fuel used through the individual vehicle as reports given with their specific electronic serial number which will aid to maintain uninterrupted travel and reduce the amount of radio separation transit for one vehicles. If a low fuel level is identified in a vehicle or is sending a trouble code or warning, the interfaced computers will recognize it and warn the whole train of a possible troubled vehicle. If it does not interfere with the ability of the vehicle to train it will be carried on with all its other functions maintained from the com link till the end of the destination day. As the com link will still be able to supply electrical power a support electric functions from the other vehicles, the troubled car could be carried on to a destination allowing the occupants to be on time to their appointments as their car received its necessary repairs at the destination point. As the train travels some vehicles fuel will drop individually.

The interfaced PFN vehicle computers will be able to either idle or increase an individual vehicles engine rpm that will most economically and efficiently power the whole train with the best stability and traction in foul weather all the while tabulating road credits that are paid for at the end of travel days either by the highway system or fuel credit card transfers and paid for right in the vehicle by credit card and the swipe system that's part of the invention(the billing box function). The on-board computers will be capable of determining which vehicles power plant and brake activation will best control the trains stability and ride. The interstate programmer will constantly be informing the train of upcoming traffic situations and controlling it automatically through congested traffic patterns with the drivers able to relax as the system picks and decides the most efficient way for their entire destination for the total group to be achieved. While the train will interact with the highway system as much as possible, the parallel development of the invention's onboard vehicle and communication systems and environmental sensing systems, e.g., cameras and distance should be developed to run the trails on the vacant back roads as well. All the GPS systems and mapping programs and individual travel plans will become interactive and interfaced with the interstate programmer and readily available to the vehicle occupants computer displays and in the cabin displays all of which will be detailed from C.O.T.S. to the highly specialized state of the art OEM devices that will be fueled by the robotic capability of training as it will allow for a lot more time to do other things in the vehicle. The train through all the interfaced communication systems will inform the individual vehicle of a separation and car leaving or adding on and when massive destinations are reached in certain classic locations the train will pull over to a dispatch lane and the cars will dissipate on their own to their private destinations. There will also be a greater need for refrigeration and porta-potties alone with privacy sections that will alter some vehicle configurations. Trains will be comprised of similar height vehicles and sizes and types and improper weight and sizes will automatically describe a vehicle to train.

For this reason the first innovation is a device that can physically link vehicles in an automated fashion and is going to be commercialized to the car manufacturer first to couple same make cars. However, the universalizing of the connecting heights with standards will be a priority to fulfill the real scope and nature of the invention and the helping hand innovation. This innovation has real value presently because of the new ride on flat tires. The only other leading disablement of vehicles other than true vehicle altercations is mechanical malfunctions. And in most cases the cars can still roll and need only to be pulled to a safe location rather than being left as a road block in a busy travel lane. Also, in very hot weather cars overheat because they are running slow and in this case can be hooked to the one in front that is running cool and/or teamed for slow travel and rested; this will be good for the atmospheric environment, good for the ambient heat, and most definitely good for the car. And if necessary because the vehicle has already been over taxed and is in need of repair the vehicle can be carted off for that repair with the flow of traffic uninterrupted keeping people from being out of their vehicles in travel lanes and harms way to remove a disabled vehicle. The tow situation or scenario should immediately have the first available access to HOV lanes and if the vehicles are rolling safely should be allowed to tow the vehicle to their own choice of service facility if agreed upon by the drivers of the vehicles being operated.

There will also be a simple tele - com port hookup to allow for voice communications but could support video as well. This could be a very useful long distance conference feature for the trains either for entertainment and/or for business. The 1100 series helping hand coupling piston system will allow a communication link of the vehicles when in operation as well as diagnose the towed vehicles system. This will allow for any number of direct communication systems to serve from one car cabin and control systems to the others if agreed upon in the towing process. This will share system data and perform any pre-calling process to a service facility that has the appropriate parts and personnel to complete the repair at the commercial cost agreed upon. Both the automobile owner and server system gives service cost parameters high low and the real conditional factors, i.e., parts cost and/or in-house or out of shop labor intended cost. The phone call cost or any charge for the look-see on arrival together with business ID for referral for the troubled motorist on their towed return home or decision to change service repair servers not stuck on the road the motorists availed to his own personal and social resources to pick his vehicle up and review his first offer and cost of repair. This freedom for the motorist is easily achieved, with all other equipped vehicles for tow with the same ability to couple and report on any mechanical and/or physical changes upon their hook up and record. The diagnostic software of the new tow contact before you drive away through a comparative review of the personal recording taken when the car was delivered for service and with any mechanic a service facility notes for their actions on the reconnect for tow or transport ready for review.

Figure 29

Along with many other secure sealing mechanisms, this technology provides an additional security feature for the PFN secure on board memory as well as, any other necessary electronic parts. The electronic seal system (the technology will seek certification as a standard in the protected area of the PFN): Figure 15 is utilizing one thousand series numbers on this drawing because it uses the trickster circuits relay systems to activate the heater wire to release the seal to physically enter the safe box memory containment section of any PFN TRAC system (that will be certified for record keeping of any kind for accountability. 1025 is the security relay switch and can be a silicon relay with a gate lead 1033 or a standard mechanical relay where 1033 would be one of the leads to a primary coil the other terminal would be connected to the opposite pole in this circuit. 1026 is a wire or thin piece of conductible metal covered in a substance that will melt when heated to 300° F or something less (application specific) the prototypes will use a product call polysulphone which is a heat resistant plastic. The inside of a PFN should never reach this temperature as it is insulated. 1027 is the plastic well anchors for the seal with galleys to accept the liquid plastic during an authorized installation of clean memory and the removal of a un-tampered memory component. They are positioned structurally around the access door and are stamped with an registered ID number for legitimate access to this compartment. 1034 is the negative terminal and can be provided a contact terminal or wire to ground in the automotive applications. 1035 is the positive lead and it too can be provided a terminal or wired to a fused positive lead with the appropriate hard wiring and fuse amperage protection. 1030 is the negative power lead and 1029 is the positive power lead. 1031 is the processor and can send the appropriate signal to the gate circuit outfitted with a 1002s trickster circuit that is resisted to a set signal, or the processor can energize the other side of a mechanical relay 1025 and thereby turn on the current and melt the plastic seal. Or 1032 can be used to send the correct electrical signal to switch the security relay 1025 and its resisted trickster circuit also energizing the seal system separate of the processor in the event the processor has been compromised. The circuit can be completely activated through the PFN\TRAC system with no outside contact and this can be achieved from a remote signal or through the keypad.

Figure 30

Is a physical·view of the PFN secure area for memory storage. This drawing does not depict any specific guarded area . it is used to show the physical locking of the access door and the seal going around through the anchor seal wells 1028 SA. 1036 is the physical lock throws through the side wall of the PFN. These can be operated physically and or electrically as well. And one design provides for the at least secured memory storage area to be spring loaded so when the proper signal is sent to the PFN to open the sealed area the mechanical lock is released and the seal is melted with the door opening an the memory tray sliding half way out. 1037 is the key slot cylinder and this cylinder can be constructed like the new ignition cylinders and outfitted to read a resister chip in the key to activate the SR part 1025 in figure 15 and melt the seal the seal is 1036 which goes around the entire access door. And 1038 is the secure box itself.

So there will not be any miss understanding the PFN box can provide interfacing protection and security to a lot of electrical components and personal property items, however, the the memory storage and any circuits responsible for TRAC routing will be electrically secured and physically secured in the certified or sanctioned area with lock and seal to protect the memory at a legal level for evidence and/or any legal proceeding.

An initial claim is made from all related applications for this technology's secure controller, or processor or computer system(s) with any application specific hardware, firmware, and software to processes accountable automated and remote control commands as a primary focal node housed in a protected encasement(s) termed a PFN. (Specific components, configurations and physical structure for the PFN will be application specific and/or compliant, as well as, be constructed to provide any industry Standard(s) government Standard(s) insurance Standard(s) and/or codes, rules, regulations, and/or laws written to insure any certification, accreditation and maintain it for the PFNs to be accountable systems for all types of automated and remote control and/or robotics.) This claim is to include the firmware and software certified, approved and standardized by industry, government, insurance industry, and the public as Trust for Remote Activity Controls, because it authorizes and authenticates commands and their activities and provides the appropriate memory record for society to function legally.

Other responsively connectable PFN control circuits, components and/or devices are at least one of: at least one current memory device with either an application specific backup device or the same device with a redundant memory function in the same containment or securely linked to an equivalent protected and secure encasement , for the purpose of recording, pristine accountable application specific automated and remote control command strings to on-board peripheral devices that perform automated and remote control functions; electrical signal sensory device and audio/visual monitoring devices to report on the command function results of the onboard peripheral devices and equipment for the application specific commands in the same plurality of memory storage and protocols with synchronized time date and (with optional application specific geographic coordinates) all matched to the application specific command functions; at least a one-way communication device capable of receiving an application specific signal and responsively connectable to the at least one processor, either stored jointly in the same protected encasement or securely linked to a separate same protected encasement; and/or at least one two-way communication device capable of transmitting and receiving an application specific signal responsively connectable to the at least one processor either stored jointly in the same encasement or securely linked in a separate same protected encasement; a report back system capable to report back to at least one remote location of any or all of the application specific data that has been permanently stored in any PFN; a global positioning system, multi tasking cellular phone tracking or RF signal locating device responsively connectable to the at least one processor providing time and geographic data for application specific control functions and memory records either stored in the same secure protected containment or securely linked in an equivalent protected encasement.

A claim of responsive connectable interface is made for this patent application's automated innovations, sensors and monitoring equipment to any other control technology's modules, and/or controllers, or processors and/or entire computer systems with any application specific, hardware, firmware, and software either secured, secluded, protected, in a responsible and/or accountable manner at any level, but capable to perform any automated and remote control and/or robotics functions. Also, any other responsively connectable desired and/or required circuits, components and/or devices including at least one of: at least one memory device capable of storing any operational equipment data and any operator performance data on-board; at least a one-way communication device capable of receiving any specific signal and responsively connectable to at least one processor stored in any fashion on-board; at least one two-way communication device capable of transmitting and receiving any specific signal responsively connectable to at least one processor stored in any fashion onboard, with off-board control options, data transfer options and memory storage for any purpose to at least at one remote location; any global positioning system, multi-tasking cellular phone with tracking or RF signal locating device responsively connectable to at least one processor capable of providing time, date and geographic data for any monitoring; and/or automated and remote control functions and/or robotics as well as to transfer this data to at least one remote location.

A further claim is made for any responsively connectable electrical sensing accessories and/or peripheral devices that performs and/or controls any accountable automated and/or remote control functions and/or applications, when it utilizes, electricity, compressed air or gasses, vacuums, hydraulic and/or fluid pressure, to energize any such devices like electro magnets solenoids, motors, mechanical or silicon relays, pistons, cylinders, pumps, valves, adjustable valves pindle valves cables, linkages levers, shifter forks, paws, ratchets, catches, couplers, spring returns, gearing or power transfer mechanisms cases, brake pads disk assemblies, or drums, clutches and/or interlocking drive mechanisms, spined hub collars and shafts.

A further claim is made for any responsively connectable electrical actuating accessory and/or peripheral devices that reports back on any responsively connectable electrical actuating accessory and/or peripheral device with any type of data signal created by any camera, transducer sensors that provide an electrical signal, for any system pressures and vacuums, surrounding environmental time and distance measurements, onboard device position sensing of devices from limited switches to rotational positions.

A further claim is made for any responsively connectable electrical actuating accessory and/or peripheral devices to control a vehicle speed, by controlling the physical position of the throttle though shaft on any air fuel mixture system or device responsible for providing this necessary fuel combination component to energize a power plant for internal combustion engines.

A further claim is made for any vehicle monitoring and remote control claim for any speed control modality for any circuitry, module, processor, device, component and/or its firmware, and/or onboard board software, like TRAC, that functions to control any electric stepper motors and/or solenoids or any throttle through shaft to control any type of drive by wire modalities (either on any internal combustion engine or any type of alternative power plant), and/ or for any electric vehicles to directly control electric drive motors or electric drive flywheel inertia power plants (electric wheel, etc.) and/or their drive trains to control vehicle speed, and/or by controlling any real time electrical energy production or generation from any on-board chemical conversion systems either by decomposing and/or composing molecular bonds (e.g. fuel cells, and other devices etc.); and/or to control and monitor the onboard real time production of alternative fuels and their waste products and/or heat production and/or by products for any type of power plants for any vehicles, including the real time monitoring and control of present standard fossil fuels and their waste products heat production and/or byproducts for any type of power plant for vehicles.

A further claim is made to electrically control any onboard cruise control mechanisms through at least one of various detailed modalities: to initially eliminate any acceleration capability; and/or to control speed for automated and/or remote control; and/or robotics driving.

A further claim is made for larger vehicles (Trucks and Buses) which provide any responsively connectable electrical actuating accessory and/or peripheral devices to: control a vehicle speed (similarly constructed); control the physical position of any throttle though shaft, operator control mechanisms (pedals, hand levers, cables and/or mechanical linkage); limit air flow, and/or to similarly effect fuel flow in any internal combustion engine so equipped to create a controlled deceleration as part of any phase one slow down for these vehicles; and/or control vehicle speed for any automated and/or aggressive remote control purpose.

Another claim is made for any fuel throttling device designed to eliminate, limit, and/or control the injection pump, which can function to restrict the injection pump (if diesel) to its idle position thereby only providing the necessary fuel combination component to energize the power plant for the diesel internal combustion engines, and/or any use of electrically controlled solenoids valves, stepper motors, and/or pindle valves to control fuel flow as has been detailed for air and fluid electrical flow control application.

A further claim is made for the automation of either driver controls and/or solenoid(s) to activate the cylinder releases, commonly referred to as a jake brake to participate in any slow down where applicable.

A claim is made for the automation of any clutch either through the operators controls or though any linkage by any system that can be utilized to energize the function to disengage and reengage the clutch, however the clutch will be disengaged during the second stage controlled slow down.

A further automated and remote control claim is made for the first phase of a two phase slow down and stop procedure, which is part of a three phase vehicle shut down protocol, that is inclusive of any and all possible modalities; that has been designed to initially take aggressive responsible and accountable control as a significant increase to public safety for automotive vehicular travel.

The first phase slowdown is to eliminate, and/or control an operator's ability to accelerate and/or increase the speed of a vehicle; while preserving an energized power steering function and power braking function on the vehicle with protocol determined operator control (ultimately as a standardized procedure). However, also claimed, as it was determined in this technology's initial experimentation, the simple elimination of all acceleration capability from the unauthorized driver is the best single simple improvement to increase public safety in this first stage slow down. But, any and/or all of these three functions can be optionally operator controlled at various application specific protocol levels either preprogrammed or remotely augmented in real time by the appropriate commands as a means to affect a safer controlled phase one slow down for this shut down designed as the initial step in aggressive automated and/or in any remote control scenario.

A further claim is made for the complete and total automation and remote control of any emergency and/or mechanical braking system as found on any and all onboard applicable vehicles, or equipment, when used in any fashion to slow or stop and retain a vehicle in a stationary position by any preprogrammed protocol response either remotely originated or as part of some onboard software or firmware programming, like TRAC's PASSS and PAGSSS programs and MASMP and RPV, to increase public safety.

A further claim is made for the second phase slowdown, stop and secure function performed by a remote command and/or a preprogram timed deployment of a automated emergency or mechanical brake system to slow and stop a vehicle in a stationary position, like all TRAC programs.

A further claim is made for the complete and total automation and remote control of any service and/or hydraulic braking system as found on any and/or all onboard applicable vehicles, or equipment, for any and/or all automated and remote control braking, and especially when used in any fashion to slow or stop and/or retain a vehicle in a stationary position by any preprogrammed protocol response either remotely originated or as part of some onboard software or firmware preprogramming.

A claim is made for the automation and remote control of any air service bake system and emergency brake system utilized on large trucks and busses to assist in this technology's second phase of a vehicle shutdown to slow, stop and secure the vehicle in a stationary position, by first slowly applying the brakes to any rear most tandem axles and wheels (ideally on any trailer first if applicable and attached). This is in a graduated manner until the truck is sensed to have no movement and without locking up the wheels (controlled by wheel sensors and/or rear end drive train sensor), and then to secure the vehicle electrical solenoid(s) dump the maxi can pressure to hold the truck and/or bus in a stationary position. TRAC software would control solenoid air valves (bellows), etc. and the ones in the appendix through programmable modular software, firmware and hardware.

A claim is made for heavy equipment and revolving track equipment for agriculture, construction, commercial applications and military equipment) to control through TRAC's CASMP and FACT programs, the braking of the left and right side track(s) independently and/or jointly to effectively control steering and braking through either automation of the operator controls, responsively connectable and/or automated braking in the final drives and/or in the transmission clutches and/or any electrically controlled hydraulic clutch packs located anywhere in the powertrain. Electrical control devices constructed to either push, pull or rotate physically and/or made connectible electrically to interface with the PFN/TRAC system.

The power plants RPMs are controlled in accordance with the same modalities covered for gasoline and diesel engines and/or for any electrical drives. All remote control device modalities would be determined by the particular equipment parts and design. However, the protocol for a controlled slow down and stop in a stationary position would incorporate the de-energizing of the track drives as well as the reversing of their direction and braking deployment if necessary for stop and guidance. Often times, the drives are so resistant to inertia movement when the are not energized either through mechanical gearing and/or hydraulic or electrical energy that in the de-energized state they will stop moving and remain in the stationary position at most any incline.

All track and/or rail transportation vehicles (trains, trams, subways, and their individual cars) outfitted with application specific PFNs will provide backup and/or augmentation to any preexisting automated and/or remote control system in existence and/or enhance any of these systems by providing real time tracking monitoring and remote control through computer and automated network links to better coordinate intersecting traffic between road, rail, and waterway shipping and boating by being able to control it through TRAC trip computers, controlling the speed of the trains through them. Diesel motors, diesel over electric motors, electric motor controllers and/or stepper motor control systems, and/or any operator mechanical controls, their cables, linkages, hydraulic lines, air lines, electrical control service lines and circuits in a similar manner as has been detailed for the automated and remote control peripheral actuating devices for the road vehicles. And any and all such other necessary automated and remote control application specific devices are configured by the electrical specifications and functional requirements from all the detailed mechanisms and are placed to control any electrical services, compressed air or gasses (steam) or hydraulic fluids utilized to energize any and all of the control components and/or devices to control speed and braking of any trains, trams, subways and/or rail transportation. A special PFN claim is made for individual rail car tracking to provide information to rail system customers and users as to the location of a particular load, and/or audio and/or video surveillance for increased security as well as specially provided sensing devices, application specific is an option for sensitive, and/or valuable loads and/or security scenarios.

A further claim is made for the remote control of all boating and shipping vessels by also outfitting them with application specific PFNs for tracking, monitoring and management world wide with the same types of devices as detailed for the different type of power plants in any and all of the land based vehicles for throttling and/or increasing their RPMs as a general rule, transmissions and rudder controls will be electrically controlled from the PFN for automated and remote control guidance and forward and reverse functions. These vessels use the same automations detailed for operator controls, as well as employing electric control over air, steam, hydraulic, mechanical and other additional electrical devices and components to control and power actuate boat controls, where and when applicable and needed. The systems will be application specific to the size of the craft and the amount of preprogrammed and/or automated system already present in any vessel for PFN/TRAC to interface with.

A further claim is made for agriculture and farming equipment to be automated for remote control with much of the same detailed automated control mechanisms, and with tracking and monitoring to control equipment from computer operating monitoring systems and networks for cultivating and harvesting protocols as well as monitor and controlling ecological impact and resource management through application specific PFN systems and special application specific equipment programming and functions managed by Commercial Application Specific Mangement Programs, which is operated through TRAC in the PFNs.

A claim is made for all other commercial, factory, and industrial equipment either minimally mobile and/or stationary to all be outfitted with application specific PFN and TRAC systems and peripheral actuating devices to remotely control them and shut them down by the same detailed modalities for all of the above reasons detailed throughout the related patents. But once again, application specific electrical and mechanical actuators and management programming will be responsible for performing these specific automated and remote control functions and providing accountability. These PFNs in multi-equipment setting locations or installations may be monitored by one local central system, which has one land line phone node or satellite hook up with a protected gateway for the PFNs to communicate with their application specific data. These could, in many cases, use short range communications so that any monitoring can be done at a local level with application specific data and then re-transmitted and stored in a redundant manner for analysis in any computer network for any reason and of any size. And if any so equipped machinery could not find a receiving local node for its short range data signal, it would go into its application specific shut down sequence and cease to operate until the proper signal was provided or the equipment was re-programmed. Battery power would be utilized to repeat transmission by any communication devices as a down and lost equipment location function and continued by the PFN power systems. In solo operation the PFNs will be monitored and remotely controlled by commercial servers with (tele communication systems and long range RF equipment) primarily that can provide local service as well as internet gateway hookups for inexpensive diverse location commercial monitoring - (this will also be used in the agriculture applications).

A further claim is made for all home and private applications of PFNs that will be used in conjunction with any existing security system, home computer controller systems and/or this technology's home equipment and utilities management system to organize, store, complete phone node contact and transmit data for utility and/or equipment use for any billing, personal records and/or taxing for same, as well as, provide services for repair and maintenance purposes, and also to provide and support home healthcare and nursing telemetry and automated functions. All equipment can be outfitted with application specific PFNs so that they will only operate for the rightful owner and can not be transferred to another location without the proper authorization, or they will send out a recognizable identification signal to all multi band PFN system receivers to report their location of the displaced equipment to the registered owner by phone node connections to the internet, E-mail managed by the PFN/TRAC program HASMP..

A further claim is made for the control of any and all ignition components and modules to control engine RPMs and/or maintain a run position through electronic signals, either, by direct interfacing with OEM components and/or indirectly providing a specific signal especially generated to create a preprogrammed OEM response from the standard OEM's firmware and/or software through this technology's trickster circuits for any desired response (application specific). These circuits can employ electro/mechanical relays or switches and/or be constructed of solid state circuits. Also the complete engine kill or shut down of the power plant is the 3rd phase of the three phase shut down for vehicles either done as a preprogrammed time activated function or as the result of a remote control signal received and a predetermined response to this signal.

A PFN claim is made for any responsively connectable interface with actuating devices for all machines that utilize any type of electrical current and/or signal to control peripheral devices and/or accessories for any vehicle, machine or equipment application.

A further claim is made for the "coyote or trickster" circuits and/or any circuits responsibly connectable to a PFN TRAC system or any other processor or any type of relay control system designed to provide an electrical signal in order to deceive any other processor's software and/or firmware so that it will perform one of its preprogrammed tasks as an additional automated function, and/or as a remote control function and/or as any part of any interface functions for synergistic machine controls

A second claim is made for the "coyote sensing" circuits or any other circuit that is designed to intercept and determine if a specific electrical signal is sent to a or OEM processor or automated relay system and utilize that signal in any manner to trigger or perform other automated functions via any control relays, a PFN and/or any other processor and/or interrupt that signal to the OEM processor if so desired, and/or perform any remote control or communications functions or memory functions as a result of detecting the electrical signal.

A further claim is made for special responsive connections for all the "Coyote circuits" or any other circuits that are designed to create any type of plug and play connectors as a universal modality to interface and/or integrate; electrical parts, components, devices, C.O.T.S. personal products or different manufactures products by design to create a more inclusive product; and/or to seek a standard for any universal connections physically and/or electrically.

A PFN claim is made for any responsive connectable report back sensing devices and components that provide monitoring data on machine remote control, area surveillance and environmental sensing, operator activities and equipment operational data, which can also make all of these transactions accountable, like through TRAC software.

A further claim is made for any type of physical protection; for any reason, that is deemed necessary and/or made mandatory by any standards codes rules regulations or laws by any appropriate governing bodies, for any electrical components and their hardware connections, control circuits locating equipment communications devices, circuits, peripheral control devices and sensory equipment including audio and video systems.

A claim is made for any protected signal from a PFN or any other machine messaging system for accountable software tracking string and file access log, as well as any special conditioning of any remote signal (encrypted).

A claim is made for an unsecured signal from a PFN as part of any remote signaling for machine messaging that does not require any special signal conditioning.

A further claim is made for web access, to monitor remote control function in real time and to mass store data off-board as transmitted by the PFN and/or other machine messaging systems and to access the web for personal use from the PFN for E-mail messaging and/or remote tracking either personally, as commercial service and/or for legal and/or governmental reasons.

A further claim is made to be the sole provider of PFN data and any use of that data and/or any other machine messaging system's data utilized on the web when it is a part of monitoring, tracking and/or remote control and/or accounting for machine use and its impact on the environment, societies infrastructure, equipment's safe use, any security functions, any data analysis and/or any remote control function of any kind in any time frame.

A claim is made for responsive connectable actuating devices to remotely control equipment.

A claim is made for responsive connectable actuating devices to remotely control machines.

A claim is made for responsive connectable actuating devices to remotely control vehicles.

A claim is made for report back data from any responsive connectable on-board sensing devices and/or audio video components processed by the PFN and/or any comparable machine messaging system for any piece of equipment ,machine and/or vehicle either to a local remote location or worldwide.

A claim is made for the Spider Eyes program and Green Eyes or watch 1100 and 1200 community and environmental watch programs carried on the web as web pages for the local , state or regional, national and world web pages providing data collected from PFNs and/or processed through TRAC, by service providers to government standards and protocols or directly provided by the government agencies, and/or other participating organizations and educational institutions.

A further claim is made for the 1100 spider eyes program to be part of any interactive highway system and law enforcement protocols that are approved by law to perform traffic control functions and surveillance functions and crowd control functions through remote control of any and all peripheral devices on any piece of equipment through any and/or all PFNs as so deemed appropriate and necessary by law, with any violations and misuse fully accountable through TRAC programs or any similar products.

A claim is made for the 1100 Helping Hand connectable car link system that physically connects two or more vehicles to tram, tow or train together either for towing purpose or as part of any mass transit for individual cars, using its automated coupling and communication links, and its automated flow control valve, that is detailed here as basic flow control technology for fluid, air and gases to be applied to other functions in steering, braking and other automated and remote control application for the operation of many other functions, including operating military ordinance as per any vehicle's control power for peripheral devices.

A claim is made for a highway device for fuel injected cars or systems as a fuel caddy that provides for the quick connect to the fuel line pressure system on a vehicle and the bleeding off of enough fuel to refuel another vehicle through a length of hose which is sealed when disconnected. Also this device can be used to fuel small engine devices like lawn mowers etc. foregoing the need to store flammable fuel in separate containers.

The following claims relate to the specific equipment disclosed in the present application:

HEAT SEAL SYSTEM

A claim is made for a sealing and unsealing system and/or bond mechanism that uses a conductive metal wire or thin strip coated with a substance that liquefies when the wire is heated by shorting out the opposite poles of the same power source on either end of the of the thin metal strip or wire. This system is to be used in the automotive industry and the electronics industry to seal and unseal electrical components with different plastics, waxes and adhesives at varied thermal ranges for application specific purposes to seal, unseal and reseal unions or joints between materials.

A further claim is made for the system to be configured with a security switch mechanism that permits the shorted condition of the power source through the metal strip when the appropriate electrical signal and or mechanical switch is closed to complete a circuit through the thin wire. There is a large amount of applications for unsealing bonds in containment systems, or between any two surfaces to be sealed.

NOTE: on the trickster circuits, the PFN computers or processors or any associated computers interfaced in the PFN will be capable of performing trickster functions by, for example, sensing and/or sending a specific signal to a OEM controller or another computer to elicit a preprogrammed response from these other processors. In this case only physical connections are generally needed and the appropriate software or firmware in the master computer in this master\slave relationship between the interfaced processors.

GEAR DRIVEN ACTUATORS

Strip Gears:

The present invention includes the control, via the PFN and/or remotely, of strip gear mechanisms with gear reduction system driven by a matching motor gear dive, with guide channels or mechanisms to perform any application specific movement as determined to be a basic push pull function accomplished with, for example, guides, tracks shafts linkages, cables, belts, sheaves, chains, mating gears and/or sprockets with, for example, the appropriate attachments mounts, anchors, adhesives, melding, welding, screwing, riveting, bolting and/or any linking of connecting surfaces by any connecting hardware to achieve the push pull arcing and or a minimal rotation function.

The present invention includes the control and/or automation of the present emergency brake pedal, via the PFN and/or remotely, for example, as disclosed in Figures 5 and 5.1, including a strip gear with channel guides to anchor to the floor boards and to apply the foot pedal for the emergency brake. This mechanism can push-pull, for example, any pedal, cables, levers, linkages, switches, valves, foot pedal assembly, rotational actuator, arched strip gear, inline gear reduction servo motor system and/or any device that requires linear movement.

Figure 5.1 is a drawing of a motorized arched gear drive emergency brake pedal assembly that replaces the standard manual emergency brake pedal. It has a gear reduction motor and drive and is reversible and can also have a quick release. These can be used in the shut down of the vehicle and be activated when a door is opened for safer boarding and off boarding of mobile vehicles and equipment, as described herein. Also, a seat sensor or belt switch can activate any electrically controlled braking system if more appropriate to the application (fork lifts, bulldozers etc), using, for example, dead man switches (electrically activated not just a mechanical).

Sensing Switch:

The present invention includes advantageously a Coyote circuit for current sensing with a driver circuit to detect a signal either digital, TTL, AC, and/or low voltage DC signals, and then performs switching functions, operational and/or control current to perform electrical tasks that the primary unprocessed low current signal could not perform on its own.

The Coyote circuit of the present invention is is a circuit access switching device designed for the replacement of the manual and/or physical striker switches for the doors, hoods and trunks in the new vehicles. This device can be used in many industries for many reasons and applications. The standard 1003 circuit sensor switch basically can help interface additional activities from the first or primary signal if so desired in a very inexpensive manner.

An automatable cable tension device for emergency brake cables to be used, for example, as a center point cable pull for the automation of the emergency brake system.

The present invention further includes as modality A, a gear motor drive and strip gear configuration for the emergency brake cables under the car as detailed in figure 5 top isometric drawing for the part 200 location for the brake cable tensing systems in figure 1.

A piston system with the same attachment and anchor points powered by air, gasses, hydraulic or fluids mediums and controlled by relay(s) and solenoid(s) and valve(s) is claimed as modality B.

The present invention includes, as Modality C, a ball and or nut screw or worm gear system with the same attachment and anchor points powered by an appropriate motor gear drive and relays to apply the emergency brake by tensing the cables in the same manner (the mechanism works like the nut screw device figure 6).

A solenoid or electric cylinder configuration with the same attachments, and anchor points powered by the appropriate push pull solenoid as detailed in the appendices is considered Modality D.

Modality E includes any COTS product linear actuator with the same attachment and anchor points to perform the push pull function to tension and relax the cable to apply the emergency brake.

The Emergency brake pedal assembly (in it's present COTS configuration) or as an OEM installed improvement to this present system, by making the appropriate modality choice, attachments and anchors for the application specific vehicle.

The present invention includes the attaching of these A-E modalities to perform push pull tasks and/or to tense any cables or relax them to increase and decrease speed and/or RPMS, and to automate and/or remotely control of any piece of equipment, machinery and/or vehicle.

The present invention further includes the attaching of any of these A-E modalities to perform push pull tasks, with any linkage and/or lever assemblies to increase and/or decrease speed, RPMS and or workout by automating and/or remotely controlling, for example, any master cylinders, injection pumps, throttle controls, and/or the carburetor.

Accelerator Pedal Stop Device

The present invention employs the ball nut modality which is electrified to restrict a driver from depressing the gas pedal. However, the other modalities A-E could be employed to achieve this goal to eliminate acceleration of a vehicle and this device can be employed to block any normal function of a control part handles

A separate hand pull emergency applicator device is claimed for the same ball nut modality to apply the hand brake in many vehicles, and here again, A-E modalities can be employed to perform this same task for automated and remote control.

a separate Automated Cable interruption device invention is claimed for any cable device that releases any anchored end of a cable or can interrupt the normal action of a cable through electrical controls for any automated or remote control purpose to control throttles for acceleration.

A separate invention for electrically activated solenoid air and or gasses valve is claimed. A separate invention claim is made for a automated brake modulator valve for the automation of a motorized modulator hydraulic brake valve system, and the flow of brake fluid controlled by solenoid valves to be capable of applying the brakes though electrical controls for automated and remote control purposes.

A separate invention claim is made for automated steering devices that employs rotational actuators and or any A-E modality on the steer gear, shafts, orbital valves rack and pinion stub shafts, steel linkage shaft and powers the actuators with servo or stepper motors and are driven by sheaves, pulleys belts sprocets chains resistance wheels, or gears to perform automated and or remote control functions.

A separate invention claim is made for electrically controlled hydraulic valve to direct flow speed and pressure to any double piston steer pistons to automate steering and or for remote control.

A separate claim is made for remote guidance and activating any of the automated steering invention which have a rotational, sensor disk to confim wheel angle sensed distance data and speed data as well as location data.

A surveillance claim of invention is made for the unattended use of any camera system for surveillance which is a part of any remote control technology for this technology's "green eyes and spider eyes" programs and protocols, as part of any machine messaging network.

The PFN software is programmable and modular software in hardware with embedded software, firmware, and software that can perform remote activities through the PFN controllers. The system is also capable of authorizing and authenticating remote and automated activities for private interactions and commercial use, insurance and legal actions, and for all types of financial transactions and to be approved for these official settings as apart of any standard or certification for automated and/or remote control scenarios for vehicles, machines, equipment and environments.

A special inventive claim is made for the PFN as a Repeater communication device for varied communication equipment, long and short range, and/or with multi-band capability and processor systems. Many PFNs will take a weaker local signal and/or a special signal, and retransmit the signal and/or data over it's long range communication equipment to be used on the Internet or isolated remote monitoring applications for tracking. This is used for tracking persons, for example, pets by all local PFNs reporting coordinates to specified e-mail address special gateway providers and or commercial servers for telemetry.

A special inventive telemetry claim is made for the PFN. The varied communication equipment and processors can be connected to present COTS physical monitoring and nursing care equipment, and used to monitor, report back and/or administer medication from a remote location allowing more freedom to the patient and reducing health care cost and attention. Also with new short-range telemetry RF equipment, the PFN can support these capabilities by wireless with the patient just being in the proximity of a PFN.

Another claim of the present invention is made to a shut down system for vehicles that first slows a vehicle by eliminating acceleration by any of the above modalities, and stops a vehicle by any of the above modalities, and secures the vehicle in a stationary position, with the power plant, engine or other energy source deactivated.

Another claim is made for the PFN for varied communication equipment and processors that can be connected to present COTS physical monitoring and nursing care equipment and be used to monitor report back and administer medication from a remote location allowing more freedom to the patient and reducing health care cost and attention. Also with new short-range telemetry RF equipment the PFN can support this by wireless with the patient just being in the proximity of a PFN.

A special Claim is made for PASSS protocol and program to a shut down system for vehicles, that first slows a vehicle by eliminating acceleration by any of the above modalities, stops a vehicle by any of the above modalities, and the secures the vehicle in a stationary position with the power plant deactivated. PASSS stands for Proprietary Automated Slow Stop And Secure in a Stationary Position. PAGSSS stands for Proprietary Automated Guidance Slow Stop and Secure in a Stationary position and is the next step in this technology's commercial development of this program protocol.

A special Claim is made for Throttle actuators, including those that use a magnetic clutch to engage and disengage a throttle through shaft to limit or control acceleration.

An additional claim is made for any such magnetic clutch attacted to a shaft and can be activated or deactivated as part of any remote control or automated application

A special throttle actuator claim is made for any solenoid locking pin mechanism that engages and or disengages the throttle through shaft to stop acceleration, and to permit acceleration.

An additional claim is made for any such lockin pin solenoid that can link two parts to perform an action or function, and disengage the same parts by activating and deactivating the solenoid for any automated and remote control activity.

A special throttle actuator claim is made for any servo motor or stepper motor that controls the position of the throttle valve through the rotation of the throttle through shaft union with these gear reduction motors for remote control by automation.

An additional claim is made for any servo motor or stepper motor valve or motorized function perform by degrees of activation in opposite directions, including any task automated for remote control especially when it is done with authorization and authentication in memory.

A special accelerator linkage separation claim is made for a solenoid linkage separation system to be activated and deactivated to eliminate acceleration and to resume it for automate and remote control systems.

An additional claim is made for the solenoid linkage locking system for any and all other controls linkage controls in any other applications.

A special solenoid accelerator cable release system for the pedal is made, where the solenoid when activated releases a piston plunger that rides in a fixed position in a guide cylinder that is attached to one end of the accelerator cable, and the other end of the cable is attached to the internal piston plunger. In the fixed position the two piece of cable work as one, and when deactivated the pedal will move the piston plunger in the cylinder but not pull the other cable for automated and remote control applications.

Another additional claim for this invention is made for any cable system in any application for remote control by automation.

A special solenoid, motorized and or piston driven air duct valve claim is made for any additional air throttle valves placed any where along the air intake system of an internal combustion engine gas, diesel turbine or jet to limit air intake to throttle engine RPM or starve and kill a motor by automated and remote control means.

A special information bar claim is made for an automated scroll bar announcement system to display visual messages to surrounding cars during an emergency shut down scenario like PASSS and PAGSSS and or just any emergency stop. A second possible use is to provide a visual communication device for drivers to coordinate intentions where wireless communication are not available for any audio communication. In this case, the scroll bar would be reversed printed and visible to the rear view mirror of the car and between the brake lights and written for normal viewing. Also it would be in different languages, and its messages will be stock preprogrammed messages with corgol statements, and/or programmed through voice recognition technology. The placement and laws governing use will be determined by the appropriate governing bodies and industry standards.

A PFN protective containment and interface claim is made for a multi current supply including 120 volts for lighting home and camping use to operate many 120 volt devices in an emergency situation. Connection outlets are available through the PFN inverter system with weather resistant and lockable covers in the interior, and on the exterior of a vehicle or piece of equipment.

An additional protective PFN interface and containment claim is made for any and all electrical accessories desired to be stored and or operated in, on or off of a host piece of equipment electrical system and to be connectable and responsive with at least one function, even if that is to be energized by the host piece of equipment.

A PFN legal privilege instruction claim is made for the courts, insurance companies to provide their limits on a specific operator licensing by defining the terms, conditions of any individuals protocol to operate a particular vehicle and or piece of equipment at any given time and provide these software instructions to the Trusted Remote activity Controller TRAC in the PFN to track a drivers performance and deploy the PASSS or PAGSSS program, if necessary, to insure public safety or the agreed upon compliance of the conditions to drive. These instructions can be down loaded physically into any single vehicle PFN as the designated vehicle an operator must use and or provided through PFN Communication system with DMV, law enforcement and court phone nodes to any vehicle so equipped with ID systems required for continual driving in the future.

A PFN Steering wheel Identification and driver protocol registration product claim is made. For example, finger print indentification, and other means of identification as well as telemetery for the physical condition of the operator have been well detailed. The steering wheel monitors telemetry functions of the operator, along with the PFN hardware and TRAC software to check driver ID and complete a search for any conditions placed on an operators privilege to drive a vehicle or operate a piece of equipment.

A PFN stock compromised driver protocol software programs products claim is made for the sensed alcohol impaired driver employing breathalyzers, or using the nose and driver performance algorithms and assisted guidance and warnings as well as interdiction means like PASSS and PAGSS with law enforcement. The consciously aware driver check program for ill (Heart attack ect.) or sleepy drivers, monitors eyelid and pupil changes and driver performance and assistance devices programs activated and recorded along with audio interrogatories that require specific preprogrammed and pre-trained responses in the normal state, including optional speech recognition patterns, and the like.

The aggravated driver program takes blood pressure and monitors verbal tones and expletives physical behaviorior and temperature. This program optionally includes contact thermometers in the steer wheel, and infrared camera data of the operator, as well as erratic and/or excessive speed, and compares it to a normal driving state as developed over time

The habitual speeder program will have trail markers set in the GPS program (like Delome Street Atlas) for known highway speeds so when a vehicle is traveling a road at the higher speed, the program tells the operator of the violation and monitors the drivers response and reports it back to the authorities for the intolerable level of access speed.

Also the pensive or timid driver program detects and determines if an individual is a nuisance on the highway and must either drive at an increased speed or perform maneuvers with greater speed an proficiency. A running program of driver or operator data will be available for the driver to review and/or receive alert notices when a potentially deficient characteristic is detected in their driver performance. Obviously all healthy individuals living long enough will be licensed for decreasing levels of self driving, and will be using and relying more on automated guidance and remote control systems. This will be true of the impaired as well physically emotionally and mentally.

A PFN to provide data back to the Internet claim is made for video equipment employed and deployed on the privately owned vehicles to capture events in real time and through the accountable software provide real time video to news media for pay.

A further claim is made for all other telemetry data to be provided for commercial purposes from a PFN as a fee for access with the expectation of any and all data deemed by government as essential and apart of necessary safety equipment and public safety systems and or national security. However the technology provides for a reimbursement of the citizen for the publics use of their equipment in the form of data recorded and reported for tax rebates, for example, in the ownership and operational costs of the host vehicle and the PFN systems. This technology accomplishes this through it's Trusted Remote Activity Controller and the Trusted Remote Activity controller system embedded in the varried computer networks the Internet and the World Wide Web. Telemetry data is gathered and/or processed through a PFN and TRAC software system, analog, digital audio, visual and/or any application specific data processed through the system.

A further claim is made for the PFN TRAC device and systems to be in the form of COTS and proprietary products interfaced either as separate devices and/or integrated hardware parts and components (circuits, circuit boards, processors, receivers, transmitters, locating circuits, memory devices, wires, chips and connectors etc.) and COTS software and firmware products supported by the appropriate hardware and managed by this technology's trusted remote activity controller and accompanying system that authorizes, authenticates and then stores, for example, in a protected accountable memory, redundantly in two places locally and in many cases in atleast one remote location.

A further black box claim is made for the physical removal of data from the PFN, and an additional claim is made for the remote removal of data from the black box by wireless protected signal, land line protected signal, and or light transmission of data to be used as court and or legal evidence, to access or analyse use, abuse and or assign a monetary value for any and all of the above.

A PFN service product asseses the mechanical system of the host piece of equipment through application specific programs provided by the OEM's of the host machinery and or provided by this technology. A large software menu list of service providers with email addresses that the PFN will call up and send the data to, and receive prices back for, the consumer to evaluate as an automated function, all different technical appraisals will be structured into a uniform estimate appraisal sheet and be printed out off the PFN or connected to a computer or provide a memory disk or transfer component for a computer, or just email the results to the computer terminal through the PFN communication equipment to where ever the owner\operator desires.

An invention for a motor\generator brake device is claimed for utilizing an electric drive motor as a generator by appropriately energizing the proper fields to slow the vehicle down as a braking device, and allowing the inertia energy to be converted into electrical energy for any on board storage batteries, and/or to augment any electrical energy or power source to increase the travel distance of any electrically powered equipment machinery and or vehicles.

An invention for a separate processor Electronic Steering Control Module (ESCM) with, for example, the stamp computer or the 188 euroboard controller or comparable microprocessor with the same firmware and or software programming used for the PFN to manage real time video and/or digital signals with other telemetry data and connectable interfaces to perform guidance activities for automated and or remote control scenarios with proprietary PFNs and any other processor s or as a stand alone device.

The present invention also includes a police hand held traffic control device and cruiser system. This device incorporates the COTS radar systems and special radio frequencies and FACT (federal authoization control code) which is encrypted at the factory in the base PFN security section to allow law enforcement to deactivate a specific vehicle by communication with it and trading the necessary integrity data to justify an aggressive shut down like PASSS and PAGSSS, or other uses.

This is part of the spider EYEs program and will have security checks onand off the vehicles for review in any forced shutdow. This program will run a video record, audio record and telemetry record synchronized in time and geographic location and will be monitored in real time by law enforcement as well as the suspect drivers vehicle and any remote E-mail storage he chooses to send a record.

In a mobile scenario for the cruiser, a hologram target image and laser light guided modulated narrow beam RF signal will guide the FACT access codes to the appropriate reception sensor for the signal to begin a dialog with the suspect vehicle. During the process the officer's badge or sn number will be registered with both vehicle and any interactive community communication equipment or the interactive high way will authenticate a legitimate official shut down of the suspect vehicle and all is performed though the PFN and described in this and the related application. TRAC software will authorize authenticate and document to the local memories and at least one remote location.

As described above, the present invention includes an automated emergency or manual foot brake deployment systems including emergency foot brake applications by linear actuators (ball or nut screw systems or worm gear configurations). Any magnetic lock leverage and load transfer device and or walking ratchet mechanism. Alternatively, an emergency foot brake applications by arched strip gear actuators, for example, like the one displayed in figure 5. In addition, an emergency foot brake applications by piston actuators with pressure mediums is included. Emergency foot brake applications by piston or diaphragm actuators operated by vacuum, and the like.

The present invention also includes an automated and remote control device for the service brake performed through electromagnetic devices, Automated and remote control of any service brake operated through any PFN system due for is also described.

Alternatively, an automated and remote control device for the emergency hand pulled center pulled brake systems is also provided.

List of items

Emergency brake cable controls for the pedal, emergency brake cable forthe center hand pull mechanism, rotational steering controls for the steering column, the steer gear boxes orbital valves any rotational shaft linkage speed controls electrically operate throttle, close off valves ignition module eliminator or standard ignition shutdown system, air, spark, fuel, power plant controls, power train controls vehicle telemetry, environmental telemetry, operation and operator activity telemetry.

What is claimed is:

1. A real-time vehicle or equipment management system including at least one of a security function that restricts unauthorized access thereto and a primary focal node (PFN), comprising:

at least one sensory device monitoring and reporting on data including command function results of onboard peripheral devices and equipment with application specific data and optional application specific geographic coordinates corresponding to the application specific data;

at least one memory, operatively connected to said at least one sensory device, and located in or on the vehicle or the equipment in a secure manner, storing information in a secure manner, including storing a plurality of interface protocols for interfacing and communicating, said memory equipped with at least one of an application specific backup device and a redundant memory function recording application specific automated and remote control command strings to on-board peripheral devices that perform automated and remote control functions;

at least one processor responsively connectable to said at least one memory, and implementing the plurality of interface protocols for interfacing and communicating with the plurality of external devices; and

a plurality of external devices supported by at least one interface for C.O.T.S. products and accessories, the plurality of external devices interfacing with said at least one processor via at least one of the plurality of interface protocol, including at least one of: pagers, wireless phones, radio frequency equipment, locating equipment systems, cordless phones, laptops, one way communication device, two-way communication device, and computer organizers, at least one of said plurality of external devices including a report back capability to report the data collected by said at least one sensory device to at least one remote location including the application specific data that is stored in the PFN.

2. A real-time vehicle or equipment management system according to claim 1, wherein said plurality of external devices includes at least one of: an electrical actuating accessory and at least one peripheral device controlling automated remote

control functions utilizing at least one of electricity, compressed air, gases, vacuums, hydraulic and fluid pressure.

3. A real-time vehicle or equipment management system according to claim 1, wherein said plurality of external devices includes at least one of: electro magnets solenoids, motors, mechanical or silicon relays, pistons, cylinders, pumps, valves, adjustable valves pindle valves cables, linkages levers, shifter forks, paws, ratchets, catches, couplers, spring returns, gearing or power transfer mechanisms cases, brake pads disk assemblies, or drums, clutches and/or interlocking drive mechanisms, spined hub collars and shafts.

4. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices including the report back capability to report the data collected by said at least one sensory device on at least one of a responsively connectable electrical actuating accessory and peripheral device via at least one of a camera, transducer sensors that provide an electrical signal, pressure sensor, vacuum sensor, surrounding environmental time and distance measurements, and onboard device position sensing,

5. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices include at least one of a responsively connectable electrical actuating accessory and peripheral devices to control vehicle or equipment speed by controlling a physical position of a throttle though shaft on any air fuel mixture system or to energize a power plant for internal combustion engines.

6. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices include at least one of circuitry, module, processor, device, component, firmware, and onboard board software that functions to control at least one of an electric stepper motor and solenoid for at least one of throttle through shaft control and drive by wire modalities to control at least one of electric drive motors, electric drive flywheel inertia power plants, drive

trains to control vehicle speed, and controlling electrical energy production or generation using an on-board chemical conversion system.

7. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices include at least one of a responsively connectable electrical actuating accessory and peripheral devices to control and monitor onboard real-time production of alternative fuels, waste products, heat production, and by products for power plants.

8. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices include at least one of:

at least one fuel throttling device designed to at least one eliminate, limit, and control an injection pump, thereby providing the necessary fuel combination component for operation;

at least one electrically controlled solenoids valve, stepper motor, and pindle valve to control fuel flow;

at least one driver controls and solenoid to activate cylinder releases, optionally including a jake brake;

at least one clutch automated via controls to energize disengagement and reengagement of said at least one clutch.

9. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices includes at least one of an emergency, mechanical, and hydraulic braking system automation and remote control the vehicles or equipment, when used in any fashion to slow or stop the vehicle or equipment, and optionally de-energizing track drives and reversing direction.

10. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices include at least one of an air service brake system and Maxi can emergency brake system utilized on trucks and buses to slow, stop and secure the truck or bus in a stationary position, by first

slowly applying brakes to rear most tandem axles and wheels in a graduated manner until the truck or the bus is sensed to have no movement and without locking up the wheels responsive to feedback from at least one of wheel sensors and a rear end drive train sensor, and optionally securing the truck or the bus and dumping the maxi can pressure to hold the truck or the bus in a substantially stationary position.

11. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices includes at least one brake system controlling left and right side track independently or jointly to effectively control at least one of steering and braking through automation of at least one of operator controls, drives, transmission clutches, electrically controlled hydraulic clutch packs located anywhere in the power train for heavy equipment, revolving track equipment, agriculture, construction, commercial applications and military equipment.

12. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices include at least one of a braking system and a fuel control system to perform a vehicle or equipment slow down and stop procedure, comprising a multi-phase shut down protocol, including:

a first phase slow down to at least one of eliminate and control an operator's ability to accelerate and increase the speed of the vehicle or the equipment, while optionally preserving an energized power steering function and power braking function on the vehicle or the equipment;

a second phase slow down to perform a stop and secure function by at least one of a remote command and a preprogrammed timed deployment of at least one of an automated emergency and mechanical brake system to slow and stop the vehicle or the equipment in a stationary position; and

a third phase shut down to completely disable the equipment or the vehicle via at least one of a preprogrammed time activated function and a remote control function to the vehicle or the equipment.

13. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices include a tracking and monitoring system to provide real-time tracking, monitoring and remote control through computer and automated network links to coordinate intersecting traffic between road, rail, and waterway shipping by controlling at least one of diesel motors, diesel over electric motors, electric motor controllers, stepper motor control systems, operator mechanical controls, cables, linkages, hydraulic lines, air lines, electrical control service lines and circuits.

14. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices include a backup system to provide back up to any automated, remote control system.

15. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices function to control electrical services, compressed air, gasses, steam, hydraulic fluids utilized to energize at least one control component to control speed and braking of at least one of trains, trams, subways and rail transportation.

16. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices function to track and provide information to rail system customers and users of a location of a particular load, and optionally including audio and video surveillance for increased security, and sensing devices to sense at least one of sensitive and valuable loads.

17. A real-time vehicle or equipment management system according to claim 1, wherein the vehicle or the equipment includes application specific primary focal nodes for at least one of:

tracking, monitoring and controlling worldwide the vehicle or the equipment to at least one of throttle, increase and decrease revolutions per minute;

controlling transmissions and rudder controls for automated and remote control guidance, forward and reverse functions;

controlling air, steam, hydraulic, and mechanical electrical devices.

18. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices include at least one of agriculture and farming equipment to be automated for remote control, tracking and monitoring including control of equipment from computer operating monitoring systems and networks for cultivating and harvesting, as well as monitoring and controlling ecological impact and resource management.

19. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices includes ignition components and modules to control engine revolutions per minute, maintain a run position through electronic signals via at least one trickster circuit.

20. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices includes at least one of a coyote circuit, a trickster circuit, and other circuit responsibly connectable to the PFN or processor providing a signal that deceives another processor into performing a preprogrammed task, as an automated function, a remote control function, and an interface function for synergistic machine control.

21. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices includes a coyote circuit providing a signal that deceives another processor into performing a preprogrammed task, including at least one of an automated function, a remote control function, and an interface function for machine control.

22. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices includes a coyote

circuit used to intercept and determine if an electrical signal is sent to a processor or automated relay system and utilize the signal to trigger or perform automated functions.

23. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices includes at least one of a coyote circuit and other circuit used to create a plug and play connector as a universal modality to interface with at least one of electrical parts, components, devices, C.O.T.S. personal products or different manufactures products.

24. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices includes at least one report back sensing device that monitors data on at least one of machine remote control, area surveillance, environmental sensing, operator activities and equipment operational data.

25. A real-time vehicle or equipment management system according to claim 1, wherein the real-time vehicle or equipment management system is located in multi-equipment locations and are monitored by at least one local central system which includes at least one land line phone, node, and satellite link with a protected gateway to communicate with application specific data, including at least one of short range communications so that monitoring can be done at a local level with application specific data and then transmitted and stored in a redundant manner for analysis in a computer network, and if no local level node is found, the vehicle or the equipment would enter an application specific shut down sequence and cease to operate until a predetermined signal was provided or the vehicle or the equipment was reprogrammed.

26. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices includes at least one application used in conjunction with a security system, home computer controller system, household equipment and utilities management system to organize, store,

complete phone node contact and transmit data for utility and/or equipment use for any billing, personal records and/or taxing for same, as well as, provide services for repair and maintenance purposes.

27. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices includes the function of operating at a specific location and not being transferrable to another location without authorization, and when transferred in an unauthorized manner, the at least one of said plurality of devices transmits an identification signal to report the location of the displaced equipment.

28. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices are supported by a universal interface for separate C.O.T.S. products and accessories, the at least one of the plurality of external devices interfacing with said at least one processor via the at least one of the plurality of interface protocols, providing the capability of the at least one of the external devices to be at least one of remotely controlled and remotely operated.

29. A real-time vehicle or equipment management system according to claim 1, wherein said real-time vehicle or equipment management system is constructed application specific in physical structure to house and provide for optional easy to remove and replace said plurality of external devices via at least one of: compartments, shelves, trays, cassettes, cartridges, and bins.

30. A real-time vehicle or equipment management system according to claim 1, wherein said real-time vehicle or equipment management system is utilized for accountability though automated onboard preprogrammed monitoring and data storage, including an optional backup system, of remote control activities in at least one of vehicles, equipment and machinery use.

31. A real-time vehicle or equipment management system according to claim 1, wherein said primary focal node supports at least one of application specific software protocols and hardware systems for industry standards for recorded data as determined by at least one of codes, specifications, rules regulations, and laws, for at least one of vehicles, equipment or machinery use.

32. A real-time vehicle or equipment management system according to claim 1, wherein said real-time vehicle or equipment management system includes redundant remote storage in at least one remote location in at least one application specific industry standard protocol as determined by at least one of codes, specifications, rules, regulations, data handling procedures and laws for at least one of equipment, machinery and vehicle use.

33. A real-time vehicle or equipment management system according to claim 1, wherein said real-time vehicle or equipment management system is at least one of global network, web and Internet accessible to monitor remote control function in real time and to mass store data off-board as transmitted by the PFN and/or other machine messaging systems and to access the web for personal use from the PFN for E-mail messaging and/or remote tracking either personally, as commercial service and/or for legal and/or governmental reasons.

34. A real-time vehicle or equipment management system according to claim 1, wherein said at least one of said plurality of external devices are supported by a universal interface with at least one of a Spider eyes program, a Green Eyes program, a community and environmental watch programs carried over at least one of a global network, local network, world wide web, and Internet for local, state, regional, and national communication, providing data collected from the PFN and processed through service providers to government standards and protocols or directly provided by the government agencies, or other participating organizations and educational institutions.

35. A real-time vehicle or equipment management system according to claim 1, wherein the real-time vehicle or equipment management system is used in conjunction with an interactive highway system and law enforcement protocols to perform traffic control functions and surveillance functions through remote control of at least one peripheral device on the vehicle or the equipment through the PFN.

36. A car link system that physically connects at least two vehicles as at least one of a tram and train for towing or for a mass transit for individually connectable cars, optionally including at least one of an automated coupling, at least one communication link, at least one automated flow control valve, and at least one steering, braking and other automated and remote control application.

37. A highway device for fuel injected cars or systems, comprising a fuel caddy providing a quick connect to a fuel line pressure system on a vehicle, and removing sufficient fuel to refuel another vehicle through a length of hose which is sealable when disconnected.

38. A real-time vehicle or equipment management system including at least one of a security function that restricts unauthorized access thereto, comprising:

at least one sensory device monitoring and reporting on data relating to the performance or the actuation of the vehicle or equipment;

at least one memory, operatively connected to said at least one sensory device, and located in or on the vehicle or the equipment in a secure manner, storing at least temporarily information regarding the performance or actuation of the vehicle or the equipment;

at least one processor responsively connectable to said at least one memory and said at least one sensory device, and coordinating collection of the information regarding the performance or actuation of the vehicle or the equipment; and

a plurality of external devices supported by at least one interface and interfacing with said at least one processor via at least one interface protocol, including at least one of: pagers, wireless phones, radio frequency equipment, locating equipment systems, cordless phones, laptops, one way communication device, two-way communication device, and computer organizers, at least one of said plurality of external devices including a report back capability to report the data collected by said at least one sensory device to at least one remote location.

39. A real-time vehicle or equipment management system including at least one of a security function that restricts unauthorized access thereto, comprising:

at least one sensory device monitoring and reporting on data relating to the performance or the actuation of the vehicle or equipment;

at least one processor responsively connectable to at least one sensory device, and coordinating collection of the information regarding the performance or actuation of the vehicle or the equipment; and

a plurality of external devices associated with or a part of the vehicle or the equipment, and supported by at least one interface and interfacing with said at least one processor via at least one interface protocol, including at least one of: pagers, wireless phones, radio frequency equipment, locating equipment systems, cordless phones, laptops, one way communication device, two-way communication device, and computer organizers.

ABSTRACT

This application describes completely in many unique ways and detail all the devices to reduce a vehicle's speed and/or reduce a machines RPM's and/or stop any piece of equipment's as well as guide it if mobile through automated controls. First to slow it down, and guide it and/or control it if necessary (i.e., other pieces of equipment). Secondly it discusses how to stop any piece of equipment completely. And thirdly, the invention secures it in a safe stationary position either entirely or any number of specific moving parts. Many of these systems are initially here described to slow, reduce speed, steer, stop and/or secure equipment functions. However, they also can be used to increase a piece of equipment's functions. In other words their variations are completely capable to serve any remote or automated controls on a vehicle in the future to provide full robotics systems, e.g., for automated transportation systems, automated manufacturing, etc., either through individually isolated remote control systems and/or interfaced with other off-board systems through communication links, gateway computers, computer networks and the world wide web for inexpensive long distance monitoring and remote control. The invention focuses on the automobile industry but as has always been maintained throughout all these applications these devices and systems are designed to control every piece of equipment. The invention includes various accountable protocols and commercial developments to control speed, brake and steering for an automobile shut down to be performed through automation to a safe controlled secured deactivated state to be considered as a basis for a standard in aggressive vehicle remote control and/or to control and guide a vehicle and/or piece of equipment through many different automated systems.

FIG 1

FRONT AND REAR DRIVE AUTOMOBILE COMPONENTS

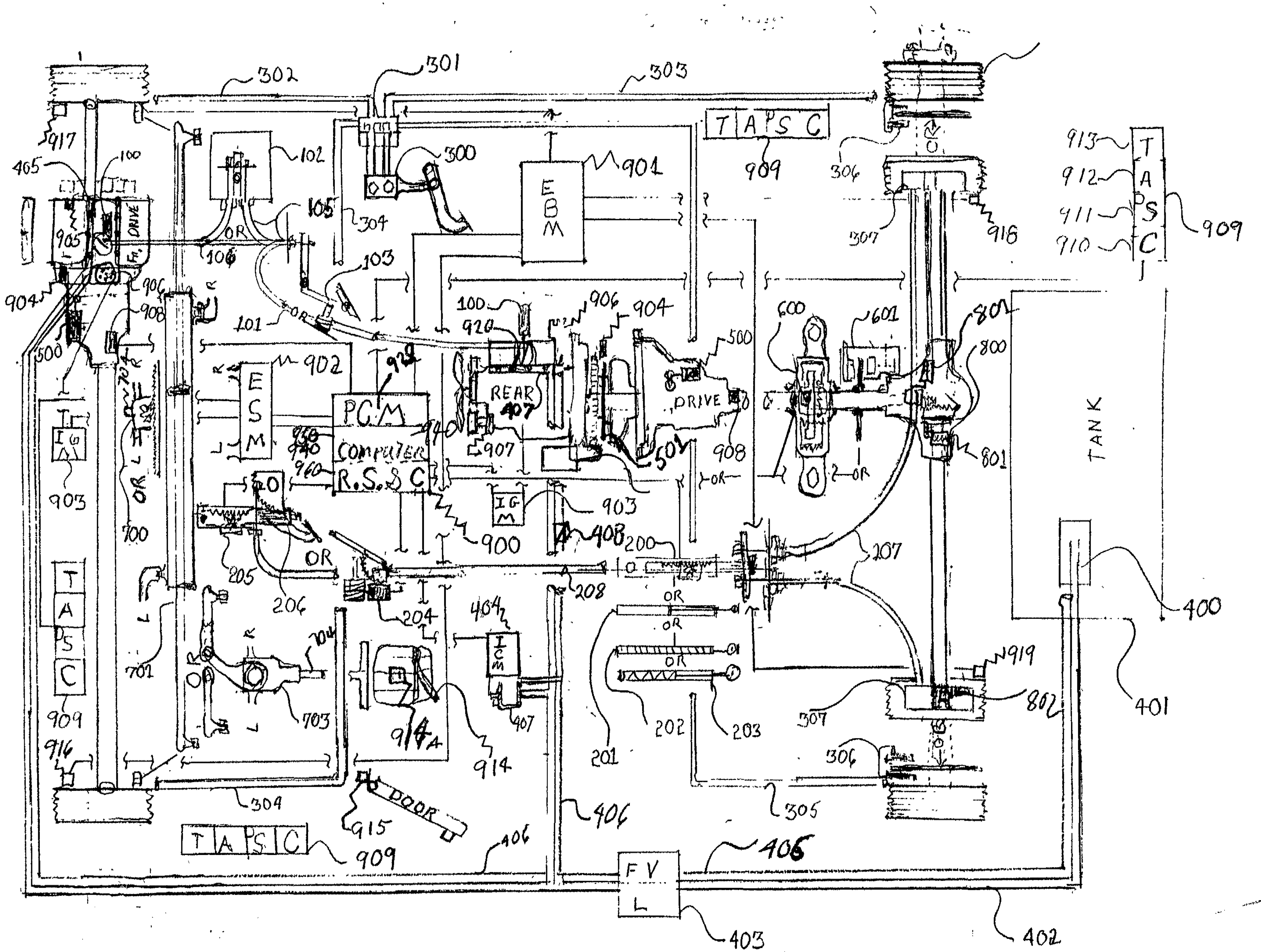

FIG 2

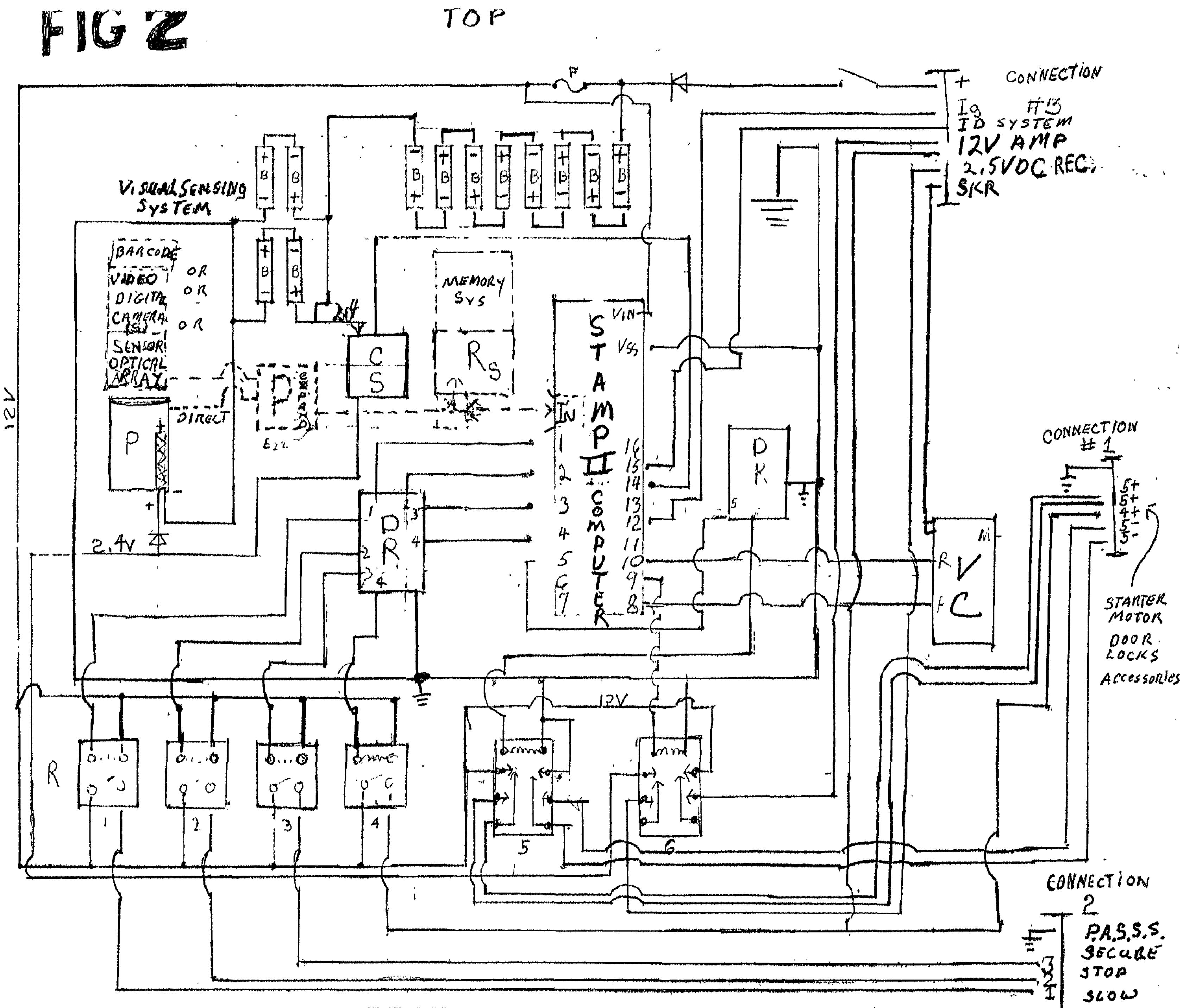

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FIG 2.1

PROTECTED PRIMARY MANAGEMENT SYSTEMS

One and Two Way PFN's

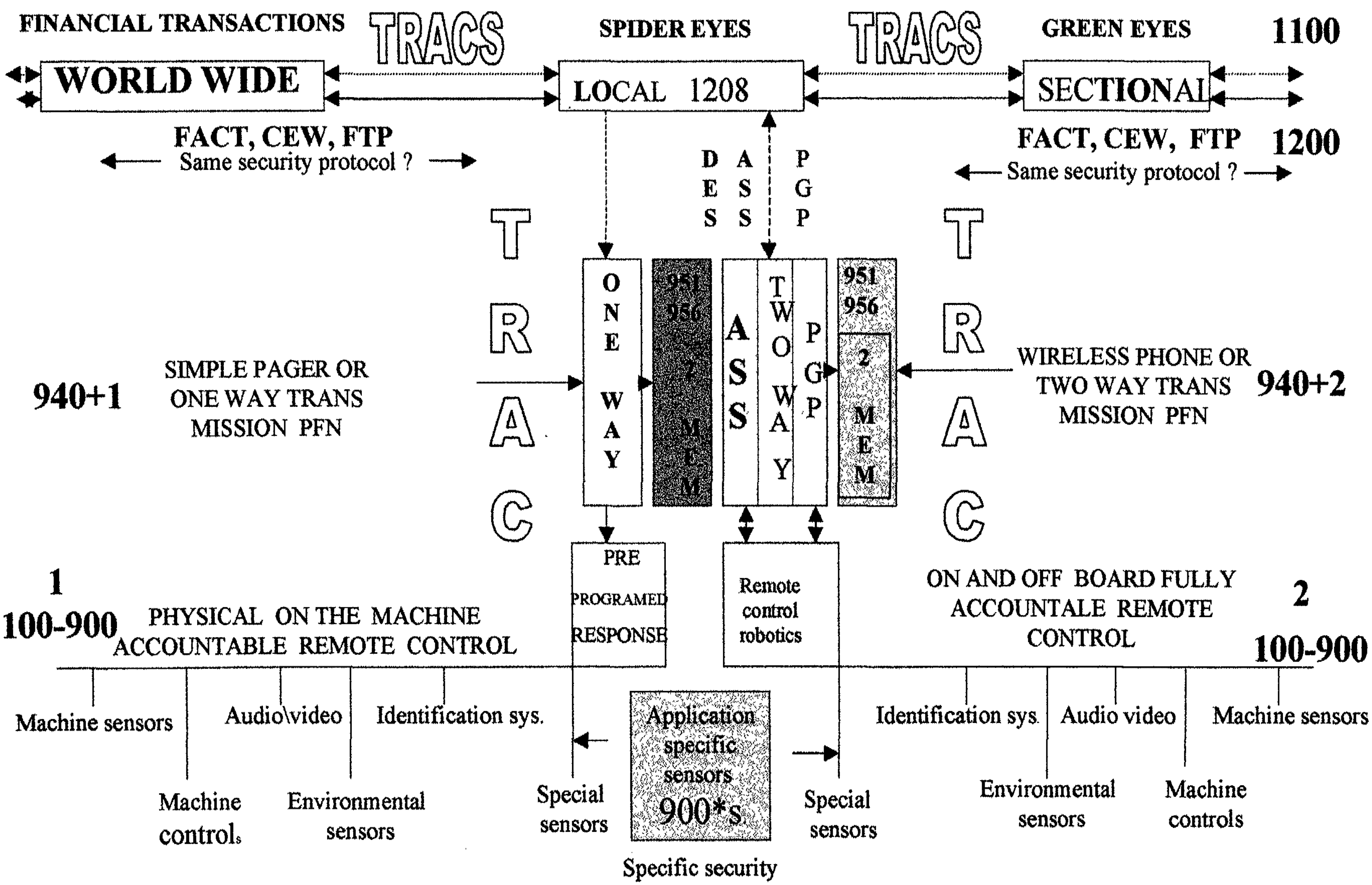

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FIG 2.2

Application specific wall structures for PFNs

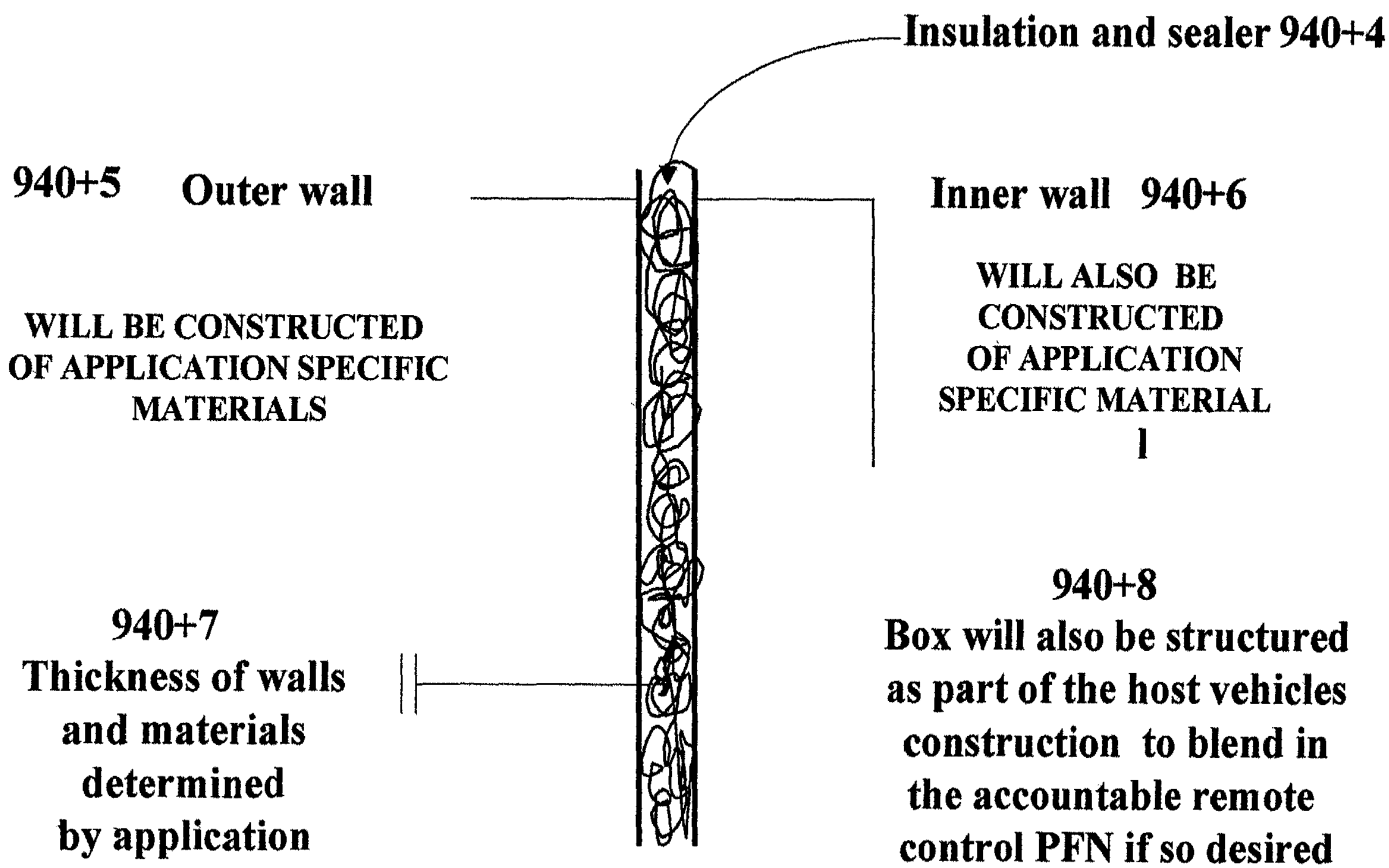

FIG 2.3

REMOTE MONITORING AND MANAGEMENT NETWORK(S) FOR PFN's

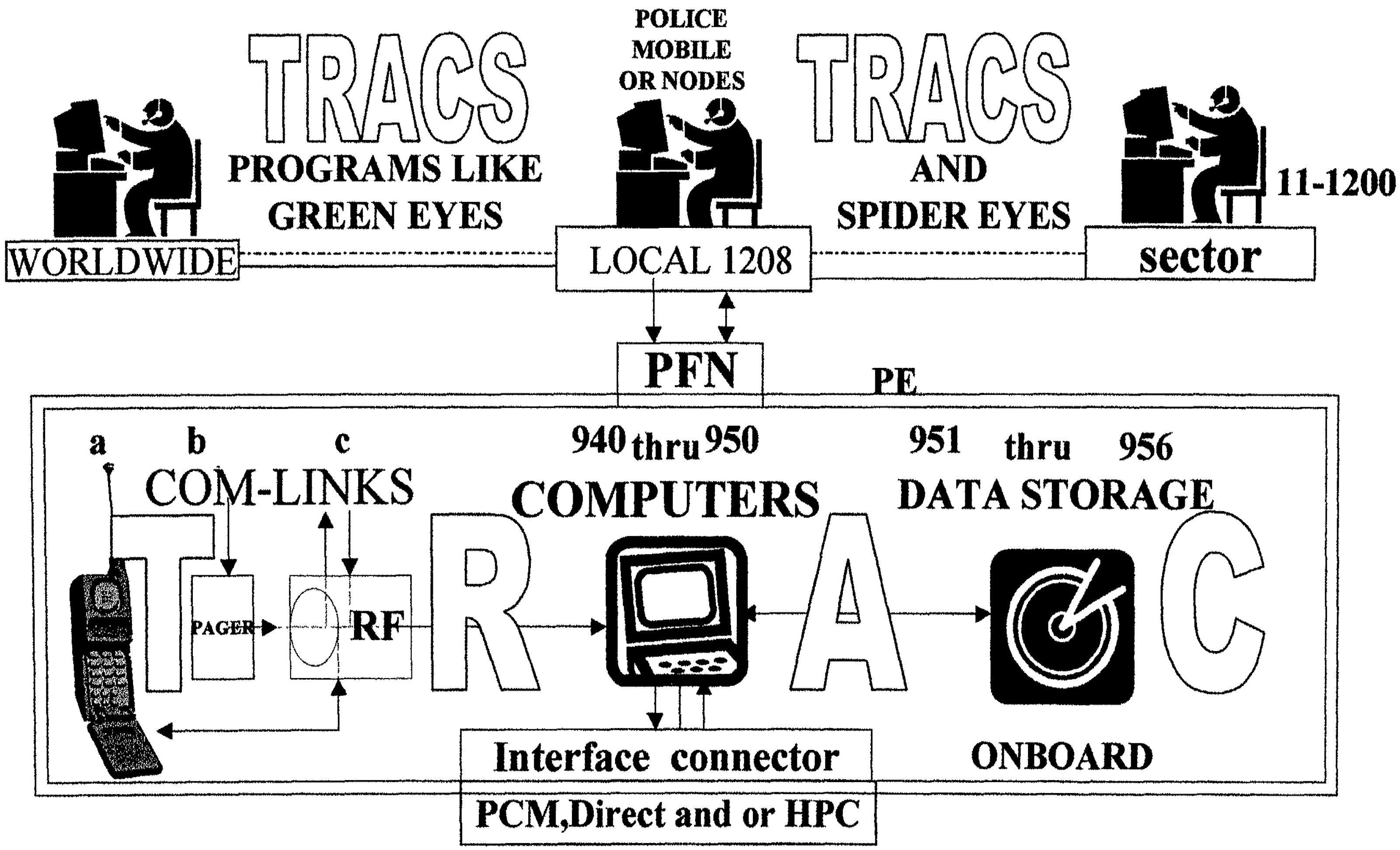

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FIG 3

PAGER PROTOTYPE PROGRAM.

```
init:
x       var     word
tflag   var     bit
relay   var     bit
solenoid var    bit
switch  var     bit
tflag=0
relay=0
switch=0
solenoid=0
input 12
input 14
input 15
output 4
output 1
output 2
output 3
output 5
output 6
output 7
output 8
output 9
output 10
output 11
output 13
out1=0
out2=0
out3=0
out4=0
out5=0
out6=0
out7=0
out8=1
out9=0
out10=1
out11=0
out13=0
Start:
if in15=1 then init   RESET ID SYS.
if in14=1 then checkt
check1:
if tflag=1 and in12=0 then relayc
check2:
if in12=1 and solenoid=0 then carrun
check3:
if in12=1 and solenoid=1 and tflag=1 then slowdown
check4:
goto start


checkt:
for x=1 to 35
pause 100
if in14=0 then nogo
next
goto go
nogo:
goto check1
go:
tflag=1
debug "go condition",cr
goto check1

noactivity:
debug "Beeper is Inactive",cr
return

relayc:
debug "relay control"
debug ? relay
if relay=0 then first
if relay=1 then second
first:
debug "first"
out4=1
out2=1  3. PAUSE 2,300 MS OUT4=0
relay=1
goto relend
second:
debug "second"
~~out4=0~~
out2=0
out3=1
pause 3000
out5=0
relay=0
tflag=0
hold: if in14=1 then hold
stuck1: if in15=0 then stuck1
goto init
relend:
tflag=0
hold1: if in14=1 then hold1
goto check2

carrun:
out1=X=0
out2=X=0
out3=X=0
solenoid=1
goto check3

slowdown:
if switch=0 then fir
if switch=1 then sec
fir:
out1=0 1   ACCELERATOR DISENGA SIREN - FLASHERS
out8=0   PLAY MESSAGE
out9=1   AMP ON FOR PLAY
pause 15000
out8=1   OFF RECORD CHIP
out10=0   RESET RECORDER CHIP
pause 1000
out10=1   RESET READY
pause 21000
out2=0 1   PROGRESSIVE BRAKE APPLICATION.
switch=1
goto swend
sec:
out3=0 1   ENERGIZE KILL RELAY
out5=1
pause 3000
out5=0
pause 45000
out9=0
switch=0
tflag=0
hold3: if in14=1 then hold3
stuck2: if in15=0 then stuck2
goto init
swend:
tflag=0
hold4: if in14=1 then hold4
goto check4
```

FIG 4

MOTOR REVERSING CIRCUIT
FOR TWO WAY DIRECTIONS

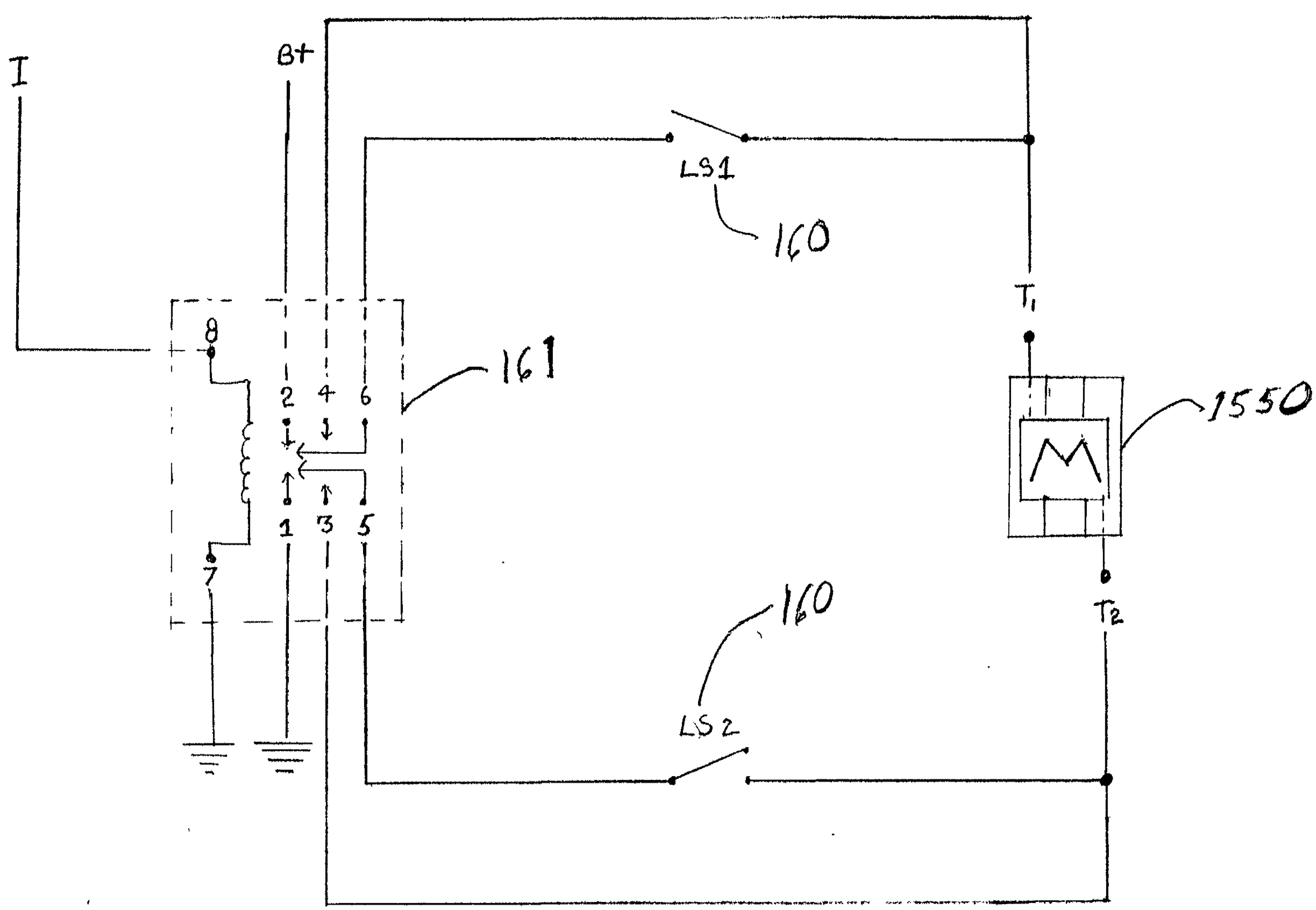

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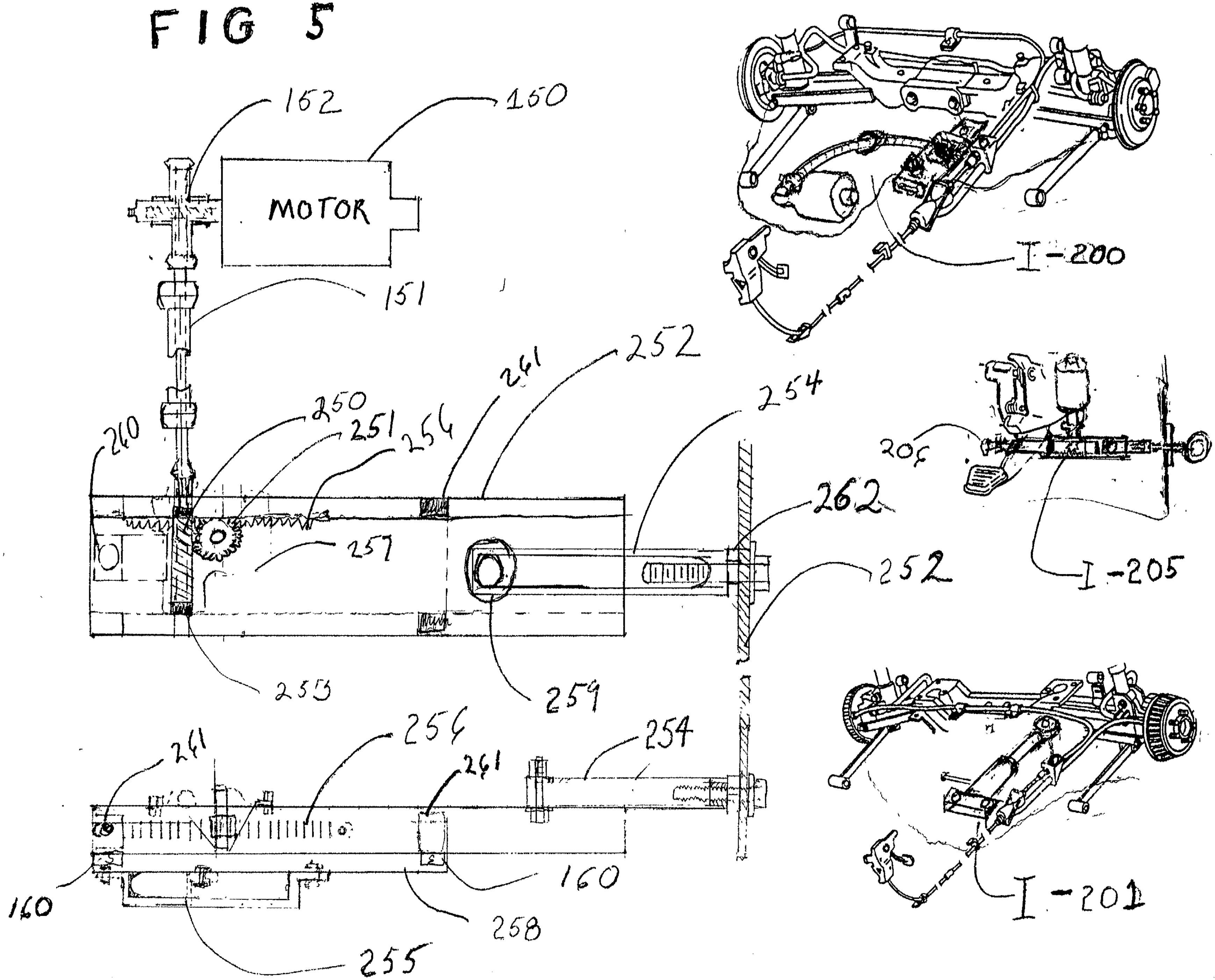
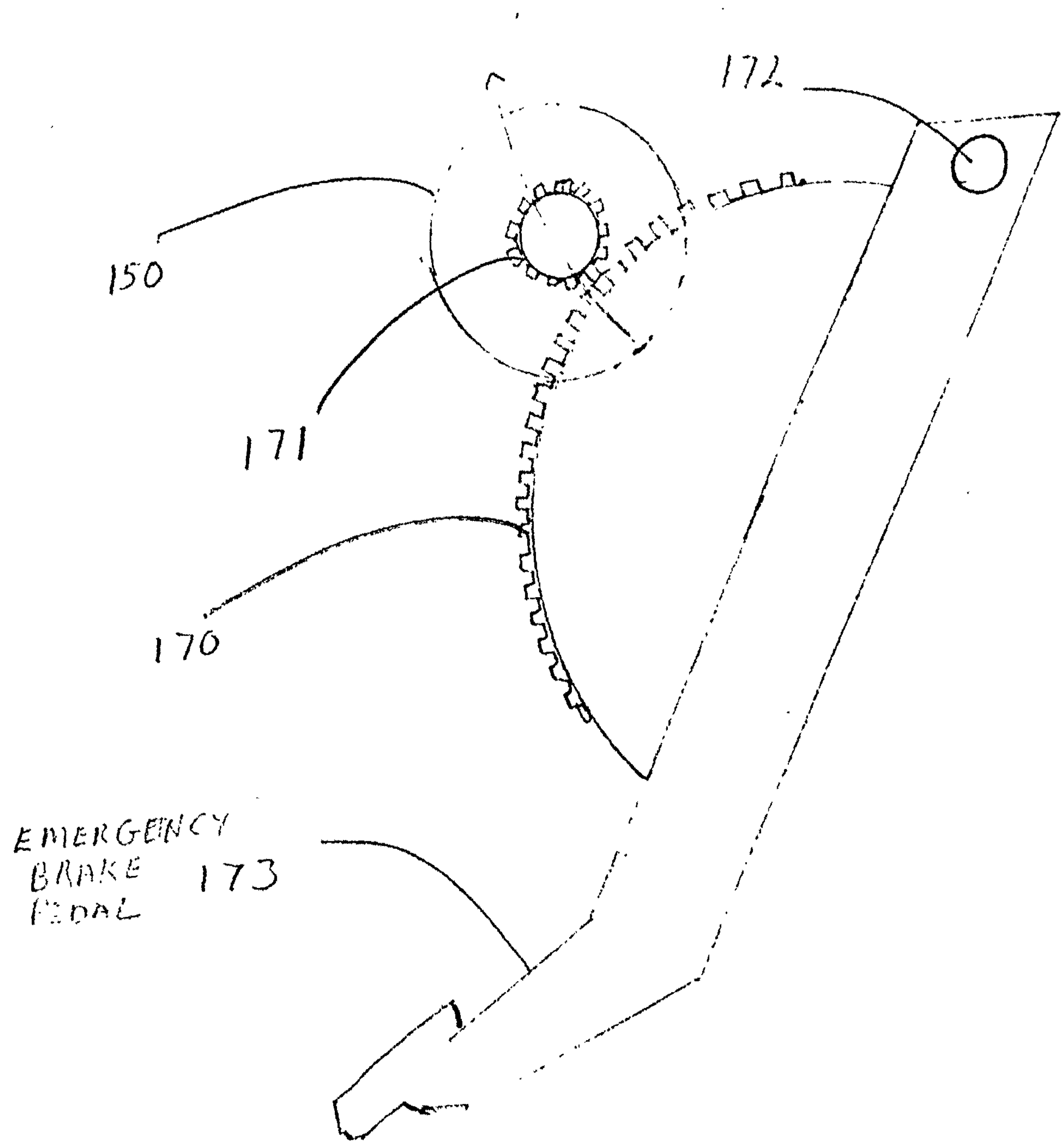
FIG 5



162
160
MOTOR
151
260
250
251
254
241
252
254
262
252
257
253
259
256
241
241
254
160
160
258
255
I-200
205
I-205
I-201

FIG 5.1

AUTOMATED
MOTORIZED
BRAKE PEDAL
ASSEMBLY



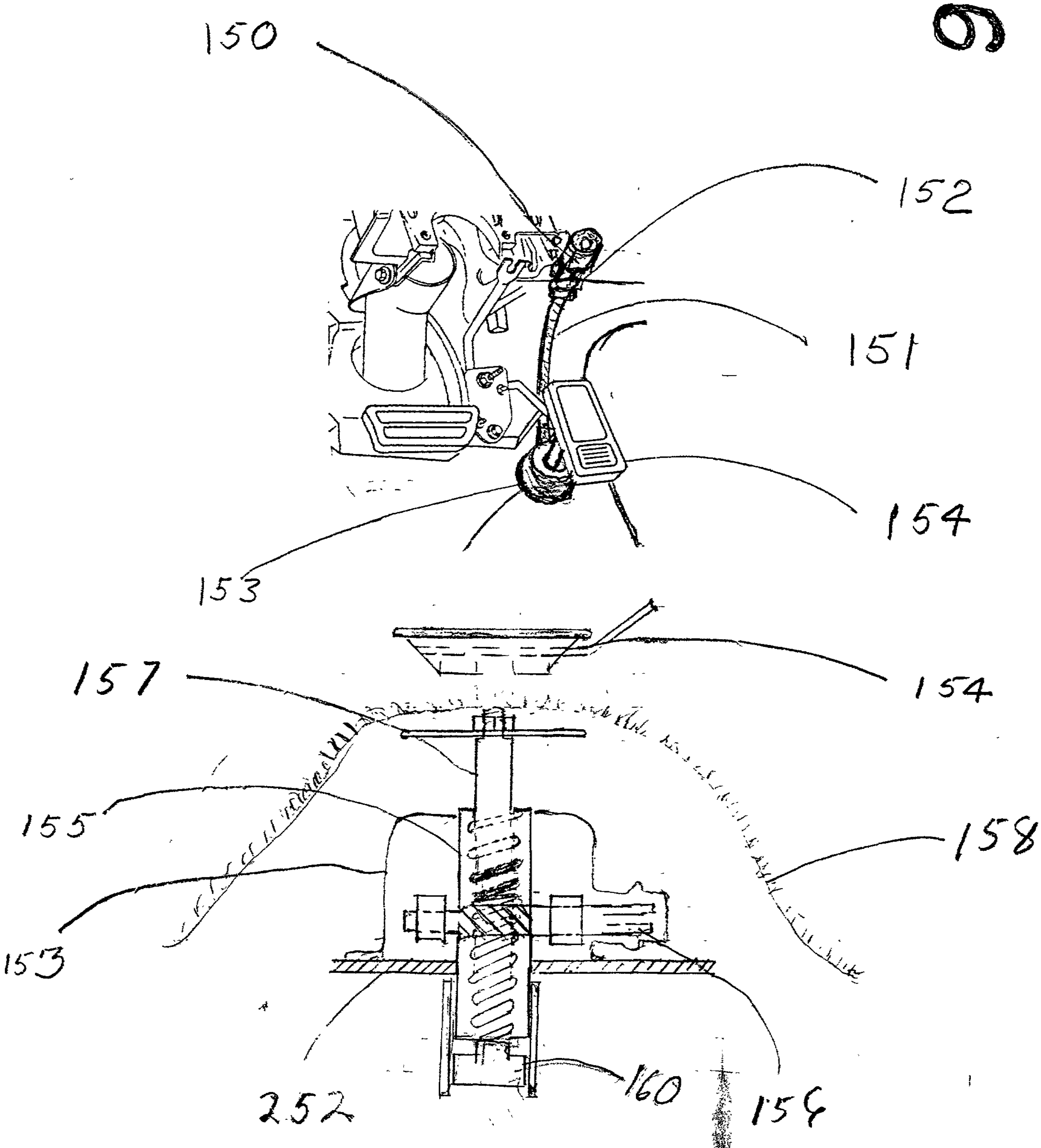
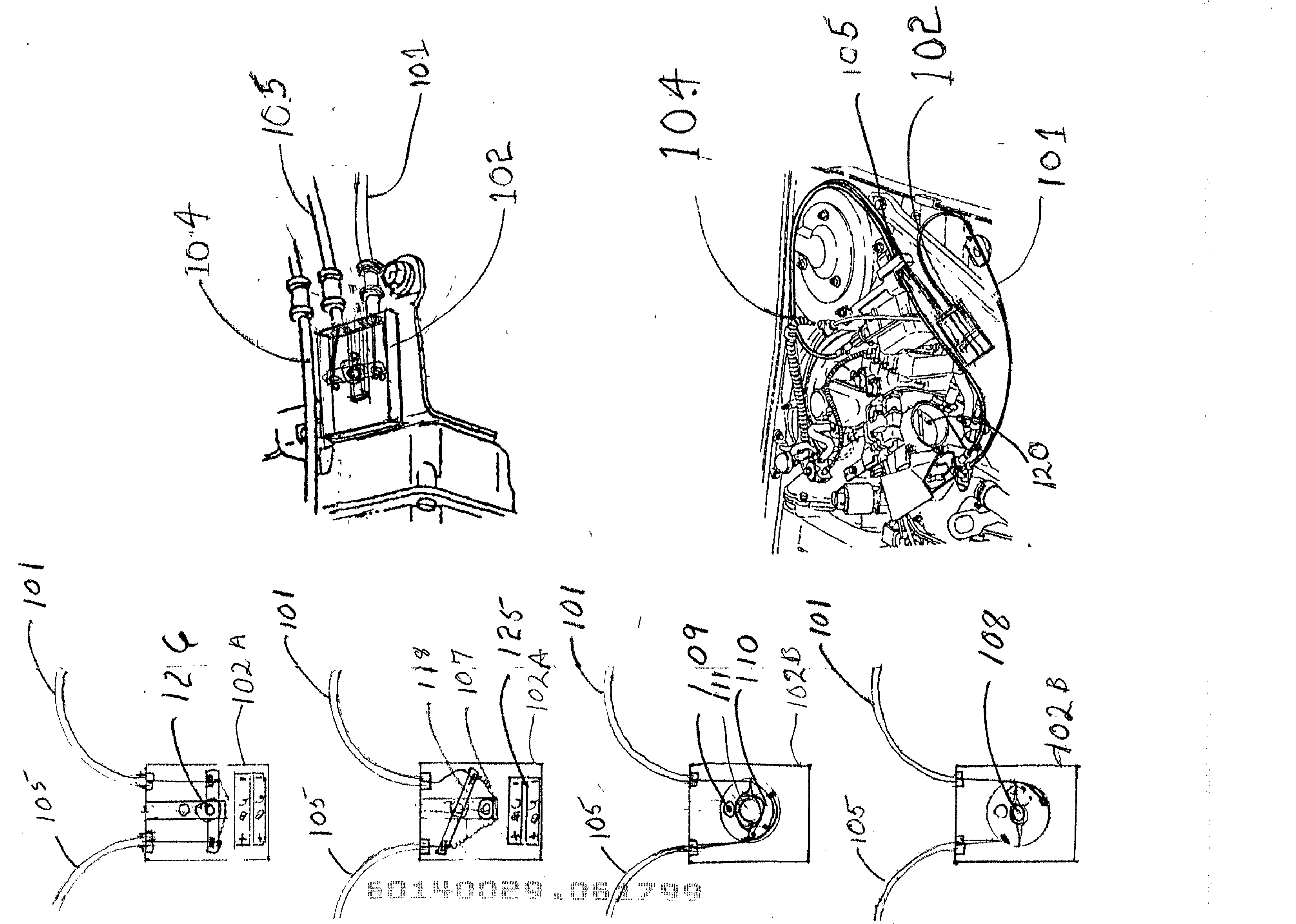


FIG 6

FIG 7

SOME OF THE POSSIBLE CABLE INTERRUPTION SYSTEMS



MORE PEDAL CABLE AND LINKAGE INTERRUPTIONS

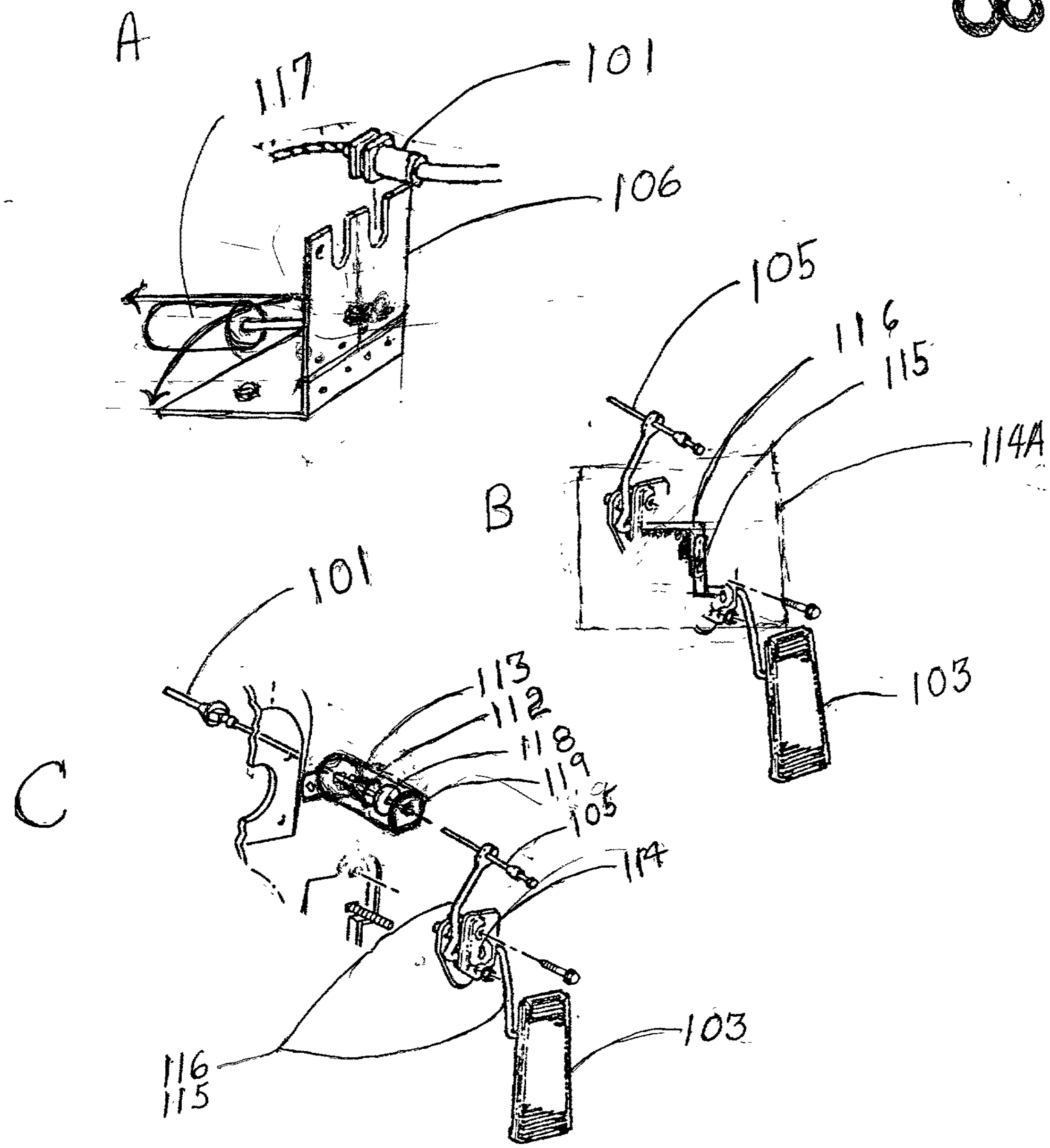
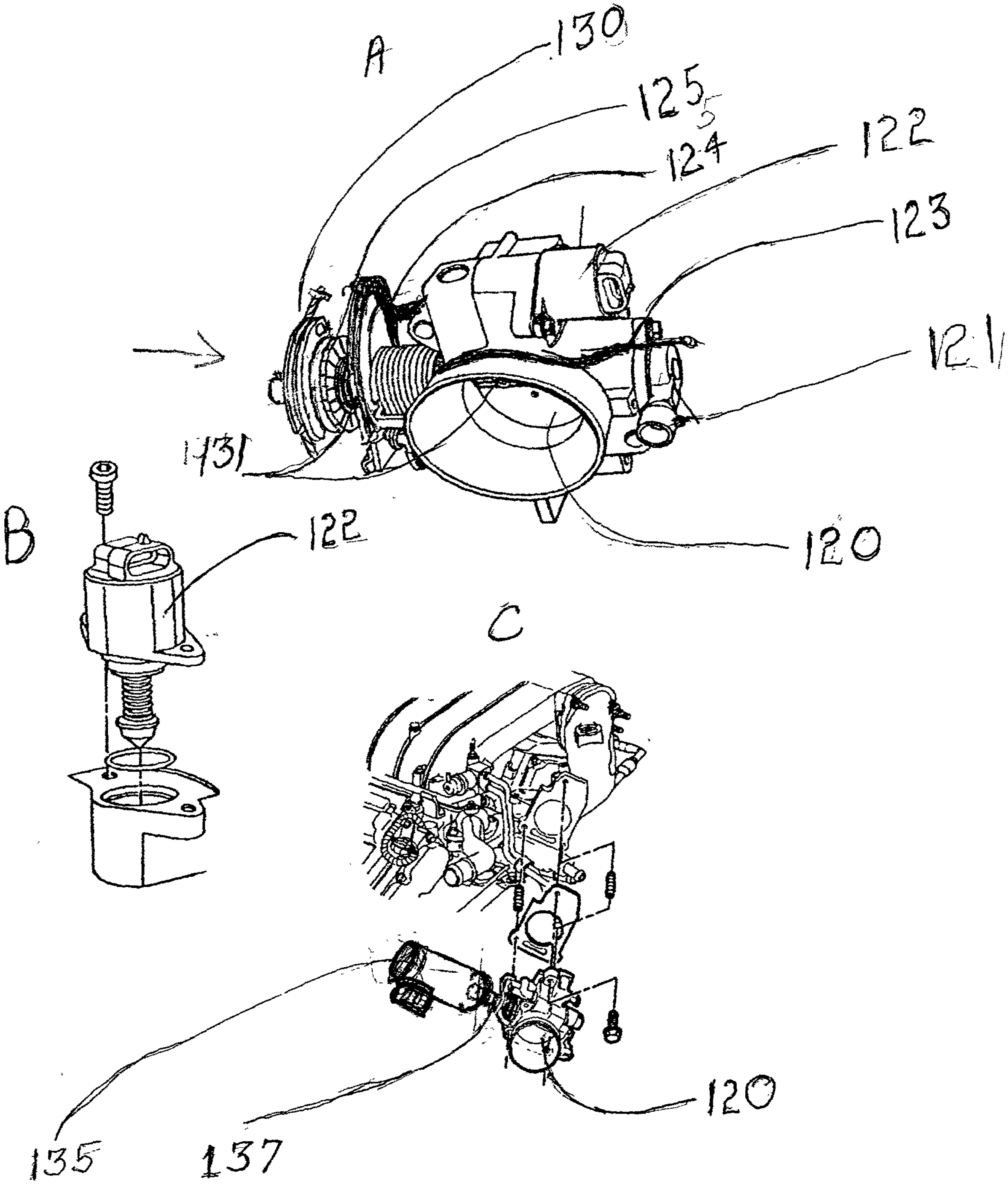


FIG 8

FIG 9



THROTTLE PLATE AND THROUGH SHAFT INTERRUPTIONS AND DRIVE BY WIRE

10

THROTTLE LINKAGE INTERRUPTION
AND POSITION SENSOR.

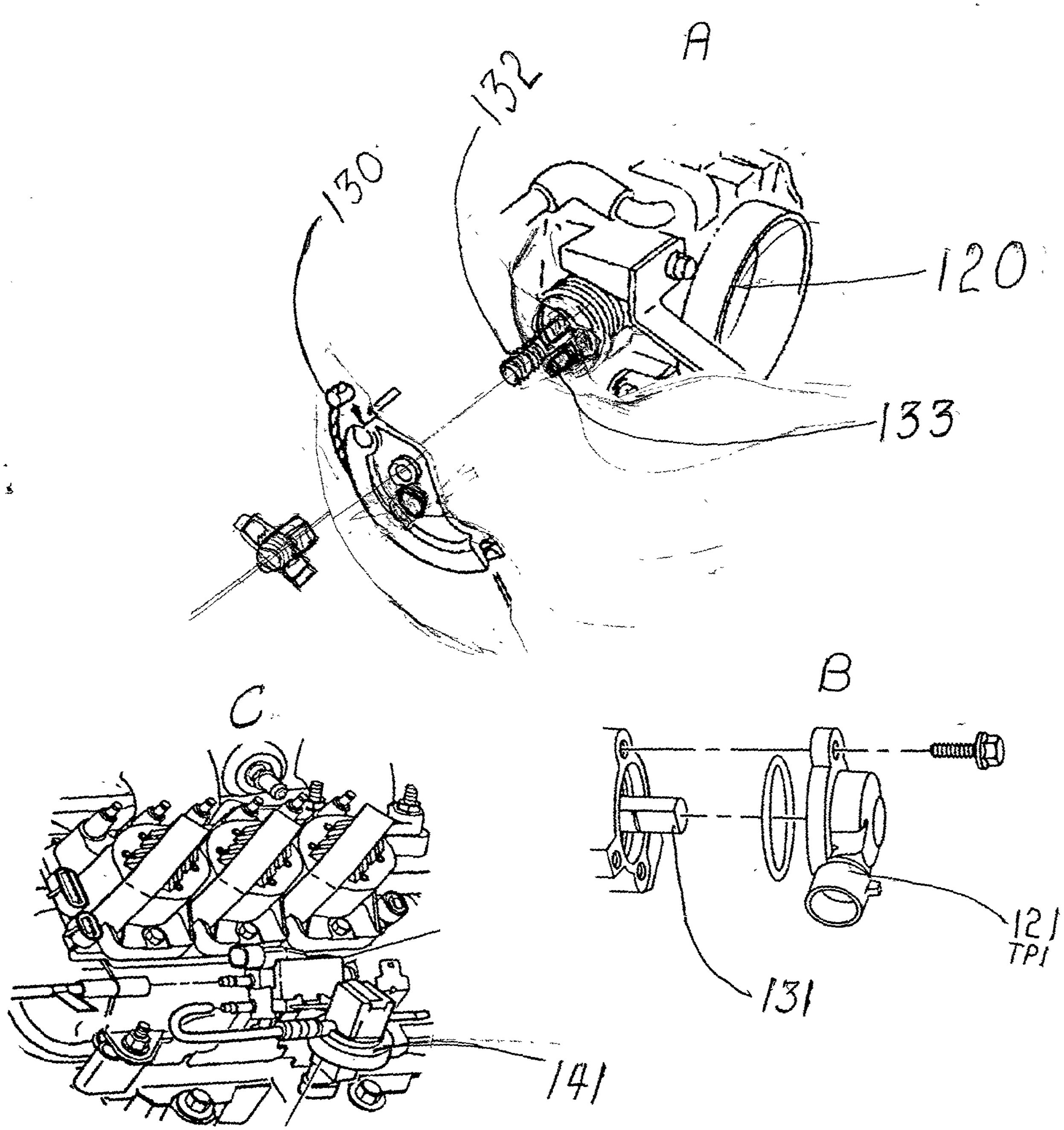
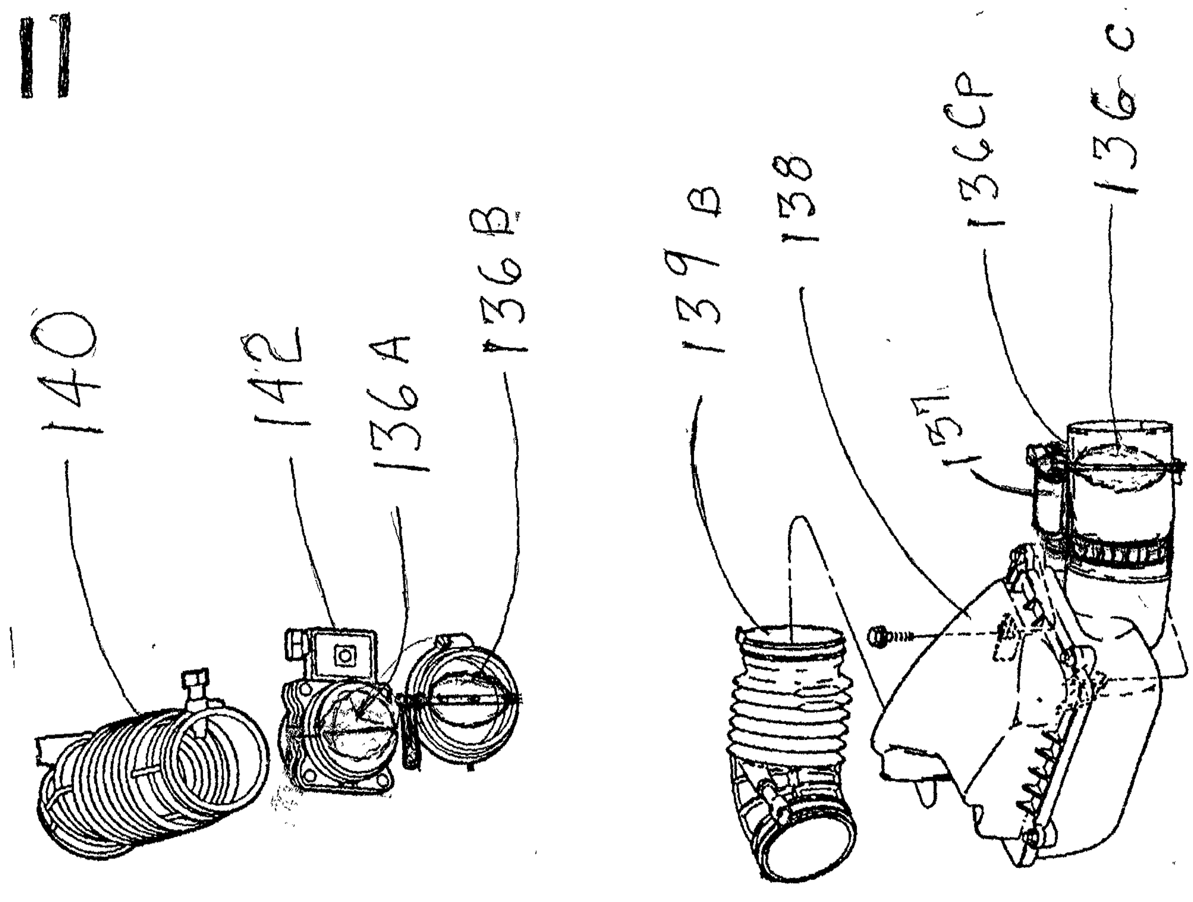


FIG 10

FIG 11



ADDITIONAL GATE VALVES.
FOR AIR INTAKE DUCTS

60140029.061799

FIG 12

BRAKE SERVICE LINES
AND NEW MODULATOR VALUE
AND MASTER CYLINDER

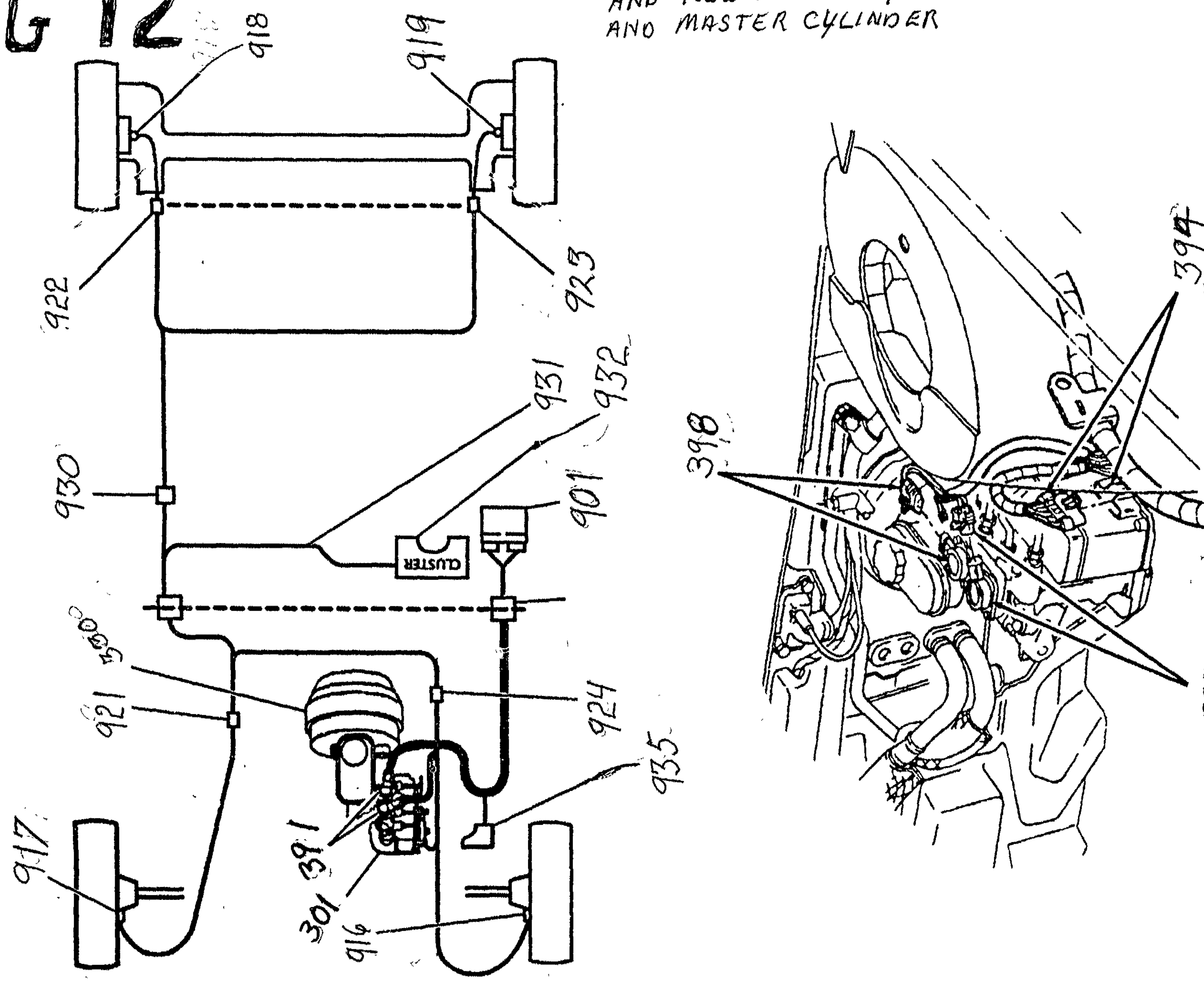
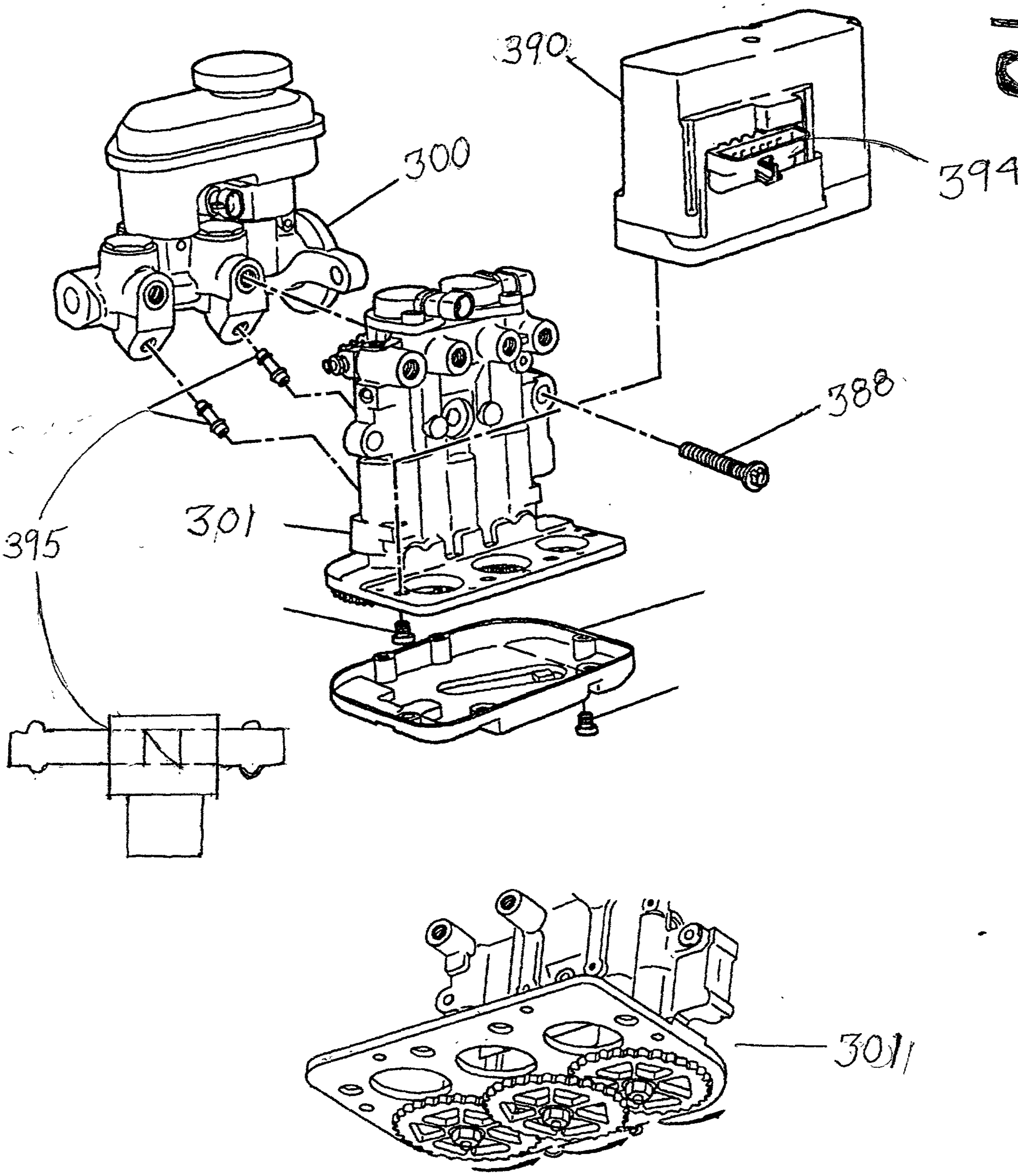
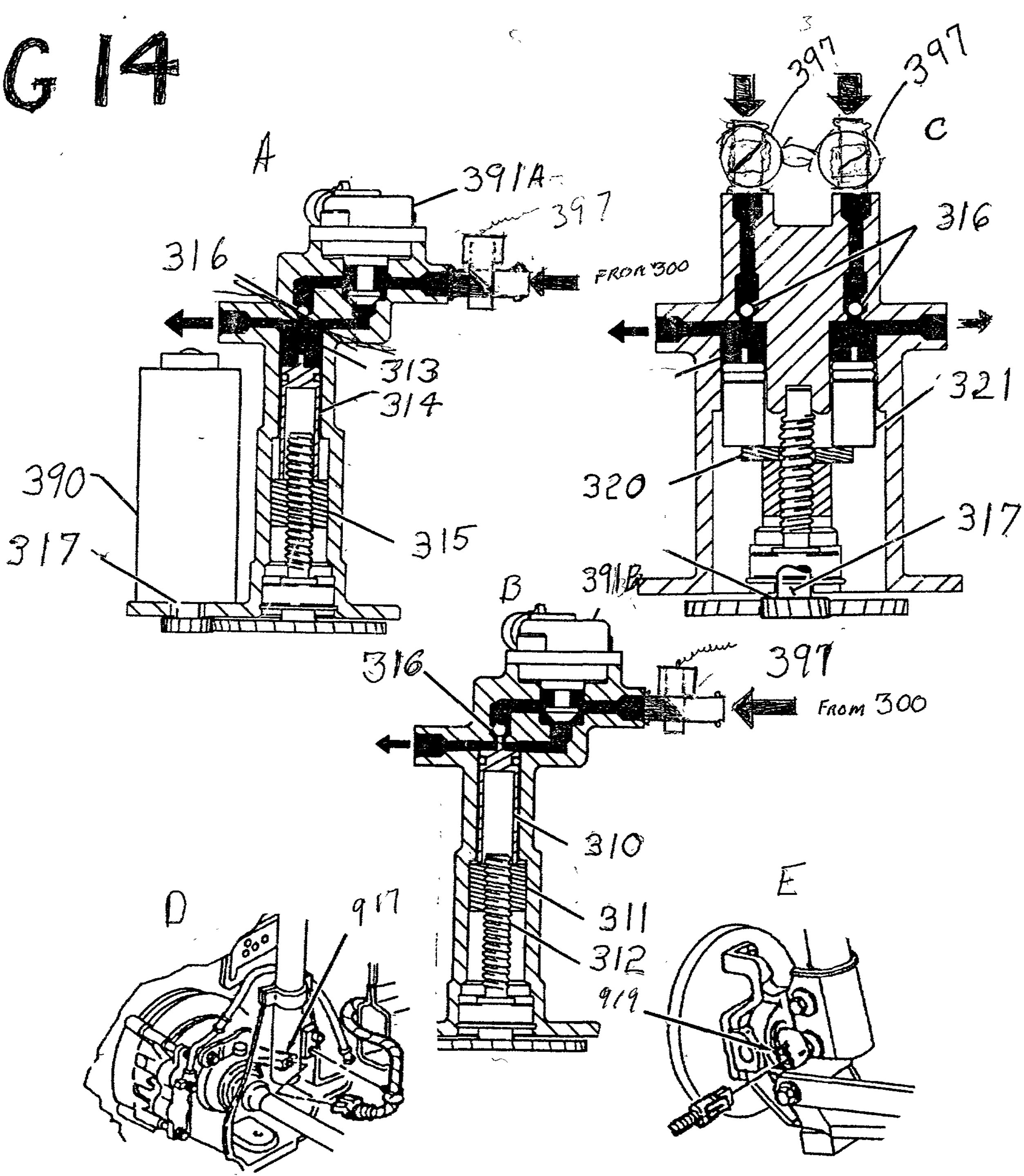


FIG 13



Customized modulator
brake value.

FIG 14

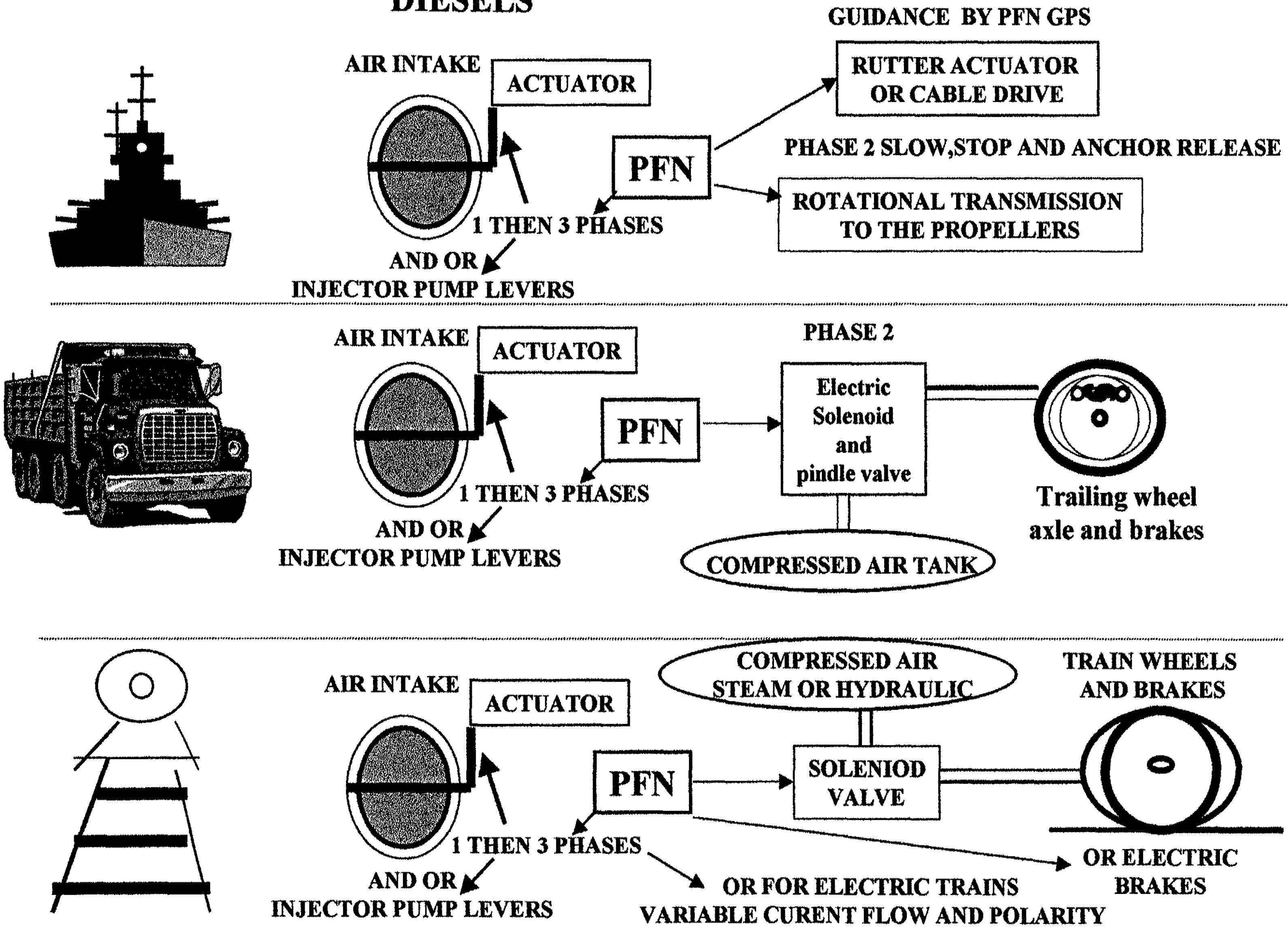


FLOW ALTERATIONS FOR MODULATOR VALVE AND WHEEL SENSORS.

FIG 14F

MANAGEMENT PFNS FOR OTHER VEHICLES AND MACHINERY

DIESELS



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PROPRIETARY FUEL FLOW VALUE PLACEMENT

FIG 15

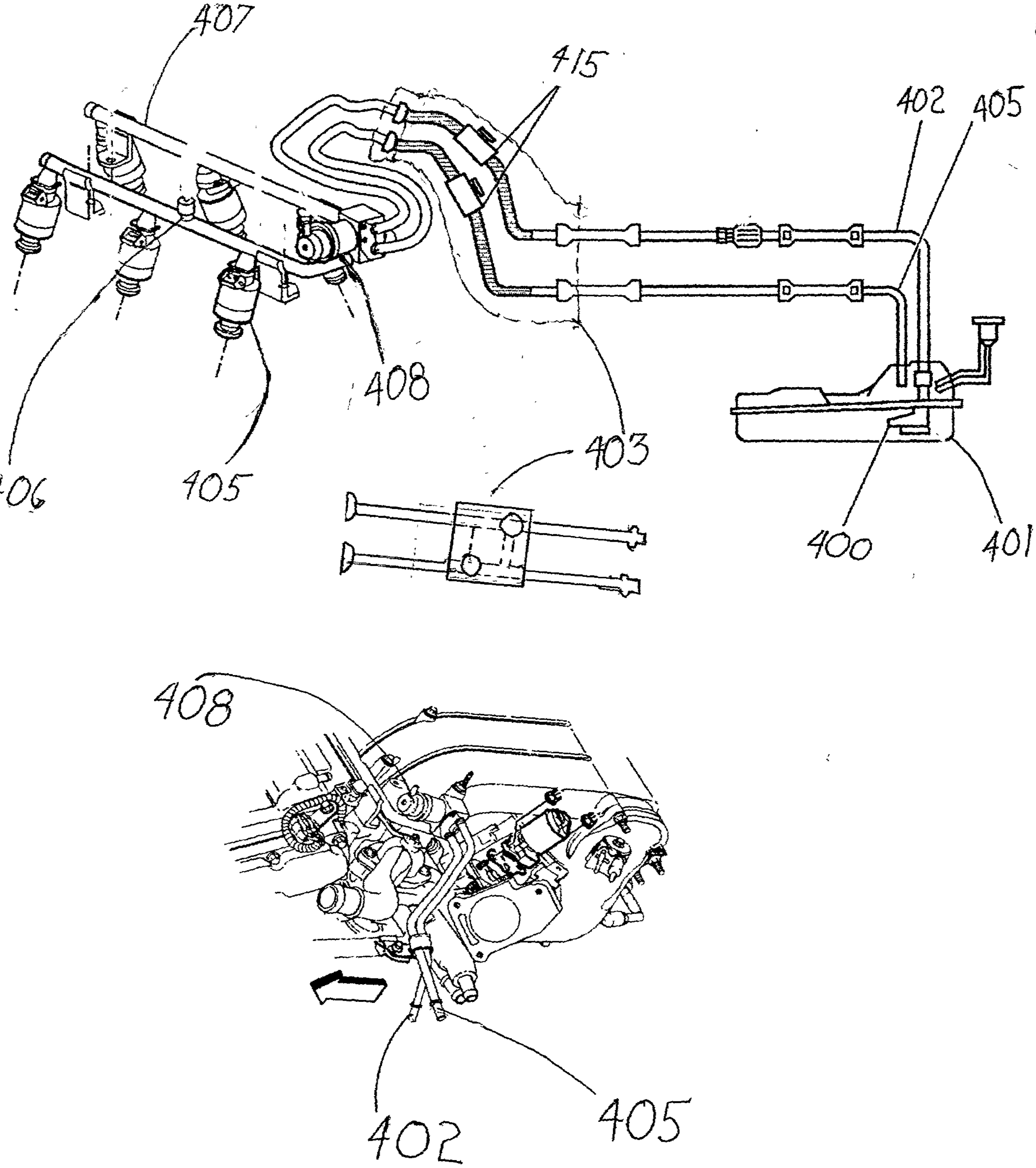
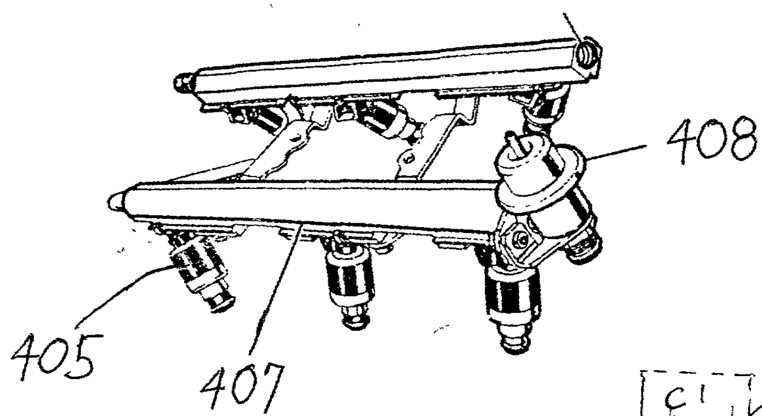
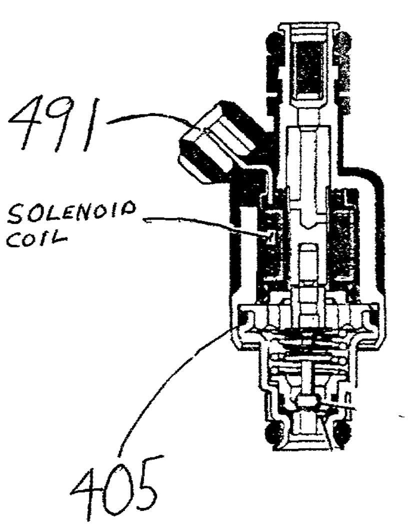


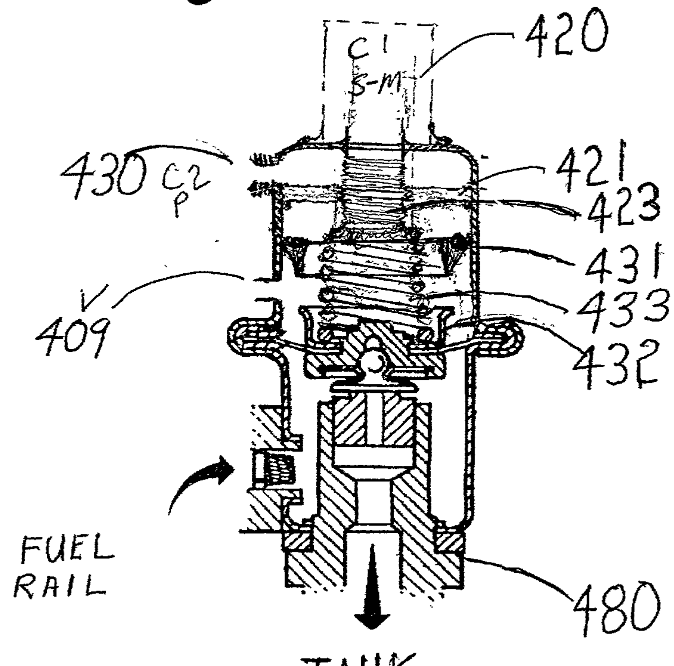
FIG16

16 A



16 B





16C

CUSTOMIZED FUEL FLOW Regulator
To Control Engine RPM's

FIG 17

TRANS MISSION Switch.

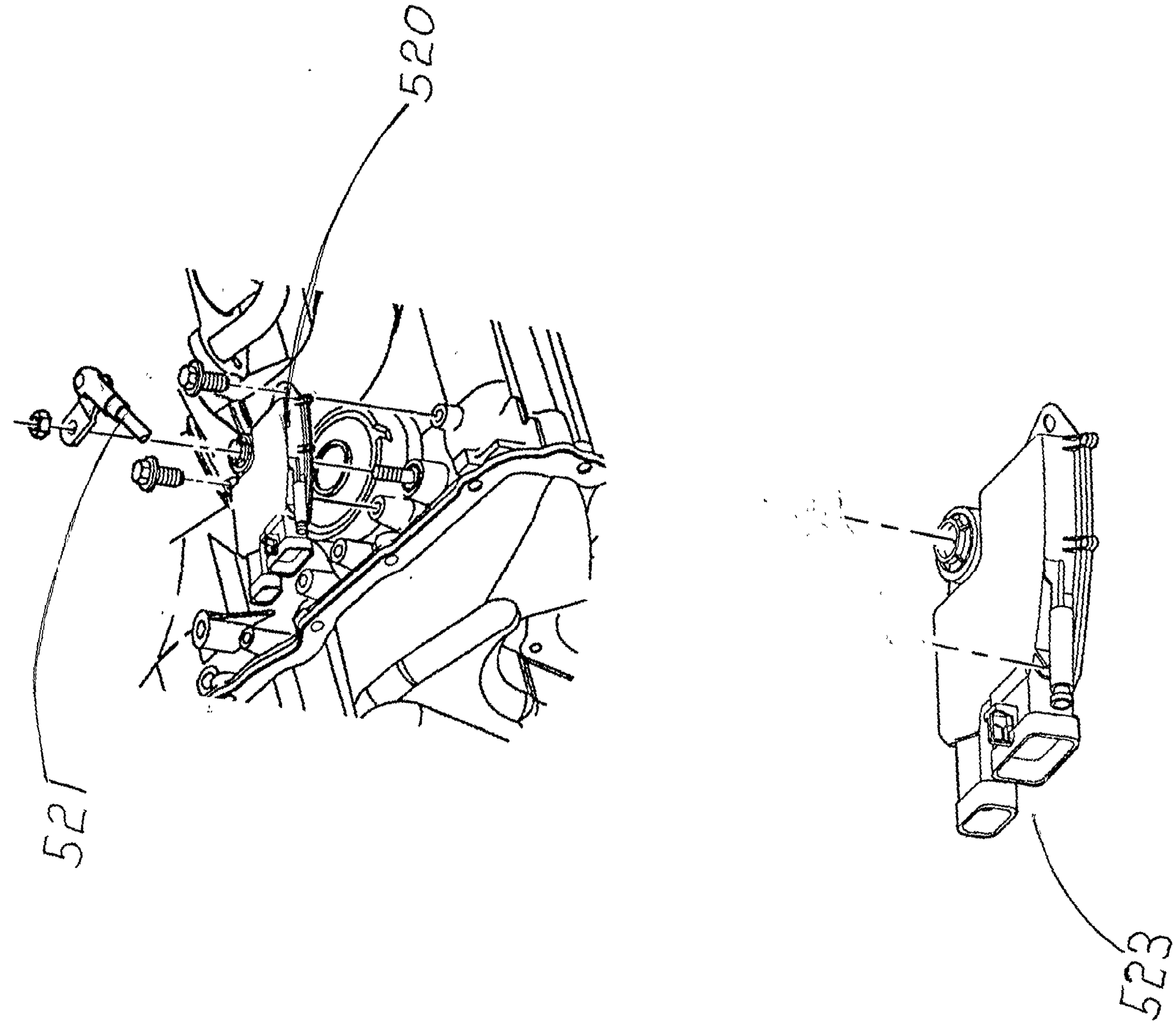


Fig 18 PAGSSS AUTOMATED STEERING

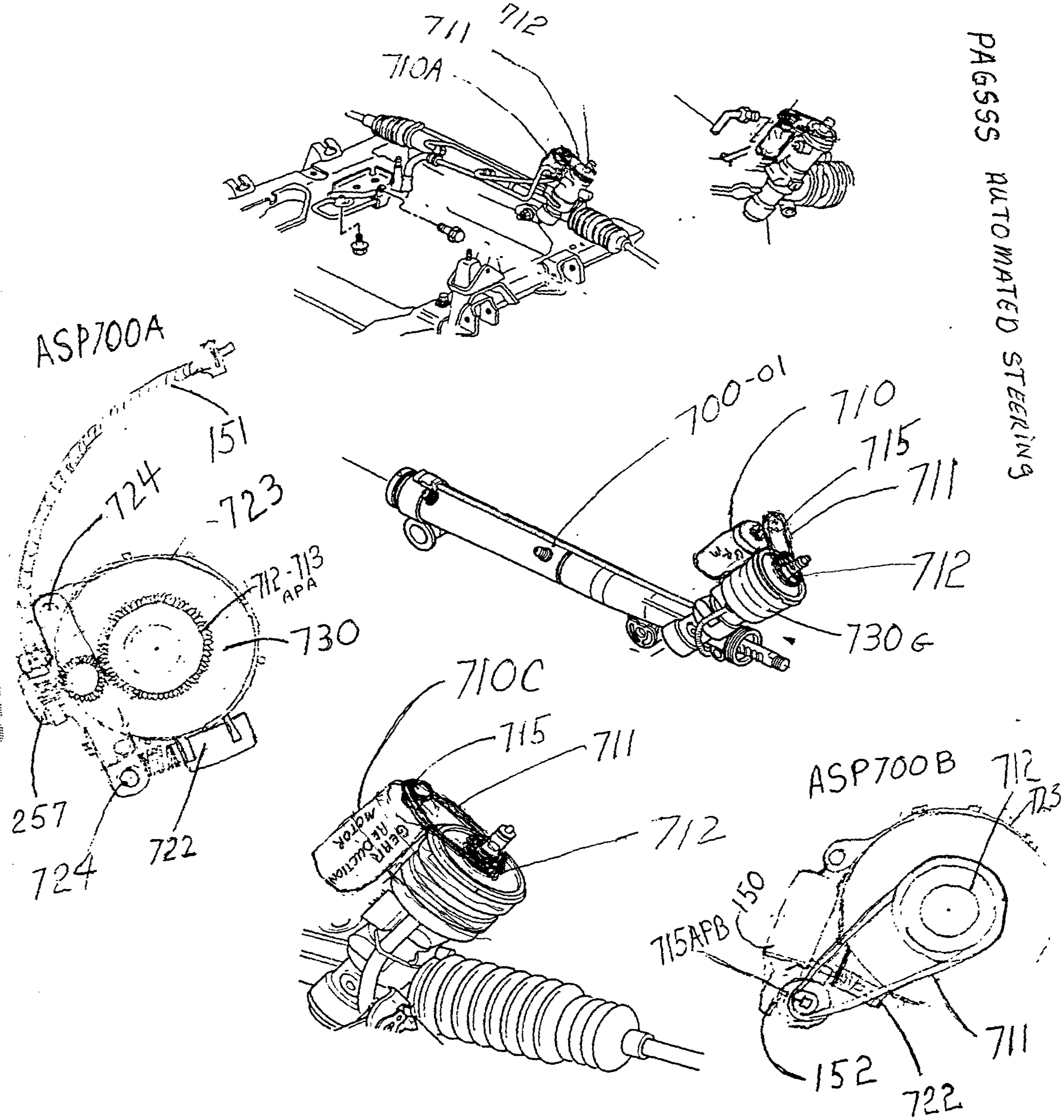


FIG 19

PAGSSS MOTORIZED PLACEMETS ON GM VEHICLE

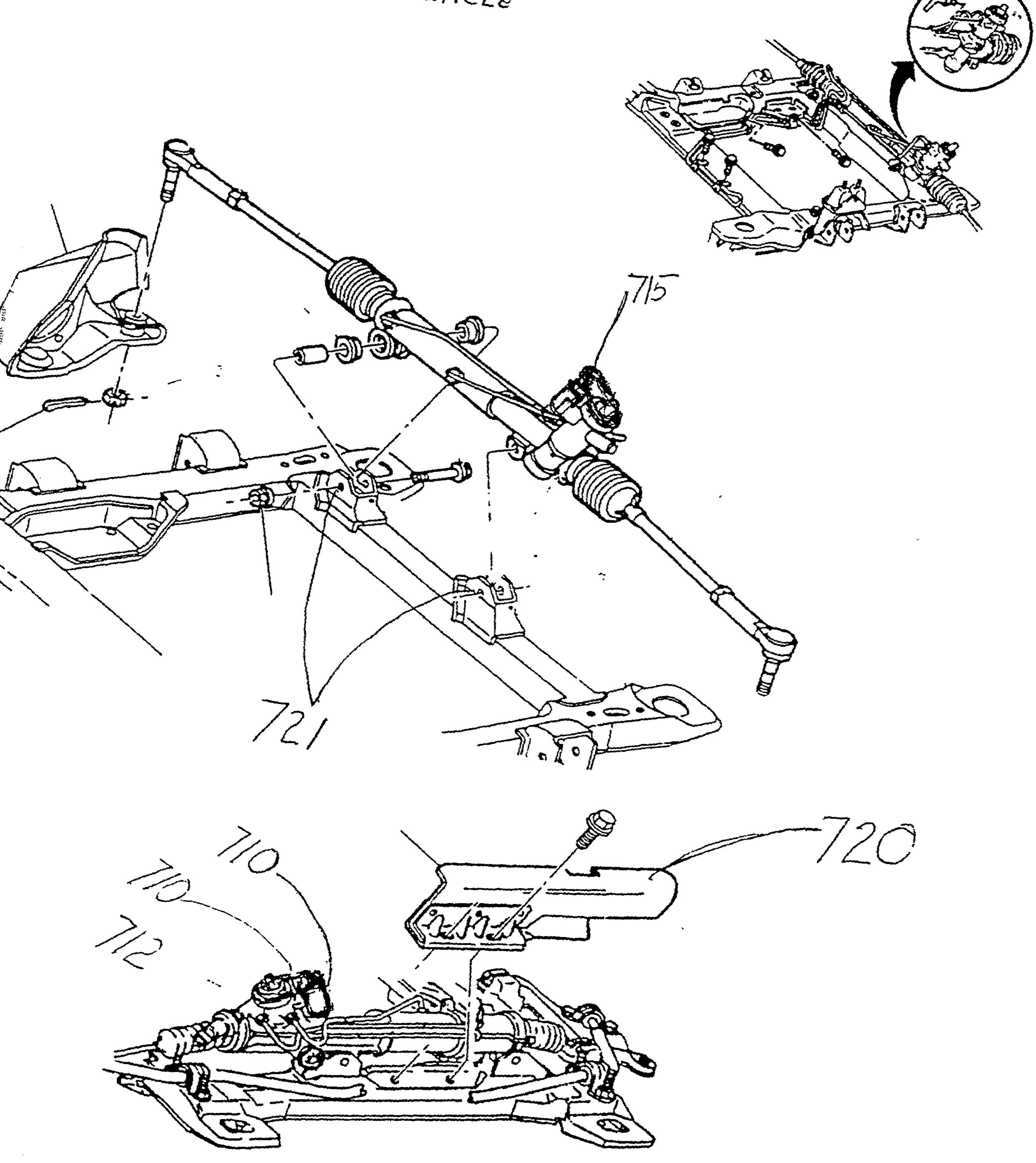
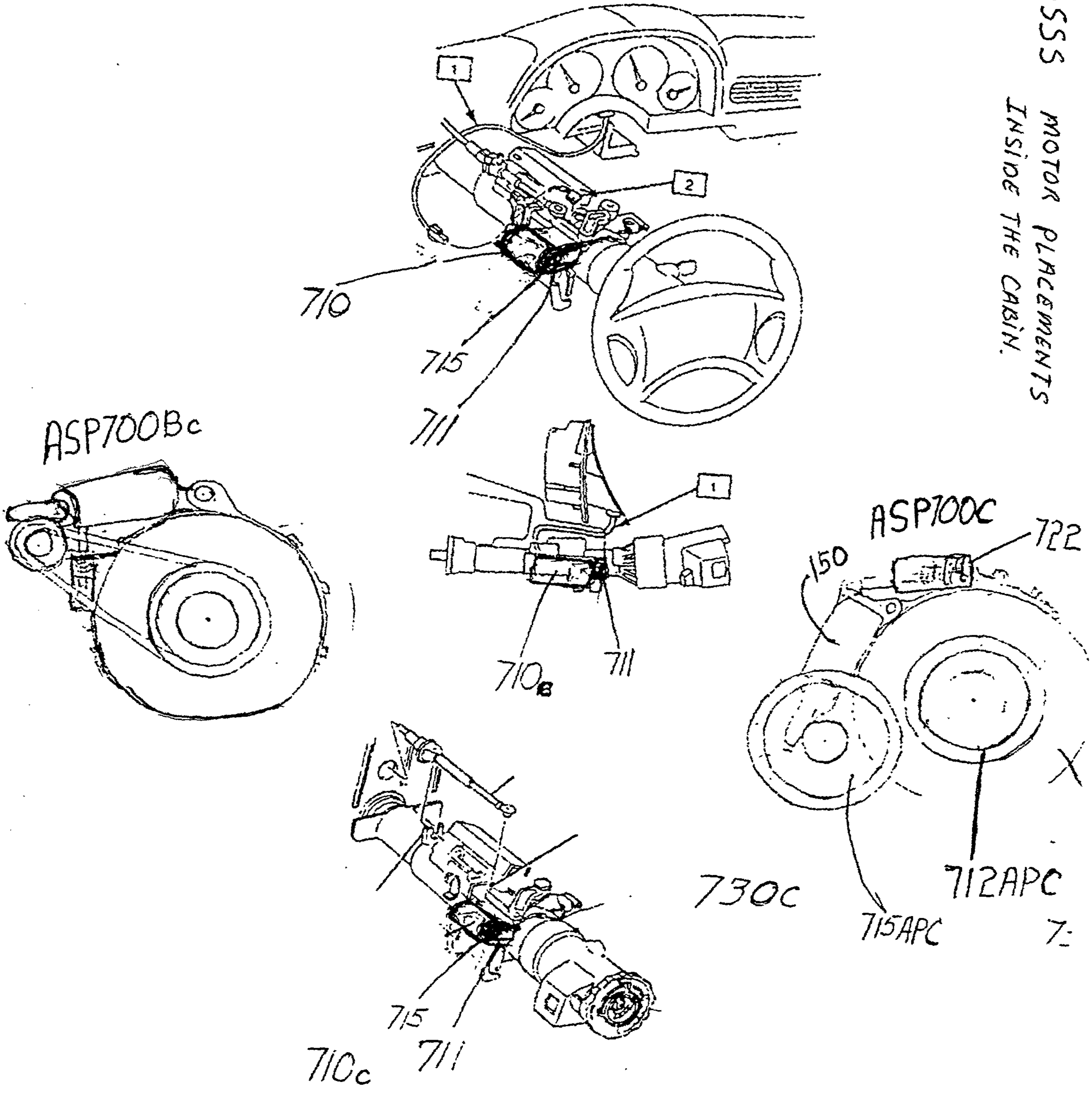


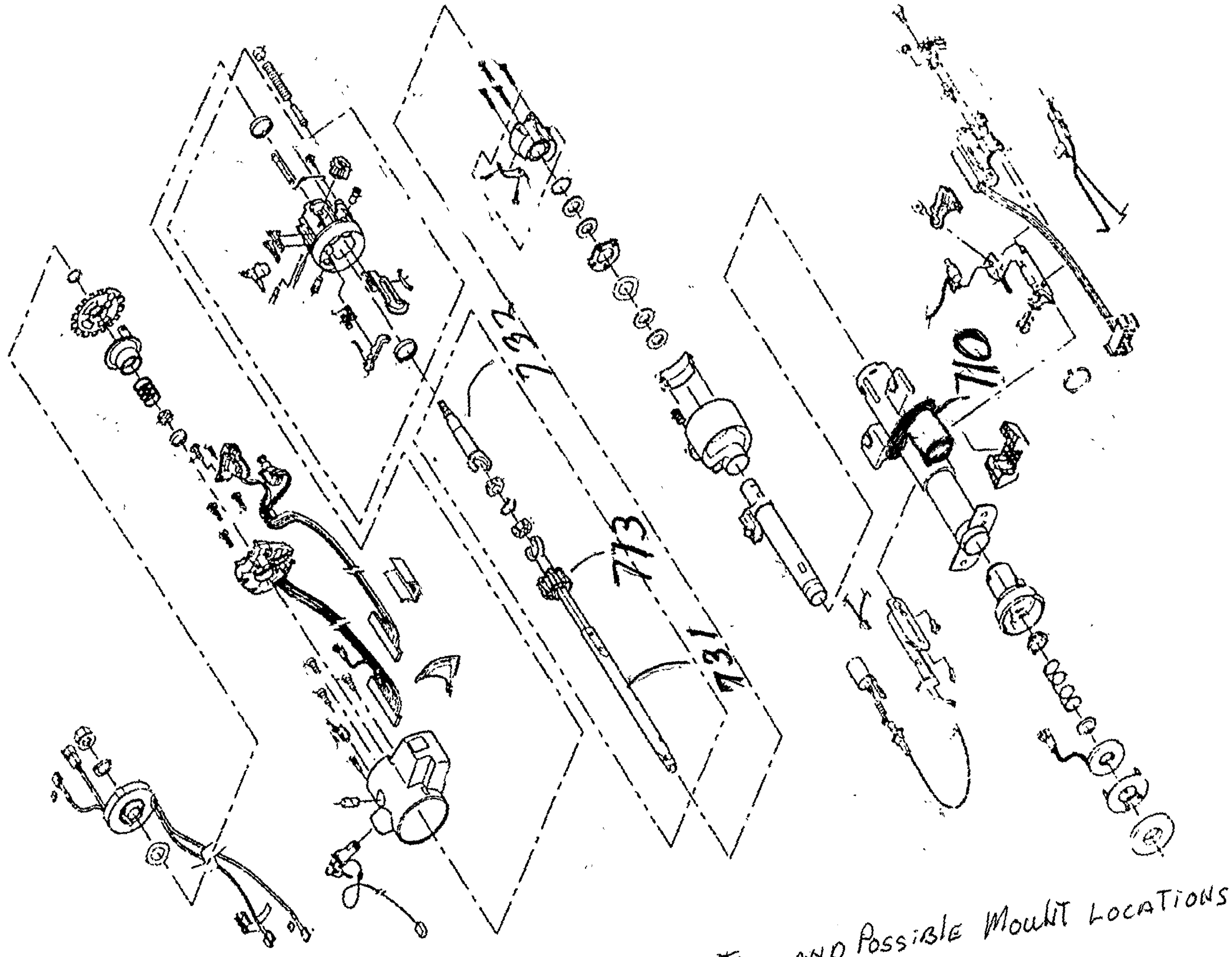
FIG 20

PAGSSS MOTOR PLACEMENTS INSIDE THE CABIN.



WHEEL, BELT, AND CHAIN CONFIGURATIONS.

FIG 21



STEERING COLumn POSITION AND POSSIBLE MOUNT LOCATIONS

FIG 22

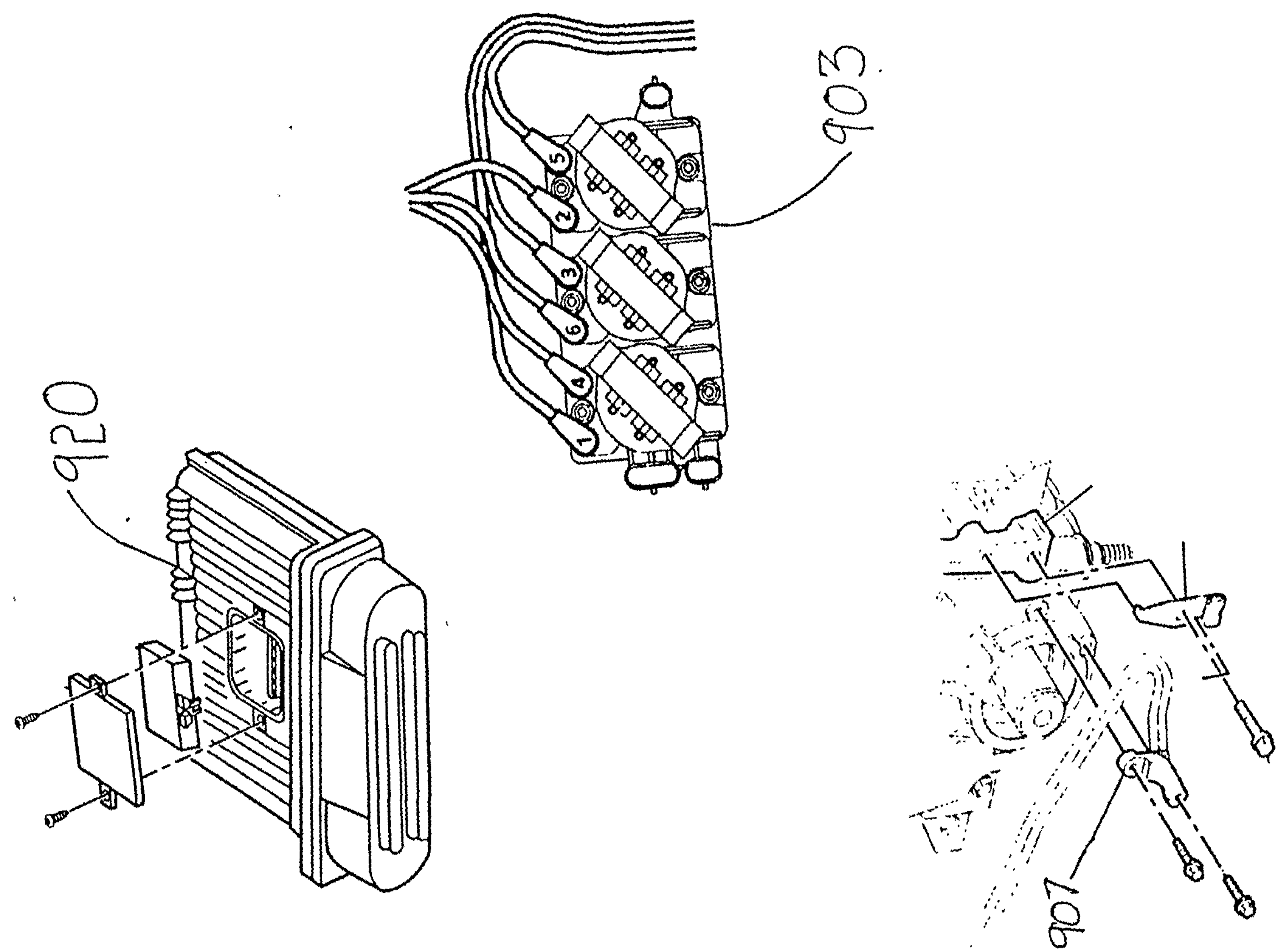


FIG 23

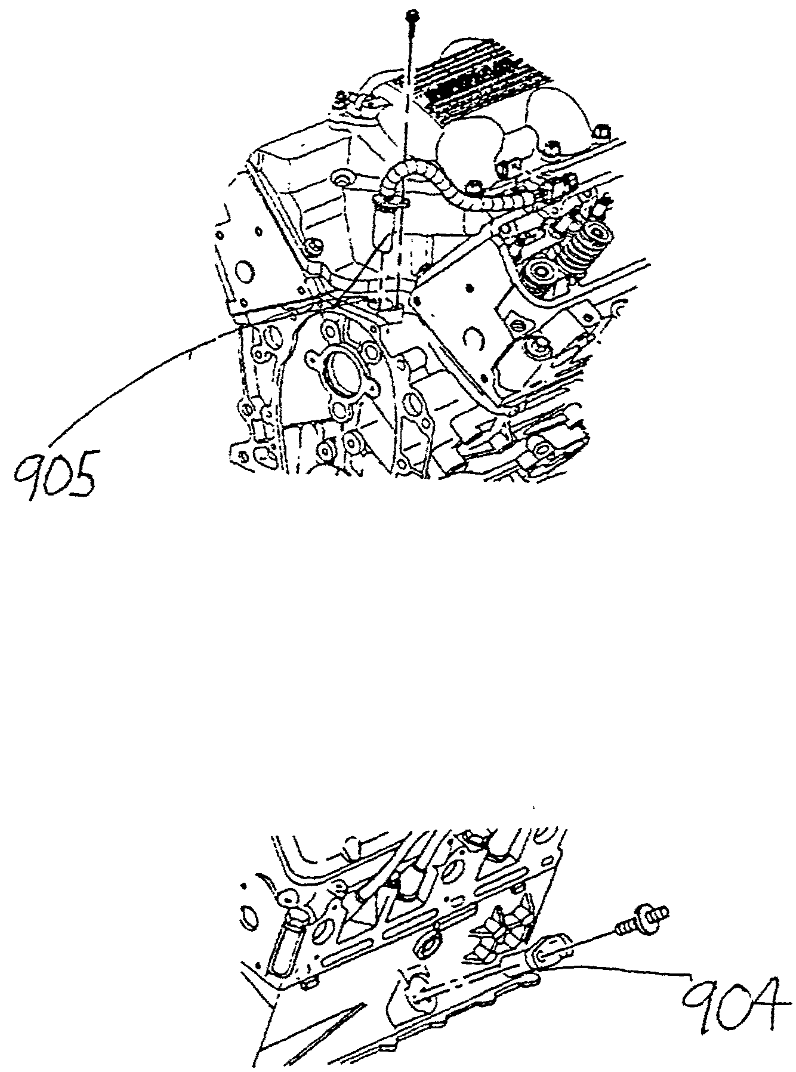


FIG 24

TWO BASIC TRICKSTERS
ANALOG AND DIGITAL

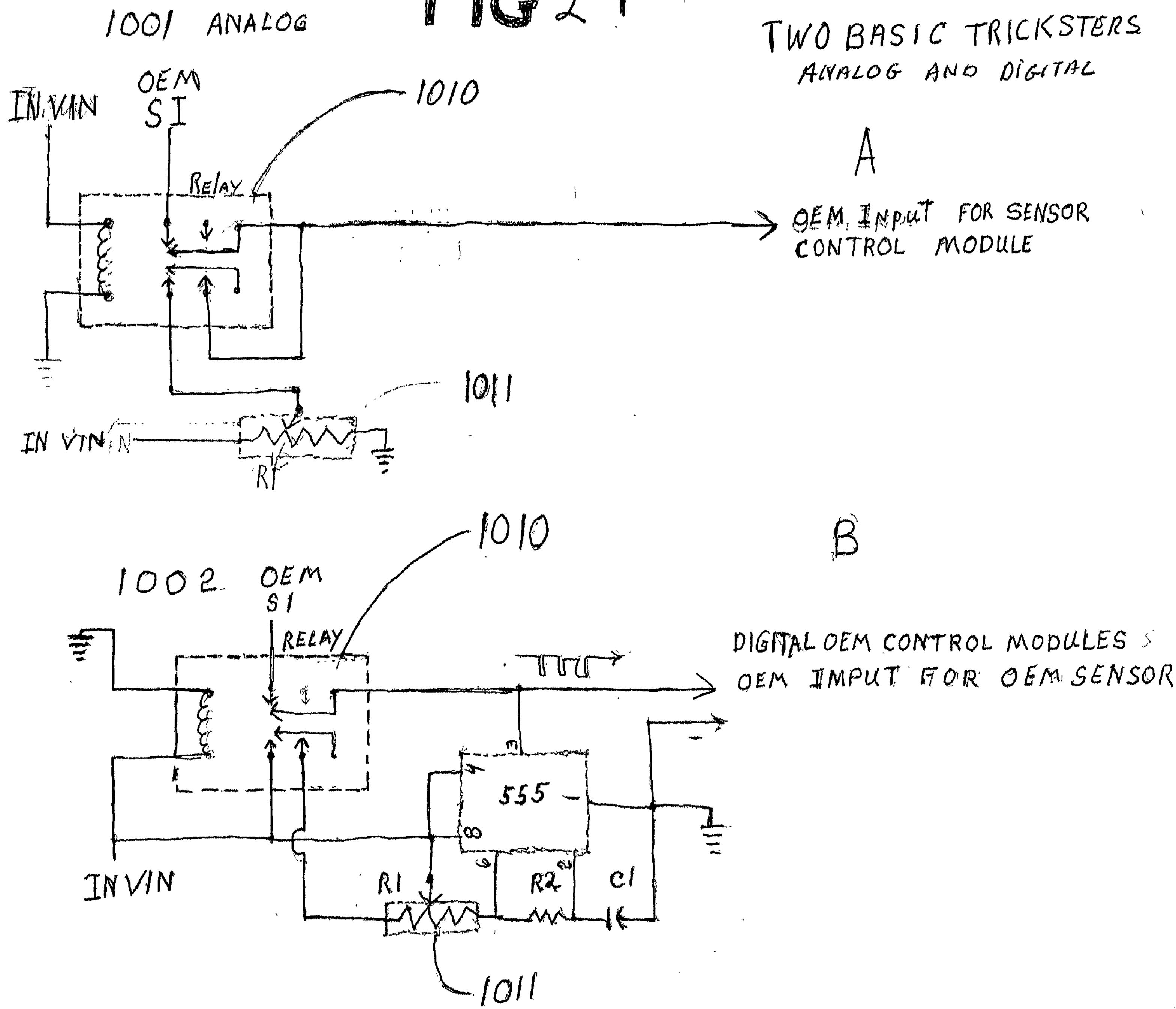


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FIG 25

CyOTE CIRCUT 1003 FOR THE NEWEST DOORSWITCH MODULE FOR DOME LIGHT, SYSTEM FOR GM

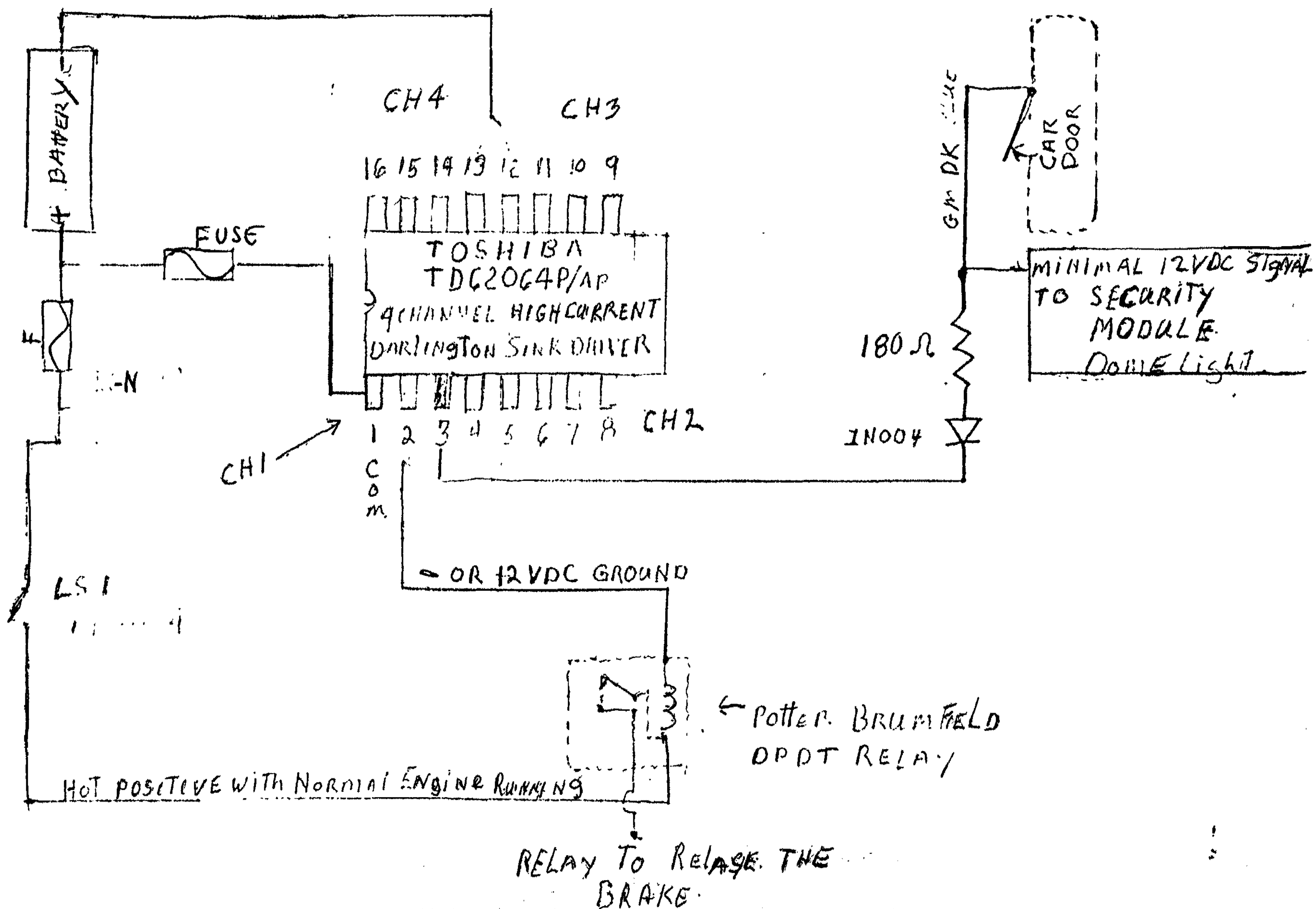

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FIG 26

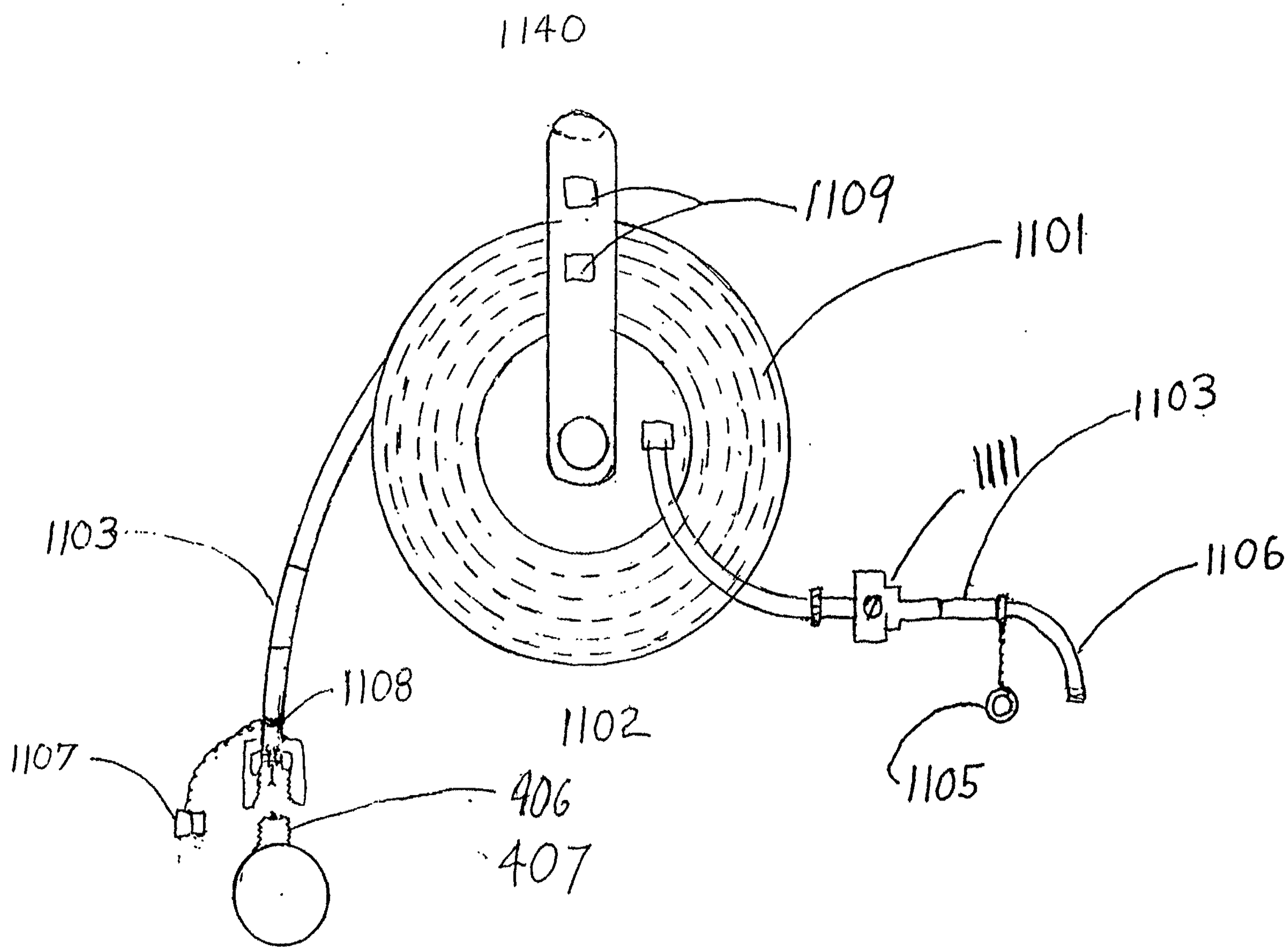

1140
1109
1101
1103
1111
1106
1103
1108
1102
1107
406
407
1105

FIG 27

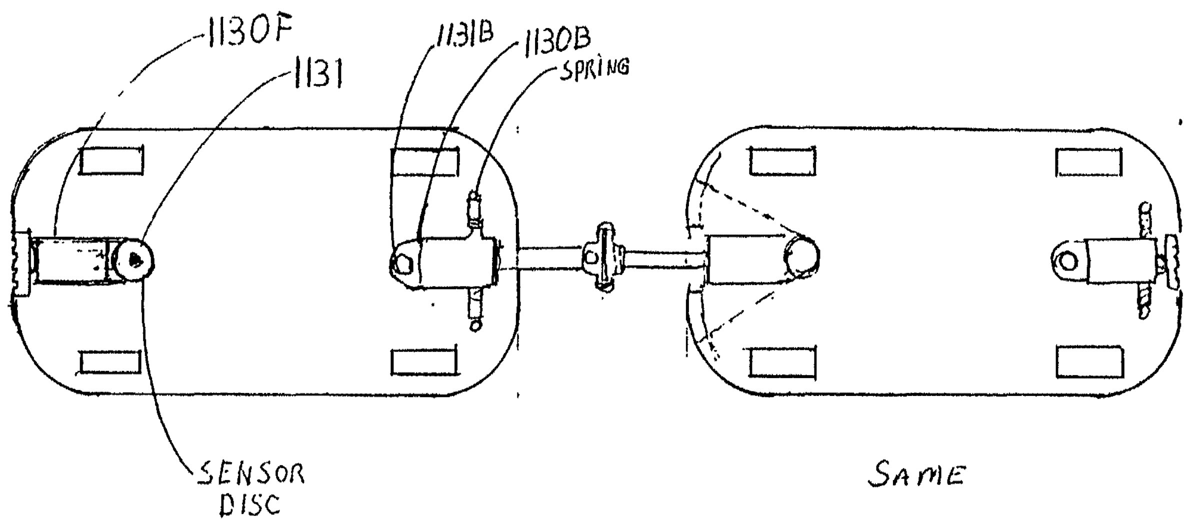
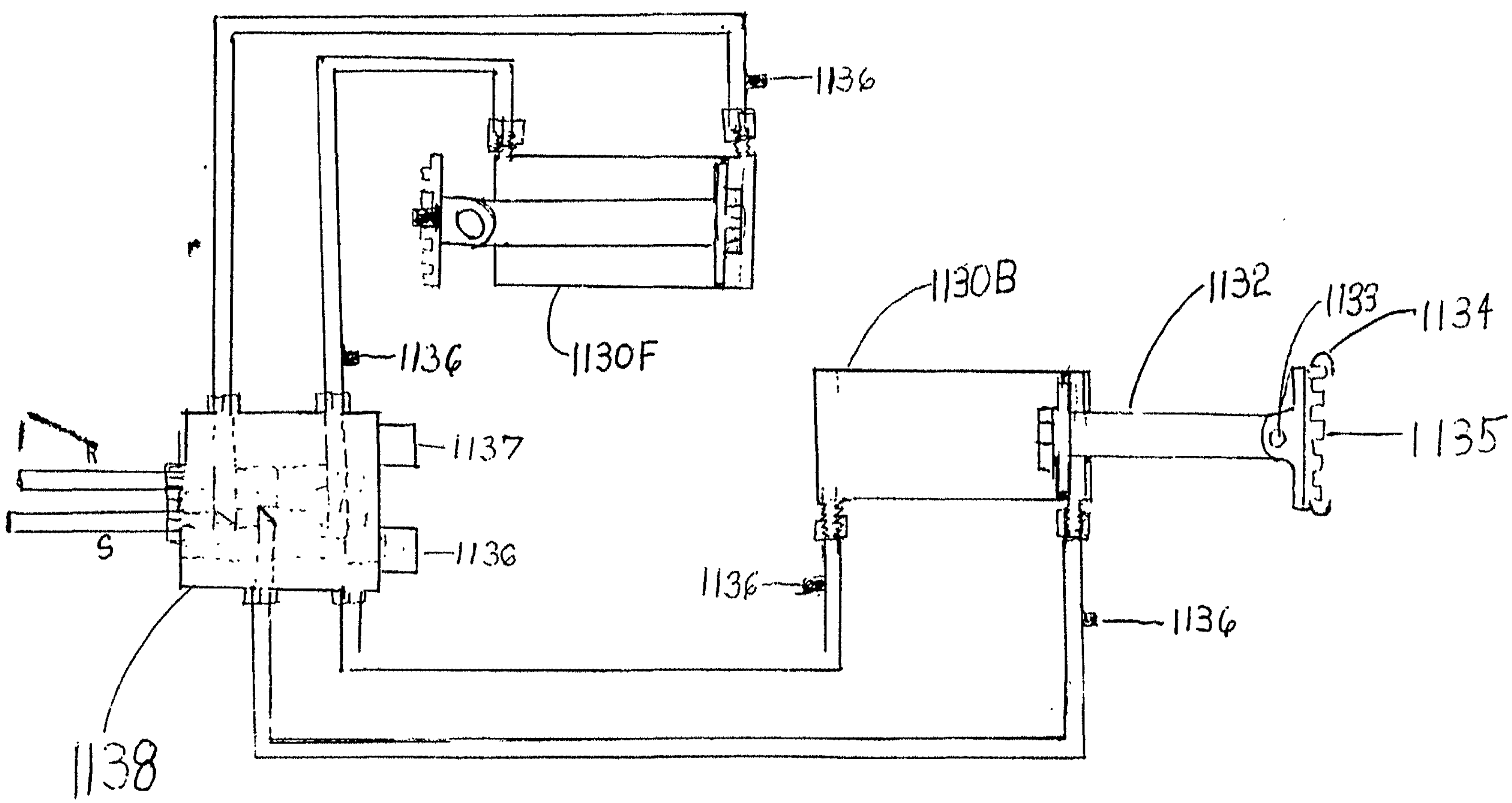


FIG 28



R
S
1136
1137
1136
1136
1130F
1130B
1132
1133
1134
1135
1136
1136
1138

Fig.29

Electronic Security Seal

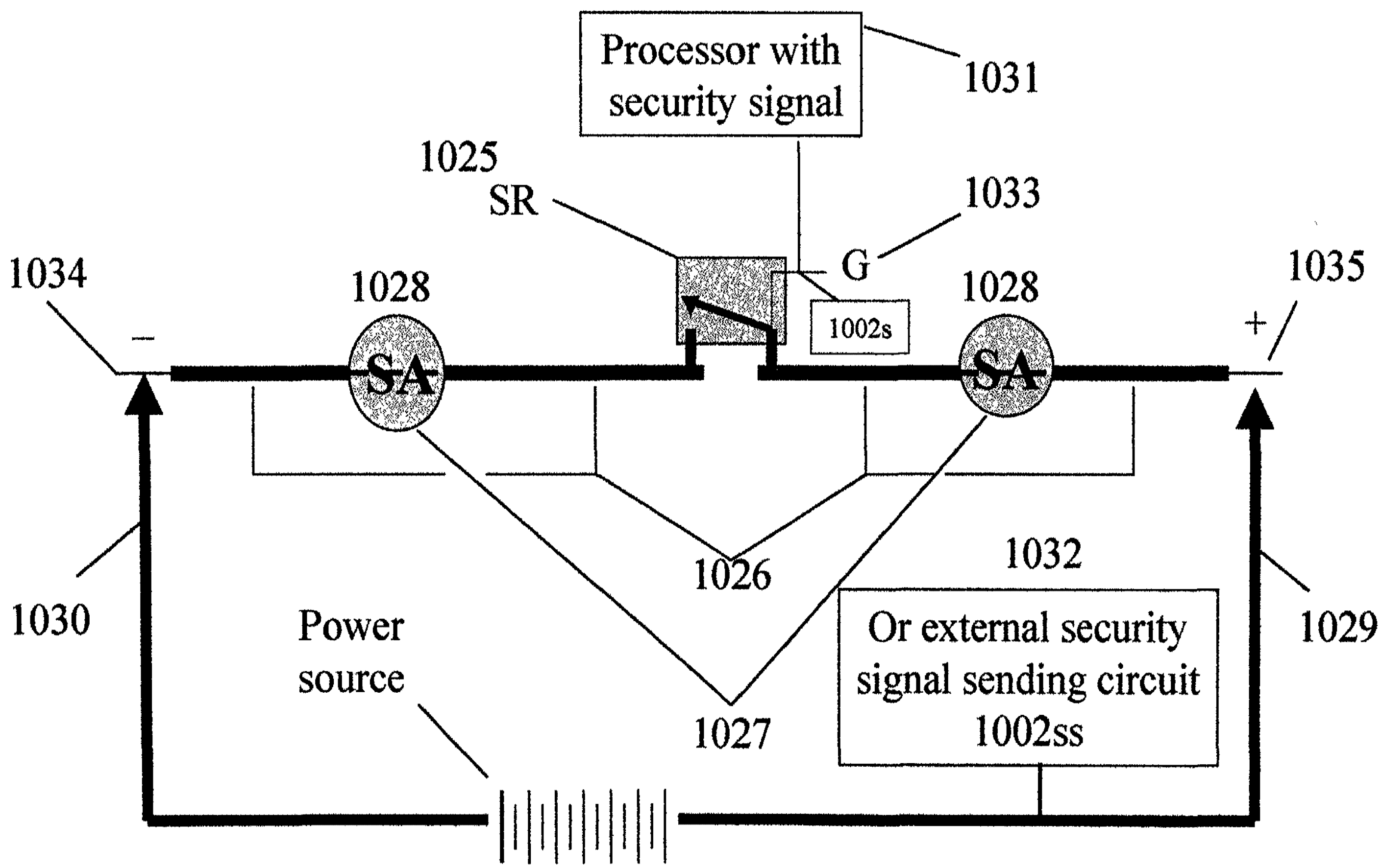
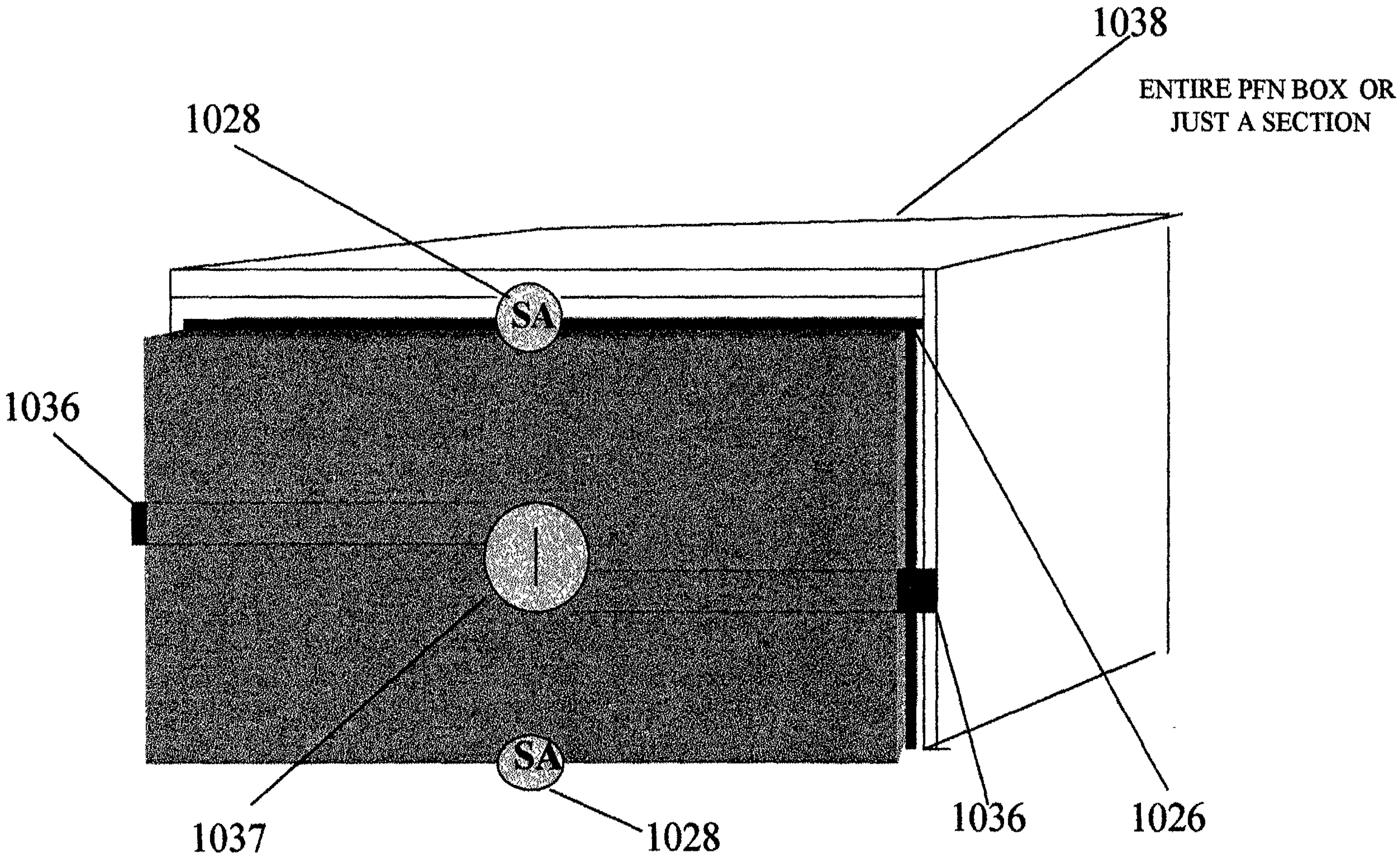


Fig.30

Security Sealed Area For The PFN



1

SONY Color PC Board CCD Camera
Sony Chipset

- 380 line resolution
- NTSC format (510H x 492V)
- Sensor: Sony 1/3" interline transfer CCD
- Signal to noise ratio: >48dB
- Auto electric shutter: 1 to 1/100,000 sec. linear
- Lens: 3.6mm / F2.0 • Focus range: 10mm to infinity
- Video output: 1Vp-p, 75Ω (mating connector BNC type: P/N 135618 – pg 53)
- Automatic gain control • Automatic white balance
- (2) 9"L wires w/ 2-pin Molex type keyed connector to board and stripped and tinned on one end
- (1) 3"L wire harness w/ 15-pin Molex type keyed connector to board
- Requires: center positive 12VDC @ 150mA (mating connector: P/N 28767 – pg 67)
- Recommended: transformer P/N 100095 – pg 66
- Size: mother card: 2.3"L x 1.7"W; analysis card: 2.0"L x 1.7"W; sensor card: 1.7"L x 1.1"W x 1.0"H
- Lens: 3.6mm • Weight: 0.2 lbs.

Part No.	Description	Price
39571	Color camera board	$229.95

2

SONY Camera Board
Sony Chipset

- EIA system 537(H) x 505(V)
- Composite output with 420 line resolution
- Shutter speed: 1/60 - 1/1000
- Signal to noise ratio: >48dB
- Requires 12V power source (not included)
- Video output: 1.0Vpp composite video/ 75Ω
- 5"L wires w/ 4-pin molex type keyed connector to board and stripped and tinned on one end
- Recommended P/N 152426 (vertical headers – pg 49) and P/N 152469 (connector housing – pg 49)
- Size: 1.3"L x 1.3"W x 1.0"H • Lens: 3.6mm
- Weight: 0.05 lbs. • One-year warranty

Part No.	Description	1-4	5-9
150931	Camera board	$79.95	$71.95

3

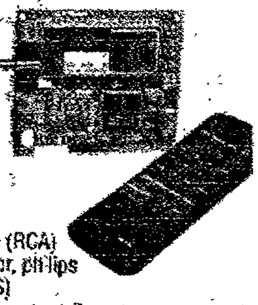
SONY Camera Board w/ Audio
Sony Chipset

- 1/3" Sony CCD image sensor
- EIA system 510(H) x 492(V)
- 380TV line resolution
- .1 lux/F2.0
- Signal to noise ratio: >48dB
- Auto shutter speed: 1/60 - 1/100,00
- Power source: 12V @ 110mA
- 5"L wires w/ 4-pin molex type keyed connector to card and stripped and tinned on one end
- Recommend P/N 152426 (vertical headers – pg 49) and P/N 152469 (connector housing – pg 49)
- Size: 1.7"L x 1.7"W x 1.1"H • Lens: 3.6mm
- Weight: 0.08 lbs. • One-year warranty

Part No.	Description	1-4	5-9
1949	Camera board with audio	$89.95	$80.95

4

PCI TV Capture Card

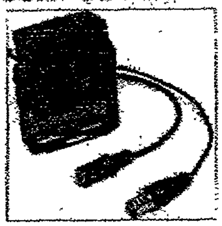


- System requirements: IBM compatible Pentium® 90MHz or higher, 8MB of RAM, Windows® 95, SVGA graphics card
- Can be used for video conferencing
- Input signal: 75Ω coaxial TV antenna, S-Video, composite (RCA) video, remote sensor, phillips camera input (CVBS)
- Output signal: audio output (loop to sound card)
- 181 channel cable ready TV tuner function
- Resizable TV window from icon size to full screen
- Supports NTSC / PAL video input
- Includes user's manual, cables, remote control (battery included), and CD-ROM drivers
- Size: 4.9"L x 3.9"H • Weight: 1.2 lbs.
- One-year warranty

Part No.	Description	Pr
152881	PCI TV capture card	$99.

5

SONY Enclosed Color Camera
Sony Chipset



- 1/3" Sony interline transfer CCD image sensor
- NTSC system with 510 (H) x 492 (V)
- 380 horizontal TV lines
- 1 LUX/F2.0
- Signal to noise ratio: >48dB
- Auto electronic shutter speed: 1 to 100,000 sec.
- Video output: 1V p-p composite video / 75Ω
- Requires 12V @ 110mA center positive power supply (not included, P/N 100095 – pg 66)
- Size: 1.9"L x 1.9"W x 1.0"H • Lens: 3.6mm
- Weight: 0.5 lbs. • One-year warranty

Part No.	Description	Price
153867	Enclosed color camera	$249.95

6

Maruda Video Signal Converter
(Notebook Presenter)

- Converts VGA signals for notebook or desktop PC compatibles (1 DB15 female and male connector)
- Supports 640 x 480, true color operation
- Provides composite signal, S-Video and interlaced RGB
- Provides non-interlaced VGA output for simultaneous display on VGA monitor
- Switch selectable NTSC or PAL output
- Minimum system requirements: IBM PC or 100% compatible with VGA display, television set or VCR with video input connector
- Power: uses keyboard power adapter (AT and PS/2)
- Includes converter unit, cables, software, and manual
- One-year warranty • Size: 4.5"L x 2.1"W x 0.9"H

Part No.	Description	Weight (lbs.)	Price
150447	Video signal converter	1.1	$89.95

7

COMPRO™ Digital Cameras

A full screen, color digital camera designed to plug directly into your parallel port for easy installation and quick video snapping. Comes with user friendly Windows® compatible software that allows for image capturing, rendering, special effects, storage and retrieval capabilities, including JPEG compression.

- Digital still image capturing up to 1280 x 960 pixels at 16.8 million colors
- 40 frames per second video with adjustable focus
- No video capture card required
- Plugs into a parallel port compatible with EPP, ECP, bi- and uni-directional modes
- Includes 8"L cable with Y-cable of DB25 male connector, PS/2 mouse connector, 5-pin DIN connector, 5-pin DIN to PS/2 adapter, mounting brackets, hardware, manual and CD-ROM
- System requirements: 386 or better compatibles, MS Windows® 3.x/95/NT, SVGA graphics card, 8MB of RAM and 3MB disk space
- Size: 4.0"L x 2.6"W x 1.0"T (at base)
- Weight: 1.6 lbs. • One-year warranty

Part No.	Description	Price
151132	Enclosed color digital camera (PS39)	$129.95
134421	Color digital camera (C640)	89.95

8

SHARP Camera Board
Black and White

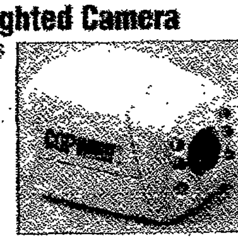
- EIA system 512(H) x 492(V)
- Composite output – 380 lines resolution
- 1/50 to 1/1000 sec. shutter speed
- 2.1mm female center positive
- Requires 12VDC @ 80mA power supply (not included), recommended P/N 100853 (pg 60) – 9VDC @ 500mA
- Mating connectors: Power: 2.1mm female (P/N 28759 – pg 61) Video: RG59 BNC (P/N 71271 – pg 47)
- Size: 1.5"L x 1.5"W x 1.0"H • Weight: 0.1 lbs

More Cameras – See page 135

Part No.	Description	Price
127263	Camera board	$99.95

9

Infrared Lighted Camera



- Adjustable camera lens
- 6 infrared LEDs for night vision
- Auto iris controlled
- 380 TV line resolution
- Scanning frequency: 15.734kHz
- Scanning system: 2:1 interlace
- Video output: 1.0Vp-p/ 75Ω
- 0.1 lux with F2.0 • Lens: 3.6mm
- Matching connectors: RG59 BNC (P/N 71271, pg 53)
- Includes 12VDC @ 500mA power supply and wall mounting bracket • One-year warranty
- Size: 2.9"L x 2.0"W x 2.0"H • Weight: 1.5 lbs.

Part No.	Description	Price
150404	Enclosed infrared lighted camera	$129.95

APPENDIX 1

Appendix 2

SENSOR CONTROLLERS

omron

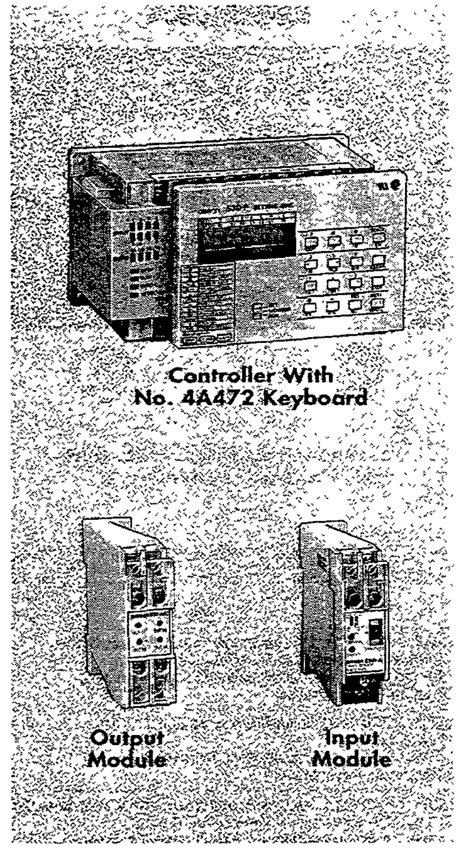
E41515 LR55621

- Contact type No. 4A468 or transistor type No. 4A469 controllers with add-on accessories act as a position sensor signal input/output center
- Self-contained power supply provides 12VDC power source for sensors
- Input response time of 1 millisecond permits detection of small or high speed objects
- 8 inputs and 4 outputs standard, expandable to 8 outputs using optional output modules
- Input modules provide amplifier function and can act as auxiliary output
- Easy to program with detachable keyboard No. 4A472
- Teach function reduces amount of required manual programming
- 100 step EEPROM memory
- DIN rail mounting
- Can be used with most brands of limit proximity, photoelectric, or rotary encoder switches

ADDITIONAL FEATURES

- Alarm buzzer
- 12, one-shot, ON delay, Off delay timers (10 when using Interval Check key)
- Time Range: 0.01 to 999 seconds
- 12, low speed counters (10 when using Interval Check key); 400 Hz response frequency
- One high speed counter (counts up and down); 3k Hz response frequency
- Input Voltage: 100 to 240VAC, 50/60 Hz
- Input Power Consumption: 35VA maximum
- Internal Power Supply for Sensors: 12VDC, 400mA maximum

This high-speed sensor controller fills the gap between slower, expensive programmable controllers and inflexible hard-wired relay control systems. Outputs from controllers can be tied into larger programmable controllers or factory control computers. It can perform many of the complex jobs usually reserved for a more expensive programmable controller. Easy to program and easy to change. Built-in diagnostics troubleshoot the system for you.



CONTROLLER ORDERING DATA

Switching Capacity (Maximum)	Omron Model	Stock No.	List	Each	Shpg. Wt.
Electromechanical (Contact) SPST-NO, 3A 250VAC	S3D8-CFK-US	**4A468**	$383.25	**$367.50**	1.7
Solid-State (Transistor, NPN) 80mA 30VDC, 0.1mA leakage	S3D8-CCF-US	**4A469**	383.25	**367.50**	1.6

KEYBOARD & OUTPUT MODULE SPECIFICATIONS

Description	Output Modules: No. 4A470 (Contact)	Output Modules: No. 4A471 (Transistor)
Switching Capacity	SPST-NO, 3A 250 VAC	80mA 30VDC, 0.1mA leakage

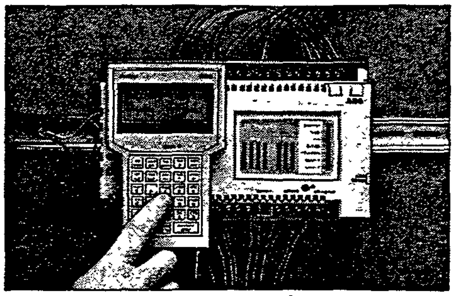
INPUT MODULE SPECIFICATIONS

Description	Fiber Optic Photoelectric No. 4A473	Photoelectric Sensor No. 4A474	Proximity Sensor No. 4A475	Rotary Encoder Pulse Director Module No. 4A476
Switching Capacity	80mA 30VDC	100mA 40VDC	200mA 40VDC	80mA 30VDC
Off-State Leakage Current	1.5 to 4mA max.	0.1mA max.	0.1mA max.	0.1mA max.

SENSOR CONTROLLER ACCESSORY ORDERING DATA

Description	Omron Model	Stock No.	List	Each	Shpg. Wt.
Keyboard	S3D-P-US	**4A472**	$105.00	**$98.05**	0.4
Output Modules	S32-A4K-US	**4A470**	96.60	**91.10**	0.2
	S32-A4C-US	**4A471**	96.60	**91.10**	0.2
Input Modules	E9A-A	**4A473**	172.20	**162.50**	0.2
	E3C-WH4F	**4A474**	136.50	**126.75**	0.2
	E2C-WH4AF	**4A475**	132.30	**113.85**	0.2
	E63-WF5C	**4A476**	112.35	**105.95**	0.2
Program Transfer Unit	S32-PM	**4A477**	96.60	**91.10**	0.1

MODICON



● Agency approvals: UL, CSA, VDE, FM Class 1 Division 2

MODICON MICRO

● Agency approvals: UL, CSA, VDE, FM Class 1 Division 2 ● Up to two plug-and-play communication ports for programming, host computer interfacing and ASCII devices ● Built-in expansion link for connecting together up to four micros ● All-in-one package includes controller, I/O, power supply, and communications ● Interrupt processing for high throughput applications ● Non-volatile Flash-PROM memory eliminates battery maintenance ● Utilize standard foil-shielded flat telephone cables ● Highly secure, noise resistant ● Shares I/O status or data between Micros ● Configure, program and monitor application program and data values ● On-board, non-volatile memory to store and transfer application programs ● Ladder logic programming software runs in DOS and Windows environments ● Dimensions: 5.5H x 10W x 3"D

CPU SELECTION

STEP 1: Select the desired level

STEP 2: Select desired power supply voltage. *Note:* This voltage is independent from the input or output voltages 115 to 230 VAC or VDC.

STEP 3: Select desired input (signal) voltage: 115 or 230 VAC (uses relay/triac output); 24 VDC (uses relay or transistor output); Analog (CPU 612 series only)

STEP 4: Select output type: Relay (2 amp at 24 to 250VAC and 2 amp at 24 to 30VDC); Transistor (.05 amp at 20 to 30VDC source* switching); Triac (0.5 amp at 20 to 30VDC); Analog (CPU 612 series only). *Note:* All units with triac outputs have 8 triacs and 4 relays.

STEP 5: Determine additional accessories. *Note:* A hand held programmer or computer transfer mode kit is needed to operate unit.

(*) PNP switching the positive side to the load.

CPU SPECIFICATIONS AND ORDERING DATA

Description	Power Supply	Inputs Volts	Output Type	Modicon Model 110CPU...	Stock No.	List	Each	Shpg. Wt.
LEVEL 1 (CPU 311): 1 K words user logic, 400 words data,	115 to 230VAC	24 DC	Relay	31100	6U769	$380.00	$323.00▲	5.0
16 inputs 12 outputs, 4.25-5 ms/1000 logic scan,	115 to 230VAC	115 AC	8 Triac/4 Relay	31101	6U768	470.00	399.50▲	4.3
1 Modbus/ASCII port, high speed I/O expansion port,	115 to 230 VAC	230 AC	8 Triac/4 Relay	31102	6U767	470.00	470.00▲	4.2
Basic 984 instruction set	24VDC	24 DC	Transistor	31103	6U766	380.00	323.00▲	4.0
LEVEL 2 (CPU 411): Same features as Level 1 plus:	115 to 230VAC	24 DC	Relay	41100	6U765	440.00	374.00▲	4.1
Time of day clock,	115 to 230VAC	115 AC	8 Triac/4 Relay	41101	6U764	530.00	450.50▲	5.0
2-3 ms throughput with interrupt processing,	115 to 230VAC	230 AC	8 Triac/4 Relay	41102	6U763	530.00	450.50▲	4.1
2 High speed DC inputs	24VDC	24 DC	Transistor	41103	6U762	440.00	374.00▲	[illegible]
LEVEL 3 (CPU 512): 2 K words user logic, 1820 words data, 16 inputs 12 outputs,	115 to 230VAC	24 DC	Relay	51200	6U761	750.00	637.50▲	
2.5 ms/1000 logic scan, 2 Modbus/ASCII port	115 to 230VAC	115 AC	8 Triac/4 Relay	51201	6U760	830.00	705.50▲	
Enhanced 984 instruction set, 3 High speed DC inputs,	115 to 230VAC	230 AC	8 Triac/4 Relay	51202	6U759	830.00	705.50▲	4.2
Time of day clock, 1-1.5 ms throughput with interrupt processing	24VDC	24 DC	Transistor	51203	6U758	750.00	637.50▲	3.0
LEVEL 4 (CPU 612): All features of Level 3 plus:								
4 Analog inputs, +10V 16 Bit, 4-20 mA 14 Bit	24VDC	24VDC	Relay	61200	6U757	1000.00	850.00▲	3.3
2 Analog outputs, 0-10V 4-20mA 12 Bit	24VDC	24VDC	Transistor	61203	6U756	1000.00	850.00▲	4.0

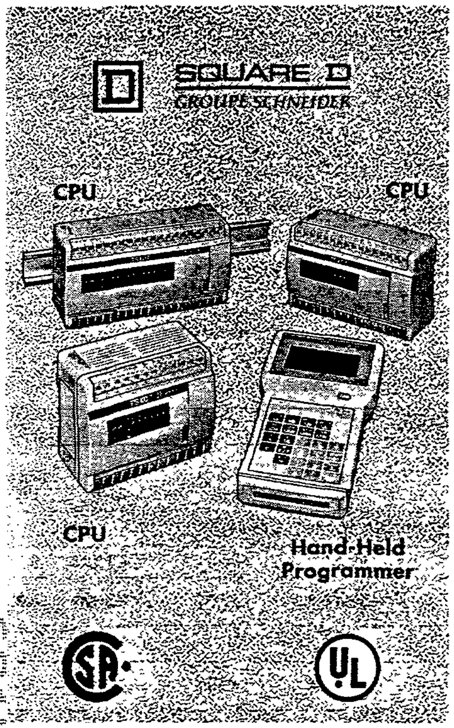
PROGRAMMABLE LOGIC CONTROLLER ACCESSORIES

Description	Modicon Model	Stock No.	List	Each	Shpg. Wt.
Lithium Battery Assembly for Modicon Micro	110XCP98000	6U755	$25.00	$21.25▲	0.3
Capacitor Assembly for Modicon Micro	110XCP99000	6U740	35.00	29.75▲	0.2
22 Pin Input terminal strip	110XTS00122	6U738	45.00	38.25▲	5.0
20 Pin Output terminal strip	110XTS00120	6U739	40.00	34.00▲	5.0
EXPANSION LINK CABLE					
I/O Expansion Link Cable 2 ft., RJ11	110XCA17101	6U753	25.00	21.25▲	0.3
I/O Expansion Link Cable 10 ft., RJ11	110XCA17102	6U752	35.00	29.75▲	0.4
I/O Expansion Link Cable 20 ft., RJ11	110XCA17103	6U751	45.00	38.25▲	0.5
I/O Exp. Link Cable Y Connector	110XCA10100	6U754	15.00	12.75▲	0.3
COMMUNICATION CABLE					
RS232 Communication Cable 3 ft., RJ45	110XCA28201	6U744	25.00	21.25▲	0.3
RS232 Communication Cable 10 ft., RJ45	110XCA28202	6U743	35.00	29.75▲	0.3
RS232 Communication Cable 20 ft., RJ45	110XCA28203	6U742	45.00	38.25▲	0.6
ADAPTERS					
RJ45 9 Pin D-shell adapter for AT serial port	110XCA20300	6U750	25.00	21.25▲	0.2
RJ45 9 Pin D-shell adapter for XT serial port	110XCA20400	6U747	25.00	21.25▲	0.3
RJ45 9 Pin D-shell male adapter kit	110XCA20301	6U749	40.00	34.00▲	0.3
RJ45 9 Pin D-shell female adapter kit	110XCA20302	6U748	40.00	34.00▲	0.3
RJ45 25 Pin D-shell male adapter kit	110XCA20401	6U746	45.00	38.25▲	0.3
RJ45 25 Pin D-shell female adapter kit	110XCA20402	6U745	45.00	38.25▲	0.3
BULK CABLE AND CONNECTORS					
RS232 Bulk Cable 1,000 ft. reel	490NAA00010	6U736	1000.00	850.00▲	5.0
I/O Extension Bulk Cable 1,000 ft. reel	490NAA00020	6U735	900.00	765.00▲	5.0
RJ45 Connectors: Qty 20	490NAD00010	6U731	35.00	29.75▲	5.0
RJ11 Connectors: Qty 20	490NAD00020	6U730	35.00	29.75▲	5.0
RJ Type Connector Tool	490NAB00010	6U734	95.00	80.75▲	5.0
RJ11 Die Set	490NAB00011	6U733	60.00	51.00▲	5.0
RJ45 Die Set	490NAB00012	6U732	60.00	51.00▲	5.0
HAND HELD PROGRAMMER AND ACCESSORIES					
English Version Programmer	520VPU19200	6U728	395.00	335.75▲	2.0
Computer Transfer Mode Kit	520VIA19200	6U729	95.00	80.75▲	1.5
Programming Software for Compact and Micro Controllers (DOS based package—self contained unit)	371SPU92100	6U737	500.00	425.00▲	3.9

▲Net Prices, Not Subject To Discounts

PROGRAMMABLE LOGIC CONTROLLERS

TSX® 07 PROGRAMMABLE CONTROLLER



- **Expansion to 48 I/O (for AC units), using second base unit located up to 665 ft. from master**
- **Panel or DIN rail mounting**
- **Mix I/O types: AC and DC inputs: relay and transistor outputs**
- **LED indicators for system operation and individual I/O status**
- **1K logic programming capacity in non-volatile EEPROM memory**
- **High speed counter and pulse output**
- **Real-time clock/calendar for action triggering, event logging or time period calculations**
- **24 VDC sensor power supply rated to 150mA**
- **Up to two potentiometers for easy operator adjustment of selected variables**
- **Peer communications allow distributed processing of up to 4 CPU's**
- **I/O interface modules provide analog & discrete I/O options**
- **Hand-held terminal provides both list language programming and maintenance functions**
- **Programming software provides "Windows Like" ease of use for DOS PC's**

CPU SELECTION

STEP 1: Select desired power supply voltage. *Note:* This voltage is independent from the input or output voltages 120 to 240 VAC or 24VDC

STEP 2: Select number of inputs/outputs (I/O) and time calendar.

10 I/O has 6 inputs, 4 outputs and no time calendar

16 I/O has 9 inputs, 7 outputs and time calendar

24 I/O has 14 inputs and 10 outputs and time calendar

STEP 3: Select desired input (signal) voltage: 120VAC or 24VDC

STEP 4: Select output type

Relay (2 amp at 24 to 264VAC or 19 to 30VDC resistive)

Transistor (0.5 amp at 19 to 30VDC)

Note: Transistor outputs are available in either sink or source.

STEP 5: Determine any additional accessories. *Note:* A hand held programmer is needed to operate unit.

CPU SPECIFICATIONS AND ORDERING DATA

Power Supply	Number of I/O's	Input Volts	Output Type	Dimension (In.) W x H x D	Square D Model TSX07...	Stock No.	List	Each	Wt.
120 to 240 VAC	10	24VDC	Relay	4.1 x 3.3 x 2.4	201028	**6U713**	$290.00	**$246.50**	1.2
	10	24VDC	Transistor (sink)	4.1 x 3.3 x 2.4	201008	**6U716**	320.00	**272.00**	1.1
	16	24VDC	Relay	5.3 x 3.3 x 2.4	211628	**6U708**	375.00	**318.75**	1.0
	16	24VDC	Transistor (sink)	5.3 x 3.3 x 2.4	211608	**6U711**	390.00	**331.50**	1.4
	16	120VAC	Relay	5.3 x 3.3 x 2.4	211648	**6U707**	480.00	**408.00**	1.0
	24	24VDC	Relay	6.5 x 3.3 x 2.4	212128	**6U702**	465.00	**395.25**	1.6
	24	24VDC	Transistor (sink)	6.5 x 3.3 x 2.4	212408	**6U705**	500.00	**425.00**	1.5
24 VDC	10	24VDC	Relay	4.1 x 3.3 x 2.4	201022	**6U714**	300.00	**255.00**	1.1
	10	24VDC	Transistor (sink)	4.1 x 3.3 x 2.4	201002	**6U717**	280.00	**238.00**	1.1
	10	24VDC	Transistor (source)	4.1 x 3.3 x 2.4	201012	**6U715**	320.00	**272.00**	1.1
	16	24VDC	Relay	5.3 x 3.3 x 2.4	211622	**6U709**	380.00	**323.00**	1.0
	16	24VDC	Transistor (sink)	5.3 x 3.3 x 2.4	211602	**6U712**	370.00	**314.50**	1.3
	16	24VDC	Transistor (source)	5.3 x 3.3 x 2.4	211612	**6U710**	390.00	**331.50**	1.3
	24	24VDC	Relay	6.5 x 3.3 x 2.4	212422	**6U703**	470.00	**399.50**	1.0
	24	24VDC	Transistor (sink)	6.5 x 3.3 x 2.4	212402	**6U706**	460.00	**391.00**	1.5
	24	24VDC	Transistor (source)	6.5 x 3.3 x 2.4	212412	**6U704**	500.00	**425.00**	1.5

PROGRAMMABLE LOGIC CONTROLLER ACCESSORIES

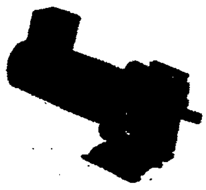
Description	Square D Model	Stock No.	List	Each	Shpg. Wt.
Hand-Held Programming Terminal Kit Includes: Hand-Held Programming Terminal, 2 meter cable and user's manual	TFTX117071E	**6U726**	$765.00	**$650.50**	2.6
Off-Line Programming Power Supply (100/120VAC)	TFTXADC11	**6U725**	150.00	**127.50**	1.0
Off-Line Programming Power Supply (200/240VAC)	TFTXADC12	**6U724**	170.00	**144.50**	1.0
Memory Storage Card (32K EEPROM)	TFTXREM3216	**6U723**	290.00	**246.50**	0.1
Memory Storage Card (32K Battery Backed RAM)	TFTXRSM3216	**6U721**	240.00	**204.00**	0.1
Memory Storage Card (128K Battery Backed RAM)	TFTXRSM12816	**6U722**	480.00	**408.00**	0.1
Programming Software Kit (RS232C) Includes: 3½" disk, 2 meter cable and user's manual	TLXLPL707P10E	**6U718**	490.00	**416.50**	0.1
Programming Software Kit (RS485) Includes: 3½" disk, 2 meter cable and user's manual	TLXLPL707F10E	**6U719**	400.00	**340.00**	0.1
6 Point DC Input Simulator for 10 I/O TSX07*	TSX07SIM06	**6U698**	90.00	**76.50**	0.2
9 Point DC Input Simulator for 16 I/O TSX07*	TSX07SIM09	**6U697**	120.00	**102.00**	0.2
14 Point DC Input Simulator for 24 I/O TSX07*	TSX07SIM14	**6U696**	150.00	**127.50**	0.3
Pre-Terminated I/O Extension Cable (0.3 meter)*	TSXCA0003	**6U695**	80.00	**68.00**	0.1
Self Teach Training Manual for TSX07 and FTX117*	MD1TSX071E	**6U727**	30.00	**25.50**	0.2
User's Manual for TSX07 and FTX117*	TLXDM07117E	**6U720**	30.00	**25.50**	0.5
Training/Demonstration Case*	TSXSDC07	**6U694**	130.00	**110.50**	0.1

(*) Training Accessories

APPENDIX 3 -A-

GEARMOTOR SELECTION GUIDE

POWER TRANSMISSION: GEARMOTORS



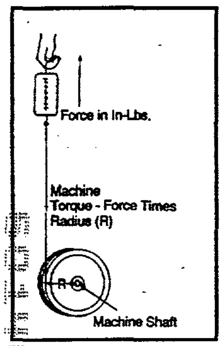
SELECTING A GEARMOTOR

A gearmotor is an electro/mechanical device using an electric motor to drive a geartrain encased in a housing. Geartrain reduces output speed while increasing available torque. Gearmotors are designed to move an object in a given direction and at a rate of speed (RPM) while providing required twisting force (torque). Selection should be easier once output performance requirements are identified. It is critical to know the speed and torque requirements of load to be driven. Unusual loads or harsh environments must be considered before a driving device is selected. Horsepower is *not* a factor in selecting a standard gearmotor, since each gearmotor was predesigned for a specific performance level. For some applications, more detailed design criteria may be required.

MECHANICAL CONSIDERATIONS

Speed

Torque



From	Into	Multiply By
In.-Lb.	Ft.-Lb.	0.0833
Ft.-Lb.	In.-Lb.	12
In.-Oz.	In.-Lb.	0.0625
In.-Lb.	In.-Oz.	16

Speed. How fast should equipment or object move? Output speeds are available from less than 1/2 RPM (revolution per minute) to nearly 300 RPM, depending on motor type and gear ratios. Based on your application, you may need to consider whether additional modified speeds will be produced through sheaves or sprocket type drive systems before determining gearmotor output speed.

Start Torque provides initial power to get things moving. On large conveyers, starting torque requirement may be high while a small rotating display cabinet may require very little torque to overcome resistance. Small gearmotors typically have "start" and "run" torque specifications shown due to their lower overall output capabilities. Starting torque ratings can be lower than maximum running torque ratings. Heavier duty gearmotors are usually only rated for their full-load (running) torque capability since starting torque is relatively high.

Running Torque (Full Load) is the continuous twisting force to keep things moving after initial start and must maintain power under all variable load situations to provide adequate service. Running torque listed in the catalog are maximum torque available for safe, continuous operation. Frequent starts and stops will require use of starting torque more frequently. This could result in excessive heat build-up, causing premature motor failure.

HOW TO MEASURE TORQUE
CAUTION: Disconnect Power Before Proceeding

Torque required to drive a machine may be measured by using a flat grooved pulley, a cord and a spring scale. Pulley must be rigidly attached to machine's drive shaft, with cord wrapped several times around pulley. Do not allow cord to overlap. The other end is tied to the scale. When the scale is pulled, it will turn the pulley. When the pulley first starts to turn, the scale will register starting force required in pounds.

Force registered on scale, in pounds, when multiplied by radius of pulley, in inches, yields the starting torque, in in.-lbs. required by machine. If torque characteristics of machine vary during its operating cycle, torque must be determined at the point in the cycle where it is the greatest. Radius is measured from the center of machine shaft to center of cord.

If pulley can be turned (by pulling on cord) at a rate equal to normal speed of driven equipment, an indication of running torque can be obtained. If load of machine is almost entirely due to friction, running requirement will be essentially the same regardless of speed. However, if load is primarily the result of inertia or windage (air drag), characteristics of the inertia or windage elements must be known.

ELECTRICAL CONSIDERATIONS

Before you can select the best gearmotor for your application, you need to identify your intended power supply capability. AC and DC input gearmotors from 12 VDC to 460 VAC are available. This chart provides typical characteristics of different motor types as a guide for your selection.

Type	Starting Torque	Reversible	Speed Controllable*	Features
Synchronous	Low	Yes	No	Exact RPM output-good for timing and positioning applications
Shaded Pole	Low	No	No	Rugged, relative low cost
PSC	Medium	Yes	No	Reversible, quiet operation
Split phase	Med./High	Yes	No	Fairly high start torque
Capacitor-Start	High	Yes	No	Heavy duty start-ups, dual voltage
Three Phase	High	Yes	No	Simple, reliable, high start power and efficiency
Perm. Mag. (12-180VDC)	High	Yes	Yes	Speed controllable, high start torque
Universal AC/DC	High	Yes	Yes	Speed controllable, relatively low cost, simple operation

(*) Performance matched speed controls are available for many catalog gearmotor listings.

LOADS

Overhung Load

Drive Factors	
Sprocket	1.00
Pulley	1.50
Gear	1.25

Shock Load

A load is any and all driven items connected to and driven by the gearmotor output shaft. Not all loads that gearmotors get coupled to have steady speed and torque requirements. Some loads demand power surges from gearmotor during running cycle. This can be abusive to gears. Also, environmental conditions and space restrictions need to be taken into account. Two types of loads that require careful consideration before selecting a gearmotor are:

Overhung Load (OHL) is the perpendicular force pushing against the side of an output shaft. This force is either from weight hanging on output shaft or from a sprocket, pulley or gear being used on shaft. Every gearmotor has a OHL specification which *should not be exceeded.* Use following formula to calculate OHL if you plan to use a sprocket, pulley, gear or any weight will be suspended directly on shaft. Multiply pounds of load (obtained from formula) by correct drive factor shown to determine actual OHL ratings in pounds on center output shaft. Catalog OHL ratings are measured on shaft diameter away from gearbox face on output shaft of reducers.

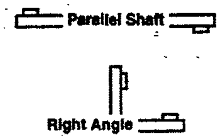
Shock Load. Some applications subject gearmotors to loads that transmit shock or abrupt peak loads back to gearmotor. Shock load can create peak loads several times greater than gearmotor torque rating. For example, when a heavy object accidentally is dropped on a running conveyor, this causes shock to gears and may even break them. Gearmotor does not recognize shock load as a warning sign and will try to put out even higher power, possibly exceeding its own gear strength. Be sure gearmotor is rated high enough to handle maximum anticipated shock load conditions.

$$\frac{\text{Full-Load Torque (Requirement of Gearmotor)} \times 2}{\text{Pitch Dia. of Sprocket, Pulley or Gear}} = \text{Lbs. of load on center of gearmotor output shaft}$$

-B-

GEARMOTOR SELECTION GUIDE

GEARS/MATERIAL



Parallel Shaft models include helical and spur gear designs. First stage gears are typically helical for low noise and of phenolic, nylon or steel material. Subsequent gears are usually metallic (sintered of hardened cut steel) as required by performance level designed into gearmotor. Parallel shaft gearmotors offer high efficiency in compact packages.

Right Angle models include predominantly worm type which are precision machined from steel. Worm wheel in usually bronze, but may be phenolic or cast iron. Right angle gearmotors tend to be of heavier construction, handle higher shock loads, and run quieter than comparably sized parallel shaft designs, but often less efficiently.

APPLICATION FORMULAS

To Obtain	Having	Formula
Velocity (V) Feet Per Minute	Pitch Dia. of Sheave or Sprocket—Inches and Revolutions Per Minute (RPM)	$V = 0.2618 \times D \times RPM$
Revolutions Per Minute (RPM)	Velocity (V) Feet Per Minute and Pitch Dia. (D) of Sheave or Sprocket—Inches	$RPM = \frac{V}{0.2618 \times D}$
Pitch Dia. (D) of Sheave or Sprocket	Velocity (V) Feet Per Minute and Revolutions Per Minute (RPM)	$D = \frac{V}{0.2618 \times RPM}$
Torque (T) In.-Lbs.	Force (W) Lbs. and Radius (R) Inches	$T = W \times R$
Horsepower (HP)	Force (W) Lbs. and Velocity (V) Feet Per Minute	$HP = \frac{W \times V}{33000}$
Horsepower (HP)	Torque (T) In.-Lbs. and Revolutions Per Minute (RPM)	$HP = \frac{T \times RPM}{63025}$
Torque (T)	Horsepower (HP) and Revolutions Per Minute (RPM)	$T = \frac{63025 \times HP}{RPM}$
Force (W) Lbs.	Horsepower (HP) and Velocity (V) Feet Per Minute	$W = \frac{33000 \times HP}{V}$
Revolutions Per Minute (RPM)	Horsepower (HP) and Torque (T) In.-Lbs.	$RPM = \frac{63025 \times HP}{T}$

THE FINAL STEP

Product pages following the Gearmotor Selection Guide are sorted by DC and AC input, then categorized by lower to highest torque rated units. Within each design you will have multiple speed options to select from. Gearmotors listed on pages 208 through 213 are sorted by RPM for quick refer[illegible] this guide was designed to assist in selection [illegible] suitable gearmotor for your application, it is not possible to identify every particular condition you may encounter in actual use.

CONVERSION CHART FOR FRACTIONS

Fractional Inches	Decimal Inches	Fractional Inches	Decimal Inches
1/64	.015625	33/64	.515625
1/32	.03125	17/32	.53125
3/64	.046875	35/64	.546875
1/16	.0625	9/16	.5625
5/16	.078125	37/64	.578125
3/32	.09375	19/32	.59375
7/64	.109375	39/64	.609375
1/8	.125	5/8	.625
9/64	.140625	41/64	.640625
5/32	.15625	21/32	.65625
11/64	.171875	43/64	.671875
3/16	.1875	11/16	.6875
13/64	.203125	45/64	.703125
7/32	.21875	23/32	.71875
15/64	.234375	47/64	.734375
1/4	.250	3/4	.750
17/64	.265625	49/54	.765625
9/32	.28125	25/32	.78125
19/64	.296875	51/64	.796875
5/16	.3125	13/16	.8125
21/64	.328125	53/64	.828125
11/32	.34375	27/32	.84375
23/64	.359375	55/64	.859375
3/8	.375	7/8	.8750
25/64	.390625	57/64	.890625
13/32	.40625	29/32	.90625
27/64	.421875	59/64	.921875
7/16	.4375	15/16	.9375
29/64	.453125	61/64	.953125
15/32	.46875	31/32	.96875
31/64	.484375	63/64	.984375
1/2	.500	1	1.0000

GEARMOTOR TERMINOLOGY

Actual Torque—The actual torque required to drive a machine. It is the torque measured at the input shaft of a machine being driven.

AGMA—American Gear Manufacturers Association. Composed of member companies who manufacture speed reducers, enclosed gear drives, open gearing, and gear type shaft couplings. They establish standards for the design and application of gear products. The combined experience of company members and technical members assures gear users that products will perform satisfactorily when built, selected, and tested in accordance with AGMA standards.

Ambient Temperature—The temperature of the air around the power transmission equipment in operation.

Axial Thrust Load—The external loading of force acting lengthwise along a shaft.

Back Drive—A condition in which the drive (or prime mover) is driven by the load rather than driving the load. An example might be when a high inertia load, such as a flywheel, is decelerating down to slower speed or complete stop.

Backlash—The amount by which the width of a tooth space exceeds the thickness of the engaging tooth.

Center Distance—When applied to speed reducers, it is the distance between the centerlines of the input (high speed) shaft and the output (low speed) shaft. Shaft centerlines may be parallel or at right angles to each other. Center distance is often used to designate a single reduction worm gear speed reducer, such as 1.33 . 1.75.

Double Reduction—A multiple reduction unit containing two stages of gear reduction housed in a single enclosure. The overall speed reduction (ratio) is the product of the gear ratios provided by the individual stages.

Duty Cycle—The relationship between operating and rest time. When applied to gear reducers, duty cycle is usually referred to as continuous or intermittent duty.

Continuous Duty—The ability of a geared unit to operate continuously within its rated capacity without exceeding the temperature limits of its lubricating system.

Intermittent Duty—A geared unit which has a specific operating time limit (min./hr.) to prevent exceeding the temperature limits of its lubricating system. This limit is often specified as a percentage. (A 25% duty cycle indicates a maximum total operating time of 15 minutes each hour.)

Efficiency—An expression of the amount of power delivered at the output of a power transmission system as a percentage of the amount of power supplied to the system's input side.

Gears—Machined elements that transmit motion and power by means of successively engaging teeth. When two gears run together, the one with the larger number of teeth is called the GEAR, and the one with the smaller number of teeth is called the PINION. Most common gear types available are helical, spur and worm gears.

Helical Gears—Gears that are cylindrical in form and mesh between parallel centerlines. Their teeth are cut at an angle, called the helix angle, across the face of the gear.

Spur Gears—Gears that are cylindrical in form and mesh between parallel centerlines with teeth cut straight across gear face.

Worm Gears—Gears that consist of a screw like worm and its mating gear. Both are cylindrical in form and mesh at right angles to each other. The WORM is the driving component and is identified by one or more teeth in the form of screw threads wrapped around a cylinder (similar to barber pole stripes). The WORM-GEAR, also called Worm-Wheel, is the driven component and has teeth similar to those of a helical gear with the top of its teeth curved inward to mesh with the worm.

Gear Ratio—Described below for helical, spur, and worm gears.

Helical and Spur Gears—Ratio of number of gear teeth on driven gear divided by a number of gear teeth on driving gear (pinion).

Worm Gears—The ratio of the number of teeth on the Worm-Gear (Worm-Wheel) divided by the number of threads or "starts" on the worm.

Gear ratio is normally expressed as (X):1.

Inertia (WR)—A measure of the resistance of an object to accelerate or decelerate.

Inertia Load—A load, such as a flywheel or other heavy rotating object, which tends to oppose acceleration up to rated speed or deceleration to stop.

Input Horsepower—The amount of power applied to the input shaft of a reducer by the prone mover. The input horsepower rating assigned to a reducer represents the maximum amount of power the reducer is capable of handling.

Load—The burden imposed on a drive system by the equipment or machine being driven. There are three cycles.

Constant Torque—The load torque remains constant over the speed range, while the horsepower required varies directly with speed. This type of load is usually the result of friction related to sliding or rolling motion. Industrial equipment of this type include conveyors, hoists, and similar general machinery.

Variable Torque—The load torque and horsepower both vary as speed is changed; as speed increases, torque and horsepower both increase in some related manner. Examples include some types of mixers, positive displacement and centrifugal pumps, air moving fans, and blowers.

Constant Horsepower—The load horsepower remains constant over speed range, while the torque required decreases as speed increases. Constant horsepower loads commonly are found on metal cutting or removing equipment such as saws, lathes, and milling machines.

Load Classifications—Loads can be classified by the degree of shock or impact they impose on the drive system. There are two main classifications.

Uniform Steady Load—Loads that are essentially smooth, shock or impact free. Equipment that normally exhibit this type of load include can filling and bottling machinery, uniformly loaded or fed conveyors, and printing presses.

Shock Loads—Loads that transmit shock or abrupt peak loads back to the driver (power source—motor, gearmotor, or reducer) and often repeat on a regular or cyclical basis. Shock loads may be categorized as light, moderate, or heavy. Equipment that exhibits this type of load are conveyors not uniformly fed, agitators for liquids and solids, tumblers, and variable density mixers.

Mechanical Rating—The maximum power or torque that a speed reducer can transmit, based on the strength and durability of its components.

Overall Drive Ratio—The ratio of input speed (RPM) to output speed (RPM). Overall drive ration is normally expressed as (X):1.

Overdrive—An interchangeable term for back drive.

Overhung Load—The side or radial force applied at right angles to a drive motor, gearmotor, or reducer shaft. This force results from a gear, pulley, or sprocket that the drive's bearing and shaft must support without damage while transmitting power.

Pinion—The input or driving gear that meshes with an output or driven gear.

Radial Load—An interchangeable term for overhung load.

Speed Ratio—The ratio or relationship of input speed divided by output speed. Speed ratio is normally expressed as (X): 1.

Thrust—The force acting lengthwise along the axis of a shaft either towards or away from it.

Torque—Twisting force that tends to cause rotation. For explanations of *Running (Full Load)) Torque* and *Starting Torque* as it pertains to gearmotors, see beginning of this GEARMOTOR SELECTION GUIDE.

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POWER TRANSMISSION: GEARMOTORS

AC GEARMOTOR SELECTION GUIDE

Name-plate RPM	F/L Torque In.-Lbs. [In.-Oz.]	Input HP	Volts 60 Hz	Volts 50 Hz	Shaft Config.	Motor Type	Motor Enclo-sure	Mounting	Rota-tion	Overall Height	Length Less Shaft	Thermal Protec-tion	Speed Control-able?	Brake Adapt-able?	Stock No.	Ref. Page
0.5	100	1/150	115	115	Par.	Shaded Pole	OpFC	Face	CW	3 9/64	3 9/16	Auto	No	No	6Z901	223
0.9	50	1/250	—	220-240	Par.	Shaded Pole	Open	Face	CW	3	1 15/16	None	No	No	1L449	223
1	[150]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 13/16	1 5/8	None	No	No	6Z535	247
1	[200]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 11/32	2 1/4	None	No	No	6A173	247
1	[290]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 3/8	2 25/32	Imp.	No	No	6Z131	247
1	42	1/100	115	115	Par.	PSC	OpFC	Face	Rev	4	4 1/8	None	No	Yes	4Z451	226
1	50	1/400	115	—	Par.	Shaded Pole	Open	Face	CW	2 13/16	3 13/32	Imp.	No	No	2Z804	222
1	60	1/250	115	—	Par.	Shaded Pole	Open	Face	CW	3	1 15/16	Imp.	No	No	3M095	223
1	100	1/100	115	115	Par.	Shaded Pole	OpFC	Face	CW	4 5/8	3 7/8	Auto	No	No	2L001	224
1	100	1/100	115	115	Par.	Shaded Pole	OpFC	Face	CW	3 9/64	3 3/4	Auto	No	No	6Z902	223
1	3000	1/15	115/230	115/230	Par. Sh.	PSC	TEFC	Face	Rev	9	8 3/4	None	No	No	1L570	235
1.2	100	1/80	115	110	Par.	PSC	Open	Face/Base	Rev	3 19/32	6 17/64	None	No	Yes	6Z073	229
1.2	100	1/80	230	220	Par.	PSC	Vented	Face/Base	Rev	3.6	6.26	None	No	Yes	1L532	229
1.3	250	1/50	115/230	115/230	Rt. Ang.	PSC	TEFC	Base	Rev	6 15/16	11 5/8	None	No	Yes	1L554	241
2	[131]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 13/16	1 5/8	None	No	No	6Z536	247
2	[174]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 11/32	2 1/4	None	No	No	6A174	247
2	[233]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 3/8	2 25/32	Imp.	No	No	6A185	247
2	25	1/400	115	—	Par.	Shaded Pole	Open	Face	CW	2 13/16	3.57	Imp.	No	No	2Z805	222
2	113	1/10	115	—	Par.	Shaded Pole	Open	Face/Base	CW	—	7 13/16	None	No	Std.	1L490	227
2	113	1/20	115	—	Par.	Shaded Pole	TEFC	Face/Base	CW	5 3/8	9 3/8	None	No	No	3M125	230
2	1900	1/12	115/230	110/220	Par. Sh.	PSC	TEFC	Face	Rev	9	8 3/4	None	No	No	1L571	235
2.3	100	1/80	115	110	Par.	PSC	Open	Face/Base	Rev	3 19/32	6 17/64	None	No	Yes	6Z074	229
2.3	100	1/80	230	220	Par.	PSC	Vented	Face/Base	Rev	3.6	6.26	None	No	Yes	1L525	229
3	200	1/20	115/230	115/230	Rt. Ang.	PSC	TEFC	Base	Rev	6 15/16	11 5/8	None	No	Yes	1L555	241
3.3	18	1/250	—	220-240	Par.	Shaded Pole	Open	Face	CW	3 13/16	2 9/16	None	No	No	1L452	222
3.5	50	1/250	115/230	115/230	Par. Sh.	PSC	TENV	Face	Rev	6	6	None	No	No	1L548	228
4	[110]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 13/16	1 5/8	None	No	No	6Z537	247
4	[152]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 11/32	2 1/4	None	No	No	6A175	247
4	[218]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 3/8	2 25/32	Imp.	No	No	6Z132	247
4	18	1/250	115	—	Par.	Shaded Pole	Open	Face	CW	3 13/16	2 1/16	Imp.	No	No	3M098	222
4	26	1/100	115	115	Par.	PSC	OpFC	Face	Rev	4	4 1/8	None	No	Yes	4Z452	226
4	30	1/100	115	115	Par.	PSC	OpFC	Face	Rev	4 1/32	3 7/16	None	No	No	2Z813	225
4	180	1/90	115	115	Par.	Shaded Pole	OpFC	Face	CW	4 11/16	3 5/8	Auto	No	No	6Z906	224
4	1200	1/40	115	—	Par.	Shaded Pole	TEFC	Face/Base	CW	5 7/8	[illegible]	None	No	Yes	3M326	231
4.5	100	1/80	115	110	Par.	PSC	Open	Face/Base	Rev	3 19/32	6 17/64	None	No	Yes	6Z075	229
4.5	100	1/80	230	220	Par.	PSC	Vented	Face/Base	Rev	3.6	6.26	None	No	Yes	1L522	229
5	72	1/60	—	220-240	Par.	Shaded Pole	Open	Face	CW	4 11/16	5 1/4	None	No	No	1L462	
5	120	1/60	—	220-240	Par.	Shaded Pole	Open	Face	CW	1 11/16	2 3/4	None	No	No	1L45[illegible]	
5	215	1/10	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev	5	1 11/16	None	No	Yes	1L493	
5.2	150	1/20	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev	5 1/4	[illegible]	None	No	Yes	1L506	
5.4	1087	1/4	115	—	Par.	Split Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	6Z399	237
5.6	200	1/14	115/230	115/230	Rt. Ang.	PSC	TEFC	Base	Rev	6 15/16	11 5/8	None	No	Yes	1L556	241
5.8	30	1/100	—	220-240	Par.	Shaded Pole	OpFC	Face	CW	3	3 3/32	None	No	Std.	1L464	226
5.8	30	1/100	—	220-240	Par.	Shaded Pole	Open	Face	CW	3	2 15/16	None	No	Std.	1L463	226
5.8	[illegible]	1/100	—	220-240	Par.	Shaded Pole	Open	Face	CW	3	2 9/16	None	No	No	1L450	223
6	[illegible]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 13/16	1 5/8	None	No	No	6A158	217
6	[140]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 11/32	2 1/4	None	No	No	6A176	247
6	[210]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 3/8	2 25/32	Imp.	No	No	6A186	247
6	22.5	1/330	115	—	Par.	Shaded Pole	Open	Face	CW	2 11/16	3 17/32	Imp.	No	No	2Z806	22[illegible]
6	72	1/60	115	—	Par.	Shaded Pole	OpFC	Face	CW	4 11/16	5 1/4	Imp.	No	Yes	4Z148	227
6	100	1/100	115	115	Par.	Shaded Pole	OpFC	Face	CW	3 1/8	4	Auto	No	No	2L002	223
6	113	1/20	115	—	Par.	Shaded Pole	TEFC	Face/Base	CW	5 3/8	9 3/8	None	No	No	3M126	230
6	113	1/10	115	—	Par.	Shaded Pole	OpFC	Face/Base	CW	5 1/8	9 5/16	None	No	No	3M135	227
6	113	1/10	115	—	Par.	Shaded Pole	Open	Face/Base	CW	—	7 13/16	None	No	Std.	1L489	227
6	120	1/60	115	—	Par.	Shaded Pole	OpFC	Face	CW	4 11/16	2 3/4	None	No	No	3M104	224
6	150	1/85	115	115	Par.	Shaded Pole	OpFC	Face	CW	4 11/16	3 5/8	Auto	No	No	6Z907	224
6	200	1/40	115	—	Par.	Shaded Pole	TEFC	Face/Base	CW	5 1/8	7 3/4	None	No	Yes	3M327	231
6	600	1/4	115	—	Par.	Split Phase	OpDpf	Base	Rev	6 3/4	10 1/3	None	No	No	5K933	236
6	600	1/12	115/230	115/230	Par. Sh.	PSC	TEFC	Base	Rev	6 1/8	10 1/4	None	No	Yes	1L572	233
6	600	1/12	115/230	115/230	Par. Sh.	PSC	TEFC	Face	Rev	10 3/4	10 3/4	None	No	Yes	1L565	234
6	1100	1/4	115/230	110/220	Par.	PSC	TEFC	Face	Rev	8	9 1/2	None	No	Yes	1L510	235
7	18	1/100	115	115	Par.	PSC	OpFC	Face	Rev	4	4 1/8	None	No	Yes	4Z453	226
7	30	1/100	115	—	Par.	Shaded Pole	Open	Face	CW	3	3 3/32	Imp.	No	Yes	3M231	226
7	30	1/100	115	—	Par.	Shaded Pole	Open	Face	CW	3	2 15/16	Imp.	No	Yes	3M287	226
7	35	1/100	115	—	Par.	Shaded Pole	Open	Face	CW	3	2 9/16	Imp.	No	No	3M096	223
7	50	1/125	115/230	115/230	Par. Sh.	PSC	TENV	Face	Rev	6	6	None	No	No	1L549	228
8	320	1/12	115/230	110/220	Par.	PSC	TEFC	Face/Base	Rev	5 11/16	10 7/16	None	No	Yes	6Z816	232
8	700	1/8	115	—	Par. Sh.	Split Phase	Open	Face	CCW	6.8	10 1/8	None	No	No	1L563	234
8	974	1/4	115	—	Par.	Split Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	6Z400	237
8.3	65	1/60	—	220-240	Par.	Shaded Pole	Open	Face	CW	3 3/8	4 7/16	None	No	No	1L456	224
8.8	76	1/80	115	110	Par.	PSC	Open	Face/Base	Rev	3 39/64	6 17/64	None	No	Yes	6Z076	229
8.8	76	1/80	230	220	Par.	PSC	Vented	Face/Base	Rev	3.6	6.26	None	No	Yes	1L519	229
9	200	1/16	115/230	115/230	Rt. Ang.	PSC	TEFC	Base	Rev	6 15/16	11 5/8	None	No	Yes	1L557	241
10	[88]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 13/16	1 5/8	None	No	No	6A189	247
10	[126]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 11/32	2 1/4	None	No	No	6A177	247
10	[180]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 3/8	2 25/32	Imp.	No	No	6Z133	247
10	26	1/100	115	115	Par.	PSC	OpFC	Face	Rev	4 1/16	3 29/32	None	No	No	3M154	225
10	65	1/60	115	—	Par.	Shaded Pole	OpFC	Face	CW	3 3/8	4 7/16	None	No	No	3M103	224
10	150	1/20	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev	5 1/4	15/16	None	No	Yes	1L508	241
10	215	1/10	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev	5	1 11/16	None	No	Yes	1L494	241
12	[73]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 13/16	1 5/8	None	No	No	6Z539	247
12	11	1/100	115	—	Par.	PSC	OpFC	Face	Rev	4	4 1/8	None	No	No	4Z454	226
12	25.7	1/135	115	—	Par.	Shaded Pole	Open	Face	CW	2 13/16	3 57/64	Imp.	No	No	2Z807	222

AC GEARMOTOR SELECTION GUIDE

Nameplate RPM	F/L Torque In.-Lbs. [In.-Oz.]	Input HP	Volts 60 Hz	Volts 50 Hz	Shaft Config.	Motor Type	Motor Enclosure	Mounting	Rotation	Overall Height	Length Less Shaft	Thermal Protection	Speed Controllable?	Brake Adaptable?	Stock No.	Ref. Page
12	50	1/85	115	115	Par.	Shaded Pole	OpFC	Face	CW	3 9/64"	4 3/16"	Auto	No	No	6Z903	223
12	113	1/20	115	—	Par.	Shaded Pole	TEFC	Face/Base	CW	5 5/8	9 3/4	None	No	No	3M127	230
12	113	1/10	115	—	Par.	Shaded Pole	Open	Face/Base	CW	—	7 13/16	None	No	Std.	1L488	227
12	113	1/10	115	—	Par.	Shaded Pole	OpFC	Face/Base	CW	6 1/8	9 5/16	None	No	No	3M136	227
12	400	1/14	115/230	115/230	Par. Sh.	PSC	TEFC	Base	Rev	6 1/8	10 1/4	None	No	Yes	1L573	233
12	400	1/14	115/230	115/230	Par. Sh.	PSC	TEFC	Face	Rev	10 3/4	10 3/4	None	No	Yes	1L566	234
12	600	1/4	115	—	Par.	Split Phase	Op Dpf	Base	Rev	6 3/4	10 1/3	None	No	No	5K934	236
12	992	1/4	3.7	—	Par.	Split Phase	TEFC	Face/Base	Rev	6 15/16	12 15/16	None	No	Yes	6K351	237
12	1100	1/4	115/230	110/220	Par.	PSC	TEFC	Face	Rev	8	9 1/4	None	No	Yes	1L509	235
13	500	1/8	115	—	Par. Sh.	Split Phase	Open	Face	CCW	6.8	10 1/8	None	No	No	1L564	234
13.5	200	1/15	115	—	Par.	Split Phase	TEFC	Face/Base	Rev	5 1/8	9 7/16	None	No	Yes	2Z817	231
13.5	200	1/20	115	—	Par.	Shaded Pole	TEFC	Face/Base	CW	5 1/8	7 7/8	None	No	Yes	3M328	231
13.5	350	1/12	115	—	Par.	Split Phase	TEFC	Face/Base	Rev	5 1/8	10 1/2	None	No	Yes	6K325	231
14	67	1/60	115	—	Par.	PSC	TENV	Face	Rev	3 1/2	5 19/32	None	No	Yes	4Z062	228
15	202	1/15	115/230	110/220	Par.	PSC	TEFC	Face/Base	Rev	5 1/8	10 9/32	None	No	Yes	4Z518	232
16	13	1/100	—	220-240	Par.	Shaded Pole	Open	Face	CW	3	2 9/16	None	No	No	1L453	223
16	385	1/6	115/230	110/220	Par.	PSC	TEFC	Face/Base	Rev	5 11/16	10 7/16	None	No	Yes	6Z817	232
16.7	100	1/20	115	110	Par.	PSC	Open	Face/Base	Rev	3 29/64	6 3/16	None	No	Yes	6Z077	229
16.7	100	1/20	115	—	Par.	PSC	TENV	Face/Base	Rev	3 29/64	6 7/64	None	No	Yes	6Z081	229
16.7	100	1/20	230	220	Par.	PSC	TENV	Face/Base	Rev	3.6	6.44	None	No	Yes	1L527	229
16.7	100	1/20	230	220-240	Par.	PSC	Vented	Face/Base	Rev	3.6	6.26	None	No	Yes	1L526	229
18	11	1/100	115	115	Par.	PSC	OpFC	Face	Rev	4	4 1/8	None	No	No	4Z455	226
18	13	1/100	115	—	Par.	Shaded Pole	Open	Face	CW	3	2 9/16	Imp.	No	No	3M099	223
18	550	1/4	115	—	Par.	Split Phase	Op Dpf	Base	Rev	6 3/4	10 1/3	None	No	No	5K935	236
18	800	1/4	115	—	Par.	Split Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	6Z401	237
18	1017	1/3	115	—	Par.	Split Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	6Z402	237
18	1017	1/3	208-230/460	190/380	Par.	3-Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	6Z404	237
19	250	1/12	115/230	115/230	Par. Sh.	PSC	TEFC	Base	Rev	6 1/8	10 1/4	None	No	Yes	1L574	233
19	250	1/12	115/230	115/230	Par. Sh.	PSC	TEFC	Face	Rev	10 3/4	10 3/4	None	No	Yes	1L567	224
20	140	1/20	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev	5 1/4	1 5/16	None	No	Yes	1L507	241
20	200	1/10	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev	5	1 11/16	None	No	Yes	1L495	241
20	[44]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 13/16	1 5/8	None	No	No	6Z540	247
20	13	1/100	115	115	Par.	PSC	OpFC	Face	Rev	4 1/32	3 7/16	None	No	No	3M153	225
20	15.2	1/120	115	—	Par.	Shaded Pole	Open	Face	CW	2 13/16	3 13/16	None	No	No	2Z808	222
21	9.25	1/100	—	220-240	Par.	Shaded Pole	Open	Face	CW	3	2 9/16	None	No	No	1L454	223
21	13	1/70	—	220-240	Par.	Shaded Pole	Open	Face	CW	3	3 3/4	None	No	Std.	1L468	225
21	13	1/70	—	220-240	Par.	Shaded Pole	OpFC	Face	CW	3	3 3/4	None	No	Std.	1L466	225
21	21	1/60	—	220-240	Par.	Shaded Pole	OpFC	Face	CW	4 11/16	5 1/4	None	No	No	1L461	227
21	21.5	1/60	—	220-240	Par.	Shaded Pole	Open	Face	CW	4 11/16	2 3/4	None	No	No	1L458	224
21	170	1/12	115/230	115/230	Rt. Ang.	PSC	TEFC	Base	Rev	6 15/16	11 7/8	None	No	Yes	1L558	241
22	1105	1/2	115	—	Par.	Split Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	6Z403	237
22	1105	1/2	208-230/460	—	Par.	3-Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	6Z405	237
25	6	1/100	115	115	Par.	PSC	OpFC	Face	Rev	4	4 1/8	None	No	Yes	4Z456	226
25	9.25	1/100	115	115	Par.	Shaded Pole	Open	Face	CW	3	2 9/16	Imp.	No	No	3M100	223
25	13	1/70	115	—	Par	Shaded Pole	Open	Face	CW	3	3 3/4	Imp.	No	Yes	3M102	225
25	13	1/70	115	—	Par.	Shaded Pole	OpFC	Face	CW	3	3 3/4	Imp.	No	Yes	3M257	225
25	21	1/60	115	—	Par.	Shaded Pole	OpFC	Face	CW	4 11/16	5 1/4	None	No	Yes	4Z149	227
25	21.5	1/60	115	—	Par.	Shaded Pole	OpFC	Face	CW	4 11/16	2 3/4	None	No	No	4Z148	224
25	45	1/85	115	115	Par.	Shaded Pole	OpFC	Face	CW	4 11/16	4	Auto	No	No	6Z908	224
27	75	1/15	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev	4 1/4	1 1/8	None	No	Yes	1L536	240
27	275	1/6	115	—	Par.	Split Phase	TEFC	Base	Rev	5 1/8	10 1/2	None	No	Yes	6K328	231
27	500	1/4	115	—	Par.	Split Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	6K352	237
27	700	1/3	115	—	Par.	Split Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	6K396	237
27	700	1/3	208-230/460	190/380	Par.	3-Phase	TEFC	Base	Rev	3 1/2	6 3/32	None	No	Yes	4Z384	237
28	50	1/25	115	115	Par.	PSC	TENV	Face	Rev	5 45/64	10 7/8	None	No	Yes	4Z063	228
28	140	1/4	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev	5 3/4	4 11/16	None	No	Yes	1L501	240
28	175	1/15	115/230	115/230	Par. Sh.	PSC	TEFC	Base	Rev	6 1/8	10 1/4	None	No	Yes	1L575	233
28	175	1/12	115/230	115/230	Par. Sh.	PSC	TEFC	Face	Rev	10 3/4	10 3/4	None	No	Yes	1L568	224
29	7	1/100	—	220-240	Par.	Shaded Pole	Open	Face	CW	3	2 9/16	None	No	No	1L455	223
29	85	1/8	115	105	Rt. Ang.	PSC	TENV	Base	Rev	5 45/64	10 7/8	None	No	Yes	4Z721	239
29	150	1/13	115/230	115/230	Par. Sh.	PSC	TEFC	Face	Rev	5 3/4	10 1/4	None	No	Yes	1L586	230
30	[29]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 13/16	1 5/8	None	No	No	6A190	247
30	[64]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 3/8	2 25/32	Imp.	No	No	6Z134	247
30	[77]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 11/32	2 1/8	None	No	No	6A178	247
30	7.5	1/100	115	—	Par.	PSC	OpFC	Face	Rev	4 1/32	3 7/16	None	No	No	2Z814	225
30	11.6	1/120	115	—	Par.	Shaded Pole	Open	Face	CW	2 13/16	3 53/64	Imp.	No	No	2Z809	222
30	42	1/20	115	—	Par.	Shaded Pole	TEFC	Face/Base	CW	5 3/8	9 3/8	None	No	No	3M128	230
30	113	1/10	115	—	Par.	Shaded Pole	OpFC	Face/Base	CW	5 1/8	9 5/16	None	No	No	3M137	227
30	113	1/10	115	—	Par.	Shaded Pole	OpFC	Face/Base	CW	5 1/8	9 5/16	None	No	Yes	3M158	227
30	125	1/15	115	—	Par.	Shaded Pole	TEFC	Face/Base	CW	5 1/8	7 7/8	None	No	Yes	3M329	231
30	125	1/15	115	—	Par.	Split Phase	TEFC	Face/Base	Rev	5 1/8	10 1/2	None	No	Yes	6K303	231
30	135	1/15	115/230	110/220	Par.	PSC	TEFC	Face/Base	Rev	5 1/8	10 9/32	None	No	Yes	4Z519	232
30	278	1/6	115/230	110/220	Par.	PSC	TEFC	Face/Base	Rev	5 11/16	10 7/16	None	No	No	6Z818	232
30	381	1/3	115/230	—	Rt. Ang.	Cap Start	TEFC	Base	Rev	8 29/32	16 27/32	None	No	No	5K535	242
30	400	1/4	115	—	Par.	Split Phase	Op Dpf	Base	Rev	6	9 7/8	None	No	No	5K939	236
30	680	1/2	115/230	—	Rt. Ang.	Cap Start	TEFC	Base	Rev	10 21/32	15 29/32	None	No	No	5K539	242
30	680	1/2	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev	9 7/16	16 7/16	None	No	Yes	3N169	242
30	800	1/2	115	—	Par.	Split Phase	Op Dpf	Base	Rev	7 7/16	10 1/16	None	No	No	2Z794	236
30	1310	3/4	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev	9 11/16	17 5/8	None	No	Yes	4Z893	242
30	1740	1	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev	9 11/16	18 5/8	None	No	Yes	3N298	242
30	2100	1	230/460	190/380	Par.	3-Phase	TEFC	Base	Rev	11 1/4	17 11/16	None	No	Yes	4Z886	238
30	4200	2	230/460	190/380	Par.	3-Phase	TEFC	Base	Rev	13 3/8	23 29/32	None	No	No	3Z950	238
32.7	96	1/20	115	110	Par.	PSC	Open	Face/Base	Rev	3 19/32	6 3/16	None	No	Yes	6Z078	229
32.7	96	1/20	115	—	Par.	PSC	TENV	Face/Base	Rev	3 19/32	6 7/64	None	No	Yes	6Z082	229

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AC GEARMOTOR SELECTION GUIDE

Name-plate RPM	F/L Torque In.-Lbs. [In.-Oz.]	Input HP	Volts 60 Hz	Volts 50 Hz	Shaft Config.	Motor Type	Motor Enclo-sure	Mounting	Rota-tion	Overall Height	Length Less Shaft	Thermal Protec-tion	Speed Control-lable?	Brake Adapt-able?	Stock No.	Ref. Page
32.7	96	1/20	230	220-240	Par.	PSC	Vented	Face/Base	Rev	3.6"	6.19"	None	No	Yes	1L524	229
32.7	96	1/20	230	220	Par.	PSC	TENV	Face/Base	Rev	3.6	6.44	None	No	Yes	1L523	229
35	4	1/100	115	115	Par.	PSC	OpFC	Face	Rev	4	4 1/8	None	No	Yes	4Z457	226
35	7	1/100	115	—	Par.	Shaded Pole	Open	Face	CW	3	2 9/16	Imp.	No	No	3M101	223
35	50	1/25	115/230	115/230	Par. Sh.	PSC	TENV	Face	Rev	6	6	None	No	No	1L550	228
36	185	1/4	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev	5 3/4	4 11/16	None	No	Yes	1L502	240
39	89	1/12	115/230	115/230	Rt. Ang.	PSC	TEFC	Base	Rev	6 15/16	11 5/8	None	No	Yes	1L559	241
40	210	1/6	115/230	110/220	Par.	PSC	TEFC	Face/Base	Rev	5 11/16	10 7/16	None	No	Yes	6Z819	232
40	225	1/6	115	—	Par.	Split Phase	TEFC	Face/Base	Rev	5 1/8	10 1/2	None	No	Yes	6K329	231
40	330	1/4	115	—	Par.	Split Phase	Op Dpf	Base	Rev	6	9 7/8	None	No	No	5K941	236
40	450	1/3	115	—	Par.	Split Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	2Z842	237
40	450	1/3	208-230/460	190/380	Par.	3-Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	4Z385	237
40	700	1/2	115	—	Par.	Split Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	6K375	237
40	700	1/2	208-230/460	—	Par.	3-Phase	TEFC	Base	Rev	6 5/8	13 1/4	None	No	Yes	4Z390	237
41	4	1/100	—	220-240	Par.	Shaded Pole	Open	Face	CW	3	2 9/16	None	No	No	1L451	223
41	57	1/15	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev	4 1/4	1 1/8	None	No	Yes	1L538	240
42	6	1/70	—	220-240	Par.	Shaded Pole	Open	Face	CW	3	3 3/4	None	No	Std.	1L465	225
42	6	1/70	—	220-240	Par.	Shaded Pole	Open	Face	CW	3	3 3/4	None	No	Std.	1L467	225
42	12	1/60	—	220-240	Par.	Shaded Pole	Open	Face	CW	4 11/16	2 3/4	None	No	No	1L459	224
42	12	1/60	—	220-240	Par.	Shaded Pole	OpFC	Face	CW	4 11/16	5 1/4	None	No	No	1L460	224
43	21	1/12	115	105	Rt. Ang.	PSC	TENV	Base	Rev	4 1/2	8 23/64	None	No	Yes	4Z277	239
43	55	1/20	115	105	Rt. Ang.	PSC	TENV	Base	Rev	5 25/64	9 11/16	None	No	Yes	4Z280	239
43	77	1/8	115	105	Rt. Ang.	PSC	TEFC	Base	Rev	5 45/64	10 5/8	None	No	Yes	4Z283	239
45	82	1/15	115/230	110/220	Par.	PSC	TEFC	Face/Base	Rev	5 1/8	10 9/32	None	No	Yes	4Z520	232
45	299	1/3	115/230	—	Rt. Ang.	Cap Start	TEFC	Base	Rev	8 29/32	16 25/32	None	No	No	5K536	242
45	438	1/3	115	—	Par.	Split Phase	Op Dpf	Base	Rev	6 3/4	12 13/32	None	No	No	2Z847	233
45	456	1/2	115/230	—	Rt. Ang.	Cap Start	TEFC	Base	Rev	8 29/32	16 25/32	None	No	No	5K540	242
45	507	1/2	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev	9 7/16	16 7/16	None	No	Yes	3N170	242
45	743	3/4	115/230	—	Rt. Ang.	Cap Start	TEFC	Base	Rev	10 21/32	17 13/32	None	No	No	5K544	242
45	743	3/4	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev	9 7/16	16 7/16	None	No	Yes	4Z894	242
45	966	1	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev	9 7/16	17 7/16	None	No	Yes	3N176	242
45	1400	1	230/460	190/380	Par.	3-Phase	TEFC	Base	Rev	7 15/16	14 21/32	None	No	Yes	2Z872	238
45	2410	2	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev	9 11/16	18 5/8	None	No	Yes	3N299	242
45	2801	2	230/460	190/380	Par.	3-Phase	TEFC	Base	Rev	11 1/4	17 11/16	None	No	Yes	4Z888	238
45	4202	3	230/460	190/380	Par.	3-Phase	TEFC	Base	Rev	13 3/8	23 29/32	None	No	No	3Z951	238
48	100	1/12	115/230	115/230	Par. Sh.	PSC	TEFC	Base	Rev	6 1/8	10 1/4	None	No	Yes	1L576	233
50	4	1/100	115	—	Par.	Shaded Pole	Open	Face	CW	3	2 9/16	Imp.	No	No	3M097	223
50	6	1/70	115	—	Par.	Shaded Pole	OpFC	Face	CW	3	3 3/4	Imp.	No	Yes	3M258	225
50	6	1/70	115	—	Par	Shaded Pole	OpFC	Face	CW	3	3 3/4	Imp.	No	Yes	3M288	225
50	12	1/60	115	—	Par.	Shaded Pole	OpFC	Face	CW	4 11/16	2 3/4	None	No	No	4Z147	[illegible]
50	12	1/60	115	—	Par.	Shaded Pole	OpFC	Face	CW	4 11/16	5 1/4	None	No	Yes	4Z150	[illegible]
50	25	1/45	115	115	Par.	Shaded Pole	OpFC	Face	CW	4 11/16	4 1/4	Auto	No	No	6Z909	224
54	45	1/15	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev	4 1/4	1 1/8	None	No	Yes	1L535	240
54	50	1/25	115	115	Par.	PSC	TENV	Face	Rev	3 1/2	5 19/32	None	No	Yes	4Z064	228
55	2.6	1/100	115	—	Par.	PSC	OpFC	Face	Rev	4	4 1/8	None	No	Yes	4Z458	226
55	140	1/4	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev	5 3/4	4 11/16	None	No	Yes	1L503	240
57	68	1/8	115	105	Rt. Ang.	PSC	TEFC	Base	Rev	5 11/16	10 7/8	None	No	Yes	4Z722	239
57	85	1/13	115/230	115/230	Par. Sh.	PSC	TEFC	Face	Rev	5 3/4	10 1/4	None	No	Yes	1L587	230
60	[16]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 13/16	1 7/8	None	No	No	6Z541	247
60	[32]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 3/8	2 25/32	Imp.	No	No	6Z135	247
60	[77]	—	115	—	Par.	Synchronous	Encl	Face	Rev	2 11/32	2 1/8	None	No	No	6A179	247
60	4	1/100	115	—	Par.	PSC	OpFC	Face	Rev	4 1/32	3 7/16	None	No	No	2Z829	225
60	4.7	1/120	115	—	Par.	Shaded Pole	Open	Face	CW	2 13/16	3 63/64	Imp.	No	No	2Z810	222
60	59	1/10	115	—	Par.	Shaded Pole	OpFC	Face/Base	CW	5 1/8	9 5/16	None	No	No	3M138	227
60	59	1/10	115	—	Par.	Shaded Pole	Open	Face/Base	CW	—	7 13/16	None	No	Std.	1L487	227
60	150	1/6	115	—	Par.	Split Phase	TEFC	Face/Base	Rev	5 1/8	10 1/2	None	No	Yes	6K331	231
60	157	1/6	115/230	110/220	Par.	PSC	TEFC	Face/Base	Rev	5 11/16	10 7/16	None	No	Yes	6Z820	232
60	200	1/4	115	—	Par.	Split Phase	Op Dpf	Base	Rev	6	9 7/8	None	No	No	5K940	236
60	240	1/4	115	—	Par.	Split Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	6K353	237
60	320	1/3	115	—	Par.	Split Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	6K369	237
60	320	1/3	208-230/460	190/380	Par.	3-Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	4Z386	237
60	400	1/2	115	—	Par.	Split Phase	Op Dpf	Base	Rev	7 7/16	10 1/16	None	No	No	2Z795	236
60	480	1/2	115	—	Par.	Split Phase	TEFC	Base	Rev	6 5/8	12 5/8	None	No	Yes	6K583	237
60	480	1/2	208-230/460	—	Par.	3-Phase	TEFC	Base	Rev	6 5/8	13 1/4	None	No	Yes	4Z391	237
63	49	1/20	115	110	Par.	PSC	Open	Face/Base	Rev	3 19/32	6 3/16	None	No	Yes	6Z079	229
63	49	1/20	115	—	Par.	PSC	TENV	Face/Base	Rev	3 19/32	6 7/64	None	No	Yes	6Z083	229
63	49	1/20	230	220-240	Par.	PSC	Vented	Face/Base	Rev	3.6	6.19	None	No	Yes	1L521	229
63	49	1/20	230	220	Par.	PSC	TENV	Face/Base	Rev	3.6	6.44	None	No	Yes	1L520	229
67	30	1/25	115/230	115/230	Par. Sh.	PSC	TENV	Face	Rev	6	6	None	No	No	1L551	228
67.5	55	1/15	115	—	Par.	Split Phase	TEFC	Face/Base	Rev	5 1/8	9 7/16	None	No	Yes	2Z818	231
67.5	55	1/15	115	—	Par.	Shaded Pole	TEFC	Face/Base	CW	5 1/8	8 3/8	None	No	Yes	3M330	231
68	222	1/3	115/230	—	Rt. Ang.	Cap Start	TEFC	Base	Rev	8 29/32	16 25/32	None	No	No	5K537	242
68	344	1/2	115/230	—	Rt. Ang.	Cap Start	TEFC	Base	Rev	8 29/32	16 25/32	None	No	No	5K541	242
68	367	1/2	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev	9 7/16	16 7/16	None	No	Yes	3N171	242
68	537	3/4	115/230	—	Rt. Ang.	Cap Start	TEFC	Base	Rev	10 21/32	17 13/32	None	No	No	5K545	242
68	537	3/4	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev	9 7/16	16 7/16	None	No	Yes	4Z895	242
68	796	1	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev	9 7/16	17 7/16	None	No	Yes	3N173	242
68	927	1	230/460	190/380	Par.	3-Phase	TEFC	Base	Rev	7 15/16	14 21/32	None	No	Yes	4Z887	238
68	1570	2	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev	9 11/16	18 5/8	None	No	Yes	3N300	242
68	1854	2	230/460	190/380	Par.	3-Phase	TEFC	Base	Rev	11 1/4	17 11/16	None	No	Yes	4Z889	238
68	2781	3	230/460	190/380	Par.	3-Phase	TEFC	Base	Rev	11 1/4	22 9/32	None	No	No	4Z890	238
70	61	1/15	115/230	110/220	Par.	PSC	TEFC	Face/Base	Rev	5 1/8	10 3/32	None	No	Yes	4Z521	232

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AC GEARMOTOR SELECTION GUIDE

Nameplate RPM	F/L Torque In.-Lbs. [In.-Oz.]	Input HP	Volts 60 Hz	Volts 50 Hz	Shaft Config.	Motor Type	Motor Enclosure	Mounting	Rotation	Overall Height	Length Less Shaft	Thermal Protection	Speed Controllable?	Brake Adaptable?	Stock No.	Ref. Page
80	33	1/15	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev.	4 1/4*	1 1/8*	None	No	Yes	1L534	240
80	185	1/4	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev.	5 3/4	4 11/16	None	No	Yes	1L504	240
86	22	1/20	115	105	Rt. Ang.	PSC	TENV	Base	Rev.	4 1/2	8 23/64	None	No	Yes	4Z276	239
86	41	1/12	115	105	Rt. Ang.	PSC	TENV	Base	Rev.	5 25/64	9 11/16	None	No	Yes	4Z279	239
86	55	1/8	115	105	Rt. Ang.	PSC	TEFC	Base	Rev.	5 11/16	10 5/8	None	No	Yes	4Z282	239
86	55	1/13	115/230	115/230	Par. Sh.	PSC	TEFC	Face	Rev.	5 3/4	10 1/4	None	No	Yes	1L588	230
89	219	1/3	115	—	Par.	Split Phase	Op Dpf	Base	Rev.	6 3/4	12 13/32	None	No	No	2Z848	233
90	100	1/6	115	—	Par.	Split Phase	TEFC	Face/Base	Rev.	5 1/8	10 1/2	None	No	Yes	6K332	231
90	100	1/6	115/230	110/220	Par.	PSC	TEFC	Face/Base	Rev.	5 11/16	10 7/16	None	No	Yes	6Z821	232
90	150	1/4	115	—	Par.	Split Phase	Op Dpf	Base	Rev.	6	9 7/8	None	No	No	6K993	236
90	220	1/3	115	—	Par.	Split Phase	TEFC	Base	Rev.	6 5/8	12 5/8	None	No	Yes	2Z843	237
90	220	1/3	208-230/460	190/380	Par.	3-Phase	TEFC	Base	Rev.	6 5/8	12 5/8	None	No	Yes	4Z387	237
90	287	1/2	115	—	Par.	Split Phase	Op Dpf	Base	Rev.	7 7/16	10 1/16	None	No	No	2Z796	236
90	320	1/2	208-230/460	—	Par.	3-Phase	TEFC	Base	Rev.	6 5/8	13 1/4	None	No	Yes	4Z392	237
90	320	1/2	115	—	Par.	Split Phase	TEFC	Base	Rev.	6 5/8	12 5/8	None	No	Yes	6K383	237
95	20	1/25	115	115	Par.	PSC	TENV	Face	Rev.	3 1/2	5 3/4	None	No	Yes	4Z065	228
95	30	1/20	115	110	Par.	PSC	Open	Face/Base	Rev.	3 19/32	6 3/16	None	No	Yes	6A195	229
95	30	1/20	115	110	Par.	PSC	TENV	Face/Base	Rev.	3 19/32	6 7/64	None	No	Yes	6A197	229
95	30	1/20	230	220-240	Par.	PSC	Vented	Face/Base	Rev.	3.6	6.19	None	No	Yes	1L518	229
95	30	1/20	230	220	Par.	PSC	TENV	Face/Base	Rev.	3.6	6.44	None	No	Yes	1L517	229
97	43	1/15	115/230	110/220	Par.	PSC	TEFC	Face/Base	Rev.	5 1/8	10 3/32	None	No	Yes	4Z522	232
98	15	1/100	115	—	Par.	PSC	OpFC	Face	Rev.	4	4 1/8	None	No	Yes	4Z459	226
100	2	—	115	115	Par.	PSC	OpFC	Face	Rev.	4 1/32	3 7/16	None	No	No	2Z830	225
100	38	1/15	115	—	Par.	Split Phase	TEFC	Face/Base	Rev.	5 1/8	9 7/16	None	No	Yes	2Z841	231
100	163	1/3	115/230	—	Rt. Ang.	Cap Start	TEFC	Base	Rev.	8 29/32	16 25/32	None	No	No	5K538	242
100	254	1/2	115/230	—	Rt. Ang.	Cap Start	TEFC	Base	Rev.	8 29/32	16 25/32	None	No	No	5K542	242
100	265	1/2	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev.	9 7/16	16 7/16	None	No	Yes	3N172	242
100	394	3/4	115/230	—	Rt. Ang.	Cap Start	TEFC	Base	Rev.	10 21/32	17 13/32	None	No	No	5K546	242
100	394	3/4	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev.	9 7/16	16 7/16	None	No	Yes	4Z896	242
100	522	1	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev.	9 7/16	17 7/16	None	No	Yes	3N174	242
100	630	1	230/460	190/380	Par.	3-Phase	TEFC	Base	Rev.	7 15/16	14 31/32	None	No	Yes	2Z873	238
100	1260	2	230/460	190/380	Par.	3-Phase	TEFC	Base	Rev.	7 15/16	15 15/32	None	No	Yes	2Z876	238
100	1891	3	230/460	190/380	Par.	3-Phase	TEFC	Base	Rev.	11 1/4	2 29/32	None	No	No	4Z891	238
107	20	1/20	115/230	115/230	Par. Sh.	PSC	TENV	Face	Rev.	6	6	None	No	No	1L552	238
120	[8]	—	115	—	Par.	Synchronous	Encl	Face	Rev.	2 13/16	1 5/8	None	No	No	6Z542	247
120	[20]	—	115	—	Par.	Synchronous	Encl	Face	Rev.	2 11/32	2 1/8	Imp.	No	No	6A180	[illegible]
120	[29]	—	115	—	Par	Synchronous	Encl	Face	Rev	[illegible]	2 7/32	None	No	No	6A187	[illegible]
120	2.7	1/120	115	—	Par	Shaded Pole	Open	Face	CW	2 13/16	3 13/16	Imp	No	No	2Z811	[illegible]
120	100	1/4	115	—	Par.	Split Phase	Op Dpf	Base	Rev.	6	9 7/8	None	No	No	5K942	236
124	14	1/25	115	115	Par.	PSC	TENV	Face	Rev.	3 1/2	5 3/4	None	No	Yes	4Z612	228
124	25	1/20	115	105	Par.	PSC	Open	Face/Base	Rev.	3 19/32	6 3/16	None	No	Yes	6Z080	229
124	25	1/20	115	—	Par.	PSC	TENV	Face/Base	Rev.	3 23/64	6 7/64	None	No	Yes	6Z084	229
124	25	1/20	230	220-240	Par.	PSC	Vented	Face/Base	Rev.	3.6	6.19	None	No	Yes	1L531	229
124	25	1/20	230	220	Par.	PSC	TENV	Face/Base	Rev.	3.6	6.44	None	No	Yes	1L530	229
135	55	1/6	115	—	Par.	Split Phase	TEFC	Face/Base	Rev.	5 7/8	10 1/2	None	No	Yes	6K334	231
135	100	1/4	115	—	Par.	Split Phase	TEFC	Base	Rev.	6 7/8	12 7/8	None	No	Yes	6K354	237
135	215	1/2	115	—	Par.	Split Phase	TEFC	Base	Rev.	6 5/8	12 5/8	None	No	Yes	6K506	237
135	215	1/2	208-230/460	—	Par.	3-Phase	TEFC	Base	Rev.	6 5/8	13 1/4	None	No	Yes	4Z393	237
139	30	1/15	115/230	110/220	Par.	PSC	TEFC	Face/Base	Rev.	5 1/8	10 3/32	None	No	Yes	4Z523	232
154	12	1/25	115	115	Par.	PSC	TENV	Face	Rev.	3 1/2	5 3/4	None	No	Yes	4Z613	228
154	20	1/20	115	—	Par.	PSC	TENV	Face/Base	Rev.	3 19/32	6 7/64	None	No	Yes	6A196	229
154	20	1/20	115	110	Par.	PSC	Open	Face/Base	Rev.	3 19/32	6 3/16	None	No	Yes	6A198	229
154	20	1/20	230	220-240	Par.	PSC	Vented	Face/Base	Rev.	3.6	6.19	None	No	Yes	1L529	229
154	20	1/20	230	220	Par.	PSC	Vented	Face/Base	Rev.	3.6	6.44	None	No	Yes	1L528	229
155	173	1/2	115/230	—	Rt. Ang.	Cap Start	TEFC	Base	Rev.	8 29/32	16 25/32	None	No	No	5K919	242
155	30	1/12	115/230	115/230	Par. Sh.	PSC	TEFC	Face	Rev.	5 3/4	10 1/4	None	No	Yes	1L589	230
155	269	3/4	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev.	9 7/16	16 7/16	None	No	Yes	4Z897	242
155	357	1	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev.	9 7/16	17 7/16	None	No	Yes	3N175	242
155	711	2	230/460	190/380	Rt. Ang.	3-Phase	TEFC	Base	Rev.	9 7/16	17 7/16	None	No	Yes	3N301	242
156	60	1/6	115/230	110/220	Par.	PSC	TEFC	Face/Base	Rev.	5 11/16	10 7/16	None	No	Yes	6Z822	232
157	20	1/15	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev.	4 1/4	1 1/8	None	No	Yes	1L533	240
157	125	1/3	115	—	Par.	Split Phase	TEFC	Base	Rev.	6 5/8	12 5/8	None	No	Yes	2Z844	237
157	125	1/3	115	—	Par.	Split Phase	Op Dpf	Base	Rev.	6 3/4	12 13/32	None	No	No	2Z849	233
157	125	1/3	208-230/460	220/440	Par.	3-Phase	Op Dpf	Base	Rev.	6 3/4	12 13/32	None	No	No	2Z851	233
157	125	1/3	208-230/460	190/380	Par.	3-Phase	TEFC	Base	Rev.	6 5/8	12 5/8	None	No	Yes	4Z388	237
160	62	1/4	115/230	110/220	Rt. Ang.	PSC	TEFC	Base	Rev.	5 3/4	4 11/16	None	No	Yes	1L505	240
173	13	1/20	115	110	Rt. Ang.	PSC	TENV	Base	Rev.	4 1/2	8 23/64	None	No	Yes	4Z275	239
173	23	1/20	115	110	Rt. Ang.	PSC	TENV	Base	Rev.	5 13/32	9 11/16	None	No	Yes	4Z278	239
173	31	1/8	115	110	Rt. Ang.	PSC	TEFC	Base	Rev.	5 11/16	10 7/8	None	No	Yes	4Z281	239
185	12	1/20	115/230	115/230	Par. Sh.	PSC	TENV	Face	Rev.	6	6	None	No	No	1L553	228
190	332	1	230/460	190/380	Par.	3-Phase	TEFC	Base	Rev.	7 15/16	14 31/32	None	No	Yes	2Z874	228
190	663	2	230/460	190/380	Par.	3-Phase	TEFC	Base	Rev.	7 15/16	15 15/32	None	No	Yes	2Z877	228
190	995	3	230/460	190/380	Par.	3-Phase	TEFC	Base	Rev.	11 1/4	2 29/32	None	No	No	4Z892	228
200	1.18	1/120	115	—	Par.	Shaded Pole	Open	Face	CW	2 13/16	3 13/16	None	No	No	2Z812	222
200	5	1/45	115	115	Par.	Shaded Pole	OpFC	Face	CW	3 9/64	4 1/4	Auto	No	No	6Z904	223
288	69	1/3	115	—	Par.	Split Phase	Op Dpf	Base	Rev.	6 3/4	12 13/32	None	No	No	2Z850	233
288	70	1/3	115	—	Par.	Split Phase	TEFC	Base	Rev.	6 5/8	12 5/8	None	No	Yes	2Z845	237
288	70	1/3	208-230/460	190/380	Par.	3-Phase	TEFC	Base	Rev.	6 5/8	12 5/8	None	No	Yes	4Z389	237
288	100	1/2	208-230/460	—	Par.	3-Phase	TEFC	Base	Rev.	6 5/8	13 1/4	None	No	Yes	4Z394	237
300	[2]	—	115	—	Par.	Synchronous	Encl	Face	Rev.	2 3/4	11/64	None	No	No	6Z533	247
300	[6]	—	115	—	Par.	Synchronous	Encl	Face	Rev.	3 1/8	1	None	No	No	6A182	247
300	[8.75]	—	115	—	Par.	Synchronous	Encl	Face	Rev.	3 1/8	1 7/16	None	No	No	6A184	247
360	[6]	—	115	—	Par.	Synchronous	Encl	Face	Rev.	2 11/32	2 1/8	None	No	No	6A181	247
360	3.3	1/45	115	115	Par.	Shaded Pole	OpFC	Face	CW	3 5/16	4 1/4	Auto	No	No	6Z905	223
600	[2.3]	—	115	—	Par.	Synchronous	Encl	Face	Rev.	2 3/4	11/64	None	No	No	6Z534	247
600	[5.5]	—	115	—	Par.	Synchronous	Encl	Face	Rev.	3 1/8	1	None	No	No	6A183	247

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POWER TRANSMISSION: GEARMOTORS

DC GEARMOTOR SELECTION GUIDE

Name-plate RPM	F/L Torque In.-Lbs. [In.-Oz.]	Input HP	Volts	Shaft Config.	Enclo-sure	Mounting	Rota-tion	Overall Height	Length Less Shaft	Thermal Protec-tion	Brake Adapt-able?	Stock No.	Ref. Page
0.45	50	1/2800	12	Par.	Vented	Face	Rev.	3	1 15/16	None	No	2L003	215
0.45	50	1/1200	12	Par.	TENV	Face	Rev.	3	3 39/64	None	No	4Z832	215
1.5	25	1/1000	12	Par.	TENV	Face	Rev.	3	3 39/64	None	No	4Z833	215
1.5	46	1/900	12	Par.	Vented	Face	Rev.	3	1 15/16	None	No	2L004	215
2.6	100	1/40	90	Par.	TENV	Face/Base	Rev.	3 39/64	7 27/32	None	No	6Z910	217
3.2	340	1/15	90	Rt. Ang.	TENV	Base	Rev.	4 7/8	9 7/8	None	No	4Z723	221
3.4	30	1/400	12	Par.	TENV	Face	Rev.	3	3 57/64	None	No	4Z834	215
3.4	44	1/425	12	Par.	Vented	Face	Rev.	3	2 7/16	None	No	2L005	215
4.5	38	1/200	12	Par.	TENV	Face	Rev.	3	3 57/64	None	No	4Z835	215
4.5	43	1/325	12	Par.	Vented	Face	Rev.	3	2 7/16	None	No	2L006	215
5	100	1/40	90	Par.	TENV	Face/Base	Rev.	3 39/64	7 27/32	None	No	6Z911	217
5	227	1/20	90	Par.	TENV	Face/Base	Rev.	5 1/8	8 7/32	None	No	6A193	218
5	215	1/10	90	Rt. Ang.	TENV	Base	Rev.	4 7/8	13	None	No	1L491	220
6	50	1/30	12	Par.	TENV	Face	Rev.	3 1/2	6 9/64	None	No	1L480	216
6	500	1/10	12	Par.	TENV	Base	Rev.	5	8 17/32	None	No	1L474	216
6	177	1/12	90	Rt. Ang.	TENV	Base	Rev.	4 7/8	9 7/8	None	No	4Z724	221
6.5	500	1/15	90	Par.	TENV	Base	Rev.	5	8 17/32	None	No	4Z530	216
7	50	1/100	90	Par.	TENV	Face	Rev.	3 1/2	6 9/64	None	No	4Z534	216
8	1087	1/4	90	Par.	TENV	Base	Rev.	6 19/32	12 1/2	None	No	6Z406	219
8.75	35	1/120	12	Par.	TENV	Face	Rev.	3	4 15/64	None	No	4Z836	215
8.75	41	1/175	12	Par.	Vented	Face	Rev.	3	2 11/16	None	No	2L007	215
9	100	1/40	90	Par.	TENV	Face/Base	Rev.	3 39/64	7 27/32	None	No	6Z912	217
9	150	1/20	90	Par.	TENV	Face/Base	Rev.	5 1/8	8 7/32	None	No	6A194	218
9.2	50	1/30	12	Par.	TENV	Face	Rev.	3 1/2	6 9/64	None	No	1L479	216
9.9	228	1/12	90	Rt. Ang.	TENV	Base	Rev.	4 7/8	9 7/8	None	No	4Z725	221
11	50	1/75	90	Par.	TENV	Face	Rev.	3 1/2	6 9/64	None	No	4Z535	216
12	240	1/125	12	Par.	Vented	Face	Rev.	3	2 11/16	None	No	2L008	215
12	240	1/90	12	Par.	TENV	Face	Rev.	3	4 19/32	None	No	4Z837	215
12	250	1/10	12	Par.	TENV	Base	Rev.	5	8 17/32	None	No	1L473	216
13	250	1/15	90	Par.	TENV	Base	Rev.	5	8 17/32	None	No	4Z531	216
13	960	1/4	90	Par.	TENV	Base	Rev.	6 19/32	12 1/2	None	No	6Z407	219
17	16	1/160	12	Par.	TENV	Face	Rev.	3	3 61/64	None	No	4Z838	215
17	30	1/125	12	Par.	Vented	Face	Rev.	3	2 11/16	None	No	2L009	215
18	150	1/20	90	Par.	TENV	Face/Base	Rev.	3 1/2	8 7/32	None	No	4Z134	218
20	100	1/20	90	Par.	TENV	Face/Base	Rev.	3 39/64	7 57/64	None	No	6Z913	217
20	150	1/10	12	Par.	TENV	Base	Rev.	5	8 17/32	None	No	1L472	216
20	727	1/4	90	Par.	TENV	Base	Rev.	6 19/32	12 1/2	None	No	6Z408	219
20	1112	1/2	90	Par.	TEFC	Base	Rev.	6 19/32	13 13/16	None	No	6Z413	219
21	50	[illegible]	90	Par.	TENV	Face	Rev.	3 1/2	6 9/64	None	No	4Z536	216
21	50	1/30	12	Par.	TENV	Face	Rev.	3 1/2	6 9/64	None	No	1L478	216
21	150	1/15	90	Par.	TENV	Base	Rev.	5	8 17/32	None	No	4Z532	216
22	200	1/10	90	Rt. Ang.	TENV	Base	Rev.	4 7/8	13	None	No	1L492	220
23.5	102	1/12	90	Rt. Ang.	TENV	Base	Rev.	4 7/8	9 7/8	None	No	4Z726	221
24	280	1/8	90	Par.	TENV	Face/Base	Rev.	3 1/2	10 5/8	None	No	4Z130	218
25	15	1/160	12	Par.	TENV	Face	Rev.	3	4 11/32	None	No	4Z839	215
25	20	1/125	12	Par.	Vented	Face	Rev.	3	2 11/16	None	No	2L010	215
30	102	1/8	90	Par.	TENV	Base	Rev.	6 1/2	10 15/16	None	No	4Z138	220
30	140	1/4	90	Rt. Ang.	TEFC	Base	Rev.	4 1/2	14	None	No	1L496	220
30	254	1/8	24	Par.	TENV	Face/Base	Rev.	5 1/8	10 5/8	None	No	1L848	217
31	244	1/8	90	Par.	TENV	Face/Base	Rev.	3 1/2	10 5/8	None	No	4Z383	218
32	40	1/30	12	Par.	TENV	Face	Rev.	3 1/2	5 23/32	None	No	4Z537	216
32	40	1/30	12	Par.	TENV	Face	Rev.	3 1/2	6	None	No	1L477	216
34	82	1/20	90	Par.	TENV	Face/Base	Rev.	3 1/2	8 7/32	None	No	4Z133	218
34	822	1/2	90	Par.	TEFC	Base	Rev.	6 19/32	13 13/16	None	No	6Z414	219
37	74	1/20	90	Par.	TENV	Face/Base	Rev.	3 39/64	7 57/64	None	No	6Z914	217
40	75	1/8	12	Par.	TENV	Base	Rev.	5	8 17/32	None	No	1L471	216
40	88	1/8	90	Rt. Ang.	TENV	Base	Rev.	6 1/2	10 15/16	None	No	6A192	220
40	160	1/4	90	Rt. Ang.	TEFC	Base	Rev.	4 1/2	14	None	No	1L497	220
40	353	1/4	90	Par.	TENV	Base	Rev.	6 19/32	12 1/2	None	No	6Z409	219
40	705	1/2	90	Par.	TEFC	Base	Rev.	6 19/32	13 13/16	None	No	6Z415	219
42	75	1/15	90	Par.	TENV	Base	Rev.	5	8 17/32	None	No	4Z533	216
45	56	1/12	90	Rt. Ang.	TENV	Base	Rev.	4 7/8	9 7/8	None	No	4Z727	221
50	10	1/125	12	Par.	Vented	Face	Rev.	3	2 11/16	None	No	2L011	215
50	10	1/90	12	Par.	TENV	Face	Rev.	3	4 11/32	None	No	4Z840	215
50	26	1/30	12	Par.	TENV	Face	Rev.	3 1/2	6	None	No	1L476	216
50	26	1/30	90	Par.	TENV	Face	Rev.	3 1/2	6	None	No	4Z538	216
51	55	1/20	90	Par.	TENV	Face/Base	Rev.	3 1/2	8 7/32	None	No	4Z132	218

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DC GEARMOTOR SELECTION GUIDE

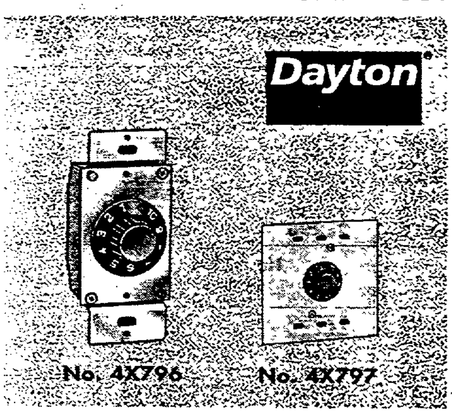
Name-plate RPM	F/L Torque In.-Lbs. [In.-Oz.]	Input HP	Volts	Shaft Config.	Enclo-sure	Mounting	Rota-tion	Overall Height	Length Less Shaft	Thermal Protec-tion	Brake Adapt-able?	Stock No.	Ref. Page
54	130	1/8	90	Par.	TENV	Face/Base	Rev.	3½	10⅝	None	No	**4Z129**	218
60	74	1/8	90	Rt. Ang.	TENV	Base	Rev.	6½	10¹⁵/₁₆	None	No	**4Z137**	220
60	75	1/8	12	Par.	TENV	Base	Rev.	5	8¹⁷/₃₂	None	No	**1L470**	216
60	120	1/4	90	Rt. Ang.	TEFC	Base	Rev.	4½	14	None	No	**1L498**	220
60	238	1/4	90	Par.	TENV	Base	Rev.	6¹⁹/₃₂	12½	None	No	**6Z410**	219
60	476	1/2	90	Par.	TEFC	Base	Rev.	6¹⁹/₃₂	13¹³/₁₆	None	No	**6Z416**	219
61	113	1/8	90	Par.	TENV	Face/Base	Rev.	3½	10⅝	None	No	**4Z382**	218
71	40	1/20	90	Par.	TENV	Face	Rev.	3³⁹/₆₄	7⁵⁷/₆₄	None	No	**6Z915**	217
89	34	1/10	90	Rt. Ang.	TENV	Base	Rev.	4⅞	9⅞	None	No	**4Z728**	221
90	50	1/8	12	Par.	TENV	Base	Rev.	5	8¹⁷/₃₂	None	No	**1L469**	216
90	59	1/8	90	Rt. Ang.	TENV	Base	Rev.	6½	10¹⁵/₁₆	None	No	**4Z136**	220
90	95	1/4	90	Rt. Ang.	TEFC	Base	Rev.	4½	14	None	No	**1L499**	220
90	160	1/4	90	Par.	TENV	Base	Rev.	6¹⁹/₃₂	12½	None	No	**6Z411**	219
90	320	1/2	90	Par.	TEFC	Base	Rev.	6¹⁹/₃₂	13¹³/₁₆	None	No	**6Z417**	219
92	77	1/8	90	Par.	TENV	Face/Base	Rev.	3½	10⅝	None	No	**4Z381**	218
102	12	1/30	12	Par.	TENV	Face	Rev.	3½	6	None	No	**1L475**	216
102	13	1/30	90	Par.	TENV	Face	Rev.	3½	5²³/₃₂	None	No	**4Z539**	216
109	27	1/20	90	Par.	TENV	Face/Base	Rev.	3½	8⅞	None	No	**4Z131**	218
139	20.4	1/20	90	Par.	TENV	Face/Base	Rev.	3³⁹/₆₄	7⁵⁷/₆₄	None	No	**6Z916**	217
146	101	1/4	90	Par.	TENV	Base	Rev.	6¹⁹/₃₂	12½	None	No	**6Z412**	219
146	202	1/2	90	Par.	TEFC	Base	Rev.	6¹⁹/₃₂	13¹³/₁₆	None	No	**6Z418**	219
167	43	1/8	90	Par.	TENV	Face/Base	Rev.	3½	10⅝	None	No	**4Z128**	218
175	36	1/8	90	Rt. Ang.	TENV	Base	Rev.	6½	10¹⁵/₁₆	None	No	**4Z135**	220
180	55	1/4	90	Rt. Ang.	TEFC	Base	Rev.	4½	14	None	No	**1L500**	220

PULLEY SELECTION CHART

Pulley-selection chart for motors turning 1725 RPM. Speeds shown are for the driven equipment in revolutions per minute.

Dia. Motor Pulley mm (In.)	Diameter of Pulley on Equipment—mm (In.) Equipment Speed (RPM)														
	32 (1.25)	38 (1.5)	45 (1.75)	51 (2.0)	58 (2.25)	64 (2.5)	76 (3.0)	102 (4.0)	127 (5.0)	165 (6.5)	203 (8.0)	254 (10.0)	306 (12.0)	381 (15.0)	457 (18.0)
32(1.25)	1725	[illegible]	1230	1075	950	860	715	540	430	330	265	215	—	—	—
38(1.5)	2075	1725	1175	1290	1140	1030	850	645	515	395	320	265	215	—	—
45(1.75)	2400	2000	1725	1500	1340	1200	1000	750	600	460	375	315	250	200	—
51(2.0)	2775	2290	1970	1725	1530	1375	1145	850	685	530	430	345	285	230	—
58(2.25)	3100	2580	2200	1930	1725	1550	1290	965	775	595	485	385	325	255	215
64(2.5)	3450	2870	2460	2150	1900	1725	1435	1075	850	660	540	430	355	285	240
76(3.0)	4140	3450	2950	2580	2290	2070	1725	1290	1070	800	615	515	430	345	285
102(4.0)	5500	4575	3950	3450	3060	2775	2295	1725	1375	1060	860	700	575	460	375
127(5.0)	6850	5750	4920	4300	3825	3450	2865	2150	1725	1325	1075	860	715	575	475
165(6.5)	8950	7475	6400	5600	4975	4480	3730	2790	2240	1725	1400	1120	930	745	620
203(8.0)	—	9200	7870	6900	6125	5520	4600	3450	2750	2120	1725	1375	1140	915	765
254(10.0)	—	—	9850	8620	7670	6900	5750	4300	3450	2650	2150	1725	1430	1140	950
302(12.0)	—	—	—	—	9200	8280	6900	5160	4130	3180	2580	2075	1725	1375	1140
381(15.0)	—	—	—	—	—	—	8635	6470	5170	3970	3230	2580	2150	1725	1425
457(18.0)	—	—	—	—	—	—	—	7750	6200	4770	3880	3100	2580	2070	1725

SPEED CONTROLS FOR AC/DC AND SERIES DC MOTORS



- Use only with 115V AC/DC universal or Series DC brush-type motors
- Clockwise turn of dial permits control of motor speed from 20 to 100% of full speed
- Typical uses are gearmotors, power tools, sewing machines, grinders, blowers, and pumps
- Input 115 VAC (±10%) 60 or 50 Hz
- Mount in panels or directly into standard "handy" boxes (handy box not included)
- No. 4X796 uses single gang wall plate; No. 4X797 uses double gang wall plate (wall plates not included)
- Controls are not intended for shaded pole, PSC, split-phase, or capacitor-start motors
- Instructions furnished
- UL Recognized (E165942)

Max. Amps	Stock No.	List	Each	Shpg. Wt.
5	**4X796**	$26.26	**$23.01**	0.3
10	**4X797**	30.95	**27.15**	0.4

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90V DC/SCR CONTROL/GEARMOTOR COMBINATIONS

GEARMOTOR SPECIFICATIONS / GEARMOTOR AND CONTROL COMBINATIONS

Stock No.	Nameplate RPM	F/L Torque In.-Lbs.	HP	Combination Stock No.	Each	Combination Stock No.	Each	Combination Stock No.	Each	Combination Stock No.	Each	Combination Stock No.	Each	Shpg. Wt.
90 VDC PARALLEL GEARMOTORS				No. 4Z827 Control		No. 4Z527 Control		No. 4Z828 Control		No. 5X412 Control		No. 6Z386 Controller		
4Z128	160	43	1/8	7Z925	$300.75	7Z945	$309.75	7Z965	$386.00	7Z704	$356.00	7Z277	$428.00	15.0
4Z381	94	77	1/8	7Z926	300.75	7Z946	309.75	7Z966	386.00	7Z745	356.00	7Z278	428.00	15.0
4Z382	64	113	1/8	7Z927	300.75	7Z947	309.75	7Z967	386.00	7Z746	356.00	7Z279	428.00	15.0
4Z129	50	130	1/8	7Z928	300.50	7Z948	309.75	7Z968	385.75	7Z705	355.75	7Z280	427.75	14.0
4Z383	30	244	1/8	7Z929	322.75	7Z949	331.75	7Z969	408.00	7Z747	378.00	7Z281	450.25	15.0
4Z130	22	280	1/8	7Z930	322.75	7Z950	331.75	7Z970	408.00	7Z706	378.00	7Z282	450.25	15.0
4Z131	109	27	1/20	7Z931	365.75	7Z951	374.75	7Z971	405.00	7Z707	325.50	7Z283	397.75	9.1
4Z132	61	55	1/20	7Z932	365.75	7Z952	374.75	7Z972	405.00	7Z708	325.50	7Z284	397.75	10.1
4Z133	34	82	1/20	7Z933	365.75	7Z953	374.75	7Z973	405.00	7Z709	325.50	7Z285	397.75	10.5
4Z134	18	150	1/20	7Z934	365.75	7Z954	374.75	7Z974	405.00	7Z710	325.50	7Z286	397.75	10.7

Stock No.	Nameplate RPM	F/L Torque In.-Lbs.	HP	Combination Stock No.	Each	Combination Stock No.	Each	Combination Stock No.	Each	Shpg. Wt.
90 VDC PARALLEL GEARMOTORS				No. 4Z827 Control		No. 4Z527 Control		No. 4Z828 Control		
4Z530	6.5	500	1/15	7Z935	$269.50	7Z955	$278.50	7Z975	$308.75	14.5
4Z531	13	250	1/15	7Z936	269.50	7Z956	278.50	7Z976	308.75	14.5
4Z532	21	150	1/15	7Z937	269.50	7Z957	278.50	7Z977	308.75	14.5
4Z533	42	75	1/15	7Z938	269.50	7Z958	278.50	7Z978	308.75	14.5
4Z534	7	50	1/30	7Z939	141.60	7Z959	278.50	7Z979	181.00	6.2
4Z535	11	50	1/30	7Z940	141.60	7Z960	278.50	7Z980	181.00	6.2
4Z536	21	50	1/30	7Z941	141.60	7Z961	278.50	7Z981	181.00	6.2
4Z537	32	40	1/30	7Z942	141.60	7Z962	278.50	7Z982	181.00	6.0
4Z538	50	26	1/30	7Z943	141.60	7Z963	278.50	7Z983	181.00	6.0
4Z539	102	13	1/30	7Z944	141.60	7Z964	278.50	7Z984	181.00	6.0
90 VDC PARALLEL GEARMOTORS				No. 2M510 Control		No. 6Z386 Control		No. 5X485 Control		
6Z406	8	1087	1/4	7Z316	507.00	7Z336	623.50	7Z349	755.00	[illegible]
6Z407	13	960	1/4	7Z317	507.00	7Z337	623.50	7Z350	755.00	38.0
6Z408	20	727	1/4	7Z318	507.00	7Z338	623.50	7Z351	755.00	38.0
6Z409	40	353	1/4	7Z320	507.00	7Z339	623.50	7Z352	755.00	38.0
6Z410	60	238	1/4	7Z322	507.00	7Z340	623.50	7Z353	755.00	38.0
6Z411	90	160	1/4	7Z324	507.00	7Z341	623.50	7Z354	755.00	38.0
6Z412	146	101	1/4	7Z325	507.00	7Z342	623.50	7Z355	755.00	38.0
6Z413	20	1112	1/2	7Z326	544.50	7Z343	661.00	7Z356	792.50	46.0
6Z414	34	822	1/2	7Z331	544.50	7Z344	661.00	7Z357	792.50	46.0
6Z415	40	705	1/2	7Z332	544.50	7Z345	661.00	7Z365	792.50	46.0
6Z416	60	476	1/2	7Z333	544.50	7Z346	661.00	7Z366	792.50	46.0
6Z417	90	320	1/2	7Z334	544.50	7Z347	661.00	7Z360	792.50	46.0
6Z418	146	202	1/2	7Z335	544.50	7Z348	661.00	7Z361	792.50	43.0

Stock No.	Nameplate RPM	F/L Torque In.-Lbs.	HP	Combination Stock No.	Each	Combination Stock No.	Each	Combination Stock No.	Each	Combination Stock No.	Each	Combination Stock No.	Each	Shpg. Wt.
90 VDC RIGHT-ANGLE GEARMOTORS				No. 4Z827 Control		No. 4Z527 Control		No. 4Z828 Control		No. 5X412 Control		No. 2M510 Control		
4Z135	180	36	1/8	7Z875	$365.75	7Z885	$374.75	7Z895	$405.00	7Z711	$421.00	7Z287	$376.25	17.5
4Z136	90	59	1/8	7Z876	365.75	7Z886	374.75	7Z896	405.00	7Z712	421.00	7Z288	376.25	16.5
4Z137	60	74	1/8	7Z877	365.75	7Z887	374.75	7Z897	405.00	7Z713	421.00	7Z289	376.25	17.5
4Z138	30	102	1/8	7Z878	365.75	7Z888	374.75	7Z898	405.00	7Z714	421.00	7Z290	376.25	16.5

Stock No.	Nameplate RPM	F/L Torque In.-Lbs.	HP	Combination Stock No.	Each	Combination Stock No.	Each	Combination Stock No.	Each	Shpg. Wt.
90 VDC RIGHT-ANGLE GEARMOTORS				No. 4Z827 Control		No. 4Z527 Control		No. 2M510 Control		
4Z723	3.2	340	1/12	7Z879	$245.00	7Z889	$254.00	7Z291	$255.50	10.7
4Z724	6.0	177	1/12	7Z880	245.00	7Z890	254.00	7Z292	255.50	10.7
4Z725	9.9	228	1/12	7Z881	245.00	7Z891	254.00	7Z293	255.50	10.7
4Z726	23.5	102	1/12	7Z882	245.00	7Z892	254.00	7Z294	255.50	10.7
4Z727	45.0	56	1/12	7Z883	245.00	7Z893	254.00	7Z295	255.50	10.7
4Z728	89.0	34	1/10	7Z884	245.00	7Z894	254.00	7Z296	255.50	10.7
90 VDC RIGHT-ANGLE GEARMOTORS				No. 4Z828 Control		No. 5X412 Control		No. 6Z386 Control		
4Z723	3.2	340	1/12	7Z899	284.00	7Z909	300.25	7Z297	372.25	12.0
4Z724	6.0	177	1/12	7Z900	284.00	7Z910	300.25	7Z298	372.25	12.0
4Z725	9.9	228	1/12	7Z901	284.00	7Z911	300.25	7Z299	372.25	12.0
4Z726	23.5	102	1/12	7Z902	284.00	7Z912	300.25	7Z300	372.25	12.0
4Z727	45.0	56	1/12	7Z903	284.00	7Z913	300.25	7Z310	372.25	12.0
4Z728	89.0	34	1/10	7Z904	284.00	7Z914	300.25	7Z311	372.25	12.0

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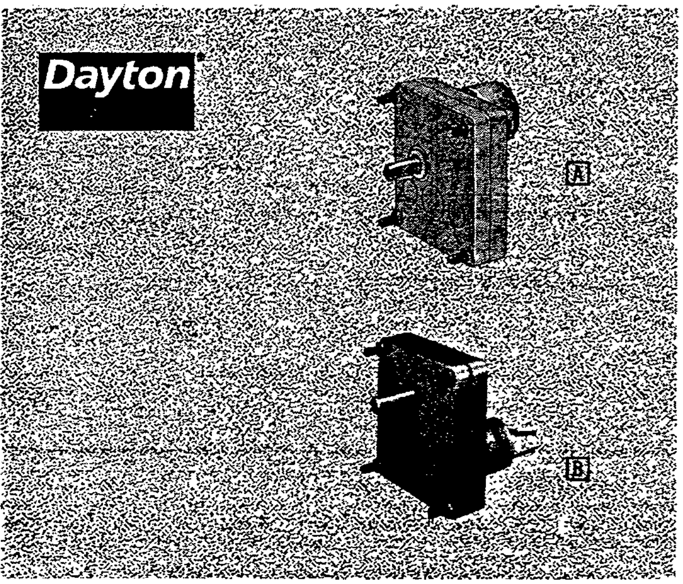
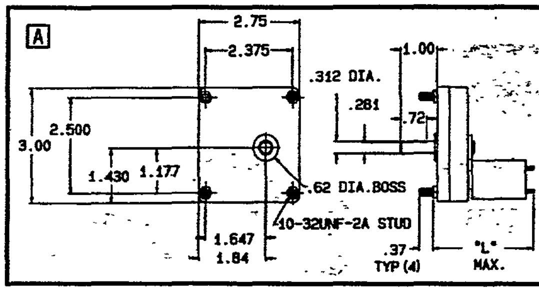
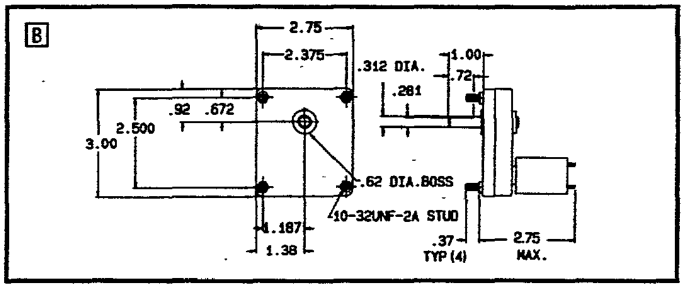
12 VDC PERMANENT MAGNET PARALLEL SHAFT GEARMOTORS

POWER TRANSMISSION: GEARMOTORS





Stock No.	L
2L003	2.50"
2L004	2.50
2L005	3.06
2L006	3.06
2L007	3.06
2L008	3.06
2L009	3.06
2L010	3.06



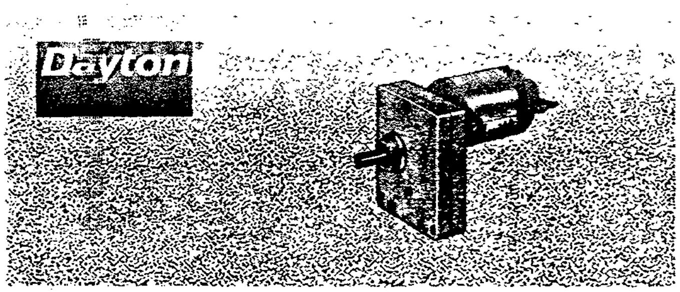
10 TO 50 IN.-LBS.

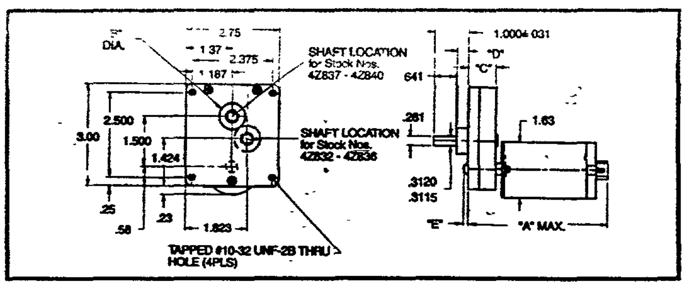
Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Spur
Bearings: Bronze sleeve on both case and motor
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Ambient: 40°C
Duty: Continuous

PARTS AVAILABLE FOR MANY DC GEARMOTORS, CALL 1-800-323-0620

12 VDC PERMANENT MAGNET

Key	Name-plate RPM	F/L Torque In.-Lbs.	Overhung Load Lbs.	Input HP	F/L Amps at 12 VDC	Gear Ratio	Stock No.	List	Each	Shpg. Wt.
A	0.45	50	30	1/2800	0.10	7189:1	**2L003**	$41.64	**$37.50**	1.1
A	1.5	46	29	1/900	0.30	1636:1	**2L004**	41.64	**37.50**	1.1
A	3.4	44	28	1/425	0.50	1176:1	**2L005**	41.64	**37.50**	1.1
A	4.5	43	27	1/325	0.70	1217:1	**2L006**	38.65	**34.80**	1.1
A	8.75	41	26	1/175	1.00	524:1	**2L007**	38.65	**34.80**	1.1
A	12.0	40	24	1/125	1.30	603:1	**2L008**	38.65	**34.80**	1.1
A	17.0	30	21	1/125	1.40	394:1	**2L009**	37.26	**31.05**	1.1
A	25.0	20	18	1/125	1.30	270:1	**2L010**	37.26	**31.05**	1.1
B	50.0	10	15	1/125	1.10	146:1	**2L011**	37.26	**31.05**	1.1





10 TO 50 IN.-LBS.

Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Spur
Bearings: Porous bronze sleeve on both case and motor
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Brushes: Externally replaceable
Ambient: 25°C
Duty: Continuous

FOR DC GEARMOTOR SELECTION GUIDE SEE PAGES 212 AND 213

12 VDC PERMANENT MAGNET

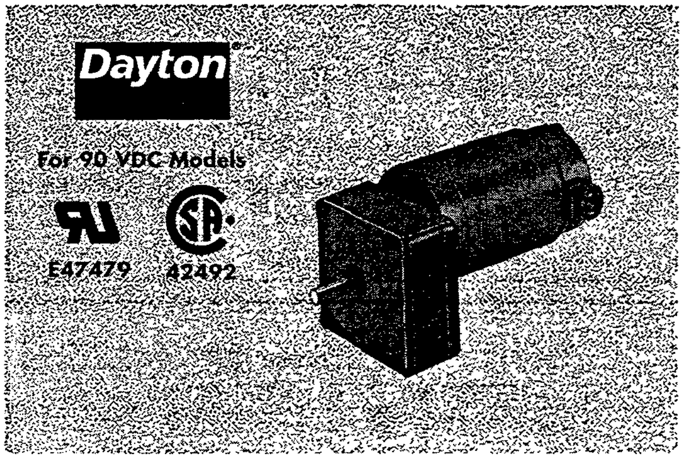
Name-plate RPM	F/L Torque In.-Lbs.	Overhung Load Lbs.	Input HP	F/L Amps at 12 VDC	Gear Ratio	Stock No.	List	Each	Shpg. Wt.
0.45	50	40	1/1200	0.30	2420:1	**4Z832**	$101.04	**$50.15**	1.5
1.5	25	40	1/1000	0.33	871.5:1	**4Z833**	101.04	**50.15**	1.5
3.4	30	40	1/400	0.60	580:1	**4Z834**	101.04	**50.15**	1.5
4.5	38	46	1/200	0.90	580:1	**4Z835**	101.04	**50.15**	1.5
8.75	35	46	1/120	1.10	267.5:1	**4Z836**	101.04	**50.15**	1.5
12.0	40	46	1/90	1.70	191.6:1	**4Z837**	101.04	**50.15**	1.5
17.0	16	13	1/160	1.10	135:1	**4Z838**	101.04	**50.15**	1.5
25.0	15	13	1/160	1.25	95.7:1	**4Z839**	101.04	**50.15**	1.5
50.0	10	13	1/90	1.60	45.4:1	**4Z840**	101.04	**50.15**	1.5

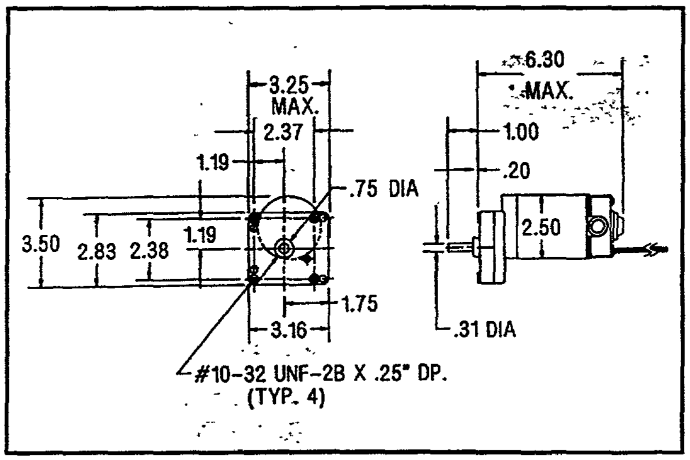
SPECIFICATIONS

Stock No.	Dimensions (Inches) A	B	C	D	E	Stock No.	Dimensions (Inches) A	B	C	D	E
4Z832	3.60	.78	.80	.33	NA	4Z837	4.60	.78	.80	.33	NA
4Z833	3.60	.78	.80	.33	NA	4Z838	3.95	.60	.54	.19	.13
4Z834	3.85	.78	.80	.33	NA	4Z839	4.33	.60	.54	.19	.13
4Z835	3.85	.78	.80	.33	NA	4Z840	4.33	.60	.54	.19	.13
4Z836	4.22	.78	.80	.33	NA						

A WIDE VARIETY OF BEARINGS IS AVAILABE, SEE PAGES 313 THRU 326

12 AND 90 VDC PERMANENT MAGNET PARALLEL SHAFT GEARMOTORS



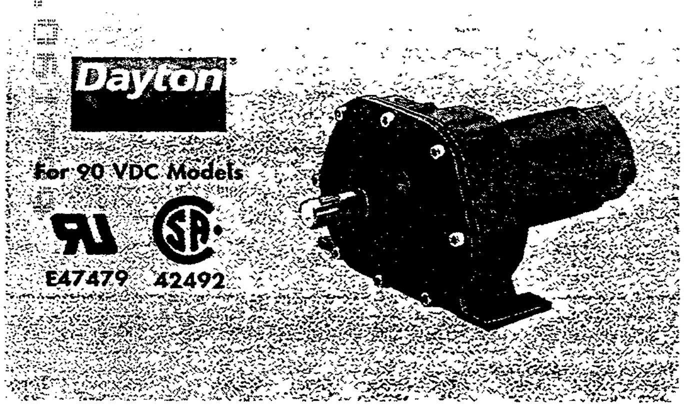


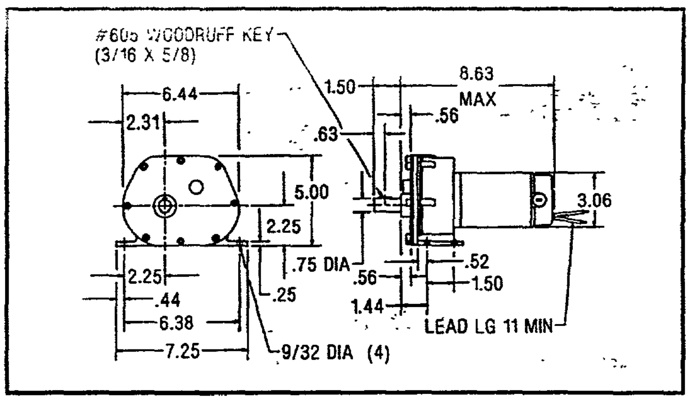
13 TO 50 IN.-LBS.

Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Heat-treated steel and acetal
Bearings: Porous bronze sleeve on both case and motor
Seals: O-ring type on output shaft
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Brushes: Externally replaceable
Ambient: 40°C
Duty: Continuous
Enclosure: TENV

PARTS AVAILABLE FOR MANY DC GEARMOTORS, CALL 1-800-323-0620

Nameplate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Full-Load Amps at Nameplate Volts	Gear Ratio	Stock No.	List	Each	Shpg. Wt.
12 VDC PERMANENT MAGNET TENV									
6	50	50	1/30	2.1	482:1	**1L480**	$129.00	**$98.70**	3.7
9.2	50	50	1/30	2.3	63:1	**1L479**	129.00	**98.70**	3.7
21	50	50	1/30	3.0	98:1	**1L478**	129.00	**98.70**	3.7
32	40	50	1/30	3.5	161:1	**1L477**	129.00	**98.70**	3.7
50	26	50	1/30	3.5	314:1	**1L476**	129.00	**98.70**	3.7
102	13	50	1/30	3.5	31:1	**1L475**	129.00	**98.70**	3.0
90 VDC PERMANENT MAGNET TENV									
7	50	50	1/30	0.20	482:1	**4Z534**	124.00	**94.90**	[illegible]
11	50	50	1/75	0.25	314:1	**4Z535**	124.00	**94.90**	[illegible]
21	50	50	1/30	0.35	161:1	**4Z536**	124.00	**94.90**	3.7
32	43	50	1/30	0.42	98:1	**4Z537**	124.00	**94.90**	3.5
50	26	50	1/30	0.42	63:1	**4Z538**	124.00	**94.90**	3.5
102	13	50	1/30	0.42	31:1	**4Z539**	124.00	**94.90**	3.5





50 TO 500 IN.-LBS.

Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Phenolic and hardened steel
Bearings: Needle/ball/sleeve on case; ball on motor
Seals: O-ring type on output shaft
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Brushes: Externally replaceable
Ambient: 40°C
Duty: Continuous
Enclosure: TENV

Nameplate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Full-Load Amps at Nameplate Volts	Gear Ratio	Stock No.	List	Each	Shpg. Wt.
12 VDC PERMANENT MAGNET TENV									
6	500	250	1/15	6.5	267:1	**1L474**	$299.00	**$229.50**	12.0
12	250	250	1/15	6.5	133:1	**1L473**	299.00	**229.50**	12.0
20	150	250	1/15	6.5	81:1	**1L472**	299.00	**229.50**	11.0
40	75	250	1/15	6.5	81:1	**1L471**	299.00	**229.50**	12.0
60	75	250	1/10	9.0	55:1	**1L470**	299.00	**229.50**	13.0
90	50	250	1/10	9.0	35:1	**1L469**	299.00	**229.50**	12.0
90 VDC PERMANENT MAGNET TENV									
6.5	500	250	1/15	0.75	267:1	**4Z530**	299.00	**229.50**	12.0
13	250	250	1/15	0.75	133:1	**4Z531**	299.00	**229.50**	12.0
21	150	250	1/15	0.75	81:1	**4Z532**	299.00	**229.50**	12.0
42	75	250	1/15	0.75	81:1	**4Z533**	299.00	**229.50**	12.0

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POWER TRANSMISSION: DC MOTORS

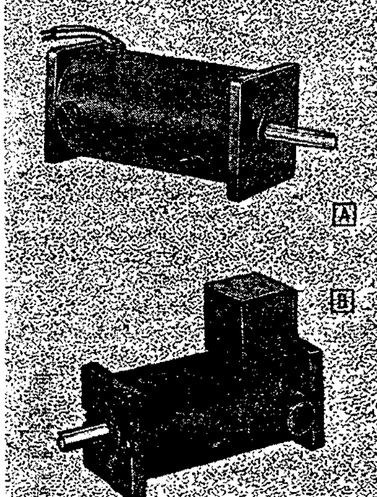
6, 12 AND 12/24V PMDC AND SNOW PLOW PUMP MOTORS

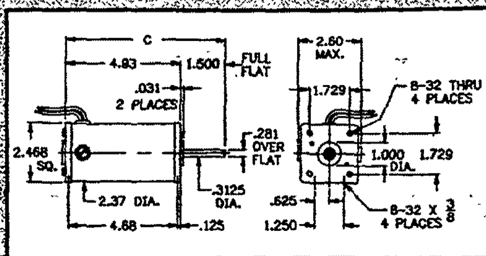
12/24 VOLT DC MOTORS

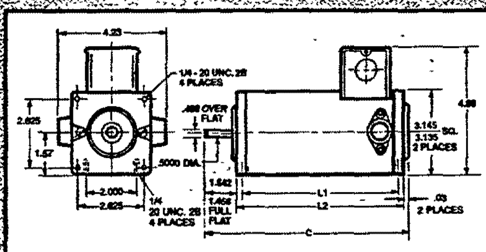
Dayton

E47479

• 1/20 to 1/6 HP at 12VDC and 1/10 to 1/3 HP at 24VDC







Typical Uses: Low voltage machines, pumps, fans, chemical feeders, and other applications requiring 12 or 24VDC supply power.

Special Features: Externally replaceable brushes

Armature Volts: 12/24

Type: DC permanent magnet

Bearings: Ball

Mounting: All-position face and base mounting

Enclosure: TENV

Ambient: 40°C

Windings: Copper

Service Factor: 1.0

Insulation Class: B

Duty: Continuous

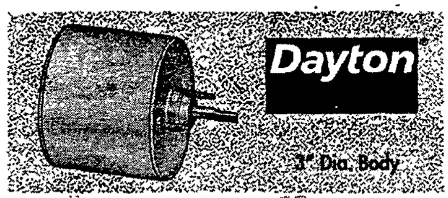
Rotation: Reversible

Finish: Black enamel

Brand: Dayton

Fig.	HP at 12VDC	HP at 24VDC	Nameplate RPM at 12VDC	Nameplate RPM at 24VDC	Full-Load Torque In.-Lbs.	Overall Length (C)	L_1	Full-Load Amps	Stock No.	List	Each	Shpg. Wt.
A	1/20	1/9	1750	4200	1.81	6 7/16"	4.78"	5.1	4Z145	$117.00	$74.80	4.0
B	1/14	1/6	1750	3900	2.56	6 13/32	4.42	6.9	4Z144	178.00	114.85	6.3
B	1/7	1/4	1750	3900	5.63	8 13/32	6.42	14.0	4Z143	181.00	129.50	8.9
B	1/6	1/3	1800	4200	6.38	9 13/32	7.42	16.5	4Z529	201.00	143.95	10.0

6 AND 12 VOLT DC MOTORS



Typical Uses: Mobile home, RV and trailer range hoods, ventilators and pumps, marine pumps and ventilators, automobile and truck heaters, coolers, air conditioners, and other applications requiring 6 or 12VDC supply power.

Special Features: Elimination of field wound stator allows improved efficiency and cooler operation.

Type: Permanent magnet

HP: 1/35

Nameplate RPM: 2350

F/L Amps: No. 2M196, 6.75; No. 2M197, 3.70

Bearings: Self-aligning sleeve

Mounting: 1/2" long studs, 2 5/16" OC

Enclosure: TENV

Shaft Dimensions: 1/4 x 1"

Overall Length: 4 7/8"

Duty: Continuous

Rotation: CW facing shaft

Body Diameter: 3"

Finish: Zinc plated

Brand: Dayton

Volts DC	Stock No.	List	Each	Lots 20	Shpg. Wt.
6	**2M196**	$30.03	**$21.24**	**$20.20**	2.3
12	**2M197**	30.03	**21.24**	**20.20**	2.3

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

SNOW PLOW PUMP MOTORS

Typical Uses: Replacement electric motors for use on Meyer brand and late style Western hydraulic snow plow mechanisms. Also suitable for other 12 VDC hydraulic power units and similar applications where a closed couple shaft is used.

Type: 4M292 is permanent magnet; 4M291 is field wound

Mounting: Stud

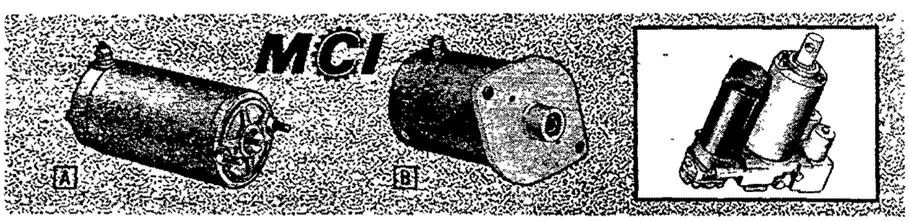
Bearings: Oil impregnated sleeve

Enclosure: TENV

Duty: Intermittent

Finish: Black

Brand: Machinery Components, Inc.



Replaces Original Motor In:	HP	Key	Nameplate RPM	Rotation*	OEM Repl. Model	Stock No.	List	Each	Shpg. Wt.
Meyer Series E47 and E48 Electro Touch™	1 1/2	A	4200	CCW	15054	**4M292**	$136.00	**$124.00**	6.5
Late Style Western	1 3/4	B	2900	CW	56133	**4M291**	180.00	**168.00**	14.0

(*) Facing shaft

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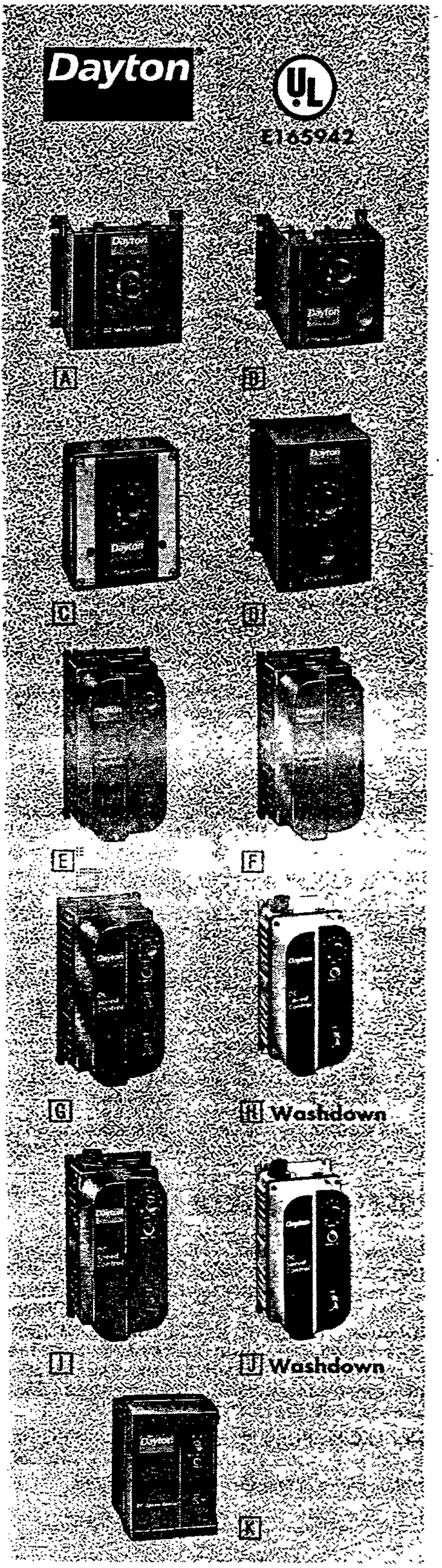
DC SPEED CONTROLS FOR 90V AND 180V MOTORS AND GEARMOTORS



ALL MODELS FEATURE:

- Adjustable maximum/minimum speed
- Fused control protection
- Run/stop switch
- Metal enclosures (except Nos. 4Z527 and 6Z812 are phenolic)
- Built-in transient and surge suppression
- Performance matched to Dayton and GE PMDC motors
- Single-phase, 60/50 Hz input
- All models are UL Listed and Certified for Canada (E165942)

Solid state speed controls convert 115 or 230 VAC input to full wave DC power for speed control of permanent magnet (90 and 180 VDC armature) motors and gearmotors. Some controls can also control shunt wound DC motors.

For constant or diminishing torque applications requiring adjustable speed control over a wide range. Not intended for constant HP applications such as saws and drill presses or in close proximity of high capacitive discharge electrical circuits such as welding equipment. Black finish (except Nos. 1F794 and 1F792 are white epoxy washdown duty). Dayton brand.

ADDITIONAL FEATURES

Stock No.	IR Comp.	Current/ Torque Limit	"Power On" Light	Arm. VDC	Shunt Wound Field VDC	Compatible with Tach‡ Feedback	Dynamic Braking	Additional Switches (On/Off Stand.)
4Z827	Fixed	None	No	90	N/A	—	No	None
4Z828	Fixed	None	No	90	N/A	—	No	None
4Z527	Fixed	None	No	90	N/A	—	No	None
5X412	Fixed	None	No	90	N/A	—	No	None
5X485	Adj.	Adj.	Yes	90	100	Yes	No	None
6X165	Adj.	Adj.	Yes	90	100	Yes	Yes#	Forward/Rev.
2M171	Adj.	Adj.	Yes	90	100	Yes	Yes#	Forward/Rev.
4Z829*	Adj.	Adj.	Yes	90	100	Yes	Yes#	Forward/Rev.
1F794	Adj.	Adj.	Yes	90	100	Yes	Yes#	Forward/Rev.
4Z377	Adj.	Adj.	Yes	180	200	Yes	No	None
6Z812†	Adj.	Adj.	Yes	180	200	Yes	Yes††	Run/Stop/Jog
1F792	Adj.	Adj.	Yes	180	200	Yes	Yes#	Forward/Rev.

(*) External speed adjust interfacing accepts 0-10V, or 1 to 5, 4 to 20, 10 to 50 mA signals with offset.
(†) Includes control circuit to prevent restart of drive after interruption of AC power. Adjustable acceleration and deceleration. Provision to allow converting to a torque control (††) With No. 6Z813.
(‡) See tachometer generators on page 204. (#) Braking kit included; installation voids UL.

SPECIFICATIONS AND ORDERING INFORMATION

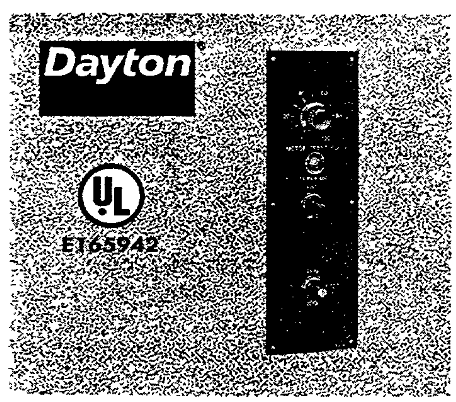
Key	HP Range	Input Volts	Speed Range	Constant Torque Speed Regulation % Nameplate RPM	Enclosure Type	H	W	D	Stock No.	List	Each	Shpg. Wt.
CONTROL WITH OUTPUT FOR 90VDC ARM. PM MOTORS												
A	1/50-1/6	115	10:1	10-30	Chassis	4"	4"	2"	4Z827	$61.73	$54.15	1.0
B	1/35-1/6	115	10:1	10	Chassis	4¼	4	4¼	4Z828	108.81	95.45	2.5
C	1/50-1/6	115	10:1	10-30	NEMA 1	5	4¼	1⅞	4Z527	72.56	63.65	0.8
D	1/50-1/6	115	10:1	10	NEMA 1	6	4	4 5/16	5X412	128.02	112.30	3.7
E	1/4-1	115	50:1	2	NEMA 4/12	9½	5	5½	5X485	372.21	326.50	6.0
F	1/35-1/6	115	50:1	2	NEMA 4/12	9½	5	5½	6X165	376.49	330.25	5.1
F	1/8-1	115	50:1	2	NEMA 4/12	9½	5	5½	2M171	468.00	411.75	5.3
G	1/8-1	115	50:1	2	NEMA 4/12	9½	5	5½	4Z829	573.42	503.00	6.8
H	1/8-1	115	50:1	2	NEMA 4/12	9½	5	5½	1F794	424.08	372.00	9.0
CONTROL WITH OUTPUT FOR 180VDC ARM. PM MOTORS												
I	1/3-2	230	50:1	2	NEMA 4/12	9½	5	5½	4Z377	420.66	369.00	5.0
J	1/3-2	230	50:1	2	NEMA 4/12	9½	5	5½	1F792	424.08	372.00	9.0
K	1/3-5	230	50:1	2	NEMA 4/12	12⅛	9	9 3/16	6Z812	832.20	730.00	12.0

MAGNETIC REVERSING KIT FOR No. 6Z812

Provides full armature reversing using forward and reverse contactors mounted on a printed circuit board. Also disconnects motor armature from control when motor is stopped, meeting electrical code requirements for an "M" contactor.

Includes an antiplugging circuit and an auxiliary form A contact rated for 5 amps at 115VAC or 30VDC. 3-5 HP range. Forward reverse toggle switch for selecting motor rotation. Operable on 230VAC only, 180V armature.

No. 6Z813. Shpg. wt. 3.3 lbs. List..$406.13.
Each...$356.25



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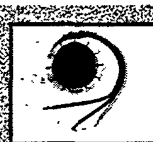
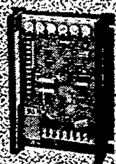
POWER TRANSMISSION: DC DRIVES

DC VARIABLE SPEED CONTROLS

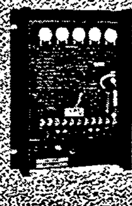
DART CONTROLS, INC.



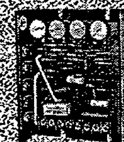
Nos. 6Z387, 6Z385, and 2M510 include speed pot, knob, and dial plate.



No. 6Z387, Chassis 1/4 to 2 HP
ADDITIONAL FEATURES
- Adj. linear accel. and decel.
- Packaged gentron bridge
- Two AC fuses
- UL Recognized



No. 6Z385, Chassis 1/8 to 2 HP
ADDITIONAL FEATURES
- Adj. linear accel.
- One AC fuse
- Packaged gentron bridge
- Dual voltage
- UL Recognized
- CSA Certified (LR85877)



No. 2M510, Chassis 1/8 to 2 HP
ADDITIONAL FEATURES
- 200% overload for 1 minute
- Dual voltage
- UL Recognized
- CSA Certified (LR85877)

No. 6Z388, Enclosed, NEMA 4/12, 1/4 to 2 HP
ADDITIONAL FEATURES
- Power interrupt relay
- Adj. linear accel. and decel.
- Packaged gentron bridge
- Two AC fuses

No. 2M511, Enclosed, NEMA 4/12, 1/8 to 1 HP
ADDITIONAL FEATURES
- Reverse manual or electric
- AC relay
- Dynamic brake
- Two AC fuses

No. 6Z386, Enclosed, NEMA 4/12, 1/8 to 2 HP
ADDITIONAL FEATURES
- Adj. linear accel.
- One AC fuse
- Packaged gentron bridge
- Dual voltage
- UL Recognized
- CSA Certified (LR85877)

STANDARD FEATURES

- Operable on 60 or 50 Hz
- 1% speed regulation over constant torque speed range
- Adjustable minimum/maximum speed
- Adjustable current limit
- Line voltage compensation
- Transient voltage protection
- Free wheeling diode
- Inhibit capability
- HP adjustable by internal trim pot
- Nonfiltered
- Shunt field (1 amp max; 100 VDC for 120 VAC in; 200 VDC for 240 VAC in)
- DC tach follower capability
- DC tach feedback capability: 3 V/K
- Full wave power supply
- 100% full load tested
- Operate on 60 Hz at ±10% rated line voltage
- Chassis units are supplied with speed pot, knob, and dial plate

DC speed controls for use with DC motors and gearmotors on constant or diminishing torque applications requiring wide range adjustable speed control. These include conveyors, assembly lines, packaging, food processing, silk screening, and photo processing equipment. Not intended for constant HP applications which include saws and drill presses. Do not use in close proximity to high capacitive discharge electrical circuits such as welding equipment. UL Recognized (E78180). Dart brand.

Type	HP	Input Volts at 60 Hz	Output to PM DC Motor	Speed Range	Dimensions (Inches) W	L	D	Dart Model	Stock No.	List	Each	Shpg. Wt.
Chassis	1/8-2*	120/240	90/180 VDC	25:1	3.625	4.25	1.3	125DV-C-K	**2M510**	$98.00	**$65.20**	0.7
Enclosed	1/8-2*	120/240	90/180 VDC	30:1	5.53	7.43	3.55	253G-200E	**6Z386**	283.00	**188.25**	2.0
Chassis	1/8-2	120/240	90/180 VDC	30:1	5.53	7.00	1.63	253C-200C	**6Z385**	219.00	**145.60**	1.5
Enclosed	1/8-1	120	90 VDC	50:1	6.75	10.75	4.75	510-100RE-36A	**2M511**	641.00	**426.75**	4.3
Enclosed	1/4-2	240	180 VDC	50:1	6.75	10.75	4.75	520-200RE	**6Z388**	537.00	**357.50**	3.6
Chassis	1/4-2	240	180 VDC	50:1	6.75	9.00	2.00	520-200C	**6Z387**	493.00	**328.50**	2.3

(*) 1/8-1 HP at 90 VDC; 1/4-2 HP at 180 VDC (No. 2M510 requires external heat sink for 2 HP rating).

FIELD PROGRAMMABLE CLOSED LOOP DC VARIABLE SPEED CONTROL

DART CONTROLS, INC.

E78180

LR85877

Field Programmability Allows User to Customize Control to Specific Application

- Microprocessor based with nonvolatile memory
- Displays include RPM, FPM, GPM, rate or process time
- Digital closed loop accuracy
- Adjustable Min./Max. set speed
- Master or follower modes of operation
- Decimal point selection
- Large 1/2" digital display
- Operable on 60 or 50 Hz
- 1/8 DIN panel mount

For use on 90V PMDC motors and gearmotors, rated to 1/3 HP, requiring long term accuracy and repeatable speed settings. Accepts 120 VAC, 60/50 Hz input. Closed loop accuracy of ±1/2 RPM when used with pulse generator. Screw-type terminal strip for easy installation. Sturdy aluminum construction. Speed range: 25:1. Dart brand (MD10P)*.

No. 1XC92. Shpg. wt. 1.2 lbs. List..$582.00. Each..$387.50

(*) Requires No. 6Z392 pulse generator or equivalent.

APPENDIX 4

MOTOR SELECTION INFORMATION

SELECTING AC (ALTERNATING CURRENT) INDUCTION MOTORS

See Electric Motor Terminology section on pages 3308, 3309, and 3310 for detailed definitions.

Motors are used in a wide variety of applications. In some applications more than one motor design would work well. In others, an exact replacement cannot be found but a similar motor with slight differences in mechanical and electrical characteristics will provide reliable operation. The following selection guide is designed to help you choose the correct motor for your application.

Follow these 4 Easy Steps to Choose Your Motor:

STEP 1: GATHER MOTOR INFORMATION

You will need the following information to properly select a motor. If you are replacing a motor, much of the information can be found on the existing motor nameplate. See the sample nameplate below.

① **Phase—Either single (1) or three (3).** Match exactly.

② **Voltage.** Match exactly.

③ **Horsepower (HP)—Very small motors are often rated in watts.** Choose an equal or next higher HP.

④ **Physical Size/Frame.** Match exactly.

⑤ **Speed (RPM).** Match within 5%.

⑥ **Frequency (Hz).** Match exactly.

⑦ **Service Factor.** Choose motor of equal or greater number.

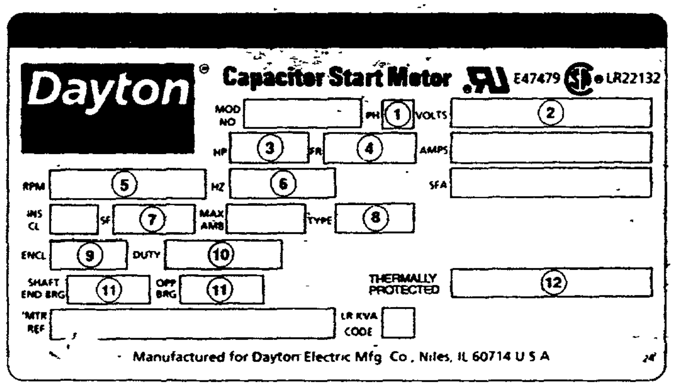
⑧ **Type:** See below.

⑨ **Enclosure.** See below.

⑩ **Duty Cycle.** If current motor is intermittent duty, you may upgrade to continuous. Air-over must be installed in the airstream.

⑪ **Bearing Type—Sleeve or Ball.** Match exactly.

⑫ **Thermal Protection.** See Thermal Protection Information on page 5.



Motor Type—See Electric Terminology section on pages 3308, 3309, and 3310 for detailed definitions.				
Type	**Starting Torque as Percent of Full-Load Torque**	**Comparative Efficiency**	**Comparative Cost**	**Typical Uses**
Shaded Pole	Very Low 50-100%	Low	Low	Small direct-drive fans and blowers
Permanent Split Capacitor (PSC)	Low 75-150%	Moderate	Low to Moderate	Direct-drive fans and blowers
Split-Phase	Low to Moderate 130-170%	Moderate	Moderate	Belt-drive and direct-drive fans and blowers, small tools, centrifugal pumps, and appliances
Capacitor Start	Moderate to High 200-400%	Moderate to High	Moderate to High	Pumps, compressors, tools, conveyors, farm equipment, and industrial ventilators
Three-Phase	Moderate to High 200-300%	High	Moderate	Applications where 3-phase power is available

Enclosure—See Electric Motor Terminology section on pages 3308, 3309, and 3310 for detailed definitions. Three basic enclosures:		
Enclosure Type	**How Can I Tell?**	**Where Do I Use This Enclosure?**
Open/Dripproof	Ventilation holes in shell and/or endshield.	Clean, dry, non-hazardous environments.
Enclosed	No ventilation holes in shell or endshield.	Dirty, moist, non-hazardous environments.
Hazardous Location	Enclosed. Must have a UL Hazardous Location nameplate on motor frame.	Designed for use in hazardous environments as defined by National Electrical Code (NEC) classifications. NEC Class and Group are designated on UL Hazardous Location nameplate mounted on motor.

MOTOR SELECTION INFORMATION

STEP 2: DETERMINE THE RIGHT CATALOG SECTION

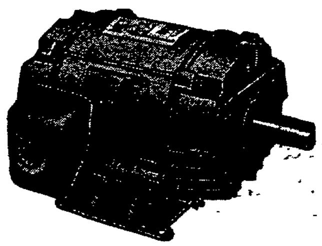
By your application: Many of our motors are listed by application such as fan, pump, blower, compressor, etc. You will find these applications under "Motors" in the Product Index in the back of the Catalog. Turn to the specific page or section to find your motor and proceed to Step 4. If your application is not listed in the index, or if you cannot find the motor you want in the listed section, choose your motor by its characteristics.

By the characteristics: Motor type, horsepower, speed, and enclosure. Grainger carries general purpose motors designed for reliable use on a wide variety of applications. They are grouped in two categories: Industrial and Commercial. The motor category chosen is dependent on the characteristics of the applications (see below).

There is considerable overlap in applications which can use either motor. In general, Industrial motors are more rugged than Commercial motors, but cost more.

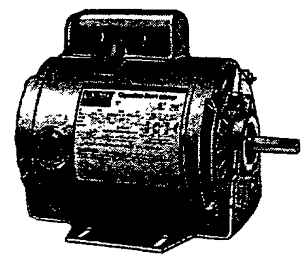
Choose the motor from the Industrial or Commercial motor section based on the characteristics of your application.

Industrial



- **Designed for mechanical loads (also effective for air moving)**
- **For hard-to-start applications such as conveyors, belt-driven equipment, machine tools, and reciprocating pumps**
- **Ball bearings to handle heavier radial and axial loads**
- **Heavier construction for industrial applications**

Commercial



- **Designed mostly for air moving and other light to medium duty applications such as fans and centrifugal pumps, small tools, and office equipment**

STEP 3: FIND THE RIGHT PAGES IN THE SECTION

Motors are arranged in sections as follows:

1st. By Type/Application

2nd: By Enclosure or Special Features within that type. **Example:** When looking for an Industrial 3-Phase TEFC motor, first turn to the Industrial section, then find 3-Phase motor pages, then turn to TEFC pages.

STEP 4: SELECT SPECIFIC MOTOR

Match all of the information you have gathered in Step 1.

If you cannot find a motor, or have any questions, call your local Grainger Branch for assistance.

GRAINGER STOCKS A BROAD LINE OF DAYTON AND GE MOTORS

Top Performance. Dayton motors are built to exceed industry standards such as NEMA (National Electrical Manufacturers Association). Used as a replacement motor in a wide variety of applications, each Dayton motor must outperform the best motor it may be called upon to replace, hence "best of the best" performance. You can be confident that the Dayton motor will work as well as, or better than, the motor you are replacing.

Top Quality Verified by Engineers. Grainger's Engineering Dept., with its "state-of-the-art" test lab, confirms that Dayton motors consistently meet or exceed top performance standards. Engineering also confirms the motors have applicable agency approvals such as UL and CSA.

Clearly Identified. Dayton motors are clearly identified by full fact carton labels and nameplates with wiring diagrams. Maintenance and installation instructions appear in every motor carton.

Broad Line Offering. Dayton offers one of the broadest lines of motors in the industry. One brand can be used for nearly all your motor replacement needs.

Time Proven Performance. Established in 1937, Dayton has grown to be one of the most dependable names in the motor industry.

Broad Line Offering. Grainger now offers over 2400 stock GE brand motors including AC and DC motors from 1/370 HP to 450 HP in Energy $aver™ and standard efficiency designs including severe duty, explosion proof, farm duty, HVAC, and many others.

National Recognition. GE is considered the leading national brand motor with the largest installed customer base. The GE brand is widely known for quality and reliability.

Clearly Identified. GE motors are clearly identified by full fact carton labels and nameplates. Easy-to-read wiring diagrams are included.

Premium Efficiency Leader. GE has long been recognized as an industry leader in premium efficiency motors with a wide variety of ratings and types to suit many applications.

Heritage of Excellence. General Electric is one of the pioneers in the electrical industry with a proud 100 year history dating back to the time of founder Thomas Edison.

MOTOR SELECTION INFORMATION

THERMAL PROTECTION INFORMATION

Motors that start automatically (e.g. thermostat controlled) and are located out of operator sight, must be protected against dangerous overheating due to failure-to-start or overloading. This protection may be a separate overcurrent device (e.g. motor starter) complying with Article 430 of the National Electrical Code (NEC), a thermally protected motor (internal motor protection), or an impedance protected motor.

Motors with automatic reset thermal protection MUST NOT be used where automatic or otherwise unexpected starting of the motor could be hazardous. Applications where automatic restarting could be hazardous include compressors, conveyors, power tools, farm equipment, and some fans and blowers. Where such a hazard exists, always use a manual reset thermally protected motor.

UL 507 STANDARD

Any motor used in fan product, such as bathroom exhaust fans, wall-insert fans, ceiling insert fans, attic exhaust fans, whole house fans, and duct fans, etc., which are built into or within the building structure and which are likely to operate unattended or in situations in which the operator may not detect a locked rotor (stalled motor) condition must have either a manual reset thermal protector or a thermal cut-off (one-shot) device.

Range hoods, circulating fans, pedestal fans, and ceiling suspended fans are not included. Agricultural fans are included if they are built into the building structure and are likely to operate unattended or in situations in which the person operating the fan may not detect a locked rotor (stalled motor) condition.

PREMIUM EFFICIENCY vs. STANDARD EFFICIENCY

Lower Operating Cost:

$$\text{Annual Savings} = 0.746 \times HP \times L \times C \times N \left(\frac{100}{E_1} - \frac{100}{E_2}\right)$$

HP = Motor Horsepower
L = Percent Load Divided by 100
C = Energy Cost, Dollars Per Kilowatt Hour
N = Running Time, Hours Per Year
E_1 = Efficiency (%) of Standard Efficiency Motor
E_2 = Efficiency (%) of Premium Efficiency Motor

If you operate a 25 HP premium efficiency motor at full load for 24 hours a day (8760 hours per year) and your cost per kilowatt hour is 9 cents, **you can save $532.00 annually.** This comparison is based on a premium efficiency motor with a 94.1 efficiency rating vs. a standard efficiency motor with a 91.0 efficiency rating.

Increased efficiency leads to lower operating temperatures, resulting in longer life.

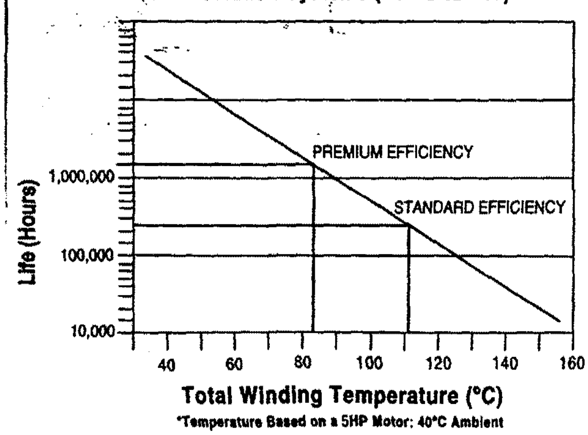
Cooler Operation:

The life of an insulation system doubles for each 10°C reduction in operating temperature.

Longer Bearing Life:

The lower the temperature, the longer the bearing grease will last.

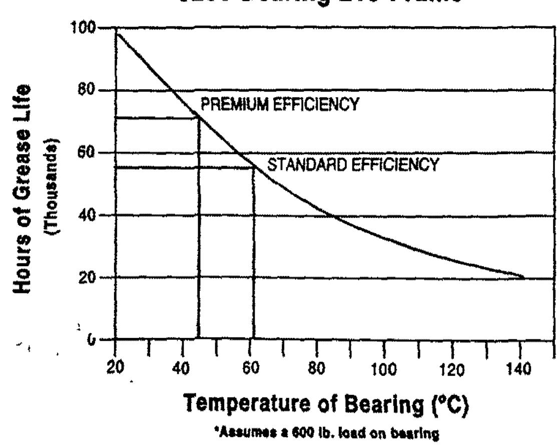
INSULATION LIFE vs. TEMPERATURE*
for Insulation Systems (Per IEEE 117)



Total Winding Temperature (°C)

*Temperature Based on a 5HP Motor: 40°C Ambient

GREASE LIFE vs. TEMPERATURE**
6208 Bearing 215 Frame



Temperature of Bearing (°C)

*Assumes a 600 lb. load on bearing

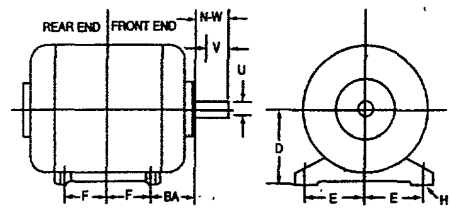
MOTOR SELECTION GUIDES

MOTOR DIMENSIONS FOR NEMA FRAMES

Standardized motor dimensions as established by the National Electrical Manufacturers Association (NEMA) are tabulated below and apply to all base-mounted motors listed herein which carry a NEMA frame designation.

NEMA Frame	D*	2E	2F	BA	H	N-W	U	V§ Min.	Key Wide	Key Thick	Key Long
	All Dimensions in Inches										
42	2 5/8	3 1/2	1 11/16	2 1/16	9/32 slot	1 1/8	3/8	—	—	3/64 flat	—
48	3	4 1/4	2 3/4	2 1/2	11/32 slot	1 1/2	1/2	—	—	3/64 flat	—
48H	3	4 1/4	4 3/4	2 1/2	11/32 slot	1 1/2	1/2	—	—	3/64 flat	—
56	3 1/2	4 7/8	3	2 3/4	11/32 slot	1 7/8†	5/8†	—	3/16†	3/16†	1 3/8†
56H	3 1/2	4 7/8	3&5‡	2 3/4	11/32 slot	1 7/8†	5/8†	—	3/16†	3/16†	1 3/8†
56HZ	3 1/2	**	**	**	**	2 1/4	7/8	2	3/16	3/16	1 3/8
66	4 1/8	5 7/8	5	3 1/8	13/32 slot	2 1/4	3/4	—	3/16	3/16	1 7/8
143T	3 1/2	5 1/2	4	2 3/4	11/32 dia.	2 1/4	7/8	2	3/16	3/16	1 3/8
145T	3 1/2	5 1/2	5	2 1/4		2 1/4	7/8	2	3/16	3/16	1 3/8
146AT	3 1/2	5 1/2	5 1/2	2 3/4	11/32 dia.	2 1/4	7/8	2	3/16	3/16	1 3/8
148AT	3 1/2	5 1/2	7	2 3/4		2 1/4	7/8	2	3/16	3/16	1 3/8
149AT	3 1/2	5 1/2	8	2 3/4		2 1/4	7/8	2	3/16	3/16	1 3/8
1412AT	3 1/2	5 1/2	11	2 3/4		2 1/4	7/8	2	3/16	3/16	1 3/8
182	4 1/2	7 1/2	4 1/2	2 3/4	13/32 dia.	2 1/4	7/8	2	3/16	3/16	1 3/8
184	4 1/2	7 1/2	5 1/2	2 3/4		2 1/4	7/8	2	3/16	3/16	1 3/8
182T	4 1/2	7 1/2	4 1/2	2 3/4		2 3/4	1 1/8	2 1/2	1/4	1/4	1 3/4
184T	4 1/2	7 1/2	5 1/2	2 3/4		2 3/4	1 1/8	2 1/2	1/4	1/4	1 3/4
182AT	4 1/2	7 1/2	4 1/2	2 3/4	13/32 dia.	2 1/4	1 1/8	2	1/4	1/4	1 3/8
L182ACY	4 1/2	7 1/2	4 1/2	2 3/4		2 1/4	7/8	2	3/16	3/16	1 3/8
L182AT	4 1/2	7 1/2	4 1/2	2 3/4		2 1/4	1 1/8	2	1/4	1/4	1 3/8
186ACY	4 1/2	7 1/2	7	2 3/4		2 1/4	7/8	2	3/16	3/16	1 3/8
186AT	4 1/2	7 1/2	7	2 3/4		2 1/4	1 1/8	2	1/4	1/4	1 3/8
L186AT	4 1/2	7 1/2	7	2 3/4		2 1/4	1 1/8	2	1/4	1/4	1 3/8
189AT	4 1/2	7 1/2	10	2 3/4		2 1/4	1 1/8	2	1/4	1/4	1 3/8
203#	5	8	5 1/2	3 1/8	13/32 dia.	2 1/4	3/4	2	3/16	3/16	1 3/8
204#	5	8	6 1/2	3 1/8		2 1/4	3/4	2	3/16	3/16	1 3/8
213	5 1/4	8 1/2	5 1/2	3 1/2	13/32 dia.	3	1 1/8	2 3/4	1/4	1/4	2
215	5 1/4	8 1/2	7	3 1/2		3	1 1/8	2 3/4	1/4	1/4	2
213T	5 1/4	8 1/2	5 1/2	3 1/2		3 3/8	1 3/8	[illegible]	5/16	5/16	2 3/8
215T	5 1/4	8 1/2	7	3 1/2		3 3/8	1 3/8		5/16	5/16	2 3/8
219AT	5 1/4	8 1/2	11	3 1/2	13/32 dia.	2 3/4	1 3/8	2 1/2	5/16	5/16	1 3/4
2110AT	5 1/4	8 1/2	12 1/2	3 1/2		2 3/4	1 3/8	2 1/2	5/16	5/16	1 3/4
224#	5 1/2	9	6 3/4	3 1/2	13/32 dia.	3	1	2 3/4	1/4	1/4	2
225#	5 1/2	9	7 1/2	3 1/2		3	1	2 3/4	1/4	1/4	2
254#	6 1/4	10	8 1/4	4 1/4	21/32 dia.	3 3/8	1 1/8	3 1/8	1/4	1/4	2 3/8
254U	6 1/4	10	8 1/4	4 1/4	17/32 dia.	3 3/4	1 3/8	3 1/2	5/16	5/16	2 3/4
256U	6 1/4	10	10	4 1/4		3 3/4	1 3/8	3 1/2	5/16	5/16	2 3/4
254T	6 1/4	10	8 1/4	4 1/4		4	1 5/8	3 3/4	3/8	3/8	2 7/8
256T	6 1/4	10	10	4 1/4		4	1 5/8	3 3/4	3/8	3/8	2 7/8
284#	7	11	9 1/2	4 3/4	21/32 dia.	3 3/4	1 1/4	3 1/2	1/4	1/4	2 3/4
284U	7	11	9 1/2	4 3/4	17/32 dia.	4 7/8	1 5/8	4 5/8	3/8	3/8	3 3/4
286U	7	11	11	4 3/4		4 7/8	1 5/8	4 5/8	3/8	3/8	3 3/4
284T	7	11	9 1/2	4 3/4		4 5/8	1 7/8	4 3/8	1/2	1/2	3 1/4
286T	7	11	11	4 3/4		4 5/8	1 7/8	4 3/8	1/2	1/2	3 1/4
284TS	7	11	9 1/2	4 3/4		3 1/4	1 5/8	3	3/8	3/8	1 7/8
286TS	7	11	11	4 3/4		3 1/4	1 5/8	3	3/8	3/8	1 7/8
324#	8	12 1/2	10 1/2	5 1/4	21/32 dia.	4 7/8	1 5/8	4 5/8	3/8	3/8	3 3/4
326#	8	12 1/2	12	5 1/4		4 7/8	1 5/8	4 5/8	3/8	3/8	3 3/4
324U	8	12 1/2	10 1/2	5 1/4	21/32 dia.	5 5/8	1 7/8	5 3/8	1/2	1/2	4 1/4
326U	8	12 1/2	12	5 1/4		5 5/8	1 7/8	5 3/8	1/2	1/2	4 1/4
324T	8	12 1/2	10 1/2	5 1/4		5 1/4	2 1/8	5	1/2	1/2	3 7/8
326T	8	12 1/2	12	5 1/4		5 1/4	2 1/8	5	1/2	1/2	3 7/8
324TS	8	12 1/2	10 1/2	5 1/4		3 3/4▲	1 7/8▲	3 1/2▲	1/2	1/2	2▲
326TS	8	12 1/2	12	5 1/4		3 3/4▲	1 7/8▲	3 1/2▲	1/2	1/2	2▲
364#	9	14	11 1/4	5 7/8	21/32 dia.	5 5/8	1 7/8	5 3/8	1/2	1/2	4 1/4
364S#	9	14	11 1/4	5 7/8		3 1/4	1 5/8	3	3/8	3/8	1 7/8
365#	9	14	12 1/4	5 7/8		5 5/8	1 7/8	5 3/8	1/2	1/2	4 1/4
364U	9	14	11 1/4	5 7/8	21/32 dia.	6 3/8	2 1/8	6 1/8	1/2	1/2	5
365U	9	14	12 1/4	5 7/8		6 3/8	2 1/8	6 1/8	1/2	1/2	5

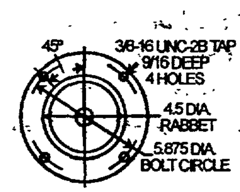
(*) Dimension D will never be greater than the above values on rigid mount motors, but it may be less so that shims up to 1/32" thick (1/16" on 364U and 365U frames) may be required for certain machines. (‡) Dayton motors designated 56H have two sets of 2F mounting holes—3" and 5". (▲) Standard short shaft for direct-drive applications. (#) Discontinued NEMA frame. (**) Base of Dayton 56HZ frame motors has holes and slots to match NEMA 56, 56H, 143T and 145T mounting dimensions. (†) Certain NEMA 56Z frame motors have 1/2" dia. x 1 1/2" long shaft with 3/64" flat. These exceptions are noted in this catalog. (§) Dimension "V" is shaft length available for coupling, pinion or pulley hub—this is a minimum value.



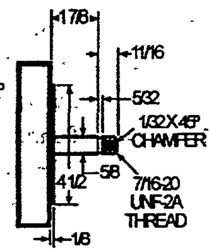
NEMA C and J-FACE MOUNT DIMENSIONS

Mounting dimensions of the 56J face are exactly the same as the NEMA 56C, 143TC and 145TC faces.

56J face has a threaded shaft of stainless steel while all others have a keyed steel shaft. See illustrations and table below for specifics.

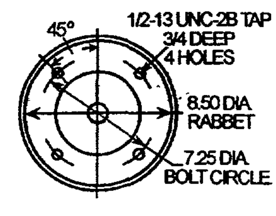


56C, 56J, 143TC and 145TC FACE DIMENSIONS



56J SHAFT

182TC thru 215TC FACE DIMENSIONS



NEMA Face	Shaft Dia. (U)	Shaft Long (N-W)	Rabbet Dia.	Bolt Circle Dia.
42C	3/8"	1 1/8"	3"	3 3/4"
48C	1/2	1 1/2	3	3 3/4
56C	5/8	1 7/8	4 1/2	5 7/8
56J	5/8	2 7/16	4 1/2	5 7/8
143TC & 145TC	7/8	2 1/4	4 1/2	5 7/8
146ATC & 1412ATC	7/8	2 1/4	4 1/2	5 7/8
182TC & 184TC	1 1/8	2 3/4	8 1/2	7 1/4
186ATC & 189ATC	1 1/8	2 1/4	8 1/2	7 1/4
213TC & 215TC	1 3/8	3 3/8	8 1/2	7 1/4
219ATC & 2110ATC	1 3/8	2 3/4	8 1/2	7 1/2
254TC & 256TC	1 5/8	4	8 1/2	7 1/4
284TC & 286TC	1 7/8	4 5/8	10 1/2	9
L182ACY & 186ACY	7/8	2 1/4	4 1/2	5 7/8

CONTINUED ON NEXT PAGE

CAPACITOR-START OPEN DRIPPROOF MOTORS

- **Rigid welded base**
- **Copper windings**
- **1.15 to 1.35 service factor**

Typical Uses: Air compressors, machinery, pumps, blowers, and other heavy-duty, hard-starting equipment.

Type: Capacitor-start

Bearings: Ball

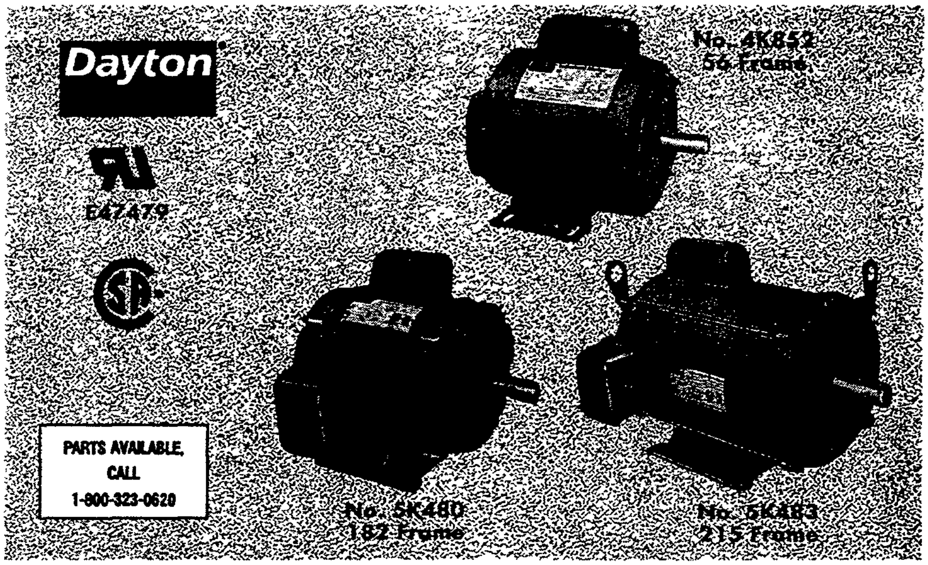
Ambient: 40°C

Duty: Continuous

Rotation: CW/CCW

Finish: Gray

Brand: Dayton



CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1/3	1725	56	None	115/230	6.8/3.4	1.35	A	**4K852**	$160.00	**$117.15**	20.0
	1725	56	Auto	115/230	6.8/3.4	1.35	A	**5K115**	167.00	**122.25**	20.0
	1140	56	None	115/230	7.3/3.7	1.35	A	**5K118**	215.00	**157.50**	26.0
1/2	1725	48	None	115/230	9.0/4.5	1.25	A	**6K178**	183.00	**133.95**	21.0
	1725	56	None	115/230	9.6/4.8	1.25	A	**4K855**	183.00	**133.95**	22.0
	1725	56	Auto	115/230	9.6/[illegible]	1.25	A	**5K116**	193.00	**141.25**	21.0
	1725	56	Manual	115/230	9.6/4.[illegible]	1.25	A	**5K696**	203.00	**148.60**	22.0
	1725	56H	Manual	115/230	9.2/4.6	[illegible]	A	**6K198** *	203.00	**155.25**	32.0
	1140	56	None	115/230	10.4/5.2	[illegible]	A	**5K617**	329.00	**241.25**	34.0
3/4	1725	56	None	115/230	11.2/5.6	1.25	A	**4K858**	226.00	**166.00**	27.0
	1725	56	Auto	115/230	11.2/5.6	1.25	A	**5K117**	236.00	**173.00**	26.0
	1725	56	Manual	115/230	11.2/5.6	1.25	A	**5K694**	242.00	**177.25**	27.0
	1725	56H	Manual	115/230	11.4/5.7	1.25	A	**6K200** *	242.00	**185.25**	34.0
	1725	66	Auto	115/230	11.4/5.7	1.25	A	**5K417**	300.00	**229.75**	30.0
	1140	56H	None	115/230	11.6/5.8	1.25	A	**6K949** †	380.00	**278.50**	38.0
1	1725	56H	None	115/230	13.6/6.8	1.25	B	**5K921**	250.00	**183.00**	28.0
	1725	56H	Manual	115/230	13.6/6.8	1.25	B	**6K699**	281.00	**190.75**	28.0
	1725	56H	Auto	115/230	13.6/6.8	1.25	A	**6K148**	257.00	**188.50**	28.0
	1725	56HZ	None	115/230	13.6/6.8	1.25	B	**6K271**	306.00	**224.25**	32.0
	1725	56HZ	Manual	115/230	13.6/6.8	1.25	B	**6K424**	319.00	**233.75**	32.0
	1725	66	None	115/230	15.0/7.5	1.25	A	**6K204** *	338.00	**258.75**	44.0
	1725	66	Manual	115/230	15.0/7.5	1.25	A	**6K205** *	351.00	**268.50**	44.0
	1725	143T	None	115/230	13.6/6.8	1.25	B	**6K825**	210.00	**190.75**	33.0
	1740	182	None	115/230	14.4/7.2	1.25	A	**5K480**	262.00	**237.75**	41.0
1½	3450	143T	None	115/230	17.5/8.8	1.15	B	**6K630** #	208.00	**189.00**	31.0
	1725	56H	None	115/230	20.4/10.2	1.15	B	**5K923**	303.00	**222.00**	37.0
	1725	56H	Auto	115/230	20.4/10.2	1.15	B	**6K305**	310.00	**227.25**	37.0
	1725	56HZ	None	115/230	20.4/10.2	1.15	B	**6K272**	386.00	**282.75**	38.0
	1725	56HZ	Manual	115/230	20.4/10.2	1.15	B	**6K422**	399.00	**292.50**	39.0
	1725	145T	None	115/230	20.4/10.2	1.15	B	**6K826**	307.00	**228.50**	39.0
	1740	184	None	115/230	22.0/11.0	1.20	A	**5K481**	298.00	**270.25**	49.0
2	3450	145T	None	115/230	22.4/11.2	1.15	B	**6K631** #	245.00	**232.50**	36.0
	1725	56H	None	115/230	21.4/10.7	1.15	B	**1K064** †	358.00	**274.00**	40.0
	1725	56HZ	None	115/230	21.4/10.7	1.15	B	**6K393** -	457.00	**334.75**	42.0
	1725	56HZ	Manual	115/230	21.4/10.7	1.15	B	**6K972** -	471.00	**345.25**	42.0
	1730	182T	None	115/230	23.2/11.6	1.15	B	**5K953**	367.00	**226.00**	52.0
	1740	213	None	115/230	24.6/12.3	1.20	A	**5K482**	377.00	**341.75**	58.0
3	3500	182T	None	115/230	32.0/16.0	1.15	B	**6K632** #	429.00	**263.75**	78.0
	1735	184T	None	115/230	38.0/19.0	1.15	B	**5K675**	444.00	**273.00**	70.0
	1740	215	None	115/230	35.6/17.8	1.15	A	**5K483**	476.00	**431.75**	86.0
5	3520	184T	None	230	19.6	1.15	B	**6K633** †#	512.00	**315.00**	83.0
	1740	184T	None	230	23.0	1.15	B	**6K854** †	509.00	**313.25**	83.0
	1740	213T	None	230	22.0	1.15	B	**5K676** †	595.00	**516.50**	100.0
	1740	215	None	230	22.0	1.15	A	**5K484** †	631.00	**572.50**	102.0
7½	3480	213T	None	230	30.3	1.15	B	**6K634** †#	791.00	**486.00**	136.0
	1730	215T	None	230	35.5	1.15	B	**5K677** †	784.00	**482.00**	124.0
10	3500	215T	None	230	40.0	1.15	B	**6K628** †#	1033.00	**613.50**	168.0
	1740	215T	None	230	42.2	1.15	B	**6K100** †	973.00	**598.50**	144.0

(*) Cast-iron endshields, double dipped windings, black finish. (†) Capacitor-start, capacitor-run. (#) Enclosed shaft endshield.

MOTOR DIMENSIONS FOR NEMA FRAMES

MOTOR DIMENSIONAL CHART (Cont.)

Standardized motor dimensions as established by the National Electrical Manufacturers Association (NEMA) are tabulated below and apply to all base-mounted motors listed herein which carry a NEMA frame designation.

NEMA Frame	D*	2E	2F	BA	H	N-W	U	V§ Min.	Key Wide	Key Thick	Key Long
364T	9	14	11 1/4	5 7/8	21/32 dia.	5 7/8	2 3/8	5 7/8	5/8	5/8	4 1/4
365T	9	14	12 1/4	5 7/8		5 7/8	2 3/8	5 7/8	5/8	5/8	4 1/4
364TS	9	14	11 1/4	5 7/8		3 3/4▲	1 7/8▲	3 1/2▲	1/2	1/2	2▲
365TS	9	14	12 1/4	5 7/8		3 3/4▲	1 7/8▲	3 1/2▲	1/2	1/2	2▲
404T	10	16	12 1/4	6 5/8	13/16 dia.	7 1/4	2 7/8	7	3/4	3/4	5 5/8
405T	10	16	13 3/4	6 5/8		7 1/4	2 7/8	7	3/4	3/4	5 5/8
404TS	10	16	12 1/4	6 5/8		4 1/4▲	2 1/8▲	4▲	1/2	1/2	2 3/4▲
405TS	10	16	13 3/4	6 5/8		4 1/4▲	2 1/8▲	4▲	1/2	1/2	2 3/4▲
404U	10	16	12 1/4	6 5/8		7 1/8	2 1/8	6 7/8	5/8	5/8	5 1/2
405U	10	16	13 3/4	6 5/8		7 1/8	2 1/8	6 7/8	5/8	5/8	5 1/2
444T	11	18	14 1/2	7 1/2	13/16 dia.	8 1/2	3 3/8	8 1/4	7/8	7/8	6 7/8
445T, 447T§§	11	18	16 1/2	7 1/2		8 1/2	3 3/8	8 1/4	7/8	7/8	6 7/8
444TS, 447TS§§	11	18	14 1/2	7 1/2		4 3/4▲	2 3/8▲	4 1/2▲	5/8	5/8	3▲
445TS	11	18	16 1/2	7 1/2		4 3/4▲	2 3/8▲	4 1/2▲	5/8	5/8	3▲
444U	11	18	14 1/2	7 1/2	13/16 dia.	8 5/8	2 7/8	8 3/8	3/4	3/4	7
445U	11	18	16 1/2	7 1/2		8 5/8	2 7/8	8 3/8	3/4	3/4	7
449T	11	18	25	7 1/2		8 1/2	3 3/8	8 1/4	7/8	7/8	6 7/8
449TS	11	18	25	7 1/2		4 3/4▲	2 3/8▲	4 1/2▲	5/8	5/8	3▲

(*) Dimension "D" will never be greater than the above values on rigid mount motors, but it may be less so that shims up to 1/32" thick (1/16" on 364U and 365U frames) may be required for certain machines.

(‡) Dayton motors designated 56H have two sets of 2F mounting holes—3" and 5".

(▲) Standard short shaft for direct-drive applications.

(#) Discontinued NEMA frame.

(**) Base of Dayton 56HZ frame motors has holes and slots to match NEMA 56, 56H, 143T and 145T mounting dimensions.

(†) Certain NEMA 56Z frame motors have 1/2" dia. x 1 1/2" long shaft with 3/64" flat. These exceptions are noted in this catalog.

(§) Dimension "V" is shaft length available for coupling, pinion or pulley hub—this is a minimum value.

(§§) The 2F dimension is 20.

QUALITY MOTORS

Electric motors listed in this catalog are engineered for maximum performance and are manufactured to the dimensional and performance standards established by National Electrical Manufacturers Association (NEMA). Fact labels on cartons give full specifications.

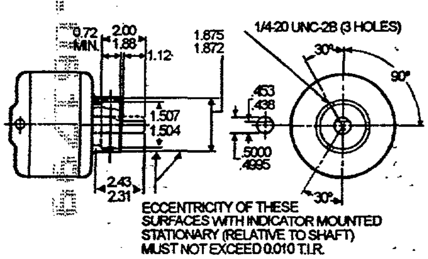
TECHNICAL ASSISTANCE AVAILABLE

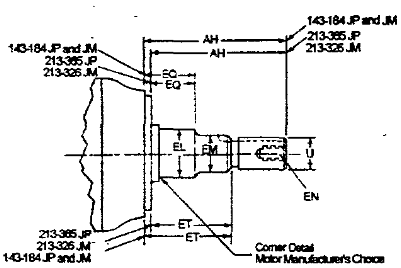
Our Technical Service Department is ready to answer any questions you may have concerning our product offerings—before and after your purchase.

Call your local Grainger Branch for assistance.

NEMA 48K & 56K HUB DIMENSIONS

SUMP PUMP MOTORS





CLOSE COUPLED PUMP SHAFT DIMENSIONS

Dimension	Frame Size	Type JM	Type JP
"U"	143 thru 184 213/215	7/8" 7/8	7/8" 1 1/4
"EM"	143 thru 184 213/215	1 1	1 1 3/8
"EL"	143/145 182/184 213/215	1 5/32 1 1/4 1 1/4	1 5/32 1 1/4 1 3/4
"AH"	143 thru 184 213/215	4 1/4 4 1/4	7 5/16 8 1/8
"ET"	143 thru 184 213/215	2 7/8 2 7/8	5 16/16 5 7/8
"EQ"	143 thru 184 213/215	5/8 5/8	1 9/16 2 3/8
"EN"	143 thru 184 213/215	3/8-16 x 3/4 3/8-16 x 3/4	3/8-16 x 3/4 1/2-13 x 3/4
Shaft Key Size	143 thru 184 213/215	3/16 x 3/16 x 1 5/8 3/16 x 3/16 x 1 5/8	3/16 x 3/16 x 1 5/8 1/4 x 1/4 x 2 1/2

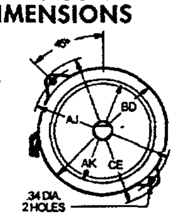
NEMA LETTER DESIGNATIONS FOLLOWING FRAME NUMBER

C Face mount; see previous page.
H Has 2F dimension larger than same frame without H suffix.
J Face mount for jet pumps; see above.
K Has hub for sump pump mounting; see at right for dimensions.
M, N Flange mount for oil burner; see column at left.
T, U Integral HP motor dimension standards set by NEMA in 1964 and 1953.
Y Non-standard mounting; see manufacturer's drawing for mounting dimensions.
Z Non-standard shaft (NW, U dimensions).

NEMA 48M, 48N and 56N FLANGE MOUNT DIMENSIONS

OIL BURNER MOTORS

	48M	48N 56N
AJ	6 1/4"	7 1/4"
BD	6 1/4 max.	7 max.
AK	5 1/2	6 3/8
CE	7 3/4 max.	8 1/4 max.



USE AIR MOTORS WHERE ELECTRIC MOTORS ARE IMPRACTICAL

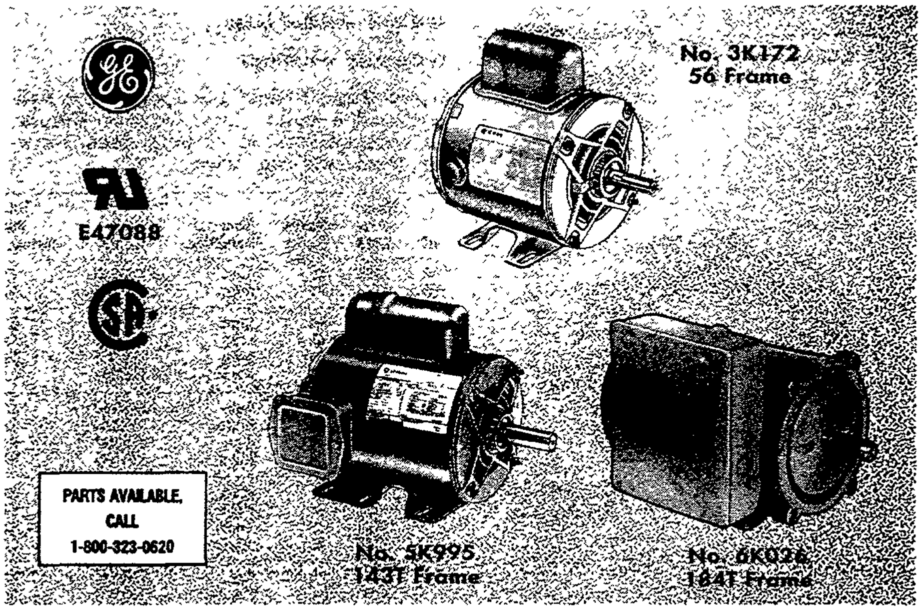
A compact, lightweight source of smooth, vibrationless power, Gast rotary van air motors can be used in applications where electric or hydraulic motors are impractical. Unlike an electric motor, the air motor runs cool to prevent heat buildup and provides smooth startups.

Use air motors in batch mixers, conveyors, and hoists. With no heat buildup or sparks, air motors are ideal for explosion-proof applications. See Index under Air Motors.

CAPACITOR-START OPEN DRIPPROOF MOTORS	INDUSTRIAL MOTORS

Typical Uses: Air compressors, machinery, pumps, blowers, and other heavy-duty, hard-starting equipment.
Type: Capacitor-start
Bearings: Ball
Mounting: Rigid welded base through 145T frame, bolted base on 182T frame and above.
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/4	1725	48	None	115/230	5.2/2.6	1.35	B	C147	**2K532**	$158.00	**$95.70**	16.0
	1725	48	Auto	115/230	5.2/2.6	1.35	B	C148	**2K533**	167.00	**101.15**	16.0
1/3	1725	48	None	115/230	6.6/3.3	1.35	B	C153	**1D059**	168.00	**101.15**	18.0
	1725	48	Auto	115/230	6.6/3.3	1.35	B	C154	**1D060**	177.00	**106.50**	18.0
	1725	56	None	115/208-230	6.6/3.4-3.3	1.35	B	C158	**2K539**	188.00	**113.85**	17.0
	1725	56	Auto	115/230	6.0/3.0	1.35	B	C159	**3K170**	197.00	**119.35**	17.0
	1140	56	None	115/230	8.6/4.3	1.35	B	C1252	**2K542**	255.00	**154.50**	28.0
1/2	3450	48	None	115/230	7.6/3.8	[illegible]	B	C162	**1D061**	152.00	**91.50**	17.0
	3450	56	Manual	115/230	7.4/3.7	1.25	B	C1477	**3K171**	166.00	**100.60**	16.0
	1725	48	None	115/230	9.2/4.6	1.25	B	C164	**2K546**	215.00	**130.25**	19.0
	1725	56	None	115/208-230	8.8/4.2-4.4	1.25	B	C167	**2K548**	215.00	**130.25**	21.0
	1725	56	Auto	115/230	8.8/4.4	1.25	B	C168	**3K172**	228.00	**138.10**	19.0
	1725	56	Manual	115/230	8.8/4.4	1.25	B	C169	**2K549**	240.00	**145.40**	21.0
	1140	56	None	115/230	9.4/4.7	1.25	B	C1263	**2K551**	388.00	**235.25**	39.0
3/4	3450	56	None	115/230	10.2/5.1	1.25	B	C171	**1D062**	194.00	**116.80**	21.0
	3450	56	Manual	115/230	10.2/5.1	1.25	A	C1475	**3K173**	200.00	**121.15**	19.0
	1725	56	None	115/208-230	13.2/6.2-6.6	1.25	B	C175	**2K554**	267.00	**162.00**	23.0
	1725	56	Auto	115/230	13.2/6.6	1.25	B	C176	**3K174**	278.00	**168.50**	26.0
	1725	56	Manual	115/230	13.2/6.6	1.25	B	C177	**2K555**	286.00	**173.75**	23.0
	1140	56	None	115/230	12.6/6.3	1.15	B	C178	**2K558***	449.00	**272.00**	41.0
1	3450	56	None	115/208-230	12.4/6.2	1.25	B	C179	**1D063**	209.00	**125.80**	24.0
	3450	56	Auto	115/208-230	12.4/6.2	1.25	B	C180	**1D064**	220.00	**132.40**	24.0
	3450	56	Manual	115/230	12.4/6.2	1.25	B	C1476	**3K175**	225.00	**136.30**	21.0
	1725	56	None	115/208-230	13.6/6.7-6.8	1.15	B	C181	**2K526**	291.00	**176.50**	29.0
	1725	56	Auto	115/230	13.6/6.8	1.15	B	C182	**3K176**	298.00	**180.75**	34.0
	1725	143T	None	115/208-230	13.6/6.7-6.8	1.15	B	C188	**5K995**	295.00	**179.00**	37.0
	1140	56H	None	115/230	12.6/6.3	1.15	B	C183	**2K529***	599.00	**363.25**	49.0
1½	3450	56	None	115/230	16.8/8.4	1.15	B	C184	**2K559**	280.00	**170.00**	32.0
	3450	56	Manual	115/230	16.8/8.4	1.15	B	C1477	**3K177**	299.00	**181.25**	32.0
	1725	56H	None	115/208-230	18.2/9.1-9.1	1.15	B	C185	**2K560***	358.00	**217.00**	35.0
	1725	56H	Auto	115/230	18.2/9.1	1.15	B	C186	**2K561***	366.00	**222.00**	32.0
	1725	145T	None	115/208-230	18.2/9.1-9.1	1.15	B	C191	**5K997***	358.00	**217.00**	43.0
2	3450	56	None	115/230	21.2/10.6	1.15	B	C187	**2K524**	372.00	**225.75**	39.0
	1725	56HZ	None	115/230	22.0/11.0	1.15	B	C193	**5K645***	389.00	**236.00**	46.0
	1725	56HZ	Auto	115/230	22.0/11.0	1.15	B	C381	**2K527***	423.00	**256.25**	54.0
	1740	182T	None	115/230	22.8/11.4	1.15	B	N768	**5K998**	367.00	**235.50**	90.0
3	3450	145T	None	115/230	28.8/14.4	1.15	B	C194	**2K525***	446.00	**270.25**	50.0
	3490	182T	None	115/230	29.8/14.9	1.15	B	N769	**2K496**	429.00	**275.75**	70.0
	1730	184T	None	115/230	30.8/15.4	1.15	B	N770	**5K999**	444.00	**285.00**	106.0
5	3500	184T	None	230	20.2	1.15	B	N771	**2K497**	512.00	**329.00**	90.0
	1725	184T	None	230	22.0	1.15	F	N772	**6K026***	509.00	**327.25**	81.0
7½	3510	215T	None	230	29.6	1.15	B	N773	**2K500**	791.00	**508.00**	154.0
	1735	215T	None	230	31.6	1.15	B	N774	**2K501**	784.00	**503.50**	156.0
10	3500	215T	None	230	40.3	1.15	B	N775	**2K498**	999.00	**642.00**	147.0
	1740	215T	None	230	41.0	1.15	B	N776	**2K499**	973.00	**625.50**	174.0

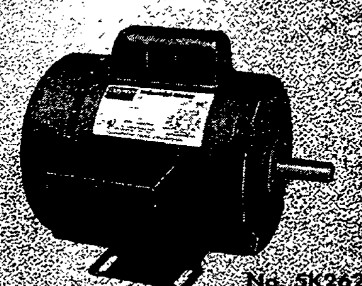
*) Capacitor-start, capacitor-run.

CAPACITOR-START TEFC MOTORS

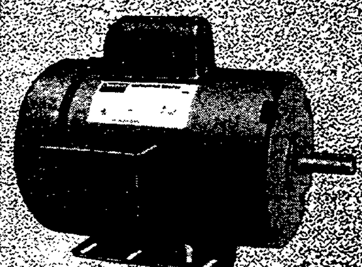
PARTS AVAILABLE, CALL 1-800-323-0620

Dayton

E47479



No. 5K262 56 Frame



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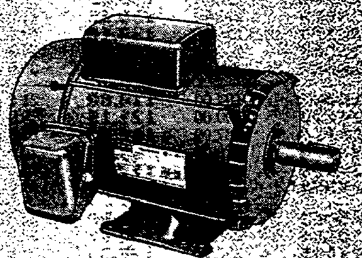

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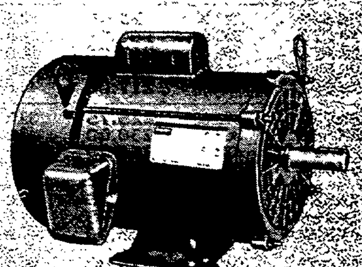


No. 5K487 213 Frame

- **Rigid welded base**
- **Copper windings**

Typical Uses: Dependable operation in non-combustible dusty, dirty areas on pumps, air compressors, machinery, fans, blowers, tools, and conveyors.

Type: Capacitor-start
Bearings: Ball
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton

HP	Name-plate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	S.F.	Ins. Class	Stock No.	List	Each	Shpg. Wt.
1/8	1725	42	None	115/230	4.0/2.0	1.0	B	1K060	$136.00	$104.00	17.0
1/6	1725	42	None	115/230	4.2/2.1	1.0	B	1K061	148.00	113.20	17.0
1/4	1725	42	None	115/230	5.2/2.6	1.0	B	1K062	155.00	118.50	18.0
	1725	48	Auto	115/230	4.6/2.3	1.0	A	5K191	162.00	118.60	18.0
	1725	56	None	115/230	5.8/2.9	1.15	A	5K262	155.00	113.45	18.0
	1725	56	Auto	115/230	5.8/2.9	1.15	A	5K263	162.00	118.60	18.0
1/3	3450	48	Auto	115/230	5.2/2.6	1.0	A	6K481	146.00	106.90	20.0
	1725	42	None	115/230	7.0/3.5	1.0	B	1K063	172.00	131.50	20.0
	1725	48	Auto	115/230	5.8/2.9	1.0	A	5K192	179.00	131.05	20.0
	1725	56	None	115/230	6.8/3.4	1.15	A	4K936	172.00	125.90	20.0
	1725	56	Auto	115/230	6.8/3.4	1.15	A	5K121	179.00	131.05	21.0
	1725	56	Manual	115/230	6.8/3.4	1.15	A	5K636	185.00	135.40	21.0
	1725	56	Auto	115/208-230	7.6/3.6-3.8	1.15	B	6K306	183.00	132.60	21.0
	1140	56	None	115/230	7.3/3.7	1.0	B	5K502	247.00	181.00	27.0
1/2	3450	48	Auto	115/230	7.2/3.6	1.0	A	6K482	165.00	126.20	20.0
	3450	56	Manual	115/230	8.0/4.0	1.0	B	6K184	167.00	127.65	21.0
	1725	48	None	115/230	8.4/4.2	1.0	B	6K177	212.00	155.25	22.0
	1725	48	Auto	115/230	8.4/4.2	1.0	B	5K193	219.00	160.75	20.0
	1725	56	None	115/230	9.0/4.5	1.15	B	6K937	203.00	148.60	23.0
	1725	56	Auto	115/230	9.0/4.5	1.15	B	6K122	220.00	161.50	23.0
	1725	56	Manual	115/230	9.0/4.5	1.15	B	6K637	215.00	164.50	23.0
	1725	56	Auto	115/208-230	9.2/4.4-4.6	1.15	B	6K307	224.00	162.75	25.0
	1140	56	None	115/230	10.4/5.2	1.0	B	5K672	352.00	258.00	37.0
3/4	3450	56	Auto	115/230	9.8/4.9	1.0	A	6K483	183.00	133.90	26.0
	3450	56	Manual	115/230	9.8/4.9	1.0	A	6K358	185.00	135.35	26.0
	1725	56	None	115/230	11.4/5.7	1.15	B	6K938	242.00	177.25	28.0
	1725	56	Auto	115/230	11.4/5.7	1.15	B	6K123	268.00	196.50	28.0
	1725	56	Manual	115/230	11.4/5.7	1.15	B	6K639	254.00	194.50	26.0
	1725	56	Auto	115/208-230	11.6/5.8-5.8	1.15	B	6K308	272.00	197.25	28.0
1	3450	56	Auto	115/230	12.0/6.0	1.0	A	6K484	227.00	164.75	28.0
	3450	56	Manual	115/230	12.0/6.0	1.0	A	5K960	233.00	170.75	28.0
	1725	56H	None	115/230	14.0/7.0	1.15	B	1K065	277.00	203.00	33.0
	1725	56H	Auto	115/230	14.0/7.0	1.15	B	6K562	301.00	206.25	33.0
	1725	56H	Manual	115/230	14.0/7.0	1.15	B	6K640	290.00	212.75	33.0
	1725	56H	Auto	115/208-230	15.0/7.2-7.5	1.0	B	6K309	305.00	221.50	33.0
	1725	56HZ	None	115/230	14.0/7.0	1.15	B	6K407	336.00	246.25	33.0
	1725	56HZ	Manual	115/230	14.0/7.0	1.15	B	6K418	350.00	256.25	36.0
	1725	143T	None	115/230	14.0/7.0	1.15	B	6K827	270.00	201.25	34.0
	1725	66	Auto	115/230	13.6/6.8	1.0	B	6K124	351.00	268.50	35.0
	1740	182	None	115/230	13.8/6.9	1.0	A	5K485	277.00	251.25	49.0
1½	3450	56H	Manual	115/230	16.4/8.2	1.0	B	6K338	317.00	232.25	34.0
	3500	143T	None	115/230	16.4/8.2	1.0	B	3K300	217.00	210.50	34.0
	1725	56H	Auto	115/230	17.6/8.8	1.15	B	5K565*	357.00	261.50	41.0
	1725	56H	Manual	115/230	17.6/8.8	1.15	B	5K641*	330.00	242.00	41.0
	1725	56H	None	115/230	17.6/8.8	1.15	B	1K066*	315.00	230.75	41.0
	1725	56HZ	None	115/230	17.6/8.8	1.15	B	6K419*	416.00	304.75	41.0
	1725	56HZ	Manual	115/230	17.6/8.8	1.15	B	6K420*	429.00	314.25	41.0
	1725	145T	None	115/230	17.6/8.8	1.15	B	6K828*	320.00	238.50	41.0
	1740	184	None	115/230	18.4/9.2	1.0	A	5K486	350.00	317.50	56.0
2	3450	56H	Manual	115/230	20.4/10.2	1.0	B	5K961	372.00	272.75	41.0
	3500	145T	None	115/230	18.8/9.4	1.0	B	3K344*	264.00	254.00	41.0
	1725	56H	None	115/230	19.0/9.5	1.0	B	1K067*	482.00	353.00	54.0
	1740	182T	None	115/230	23.6/11.8	1.0	B	5K966	416.00	256.00	57.0
	1740	213	None	115/230	24.0/12.0	1.0	A	5K487	473.00	429.00	80.0
3	3500	182T	None	115/230	32.0/16.0	1.0	B	6K145	465.00	285.75	77.0
	1740	184T	None	115/230	30.0/15.0	1.0	B	5K967*	496.00	305.00	79.0
	1730	215	None	115/230	33.6/16.8	1.0	A	5K488*	643.00	583.50	100.0
5	3505	184T	None	230	19.6	1.0	B	6K146*	624.00	383.75	88.0
	1730	213T	None	230	23.0	1.0	B	5K968*	562.00	345.50	106.0
	1745	215	None	230	20.0	1.0	A	5K489*	832.00	754.50	120.0
7½	3480	213T	None	230	30.3	1.0	B	6K179*	827.00	508.50	132.0
	1740	215T	None	230	30.0	1.0	B	6K176*	841.00	517.00	136.0

(*) Capacitor-start, capacitor-run.

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

CAPACITOR-START TEFC MOTORS

Typical Uses: Dependable operation in non-combustible dusty, dirty areas on air compressors, pumps, machinery, fans, blowers, tools, and conveyors.

Type: Capacitor-start

Bearings: Prelubricated ball

Mounting: Rigid welded base through 145T frame, bolted base on 182T frame and above.

Enclosure: TEFC

Ambient: 40°C

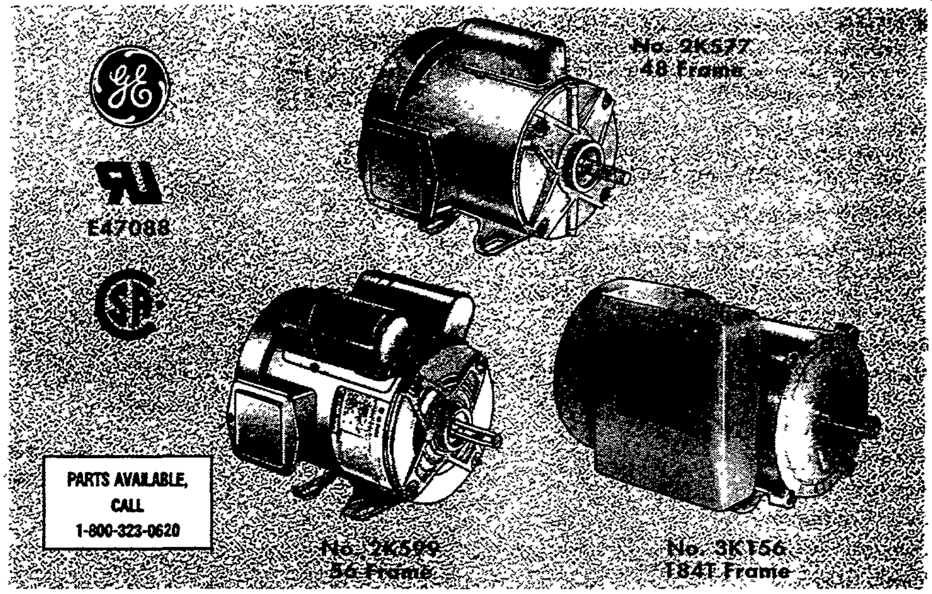
Duty: Continuous

Rotation: CW/CCW

Finish: Gray

Brand: GE

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/6	850	56	None	115/230	5.6/2.8	1.0	B	C248	**2K575**	$408.00	**$247.50**	31.0
1/4	1725	48	Auto	115/230	5.4/2.7	1.0	B	C243	**3K160**	191.00	**115.70**	15.0
	1725	48	None	115/230	5.4/2.7	1.0	B	C242	**2K577**	183.00	**110.90**	18.0
	1725	56	Auto	115/230	5.4/2.7	1.0	B	C251	**2K579**	191.00	**115.70**	17.0
	1725	56	None	115/230	5.4/2.7	1.0	B	C250	**2K578**	183.00	**110.90**	17.0
	1140	56	None	115/230	6.2/3.1	1.0	B	C252	**2K581**	278.00	**168.50**	27.0
1/3	3450	48	None	115/230	5.6/2.8	1.0	B	C244	**2K582**	164.00	**99.35**	17.0
	3450	56	None	115/230	5.6/2.8	1.0	A	C253	**2K583**	164.00	**99.35**	17.0
	1725	56	Auto	115/230	5.6/2.8	[illegible]	B	C255	**3K225**	211.00	**127.80**	20.0
	1725	56	None	115/230	6.0/3.0	1.0	B	C254	**2K584**	203.00	**123.00**	19.0
	1140	56	None	115/230	8.6/4.3	1.0	B	C257	**2K587**	292.00	**177.25**	31.0
1/2	3450	48	Auto	115/230	7.4/3.7	1.0	A	C245	**2K588**	195.00	**118.15**	19.0
	3450	56	Auto	115/230	7.4/3.7	1.0	B	C259	**3K228**	195.00	**118.15**	20.0
	3450	56	None	115/230	7.4/3.7	1.0	B	C258	**2K589**	186.00	**112.70**	20.0
	1725	48	None	115/230	8.2/4.1	1.0	B	C260	**2K590**	250.00	**151.50**	23.0
	1725	56	Auto	115/230	8.6/4.3	1.15	B	C262	**3K227**	260.00	**158.00**	22.0
	1725	56	None	115/208-230	8.6/4.1-4.3	1.15	B	C261	**2K591**	240.00	**145.40**	21.0
	1140	56	None	115/230	9.4/4.7	1.0	A	C264	**2K593**	416.00	**252.25**	39.0
3/4	3450	56	Auto	115/230	9.8/4.9	1.0	B	C266	**3K230**	215.00	**130.25**	22.0
	3450	56	Manual	115/230	9.8/4.9	1.0	B	C267	**2K596**	218.00	**132.05**	23.0
	3450	56	None	115/230	9.8/4.9	1.0	B	C265	**2K595**	208.00	**126.00**	23.0
	1725	56	Auto	115/230	11.0/5.5	1.0	B	C269	**3K229**	316.00	**191.75**	34.0
	1725	56	None	115/208-230	11.0/5.4-5.5	1.15	B	C268	**2K597**	286.00	**173.75**	31.0
	1140	56	None	115/230	10.6/5.3	1.0	B	C271	**2K599***	480.00	**291.00**	43.0
1	3450	56	Auto	115/230	13.4/6.7	1.0	B	C273	**3K234**	271.00	**164.50**	30.0
	3450	56	Manual	115/230	13.4/6.7	1.0	B	C274	**2K601**	275.00	**166.75**	30.0
	3450	56	None	115/230	13.4/6.7	1.0	B	C272	**2K600**	268.00	**162.75**	29.0
	1725	56	Auto	115/230	13.2/6.6	1.0	B	C276	**3K231**	330.00	**200.25**	41.0
	1725	56	None	115/230	13.2/6.6	1.15	B	C275	**2K602**	327.00	**198.50**	38.0
	1725	143T	None	115/230	13.2/6.6	1.0	B	C295	**2K604**	327.00	**198.50**	38.0
1½	3450	56	Auto	115/230	16.4/8.2	1.0	B	C279	**3K239**	371.00	**225.25**	37.0
	3450	56	Manual	115/230	16.4/8.2	1.0	B	C280	**2K606**	375.00	**227.50**	39.0
	1725	56H	Auto	115/230	14.8/7.4	1.0	B	C282	**3K235***	422.00	**255.75**	49.0
	1725	56H	None	115/208-230	14.8/7.7-7.4	1.15	B	C281	**2K607***	371.00	**225.25**	47.0
	1725	145T	None	115/230	14.8/7.4	1.0	B	C297	**3K152***	371.00	**225.25**	49.0
2	3450	56	Manual	115/230	17.8/8.9	1.0	F	C284	**2K609***	440.00	**266.75**	42.0
	1730	182T	None	115/230	22.8/11.4	1.0	F	N777	**3K155**	416.00	**267.25**	90.0
3	3460	182T	None	115/230	29.8/14.9	1.0	F	N778	**2K567**	465.00	**298.75**	86.0
	1730	184T	None	115/230	32.0/16.0	1.0	F	N779	**3K156**	496.00	**318.50**	98.0
5	3490	184T	None	230	21.0	1.0	F	N780	**2K568**	624.00	**401.00**	96.0
	1730	184T	None	230	22.0	1.0	F	N781	**3K159**	562.00	**361.00**	106.0
7½	3505	215T	None	230	29.5	1.0	F	N782	**2K569**	827.00	**531.50**	153.0
	1740	215T	None	230	32.2	1.0	F	N783	**2K570**	841.00	**540.00**	168.0
10	3500	215T	None	230	38.5	1.0	F	N784	**2K565**	1015.00	**652.50**	153.0
	1735	215T	None	230	40.0	1.0	F	N785	**2K566**	1035.00	**665.00**	204.0

(*) Capacitor-start, capacitor-run.

3-PHASE OPEN DRIPPROOF MOTORS

- **NEMA service factors up to 1.35 provide a reserve margin for intermittent overloading or fluctuating (high/low) voltage conditions**
- **Base design of NEMA 56HZ motors have holes and slots to match NEMA 56, 56H, 143T, and 145T frames**
- **NEMA design B**

Typical Uses: Pumps, blowers, machine tools, air compressors, and other moderate to hard-starting applications where 3-phase power is available.

Bearings: Double-shielded ball

Mounting: Rigid welded, except 250U frames have removable cast-iron base

Thermal Protection: None

Windings: Copper

Ambient: 40°C

Duty: Continuous

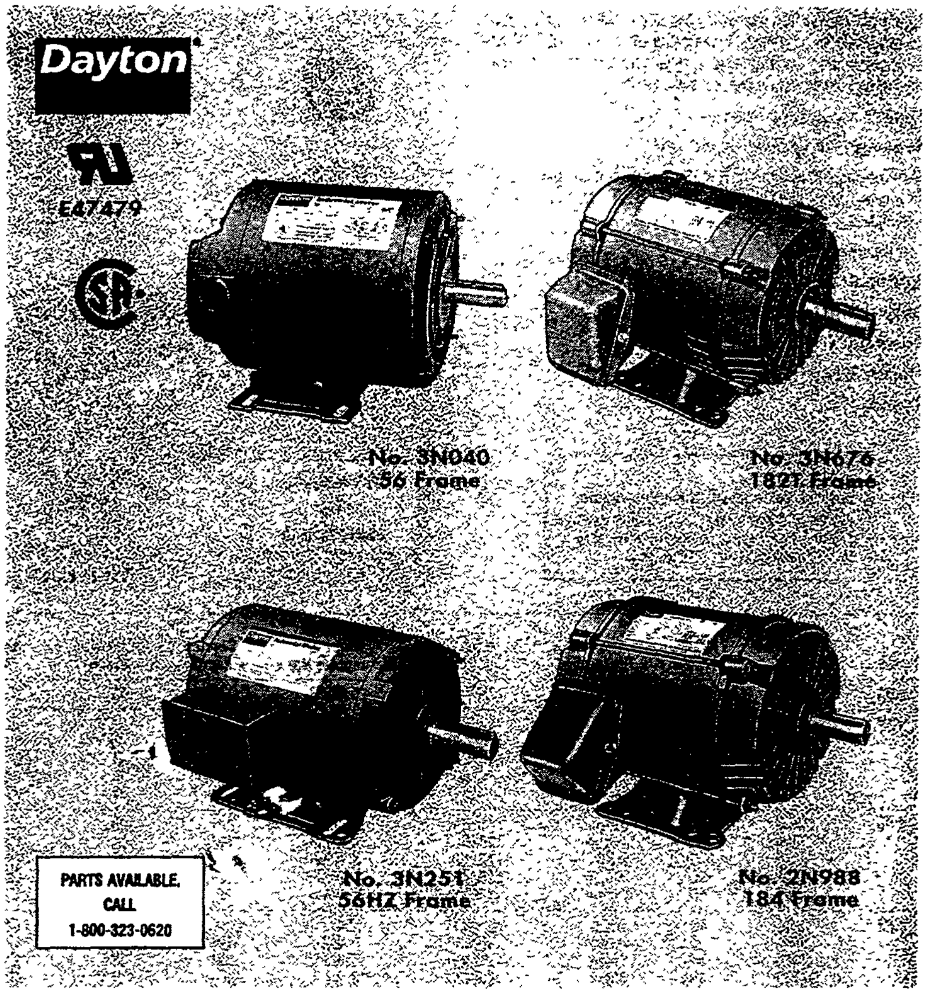
Rotation: CW/CCW

Finish: Gray

Brand: Dayton

Modifications & Service Available at Most Locations

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1/4	1725	56	208-220/440*	1.2-1.4/0.7	1.35	66.0	A	**2N101**	$153.00	**$117.00**	15.0
	1140	56	208-220/440*	1.3-1.3/0.7	1.35	62.0	A	**2N878**	227.00	**173.75**	17.0
1/3	3450	48	230/460‡	1.4/0.7	1.35	64.0	B	**3N851**	131.00	**100.20**	17.0
	3450	56	208-220/440*	1.3-1.4/0.7	1.35	64.0	A	**3N589**	148.00	**113.20**	16.0
	1725	56	230/460‡	1.8/0.9	1.35	62.0	B	**3N040**	149.00	**113.95**	17.0
	1725	56	208-220/440*	1.4-1.4/0.7	1.35	66.0	A	**2N102**	166.00	**126.95**	18.0
	1140	56	208-220/440*	1.7-1.8/0.9	1.35	70.0	A	**2N879**	236.00	**180.75**	23.0
1/2	3450	48	230/460‡	1.8/0.9	1.25	70.0	B	**3N852**	139.00	**106.30**	18.0
	3450	56	208-220/440*	2.2-2.4/1.2	1.25	66.0	A	**3N590**	156.00	**119.30**	19.0
	1725	56	230/460‡	2.0/1.0	1.25	72.0	B	**3N041**	174.00	**133.05**	21.0
	1725	56	208-220/440*	2.0-2.0/1.0	1.25	72.0	A	**2N103**	191.00	**146.05**	20.0
	1140	56	208-220/440*	2.1-2.2/1.1	1.25	72.0	A	**2N880**	259.00	**198.50**	25.0
3/4	3450	48	230/460‡	2.4/1.2	1.25	74.0	B	**3N853**	166.00	**126.95**	18.0
	3450	56	208-220/440*	2.8-3.0/1.5	1.25	70.0	A	**3N591**	183.00	**139.95**	20.0
	1725	56	230/460‡	2.8/1.4	1.25	77.0	B	**3N042**	194.00	**148.35**	23.0
	1725	56	208-220/440*	2.8-2.7/1.4	1.25	77.0	A	**2N104**	211.00	**161.50**	23.0
	1140	56H	208-220/440*	3.0-3.0/1.5	1.25	74.0	A	**3N316**	279.00	**213.50**	30.0
1	3450	56	208-220/440*	3.4-3.2/1.6	1.25	77.0	A	**3N178**	212.00	**162.25**	22.0
	1740	143T	200-230/460	3.4-3.5/1.8	1.15	80.0	B	**3N655**	187.00	**142.95**	26.0
	1725	56	208-220/440*	3.4-3.4/1.7	1.25	78.5	A	**3N012**	227.00	**173.75**	26.0
	1725	56H	230/460‡	3.6/1.8	1.15	77.0	B	**3N043**	204.00	**156.25**	23.0
	1725	56HZ	230/460‡	3.6/1.8	1.15	77.0	B	**3N251**	247.00	**189.00**	27.0
	1760	182	208-220/440*	3.7-3.6/1.8	1.25	81.5	A	**2N980**	316.00	**237.25**	45.0
	1140	145T	200-230/460*	4.0-4.2/2.1	1.15	78.5	B	**3N675**	243.00	**186.25**	34.0
	1160	184	208-220/440*	4.4-4.2/2.1	1.25	78.5	A	**2N988**	304.00	**228.25**	45.0

(*) 50 Hz operation at rated voltage and 190/380V.
(‡) Operable on 50 Hz, 190/380V, at 5/6 of 60 Hz HP and speed (1.0 service factor).

CONTINUED ON NEXT PAGE

3-PHASE OPEN DRIPPROOF MOTORS

DAYTON 3-PHASE OPEN DRIPPROOF MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1½	3450	56	208-220/440*	4.4-4.2/2.1	1.15	78.5	A	**3N592**	$254.00	**$194.50**	26.0
	3500	143T	200-230/460‡	4.6-4.4/2.2	1.15	81.5	B	**3N666**	204.00	**156.25**	30.0
	3515	182	208-220/440*	4.8-4.6/2.3	1.2	80.0	A	**2N995**	348.00	**261.25**	45.0
	1725	56H	230/460‡	4.8/2.4	1.15	80.0	B	**3N044**	239.00	**183.00**	32.0
	1725	56H	208-220/440*	4.9-4.8/2.4	1.2	81.5	A	**3N013**	262.00	**200.75**	33.0
	1725	56HZ	230/460‡	4.8/2.4	1.15	80.0	B	**3N252**	274.00	**209.75**	31.0
	1740	143T	200-230/460‡	5.0-5.2/2.6	1.15	82.5	B	**3N656**	211.00	**161.50**	35.0
	1755	184	208-220/440*	5.1-5.0/2.5	1.2	82.5	A	**2N981**	349.00	**262.00**	50.0
	1155	182T	200-230/460‡	5.9-5.8/2.9	1.15	81.5	B	**3N676**	286.00	**214.50**	55.0
	1140	184	208-220/440*	5.6-5.4/2.7	1.15	77.0	A	**2N989**	357.00	**268.25**	50.0
2	3450	56H	208-220/440*	5.8-5.6/2.8	1.15	81.5	A	**3N593**	270.00	**206.75**	33.0
	3500	145T	200-230/460‡	6.0-5.6/2.8	1.15	82.5	B	**3N667**	240.00	**183.75**	35.0
	3510	184	208-220/440*	6.2-6.0/3.0	1.2	81.5	A	**2N996**	380.00	**285.25**	50.0
	1725	56H	230/460‡	6.0/3.0	1.15	80.0	B	**3N693**	240.00	**183.75**	34.0
	1725	56HZ	230/460‡	6.0/3.0	1.15	80.0	B	**3N253**	300.00	**229.75**	35.0
	1740	145T	200-230/460‡	6.6-6.8/3.4	1.15	81.5	B	**3N657**	227.00	**173.75**	38.0
	1750	184	208-220/440*	6.3-6.2/3.1	1.2	84.0	A	**2N982**	379.00	**284.50**	55.0
	1160	184T	200-230/460‡	7.4-7.2/3.6	1.15	82.5	B	**3N677**	280.00	**210.00**	65.0
	1145	213	208-220/440*	7.3-7.2/3.6	1.15	81.5	A	**2N990**	350.00	**262.50**	75.0
3	3500	145T	200-230/460‡	8.5-8.0/4.0	1.15	85.5	B	**3N668**	264.00	**202.25**	36.0
	3500	184	208-220/440*	9.1-8.6/4.3	1.15	82.5	A	**2N997**	389.00	**292.00**	55.0
	1725	56HZ	230/460‡	8.8/4.4	1.15	80.0	B	**3N376**†	314.00	**240.50**	41.0
	1755	182T	200-230/460‡	9.7-9.6/4.8	1.15	82.5	B	**3N658**	248.00	**186.25**	55.0
	1750	213	208-220/440*	9.1-8.8/4.4	1.15	85.5	A	**2N983**	489.00	**367.00**	75.0
	1175	213T	200-230/460‡	10.8-10.8/5.4	1.15	84.0	B	**3N678**	369.00	**277.00**	80.0
	1170	215	208-220/440*	10.2-10.0/5.0	1.15	86.5	A	**2N991**	461.00	**346.00**	80.0
5	3515	182T	200-230/460‡	14.0-12.6/6.3	1.15	88.5	B	**3N669**	299.00	**224.50**	65.0
	3500	213	208-220/440*	13.8-13.2/6.6	1.15	86.5	A	**2N998**	537.00	**403.00**	75.0
	1750	184T	200-230/460‡	15.4-14.6/7.3	1.15	85.5	B	**3N659**	273.00	**204.75**	68.0
	1755	215	208-220/440*	14.5-13.8/6.9	1.15	86.5	A	**2N984**	532.00	**399.25**	93.0
	1170	215T	200-230/460‡	17.0-16.0/8.0	1.15	86.5	B	**3N679**	469.00	**351.75**	113.0
	1165	254U	208-220/440*	16.5-16.0/8.0	1.15	87.5	A	**2N992**	586.00	**439.50**	124.0
7½	3500	184T	200-230/460‡	21.4-18.4/9.2	1.15	[illegible]	B	**3N670**	389.00	**292.00**	74.0
	3520	215	208-220/440*	20.8-19.8/9.9	1.15	[illegible]	A	**2N999**	577.00	**433.00**	85.0
	1760	213T	200-230/460‡	22.5-21.0/10.5	1.15	87.5	B	**3N660**	389.00	**291.75**	90.0
	1745	254U	208-220/440*	21.5-20.2/10.1	[illegible]	87.5	A	**2N985**	937.00	**703.00**	118.0
	1180	254T	208-230/460‡	24.4-24.0/12.0	1.15	87.5	B	**3N691**	641.00	**480.75**	176.0
10	3520	213T	200-230/460‡	28.5-26.6/13.3	1.15	89.5	B	**3N671**	474.00	**355.75**	85.0
	3510	254U	208-220/440*	27.0-25.6/12.8	1.15	89.5	A	**3N003**	592.00	**444.25**	125.0
	1755	215T	208-230/460‡	28.6-26.6/13.3	1.15	87.5	B	**3N661**	478.00	**358.75**	112.0
	1740	256U	208-220/440*	28.0-26.8/13.4	1.15	87.5	A	**2N986**	1014.00	**761.50**	142.0
	1175	256T	208-230/460‡	31.5-31.0/15.5	1.15	88.5	B	**3N692**	779.00	**584.00**	214.0
15	3510	215T	200-230/460‡	42.5-37.8/18.9	1.15	90.2	B	**3N672**	627.00	**470.50**	111.0
	1770	254T	208-230/460‡	42.0-40.0/20.0	1.15	89.5	B	**3N662**	659.00	**494.00**	187.0
20	3540	254T	208-230/460‡	53.5-48.0/24.0	1.15	90.2	B	**3N673**	834.00	**625.50**	222.0
	1770	256T	208-230/460‡	55.0-51.0/25.5	1.15	90.2	B	**3N663**	828.00	**621.50**	230.0
25	3535	256T	208-230/460‡	67.0-59.0/29.5	1.15	90.2	B	**3N674**	1006.00	**754.50**	242.0
	1765	284T	200	72.0	1.15	91.0	B	**3N665**	1003.00	**752.50**	248.0
	1765	284T	230/460‡	63.0/31.5	1.15	91.0	B	**3N6F4**	1003.00	**752.50**	244.0

(*) 50 Hz operation at rated voltage and 190/380V. (‡) Operable on 50 Hz, 190/380V, at 5/6 of 60 Hz HP and speed (1.0 service factor).
(†) Externally fan-cooled with fan shroud.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

3-PHASE LINE MONITOR

Protects Equipment & Motors from Dangerous Line Conditions

- Incorrect phase sequence
- Loss of a phase
- Low voltage conditions, 88 to 92% of adjusted nominal voltage
- Voltage unbalance between phases

Features

- Easy-to-set line voltage
- Wye or Delta 3-wire hookup
- 8 amp, SPDT isolated relay contacts
- LED indicator signals normal operation
- Automatic reset
- 4% voltage unbalance
- 5 second trip delay
- No. 6C058 uses socket No. 5X852 (see page 473; No. 6C059 includes socket

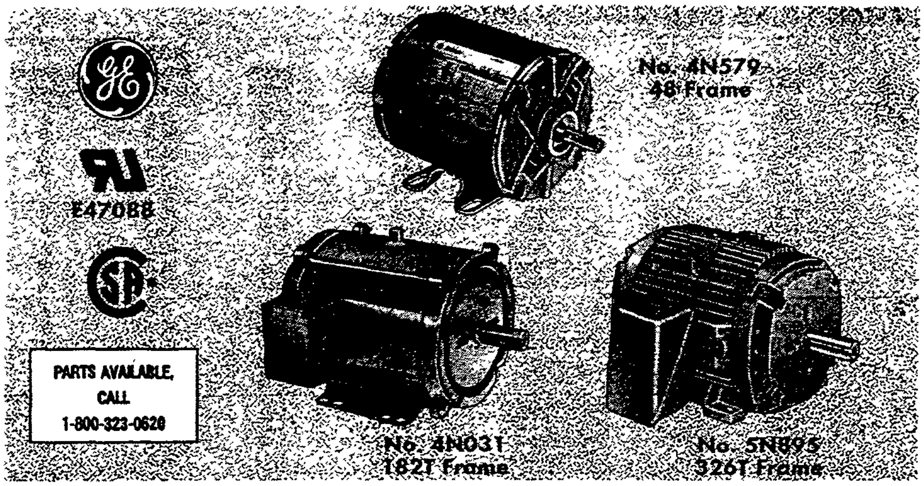
Adjustable Nominal Line Voltage at 50/60 Hz	Maximum Line Voltage	Socket Required	SSAC Model	Stock No.	List	Each	Shpg. Wt.
200 to 240 VAC	277 VAC	5X852	PLM6405	**6C058**	$62.79	**$62.25**	0.5
400 to 480	530	Included	PLM9405	**6C059**	73.34	**72.60**	0.8

3-PHASE OPEN DRIPPROOF MOTORS

Typical Uses: Pumps, fans, blowers, air compressors, conveyors, machinery, and other industrial equipment.
Bearings: Ball
Thermal Protection: None
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

Modifications & Service Available at Most Locations



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame†	Base	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/4	1725	48	208-230/460	1.3-1.4/0.7	1.35	62.7*	RS	Rigid	K111	**4N579**	$160.00	**$96.90**	14.0
1/3	3450	48	208-230/460	1.5-1.8/0.9	1.35	61.9*	RS	Rigid	K196	**4N581**	155.00	**93.95**	14.0
	1725	48	208-230/460	1.5-1.6/0.8	1.35	66.5*	RS	Rigid	K527	**4N583**	164.00	**99.35**	15.0
	1725	56	208-230/460#	1.5-1.6/0.8	1.35	66.0*	RS	Rigid	K114	**3N527**	176.00	**106.65**	13.0
	1140	56	230/460	1.8/0.9	1.35	67.9*	RS	Rigid	K385	**4N584**	259.00	**157.50**	20.0
1/2	3450	48	208-230/460#	2.0-2.0/1.0	1.25	65.9*	RS	Rigid	K115	**4N585**	164.00	**99.35**	15.0
	1725	56	208-230/460#	2.1-2.2/1.1	1.25	69.0*	RS	Rigid	K116	**3N528**	205.00	**124.20**	15.0
	1725	56	575	0.9	1.25	69.8*	RS	Rigid	K387	**4N589**	205.00	**124.20**	17.0
	1140	56	230/460	2.6/1.3	1.25	69.9*	RS	Rigid	K117	**4N592**	286.00	**173.75**	24.0
3/4	3450	56	208-230/460#	2.6-2.6/1.3	1.25	74.0*	RS	Rigid	K118	**3N530**	196.00	**118.75**	18.0
	1725	56	208-230/460#	2.9-3.0/1.5	1.25	72.0*	RS	Rigid	K119	**3N529**	229.00	**138.75**	20.0
	1725	56	575	1.3	1.25	73.4*	RS	Rigid	K392	**4N595**	229.00	**138.75**	20.0
	1140	56	208-230/460#	3.0-3.0/1.5	1.15	76.1*	RS	Rigid	K120	**4N596**	309.00	**187.50**	29.0
	850	145T	230/460	3.4/1.7	1.15	[illegible]	RS	Rigid	K402	**4N593**	509.00	**308.50**	44.0
1	3450	56	208-230/460#	3.3-3.2/1.6	1.25	77.0*	RS	Rigid	K121	**3N532**	222.00	**134.50**	19.0
	1725	56	208-230/460#	3.6-3.8/1.9	1.15	75.0*	RS	Rigid	K122	**3N531**	241.00	**146.00**	25.0
	1725	143T	208-230/460#	3.3-3.6/1.8	1.15	72.0	RS	Rigid	K127	**3N390**	241.00	**146.00**	24.0
	1140	56H	230/460	3.8/1.9	1.15	76.3*	RS	Rigid	K393	**4N603**	329.00	**199.50**	34.0
1½	3450	56	230/460	4.4/2.2	1.15	79.4*	RS	Rigid	K124	**3N534**	273.00	**165.50**	24.0
	3450	143T	208-230/460	5.0-4.8/2.4	1.15	79.2	RS	Rigid	K129	**3N083**	275.00	**166.75**	25.0
	1725	56H	208-230/460#	5.8-5.6/2.8	1.15	77.0*	RS	Rigid	K125	**3N533**	282.00	**171.00**	32.0
	1725	145T	208-230/460#	5.8-5.6/2.8	1.15	77.0	RS	Rigid	K130	**3N391**	285.00	**172.75**	30.0
2	3450	56	208-230/460	6.6-6.0/3.0	1.15	80.5*	RS	Rigid	K126	**4N606**	298.00	**180.75**	30.0
	3450	145T	208-230/460#	6.6-6.0-3.0	1.15	77.0	RS	Rigid	K132	**3N544**	301.00	**182.75**	32.0
	1725	145T	208-230/460#	6.5-6.6/3.3	1.15	80.0	RS	Rigid	K133	**3N392**	276.00	**167.25**	39.0
	1725	145T	575	2.6	1.15	77.1	RS	Rigid	K566	**4N608**	276.00	**167.25**	41.0
3	3450	145T	230/460	8.2/4.1	1.15	82.0	RS	Rigid	K134	**3N085**	332.00	**201.25**	31.0
	1725	145T	230/460	9.2/4.6	1.15	79.6	RS	Rigid	K135	**3N313**	314.00	**190.50**	46.0
	1745	182T	230/460#	8.6/4.3	1.15	84.0	RS	Bolted	N627	**4N031**	271.00	**174.00**	66.0
	1745	182T	200	9.8	1.15	84.0	RS	Bolted	N626	**5N355**	271.00	**174.00**	71.0
	1745	182T	575	3.5	1.15	84.0	RS	Bolted	N628	**4N032**	271.00	**174.00**	64.0
5	3450	145T	230/460	13.0/6.5	1.0	83.2	RS	Rigid	K136	**4N610**	381.00	**231.00**	52.0
	3500	182T	230/460#	14.2/7.1	1.15	84.0	RS	Bolted	N629	**5N356**	364.00	**234.00**	71.0
	1730	184T	230/460#	14.2/7.1	1.15	84.0	RS	Bolted	N631	**4N033**	364.00	**234.00**	70.0
	1735	184T	200	16.4	1.15	84.0	RS	Bolted	N630	**5N357**	364.00	**233.75**	91.0
	1730	184T	575	5.7	1.15	84.0	RS	Bolted	N632	**4N034**	364.00	**234.00**	68.0
7½	3480	184T	230/460#	21.4/10.7	1.15	84.0	RS	Bolted	N633	**5N358**	429.00	**275.75**	69.0
	1745	213T	230/460#	22.8/11.4	1.15	85.5	RS	Bolted	N635	**4N035**	466.00	**299.00**	116.0
	1740	213T	200	25.7	1.15	85.5	RS	Bolted	N634	**5N359**	466.00	**299.00**	112.0
	1745	213T	575	9.1	1.15	85.5	RS	Bolted	N636	**4N036**	466.00	**299.00**	114.0
10	3520	213T	230/460#	25.2/12.6	1.15	87.5	RS	Bolted	N637	**5N360**	563.00	**361.50**	112.0
	1740	215T	230/460#	28.6/14.3	1.15	86.5	RS	Bolted	N639	**4N037**	574.00	**368.50**	128.0
	1745	215T	200	32.8	1.15	86.5	RS	Bolted	N638	**5N361**	574.00	**368.75**	112.0
	1740	215T	575	11.4	1.15	86.5	RS	Bolted	N640	**4N038**	574.00	**368.50**	126.0
15	3515	215T	230/460#	37.8/18.9	1.15	88.5	RS	Bolted	N641	**5N362**	728.00	**467.75**	122.0
	1765	254T	230/460#	41.2/20.6	1.15	87.5	RS	Bolted	N643	**4N039**	771.00	**494.25**	220.0
	1760	254T	200	46.8	1.15	87.5	RS	Bolted	N642	**5N363**	771.00	**494.00**	232.0
	1765	254T	575	16.5	1.15	87.5	RS	Bolted	N622	**4N040**	771.00	**494.25**	214.0

(*) Average efficiency, not NEMA nominal efficiency. (†) RS = Rolled Steel.
(#) Usable on 200V at 1.0 service factor.

CONTINUED ON NEXT PAGE

3-PHASE OPEN DRIPPROOF MOTORS

GE 3-PHASE OPEN DRIPPROOF MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame†	Base	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
20	3540	254T	230/460#	49.0/24.5	1.15	88.5	RS	Bolted	N644	**5N364**	$900.00	**$577.00**	232.0
	1755	256T	230/460#	53.4/26.7	1.15	88.5	RS	Bolted	N646	**4N041**	937.00	**601.50**	236.0
	1755	256T	200	60.9	1.15	88.5	RS	Bolted	N645	**5N365**	937.00	**601.00**	279.0
	1755	256T	575	21.3	1.15	88.5	RS	Bolted	N623	**4N042**	937.00	**601.50**	217.0
25	3530	256T	230/460#	60.4/30.2	1.15	89.5	RS	Bolted	N647	**5N366**	1049.00	**673.00**	279.0
	1765	284T	230/460#	62.4/31.2	1.15	89.5	RS	Bolted	N649	**4N043**	1157.00	**741.50**	340.0
	1765	284T	200	71.6	1.15	89.5	RS	Bolted	N648	**5N367**	1157.00	**741.00**	359.0
	1765	284T	575	25.0	1.15	89.5	RS	Bolted	N624	**4N044**	1157.00	**741.50**	328.0
30	3560	284TS	230/460#	69.2/34.6	1.15	90.2	RS	Bolted	N650	**5N368**	1276.00	**818.00**	369.0
	1760	286T	230/460#	73.6/36.8	1.15	89.5	RS	Bolted	N652	**4N045**	1318.00	**845.00**	358.0
	1765	286T	200	86.0	1.15	89.5	RS	Bolted	N651	**5N369**	1318.00	**844.50**	409.0
	1760	286T	575	29.9	1.15	89.5	RS	Bolted	N625	**4N046**	1318.00	**845.00**	348.0
	1175	326T	230/460	83.6/41.8	1.15	90.2	CI	Rigid	S144	**5N895**	2273.00	**1457.00**	630.0
40	3555	286TS	230/460#	90.8/45.4	1.15	91.0	RS	Bolted	N653	**5N370**	1671.00	**1072.00**	409.0
	1765	324T	230/460	103.6/51.8	1.15	91.0	CI	Rigid	S114	**5N896**	1965.00	**1261.00**	480.0
	1765	324T	200	117.0	1.15	91.0	CI	Rigid	S3338	**5N897**	1965.00	**1259.00**	600.0
	1185	364T	460	55.3	1.15	91.0	CI	Rigid	S1180	**5N898**	3050.00	**1958.00**	640.0
50	3540	324TS	230/460	121.4/60.7	1.15	93.0	CI	Rigid	S115	**5N899**	2327.00	**1494.00**	500.0
	1765	326TS	230/460	128.0/64.0	1.15	91.0	CI	Rigid	S146	**5N900**	2214.00	**1421.00**	495.0
	1765	326T	230/460	128.0/64.0	1.15	91.0	CI	Rigid	S116	**5N901**	2149.00	**1379.00**	510.0
	1185	365T	460	67.7	1.15	91.7	CI	Rigid	S1200	**5N902**	3786.00	**2428.00**	980.0
60	3540	326TS	230/460	144.8/72.4	1.15	93.0	CI	Rigid	S117	**5N903**	2609.00	**1675.00**	540.0
	1775	364TS	230/460	149.6/74.8	1.15	91.7	CI	Rigid	S1184	**5N904**	3218.00	**2066.00**	640.0
	1775	364T	230/460	149.6/74.8	1.15	91.7	CI	Rigid	S1181	**5N905**	3124.00	**2005.00**	650.0
	1180	404T	460	75.4	1.15	90.2	CI	Rigid	S1220	**5N906**	4657.00	**2984.00**	1320.0
75	3550	364TS	230/460	179.8/89.9	1.15	93.6	CI	Rigid	S1191	**5N907**	3846.00	**2467.00**	900.0
	1775	365TS	230/460	185.4/92.7	1.15	93.0	CI	Rigid	S1204	**5N908**	3535.00	**2270.00**	660.0
	1775	365T	230/460	185.4/92.7	1.15	93.0	CI	Rigid	S1201	**5N909**	3432.00	**2204.00**	680.0
	1180	405T	460	92.2	1.15	91.7	CI	Rigid	S1240	**5N910**	5246.00	**3364.00**	1360.0
100	3545	365TS	230/460	234.0/117.0	1.15	94.1	CI	Rigid	S1211	**5N911**	4048.00	**2598.00**	920.0
	1780	404TS	230/460	242.0/121.0	1.15	93.0	CI	Rigid	S1224	**5N912**	4734.00	**3039.00**	986.0
	1780	404T	230/460	242.0/121.0	1.15	93.0	CI	Rigid	S1221	**5N913**	4597.00	**2950.00**	990.0
	1185	444T	460	125.0	1.15	90.2	CI	Rigid	S147	**5N914**	6717.00	**4312.00**	1326.0
125	3560	404TS	460	146.0	1.15	91.7	CI	Rigid	S1231	**5N915**	5641.00	**3618.00**	1350.0
	1780	405TS	460	150.0	1.15	93.0	CI	Rigid	S1244	**5N916**	5445.00	**3496.00**	1038.0
	1780	405T	460	150.0	1.15	93.[illegible]	CI	Rigid	S1241	**5N917**	5286.00	**3393.00**	1050.0
	1185	445T	460	153.0	1.15	92.[illegible]	CI	Rigid	S150	**5N918**	7400.00	**4747.00**	1710.0
150	3560	405TS	460	174.0	1.15	91.7	CI	Rigid	S125	**5N919**	7842.00	**5036.00**	1370.0
	1780	444TS	460	178.0	1.15	94.1	CI	Rigid	S149	**5N949**	7514.00	**4821.00**	1650.0
	1780	444T	460	178.0	1.15	94.1	CI	Rigid	S126	**5N950**	7295.00	**4679.00**	1650.0
	1185	445T	460	183.0	1.15	93.6	CI	Rigid	S152	**5N951**	8248.00	**5292.00**	1780.0
200	3575	444TS	460	218.0	1.15	94.5	CI	Rigid	S127	**5N952**	9919.00	**6369.00**	1780.0
	1785	445TS	460	234.0	1.15	94.5	CI	Rigid	S156	**5N953**	8318.00	**5338.00**	1750.0
	1785	445T	460	234.0	1.15	94.5	CI	Rigid	S128	**5N954**	8076.00	**5182.00**	1750.0
250	3570	445TS	460	284.0	1.15	93.6	CI	Rigid	S129	**5N955**	13241.00	**8511.00**	1750.0
	1785	445T	460	284.0	1.15	95.0	CI	Rigid	S130	**5N956**	8995.00	**5773.00**	1850.0
300	3575	449TS	575	254.0	1.15	96.0	CI	Rigid	S3398	**5N957**	19894.00	**12802.00**	1500.0
	1785	449T	460	342.0	1.15	95.4	CI	Rigid	S3381	**5N958**	17730.00	**11395.00**	2350.0
	1780	449T	575	270.0	1.15	96.0	CI	Rigid	S3384	**5N959**	17730.00	**11406.00**	1598.0
400	1785	449T	460	436.0	1.15	95.8	CI	Rigid	S3382	**5N961**	19233.00	**12359.00**	2690.0
	1785	449T	575	351.0	1.15	95.8	CI	Rigid	S3399	**5N962**	19233.00	**12374.00**	1697.0
450	3570	449TS	575	377.0	1.15	95.4	CI	Rigid	S3390	**5N964**	20551.00	**13222.00**	1770.0

(†) RS = Rolled Steel construction; CI = Cast-Iron construction.
(#) Usable on 200V at 1.0 service factor.

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

Modifications & Service Available at Most Locations

MOTOR PROTECTION

Motors that start automatically (eg. thermostat controlled), that are located remotely or unattended, or that are out-of-sight of the operator, must be protected against dangerous overheating due to failure-to-start or overloading. This protection may be separate overcurrent device (eg. motor starter) complying with Article 430 of the National Electrical Code (NEC), a thermally protected motor (integral motor protection), or an impedance protected motor.

Motors with automatic reset thermal protection MUST NOT be used where automatic or otherwise unexpected starting of the motor could be hazardous. Where such a hazard exists, always use a manual reset thermally protected motor. Applications where automatic restarting could be hazardous include compressors, conveyors, power tools, farm equipment, and some fans and blowers.

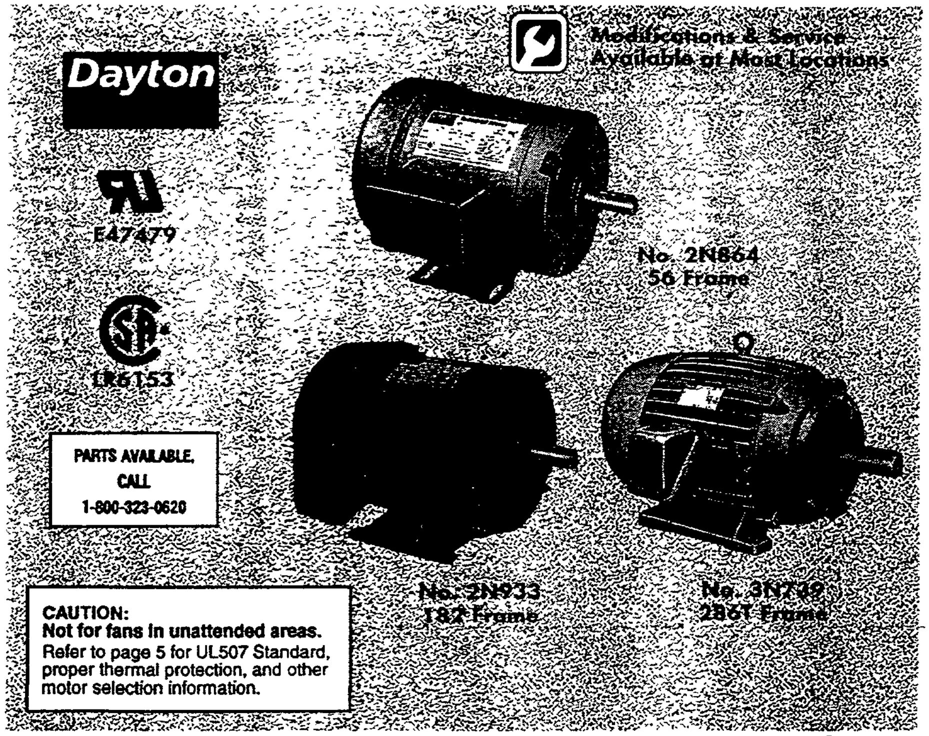
3-PHASE TEFC MOTORS

- Special base design of NEMA 56HZ motors has holes and slots to match NEMA 56, 56H, 143T, and 145T frames
- NEMA design B

CAST-IRON MOTOR FEATURES

- Protective coating on rotor
- Eye bolt on 180 frame and above
- Double baked stator on 210 frame and above
- Shaft slingers
- Drain holes for condensation

Typical Uses: Cool and efficient performance on pumps, blowers, air compressors, machine tools, conveyors, and other equipment operating in **noncombustible** dusty, dirty areas.
Bearings: Ball. Double-shielded on 42 thru 360 frame; open ball with filler caps on 400 frame and above.
Mounting: Rigid welded; 254U frame has removable base
Thermal Protection: None
Windings: Copper
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame†	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1/4	1725	42	208-220/440*	1.0-1.0/0.5	1.0	66.0	RS	B	**3N843**	$168.00	**$128.45**	17.0
	1725	48	230/460‡	1.3/0.6	1.0	[illegible]	RS	B	**3N349#**	151.00	**115.45**	17.0
	1725	56	208-220/440*	1.2-1.4/0.7	1.0		RS	A	**2N863**	168.00	**128.45**	17.0
1/3	3450	48	230/460‡	1.4/0.7	1.0	64.0	RS	B	**3N854#**	140.00	**107.05**	18.0
	1725	42	208-220/440*	1.3-1.3/0.7	1.0	70.0	RS	B	**3N844**	185.00	**141.45**	19.0
	1725	48	230/460‡	1.3/0.6	1.0	72.0	RS	B	**3N350#**	168.00	**128.45**	18.0
	1725	56	208-220/440*	1.4-1.4/0.7	1.0	66.0	RS	A	**2N864**	185.00	**141.45**	19.0
	1140	56	208-220/440*	1.7-1.8/0.9	1.0	70.0	RS	A	**2N925**	260.00	**199.00**	23.0
1/2	3450	48	230/460‡	1.8/0.9	1.0	70.0	RS	B	**3N855**	162.00	**123.95**	18.0
	3450	56	208-220/440*	2.2-2.3/1.2	1.0	66.0	RS	A	**3N442**	179.00	**136.90**	20.0
	1725	48	230/460‡	1.9/0.9	1.0	74.0	RS	B	**3N351**	198.00	**151.50**	18.0
	1725	56	208-220/440*	2.0-2.0/1.0	1.0	72.0	RS	A	**2N865**	215.00	**164.50**	21.0
	1140	56	208-220/440*	2.1-2.2/1.1	1.0	72.0	RS	A	**2N926**	279.00	**213.50**	26.0
3/4	3450	48	230/460‡	2.4/1.2	1.0	74.0	RS	B	**3N856**	178.00	**136.15**	22.0
	3450	56	208-220/440*	2.8-2.9/1.5	1.0	70.0	RS	A	**3N443**	195.00	**149.10**	22.0
	1725	48	230/460‡	3.0/1.5	1.0	77.0	RS	B	**3N352**	213.00	**163.00**	22.0
	1725	56	208-220/440*	2.8-2.7/1.4	1.0	77.0	RS	A	**2N866**	230.00	**176.25**	24.0
	1140	56H	208-220/440‡	3.0-3.0/1.5	1.0	74.0	RS	B	**3N427**	268.00	**205.50**	30.0
1	3450	56	208-220/440*	3.4-3.2/1.6	1.0	80.0	RS	B	**3N317**	233.00	**178.50**	23.0
	1740	56HZ	230/460‡	3.6/1.8	1.0	77.0	RS	B	**3N285**	278.00	**213.00**	27.0
	1725	56H	208-220/440*	3.4-3.4/1.7	1.0	78.5	RS	A	**3N017**	245.00	**187.75**	29.0
	1755	143T	208-230/460‡	3.7-3.8/1.9	1.15	81.5	RS	F	**3N729**	219.00	**163.75**	44.0
	1740	143T	208-230/460‡	3.4-3.6/1.8	1.15	78.5	RS	F	**3N548**	209.00	**160.00**	28.0
	1755	182	208-220/440	3.7-3.6/1.8	1.0	78.5	RS	A	**2N933**	345.00	**259.00**	45.0
	1155	145T	208-230/460‡	4.3-4.4/2.2	1.15	75.5	RS	F	**3N756**	277.00	**207.00**	50.0
	1150	145T	208-230/460‡	3.8-4.0/2.0	1.15	78.5	RS	F	**3N549**	264.00	**202.25**	32.0
	1155	184	208-220/440	4.1-4.0/2.0	1.0	77.0	RS	A	**2N941**	388.00	**291.25**	45.0
1½	3450	56H	208-220/440*	4.4-4.2/2.1	1.0	78.5	RS	A	**3N444**	256.00	**196.00**	30.0
	3505	143T	208-230/460‡	4.8-4.6/2.3	1.15	80.0	RS	F	**3N747**	229.00	**171.25**	44.0
	3500	143T	208-230/460‡	4.6-4.4/2.2	1.15	80.0	RS	F	**3N551**	218.00	**167.00**	29.0
	3510	182	208-220/440	4.9-4.8/2.4	1.0	78.5	RS	A	**2N946**	359.00	**269.50**	45.0
	1725	56H	208-220/440*	4.9-4.8/2.4	1.0	81.5	RS	A	**3N018**	260.00	**199.00**	34.0
	1740	56HZ	230/460‡	4.8/2.4	1.0	80.0	RS	B	**3N286**	302.00	**231.00**	32.0
	1745	145T	208-230/460‡	5.4-5.8/2.9	1.15	81.5	RS	F	**3N730**	236.00	**176.50**	50.0
	1740	145T	208-230/460‡	4.8-4.9/2.5	1.15	80.0	RS	F	**3N550**	225.00	**172.50**	32.0
	1750	184	208-220/440	5.1-5.0/2.5	1.0	80.0	RS	A	**2N934**	386.00	**289.75**	50.0
	1155	182T	208-230/460‡	5.7-5.6/2.8	1.15	80.0	RS	F	**3N552**	307.00	**230.50**	55.0
	1140	184	208-220/440	5.6-5.4/2.7	1.0	77.0	RS	A	**2N942**	396.00	**297.25**	50.0

(*) Operable on 50 Hz at 208-220/440V or 190/380V at 5/6 of 60 Hz speed and full HP.
(†) RS = Rolled Steel construction.
(‡) Operable on 50 Hz, 190/380V, at 5/6 of 60 Hz HP speed.
(#) Totally enclosed nonventilated.

CONTINUED ON NEXT PAGE

3-PHASE TEFC MOTORS

DAYTON 3-PHASE TEFC MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame†	Ins. Class	Stock No.	List	Each	Shpg. Wt.
2	3450	56H	208-220/440*	5.6-5.4/2.7	1.0	81.	RS	B	**3N445**	$281.00	**$215.25**	33.0
	3495	145T	208-230/460‡	6.0-5.4/2.7	1.15	82.	RS	F	**3N748**	264.00	**197.25**	44.0
	3500	145T	208-230/460‡	5.8-5.5/2.8	1.15	82.	RS	F	**3N554**	251.00	**192.25**	30.0
	3500	184	208-220/440	6.2-6.0/3.0	1.0	80.	RS	A	**2N947**	386.00	**289.75**	50.0
	1725	56H	208-220/440‡	6.2-6.2/3.1	1.0	80.	RS	B	**3N486**	245.00	**187.75**	36.0
	1740	56HZ	230/460‡	6.0/3.0	1.0	80.	RS	B	**3N287**	331.00	**253.25**	36.0
	1740	145T	208-230/460‡	6.6-6.4/3.2	1.15	84.	RS	F	**3N731**	250.00	**186.75**	50.0
	1740	145T	208-230/460‡	6.4-6.4/3.2	1.15	81.	RS	F	**3N553**	238.00	**182.25**	36.0
	1760	184	208-220/440	6.4-6.2/3.1	1.0	82.	RS	A	**2N935**	421.00	**316.25**	60.0
	1155	184T	208-230/460‡	7.7-7.8/3.9	1.15	78.	CI	F	**3N757**	343.00	**256.00**	105.0
	1150	184T	208-230/460‡	7.3-7.2/3.6	1.15	80.	RS	F	**3N555**	327.00	**245.50**	60.0
	1145	213	208-220/440	7.3-7.2/3.6	1.0	80.	RS	A	**2N943**	470.00	**352.75**	64.0
3	3500	145T	208-230/460‡	8.3-7.8/3.9	1.15	85.	RS	F	**3N761**	288.00	**220.50**	37.0
	3515	182T	208-230/460‡	9.2-8.8/4.4	1.15	82.	CI	F	**3N749**	292.00	**218.00**	84.0
	3510	182T	208-230/460‡	8.9-8.6/4.3	1.15	84.	RS	F	**3N557**	278.00	**208.75**	50.0
	3510	184	208-220/440	8.9-8.6/4.3	1.0	82.	RS	A	**2N948**	337.00	**253.00**	60.0
	1735	182T	208-230/460‡	9.3-8.8/4.4	1.15	84.	CI	F	**3N732**	294.00	**219.75**	94.0
	1740	182T	208-230/460‡	9.4-9.2/4.6	1.15	82.	RS	F	**3N556**	280.00	**210.00**	55.0
	1755	213	208-220/440	9.2-9.0/4.5	1.0	84.	RS	A	**2N936**	521.00	**391.25**	62.0
	1165	213T	208-230/460‡	10.5-10.4/5.2	1.15	82.	CI	F	**3N758**	433.00	**323.25**	140.0
	1170	213T	208-230/460‡	10.7-10.8/5.4	1.15	82.	RS	F	**3N569**	412.00	**309.25**	80.0
	1170	215	208-220/440	10.7-10.6/5.3	1.0	84.	RS	A	**2N944**	500.00	**375.00**	80.0
5	3495	184T	208-230/460‡	14.2-12.8/6.4	1.15	86.	CI	F	**3N750**	371.00	**277.25**	90.0
	3500	184T	208-230/460‡	14.0-13.0/6.5	1.15	85.	RS	F	**3N559**	353.00	**265.00**	65.0
	3490	213	208-220/440	14.2-13.4/6.7	1.0	85.	RS	A	**2N949**	589.00	**442.00**	69.0
	1740	184T	208-230/460‡	15.0-13.5/6.8	1.15	86.	CI	F	**3N733**	340.00	**254.00**	95.0
	1750	184T	208-230/460‡	14.6-13.8/6.9	1.15	86.	RS	F	**3N558††**	324.00	**243.00**	75.0
	1760	215	208-220/440	14.7-14.4/7.2	1.0	86.	RS	A	**2N937**	575.00	**431.50**	98.0
	1165	215T	208-230/460‡	16.7-16.6/8.3	1.15	85.	CI	F	**3N759**	623.00	**465.25**	180.0
	1165	215T	208-230/460‡	16.7-16.2/8.1	1.15	85.	RS	F	**3N570**	593.00	**444.75**	111.0
	1165	254U	208-220/440	17.0-16.6/8.3	1.0	86.	RS	A	**2N945**	944.00	**708.50**	132.0
7½	3520	213T	208-230/460‡	20.8-18.8/9.4	1.15	87.	CI	F	**3N751**	499.00	**372.75**	140.0
	3510	213T	208-230/460‡	21.5-21.0/10.5	1.15	86.	RS	F	**3N571**	475.00	**356.50**	85.0
	1745	213T	208-230/460‡	22.2-22.2/11.1	1.15	85.	CI	F	**3N734**	433.00	**323.25**	155.0
	1760	213T	208-230/460‡	21.8-20.4/10.2	1.15	86.	RS	F	**3N572††**	412.00	**309.25**	90.0
	1760	254U	208-220/440	21.0-20.2/10.1	1.0	88.	RS	A	**2N938**	667.00	**500.50**	137.0
10	3515	215T	208-230/460‡	26.8-24.0/12.0	1.15	89.	CI	F	**3N752**	590.00	**440.50**	179.0
	3505	215T	208-230/460‡	27.9-25.6/12.8	1.15	38.	RS	F	**3N573**	562.00	**421.75**	105.0
	1750	215T	208-230/460‡	28.6-26.2/13.1	1.15	88.	CI	F	**3N735**	526.00	**392.75**	187.0
	1755	215T	208-230/460‡	28.7-26.4/13.2	1.15	87.	RS	F	**3N574††**	501.00	**375.75**	123.0
15	3535	254T	208-230/460‡	41.8-37.6/18.8	1.15	86.	CI	F	**3N753**	806.00	**608.00**	295.0
	1745	254T	208-230/460‡	42.6-38.4/19.2	1.15	88.	CI	F	**3N736**	824.00	**621.00**	295.0
20	3525	256T	208-230/460‡	53.9-48.0/24.0	1.15	88.	CI	F	**3N754**	1086.00	**818.50**	320.0
	1745	256T	208-230/460‡	54.9-49.2/24.6	1.15	90.	CI	F	**3N737**	1018.00	**767.00**	337.0
25	3545	284TS	208-230/460‡	66.6-59.4/29.7	1.15	89.	CI	F	**3N755**	1360.00	**1026.00**	340.0
	1770	284T	208-230/460‡	67.7-63.4/31.7	1.15	91.	CI	F	**3N738**	1259.00	**949.00**	429.0
30	1760	286T	230/460	70.0/35.0	1.15	91.	CI	F	**3N739**	1487.00	**1122.00**	500.0
40	1775	324T	230/460	94.8/47.4	1.15	91.	CI	F	**3N740**	1904.00	**1435.00**	548.0
50	1775	326T	230/460	116.0/58.0	1.15	93.	CI	F	**3N741**	2454.00	**1851.00**	621.0
60	1780	364T	230/460	144.0/72.0	1.15	92.	CI	F	**3N742**	3431.00	**2587.00**	748.0
75	1780	365T	230/460	178.0/89.0	1.15	93.	CI	F	**3N743**	4131.00	**3116.00**	828.0
100	1780	405T	230/460	240.0/120.0	1.15	93.	CI	F	**3N744**	5501.00	**4148.00**	1156.0
125	1780	444T	460	148.0	1.15	93.	CI	F	**3N745**	7423.00	**5598.00**	1500.0
150	1780	445T	460	174.0	1.15	93.	CI	F	**3N746**	8861.00	**6683.00**	1600.0

(*) Operable on 50 Hz at 208-220/440V or 190/380V at 5/6 of 60 Hz speed and full HP.
(†) RS = Rolled Steel construction; CI = Cast-Iron construction.
(‡) Operable on 50 Hz, 190/380V, at 5/6 of 60 Hz speed and full HP. (††) Rated 1.15 service factor at 230/460V, 1.0 service factor at 208V

KITS FOR CAST-IRON MOTORS

C-FLANGE KITS

For NEMA Frames	Rabbet Dia.	Stock No.	List	Each	Shpg. Wt.
143/145T*	4½"	**6A479**	$60.00	**$43.55**	6.5
182/184T	4½	**6A480**	80.00	**58.05**	9.8
182/184T	8½	**6A481**	80.00	**58.00**	14.0
213/215T	8½	**6A482**	95.00	**68.85**	17.0
254/256T	8½	**6A483**	120.00	**87.00**	25.0
284/286T	10½	**6A484**	140.00	**101.45**	32.0

CAST-IRON SEVERE DUTY FAN COVER & CONDUIT BOX

For NEMA Frames	Stock No.	List	Each	Shpg. Wt.
143/145T*	**6A474**	$88.00	**$63.90**	7.0
182/184T	**6A475**	97.00	**70.35**	14.0
213/215T	**6A476**	132.00	**95.75**	20.0
254/256T	**6A477**	176.00	**127.60**	35.0
284/286T	**6A478**	197.00	**142.80**	43.0

(*) 140 frame motors feature rolled steel construction.

CAUTION: Not for fans in unattended areas.

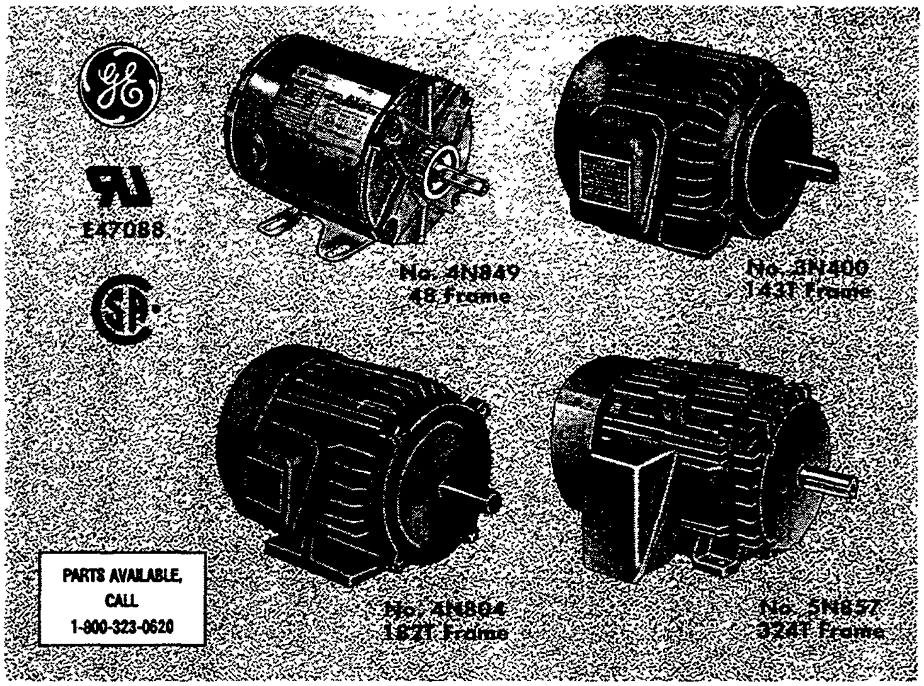
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

3-PHASE TEFC MOTORS

Typical Uses: Pumps, fans, blowers, air compressors, conveyors, machinery, and other industrial equipment.
Bearings: Ball
Mounting: Rigid
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE

Modifications & Service Available at Most Locations

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



HP	Nameplate RPM.	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame†	Ins. Class	Base	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/4	1725	48	208-230/460	1.3-1.4/0.7	1.0	62.7*	RS	B	Rigid	K151	**4N820**	$178.00	**$107.85**	16.0
	1725	48	230/460	1.2/0.6	1.0	67.5*	R	B	Rigid	K194	**4N849‡**	201.00	**121.80**	16.0
	1725	48	575	0.6	1.0	61.3*	RS	B	Rigid	K418	**4N821**	188.00	**113.90**	16.0
	1725	56	208-230/460	1.3-1.4/0.7	1.0	66.0*	RS	B	Rigid	K439	**4N822‡**	178.00	**107.85**	16.0
	1140	56	230/460	1.4/0.7	1.0	66.0*	RS	A	Rigid	K321	**4N823**	265.00	**161.00**	19.0
1/3	3450	48	208-230/460	1.5-1.8/0.9	1.0	61.9*	RS	B	Rigid	K153	**4N824**	176.00	**106.65**	16.0
	1725	56	208-230/460	1.5-1.5/0.8	1.0	66.0*	RS	B	Rigid	K154	**3N535**	199.00	**120.55**	16.0
	1725	56	230/460	1.5/0.8	1.0	68.8*	RS	B	Rigid	K196	**4N851‡**	250.00	**151.50**	17.0
	1140	56	230/460	1.8/0.9	1.0	67.9*	RS	B	Rigid	K155	**4N826**	287.00	**174.25**	22.0
1/2	3450	48	208-230/460	2.0-2.0/1.0	1.0	69.9*	RS	B	Rigid	K156	**4N827**	191.00	**115.70**	18.0
	3450	56	208-230/460	2.0-2.0/1.0	1.0	69.0*	RS	B	Rigid	K157	**3N537**	191.00	**115.70**	18.0
	1725	56	208-230/460	2.1-2.2/1.1	1.0	69.0*	RS	B	Rigid	K158	**3N536**	234.00	**141.70**	18.0
	1725	56	230/460	2.0/1.0	1.0	73.9*	RS	B	Rigid	K197	**4N853‡**	278.00	**168.75**	23.0
	1725	56	575	0.9	1.0	69.8*	RS	B	Rigid	K426	**4N829**	234.00	**141.70**	21.0
	1140	56	230/460	2.6/1.3	1.0	69.9*	RS	B	Rigid	K159	**4N831**	309.00	**187.50**	27.0
3/4	3450	56	208-230/460	2.6-2.6/1.3	1.0	76.0*	RS	B	Rigid	K160	**3N539**	210.00	**127.15**	22.0
	1725	56	208-230/460	2.8-2.8/1.4	1.0	76.0*	RS	B	Rigid	K161	**3N538**	251.00	**152.00**	23.0
	1725	56	230/460	2.6/1.3	1.0	78.5*	RS	B	Rigid	K198	**4N854‡**	286.00	**173.75**	32.0
	1725	56	575	1.3	1.0	73.4*	RS	B	Rigid	K421	**4N833**	251.00	**152.00**	21.0
	1140	56	230/460	3.0/1.5	1.0	76.1*	RS	B	Rigid	K162	**4N835**	316.00	**191.75**	30.0
	1155	143T	230/460#	3.0/1.5	1.15	74.0	CI	B	Rigid	K515	**4N798**	305.00	**199.00**	42.0
1	3450	56	208-230/460	3.2-3.0/1.5	1.0	80.0*	RS	B	Rigid	K163	**3N541**	248.00	**150.25**	24.0
	3450	56	575	1.2	1.0	78.6*	RS	B	Rigid	K532	**4N836**	248.00	**150.25**	25.0
	1725	56	208-230/460	3.6-3.8/1.9	1.0	72.0*	RS	B	Rigid	K154	**3N540**	262.00	**159.25**	27.0
	1725	56	575	1.7	1.0	73.1*	RS	B	Rigid	K424	**4N838**	262.00	**159.25**	26.0
	1745	143T	230/460#	3.4/1.7	1.15	77.0	CI	B	Rigid	K171	**3N400**	253.00	**165.25**	44.0
	1725	143T	575	1.7	1.0	73.1	RS	B	Rigid	K425	**4N839**	262.00	**159.25**	27.0
	1140	56H	230/460	3.6/1.8	1.0	78.3*	RS	B	Rigid	K165	**4N841**	321.00	**194.75**	40.0
	1160	145T	230/460#	4.2/2.1	1.15	75.5	CI	B	Rigid	K173	**4N799**	310.00	**202.25**	50.0
1½	3450	56	208-230/460	5.0-4.8/2.4	1.15	79.0*	RS	B	Rigid	K166	**3N543**	275.00	**166.75**	26.0
	3480	143T	230/460#	4.0/2.0	1.15	80.0	CI	B	Rigid	K174	**4N800**	268.00	**175.00**	50.0
	1725	56H	208-230/460	4.9-4.8/2.4	1.0	80.0*	RS	B	Rigid	K167	**3N542**	274.00	**166.25**	41.0
	1735	145T	230/460#	5.2/2.6	1.15	78.5	CI	B	Rigid	K176	**3N401**	265.00	**173.25**	50.0
	1725	145T	575	1.9	1.0	77.7	RS	B	Rigid	K573	**4N842**	274.00	**166.25**	36.0
	1150	182T	230/460#	4.8/2.4	1.15	75.5	CI	B	Rigid	K188	**4N801**	340.00	**218.00**	88.0
2	3450	56	230/460	5.2/2.6	1.15	81.7*	RS	B	Rigid	K168	**3N564**	304.00	**184.50**	40.0
	3460	145T	230/460#	5.4/2.7	1.15	80.0	CI	B	Rigid	K177	**3N546**	294.00	**192.00**	47.0
	1715	145T	230/460#	5.8/2.9	1.15	80.0	CI	B	Rigid	K179	**3N402**	279.00	**182.00**	50.0
	1725	145T	575	2.6	1.0	77.1	RS	B	Rigid	K575	**4N844**	293.00	**177.75**	40.0
	1160	184T	230/460#	6.4/3.2	1.15	80.0	CI	B	Rigid	K189	**4N802**	372.00	**238.50**	111.0

(*) Average efficiency, not NEMA nominal efficiency. (#) Usable on 200V at 1.0 service factor.
(†) RS = Rolled Steel construction; CI = Cast-Iron construction. (‡) TENV.

CONTINUED ON NEXT PAGE

3-PHASE TEFC MOTORS

GE 3-PHASE TEFC MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame†	Ins. Class	Base	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
3	3450	145T	230/460	8.0/4.0	1.0	83.4	RS	B	Rigid	K180	**4N846**	$350.00	**$212.25**	49.0
	3420	182T	230/460	8.0/4.0	1.15	78.5	CI	B	Rigid	K192	**4N803**	357.00	**229.25**	80.0
	1755	182T	230/460#	9.0/4.5	1.15	84.0	CI	B	Rigid	K184	**4N804**	347.00	**222.75**	82.0
	1755	182T	200	10.4	1.15	80.0	CI	B	Rigid	K293	**4N805**	347.00	**222.75**	80.0
	1755	182T	575	3.6	1.15	84.0	CI	B	Rigid	K295	**4N806**	347.00	**222.75**	90.0
	1170	213T	230/460#	9.4/4.7	1.15	85.5	CI	B	Rigid	S331	**4N808**	505.00	**324.00**	130.0
	1170	213T	575	3.8	1.15	85.5	CI	B	Rigid	S3233	**4N807**	505.00	**323.75**	135.0
5	3450	184T	230/460#	12.6/6.3	1.15	82.5	CI	B	Rigid	K193	**4N809**	432.00	**277.25**	100.0
	3450	184T	575	5.1	1.15	82.5	CI	B	Rigid	K436	**4N847**	432.00	**277.50**	92.0
	1750	184T	230/460#	13.0/6.5	1.15	85.5	CI	B	Rigid	K185	**4N632**	397.00	**254.75**	100.0
	1750	184T	200	15.0	1.15	85.5	CI	B	Rigid	K437	**4N848**	397.00	**254.50**	110.0
	1750	184T	575	5.2	1.15	85.5	CI	B	Rigid	K296	**4N810**	397.00	**254.75**	100.0
	1160	215T	230/460#	14.0/7.0	1.15	84.0	CI	B	Rigid	S332	**4N811**	700.00	**449.25**	154.0
	1160	215T	575	5.6	1.15	84.0	CI	B	Rigid	S3393	**4N812**	700.00	**449.50**	130.0
7½	3470	213T	230/460#	19.0/9.5	1.15	84.0	CI	B	Rigid	S301	**4N813**	578.00	**370.50**	150.0
	3470	213T	575	7.6	1.15	84.0	CI	B	Rigid	S3248	**4N814**	578.00	**370.50**	159.0
	1745	213T	230/460#	19.0/9.5	1.15	86.5	CI	B	Rigid	S302	**4N815**	578.00	**370.50**	150.0
	1745	213T	200	22.0	1.15	91.7	CI	B	Rigid	S3329	**4N817**	578.00	**370.50**	160.0
	1745	213T	575	7.6	1.15	86.5	CI	B	Rigid	S3244	**4N816**	578.00	**370.50**	161.0
	1165	254T	230/460#	20.0/10.0	1.15	86.5	CI	B	Rigid	S333	**4N818**	963.00	**617.50**	252.0
	1165	254T	575	8.0	1.15	86.5	CI	B	Rigid	S3394	**4N819**	963.00	**617.50**	250.0
10	3470	215T	230/460#	24.0/12.0	1.15	85.5	CI	B	Rigid	S303	**4N638**	682.00	**437.25**	181.0
	3470	215T	575	9.6	1.15	85.5	CI	B	Rigid	S3253	**4N650**	682.00	**437.00**	194.0
	1740	215T	230/460#	24.0/12.0	1.15	87.5	CI	B	Rigid	S304	**4N657**	705.00	**452.25**	180.0
	1740	215T	200	27.6	1.15	87.5	CI	B	Rigid	S3330	**4N772**	705.00	**452.25**	178.0
	1740	215T	575	9.6	1.15	87.5	CI	B	Rigid	S3256	**4N665**	705.00	**452.00**	199.0
	1170	256T	230/460#	26.0/13.0	1.15	87.5	CI	B	Rigid	S334	**4N788**	1201.00	**770.50**	277.0
	1170	256T	575	10.4	1.15	87.5	CI	B	Rigid	S3395	**4N791**	1201.00	**771.00**	250.0
15	3530	254T	230/460#	36.0/18.0	1.15	86.5	CI	B	Rigid	S305	**4N639**	936.00	**600.00**	264.0
	3530	254T	575	14.4	1.15	86.5	CI	B	Rigid	S3260	**4N651**	936.00	**600.00**	263.0
	1760	254T	230/460#	36.0/18.0	1.15	88.5	CI	B	Rigid	S306	**4N658**	948.00	**608.00**	268.0
	1760	254T	200	41.4	1.15	88.5	CI	B	Rigid	S3331	**4N773**	948.00	**608.00**	271.0
	1760	254T	575	14.4	1.15	[illegible]	CI	B	Rigid	S3261	**4N667**	948.00	**608.00**	284.0
	1165	284T	230/460#	40.0/20.0	1.15	88.5	CI	B	Rigid	S336	**4N789**	1691.00	**1085.00**	396.0
	1165	284T	575	16.0	1.15	88.5	CI	B	Rigid	S3264	**4N787**	1691.00	**1085.00**	423.0
20	3520	256T	230/460#	46.0/23.0	1.15	88.5	CI	B	Rigid	S307	**4N640**	1195.00	**766.50**	314.0
	3520	256T	575	18.4	1.15	88.5	CI	B	Rigid	S3350	**4N656**	1195.00	**766.00**	335.0
	1755	256T	230/460#	46.0/23.0	1.15	90.2	CI	B	Rigid	S308	**4N659**	1173.00	**752.00**	315.0
	1755	256T	200	52.9	1.15	90.2	CI	B	Rigid	S3333	**4N774**	1173.00	**752.00**	314.0
	1755	256T	575	18.4	1.15	90.2	CI	B	Rigid	S3274	**4N668**	1173.00	**753.50**	225.0
	1175	286T	230/460#	50.0/25.0	1.15	90.2	CI	B	Rigid	S339	**4N790**	2013.00	**1292.00**	440.0
25	3520	284TS	230/460#	60.0/30.0	1.15	88.5	CI	B	Rigid	S309	**4N641**	1508.00	**967.00**	404.0
	1760	284T	230/460#	60.0/30.0	1.15	90.2	CI	B	Rigid	S310	**4N660**	1466.00	**940.00**	398.0
	1760	284T	200	69.0	1.15	90.2	CI	B	Rigid	S3334	**4N775**	1466.00	**939.50**	443.0
	1760	284T	575	24.0	1.15	90.2	CI	B	Rigid	S3276	**4N669**	1466.00	**939.50**	443.0
	1175	324TS	230/460	69.4/34.7	1.15	89.5	CI	F	Rigid	S343	**5N853**	2588.00	**1660.00**	620.0
	1175	324T	230/460	69.4/34.7	1.15	89.5	CI	F	Rigid	S342	**5N854**	2514.00	**1615.00**	490.0
30	3530	286TS	230/460#	70.0/35.0	1.15	89.5	CI	B	Rigid	S311	**4N642**	1680.00	**1078.00**	400.0
	3530	286TS	200	80.5	1.15	89.5	CI	B	Rigid	S3347	**4N655**	1680.00	**1077.00**	480.0
	1750	286T	230/460#	70.0/35.0	1.15	90.2	CI	B	Rigid	S312	**4N661**	1855.00	**1191.00**	468.0
	1750	286T	200	80.5	1.15	90.2	CI	B	Rigid	S3336	**4N776**	1855.00	**1191.00**	454.0
	1750	286T	575	28.0	1.15	90.2	CI	B	Rigid	S3283	**4N671**	1855.00	**1190.00**	507.0
	1175	326T	230/460	82.0/41.0	1.15	90.2	CI	F	Rigid	S345	**5N855**	2773.00	**1779.00**	650.0
40	3540	324TS	230/460	101.8/50.9	1.15	91.0	CI	F	Rigid	S313	**5N856**	2339.00	**1501.00**	500.0
	1765	324T	230/460	99.8/49.9	1.15	91.0	CI	F	Rigid	S314	**5N857**	2145.00	**1376.00**	490.0
	1765	324T	575	40.0	1.15	91.0	CI	F	Rigid	S3287	**5N858**	2145.00	**1374.00**	630.0
	1185	364T	460	53.4	1.15	91.7	CI	F	Rigid	S3180	**5N859**	4908.00	**3151.00**	960.0
50	3545	326TS	230/460	121.4/60.7	1.15	92.4	CI	F	Rigid	S315	**5N860**	2865.00	**1839.00**	570.0
	3545	326T	230/460	121.4/60.7	1.15	92.4	CI	F	Rigid	S3342	**5N861**	2782.00	**1786.00**	620.0
	1770	326TS	230/460	123.8/61.9	1.15	91.7	CI	F	Rigid	S344	**5N862**	2472.00	**1585.00**	680.0
	1770	326T	230/460	123.8/61.9	1.15	91.7	CI	F	Rigid	S316	**5N863**	2401.00	**1540.00**	550.0
	1770	326T	575	49.6	1.15	91.7	CI	F	Rigid	S3294	**5N864**	2401.00	**1539.00**	680.0
	1185	365T	460	66.3	1.15	92.4	CI	F	Rigid	S3200	**5N865**	5663.00	**3640.00**	780.0

(#) Usable on 200V at 1.0 service factor
(†) RS = Rolled Steel construction; CI = Cast-Iron construction

CONTINUED ON NEXT PAGE

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

3-PHASE TEFC MOTORS

GE 3-PHASE TEFC MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame†	Ins. Class	Base	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
60	3555	364TS	230/460	149.4/74.7	1.15	92.4	CI	F	Rigid	S3171	**5N866**	$4904.00	**$3150.00**	800.0
	1775	364TS	230/460	144.0/72.0	1.15	93.0	CI	F	Rigid	S3184	**5N867**	3989.00	**2558.00**	980.0
	1775	364T	230/460	144.0/72.0	1.15	93.0	CI	F	Rigid	S3181	**5N868**	3873.00	**2487.00**	760.0
	1775	364T	460	72.0	1.15	93.0	CI	F	Rigid	S3344	**5N869**	3873.00	**2484.00**	980.0
	1775	364T	575	57.6	1.15	93.0	CI	F	Rigid	S3300	**5N870**	3873.00	**2484.00**	980.0
	1185	404T	460	75.7	1.15	91.7	CI	F	Rigid	S3205	**5N871**	6633.00	**4257.00**	1360.0
75	3560	365TS	230/460	176.6/88.3	1.15	93.6	CI	F	Rigid	S3191	**5N872**	5491.00	**3529.00**	805.0
	1780	365T	230/460	178.8/89.4	1.15	93.6	CI	F	Rigid	S3201	**5N873**	4656.00	**2987.00**	1070.0
	1780	365T	575	71.5	1.15	93.6	CI	F	Rigid	S3302	**5N874**	4656.00	**2987.00**	1070.0
	1185	405T	460	95.3	1.15	91.7	CI	F	Rigid	S3220	**5N875**	7296.00	**4689.00**	1066.0
100	3560	405TS	230/460	224.0/112.0	1.15	90.2	CI	F	Rigid	S3211	**5N876**	6592.00	**4234.00**	1058.0
	1780	405TS	230/460	224.0/112.0	1.15	93.0	CI	F	Rigid	S3224	**5N877**	6231.00	**3997.00**	1420.0
	1780	405T	230/460	224.0/112.0	1.15	93.0	CI	F	Rigid	S3221	**5N878**	6051.00	**3881.00**	1420.0
	1780	405T	575	89.9	1.15	93.0	CI	F	Rigid	S3304	**5N879**	6051.00	**3881.00**	1420.0
	1185	444T	460	115.0	1.15	93.0	CI	F	Rigid	S348	**5N880**	7677.00	**4923.00**	1820.0
125	3570	444TS	460	137.0	1.15	91.7	CI	F	Rigid	S323	**5N881**	10350.00	**6648.00**	1740.0
	1785	444TS	460	140.0	1.15	92.4	CI	F	Rigid	S347	**5N882**	8181.00	**5250.00**	1760.0
	1785	444T	460	140.0	1.15	92.4	CI	F	Rigid	S324	**5N883**	7943.00	**5096.00**	1760.0
	1190	445T	460	147.0	1.15	94.1	CI	F	Rigid	S351	**5N884**	11496.00	**7384.00**	1910.0
150	3570	445TS	460	165.0	1.15	92.4	CI	F	Rigid	S325	**5N885**	12534.00	**8055.00**	1740.0
	1785	445TS	460	165.0	1.15	93.0	CI	F	Rigid	S350	**5N886**	9950.00	**6387.00**	1910.0
	1785	445T	460	165.0	1.15	93.0	CI	F	Rigid	S326	**5N887**	9660.00	**6200.00**	1910.0
	1190	445T	460	173.0	1.15	94.5	CI	F	Rigid	S354	**5N888**	12713.00	**8166.00**	2050.0
200	3575	445TS	460	214.0	1.15	93.0	CI	F	Rigid	S327	**5N889**	13028.00	**8371.00**	1950.0
	1785	445TS	460	227.0	1.15	93.0	CI	F	Rigid	S353	**5N890**	12109.00	**7777.00**	1990.0
	1785	445T	460	227.0	1.15	93.0	CI	F	Rigid	S328	**5N891**	11756.00	**7551.00**	1990.0
250	3575	445TS	460	268.0	1.0	94.1	CI	F	Rigid	S329	**5N892**	17008.00	**10935.00**	1960.0
	1780	445TS	460	278.0	1.0	95.0	CI	F	Rigid	S356	**5N893**	15503.00	**9964.00**	2050.0
	1780	445T	460	278.0	1.0	95.0	CI	F	Rigid	S330	**5N894**	15051.00	**9673.00**	2050.0

(†) CI = Cast-Iron construction.

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

Modifications & Service Available at Most Locations

GRAINGER STOCKS A BROAD LINE OF DAYTON AND GE MOTORS

Top Performance. Dayton motors are built to exceed industry standards such as NEMA (National Electrical Manufacturers Association). Used as a replacement motor in a wide variety of applications, each Dayton motor must outperform the best motor it may be called upon to replace, hence "best of the best" performance. You can be confident that the Dayton motor will work as well as, or better than, the motor you are replacing.

Top Quality Verified by Engineers. Grainger's Engineering Dept., with its "state-of-the-art" test lab, confirms that Dayton motors consistently meet or exceed top performance standards. Engineering also confirms the motors have applicable agency approvals such as UL and CSA.

Clearly Identified. Dayton motors are clearly identified by full fact carton labels and nameplates with wiring diagrams. Maintenance and installation instructions appear in every motor carton.

Broad Line Offering. Dayton offers one of the broadest lines of motors in the industry. One brand can be used for nearly all your motor replacement needs.

Time Proven Performance. Established in 1937, Dayton has grown to be one of the most dependable names in the motor industry.

Broad Line Offering. Grainger now offers over 2400 stock GE brand motors including AC and DC motors from 1/370 HP to 450 HP in Energy $aver™ and standard efficiency designs including severe duty, explosion proof, farm duty, HVAC, and many others.

National Recognition. GE is considered the leading national brand motor with the largest installed customer base. The GE brand is widely known for quality and reliability.

Clearly Identified. GE motors are clearly identified by full fact carton labels and nameplates. Easy-to-read wiring diagrams are included.

Premium Efficiency Leader. GE has long been recognized as an industry leader in premium efficiency motors with a wide variety of ratings and types to suit many applications.

Heritage of Excellence. General Electric is one of the pioneers in the electrical industry with a proud 100 year history dating back to the time of founder Thomas Edison.

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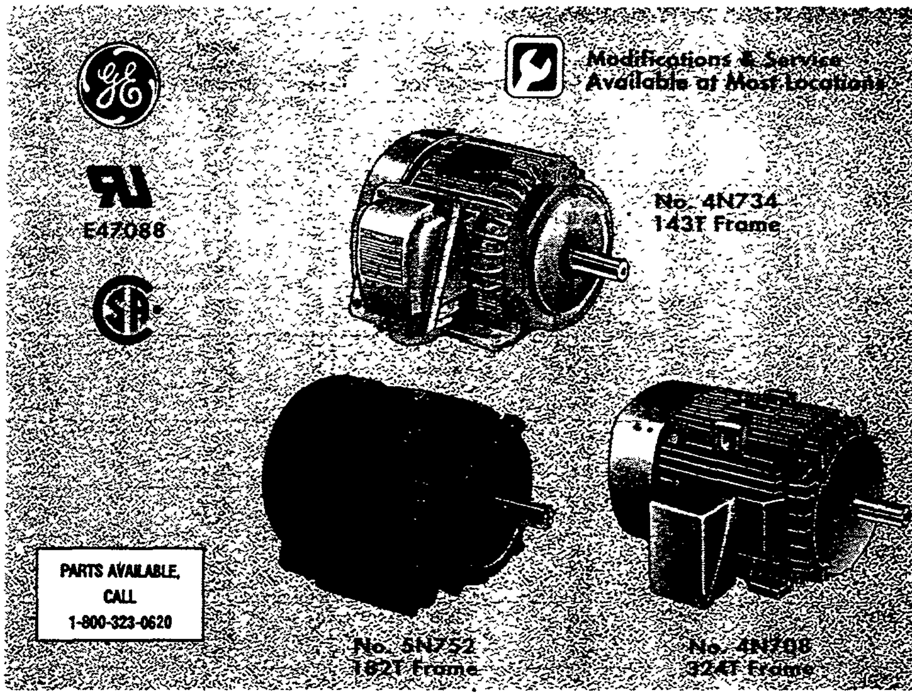
3-PHASE SEVERE DUTY MOTORS

- **Suitable for 65°C ambient at 1.0 service factor on 140 frame and above**
- **Designed for high humidity, acidic, alkali, or dirty (nonexplosive) conditions**
- **324 frame and above supplied with grease fittings**

Typical Uses: Pumps, fans, blowers, air compressors, conveyors, machinery, and other industrial equipment.

Bearings: Ball
Mounting: Rigid base
Enclosure: TEFC
Frame: Cast iron
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
3/4	1155	143T	230/460	3.0/1.5	1.15	74.0	F	K347	**4N732**	$365.00	**$238.25**	56.0
1	1745	143T	230/460	3.4/1.7	1.15	77.0	F	K348	**4N734**	373.00	**243.50**	56.0
	1745	143T	575	1.4	1.15	77.0	F	K1439	**4N733**	373.00	**243.50**	56.0
	1160	145T	230/460	4.2/2.1	1.15	75.5	F	K349	**4N736**	372.00	**242.75**	63.0
	1160	145T	575	1.7	1.15	75.5	F	K1440	**4N735**	372.00	**243.00**	52.0
1½	3480	143T	230/460	4.0/2.0	1.15	80.0	F	K350	**4N738**	369.00	**240.75**	56.0
	3480	143T	575	1.0	1.15	80.0	F	K1441	**4N737**	369.00	**240.75**	56.0
	1735	145T	230/460	5.2/2.6	1.15	77.0	F	K351	**4N740**	382.00	**249.25**	52.0
	1735	145T	575	2.1	1.15	77.0	F	K1442	**4N739**	382.00	**249.25**	52.0
	1150	182T	230/460	4.8/2.4	1.15	75.5	F	K339	**5N768**	425.00	**272.75**	109.0
2	3460	145T	230/460	5.4/2.7	1.15	81.5	F	K353	**4N744**	427.00	**278.75**	55.0
	3460	145T	575	2.2	1.15	81.5	F	K1443	**4N743**	427.00	**278.50**	63.0
	1715	145T	230/460	5.8/2.9	1.15	80.0	F	K354	**4N746**	404.00	**263.75**	63.0
	1715	145T	575	2.3	1.15	80.0	F	K1444	**4N745**	404.00	**263.75**	63.0
	1160	184T	230/460	6.4/3.2	1.15	78.5	F	K342	**5N751**	516.00	**331.50**	88.0
3	3420	182T	230/460	8.0/4.0	1.15	78.5	F	K343	**5N752**	436.00	**280.00**	73.0
	1755	182T	230/460	9.0/4.5	1.15	82.5	F	K344	**5N753**	467.00	**300.25**	77.0
	1170	213T	230/460	9.4/4.7	1.15	82.5	F	S359	**5N754**	632.00	**406.00**	117.0
5	3450	184T	230/460	12.6/6.3	1.15	81.5	F	K345	**5N755**	531.00	**341.25**	90.0
	1750	184T	230/460	13.0/6.5	1.15	85.5	F	K346	**5N756**	486.00	**312.25**	103.0
	1160	215T	230/460	14.0/7.0	1.15	84.0	F	S360	**5N757**	887.00	**570.00**	160.0
7½	3470	213T	230/460	19.0/9.5	1.15	84.0	F	S361	**5N758**	649.00	**416.75**	143.0
	1745	213T	230/460	19.0/9.5	1.15	85.5	F	S362	**5N759**	647.00	**415.25**	143.0
	1165	254T	230/460	20.0/10.0	1.15	85.5	F	S363	**5N769**	1221.00	**783.50**	295.0
10	3470	215T	230/460	24.0/12.0	1.15	84.0	F	S364	**5N760**	854.00	**548.50**	172.0
	1740	215T	230/460	24.0/12.0	1.15	85.5	F	S365	**5N761**	818.00	**525.00**	172.0
	1170	256T	230/460	26.0/13.0	1.15	86.5	F	S366	**5N770**	1492.00	**957.50**	340.0
15	3530	254T	230/460	36.0/18.0	1.15	85.5	F	S367	**5N762**	1182.00	**759.00**	246.0
	1760	254T	230/460	36.0/18.0	1.15	88.5	F	S368	**5N763**	1111.00	**713.50**	255.0
20	3520	256T	230/460	46.0/23.0	1.15	87.5	F	S370	**5N764**	1464.00	**940.00**	297.0
	1755	256T	230/460	46.0/23.0	1.15	89.5	F	S371	**5N765**	1384.00	**888.50**	308.0
	1175	286T	230/460	50.0/25.0	1.15	89.5	F	S372	**5N771**	2417.00	**1559.00**	523.0
25	3520	284T	230/460	60.0/30.0	1.15	88.5	F	S373	**5N766**	1809.00	**1162.00**	385.0
	1760	284T	230/460	60.0/30.0	1.15	91.0	F	S374	**5N767**	1652.00	**1060.00**	396.0
	1175	324T	460	34.7	1.15	89.5	F	S450	**4N723**	3234.00	**2078.00**	575.0
30	3530	286TS	230/460	70.0/35.0	1.15	89.5	F	S376	**5N669**	2114.00	**1356.00**	500.0
	1750	286T	230/460	70.0/35.0	1.15	91.0	F	S377	**5N670**	1925.00	**1235.00**	500.0
	1175	326T	460	41.0	1.15	90.2	F	S452	**4N724**	3355.00	**2156.00**	586.0

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3-PHASE SEVERE DUTY MOTORS

GE 3-PHASE SEVERE DUTY MOTORS (Cont.)

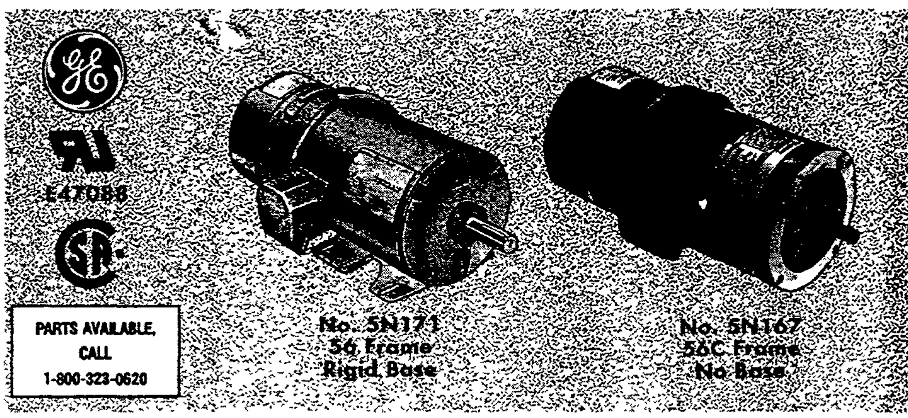
HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
40	3560	324TS	460	50.9	1.15	89.5	F	S406	**4N691**	$2564.00	**$1646.00**	558.0
	1765	324T	230/460	99.8/49.9	1.15	90.2	F	S380	**4N708**	2491.00	**1598.00**	570.0
	1765	324T	460	49.9	1.15	90.2	F	S423	**4N710**	2491.00	**1598.00**	578.0
	1185	364T	460	53.4	1.15	90.2	F	S454	**4N725**	5497.00	**2883.00**	818.0
50	3545	326TS	460	60.7	1.15	90.2	F	S407	**4N692**	3318.00	**2132.00**	560.0
	1770	326T	230/460	123.8/60.9	1.15	91.7	F	S382	**4N709**	2667.00	**1711.00**	641.0
	1770	326T	460	61.9	1.15	91.7	F	S425	**4N711**	2667.00	**1711.00**	635.0
	1775	326T	575	50.8	1.15	91.7	F	S3293	**4N706**	2667.00	**1711.00**	622.0
	1185	365T	460	66.3	1.15	90.2	F	S456	**4N726**	6321.00	**3171.00**	818.0
60	3555	364TS	230/460	149.4/74.7	1.15	88.5	F	S383	**4N767**	5456.00	**3505.00**	885.0
	1775	364T	230/460	144.0/77.0	1.15	91.7	F	S384	**4N768**	4374.00	**2809.00**	855.0
75	3560	365TS	230/460	176.6/83.3	1.15	89.5	F	S385	**4N769**	6464.00	**4154.00**	905.0
	1780	365T	230/460	178.8/89.4	1.15	91.7	F	S386	**4N770**	5429.00	**3487.00**	965.0
	1780	365T	575	73.2	1.15	91.7	F	S3303	**4N707**	5429.00	**3487.00**	921.0
	1185	405T	460	95.3	1.15	93.0	F	S460	**4N727**	8226.00	**4243.00**	1149.0
100	3560	405TS	460	112.0	1.15	91.0	F	S410	**4N693**	7415.00	**4764.00**	1153.0
	1780	405T	460	112.0	1.15	93.0	F	S431	**4N712**	7037.00	**4519.00**	1218.0
	1185	444T	460	115.0	1.15	92.4	F	S462	**4N728**	8684.00	**6245.00**	1472.0
125	1785	444T	460	140.0	1.15	93.0	F	S433	**4N713**	10083.00	**6477.00**	1592.0
	1190	445T	460	147.0	1.15	93.6	F	S464	**4N729**	12505.00	**7462.00**	1798.0
150	3570	445TS	460	165.0	1.15	92.4	F	S412	**4N694**	11731.00	**7540.00**	1552.0
	1785	445T	460	165.0	1.15	93.0	F	S435	**4N714**	11379.00	**7260.00**	1767.0
	1190	445T	460	173.0	1.15	93.0	F	S466	**4N730**	13721.00	**7841.00**	1900.0
200	3575	445TS	460	214.0	1.15	93.0	F	S413	**4N695**	13329.00	**8566.00**	1808.0
	1785	445T	460	221.0	1.15	94.5	F	S437	**4N715**	13107.00	**8422.00**	1880.0
	1190	449T	460	229.0	1.15	94.1	F	S468	**4N731**	17435.00	**11206.00**	2300.0
250	1780	449T	460	273.0	1.15	95.0	F	S439	**4N716**	16648.00	**10699.00**	2300.0

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, prop. thermal protection, and other motor selection information.

GE BRAND, BRAKE MOTORS

- **230/460V with dual voltage brake coil**

Typical Uses: For applications requiring braking and holding action at standstill such as conveyors, index mechanisms, machine tools, and commercial and industrial overhead doors.
Bearings: Ball
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE



HP	Nameplate RPM	NEMA Frame	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Brake Rating Ft.-Lbs.	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
RIGID BASE													
1/2	1725	56	TEFC	230/460	2.4/1.2	1.0	3	B	K456	**5N171**	$511.00	**$309.75**	30.0
	1140	56	TEFC	230/460	2.6/1.3	1.0	3	B	K526	**5N172**	705.00	**427.25**	27.0
3/4	1725	56	TEFC	230/460	3.0/1.5	1.0	3	B	K458	**5N173**	597.00	**361.75**	33.0
1	1725	56	TEFC	230/460	3.8/1.9	1.0	3	B	K459	**5N174**	693.00	**420.00**	36.0
	1725	143T	TEFC	230/460	3.8/1.9	1.0	3	B	K461	**5N175**	693.00	**420.00**	38.0
2	1725	145T	TEFC	208-230/460	6.1-6.2/3.1	1.0	6	B	K464	**5N176**	798.00	**483.75**	38.0
C-FACE, NO BASE													
1/2	1725	56C	TEFC	230/460	2.4/1.2	1.0	3	B	K457	**5N167**	523.00	**317.00**	31.0
3/4	1725	56C	TEFC	230/460	3.0/1.5	1.0	3	B	K460	**5N168**	611.00	**370.25**	34.0
1	1725	143TC	TEFC	230/460	3.8/1.9	1.0	3	B	K462	**5N169**	706.00	**428.00**	37.0
2	1725	145TC	TEFC	208-230/460	6.1-6.2/3.1	1.0	6	B	K466	**5N170**	813.00	**492.75**	47.0

3-PHASE TEFC MOTORS

- NEMA service factor of 1.25 with Class B temperature rise provides increased safety margin for intermittent overloading or fluctuating (high/low) voltage conditions
- Dual voltage
- NEMA Design B
- Oversize conduit box
- 143T/145T frame motors include C-face at no additional cost
- Mounting feet can be repositioned for NEMA C-face installation (with optional kit) or removed for footless installation on 182T frame and above
- C-face, canopy cap, and brake kits, available below, increase mechanical flexibility

Typical Uses: Cooler, more efficient performance on pumps, blowers, air compressors, and farm equipment operating in noncombustible dusty, dirty areas.

Bearings: Double-shielded, prelubricated ball

Mounting: Rigid removable base on 180 frame and above; rigid welded base on 140 frame

Insulation Class: F

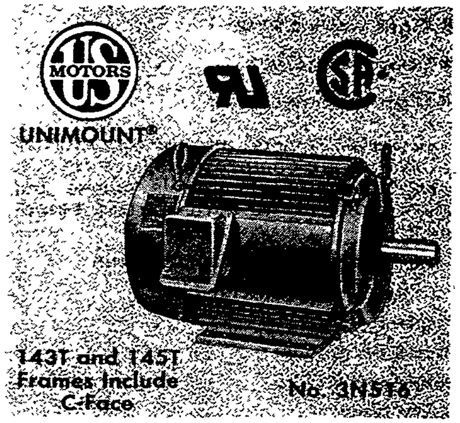
Ambient: 40°C

Duty: Continuous

Rotation: CW/CCW

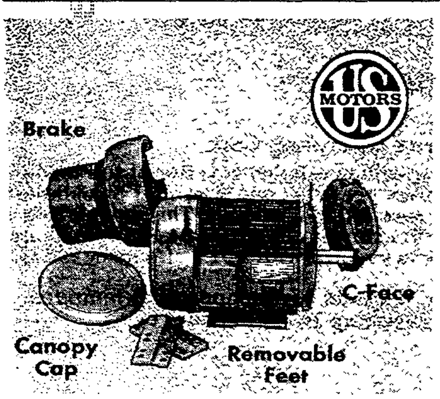
Finish: Gray enamel

Brand: USEM



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame†	USEM Model	Stock No.	List	Each	Shpg. Wt.
1	1745	143TC	230/460	3.6/1.8	1.25	80.0	RS	F029	**3N509**	$217.00	**$157.50**	30.0
	1145	145TC	230/460	4.2/2.1	1.25	77.0	RS	F031	**3N512**	271.00	**196.75**	35.0
1½	3450	143TC	230/460	4.2/2.1	1.25	78.5	RS	F033	**3N513**	223.00	**162.00**	29.0
	1730	145TC	230/460	5.0/2.5	1.25	80.0	RS	F036	**3N510**	241.00	**175.00**	30.0
	1160	182T	230/460	5.8/2.9	1.25	78.5	AL	A885	**3N517**	290.00	**210.25**	60.0
2	3460	145TC	230/460	5.4/2.7	1.25	80.0	RS	F038	**3N514**	259.00	**188.00**	30.0
	1725	145TC	230/460	6.2/3.1	1.25	82.5	RS	F041	**3N511**	265.00	**192.50**	31.0
	1165	184T	230/460	7.2/3.6	1.25	80.0	AL	A893	**3N518**	320.00	**232.00**	70.0
3	3490	182T	230/460	8.6/4.3	1.25	80.0	AL	A896	**3N519**	305.00	**221.50**	49.0
	1750	182T	230/460	9.0/4.5	1.25	84.0	AL	A899	**3N515**	296.00	**214.75**	54.0
	1160	213T	230/460	10.6/5.3	1.25	82.5	AL	A901	**3N523**	424.00	**307.25**	85.0
5	3495	184T	230/460	12.8/6.4	1.25	85.5	AL	A904	**3N520**	377.00	**273.50**	70.0
	1740	184T	230/460*	13.6/6.8	1.25	85.5	AL	A907	**3N516**	344.00	**249.50**	63.0
	1165	215T	230/460	16.0/8.0	1.25	85.5	AL	A909	**3N524**	610.00	**442.25**	133.0
7½	3510	213T	230/460	19.2/9.6	1.25	[illegible]	AL	A912	**3N525**	494.00	**358.25**	85.0
	1745	213T	230/460	20.6/10.3	1.25	[illegible]	AL	A915	**3N521**	494.00	**358.25**	100.0
10	3500	215T	230/460	24.4/12.2	1.25	88.5	AL	A920	**3N526**	592.00	**429.25**	130.0
	1755	215T	230/460	27.2/13.6	1.25	87.5	AL	A923	**3N522**	614.00	**445.25**	123.0
15	1765	254T	230/460	39.2/19.6	1.25	89.5	AL	A933	**3N762**	811.00	**588.00**	202.0
20	1765	256T	230/460	49.6/24.8	1.25	89.5	AL	A939	**3N763**	1025.00	**743.00**	235.0
25	1765	284T	230/460*	63.0/31.5	1.25	91.0	AL	B522	**3N764**	1230.00	**891.50**	258.0
30	1765	286T	230/460*	76.2/38.1	1.25	91.0	AL	B530	**3N765**	1494.00	**1084.00**	270.0

*) Operable at 60 Hz only; all others are suitable for 190/380V for 50 Hz operation at 1.0 service factor.
†) RS = Rolled Steel construction; AL = Aluminum construction.



CONVERSION KITS FOR ABOVE MOTORS

NEMA Frame	C-FACE KITS Stock No.	List	Each	Shpg. Wt.	CANOPY CAP KITS Stock No.	List	Each	Shpg. Wt.
143T to 145T	—	—	—	—	**1A770**	$20.00	**$14.51**	0.9
182T to 184T	**1A768**	$45.00	**$32.65**	2.0	**1A771**	25.00	**18.14**	1.1
213T to 215T	**1A769**	55.00	**39.95**	3.0	**1A772**	30.00	**21.76**	1.4
254T to 256T	**4A329**	80.00	**58.05**	9.0	—	—	—	—
284T to 286T	**4A330**	90.00	**65.20**	25.0	—	—	—	—

NOMINAL STATIC TORQUE BRAKES

For 143T and 145T frames. Manual release lever, 13" leads. 4⁷⁄₁₆" overall length, 6⁵⁄₈" diameter. Gray. Dayton brand.

Nominal Static Torque Ft.-Lbs.	Stock No.	List	Each	Shpg. Wt.
3	**3M360**	$253.00	**$177.00**	8.0
6	**2Z871**	325.00	**227.25**	8.0

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

Modifications & Service Available at Most Locations

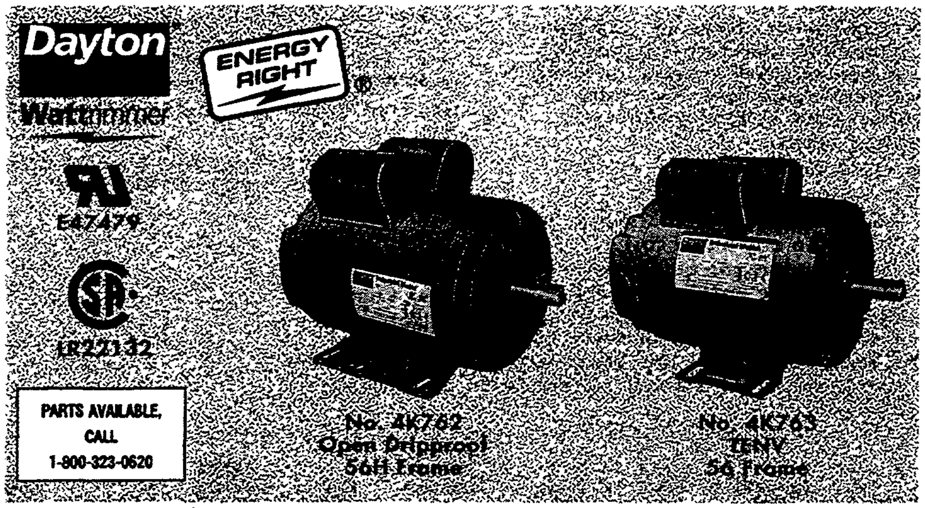
INDUSTRIAL MOTORS	HIGH EFFICIENCY CAPACITOR-START MOTORS

HIGH EFFICIENCY CAPACITOR-START MOTORS

- **Rigid welded base**
- **Copper windings**
- **High efficiency**

Typical Uses: General purpose applications including air compressors, conveyors, fans, blowers, machine tools, pumps, and other moderate to hard-starting equipment.

Type: Capacitor-start, capacitor-run
Bearings: Double-shielded ball
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



OPEN DRIPPROOF

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1½	1725	56H	None	115/230	14.0/7.0	1.15	B	4K762	$339.00	$259.75	36.0
	1725	56H	Auto	115/230	14.0/7.0	1.15	B	4K106	341.00	261.00	36.0
2	1740	56H	None	115/230	19.4/9.7	1.15	B	4K774	384.00	293.75	42.0
	1740	56H	Auto	115/230	19.4/9.7	1.15	B	4K107	390.00	298.50	41.0

TENV AND TEFC

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Ins. Class	Stock No.	List	Each	Shpg. Wt.
1/3	1725	56	None	TENV	115/230	3.8/1[illegible]	1.0	B	4K763	$189.00	$144.50	23.0
	1725	56	Auto	TENV	115/230	3.8/1.9	1.0	B	4K095	197.00	150.75	23.0
1/2	1725	56	None	TENV	115/230	[illegible].8	1.0	B	4K764	223.00	170.75	26.0
	1725	56	Auto	TENV	115/230	5.[illegible].8	1.0	B	4K096	242.00	185.50	28.0
3/4	1725	56	None	TENV	115/230	7.6/3.8	1.0	B	4K765	266.00	203.50	35.0
	1725	56	Auto	TENV	115/230	7.6/3.8	1.0	B	4K097	294.00	225.25	37.0
1	1725	56H	None	TEFC	115/230	9.2/4.6	1.0	B	4K766	304.00	232.75	38.0
	1725	56H	Auto	TEFC	115/230	9.2/4.6	1.0	B	4K098	331.00	253.25	38.0
1½	1725	56H	None	TEFC	115/230	14.0/7.0	1.0	B	4K767	346.00	265.00	41.0
	1725	56H	Auto	TEFC	115/230	14.0/7.0	1.0	B	4K099	392.00	300.00	41.0

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

PREMIUM EFFICIENCY vs. STANDARD EFFICIENCY

$$\text{Annual Savings} = 0.746 \times HP \times L \times C \times N \left(\frac{100}{E_1} - \frac{100}{E_2}\right)$$

HP = Motor Horsepower
L = Percent Load Divided by 100
C = Energy Cost, Dollars Per Kilowatt Hour
N = Running Time, Hours Per Year
E_1 = Efficiency (%) of Standard Efficiency Motor
E_2 = Efficiency (%) of Premium Efficiency Motor

Lower Operating Cost:

If you operate a 25 HP premium efficiency motor at full load for 24 hours a day (8760 hours per year) and your cost per kilowatt hour is 9 cents, **you can save $532.00 annually.** This comparison is based on a premium efficiency motor with a 94.1 efficiency rating vs. a standard efficiency motor with a 91.0 efficiency rating.

Increased efficiency leads to lower operating temperatures, resulting in longer life.

WIDE SELECTION OF MOTORS IN THIS CATALOG

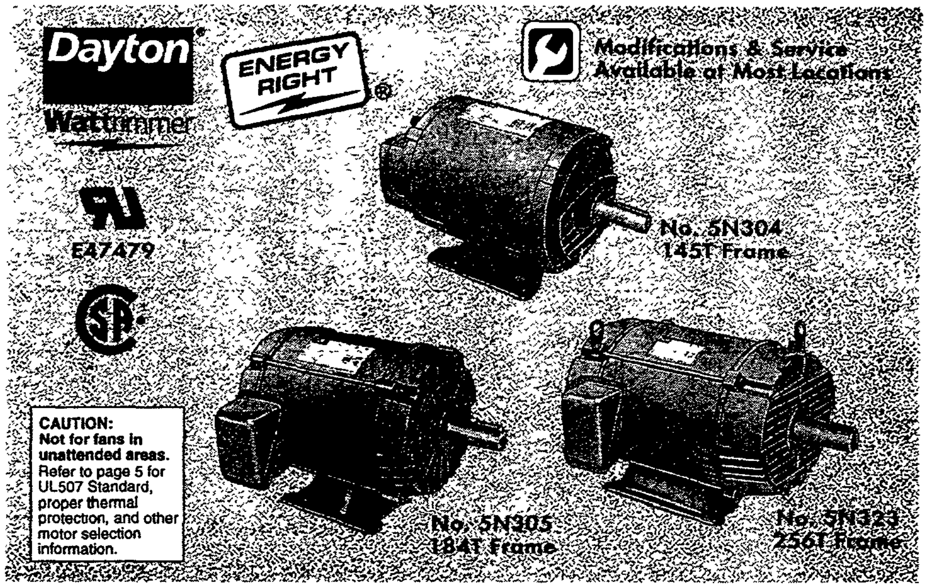
Including capacitor-staart, split-phase, three-phase, PSC and shaded pole, belt-drive fan and blower, direct-drive fan and blower, farm duty, and pump types. See Index under Motors.

3-PHASE OPEN DRIPPROOF PREMIUM EFFICIENCY MOTORS

- Premium efficiency motors qualify for utility rebate programs
- Increased efficiency leads to lower operating cost
- 100% copper windings
- Motors run cool for increased life
- Two-year warranty
- 1.15 to 1.35 service factors provide a reserve margin for intermittent overloading or fluctuating (high/low) voltage conditions

Typical Uses: Premium efficiency performance on pumps, fans, blowers, and other moderate to hard-starting equipment.

Bearings: Double-shielded ball
Mounting: Rigid welded base
Thermal Protection: None
Windings: Copper
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame†	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1/4	1725	56	230/460	0.8/0.4	1.35	77.0	RS	B	3N639	$149.00	**$113.90**	21.0
1/3	1725	56	230/460	1.1/0.55	1.35	80.0	RS	B	3N640	163.00	**124.65**	21.0
1/2	1725	56	230/460	1.6/0.8	1.25	81.5	RS	B	3N641	191.00	**146.05**	24.0
3/4	1725	56	230/460	2.3/1.15	1.25	81.5	RS	B	3N642	213.00	**163.00**	26.0
1	1725	56	230/460	3.1/1.55	1.15	82.5	RS	B	3N643	224.00	**171.50**	29.0
	1750	143T	208-230/460	3.3-3.2/1.6	1.15	85.5	RS	B	5N300	211.00	**145.60**	40.0
	1150	145T	208-230/460	3.9-4.0/2.0	1.15	81.5	RS	B	5N301	271.00	**187.25**	45.0
1½	1725	56H	230/460	4.2/2.1	1.15	85.5	RS	B	3N644	262.00	**200.75**	36.0
	1745	145T	208-230/460	4.8-4.6/2.3	1.15	[illegible]	RS	B	5N302	230.00	**159.00**	45.0
	1170	182T	230/460*	5.0/2.5	1.15	[illegible]	RS	B	5N303	298.00	**205.75**	80.0
2	1725	56H	230/460	5.7/2.85	1.15	84.0	RS	B	3N645	264.00	**202.25**	39.0
	1735	145T	208-230/460	6.1-5.8/2.9	1.15	86.5	RS	B	5N304	254.00	**175.50**	55.0
	1170	184T	230/460*	6.6/3.3	1.15	87.5	RS	B	5N305	383.00	**264.75**	65.0
3	1765	182T	230/460*	8.2/4.1	1.15	90.2	RS	B	5N306	264.00	**182.25**	65.0
	1170	213T	230/460*	9.2/4.6	1.15	89.5	RS	B	5N307	514.00	**354.75**	120.0
5	3510	182T	230/460*	12.6/6.3	1.15	89.5	RS	B	5N308	370.00	**245.50**	75.0
	1755	184T	230/460*	13.4/6.7	1.15	89.5	RS	B	5N309	370.00	**245.50**	70.0
	1165	215T	230/460*	14.8/7.4	1.15	89.5	RS	B	5N310	643.00	**426.25**	135.0
7½	3495	184T	230/460*	18.8/9.4	1.15	89.5	RS	B	5N311‡	533.00	**353.50**	80.0
	1760	213T	230/460*	19.0/9.5	1.15	91.7	RS	B	5N312	538.00	**356.75**	115.0
	1180	254T	230/460*	20.2/10.1	1.15	91.7	RS	B	5N313‡	839.00	**556.50**	220.0
10	3500	213T	230/460*	25.0/12.5	1.15	90.2	RS	B	5N314	665.00	**441.25**	110.0
	1755	215T	230/460*	25.4/12.7	1.15	91.7	RS	B	5N315	650.00	**431.00**	140.0
	1175	256T	230/460*	26.0/13.0	1.15	91.7	RS	B	5N316‡	981.00	**650.00**	250.0
15	3490	215T	230/460*	36.8/18.4	1.15	91.0	RS	B	5N317	842.00	**558.50**	135.0
	1770	254T	230/460*	38.0/19.0	1.15	93.0	RS	B	5N318	864.00	**573.00**	205.0
	1180	284T	230/460*	38.0/19.8	1.15	92.4	RS	B	5N319	1263.00	**837.50**	295.0
20	3545	254T	230/460*	48.0/24.0	1.15	92.4	RS	B	5N320‡	993.00	**658.50**	195.0
	1770	256T	230/460*	49.6/24.8	1.15	93.6	RS	B	5N321	1055.00	**699.50**	275.0
	1180	286T	230/460*	50.0/25.0	1.15	92.4	RS	B	5N322	1549.00	**1027.00**	320.0
25	3545	256T	230/460*	59.0/29.5	1.15	93.0	RS	B	5N323‡	1212.00	**803.50**	240.0
	1775	284T	230/460*	60.0/30.0	1.15	94.1	RS	B	5N324	1226.00	**812.50**	335.0
	1180	324T	230/460*	60.0/30.0	1.15	93.6	RS	B	5N325	1838.00	**1218.00**	460.0
30	3560	284TS	230/460*	69.4/34.7	1.15	93.6	RS	B	5N326	1446.00	**958.50**	335.0
	1775	286T	230/460*	71.0/35.5	1.15	94.1	RS	B	5N327	1425.00	**944.50**	395.0
	1180	326T	230/460	71.4/35.7	1.15	93.6	RS	B	5N328	2103.00	**1395.00**	505.0
40	3565	286TS	230/460*	92.0/46.0	1.15	94.1	RS	B	5N329	1850.00	**1227.00**	390.0
	1775	324T	230/460	94.0/47.0	1.15	94.5	RS	B	5N330	1772.00	**1174.00**	450.0
	1190	364T	460	47.1	1.15	94.5	CI	B	5N331	3091.00	**2049.00**	695.0
50	3560	324TS	230/460	120.0/60.0	1.15	93.6	RS	B	5N332	2199.00	**1458.00**	420.0
	1775	326T	230/460	117.0/58.5	1.15	94.5	RS	B	5N333	2066.00	**1370.00**	485.0
	1185	365T	460	58.9	1.15	94.5	CI	B	5N334	3610.00	**2393.00**	730.0

(*) Usable on 200V at 1.0 service factor. (†) RS = Rolled Steel construction, CI = Cast-Iron construction.
(‡) NEMA design A; all others NEMA design B.

CONTINUED ON NEXT PAGE

3-PHASE OPEN DRIPPROOF PREMIUM EFFICIENCY MOTORS

DAYTON WATTRIMMER PREMIUM EFFICIENCY MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame†	Insulation Class	Stock No.	List	Each	Shpg. Wt.
60	3555	326TS	230/460	140.0/70.0	1.15	94.1	RS	B	**5N335**†	$2500.00	**$1657.00**	545.0
	1780	364T	230/460	142.0/71.0	1.15	95.4	CI	B	**5N336**	2532.00	**1678.00**	665.0
	1185	404T	460	70.2	1.15	95.0	CI	B	**5N337**	4212.00	**2791.00**	960.0
75	3560	364TS	230/460	176.0/88.0	1.15	94.1	CI	B	**5N338**	3333.00	**2210.00**	625.0
	1785	365T	230/460	174.0/87.0	1.15	95.0	CI	B	**5N339**	3084.00	**2044.00**	755.0
	1185	405T	460	87.7	1.15	95.0	CI	B	**5N340**	5015.00	**3324.00**	1035.0
100	3560	365TS	230/460	230.0/115.0	1.15	94.5	CI	B	**5N341**	4378.00	**2903.00**	700.0
	1780	404T	230/460	230.0/115.0	1.15	95.8	CI	B	**5N342**	3933.00	**2606.00**	955.0
	1185	444T	460	124.0	1.15	95.4	CI	B	**5N343**	6352.00	**4210.00**	1395.0
125	3560	404TS	460	140.0	1.15	95.0	CI	B	**5N344**	5447.00	**3611.00**	930.0
	1780	405T	460	141.0	1.15	95.4	CI	B	**5N345**	4709.00	**3121.00**	1065.0
	1185	445T	460	155.0	1.15	95.4	CI	B	**5N346**	7800.00	**5170.00**	1530.0
150	3555	405TS	460	168.0	1.15	94.5	CI	B	**5N347**	6626.00	**4393.00**	975.0
	1785	444T	460	172.0	1.15	96.2	CI	B	**5N348**‡	6801.00	**4508.00**	1395.0
	1185	445T	460	190.0	1.15	95.8	CI	B	**5N349**	8647.00	**5731.00**	1670.0
200	3555	444TS	460	234.0	1.15	95.0	CI	B	**5N350**	10307.00	**6835.00**	1290.0
	1780	445T	460	237.0	1.15	96.2	CI	B	**5N351**	8592.00	**5696.00**	1525.0
	1185	447T	460	250.0	1.15	95.4	CI	B	**5N352**	10608.00	**7032.00**	1940.0
250	3560	445TS	460	288.0	1.15	95.4	CI	B	**5N353**	12323.00	**8172.00**	1380.0
	1780	447T	460	293.0	1.15	96.2	CI	B	**5N354**	12701.00	**8420.00**	2095.0

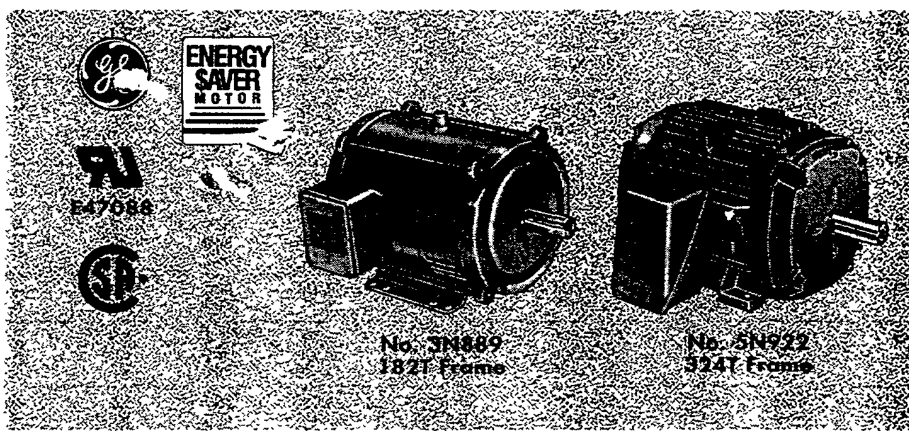
(†) RS = Rolled Steel construction; CI = Cast-Iron construction. (‡) NEMA design A; all others are NEMA design B.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND, PREMIUM EFFICIENCY

- **Qualify for efficiency rebates**
- **Two-year warranty**

Typical Uses: Premium efficiency performance on pumps, fans, blowers, and other moderate to hard-starting equipment in dry, clean, well-ventilated areas.
Bearings: Single-shielded ball
Thermal Protection: None
Insulation Class: B (except No. 3N922 is F)
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Beige or gray
Brand: GE Energy $aver



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame‡	Base	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/2	1725	56	208-230/460	1.8-1.8/0.9	1.25	75.2*	RS	Rigid	E12D4	**3N883**	$291.00	**$176.50**	22.0
3/4	1725	56	208-230/460	2.5-2.4/1.2	1.25	78.0*	RS	Rigid	E34D4	**3N884**	325.00	**197.25**	25.0
1	1725	56	208-230/460	3.2-3.0/1.5	1.15	78.3*	RS	Rigid	E10D4	**3N885**	316.00	**191.75**	35.0
	1725	143T	208-230/460	3.2-3.0/1.5	1.15	84.0	RS	Rigid	E10D2	**3N886**	316.00	**191.75**	40.0
1½	1725	145T	208-230/460	4.6-4.2/2.1	1.15	84.0	RS	Rigid	E15D4	**3N887**	291.00	**176.50**	44.0
	1160	182T	230/460	4.8/2.4	1.15	85.5	CI	Rigid	E8707	**3N922**	354.00	**239.00**	54.0
2	1725	145T	208-230/460	6.2-5.8/2.9	1.15	84.0	RS	Rigid	E20D4	**3N888**	372.00	**225.75**	49.0
	1165	184T	230/460	6.4/3.2	1.15	86.5	CI	Rigid	E8710	**3N923**	438.00	**272.00**	82.0
3	1750	182T	230/460	8.0/4.0	1.15	87.5	CI	Rigid	E820	**3N889**	361.00	**223.25**	78.0
	1750	182T	200	9.2	1.15	87.5	CI	Rigid	E8714	**4N860**	361.00	**223.25**	80.0
	1750	182T	575	3.2	1.15	87.5	CI	Rigid	E8635	**5N618**	361.00	**214.00**	70.0
	1160	213T	230/460	8.8/4.4	1.15	87.5	CI	Rigid	E8011	**3N924**	539.00	**363.50**	150.0
5	3460	182T	230/460	12.2/6.1	1.15	87.5	CI	Rigid	E821	**3N906**	493.00	**305.50**	82.0
	1740	184T	230/460	12.6/6.3	1.15	88.5	CI	Rigid	E822	**3N890**	453.00	**305.50**	80.0
	1740	184T	200	14.5	1.15	88.5	CI	Rigid	E8716	**4N861**	493.00	**305.50**	85.0
	1740	184T	575	5.0	1.15	88.5	CI	Rigid	E8808	**5N622**	493.00	**292.75**	76.0
	1155	215T	230/460	14.2/7.1	1.15	88.5	CI	Rigid	E8012	**3N925**	735.00	**454.75**	156.0

(*) Average efficiency, not NEMA nominal efficiency.
(†) Usable on 200V at 1.0 service factor. (‡) RS = Rolled Steel construction.

CONTINUED ON NEXT PAGE

3-PHASE OPEN DRIPPROOF PREMIUM EFFICIENCY MOTORS

GE PREMIUM EFFICIENCY MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame‡	Base	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
7½	3450	184T	230/460	18.0/9.0	1.15	88.5	CI	Rigid	E823	3N907	$609.00	**$378.50**	87.0
	1755	213T	230/460	18.4/9.2	1.15	91.0	CI	Rigid	E830	3N891	564.00	**380.50**	145.0
	1755	213T	200	21.2	1.15	91.0	CI	Rigid	E8729	4N862	615.00	**380.50**	148.0
	1755	213T	575	7.4	1.15	91.0	CI	Rigid	E8640	5N624	615.00	**364.25**	112.0
	1165	254T	230/460	20.0/10.0	1.15	89.5	CI	Rigid	E8013	3N926	878.00	**592.50**	268.0
10	3490	213T	230/460	24.0/12.0	1.15	90.2	CI	Rigid	E850	3N908	699.00	**471.50**	152.0
	1750	215T	230/460	23.6/11.8	1.15	91.0	CI	Rigid	E831	3N892	682.00	**460.00**	156.0
	1750	215T	200	27.1	1.15	91.0	CI	Rigid	E8734	4N855	743.00	**460.00**	156.0
	1750	215T	575	9.4	1.15	91.0	CI	Rigid	E8643	5N627	743.00	**440.50**	122.0
	1170	256T	230/460	26.4/13.2	1.15	90.2	CI	Rigid	E8014	3N927	1121.00	**695.00**	280.0
15	3475	215T	230/460	36.4/18.2	1.15	90.2	CI	Rigid	E851	3N909	884.00	**596.50**	174.0
	1755	254T	230/460	35.6/17.8	1.15	91.7	CI	Rigid	E832	3N893	987.00	**611.50**	292.0
	1755	254T	200	40.9	1.15	91.7	CI	Rigid	E8744	4N856	987.00	**611.50**	292.0
	1755	254T	575	14.2	1.15	91.7	CI	Rigid	E8646	5N630	987.00	**585.00**	255.0
	1175	284T	230/460	37.6/18.8	1.15	92.4	CI	Rigid	E8015	3N928	1471.00	**895.50**	426.0
20	3520	254T	230/460	45.6/22.8	1.15	91.0	CI	Rigid	E852	3N910	1135.00	**702.50**	258.0
	1755	256T	230/460	46.6/23.3	1.15	92.4	CI	Rigid	E833	3N894	1206.00	**747.50**	320.0
	1755	256T	200	53.6	1.15	92.4	CI	Rigid	E8754	4N857	1206.00	**747.50**	318.0
	1755	256T	575	18.6	1.15	92.4	CI	Rigid	E8649	5N633	1206.00	**747.50**	307.0
	1175	286T	230/460	49.6/24.8	1.15	92.4	CI	Rigid	E8017	3N929	1627.00	**1098.00**	471.0
25	3525	256T	230/460	56.0/28.0	1.15	92.4	CI	Rigid	E853	3N911	1385.00	**859.00**	298.0
	1760	284T	230/460	59.6/29.8	1.15	93.6	CI	Rigid	E834	3N895	1401.00	**868.00**	430.0
	1760	284T	200	68.5	1.15	93.6	CI	Rigid	E8757	4N858	1401.00	**868.00**	426.0
	1760	284T	575	23.8	1.15	93.6	CI	Rigid	E8652	5N636	1401.00	**868.00**	395.0
	1175	324T	230/460	67.6/33.8	1.15	93.6	CI	Rigid	E9019	5N920	2371.00	**1521.00**	600.0
30	3540	284TS	230/460	67.0/33.5	1.15	93.0	CI	Rigid	E854	3N912	1653.00	**1024.00**	406.0
	1765	286T	230/460	70.6/35.3	1.15	93.6	CI	Rigid	E835	3N896	1629.00	**1010.00**	430.0
	1765	286T	200	81.2	1.15	93.6	CI	Rigid	E8763	4N859	1629.00	**1010.00**	428.0
	1765	286T	575	28.2	1.15	93.6	CI	Rigid	E8654	5N638	1629.00	**1010.00**	450.0
	1180	326T	230/460	80.6/40.3	1.15	93.6	CI	Rigid	E9022	5N921	2704.00	**1734.00**	610.0
40	3540	286TS	230/460	88.0/44.0	1.15	93.6	CI	Rigid	E855	3N913	1942.00	**1310.00**	404.0
	1775	324T	230/460	98.0/49.0	1.15	95.0	CI	Rigid	E936	5N922	2289.00	**1467.00**	610.0
	1185	364T	460	52.5	1.15	94.5	CI	Rigid	E9024	5N923	3709.00	**2377.00**	1000.0
50	3540	324TS	230/460	122.2/61.1	1.15	[illegible]	CI	Rigid	E956	5N924	2827.00	**1814.00**	570.0
	1775	326T	230/460	122.6/61.3	1.15	95.[illegible]	CI	Rigid	E937	5N925	2597.00	**1666.00**	615.0
	1185	365T	460	65.7	1.15	94.5	CI	Rigid	E9026	5N926	4126.00	**2647.00**	840.0
60	3540	326TS	230/460	143.4/71.7	1.15	94.5	CI	Rigid	E957	5N927	3214.00	**2062.00**	575.0
	1780	364T	230/460	145.6/72.8	1.15	95.4	CI	Rigid	E9381	5N928	3443.00	**2208.00**	890.0
	1190	404T	460	68.4	1.15	95.0	CI	Rigid	E9029	5N929	5054.00	**3239.00**	1490.0
75	3555	364TS	230/460	181.4/90.7	1.15	95.0	CI	Rigid	E958	5N930	4285.00	**2748.00**	910.0
	1780	365T	230/460	180.8/90.4	1.15	95.4	CI	Rigid	E9391	5N931	3877.00	**2486.00**	885.0
	1190	405T	460	85.5	1.15	95.4	CI	Rigid	E9032	5N932	6018.00	**3860.00**	1250.0
100	3550	365TS	230/460	234.0/117.0	1.15	95.0	CI	Rigid	E959	5N933	5179.00	**3322.00**	940.0
	1790	404T	230/460	226.0/113.0	1.15	95.4	CI	Rigid	E9401	5N934	5097.00	**3268.00**	1294.0
	1790	404TS	230/460	226.0/113.0	1.15	95.4	CI	Rigid	E9257	5N935	5250.00	**3365.00**	1286.0
	1190	444T	460	112.0	1.15	95.4	CI	Rigid	E9034	5N936	7622.00	**4885.00**	1980.0
125	3570	404TS	460	137.0	1.15	95.0	CI	Rigid	E9501	5N937	6941.00	**4451.00**	1470.0
	1780	405T	460	134.0	1.15	95.4	CI	Rigid	E941	5N938	5920.00	**3797.00**	1250.0
	1190	445T	460	140.0	1.15	95.4	CI	Rigid	E9036	5N939	9360.00	**6002.00**	2050.0
150	3565	405TS	460	165.0	1.15	94.5	CI	Rigid	E9502	5N940	8519.00	**5465.00**	1470.0
	1790	444T	460	168.0	1.15	96.2	CI	Rigid	E942	5N941	7889.00	**5057.00**	2020.0
	1790	444TS	460	168.0	1.15	96.2	CI	Rigid	E9259	5N942	8142.00	**5219.00**	2020.0
	1190	445T	460	171.0	1.15	95.8	CI	Rigid	E9039	5N943	10673.00	**6845.00**	2080.0
200	3575	444TS	460	217.0	1.15	95.0	CI	Rigid	E9503	5N944	14724.00	**9449.00**	1990.0
	1785	445T	460	215.0	1.15	95.8	CI	Rigid	E943	5N945	10384.00	**6660.00**	2050.0
	1190	445T	460	232.0	1.15	95.4	CI	Rigid	E9042	5N946	13357.00	**8570.00**	2060.0
250	3575	445TS	460	278.0	1.15	95.4	CI	Rigid	E9504	5N947	17604.00	**11299.00**	1980.0
	1790	449T	460	274.0	1.15	96.2	CI	Rigid	E9272	5N948	16148.00	**10358.00**	2830.0

(†) Usable on 200V at 1.0 service factor.
(‡) RS = Rolled Steel construction; CI = Cast-Iron construction.

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

Modifications & Service Available at Most Locations

3-PHASE TEFC PREMIUM EFFICIENCY MOTORS

- **Premium efficiency motors qualify for utility rebate programs**
- **Increased efficiency leads to lower operating cost**
- **Motors run cooler resulting in increased life**
- **100% copper windings**
- **Two-year warranty**

Typical Uses: Premium efficiency performance on air compressors, conveyors, fans, blowers, machine tools, pumps, and other moderate to hard-starting equipment. For use in **noncombustible**, dusty, dirty environments where 3-phase power is available.

Bearings: Double-shielded ball on 56 thru 360 frame. Open ball with filler caps on 400 thru 440 frame. Regreasable 180 thru 440 frame.

Mounting: Rigid welded or solid base

Thermal Protection: None

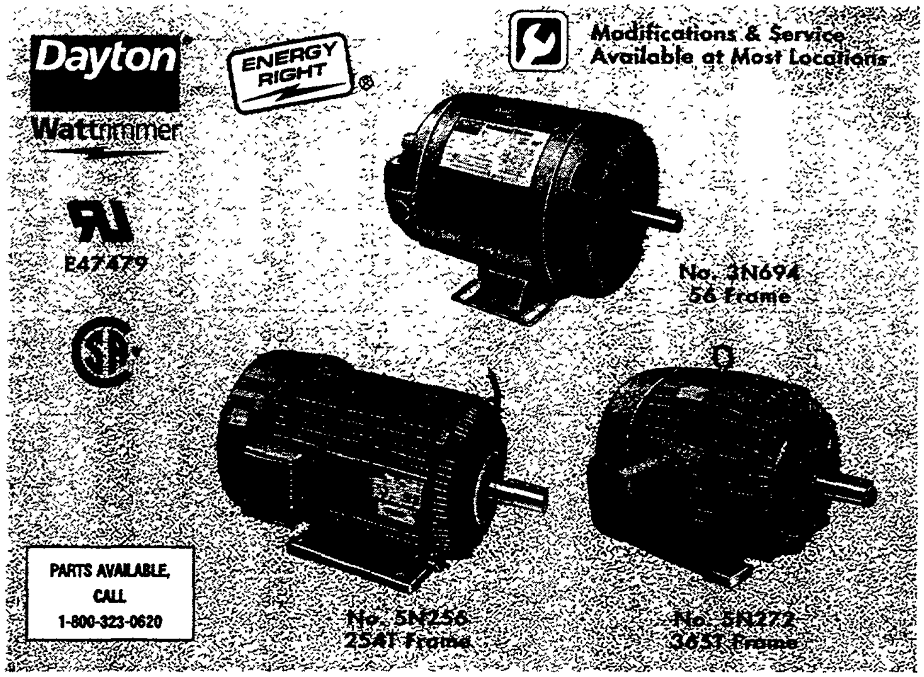
Windings: Copper

Ambient: 40°C

Duty: Continuous

Finish: Gray

Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Rotation-Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate	Service Factor	NEMA Nominal Efficiency	Frame#	Ins. Class	Stock No.	List	Each	Shpg. Wt.
1/3	1725	56	CW/CCW	230/460	1.1/0.55	1.0	80.0‡	RS	B	3N694†	$184.00	**$140.65**	23.0
1/2	1725	56	CW/CCW	230/460	1.6/0.8	1.0	81.5‡	RS	B	3N695†	217.00	**166.25**	25.0
3/4	1725	56	CW/CCW	230/460	2.3/1.15	1.0	81.5‡	RS	B	3N696†	234.00	**179.25**	27.0
1	1725	56H	CW/CCW	230/460	3.1/1.55	1.0	82.5‡	RS	B	3N697†	244.00	**187.00**	32.0
	1740	143T	CW/CCW	208-230/460	3.2-3.0/1.5	1.15	86.5	RS	F	5N293	286.00	**204.00**	40.0
	1150	145T	CW/CCW	208-230/460	4.0-3.9/1.95	1.15	82.5	RS	F	5N242	356.00	**253.75**	40.0
1½	3500	143T	CW/CCW	208-230/460	4.5-4.0/2.0	1.15	84.0	RS	F	5N243	293.00	**209.00**	35.0
	1740	56H	CW/CCW	230/460	4.2/2.1	1.0	85.5‡	RS	B	3N698	260.00	**199.00**	34.0
	1740	145T	CW/CCW	208-230/460	4.8-4.5/2.25	1.15	86.5	RS	F	5N294	315.00	**224.50**	40.0
	1170	182T	CW/CCW	230/460*	5.0/2.5	1.15	87.5	AL	F	5N244	380.00	**271.00**	60.0
2	3495	145T	CW/CCW	208-230/460	5.6-5.0/2.5	1.15	86.5	RS	F	5N245	341.00	**243.25**	40.0
	1730	145T	CW/CCW	208-230/460	6.3-5.8/2.5	1.15	86.5	RS	F	5N295	342.00	**243.75**	45.0
	1170	184T	CW/CCW	230/460*	6.6/3.3	1.15	87.5	AL	F	5N246	420.00	**299.25**	70.0
3	3535	182T	CW/CCW	230/460*	8.0/4.0	1.15	88.5	AL	F	5N247	400.00	**285.25**	60.0
	1760	182T	CW/CCW	230/460*	8.1/4.05	1.15	89.5	AL	F	5N296	393.00	**280.25**	60.0
	1170	213T	CW/CCW	230/460*	9.4/4.7	1.15	89.5	AL	F	5N248	559.00	**398.25**	110.0
5	3515	184T	CW/CCW	230/460*	12.6/6.3	1.15	89.5	AL	F	5N249	495.00	**352.75**	70.0
	1750	184T	CW/CCW	230/460*	13.2/6.6	1.15	90.2	AL	F	5N297	448.00	**319.25**	70.0
	1165	215T	CW/CCW	230/460*	14.8/7.4	1.15	90.2	AL	F	5N250	822.00	**586.00**	135.0
7½	3525	213T	CW/CCW	230/460*	18.6/9.3	1.15	91.7	AL	F	5N251	647.00	**461.00**	122.0
	1760	213T	CW/CCW	230/460*	19.0/9.5	1.15	91.7	AL	F	5N298	647.00	**461.00**	110.0
	1175	254T	CW/CCW	230/460*	20.2/10.1	1.15	91.7	AL	F	5N252††	1110.00	**791.00**	200.0
10	3515	215T	CW/CCW	230/460*	24.6/12.3	1.15	91.7	AL	F	5N253	763.00	**544.00**	125.0
	1755	215T	CW/CCW	230/460*	24.8/12.4	1.15	91.7	AL	F	5N299	780.00	**556.00**	135.0
	1170	256T	CW/CCW	230/460*	25.2/12.6	1.15	91.7	AL	F	5N254††	1304.00	**929.00**	250.0
15	3545	254T	CW/CCW	230/460*	36.2/18.1	1.15	91.7	AL	F	5N255††	1047.00	**746.00**	185.0
	1770	254T	CW/CCW	230/460*	38.0/19.0	1.15	93.0	AL	F	5N256	1042.00	**742.50**	240.0
	1175	284T	CW/CCW	230/460*	39.0/19.5	1.15	92.4	CI	F	5N257††	1730.00	**1232.00**	420.0
20	3545	256T	CW/CCW	230/460*	47.2/23.6	1.15	92.4	AL	F	5N258††	1262.00	**899.00**	220.0
	1770	256T	CW/CCW	230/460*	49.0/24.5	1.15	93.0	AL	F	5N259	1268.00	**903.00**	240.0
	1175	286T	CW/CCW	230/460*	51.6/25.8	1.15	92.4	CI	F	5N260††	2105.00	**1500.00**	410.0
25	3560	284TS	CW/CCW	230/460*	61.4/30.7	1.15	92.4	CI	F	5N261	1574.00	**1121.00**	360.0
	1775	284T	CW/CCW	230/460*	60.4/30.2	1.15	93.6	CI	F	5N262	1542.00	**1099.00**	395.0
	1180	324T	CW/CCW	230/460	60.4/30.2	1.15	93.0	CI	F	5N263	2555.00	**1819.00**	586.0
30	3550	286TS	CW/CCW	230/460*	69.6/34.8	1.15	92.4	CI	F	5N264	1861.00	**1326.00**	415.0
	1775	286T	CW/CCW	230/460*	71.0/35.5	1.15	94.1	CI	F	5N265	1824.00	**1299.00**	450.0
	1180	326T	CW/CCW	230/460	71.4/35.7	1.15	93.6	CI	F	5N266	2928.00	**2086.00**	663.0

(*) Usable on 200V at 1.0 Service Factor. (†) TENV, all others are TEFC. (‡) High efficiency.
(#) RS = Rolled Steel construction; AL = Aluminum construction; CI = Cast-Iron construction.
(††) NEMA design A; all others are NEMA design B.

CONTINUED ON NEXT PAGE

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

3-PHASE TEFC PREMIUM EFFICIENCY MOTORS

NEW Product Offering

GE PREMIUM EFFICIENCY MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame†	Ins. Class	Base	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
5	3480	184T	230/460	11.4/5.7	1.15	89.5	CI	F	Rigid	E828	2G675	$547.00	**$351.25**	106.0
	3480	184T	575	4.6	1.15	89.5	CI	F	Rigid	E8659	2G677	547.00	**351.50**	106.0
	1750	184T	230/460	12.3/6.2	1.15	89.5	CI	F	Rigid	E829	2G679	495.00	**317.75**	114.0
	1750	184T	575	4.9	1.15	89.5	CI	F	Rigid	E8809	2G681	495.00	**317.75**	114.0
	1155	215T	230/460	13.3/6.7	1.15	89.5	CI	F	Rigid	E8212	2G683	908.00	**583.00**	165.0
	1155	215T	575	5.3	1.15	89.5	CI	F	Rigid	E8721	2G685	908.00	**583.00**	165.0
7.5	3510	213T	230/460	17.4/8.7	1.15	91.0	CI	F	Rigid	E880	2G687	715.00	**458.75**	156.0
	3510	213T	575	7.0	1.15	91.0	CI	F	Rigid	E8810	2G689	715.00	**458.50**	156.0
	1755	213T	230/460	18.0/9.0	1.15	91.7	CI	F	Rigid	E860	2G691	715.00	**458.25**	167.0
	1755	213T	575	7.2	1.15	91.7	CI	F	Rigid	E8727	2G693	715.00	**458.25**	167.0
	1170	254T	230/460	19.0/9.5	1.15	91.7	CI	F	Rigid	E8213	2G695	1227.00	**787.50**	257.0
	1170	254T	575	7.6	1.15	91.7	CI	F	Rigid	E8660	2G697	1227.00	**787.50**	259.0
10	3510	215T	230/460	23.0/11.5	1.15	91.7	CI	F	Rigid	E881	2G699	857.00	**550.00**	183.0
	3510	215T	575	9.2	1.15	91.7	CI	F	Rigid	E8850	2G701	857.00	**550.00**	183.0
	1755	215T	230/460	23.5/11.8	1.15	91.7	CI	F	Rigid	E861	2G703	861.00	**552.50**	189.0
	1755	215T	575	9.4	1.15	91.7	CI	F	Rigid	E8739	2G705	861.00	**553.00**	189.0
	1170	256T	230/460	25.4/12.7	1.15	91.7	CI	F	Rigid	E8214	2G707	1441.00	**925.00**	295.0
	1170	256T	575	10.2	1.15	91.7	CI	F	Rigid	E8670	2G709	1441.00	**925.00**	295.0
15	3525	254T	230/460	33.3/16.7	1.15	91.7	CI	F	Rigid	E882	2G711	1176.00	**754.50**	282.0
	3525	254T	575	13.3	1.15	91.7	CI	F	Rigid	E8811	2G713	1176.00	**754.50**	282.0
	1765	254T	230/460	34.5/17.3	1.15	92.4	CI	F	Rigid	E862	2G715	1152.00	**739.00**	288.0
	1765	254T	575	13.8	1.15	92.4	CI	F	Rigid	E8747	2G717	1152.00	**739.00**	288.0
	1175	284T	230/460	37.0/18.5	1.15	91.7	CI	F	Rigid	E8215	2G719	1911.00	**1227.00**	414.0
	1175	284T	575	14.8	1.15	91.7	CI	F	Rigid	E8690	2G721	1911.00	**1227.00**	414.0
20	3520	256T	230/460	44.5/22.3	1.15	92.4	CI	F	Rigid	E883	2G723	1415.00	**908.00**	315.0
	3520	256T	575	17.8	1.15	92.4	CI	F	Rigid	E8812	2G725	1415.00	**908.00**	315.0
	1765	256T	230/460	45.5/22.8	1.15	93.0	CI	F	Rigid	E863	2G727	1401.00	**899.00**	332.0
	1765	256T	575	18.2	1.15	93.0	CI	F	Rigid	E8756	2G729	1401.00	**899.00**	332.0
	1170	286T	230/460	49.0/24.5	1.15	92.4	CI	F	Rigid	E8217	2G731	2326.00	**1493.00**	473.0
	1170	286T	575	19.6	1.15	92.4	CI	F	Rigid	E8692	2G733	2326.00	**1493.00**	473.0
25	3545	284TS	230/460	55.5/27.8	1.15	93.0	CI	F	Rigid	E884	2G735	1771.00	**1137.00**	418.0
	3545	284TS	575	22.2	1.15	[illegible]	CI	F	Rigid	E8813	2G737	1771.00	**1137.00**	418.0
	1765	284T	230/460	58.0/29.0	1.15	[illegible]	CI	F	Rigid	E864	2G739	1704.00	**1094.00**	429.0
	1765	284T	575	23.3	1.15	93.6	CI	F	Rigid	E8762	2G741	1704.00	**1094.00**	429.0
	1180	324T	230/460	60.4/30.2	1.15	93.0	CI	F	Rigid	E9219	5N976	3169.00	**2033.00**	595.0
30	3545	286TS	230/460	67.0/33.5	1.15	93.0	CI	[illegible]	Rigid	E885	2G743	2093.00	**1343.00**	455.0
	3545	286TS	575	26.8	1.15	93.0	CI	F	Rigid	E8814	2G745	2093.00	**1343.00**	455.0
	1765	286T	230/460	69.0/34.5	1.15	93.6	[illegible]	F	Rigid	E865	2G747	2016.00	**1294.00**	475.0
	1765	286T	575	27.6	1.15	93.6	CI	F	Rigid	E8815	2G749	2016.00	**1294.00**	475.0
	1180	326T	230/460	72.4/36.2	1.15	93.0	CI	F	Rigid	E9222	5N977	3648.00	**2340.00**	740.0
40	3560	324TS	230/460	94.8/47.4	1.15	94.1	CI	F	Rigid	E986	5N978	2864.00	**1837.00**	570.0
	1780	324T	230/460	96.8/48.4	1.15	94.5	CI	F	Rigid	E966	5N979	2741.00	**1758.00**	605.0
	1780	324T	575	38.7	1.15	94.5	CI	F	Rigid	E9819	5N980	2741.00	**1758.00**	620.0
	1185	364T	460	46.5	1.15	94.1	CI	F	Rigid	E9224	5N981	5165.00	**3312.00**	1040.0
50	3560	326TS	230/460	115.4/57.7	1.15	94.5	CI	F	Rigid	E987	5N982	3612.00	**2318.00**	565.0
	1780	326T	230/460	121.0/60.5	1.15	94.5	CI	F	Rigid	E967	5N983	3223.00	**2068.00**	605.0
	1775	326T	575	48.4	1.15	94.5	CI	F	Rigid	E9822	5N984	3223.00	**2068.00**	610.0
	1185	365T	460	58.5	1.15	93.6	CI	F	Rigid	E9226	5N985	6026.00	**3865.00**	1080.0
60	3560	364TS	230/460	138.4/69.2	1.15	95.0	CI	F	Rigid	E988	5N986	5386.00	**3457.00**	810.0
	1780	364T	230/460	141.8/70.9	1.15	95.0	CI	F	Rigid	E9681	5N987	4793.00	**3075.00**	905.0
	1780	364T	575	56.7	1.15	95.0	CI	F	Rigid	E9824	5N988	4793.00	**3074.00**	1030.0
	1190	404T	460	68.8	1.15	94.5	CI	F	Rigid	E9228	5N989	6971.00	**4471.00**	1490.0
75	3560	365TS	230/460	169.4/84.7	1.15	95.4	CI	F	Rigid	E989	5N990	6412.00	**4116.00**	835.0
	1780	365T	230/460	177.2/88.6	1.15	95.0	CI	F	Rigid	E9691	5N991	6283.00	**4032.00**	905.0
	1780	365T	575	70.9	1.15	95.0	CI	F	Rigid	E9826	5N992	6283.00	**4031.00**	1070.0
	1190	405T	460	85.9	1.15	95.0	CI	F	Rigid	E9231	5N993	8531.00	**5472.00**	1550.0
100	3570	405TS	230/460	218.0/109.0	1.15	93.6	CI	F	Rigid	E9505	5N994	8137.00	**5221.00**	1212.0
	1790	405T	230/460	226.0/113.0	1.15	95.0	CI	F	Rigid	E9701	5N995	7486.00	**4803.00**	1304.0
	1790	405TS	230/460	226.0/113.0	1.15	95.0	CI	F	Rigid	E9358	5N996	7711.00	**4946.00**	1560.0
	1790	405T	575	91.6	1.15	95.0	CI	F	Rigid	E9827	5N997	7486.00	**4801.00**	1560.0
	1190	444T	460	113.0	1.15	95.0	CI	F	Rigid	E9233	5N998	11387.00	**7304.00**	1980.0
125	3575	444TS	460	135.0	1.15	94.5	CI	F	Rigid	E9506	5N999#	11291.00	**7243.00**	1990.0
	1785	444T	460	134.0	1.15	95.4	CI	F	Rigid	E971	6N032	10532.00	**6755.00**	2050.0
150	3575	445TS	460	162.0	1.0	94.5	CI	F	Rigid	E9507	6N034#	14102.00	**9049.00**	1990.0
	1790	445T	460	168.0	1.15	95.8	CI	F	Rigid	E972	6N035	12291.00	**7886.00**	2020.0
	1790	445TS	460	168.0	1.15	95.8	CI	F	Rigid	E9371	6N036	12659.00	**8122.00**	2020.0
	1190	449T	460	168.0	1.15	95.8	CI	F	Rigid	E9237	6N037	16047.00	**10293.00**	2790.0
200	3570	445TS	460	219.0	1.0	94.1	CI	F	Rigid	E9508	6N038	18418.00	**11822.00**	1990.0
	1785	445T	460	216.0	1.15	95.4	CI	F	Rigid	E9373	6N039	15031.00	**9645.00**	2050.0
	1190	449T	460	225.0	1.15	95.4	CI	F	Rigid	E9239	6N040	19889.00	**12762.00**	2820.0
250	3575	449TS	460	267.0	1.0	95.0	CI	F	Rigid	E9509	6N041	23117.00	**14837.00**	2630.0
	1785	449T	460	282.0	1.15	96.2	CI	F	Rigid	E9380	6N042	18532.00	**11890.00**	2830.0

(†) CI = Cast-Iron construction. (#) CCW rotation (facing shaft) only.

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

3-PHASE TEFC PREMIUM EFFICIENCY MOTORS

DAYTON WATTRIMMER PREMIUM EFFICIENCY MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame#	Ins. Class	Stock No.	List	Each	Shpg. Wt.
40	3565	324TS	CW/CCW	230/460	94.6/47.3	1.15	93.6	CI	F	5N267††	$2412.00	**$1718.00**	585.0
	1775	324T	CW/CCW	230/460	95.0/47.5	1.15	94.1	CI	F	5N268	2340.00	**1666.00**	576.0
	1185	364T	CW/CCW	460	48.0	1.15	94.5	CI	F	5N269	4155.00	**2960.00**	803.0
50	3545	326TS	CW/CCW	230/460	115.0/57.5	1.15	93.0	CI	F	5N270	3106.00	**2212.00**	644.0
	1775	326T	CW/CCW	230/460	115.0/57.5	1.15	94.1	CI	F	5N271	2881.00	**2052.00**	690.0
	1185	365T	CW/CCW	460	60.0	1.15	94.5	CI	F	5N272	4848.00	**3453.00**	877.0
60	3560	364TS	CW/CCW	230/460	139.2/69.6	1.15	93.6	CI	F	5N273	4227.00	**3011.00**	790.0
	1780	364T	CW/CCW	230/460	145.0/72.5	1.15	95.0	CI	F	5N274	4284.00	**3051.00**	773.0
	1185	404T	CW/CCW	460	72.5	1.15	94.5	CI	F	5N275	5739.00	**4086.00**	1210.0
75	3560	365TS	CW/CCW	230/460	171.6/85.8	1.15	94.1	CI	F	5N276	5324.00	**3792.00**	835.0
	1780	365T	CW/CCW	230/460	172.0/86.0	1.15	95.4	CI	F	5N277	5520.00	**3932.00**	900.0
	1185	405T	CW/CCW	460	90.0	1.15	95.0	CI	F	5N278	6863.00	**4887.00**	1300.0
100	3565	405TS	CW/CCW	230/460	226.0/113.0	1.15	94.1	CI	F	5N279††	7115.00	**5068.00**	1240.0
	1780	405T	CW/CCW	230/460	232.0/116.0	1.15	95.4	CI	F	5N280	6775.00	**4825.00**	1300.0
	1185	444T	CW/CCW	460	127.0	1.15	95.4	CI	F	5N281	9607.00	**6842.00**	1715.0
125	3570	444TS	CCW	460	147.5	1.15	94.5	CI	F	5N282	10263.00	**7309.00**	1750.0
	1775	444T	CW/CCW	460	144.0	1.15	95.4	CI	F	5N283	9531.00	**6787.00**	1790.0
	1185	445T	CW/CCW	460	150.0	1.15	95.8	CI	F	5N284	11056.00	**7874.00**	1925.0
150	3555	445TS	CCW	460	174.0	1.15	94.5	CI	F	5N285	12329.00	**8782.00**	1815.0
	1780	445T	CW/CCW	460	170.0	1.15	95.8	CI	F	5N286	11123.00	**7922.00**	1845.0
	1185	447T	CW/CCW	460	178.0	1.15	96.2	CI	F	5N287	12909.00	**9193.00**	2310.0
200	3560	447TS	CW/CCW	460	226.0	1.15	95.0	CI	F	5N288	15596.00	**11109.00**	2145.0
	1780	447T	CW/CCW	460	224.0	1.15	96.2	CI	F	5N289	13369.00	**9521.00**	2200.0
	1185	449T	CW/CCW	460	225.0	1.15	95.8	CI	F	5N290	16000.00	**11395.00**	2500.0
250	3570	449TS	CCW	460	269.0	1.15	95.4	CI	F	5N291	19925.00	**14194.00**	2600.0
	1785	449T	CCW	460	275.0	1.15	96.2	CI	F	5N292	16771.00	**11945.00**	2600.0

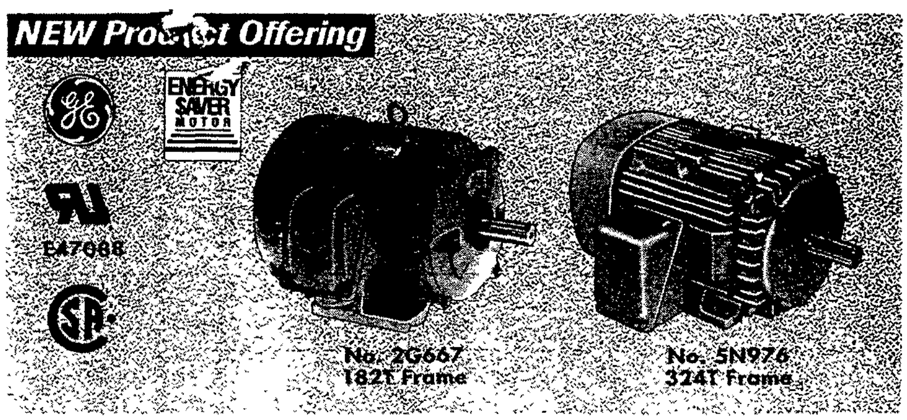
(#) CI = Cast-Iron construction. (††) NEMA design A; all others are NEMA design B.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND, PREMIUM EFFICIENCY

- **Qualify for efficiency rebates**
- **Two-year warranty**

Typical Uses: Premium efficiency performance on air compressors, conveyors, fans, blowers, machine tools, pumps, and other moderate to hard-starting equipment in noncombustible dusty, dirty environments where 3-phase power is available.
Bearings: Ball
Mounting: Rigid
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW (except Nos. 5N999 and 6N034 are CCW facing shaft)
Finish: Beige or gray
Brand: GE



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame**	Ins. Class	Base	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1	1725	56	208-230/460	3.2-3.0/1.5	1.15	78.3*	RS	B	Rigid	E10F1	3N940	$368.00	**$223.25**	39.0
	1725	143T	208-230/460	3.2-3.0/1.5	1.15	84.0	RS	B	Rigid	E10F2	3N941	372.00	**225.75**	40.0
1½	1725	145T	208-230/460	4.6-4.2/2.1	1.15	84.0	RS	B	Rigid	E15F1	3N942	408.00	**247.50**	34.0
	1170	182T	230/460	4.9/2.5	1.15	86.5	CI	F	Rigid	E824	2G655	420.00	**269.25**	90.0
	1170	182T	575	1.8	1.15	86.5	CI	F	Rigid	E8656	2G657	420.00	**269.25**	90.0
2	3450	145T	208-230/460	5.8-5.4/2.7	1.15	86.5	RS	B	Rigid	E20F2	3N961	471.00	**285.75**	36.0
	1725	145T	208-230/460	6.2-5.8/2.9	1.15	84.0	RS	B	Rigid	E20F1	3N943	427.00	**258.75**	48.0
	1165	184T	230/460	6.3/3.2	1.15	87.5	CI	F	Rigid	E825	2G659	464.00	**298.00**	101.0
	1165	184T	575	2.5	1.15	87.5	CI	F	Rigid	E8657	2G661	464.00	**298.00**	101.0
3	3520	182T	230/460	7.2/3.6	1.15	87.5	CI	F	Rigid	E826	2G663‡	442.00	**283.75**	90.0
	1765	182T	230/460	7.6/3.8	1.15	88.5	CI	F	Rigid	E827	2G667	455.00	**292.50**	95.0
	1765	182T	575	3.0	1.15	88.5	CI	F	Rigid	E868	2G669	455.00	**292.50**	95.0
	1175	213T	230/460	8.3/4.2	1.15	88.5	CI	F	Rigid	E8211	2G671	618.00	**396.50**	139.0
	1175	213T	575	3.3	1.15	88.5	CI	F	Rigid	E8709	2G673	618.00	**396.50**	139.0

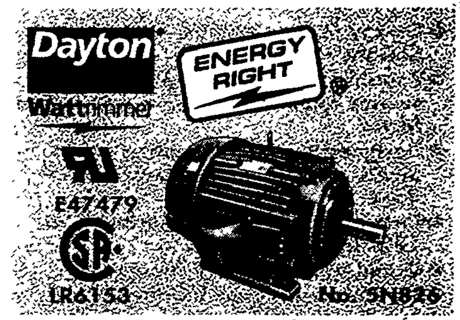
(*) Average efficiency, not NEMA nominal efficiency. (**) RS = Rolled Steel construction; CI = Cast-Iron construction. (‡) TENV.

CONTINUED ON NEXT PAGE

3-PHASE PREMIUM EFFICIENCY SEVERE DUTY MOTORS

- Designed to meet or exceed 1997 federally legislated efficiency levels
- For use in high humidity, acidic, alkali, or dirty, non-explosive conditions
- Complete cast-iron construction on 180 frame and above
- 100% copper windings
- Bearing caps supplied on 180 frame and above
- Suitable for 40°C ambient at 1.15 service factor and 65°C ambient at 1.0 service factor
- Three-year warranty

Typical Uses: Pumps, fans, blowers, compressors, conveyors, and other industrial equipment used in chemical and processing industries.
Bearings: Regreasable double-shielded ball
Mounting: Rigid welded on 140 frame; cast feet on 180 frame and above
Enclosure: TEFC
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Nominal Efficiency	Ins. Class	Stock No.	List	Each	Shpg. Wt.
1	1740	143T	CW/CCW	230/460	3.0/1.5	1.15	85.5	F	5N795	$362.00	**$266.50**	65.0
	1150	145T	CW/CCW	230/460	3.9/1.95	1.15	82.6	F	5N796	449.00	**330.25**	70.0
1½	3500	143T	CW/CCW	230/460	4.0/2.0	1.15	84.0	F	5N797	387.00	**285.00**	65.0
	1740	145T	CW/CCW	230/460	4.5/2.25	1.15	86.5	F	5N798	402.00	**296.00**	70.0
	1170	182T	CW/CCW	230/460	5.0/2.5	1.15	86.5	F	5N799	507.00	**373.00**	100.0
2	3490	145T	CW/CCW	230/460	5.2/2.6	1.15	86.5	F	5N800	463.00	**340.75**	70.0
	1730	145T	CW/CCW	230/460	5.8/2.9	1.15	86.5	F	5N801	442.00	**325.25**	70.0
	1170	184T	CW/CCW	230/460	6.6/3.3	1.15	87.5	F	5N802	566.00	**416.50**	110.0
3	3530	182T	CW/CCW	230/460	8.0/4.0	1.15	88.5	F	5N803	522.00	**384.00**	100.0
	1760	182T	CW/CCW	230/460	8.1/4.05	1.15	89.5	F	5N804	490.00	**360.25**	100.0
	1175	213T	CW/CCW	230/460	9.4/4.7	1.15	89.5	F	5N805	691.00	**508.50**	110.0
5	3515	184T	CW/CCW	230/460	12.6/6.3	1.15	89.5	F	5N806	646.00	**475.25**	110.0
	1750	184T	CW/CCW	230/460	13.0/6.5	1.15	90.2	F	5N807	573.00	**421.50**	110.0
	1165	215T	CW/CCW	230/460	15.0/7.5	1.15	90.2	F	5N808	973.00	**716.00**	135.0
7½	3525	213T	CW/CCW	230/460	18.6/9.3	1.15	91.7	F	5N809 *	781.00	**574.50**	160.0
	1760	213T	CW/CCW	230/460	19.0/9.5	1.15	91.7	F	5N810	776.00	**570.50**	160.0
	1175	254T	CW/CCW	230/460	20.2/10.1	1.15	91.7	F	5N811 *	1293.00	**951.00**	220.0
10	3510	215T	CW/CCW	230/460	24.6/12.3	1.15	[illegible]	F	5N812	913.00	**672.00**	150.0
	1755	215T	CW/CCW	230/460	24.8/12.4	1.15	[illegible]	F	5N813	935.00	**688.00**	150.0
	1170	256T	CW/CCW	230/460	25.2/12.6	1.15	91.7	F	5N814 *	1580.00	**1162.00**	360.0
15	3545	254T	CW/CCW	230/460	36.2/18.1	1.15	91.7	F	5N815	1254.00	**922.50**	300.0
	1770	254T	CW/CCW	230/460	38.0/19.0	1.15	91.7	F	5N816	1232.00	**906.00**	300.0
	1180	284T	CW/CCW	230/460	39.0/19.5	1.15	92.4	F	5N817 *	2096.00	**1542.00**	380.0
20	3545	256T	CW/CCW	230/460	47.2/23.6	1.15	92.4	F	5N818 *	1553.00	**1142.00**	360.0
	1770	256T	CW/CCW	230/460	49.0/24.5	1.15	93.0	F	5N819	1535.00	**1130.00**	360.0
	1175	286T	CW/CCW	230/460	51.6/25.8	1.15	92.4	F	5N820 *	2554.00	**1879.00**	410.0
25	3560	284TS	CW/CCW	460	30.7	1.15	92.4	F	5N821 *	1914.00	**1408.00**	380.0
	1775	284T	CW/CCW	460	30.2	1.15	93.6	F	5N822	1828.00	**1345.00**	380.0
	1180	324T	CW/CCW	460	30.2	1.15	93.0	F	5N823	3096.00	**2277.00**	575.0
30	3550	286TS	CW/CCW	460	34.8	1.15	92.4	F	5N824	2235.00	**1644.00**	410.0
	1775	286T	CW/CCW	460	35.5	1.15	94.1	F	5N825	2125.00	**1562.00**	625.0
	1180	326T	CW/CCW	460	35.7	1.15	93.6	F	5N826	3566.00	**2622.00**	625.0
40	3565	324TS	CW/CCW	460	47.3	1.15	93.6	F	5N827 *	2948.00	**2168.00**	625.0
	1775	324T	CW/CCW	460	47.5	1.15	94.1	F	5N828	2823.00	**2076.00**	575.0
	1185	364T	CW/CCW	460	48.0	1.15	94.5	F	5N829	4833.00	**3554.00**	800.0
50	3545	326TS	CW/CCW	460	57.7	1.15	93.0	F	5N830	3814.00	**2805.00**	625.0
	1775	326T	CW/CCW	460	57.5	1.15	94.1	F	5N831	3467.00	**2550.00**	625.0
	1185	365T	CW/CCW	460	60.0	1.15	94.5	F	5N832	5549.00	**4080.00**	910.0
60	3560	364TS	CW/CCW	460	69.6	1.15	93.6	F	5N833 *	5017.00	**3689.00**	800.0
	1780	364T	CW/CCW	460	72.5	1.15	95.0	F	5N834 *	4974.00	**3658.00**	800.0
	1185	404T	CW/CCW	460	72.5	1.15	94.5	F	5N835	6502.00	**4781.00**	1160.0
75	3565	365TS	CW/CCW	460	85.8	1.15	94.1	F	5N836 *	6300.00	**4634.00**	910.0
	1780	365T	CW/CCW	460	86.0	1.15	95.4	F	5N837	6305.00	**4637.00**	910.0
	1185	405T	CW/CCW	460	90.0	1.15	95.0	F	5N838	7655.00	**5629.00**	1300.0
100	3565	405TS	CW/CCW	460	113.0	1.15	94.1	F	5N839 *	8442.00	**6208.00**	1300.0
	1780	405T	CW/CCW	460	116.0	1.15	95.4	F	5N840	7790.00	**5728.00**	1300.0
	1185	444T	CW/CCW	460	121.0	1.15	95.4	F	5N841	10462.00	**7693.00**	1675.0
125	3570	444TS	CW	460	147.5	1.15	94.5	F	5N842	11035.00	**8115.00**	1675.0
	1775	444T	CW/CCW	460	144.0	1.15	95.4	F	5N843	10255.00	**7541.00**	1675.0
	1185	445T	CW/CCW	460	150.0	1.15	95.8	F	5N844	12850.00	**9448.00**	2120.0
150	3555	445TS	CW	460	174.0	1.15	94.5	F	5N845	13257.00	**9749.00**	2120.0
	1780	445T	CW/CCW	460	170.0	1.15	95.8	F	5N846	11922.00	**8766.00**	2120.0
	1185	447T	CW/CCW	460	185.0	1.15	96.2	F	5N847 *	14377.00	**10572.00**	2350.0
200	3560	447TS	CW/CCW	460	226.0	1.15	95.0	F	5N848	16770.00	**12334.00**	2120.0
	1780	447T	CW/CCW	460	224.0	1.15	96.2	F	5N849	14501.00	**10664.00**	2120.0
	1185	449T	CW/CCW	460	225.0	1.15	95.8	F	5N850	17600.00	**12944.00**	2350.0
250	3570	449TS	CCW	460	269.0	1.15	95.4	F	5N851 *	21150.00	**15557.00**	2350.0
	1785	449T	CCW	460	275.0	1.15	96.2	F	5N852	18192.00	**13379.00**	2350.0

(*) NEMA design A; all others are NEMA design B.

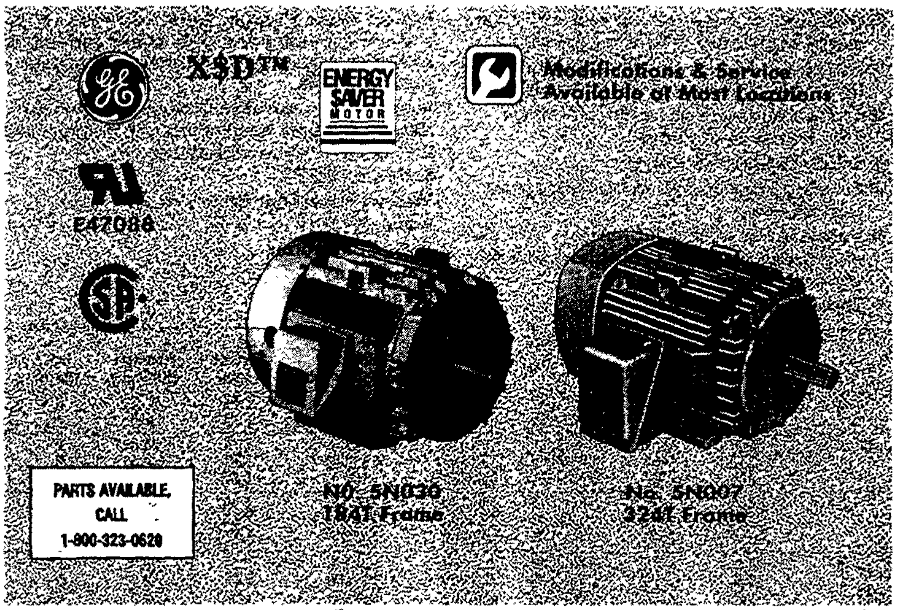
CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

3-PHASE PREMIUM EFFICIENCY SEVERE DUTY MOTORS

- **Energy $aver premium efficiency designs**
- **Suitable for 40°C ambient at 1.15 service factor and 65°C at 1.0 service factor**
- **Designed for high humidity, acidic, alkali, or dirty (nonexplosive) conditions**
- **Cast-iron frames and endshields on 182T frame and up**
- **Qualify for efficiency rebates**
- **Supplied with grease fittings**
- **Three-year warranty**

Typical Uses: Pumps, fans, blowers, air compressors, conveyors, machinery, and other industrial equipment.
Bearings: Ball
Mounting: Rigid base
Enclosure: TEFC
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Finish: Gray or beige
Brand: GE



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1	870	182T	CW/CCW	230/460†	4.0/2.0	1.15	80.0	F	E9871	**5N017**	$714.00	**$458.25**	116.0
	870	182T	CW/CCW	460	2.0	1.15	80.0	F	E9887	**5N019**	714.00	**458.25**	100.0
	870	182T	CW/CCW	575	1.6	1.15	80.0	F	E9872	**5N018**	714.00	**458.25**	116.0
1½	1170	182T	CW/CCW	230/460†	4.6/2.3	1.15	87.5	F	9702E	**4N893**	560.00	**359.00**	138.0
	1170	182T	CW/CCW	460	2.3	1.15	87.5	F	9943E	**5N024**	560.00	**359.25**	110.0
	1170	182T	CW/CCW	575	1.8	1.15	87.5	F	9703E	**5N023**	560.00	**359.00**	134.0
	860	184T	CW/CCW	230/460	5.6/2.8	1.15	81.5	F	E9873	**5N020**	844.00	**542.00**	126.0
	860	184T	CW/CCW	460	2.8	1.15	81.5	F	E9888	**5N022**	844.00	**542.00**	124.0
	860	184T	CW/CCW	575	2.3	1.15	81.5	F	E9874	**5N021**	844.00	**542.00**	124.0
2	1165	184T	CW/CCW	230/460†	5.8/2.9	1.15	87.5	F	9074E	**5N028**	626.00	**401.50**	136.0
	1165	184T	CW/CCW	460	2.9	1.15	87.5	F	9944E	**5N030**	626.00	**401.50**	132.0
	1165	184T	CW/CCW	575	2.4	1.15	87.5	F	9706E	**5N029**	626.00	**401.50**	134.0
	875	213T	CW/CCW	230/460†	7.0/3.5	1.15	86.5	F	E9875	**5N026**	1089.00	**699.00**	171.0
	875	213T	CW/CCW	460	3.5	1.15	86.5	F	E9705	**5N025**	1089.00	**698.50**	214.0
	875	213T	CW/CCW	575	2.8	1.15	86.5	F	E9876	**5N027**	1089.00	**699.00**	186.0
3	3515	182T	CW/CCW	230/460†	7.4/3.7	1.15	88.5	F	9713E	**5N070‡**	594.00	**381.25**	126.0
	3515	182T	CW/CCW	460	3.7	1.15	88.5	F	9939E	**5N072‡**	594.00	**381.25**	120.0
	3520	182T	CW/CCW	575	3.0	1.15	88.5	F	9715E	**5N071**	594.00	**381.25**	124.0
	1765	182T	CW/CCW	230/460†	8.0/4.0	1.15	89.5	F	241E	**5N034**	541.00	**347.00**	126.0
	1765	182T	CW/CCW	460	4.0	1.15	89.5	F	9941E	**5N036**	541.00	**347.00**	118.0
	1765	182T	CW/CCW	575	3.2	1.15	89.5	F	9711E	**5N035**	541.00	**347.00**	126.0
	1175	213T	CW/CCW	230/460	8.4/4.2	1.15	89.5	F	9142E	**5N038**	764.00	**490.00**	200.0
	1175	213T	CW/CCW	460	4.2	1.15	89.5	F	9111E	**5N037**	764.00	**489.75**	221.0
	1175	213T	CW/CCW	575	3.4	1.15	89.5	F	9712E	**5N039**	764.00	**490.00**	192.0
	870	215T	CW/CCW	230/460†	10.4/5.2	1.15	86.5	F	E9877	**5N032**	1403.00	**901.00**	206.0
	870	215T	CW/CCW	460	5.2	1.15	86.5	F	E9708	**5N031**	1403.00	**900.50**	210.0
	870	215T	CW/CCW	575	4.1	1.15	86.5	F	E9878	**5N033**	1403.00	**900.50**	214.0
5	3515	184T	CW/CCW	230/460†	12.0/6.0	1.15	89.5	F	240E	**5N043**	714.00	**458.00**	139.0
	3515	184T	CW/CCW	460	6.0	1.15	89.5	F	9940E	**5N045**	714.00	**458.00**	138.0
	3515	184T	CW/CCW	575	4.8	1.15	89.5	F	9722E	**5N044**	714.00	**458.00**	141.0
	1755	184T	CW/CCW	230/460†	12.6/6.3	1.15	90.2	F	242E	**5N046**	633.00	**406.00**	138.0
	1755	184T	CW/CCW	460	6.3	1.15	90.2	F	9942E	**5N048**	633.00	**406.00**	138.0
	1755	184T	CW/CCW	575	5.1	1.15	90.2	F	9718E	**5N047**	633.00	**406.00**	140.0
	1170	215T	CW/CCW	230/460†	13.8/6.9	1.15	89.5	F	9143E	**5N050**	1075.00	**689.50**	226.0
	1170	215T	CW/CCW	460	6.9	1.15	89.5	F	9112E	**5N049**	1075.00	**689.50**	224.0
	1170	215T	CW/CCW	575	5.6	1.15	89.5	F	9717E	**5N051**	1075.00	**689.50**	224.0
	880	254T	CW/CCW	230/460†	14.8/7.4	1.15	89.5	F	E9879	**5N041**	1937.00	**1244.00**	313.0
	880	254T	CW/CCW	460	7.4	1.15	89.5	F	E9719	**5N040**	1937.00	**1244.00**	323.0
	880	254T	CW/CCW	575	6.1	1.15	89.5	F	E9880	**5N042**	1937.00	**1243.00**	336.0

(†) Usable on 200V at 1.0 service factor. (‡) TENV.

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CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE 3-PHASE PREMIUM EFFICIENCY SEVERE DUTY MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
7½	3535	213T	CW/CCW	230/460†	17.4/8.7	1.15	91.7	F	9144E	5N055	$863.00	**$553.50**	232.0
	3535	213T	CW/CCW	460	8.7	1.15	91.7	F	990E	5N057	863.00	**553.50**	232.0
	3520	213T	CW/CCW	575	7.0	1.15	91.7	F	9728E	5N056	863.00	**553.50**	228.0
	1765	213T	CW/CCW	230/460	18.8/9.4	1.15	91.7	F	9145E	5N058	858.00	**550.50**	192.0
	1765	213T	CW/CCW	460	9.4	1.15	91.7	F	9911E	5N060	858.00	**550.50**	208.0
	1765	213T	CW/CCW	575	7.5	1.15	91.7	F	9730E	5N059	858.00	**550.50**	210.0
	1180	254T	CW/CCW	230/460†	21.4/10.7	1.15	91.7	F	9146E	5N062	1429.00	**916.50**	347.0
	1180	254T	CW/CCW	460	10.7	1.15	91.7	F	9113E	5N061	1429.00	**916.50**	347.0
	1180	254T	CW/CCW	575	8.5	1.15	91.7	F	9726E	5N237	1429.00	**916.50**	336.0
	875	256T	CW/CCW	230/460†	21.8/10.9	1.15	89.5	F	E9881	5N053	2452.00	**1574.00**	395.0
	875	256T	CW/CCW	460	10.9	1.15	89.5	F	E9724	5N052	2452.00	**1574.00**	425.0
	875	256T	CW/CCW	575	8.8	1.15	89.5	F	E9982	5N054	2452.00	**1574.00**	343.0
10	3530	215T	CW/CCW	230/460†	23.2/11.6	1.15	91.7	F	9147E	4N913	1008.00	**646.50**	230.0
	3530	215T	CW/CCW	460	11.6	1.15	91.7	F	991E	4N940	1008.00	**646.50**	226.0
	3530	215T	CW/CCW	575	9.3	1.15	91.7	F	9733E	4N925	1008.00	**646.50**	232.0
	1765	215T	CW/CCW	230/460†	25.4/12.7	1.15	91.7	F	9148E	4N949	1034.00	**663.50**	218.0
	1765	215T	CW/CCW	460	12.7	1.15	91.7	F	9912E	4N969	1034.00	**663.50**	216.0
	1765	215T	CW/CCW	575	10.2	1.15	91.7	F	9738E	4N956	1034.00	**663.50**	220.0
	1175	256T	CW/CCW	230/460†	28.6/14.3	1.15	91.7	F	9149E	5N004	1746.00	**1121.00**	317.0
	1175	256T	CW/CCW	460	14.3	1.15	91.7	F	9114E	4N990	1746.00	**1120.00**	373.0
	1175	256T	CW/CCW	575	11.6	1.15	91.7	F	9737E	5N009	1746.00	**1120.00**	378.0
	885	284T	CW/CCW	230/460†	26.6/13.3	1.15	91.0	F	E9883	4N909	2906.00	**1865.00**	438.0
	885	284T	CW/CCW	460	13.3	1.15	91.0	F	E9736	4N898	2906.00	**1865.00**	435.0
	885	284T	CW/CCW	575	10.7	1.15	91.0	F	E9884	4N910	2906.00	**1865.00**	493.0
15	3545	254T	CW/CCW	230/460†	34.6/17.3	1.15	91.7	F	9150E	4N914	1385.00	**888.00**	383.0
	3545	254T	CW/CCW	460	17.3	1.15	91.7	F	992E	4N941	1385.00	**888.00**	398.0
	3545	254T	CW/CCW	575	13.9	1.15	91.7	F	9741E	4N926	1385.00	**888.00**	380.0
	1770	254T	CW/CCW	230/460†	37.0/18.5	1.15	92.4	F	9151E	4N950	1361.00	**872.50**	384.0
	1770	254T	CW/CCW	460	18.5	1.15	92.4	F	9913E	4N970	1361.00	**872.50**	382.0
	1770	254T	CW/CCW	575	15.0	1.15	92.4	F	9745E	4N957	1361.00	**872.50**	370.0
	1180	284T	CW/CCW	230/460†	40.2/20.1	1.15	91.7	F	9152E	5N005	2316.00	**1486.00**	533.0
	1180	284T	CW/CCW	460	20.1	1.15	91.7	F	9115E	4N991	2316.00	**1486.00**	558.0
	1180	284T	CW/CCW	575	16.1	1.15	[illegible]	F	9746E	5N010	2316.00	**1486.00**	562.0
	880	286T	CW/CCW	230/460†	39.6/19.8	1.15	[illegible]	F	E9885	4N911	3798.00	**2438.00**	465.0
	880	286T	CW/CCW	460	19.7	1.15	91.0	F	E9742	4N899	3798.00	**2438.00**	510.0
	880	286T	CW/CCW	575	15.6	1.15	91.0	F	E9886	4N912	3798.00	**2438.00**	544.0
20	3540	256T	CW/CCW	230/460†	45.0/22.5	1.15	92.4	F	9153E	4N915	1716.00	**1101.00**	426.0
	3540	256T	CW/CCW	460	22.5	1.15	92.4	F	993E	4N942	1716.00	**1101.00**	430.0
	3535	256T	CW/CCW	575	18.0	1.15	92.4	F	9749E	4N927	1716.00	**1101.00**	459.0
	1770	256T	CW/CCW	230/460†	49.2/24.6	1.15	93.0	F	9154E	4N951	1696.00	**1088.00**	395.0
	1770	256T	CW/CCW	460	24.6	1.15	93.0	F	9914E	4N971	1696.00	**1088.00**	414.0
	1770	256T	CW/CCW	575	19.5	1.15	93.0	F	9751E	4N958	1696.00	**1088.00**	395.0
	1175	286T	CW/CCW	230/460†	53.4/26.7	1.15	92.4	F	9155E	5N006	2822.00	**1811.00**	544.0
	1175	286T	CW/CCW	460	26.7	1.15	92.4	F	9117E	4N992	2822.00	**1811.00**	561.0
	1175	286T	CW/CCW	575	21.5	1.15	92.4	F	9755E	5N011	2822.00	**1811.00**	560.0
25	3560	284TS	CW/CCW	230/460†	55.8/27.9	1.15	92.4	F	9156E	4N916	2115.00	**1357.00**	542.0
	3560	284TS	CW/CCW	460	27.9	1.15	92.4	F	994E	4N943	2115.00	**1357.00**	536.0
	3560	284TS	CW/CCW	575	22.3	1.15	92.4	F	9838E	4N934	2115.00	**1357.00**	493.0
	1770	284T	CW/CCW	230/460†	60.0/30.0	1.15	93.6	F	9157E	4N952	2020.00	**1296.00**	562.0
	1770	284T	CW/CCW	460	30.0	1.15	93.6	F	9935E	4N988	2020.00	**1296.00**	559.0
	1775	284T	CW/CCW	575	24.0	1.15	93.6	F	9759E	4N959	2020.00	**1296.00**	556.0
	1180	324T	CW/CCW	230/460	60.4/30.2	1.15	93.0	F	E9158	5N007	3643.00	**2337.00**	680.0
	1180	324T	CW/CCW	460	30.2	1.15	93.0	F	E9119	4N993	3643.00	**2337.00**	685.0
	1180	324T	CW/CCW	575	24.2	1.15	93.0	F	E9758	5N012	3643.00	**2337.00**	650.0
	885	326T	CW/CCW	460	32.8	1.15	91.7	F	E9761	4N900	5751.00	**3692.00**	668.0
30	3555	286TS	CW/CCW	230/460†	66.8/33.4	1.15	92.4	F	9159E	4N917	2469.00	**1584.00**	534.0
	3555	286TS	CW/CCW	460	33.4	1.15	92.4	F	995E	4N944	2469.00	**1584.00**	544.0
	3555	286TS	CW/CCW	575	26.7	1.15	92.4	F	9828E	4N930	2469.00	**1584.00**	544.0
	1770	286T	CW/CCW	230/460†	72.4/36.2	1.15	93.6	F	9160E	4N953	2348.00	**1506.00**	556.0
	1770	286T	CW/CCW	460	36.2	1.15	93.6	F	9937E	4N989	2348.00	**1506.00**	556.0
	1770	286T	CW/CCW	575	29.0	1.15	93.6	F	9764E	4N960	2348.00	**1506.00**	544.0
	1180	326T	CW/CCW	230/460	72.4/36.2	1.15	93.0	F	E9161	5N008	4196.00	**2692.00**	705.0
	1180	326T	CW/CCW	460	36.2	1.15	93.0	F	E9122	4N994	4196.00	**2692.00**	710.0
	1175	326T	CW/CCW	575	29.0	1.15	93.0	F	E9834	5N013	4196.00	**2692.00**	680.0
	890	364T	CW/CCW	460	39.2	1.15	93.6	F	E9767	4N901	6763.00	**4340.00**	892.0

(†) Usable on 200V at 1.0 service factor.

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CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

CAN'T FIND A PRODUCT? CHECK OUR INDEX AT THE BACK OF THE CATALOG.

3-PHASE PREMIUM EFFICIENCY SEVERE DUTY MOTORS

GE 3-PHASE PREMIUM EFFICIENCY SEVERE DUTY MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
40	3565	324TS	CW/CCW	230/460	87.4/43.7	1.15	93.0	F	E9162	4N918	$3303.00	**$2119.00**	685.0
	3565	324T	CW/CCW	460	43.7	1.15	93.0	F	E9820	4N928	3303.00	**2119.00**	660.0
	3565	324TS	CW/CCW	460	43.7	1.15	93.0	F	E996	4N945	3303.00	**2119.00**	660.0
	3565	324TS	CW/CCW	575	35.0	1.15	93.0	F	E9829	4N931	3303.00	**2119.00**	685.0
	1780	324T	CW/CCW	230/460	91.0/45.5	1.15	94.1	F	E9163	4N954	3174.00	**2036.00**	675.0
	1780	324T	CW/CCW	460	45.5	1.15	94.1	F	E9915	4N972	3174.00	**2036.00**	690.0
	1780	324TS	CW/CCW	460	45.5	1.15	94.1	F	E9916	4N973	3269.00	**2097.00**	692.0
	1780	324T	CW/CCW	575	36.4	1.15	94.1	F	E9768	4N962	3174.00	**2036.00**	695.0
	1185	364T	CW/CCW	460	46.5	1.15	94.1	F	E9124	4N995	5620.00	**3606.00**	927.0
	1185	364T	CW/CCW	575	37.2	1.15	94.1	F	E9835	5N014	5620.00	**3606.00**	925.0
	890	365T	CW/CCW	460	53.3	1.15	93.0	F	E9770	4N902	8034.00	**5157.00**	914.0
	890	365T	CW/CCW	575	42.6	1.15	93.0	F	E9534	5N671	8034.00	**5157.00**	925.0
50	3555	326TS	CW/CCW	230/460	109.4/54.7	1.15	93.0	F	E9164	4N919	4193.00	**2691.00**	664.0
	3555	326T	CW/CCW	460	54.7	1.15	93.0	F	E9823	4N929	4193.00	**2691.00**	665.0
	3555	326TS	CW/CCW	460	54.7	1.15	93.0	F	E997	4N946	4193.00	**2691.00**	655.0
	1780	326T	CW/CCW	230/460	115.0/57.5	1.15	94.1	F	E9165	4N955	3898.00	**2501.00**	710.0
	1775	326T	CW/CCW	460	57.5	1.15	94.1	F	E9917	4N974	3898.00	**2501.00**	686.0
	1775	326TS	CW/CCW	460	57.5	1.15	94.1	F	E9918	4N975	4015.00	**2577.00**	697.0
	1775	326T	CW/CCW	575	46.0	1.15	94.1	F	E9765	4N961	3898.00	**2501.00**	710.0
	1185	365T	CW/CCW	460	58.5	1.15	93.6	F	E9126	4N996	6407.00	**4112.00**	990.0
	1185	365T	CW/CCW	575	46.8	1.15	93.6	F	E9775	5N015	6407.00	**4112.00**	960.0
	890	404T	CW/CCW	460	59.6	1.15	93.6	F	E9773	4N903	9664.00	**6202.00**	1342.0
	890	404T	CW/CCW	575	47.6	1.15	93.6	F	E9535	5N672	9664.00	**6204.00**	980.0
60	3565	364TS	CW/CCW	460	65.2	1.15	94.1	F	E998	4N947	5682.00	**3646.00**	950.0
	1785	364T	CW/CCW	460	68.7	1.15	95.0	F	E9919	4N976	5428.00	**3482.00**	954.0
	1785	364TS	CW/CCW	460	68.7	1.15	95.0	F	E9921	4N977	5592.00	**3588.00**	965.0
	1785	364T	CW/CCW	575	55.0	1.15	95.0	F	E9776	4N963	5428.00	**3482.00**	1000.0
	1190	404T	CW/CCW	460	68.8	1.15	94.5	F	E9128	4N997	7562.00	**4851.00**	1285.0
	1190	404T	CW/CCW	575	55.7	1.15	94.5	F	E9837	5N674	7562.00	**4853.00**	980.0
	885	405T	CW/CCW	460	71.8	1.15	93.6	F	E9778	4N904	11169.00	**7169.00**	1389.0
	885	405T	CW/CCW	575	57.5	1.15	93.6	F	E9536	5N673	11169.00	**7167.00**	1600.0
75	3565	365TS	CW/CCW	460	81.1	1.15	94.5	F	E999	4N948	7083.00	**4545.00**	990.0
	3565	365TS	CW/CCW	575	64.9	1.15	94 5	F	E9830	4N932	7083.00	**4545.00**	1025.0
	1785	365T	CW/CCW	460	86.9	1.15	95.0	F	E9922	4N978	6793.00	**4359.00**	1010.0
	1785	365TS	CW/CCW	460	86.9	1.15	95.0	F	E9923	4N979	6996.00	**4490.00**	964.0
	1785	365T	CW/CCW	575	69.5	1.15		F	E9781	4N965	6793.00	**4359.00**	1025.0
	1190	405T	CW/CCW	460	85.9	1.15	[illegible]	F	E9131	4N998	9029.00	**5793.00**	1420.0
	1190	405T	CW/CCW	575	68.7	1.15	95.0	F	E9868	5N675	9029.00	**5792.00**	1600.0
	885	444T	CW/CCW	460	90.0	1.15	94.1	F	E9780	4N905	14875.00	**9547.00**	1856.0
	885	444T	CW/CCW	575	72.0	1.15	94.1	F	E9537	5N676	14875.00	**9547.00**	1750.0
100	3570	405TS	CW/CCW	460	109.0	1.15	93.6	F	E9510	4N920	9492.00	**6091.00**	1389.0
	3565	405TS	CW/CCW	575	87.4	1.15	93.6	F	E9831	4N933	9492.00	**6090.00**	1600.0
	1790	405T	CW/CCW	460	113.0	1.15	95.0	F	E9924	4N980	8759.00	**5619.00**	1456.0
	1790	405TS	CW/CCW	460	113.0	1.15	95.0	F	E9925	4N981	9021.00	**5788.00**	1435.0
	1790	405T	CW/CCW	575	91.6	1.15	95.0	F	E9779	4N964	8759.00	**5618.00**	1600.0
	1190	444T	CW/CCW	460	113.0	1.15	95.0	F	E9133	4N999	12081.00	**7751.00**	1854.0
	1190	444T	CW/CCW	575	90.6	1.15	95.0	F	E9846	5N677	12081.00	**7752.00**	1748.0
	885	445T	CW/CCW	460	121.0	1.15	94.1	F	E9782	4N906	18711.00	**12012.00**	1846.0
125	3575	444TS	CCW	460	135.0	1.15	94.5	F	E9511	4N921	12407.00	**7962.00**	1766.0
	3575	444TS	CW/CCW	460	138.0	1.15	92.4	F	E9843	4N938	12407.00	**7962.00**	1750.0
	3575	444TS	CW/CCW	575	108.0	1.15	94.5	F	E9538	5N678	12407.00	**7962.00**	1750.0
	1785	444T	CW/CCW	460	135.0	1.15	95.4	F	E9926	4N982	11530.00	**7398.00**	1746.0
	1785	444TS	CW/CCW	460	135.0	1.15	95.4	F	E9927	4N983	11876.00	**7621.00**	1698.0
	1785	444T	CW/CCW	575	108.0	1.15	95.4	F	E9832	5N679	11530.00	**7398.00**	1750.0
	1190	445T	CW/CCW	460	141.0	1.15	95.0	F	E9135	5N001	14448.00	**9272.00**	2000.0
	885	449T	CW/CCW	460	148.0	1.15	94.5	F	E9784	4N907	21708.00	**13932.00**	2650.0
150	3575	445TS	CCW	460	162.0	1.0	94.5	F	E9512	4N922	14978.00	**9612.00**	2000.0
	3575	445TS	CW/CCW	460	164.0	1.15	93.0	F	E9844	4N939	14978.00	**9612.00**	2000.0
	1790	445T	CW/CCW	460	168.0	1.15	95.8	F	E9928	4N984	13108.00	**8411.00**	2000.0
	1790	445TS	CW/CCW	460	168.0	1.15	95.8	F	E9929	4N985	13503.00	**8664.00**	2000.0
	1790	445T	CW/CCW	575	134.0	1.15	95.8	F	E9854	5N680	13108.00	**8411.00**	2000.0
	1190	449T	CW/CCW	460	168.0	1.15	95.8	F	E9137	5N002	16601.00	**10651.00**	2566.0
	1190	449T	CW/CCW	575	134.0	1.15	95.8	F	E9869	5N681	16601.00	**10650.00**	2650.0
	885	449T	CW/CCW	460	178.0	1.15	94.5	F	E9785	4N908	24527.00	**15744.00**	2536.0
200	3570	445TS	CW/CCW	460	219.0	1.0	94.1	F	E9513	4N923	18438.00	**11836.00**	2000.0
	1785	445T	CW/CCW	460	216.0	1.15	95.4	F	E9931	4N986	16344.00	**10490.00**	1910.0
	1785	445T	CW/CCW	575	173.0	1.15	95.4	F	E9833	4N966	16344.00	**10490.00**	1914.0
	1190	449T	CW/CCW	460	226.0	1.1[illegible]	95.4	F	E9139	5N003	19788.00	**12698.00**	2650.0
	1190	449T	CW/CCW	575	179.0	1.15	95.4	F	E9845	5N682	19788.00	**12698.00**	2650.0
250	3575	449TS	CW/CCW	460	273.0	1.0	95.4	F	E9514	4N924	23838.00	**15302.00**	2428.0
	1785	449T	CW/CCW	460	275.0	1.15	96.2	F	E9933	4N987	19448.00	**12480.00**	2650.0

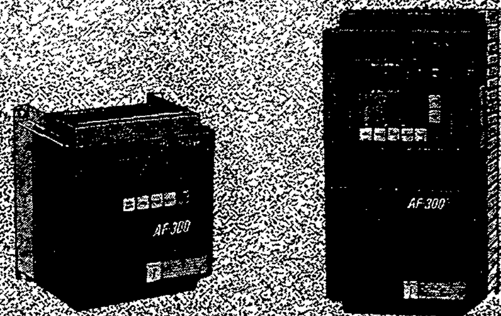
CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

Modifications & Service Available at Most Locations

AC INVERTERS

NEW Product Offering

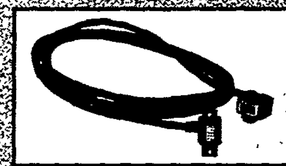
- Simple, easy-to-use programming for application flexibility
- Self-diagnostics provide shut-off protection and fault failure message
- Quick response time provides reliable operation against load fluctuations



No. 5U181
1/4 HP Single-Phase AC Inverter

No. 5U192
1 HP Three-Phase AC Inverter

No. 2G647
Relay Unit



No. 2G649
Keypad Extension Cable

Typical Uses: Designed to provide variable speed operation on standard AC three-phase motors used to power pumps, fans, blowers, conveyors, and other industrial equipment. **Not for use in combustible, dusty, or wet environments.**

Both single-phase and three-phase designs feature a 32-bit digital processor which allows fast and easy programming as well as providing built-in self-protection, operational, and fault diagnostics.

Nos. 5U181 thru 5U191 are compact, economical, low horsepower inverters excellent for use where relatively simple speed control is desired. Twenty selectable functions provide flexibility for more efficient operation.

Nos. 5U192 thru 5U201 offer 79 programmable functions for more advanced applications in higher horsepowers while still offering simple programmability.

Enclosure: NEMA 1

Protection: All Units

Stall
Overcurrent
Overvoltage
Undervoltage
Instantaneous power failure
Inverter overheating (external fault-overload relay trip).

Voltage Requirements:

Nos. 5U181 thru 5U185
Input: Single-phase, 200-240V, 50/60 Hz
Output: Three-phase, 3-wire, 200-240V

Nos. 5U186 thru 5U191
Input: Three-phase, 200-240V, 50/60 Hz
Output: Three-phase, 3-wire, 200-240V

Nos. 5U192 thru 5U201
Input: Three-phase, 400-460V, 50/60 Hz
Output: Three-phase, 3-wire, 400-460V

Selectable Functions: All Units

Operating Method/Frequency Setting Selection
Base and Top Frequency
Maximum Output Voltage
Maximum Output Frequency
Torque Boost
Fault Memory
DC Braking
Accelerator/Decelerator
Multi-Frequency Settings

Additional Functions: Nos. 5U192 thru 5U201

Slip Compensation
Current Limiting
Jump Frequency
Automatic/Deceleration Time Selection
2-Wire/3-Wire Control Selection
Automatic Pattern Operation
Terminal Link
Removable Keypad

Motor Output HP	Rated Output Amps	Dimensions (Inches) H	W	D	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
INPUT SINGLE-PHASE, 200-230 VOLTS AC, 50/60 Hz									
1/4	1.5	6.7	6.3	3.2	D5012	**5U181**	$685.00	**$612.50**	3.8
1/2	3.0	8.7	6.3	3.9	D5022	**5U182**	745.00	**666.00**	8.0
1	5.0	8.7	6.3	4.5	D5032	**5U183**	850.00	**759.50**	8.2
2	8.0	7.9	6.3	6.7	D5042	**5U184**	990.00	**885.00**	8.8
3	11.0	7.9	6.3	6.7	D5052	**5U185**	1050.00	**938.00**	8.8
INPUT THREE-PHASE, 200-230 VOLTS AC, 50/60 Hz									
1/4	1.5	6.7	6.3	3.2	D5062	**5U186**	415.00	**400.00**	3.8
1/2	3.0	6.7	6.3	3.9	D5072	**5U187**	450.00	**433.75**	4.4
1	5.0	6.7	6.3	4.5	D5082	**5U188**	525.00	**506.00**	5.5
2	8.0	7.9	6.3	6.7	D5092	**5U189**	685.00	**660.50**	8.8
3	11.0	7.9	6.3	6.7	D5102	**5U190**	750.00	**723.00**	8.8
5	17.0	7.9	6.3	6.7	D5112	**5U191**	965.00	**930.00**	8.8
INPUT THREE-PHASE, 400-460 VOLTS AC, 50/60 Hz									
1	2.5	11.8	6.3	6.7	D6232	**5U192**	1100.00	**1095.00**	13.0
2	3.7	11.8	6.3	6.7	D6242	**5U193**	1180.00	**1175.00**	13.0
3	5.5	11.8	6.3	6.7	D6252	**5U194**	1270.00	**1264.00**	13.0
5	9.0	11.8	6.3	6.7	D6262	**5U195**	1560.00	**1552.00**	13.0
7½	13.0	15.0	9.5	8.5	D6272	**5U196**	1950.00	**1940.00**	27.0
10	18.0	15.0	9.5	8.5	D6282	**5U197**	2375.00	**2363.00**	27.0
15	24.0	17.7	10.6	8.7	D6292	**5U198**	3175.00	**3159.00**	35.0
20	30.0	17.7	10.6	8.7	D6302	**5U199**	4000.00	**3979.00**	36.0
25	39.0	21.7	10.6	8.7	D6312	**5U200**	4750.00	**4725.00**	43.0
30	45.0	21.7	10.6	8.7	D6322	**5U201**	5510.00	**5481.00**	43.0

NEW Product Offering

INVERTER ACCESSORIES

For Stock Nos. 5U192 thru 5U201

Relay unit converts open collector outputs to relay outputs for interface to existing plant equipment.

No. of Relay Outputs	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
4	A3032	**2G647**	$600.00	**$578.50**	1.0

Keypad extension cables for remote mounting provide full operation functionality for removable inverter keypads.

Cable Lengths	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
2 Meter	A3034	**2G649**	$100.00	**$96.40**	1.0
5 Meter	A3035	**2G651**	200.00	**193.00**	1.0
10 Meter	A3036	**2G653**	250.00	**241.00**	1.0

3-PHASE OPEN DRIPPROOF AND TEFC INVERTER-DUTY MOTORS

- **Inverter-grade insulation systems provide dielectric strength to withstand wave form stress**
- **High performance matches speed/torque requirements for increased system flexibility**
- **Incorporates premium efficiency designs**
- **Meets latest NEMA MG1 Part 31 requirements for inverter-duty motors**
- ***10:1 speed range, variable torque***
- ***100% copper windings***
- ***Two-year warranty***

Typical Uses: Used in adjustable speed applications found in pumps and other air moving devices.

Bearings: Double-shielded ball

Mounting: Open dripproof rigid welded, TEFC cast feet

Thermal Protection: Thermostat

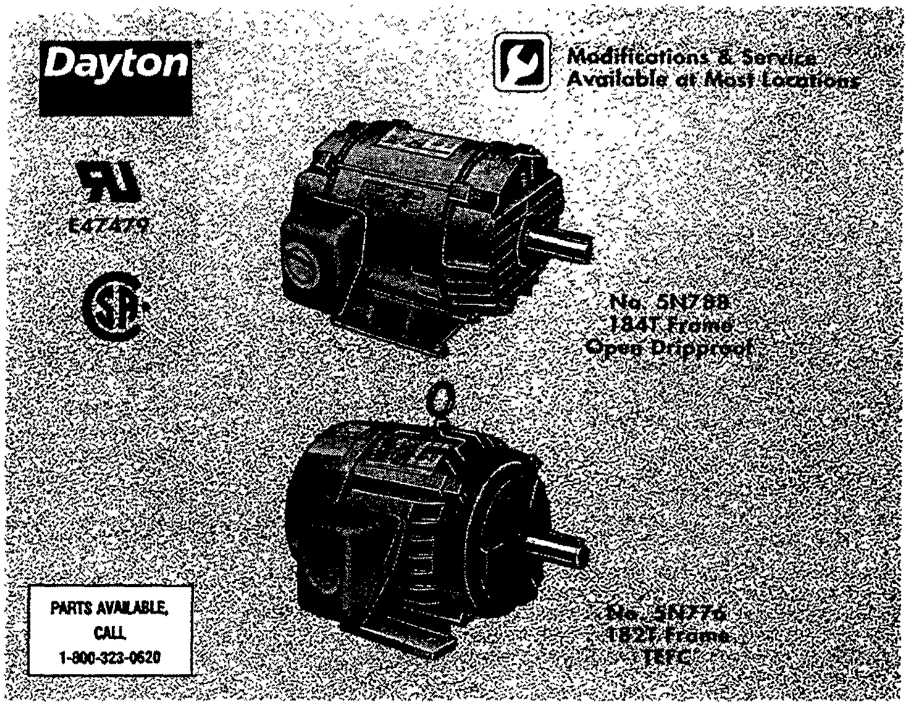
Ambient: 40°C

Duty: Continuous

Rotation: CW/CCW

Finish: Gray

Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	RPM Range	Service Factor	NEMA Nominal Efficiency	Frame*	Insulation Class	Stock No.	List	Each	Shpg. Wt.
						OPEN DRIPPROOF							
1	1755	143T	230/460	3.3/1.6	1800-180	1.15	84.0	RS	F	**5N784**	$426.00	**$362.00**	40.0
1½	1745	145T	230/460	4.6/2.3	1800-180	1.15	85.5	RS	F	**5N785**	445.00	**378.25**	34.0
2	1745	145T	230/460	6.1/3.1	1800-180	1.15	86.5	RS	F	**5N786**	469.00	**398.50**	45.0
3	1760	182T	230/460	8.6/4.3	1800-180	1.15	86.5	RS	F	**5N787**	488.00	**414.75**	50.0
5	1740	184T	230/460	13.8/6.9	1800-180	1.15	87.5	RS	F	**5N788**	595.00	**50[illegible].50**	60.0
7½	1755	213T	230/460	20.0/10.0	1800-180	1.15	90.7	RS	F	**5N789**	795.00	**675.50**	90.0
10	1755	215T	230/460	26.4/13.2	1800-180	1.15	90.2	RS	F	**5N790**	907.00	**770.50**	100.0
15	1750	254T	230/460	39.8/19.9	1800-180	1.15	90.2	RS	F	**5N791**	1160.00	**984.50**	220.0
20	1760	256T	230/460	51.0/25.5	1800-180	1.15	91.0	RS	F	**5N792**	1350.00	**1147.00**	230.0
25	1775	284T	230/460	60.0/30.0	1800-180	1.15	93.6	RS	F	**5N793**	1586.00	**1347.00**	350.0
30	1775	286T	230/460	72.0/36.0	1800-180	1.15	94.1	RS	F	**5N794**	1783.00	**1514.00**	350.0
						TEFC							
1	1740	143T	230/460	2.9/1.5	1800-180	1.15	85.5	RS	F	**5N773**	564.00	**479.25**	50.0
1½	1740	145T	230/460	4.4/2.2	1800-180	1.15	85.5	RS	F	**5N774**	583.00	**495.25**	46.0
2	1730	145T	230/460	5.8/2.9	1800-180	1.15	85.5	RS	F	**5N775**	605.00	**514.00**	50.0
3	1760	182T	230/460	8.4/4.2	1800-180	1.15	87.5	CI	F	**5N776**	657.00	**558.50**	95.0
5	1745	184T	230/460	13.2/6.6	1800-180	1.15	88.5	CI	F	**5N777**	719.00	**611.00**	100.0
7½	1760	213T	230/460	19.2/9.6	1800-180	1.15	91.0	CI	F	**5N778**	848.00	**720.50**	110.0
10	1755	215T	230/460	25.0/12.5	1800-180	1.15	91.0	CI	F	**5N779**	979.00	**832.00**	125.0
15	1770	254T	230/460	38.6/19.3	1800-180	1.15	92.4	CI	F	**5N780**	1412.00	**1200.00**	230.0
20	1770	256T	230/460	50.0/25.0	1800-180	1.15	93.0	CI	F	**5N781**	1581.00	**1343.00**	230.0
25	1770	284T	230/460	63.0/31.5	1800-180	1.15	93.0	CI	F	**5N782**	1893.00	**1608.00**	290.0
30	1770	286T	230/460	72.0/36.0	1800-180	1.15	93.6	CI	F	**5N783**	2188.00	**1859.00**	290.0

(*) RS = Rolled Steel construction; CI = Cast-Iron construction.

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

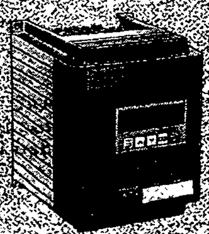
AC INVERTERS

INDUSTRIAL MOTORS: AC DRIVES

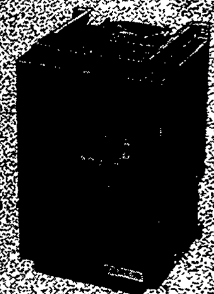
Dayton

UL

PARTS AVAILABLE, CALL 1-800-323-0620



No. 1XC98



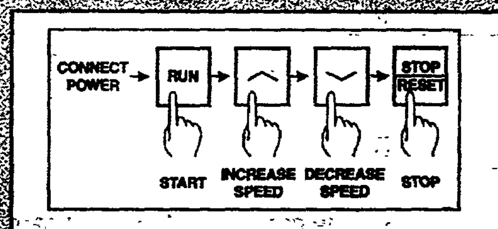
No. 2M532

Self-Protecting—Shuts Off Before Damage Occurs

Indicates Faults—Digital Display of What Happened

- Digital keypad
- Sinusoidal PWM control
- Fast 32-bit digital signal processor
- Smooth motor response during acceleration and deceleration
- Fault message displayed when protection function is activated

SIMPLE OPERATION



Typical Uses: Variable speed operation of standard three-phase motors on pumps, fans, blowers, conveyors, machine tools, and other industrial equipment. **Not for use in combustible, dusty, or wet environments.**

Compact, economical and factory set for easy keypad operation. High speed digital signal processor control combined with immediate output current and voltage detection allow the inverter to attain powerful starting torque (over 150%); and quick response current limiting. This quick response allows impact or load fluctuation nuisance trips to be avoided.

Digital display on Nos. 1XC93 thru 1XC98 monitors frequency (sp[illegible]), diagnostic information, or programming information and data codes.

The liquid crystal and LED display on Nos. 2M526 thru 2M535 provide display for running, reference frequency, output current, output voltage, motor synchronous speed or machine speed.

The keypad on Nos. 1XC93 thru 1XC98 features 5 keys: PRG (program), up and down arrows, run, and stop.

The keypad on Nos. 2M526 thru 2M535 features 8 keys: PRG (program), shift, set, rest, run, stop, and up and down arrows.

Motor Output HP	Maximum Output Amps	Dimensions (In.) H	W	D	Stock No.	List	Each	Shpg. Wt.
INPUT THREE-PHASE, 200-230 VOLTS AC, 60/50 Hz								
1/3	1.5	6 5/8	6 1/4	3 1/8	**1XC93**	$415.00	**$404.75**	3.3
1/2	3.0	6 5/8	6 1/4	4	**1XC94**	450.00	**438.75**	4.4
1	5.0	6 5/8	6 1/4	4 1/2	**1XC95**	525.00	**512.00**	5.1
2	8.0	7 7/8	6 1/4	6 5/8	**1XC96**	685.00	**668.50**	8.1
3	11.0	7 7/8	6 1/4	6 5/8	**1XC97**	750.00	**731.00**	9.0
5	17.0	7 7/8	6 1/4	6 5/8	**1XC98**	965.00	**941.00**	8.5
INPUT THREE-PHASE, 380-460 VOLTS AC, 60/50 Hz								
1	2.5	11 7/8	6 3/8	6 5/8	**2M526**	1100.00	**1044.00**	12.0
2	3.7	11 7/8	6 3/8	6 5/8	**2M527**	1210.00	**1135.00**	13.0
3	5.5	11 7/8	6 3/8	6 5/8	**2M528**	1350.00	**1266.00**	13.0
5	9.0	11 7/8	6 3/8	6 5/8	**2M529**	1650.00	**1545.00**	13.0
7 1/2	13.0	15	9 1/2	8 1/2	**2M530***	2010.00	**1886.00**	27.0
10	18.0	15	9 1/2	8 1/2	**2M531***	2500.00	**2348.00**	27.0
15	24.0	17 3/4	10 5/8	8 5/8	**2M532***	3150.00	**2950.00**	35.0
20	30.0	17 3/4	10 6/8	8 5/8	**2M533***	4000.00	**3752.00**	36.0
25	39.0	21 5/8	10 5/8	8 6/8	**2M534***	4860.00	**4563.00**	44.0
30	45.0	21 5/8	10 5/8	8 5/8	**2M535***	5830.00	**5472.00**	44.0

(*) Ground fault protection for inverter.

Output Volts: Three-phase, output volts are same as voltage input; Hz adjustable with 60 Hz factory preset limit.

Enclosure: NEMA 1

Protection: All Units

Stall
Overcurrent
Overvoltage
Undervoltage
Instantaneous Power Failure
Inverter Heatsink Overheating
External Alarm
Short-circuit for Output Terminal

Nos. 2M526 thru 2M535 only:

Motor Overload (electronic thermal or relay trip)
Digital Signal Processing Error

Advanced Programming: All Units

Output Hz
Volts/Hz
Torque Boost
Accel/Decel Time
Output Volt Limit
DC Braking
Auto Restart
Bias Control
Multi-frequency Settings
Input Signal Following
Output Signal Following

Nos. 2M526 thru 2M535 only:

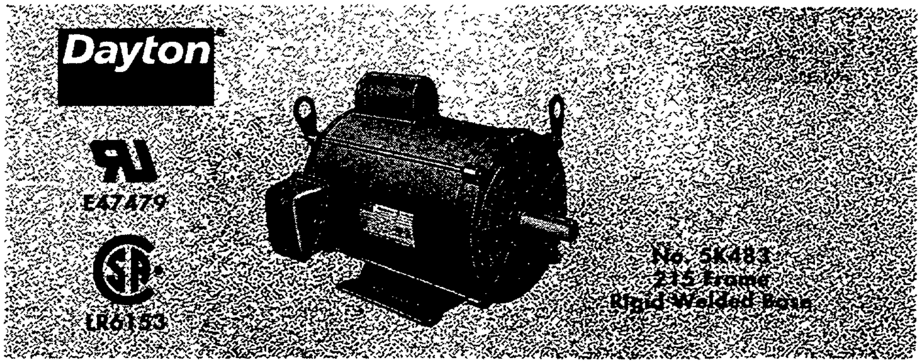
Slip Compensation
Current Limiting
Jump Frequency
Automatic Accelerator/Decelerator
2-Wire/3-Wire Control Selection
Automatic Pattern Operation
Two S-curve Accel/Decel Patterns

CAPACITOR-START U-FRAME MOTORS

CAPACITOR-START OPEN DRIPPROOF U-FRAME MOTORS

- **Rigid welded base**
- **Copper windings**

Typical Uses: Air compressors, machinery, pumps, blowers, and other heavy-duty hard-starting equipment.
Type: Capacitor-start
Bearings: Ball
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1	1740	182	None	115/230	14.4/7.2	1.25	A	**5K480**	$262.00	**$237.75**	41.0
1 1/2	1740	184	None	115/230	22.0/11.0	1.20	A	**5K481**	298.00	**270.25**	49.0
2	1740	213	None	115/230	24.6/12.3	1.20	A	**5K482**	377.00	**341.75**	58.0
3	1740	215	None	115/230	35.6/17.8	1.15	A	**5K483**	476.00	**431.75**	86.0
5	1740	215	None	230	22.0	1.15	A	**5K484†**	631.00	**572.50**	102.0

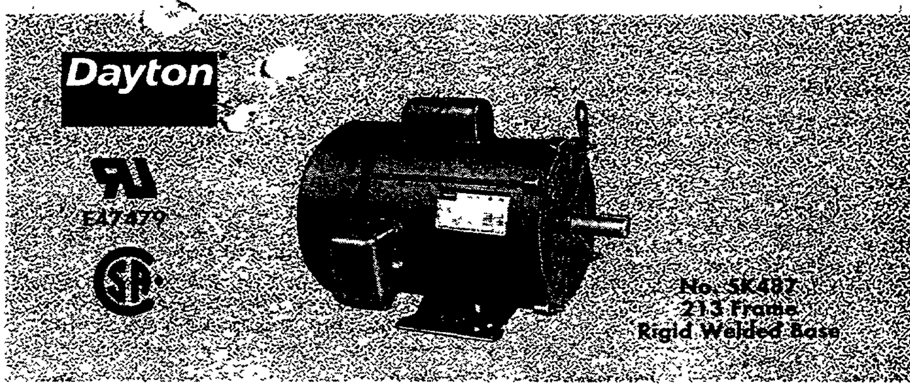
(†) Capacitor-start, capacitor-run.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

CAPACITOR-START TEFC U-FRAME MOTORS

- **Rigid welded base**
- **Copper windings**

Typical Uses: Dependable operation in non-combustible dusty, dirty areas on pumps, air compressors, machinery, fans, blowers, tools, and conveyors.
Type: Capacitor-start
Bearings: Ball
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1	1740	182	None	115/230	13.8/6.9	1.0	A	**5K485**	$277.00	**$251.25**	49.0
1 1/2	1740	184	None	115/230	18.4/9.2	1.0	A	**5K486**	350.00	**317.50**	56.0
2	1740	213	None	115/230	24.0/12.0	1.0	A	**5K487**	473.00	**429.00**	80.0
3	1730	215	None	115/230	33.6/16.8	1.0	A	**5K488†**	643.00	**583.50**	100.0
5	1745	215	None	230	20.0	1.0	A	**5K489†**	832.00	**754.50**	120.0

(†) Capacitor-start, capacitor-run.

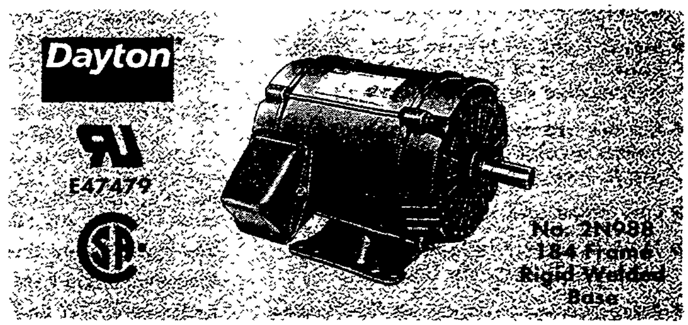
3-PHASE U-FRAME MOTORS

3-PHASE OPEN DRIPPROOF U-FRAME MOTORS

- **NEMA design B**

Typical Uses: Pumps, blowers, machine tools, air compressors, and other moderate to hard-starting applications where 3-phase power is available.

Bearings: Double-shielded ball
Mounting: Rigid welded; 250U frames have removable cast-iron base
Thermal Protection: None
Windings: Copper
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz*	Full-Load Amps at Nameplate Volts	Service Factor	Nominal Efficiency	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1	1760	182	208-220/440	3.7-3.6/1.8	1.25	81.5	A	**2N980**	$316.00	**$237.25**	45.0
1	1160	184	208-220/440	4.4-4.2/2.1	1.25	78.5	A	**2N988**	304.00	**228.25**	45.0
1½	3515	182	208-220/440	4.8-4.6/2.3	1.20	80.0	A	**2N995**	348.00	**261.25**	45.0
1½	1755	184	208-220/440	5.1-5.0/2.5	1.20	82.5	A	**2N981**	349.00	**262.00**	50.0
1½	1140	184	208-220/440	5.6-5.4/2.7	1.15	77.0	A	**2N989**	357.00	**268.25**	50.0
2	3510	184	208-220/440	6.2-6.0/3.0	1.20	81.5	A	**2N996**	380.00	**285.25**	50.0
2	1750	184	208-220/440	6.3-6.2/3.1	1.20	84.0	A	**2N982**	379.00	**284.50**	55.0
2	1145	213	208-220/440	7.3-7.2/3.6	1.15	81.5	A	**2N990**	350.00	**262.50**	75.0
3	3500	184	208-220/440	9.1-8.6/4.3	1.15	82.5	A	**2N997**	389.00	**292.00**	55.0
3	1750	213	208-220/440	9.1-8.8/4.4	1.15	85.5	A	**2N983**	489.00	**367.00**	75.0
3	1170	215	208-220/440	10.2-10.0/5.0	1.15	86.5	A	**2N991**	461.00	**346.00**	80.0
5	3500	213	208-220/440	13.8-13.2/6.6	1.15	86.5	A	**2N998**	537.00	**403.00**	75.0
5	1755	215	208-220/440	14.5-13.8/6.9	1.15	86.5	A	**2N984**	532.00	**399.25**	93.0
5	1165	254U	208-220/440	16.5-16.0/8.0	1.15	87.5	A	**2N992**	586.00	**439.50**	124.0
7½	3520	215	208-220/440	20.8-19.8/9.9	1.15	88.5	A	**2N999**	577.00	**433.00**	85.0
7½	1745	254U	208-220/440	21.5-20.2/10.1	1.15	[illegible]	A	**2N985**	937.00	**703.00**	118.0
10	3510	254U	208-220/440	27.0-25.6/12.8	1.15	[illegible]	A	**3N003**	592.00	**444.25**	125.0
10	1740	256U	208-220/440	28.0-26.8/13.4	1.15	[illegible]	A	**2N986**	1014.00	**761.50**	142.0

(*) 50 Hz operational at rated voltage and 190/380V.

CAUTION: Not for fa[illegible] in unattended areas.

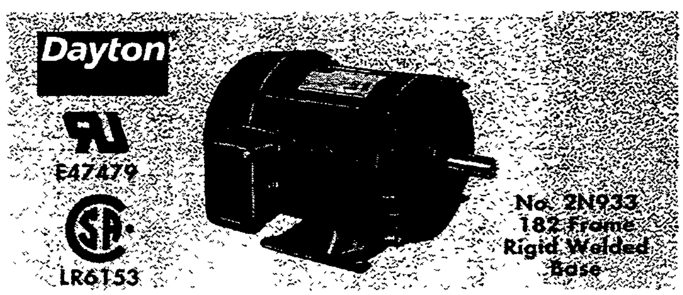
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

3-PHASE TEFC U-FRAME MOTORS

- **NEMA design B**

Typical Uses: Cool and efficient performance on pumps, blowers, air compressors, machine tools, conveyors, and other equipment operating in **non-combustible** dusty, dirty areas.

Bearings: Double-shielded ball
Mounting: Rigid welded; 254U frames have removable base
Thermal Protection: None
Windings: Copper
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Nominal Efficiency	Frame*	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1	1755	182	208-220/440	3.7-3.6/1.8	1.0	78.5	RS	A	**2N933**	$345.00	**$259.00**	45.0
1	1155	184	208-220/440	4.1-4.0/2.0	1.0	77.0	RS	A	**2N941**	388.00	**291.25**	45.0
1½	3510	182	208-220/440	4.9-4.8/2.4	1.0	78.5	RS	A	**2N946**	359.00	**269.50**	45.0
1½	1750	184	208-220/440	5.1-5.0/2.5	1.0	80.0	RS	A	**2N934**	386.00	**289.75**	50.0
1½	1140	184	208-220/440	5.6-5.4/2.7	1.0	77.0	RS	A	**2N942**	396.00	**297.25**	50.0
2	3500	184	208-220/440	6.2-6.0/3.0	1.0	80.0	RS	A	**2N947**	386.00	**289.75**	50.0
2	1760	184	208-220/440	6.4-6.2/3.1	1.0	82.5	RS	A	**2N935**	421.00	**316.25**	60.0
2	1145	213	208-220/440	7.3-7.2/3.6	1.0	80.0	RS	A	**2N943**	470.00	**352.75**	64.0
3	3510	184	208-220/440	8.9-8.6/4.3	1.0	82.5	RS	A	**2N948**	337.00	**253.00**	60.0
3	1755	213	208-220/440	9.2-9.0/4.5	1.0	84.0	RS	A	**2N936**	521.00	**391.25**	62.0
3	1170	215	208-220/440	10.7-10.6/5.3	1.0	84.0	RS	A	**2N944**	500.00	**375.00**	80.0
5	3490	213	208-220/440	14.2-13.4/6.7	1.0	85.5	RS	A	**2N949**	589.00	**442.00**	69.0
5	1760	215	208-220/440	14.7-14.4/7.2	1.0	86.5	RS	A	**2N937**	575.00	**431.50**	98.0
5	1165	254U	208-220/440	17.0-16.6/8.3	1.0	86.5	RS	A	**2N945**	944.00	**708.50**	132.0
7½	1760	254U	208-220/440	21.0-20.2/10.1	1.0	88.5	RS	A	**2N938**	667.00	**500.50**	137.0

(*) RS = Rolled Steel construction.

3-PHASE PREMIUM EFFICIENCY U-FRAME AUTOMOTIVE DUTY MOTORS

- **Super U-frame designs offer the highest efficiencies available today**
- **Meets General Motors 7EQ, 7EHQ, Ford EMI, and Chrysler NPEM 100 automotive duty specifications**
- **Motors are designed to operate well below insulation system limits, resulting in increased life expectancy**
- **Low noise and vibration levels**
- **Meet "special" balance limits for automotive industry levels**
- **Cast-iron construction on 180 frame and above**
- **Two-year warranty**

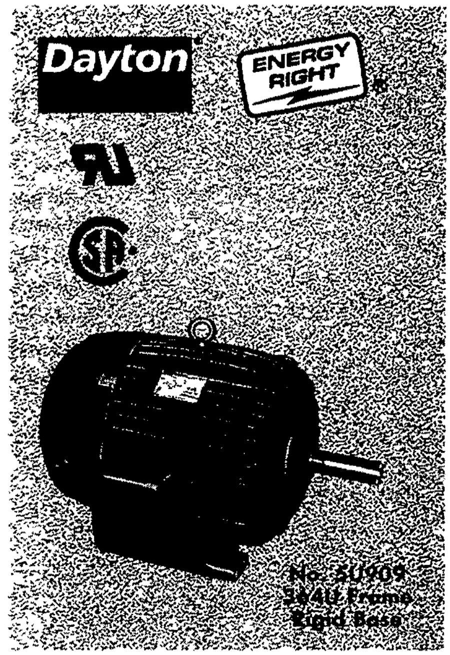
CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

Typical Uses: For a wide variety of applications where change-out to T-frame motors is cumbersome and difficult. Efficiency ratings will qualify for many rebate programs while not requiring added conversion costs.

Designed to meet automotive manufacturers' specifications, these motors feature rugged construction and advanced electrical design. Ideal for use in industrial, commercial, and institutional applications that need U-frame dimensions.

Bearings: Double-shielded ball
Mounting: Rigid base
Enclosure: TENV and TEFC
Thermal Protection: None
Ambient: 65°C
Duty: Continuous
Finish: Gray
Brand: Dayton

Modifications & Service Available at Most Locations



No. 5U909
364U Frame
Rigid Base

HP	Nameplate RPM	NEMA Frame	Rotation	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame*	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1/4	1725	56	CW/CCW	230/460	1.0/0.5	1.0	72.0	RS	B	5U864†	$264.00	**$230.75**	47.0
	1140	56	CW/CCW	230/460	1.3/0.7	[illegible]	64.0	RS	B	5U865†	328.00	**286.75**	45.0
1/3	3450	56	CW/CCW	230/460	1.1/0.6	1.0	70.[illegible]	RS	B	5U866†	224.00	**195.75**	47.0
	1725	56	CW/CCW	230/460	1.1/0.6	1.0	75.5	RS	B	5U867†	272.00	**237.75**	47.0
	1140	56	CW/CCW	230/460	1.3/0.6	1.0	70.0	RS	B	5U868	344.00	**301.00**	45.0
1/2	3450	56	CW/CCW	230/460	1.5/0.8	1.0	84.0	RS	B	5U869†	256.00	**223.75**	27.0
	1725	56	CW/CCW	230/460	1.7/0.9	1.0	80.0	RS	B	5U870†	298.00	**260.50**	47.0
	1140	56	CW/CCW	230/460	2.0/1.0	1.0	72.0	RS	B	5U871	372.00	**325.25**	47.0
3/4	3450	56	CW/CCW	230/460	2.4/1.2	1.0	74.0	RS	B	5U872	276.00	**241.50**	27.0
	1725	56	CW/CCW	230/460	2.6/1.3	1.0	75.5	RS	B	5U873	324.00	**283.25**	49.0
1	3450	56	CW/CCW	230/460	3.2/1.6	1.0	77.0	RS	B	5U874	304.00	**265.75**	47.0
	1770	182	CW/CCW	460	1.4	1.0	89.5	CI	B	5U875†	379.00	**331.25**	85.0
	1175	184	CW/CCW	460	1.5	1.0	88.5	CI	B	5U876†	463.00	**404.75**	85.0
1½	3515	182	CW/CCW	460	2.5	1.0	81.5	CI	B	5U877	324.00	**283.25**	85.0
	1770	184	CW/CCW	460	2.0	1.0	90.2	CI	B	5U878†	406.00	**354.75**	100.0
	1175	184	CW/CCW	460	2.3	1.0	88.5	CI	B	5U879	511.00	**446.75**	100.0
2	3515	184	CW/CCW	460	3.2	1.0	78.5	CI	B	5U880	358.00	**312.75**	100.0
	1765	184	CW/CCW	460	2.7	1.0	90.2	CI	B	5U881	428.00	**374.25**	100.0
	1180	213	CW/CCW	460	3.0	1.0	90.2	CI	B	5U882	566.00	**494.50**	150.0
3	3510	184	CW/CCW	460	4.4	1.0	85.5	CI	B	5U883	406.00	**354.75**	100.0
	1775	213	CW/CCW	460	3.7	1.0	91.7	CI	B	5U884	492.00	**430.00**	150.0
	1175	215	CW/CCW	460	4.2	1.0	91.0	CI	B	5U885	701.00	**612.50**	160.0
	880	254U	CW/CCW	460	4.9	1.0	86.5	CI	B	5U886	886.00	**774.50**	300.0
5	3515	213	CW/CCW	460	7.1	1.0	86.5	CI	B	5U887	482.00	**421.25**	150.0
	1770	215	CW/CCW	460	6.1	1.0	92.4	CI	B	5U888	652.00	**570.00**	160.0
	1175	254U	CW/CCW	460	6.1	1.0	91.0	CI	B	5U889	975.00	**852.00**	300.0
	875	256U	CW/CCW	460	7.6	1.0	87.5	CI	B	5U890	1198.00	**1047.00**	340.0
7½	3510	215	CW/CCW	460	9.5	1.0	87.5	CI	B	5U891	586.00	**512.00**	160.0
	1780	254U	CW/CCW	460	8.9	1.0	93.6	CI	B	5U892	857.00	**748.50**	300.0
	1170	256U	CW/CCW	460	9.0	1.0	91.7	CI	B	5U893	1246.00	**1089.00**	340.0
	880	284U	CW/CCW	460	11.3	1.0	88.5	CI	B	5U894	1528.00	**1335.00**	380.0
10	3535	254U	CW/CCW	460	12.4	1.0	88.5	CI	B	5U895	702.00	**613.00**	300.0
	1775	256U	CW/CCW	460	11.7	1.0	93.6	CI	B	5U896	1041.00	**909.50**	340.0
	1180	284U	CW/CCW	460	12.2	1.0	92.4	CI	B	5U897	1527.00	**1334.00**	380.0
	880	286U	CW/CCW	460	15.2	1.0	88.5	CI	B	5U898	1796.00	**1570.00**	400.0
15	3535	256U	CW/CCW	460	17.9	1.0	90.2	CI	B	5U899	894.00	**781.00**	340.0
	1775	284U	CW/CCW	460	18.2	1.0	93.6	CI	B	5U900	1430.00	**1250.00**	380.0
	1180	324U	CW/CCW	460	17.8	1.0	93.0	CI	B	5U901	2056.00	**1797.00**	560.0
	880	326U	CW/CCW	460	21.1	1.0	89.5	CI	B	5U902	2388.00	**2087.00**	600.0

(*) RS = Rolled Steel construction; CI = Cast-Iron construction. (†) TENV.

CONTINUED ON NEXT PAGE

3-PHASE PREMIUM EFFICIENCY U-FRAME AUTOMOTIVE DUTY MOTORS

DAYTON 3-PHASE PREMIUM EFFICIENCY U-FRAME MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Rotation	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Frame*	Insulation Class	Stock No.	List	Each	Shpg. Wt.
20	3540	286U	CW/CCW	460	23.5	1.0	89.5	CI	B	5U903	$1216.00	**$1062.00**	400.0
	1775	286U	CW/CCW	460	22.8	1.0	93.6	CI	B	5U904	1756.00	**1535.00**	400.0
	1175	326U	CW/CCW	460	23.5	1.0	93.0	CI	B	5U905	2513.00	**2196.00**	600.0
	880	364U	CW/CCW	460	26.4	1.0	90.2	CI	B	5U906	2894.00	**2528.00**	800.0
25	3535	324US	CW/CCW	460	29.9	1.0	91.0	CI	B	5U907	1560.00	**1363.00**	560.0
	1775	324U	CW/CCW	460	28.3	1.0	94.1	CI	B	5U908	2198.00	**1920.00**	560.0
	1190	364U	CW/CCW	460	28.9	1.0	94.1	CI	B	5U909	3034.00	**2651.00**	800.0
	880	365U	CW/CCW	460	33.0	1.0	90.2	CI	B	5U910	3392.00	**2964.00**	880.0
30	3550	326US	CW/CCW	460	35.2	1.0	91.0	CI	B	5U911	1882.00	**1644.00**	600.0
	1780	326U	CW/CCW	460	33.7	1.0	94.5	CI	B	5U912	2568.00	**2245.00**	600.0
	1185	365U	CW/CCW	460	34.6	1.0	94.5	CI	B	5U913	3433.00	**2999.00**	880.0
	890	404U	CW/CCW	460	40.3	1.0	91.7	CI	B	5U914	4016.00	**3509.00**	1100.0
40	3535	364US	CW/CCW	460	46.4	1.0	91.7	CI	B	5U915	2456.00	**2145.00**	800.0
	1785	364U	CW/CCW	460	45.1	1.0	95.0	CI	B	5U916	3386.00	**2959.00**	800.0
	1185	404U	CW/CCW	460	46.0	1.0	94.5	CI	B	5U917	4422.00	**3864.00**	1100.0
	890	405U	CW/CCW	460	52.9	1.0	92.4	CI	B	5U918	4916.00	**4295.00**	1250.0
50	3550	365US	CW/CCW	460	57.7	1.0	92.4	CI	B	5U919	3100.00	**2709.00**	880.0
	1780	365U	CW/CCW	460	56.1	1.0	95.0	CI	B	5U920	3972.00	**3471.00**	880.0
	1190	405U	CW/CCW	460	58.0	1.0	94.5	CI	B	5U921	5108.00	**4462.00**	1250.0
60	3545	405US	CW/CCW	460	69.4	1.0	92.4	CI	B	5U922	3688.00	**3221.00**	1250.0
	1780	405U	CW/CCW	460	67.5	1.0	95.0	CI	B	5U923	4932.00	**4309.00**	1250.0
	1185	444U	CW/CCW	460	68.0	1.0	94.5	CI	B	5U924	5997.00	**5240.00**	1450.0
75	1780	444U	CW/CCW	460	82.3	1.0	95.0	CI	B	5U925	6083.00	**5315.00**	1450.0
	1185	445U	CW/CCW	460	84.1	1.0	95.0	CI	B	5U926	7111.00	**6213.00**	1550.0
100	1780	445U	CW/CCW	460	111.0	1.0	95.4	CI	B	5U927	7561.00	**6607.00**	1550.0
125	1185	5004G	CW/CCW	460	147.0	1.0	93.0	CI	B	5U928	13310.00	**11630.00**	2700.0
150	1785	5004G	CW/CCW	460	168.0	1.0	94.5	CI	B	5U929	12740.00	**11132.00**	2700.0
	1185	5004G	CW/CCW	460	175.0	1.0	93.6	CI	B	5U930	14410.00	**12592.00**	2700.0
200	1785	5004G	CW/CCW	460	231.0	1.0	94.5	CI	B	5U931	14740.00	**12881.00**	2700.0
250	1780	5008G	CW/CCW	460	275.0	1.0	94.5	CI	B	5U932	17930.00	**15669.00**	3000.0

(*) CI=Cast-Iron construction.

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

Modifications & Service Available at Most Locations

GRAINGER STOCKS A BROAD LINE OF DAYTON AND GE MOTORS

Dayton

Top Performance. Dayton motors are built to exceed industry standards such as NEMA (National Electrical Manufacturers Association). Used as a replacement motor in a wide variety of applications, each Dayton motor must outperform the best motor it may be called upon to replace, hence "best of the best" performance. You can be confident that the Dayton motor will work as well as, or better than, the motor you are replacing.

Top Quality Verified by Engineers. Grainger's Engineering Dept., with its "state-of-the-art" test lab, confirms that Dayton motors consistently meet or exceed top performance standards. Engineering also confirms the motors have applicable agency approvals such as UL and CSA.

Clearly Identified. Dayton motors are clearly identified by full fact carton labels and nameplates with wiring diagrams. Maintenance and installation instructions appear in every motor carton.

Broad Line Offering. Dayton offers one of the broadest lines of motors in the industry. One brand can be used for nearly all your motor replacement needs.

Time Proven Performance. Established in 1937, Dayton has grown to be one of the most dependable names in the motor industry.

Broad Line Offering. Grainger now offers over 2400 stock GE brand motors including AC and DC motors from 1/370 HP to 450 HP in Energy $aver™ and standard efficiency designs including severe duty, explosion proof, farm duty, HVAC, and many others.

National Recognition. GE is considered the leading national brand motor with the largest installed customer base. The GE brand is widely known for quality and reliability.

Clearly Identified. GE motors are clearly identified by full fact carton labels and nameplates. Easy-to-read wiring diagrams are included.

Premium Efficiency Leader. GE has long been recognized as an industry leader in premium efficiency motors with a wide variety of ratings and types to suit many applications.

Heritage of Excellence. General Electric is one of the pioneers in the electrical industry with a proud 100 year history dating back to the time of founder Thomas Edison.

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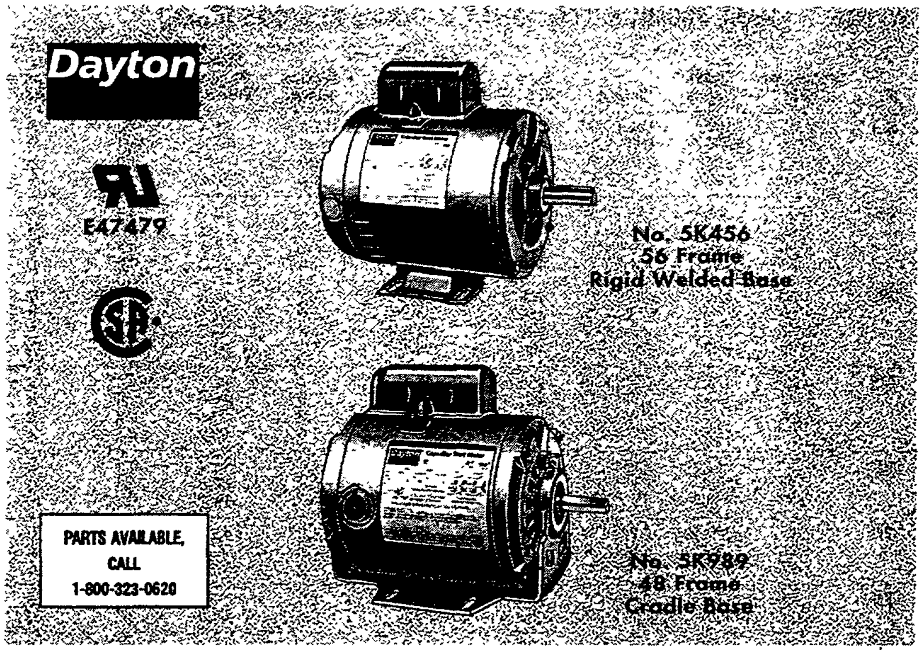
CAPACITOR-START OPEN DRIPPROOF MOTORS

Typical Uses: Fans, blowers, pumps, and commercial machinery
Bearings: All-angle sleeve or double-shielded ball
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Insulation Class	Mounting	Stock No.	List	Each	Shpg. Wt.
1/4	1725	48	Auto	115/230	6.2/3.1	1.35	Sleeve	A	Rigid	**6K971**	$134.00	**$102.40**	16.0
	1725	48	Auto	115/230	6.2/3.1	[illegible]	Sleeve	A	Cradle	**6K438**	136.00	**103.95**	16.0
	1725	48	None	115	6.3	1.0	Sleeve	A	Rigid	**6K902**	118.00	**90.20**	14.0
	1725	48	Auto	115	6.3	1.0	Sleeve	A	Rigid	**6K912**	122.00	**93.25**	15.0
	1725	48	None	115	6.3	1.0	Sleeve	A	Cradle	**5K989**	120.00	**91.70**	15.0
	1725	48	Auto	115	6.3	1.0	Sleeve	A	Cradle	**6K924**	124.00	**94.75**	15.0
	1725	56	Auto	115/230	6.2/3.1	1.35	Sleeve	B	Rigid	**3K201**	134.00	**102.40**	15.0
	1725	56	Auto	115/230	6.2/3.1	1.35	Sleeve	B	Cradle	**3K202**	136.00	**103.95**	18.0
	1725	56	Manual	115	6.0	1.0	Sleeve	A	Rigid	**5K598**	128.00	**97.80**	16.0
	1725	56	None	115	6.0	1.0	Sleeve	A	Cradle	**5K441**	120.00	**91.70**	17.0
	1140	56	None	115/230	6.2/3.1	1.0	Sleeve	A	Rigid	**5K440**	192.00	**146.75**	21.0
1/3	3450	48	Auto	115/230	6.8/3.4	1.35	Sleeve	B	Rigid	**4K132**	118.00	**90.20**	17.0
	3450	56	Auto	115/230	6.4/3.2	1.35	Ball	A	Cradle	**6K326**	128.00	**97.80**	19.0
	1725	48	Auto	115/230	6.2/3.1	1.35	Sleeve	A	Rigid	**6K973**	160.00	**122.25**	18.0
	1725	48	Auto	115/230	6.2/3.1	1.35	Sleeve	A	Cradle	**6K490**	162.00	**123.80**	19.0
	1725	48	None	115/230	6.8/3.4	1.0	Sleeve	A	Rigid	**6K241**	129.00	**98.60**	16.0
	1725	48	Auto	115/230	6.8/3.4	1.0	Sleeve	A	Rigid	**6K243**	137.00	**104.70**	16.0
	1725	48	Auto	115/230	6.8/3.4	1.0	Ball	A	Rigid	**4K928**	145.00	**110.80**	17.0
	1725	48	None	115/230	6.8/3.4	1.0	Sleeve	A	Cradle	**5K991**	131.00	**100.10**	16.0
	1725	48	Auto	115/230	6.8/3.4	1.0	Sleeve	A	Cradle	**6K244**	139.00	**106.25**	17.0
	1725	48	Auto	115/230	6.8/3.4	1.0	Ball	A	Cradle	**4K929**	147.00	**112.30**	18.0
	1725	48	None	115/230	6.8/3.4	1.0	Ball	A	Cradle	**6K927**	139.00	**106.25**	17.0
	1725	56	Auto	115/230	6.8/3.4	1.35	Ball	A	Cradle	**6K366**	169.00	**129.15**	20.0
	1725	56	None	115/230	6.8/3.4	1.35	Ball	A	Cradle	**4K853**	162.00	**123.80**	21.0
	1725	56	Auto	115	6.8	1.0	Sleeve	A	Rigid	**5K443**	127.00	**97.05**	18.0
	1725	56	None	115/230	6.8/3.4	1.0	Sleeve	A	Rigid	**5K445**	127.00	**97.05**	17.0
	1725	56	Manual	115/230	6.8/3.4	1.0	Ball	A	Rigid	**5K599**	149.00	**113.90**	18.0
	1725	56	None	115/230	6.8/3.4	1.0	Sleeve	A	Cradle	**5K446**	131.00	**100.10**	19.0
	1725	56	Auto	115	6.8	1.0	Sleeve	A	Cradle	**5K444**	129.00	**98.60**	19.0
	1725	56	Manual	115/230	6.8/3.4	1.0	Sleeve	A	Cradle	**5K447**	141.00	**107.75**	19.0
	1725	56	None	115/230	6.8/3.4	1.0	Ball	A	Cradle	**5K448**	139.00	**106.25**	19.0
	1140	56	None	115/230	7.4/3.7	1.0	Sleeve	B	Rigid	**5K442**	194.00	**148.25**	23.0
1/2	3450	48	Auto	115/230	8.1/4.1	1.25	Sleeve	B	Rigid	**4K131**	130.00	**99.35**	18.0
	3450	48	None	115/230	9.8/4.9	1.0	Sleeve	A	Rigid	**5K683**	115.00	**87.90**	18.0
	3450	48	Manual	115/230	9.8/4.9	1.0	Sleeve	A	Rigid	**6K361**	124.00	**94.75**	18.0
	3450	56	Auto	115/230	8.0/4.0	1.25	Ball	A	Cradle	**6K345**	140.00	**106.95**	21.0
	1725	48	Auto	115/230	8.4/4.2	1.0	Sleeve	A	Rigid	**5K987**	172.00	**131.45**	21.0
	1725	48	None	115/230	8.4/4.2	1.0	Ball	A	Rigid	**6K958**	172.00	**131.45**	22.0
	1725	48	None	115/230	8.4/4.2	1.0	Sleeve	A	Cradle	**6K951**	166.00	**126.85**	22.0
	1725	48	Auto	115/230	8.4/4.2	1.0	Sleeve	A	Cradle	**6K245**	174.00	**132.95**	21.0
	1725	48	Auto	115/230	8.4/4.2	1.0	Ball	A	Cradle	**6K965**	181.00	**138.30**	22.0

CONTINUED ON NEXT PAGE

CAPACITOR-START OPEN DRIPPROOF MOTORS

DAYTON CAPACITOR-START OPEN DRIPPROOF MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Insulation Class	Mounting	Stock No.	List	Each	Shpg. Wt.
1/2	1725	56	Auto	115/230	9.0/4.5	1.25	Sleeve	B	Rigid	**3K211**	$185.00	**$141.40**	20.0
	1725	56	Auto	115/230	9.0/4.5	1.25	Sleeve	B	Cradle	**3K213**	187.00	**142.90**	20.0
	1725	56	None	115/230	9.0/4.5	1.25	Ball	A	Cradle	**4K856**	185.00	**141.40**	22.0
	1725	56	Auto	115/230	9.0/4.5	1.25	Ball	A	Cradle	**3K199**	195.00	**149.05**	21.0
	1725	56	None	115	8.2	1.0	Sleeve	A	Rigid	**5K449**	164.00	**125.30**	21.0
	1725	56	None	115/230	8.2/4.1	1.0	Sleeve	A	Rigid	**5K451**	156.00	**119.25**	21.0
	1725	56	Auto	115	8.2	1.0	Sleeve	A	Rigid	**5K450**	172.00	**131.45**	21.0
	1725	56	Manual	115/230	8.2/4.1	1.0	Ball	A	Rigid	**5K455**	181.00	**138.30**	21.0
	1725	56	Auto	115	8.2	1.0	Sleeve	A	Cradle	**5K504**	174.00	**132.95**	21.0
	1725	56	Auto	115/230	8.2/4.1	1.0	Sleeve	A	Cradle	**5K453**	184.00	**140.60**	21.0
	1725	56	None	115/230	8.2/4.1	1.0	Sleeve	A	Cradle	**5K452**	158.00	**120.75**	21.0
	1725	56	None	115/230	8.2/4.1	1.0	Ball	A	Cradle	**5K454**	173.00	**132.25**	21.0
	1725	56	Auto	115/230	8.2/4.1	1.0	Ball	A	Cradle	**6K397**	183.00	**139.85**	21.0
3/4	3450	48	None	115/230	11.8/5.9	1.0	Sleeve	A	Rigid	**5K684**	143.00	**109.30**	18.0
	3450	48	Manual	115/230	11.8/5.9	1.0	Sleeve	A	Rigid	**6K370**	153.00	**116.95**	19.0
	3450	56	Auto	115/230	10.5/5.3	1.25	Sleeve	B	Rigid	**4K130**	170.00	**129.90**	21.0
	3450	56	Auto	115/230	9.8/4.9	1.25	Ball	A	Cradle	**6K346**	172.00	**131.45**	24.0
	1725	56	Auto	115/230	11.6/5.8	1.25	Sleeve	B	Rigid	**3K218**	228.00	**174.50**	28.0
	1725	56	Auto	115/230	11.6/5.8	1.25	Sleeve	B	Cradle	**3K224**	230.00	**176.00**	28.0
	1725	56	None	115/230	11.4/5.7	1.25	Ball	A	Cradle	**4K859**	228.00	**174.50**	27.0
	1725	56	Auto	115/230	11.4/5.7	1.25	Ball	A	Cradle	**6K376**	238.00	**182.00**	29.0
	1725	56	None	115	11.6	1.0	Sleeve	A	Rigid	**5K456**	199.00	**152.25**	26.0
	1725	56	None	115/230	11.6/5.8	1.0	Sleeve	A	Rigid	**5K457**	207.00	**158.25**	24.0
	1725	56	Auto	115	11.6	1.0	Sleeve	A	Rigid	**5K982**	203.00	**155.25**	24.0
	1725	[illegible]	Auto	115	11.6	1.0	Ball	A	Rigid	**6K236**	211.00	**161.50**	24.0
	1725	56	None	115/230	11.6/5.8	1.0	Ball	A	Rigid	**6K519**	215.00	**164.50**	24.0
	1725	56	Manual	115/230	11.6/5.8	1.0	Ball	A	Rigid	**5K460**	225.00	**172.25**	24.0
	1725	56	None	115/230	11.6/5.8	1.0	Sleeve	A	Cradle	**5K458**	209.00	**160.00**	25.0
	1725	56	Auto	115/230	11.6/5.8	1.0	Sleeve	A	Cradle	**5K459**	215.00	**164.50**	26.0
	1725	56	Auto	115/230	11.6/5.8	1.0	Ball	A	Cradle	**6K759**	223.00	**170.50**	25.0
1	3450	56	Auto	115/230	13.8/6.9	1.25	Sleeve	B	Rigid	**4K129**	198.00	**151.50**	25.0
	3450	56	Auto	115/230	17.8/8.9	1.25	Ball	B	Cradle	**6K347**	192.00	**146.70**	25.0
	3450	56	None	115/230	15.0/7.5	1.0	Ball	A	Rigid	**6K232**	180.00	**137.50**	31.0
	3450	56	Manual	115/230	15.0/7.5	1.0	Ball	A	Rigid	**6K385**	190.00	**145.20**	30.0
	1725	66	Auto	115/230	13.6/6.8	1.0	Ball	A	Rigid	**4K996**	319.00	**243.75**	33.0
	1725	56	None	115/230	13.6/6.8	1.25	Ball	A	Cradle	**5K922**	233.00	**178.25**	32.0
	1725	56	Auto	115/230	13.6/6.8	1.25	Ball	B	Cradle	**6K321**	255.00	**195.00**	32.0
	1725	56	None	115/230	14.8/7.4	1.0	Sleeve	A	Rigid	**5K431**	223.00	**170.50**	30.0
	1725	56	Auto	115/230	14.8/7.4	1.0	Ball	A	Rigid	**6K237**	241.00	**184.25**	30.0
	1725	56	None	115/230	14.8/7.4	1.0	Sleeve	A	Cradle	**5K432**	225.00	**172.00**	31.0
	1725	56	Auto	115/230	14.8/7.4	1.0	Sleeve	A	Cradle	**6K246**	235.00	**179.75**	31.0
	1725	56	Auto	115/230	14.8/7.4	1.0	Ball	A	Cradle	**6K760**	240.00	**183.50**	32.0
1½	3450	56	Auto	115/230	17.5/8.8	1.15	Ball	B	Cradle	**6K365**	251.00	**192.00**	28.0
	3450	56	None	115/230	19.6/9.8	1.0	Ball	A	Rigid	**6K284***	223.00	**170.50**	32.0
	3450	56	Manual	115/230	19.6/9.8	1.0	Ball	A	Rigid	**6K614***	239.00	**182.75**	32.0
	3450	66	Manual	115/230	16.4/8.2	1.0	Ball	B	Rigid	**5K242**	325.00	**248.75**	35.0
	1725	56	Auto	115/230	20.4/10.2	1.15	Ball	B	Cradle	**6K324**	312.00	**238.75**	39.0
	1725	56	None	115/230	20.0/10.0	1.0	Ball	B	Rigid	**6K162†**	288.00	**220.25**	38.0
2	3450	56	Auto	115/230	19.6/9.8	1.15	Ball	B	Cradle	**6K805**	329.00	**251.75**	37.0
	3450	56	None	115/230	23.0/11.5	1.0	Ball	A	Rigid	**6K138***	297.00	**227.25**	36.0
	3450	56	Manual	115/230	22.0/11.0	1.0	Ball	A	Rigid	**6K652***	313.00	**239.50**	36.0

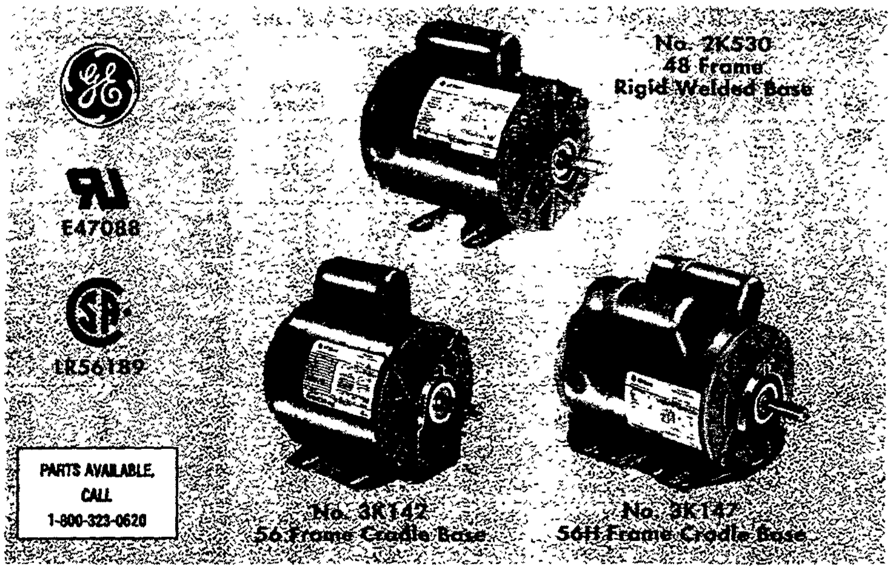
(*) Side mounted conduit box. (†) Rigid cradle base; similar to cradle base except does not have rubber rings on endshield.

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

CAPACITOR-START OPEN DRIPPROOF MOTORS

Typical Uses: Fans, blowers, pumps, and commercial machinery.
Bearings: Sleeve or ball
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE



CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

SINGLE SPEED

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Mounting	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/4	1725	48	Auto	115	5.2	1.35	Sleeve	Cradle	C201	**2K504**	$160.00	**$97.90**	15.0
	1725	48	None	115	5.2	1.35	Sleeve	Cradle	C200	**4K588**	151.00	**92.40**	16.0
	1725	48	Auto	115/230	5.2/2.6	1.35	Sleeve	Rigid	C145	**2K530**	158.00	**96.70**	16.0
	1725	48	Auto	115/230	5.2/2.6	1.35	Sleeve	Cradle	C203	**3K148**	166.00	**101.60**	15.0
	1725	48	None	115/230	5.2/2.6	1.35	Sleeve	Cradle	C202	**2K505**	160.00	**97.90**	17.0
	1140	56	Auto	115/230	6.2/3.1	1.35	Ball	Cradle	C544	**2K507**	261.00	**160.00**	25.0
1/3	3450	48	Auto	115/230	6.8/3.4	1.35	Ball	Cradle	C208	**1D065**	148.00	**89.10**	16.0
	1725	48	Auto	115/230	6.6/3.3	1.0	Sleeve	Cradle	C129	**3K054**	166.00	**101.60**	16.0
	1725	48	Auto	115/230	6.6/3.3	1.35	Ball	Cradle	C210	**1D067**	179.00	**107.75**	18.0
	1725	48	None	115/230	6.6/3.3	1.35	Ball	Cradle	C209	**1D066**	170.00	**102.30**	18.0
	1725	56	Manual	115/230	6.6/3.3	1.0	Ball	Rigid	C105	**2K484**	203.00	**124.25**	15.0
	1725	56	Auto	115/230	6.6/3.3	1.35	Ball	Cradle	C216	**2K511**	210.00	**128.50**	18.0
	1725	56	None	115/230	6.6/3.3	1.35	Ball	Cradle	C215	**2K510**	191.00	**116.90**	18.0
	1140	56	Auto	115/230	8.6/4.3	1.35	Ball	Cradle	C548	**2K514**	265.00	**162.25**	35.0
	1140	56	None	115/230	8.6/4.3	1.35	Ball	Cradle	C1258	**2K513**	257.00	**157.50**	33.0
1/2	3450	48	None	115/230	7.6/3.8	1.25	Ball	Cradle	C219	**1D068**	154.00	**92.70**	15.0
	1725	48	Auto	115/230	8.6/4.3	1.0	Ball	Cradle	C133	**1D057**	223.00	**134.25**	19.0
	1725	56	Auto	115/230	8.6/4.3	1.0	Ball	Cradle	C136	**3K060**	225.00	**137.70**	18.0
	1725	56Z†	None	115/230	8.6/4.3	1.0	Ball	Rigid	C393	**1D070**	218.00	**131.20**	18.0
	1725	56	None	115/230	9.2/4.6	1.25	Ball	Cradle	C415	**2K773**	258.00	**158.25**	21.0
	1725	56	Auto	115/230	8.8/4.4	1.25	Ball	Cradle	C223	**3K142**	231.00	**141.35**	19.0
	1725	56	None	115/208-230	8.8/4.2-4.4	1.25	Ball	Cradle	C221	**6K186**	209.00	**127.90**	20.0
	1140	56	Auto	115/230	9.4/4.7	1.25	Ball	Cradle	C552	**2K517**	398.00	**243.75**	41.0
	1140	56	None	115/230	9.4/4.7	1.25	Ball	Cradle	C1264	**2K516**	390.00	**239.00**	41.0
3/4	3450	48	None	115/230	11.2/5.6	1.0	Ball	Rigid	C111	**1D056**	185.00	**111.35**	19.0
	3450	48Z†	None	115/230	11.2/5.6	1.0	Ball	Rigid	C394	**1D071**	188.00	**113.15**	18.0
	1725	56	Auto	115/230	13.2/6.6	1.25	Ball	Cradle	C231	**3K143**	280.00	**171.50**	26.0
	1725	56	None	115/208-230	13.2/6.2-6.6	1.25	Ball	Cradle	C230	**2K519**	269.00	**164.75**	23.0
	1725	56	None	115/208-230	11.4/5.6-5.7	1.25	Ball	Cradle/Stud	C417	**2K774**	316.00	**193.50**	30.0
	1140	56	None	115/230	12.6/6.3	1.15	Ball	Cradle	C232	**2K520**	451.00	**276.25**	43.0
1	3450	56Z†	None	115/230	13.4/6.7	1.0	Ball	Rigid	C449	**1D074**	224.00	**134.85**	20.0
	1725	56	Auto	115/230	15.0/7.5	1.15	Ball	Cradle	C636	**3K064**	299.00	**183.25**	32.0
	1725	56	Auto	115/230	13.6/6.8	1.15	Ball	Cradle	C236	**3K144**	301.00	**184.50**	34.0
	1725	56	None	115/208-230	13.6/6.7-6.8	1.15	Ball	Cradle	C235	**2K502**	293.00	**179.50**	29.0
1½	1725	56H	Auto	115/230	18.2/9.1	1.15	Ball	Cradle	C239	**3K147***	368.00	**225.50**	46.0

TWO SPEED

HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Mounting	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
3/4	1/4	1725/1140	56	None	115	10.6/6.4	1.25	Ball	Cradle/Stud	C420	**2K776***	$370.00	**$226.75**	33.0
1	1/3	1725/1140	56	None	115	12.0/7.0	1.15	Ball	Cradle/Stud	C475	**2K778***	406.00	**248.75**	40.0
	1/3	1725/1140	56	None	230	5.8/3.4	1.15	Ball	Cradle/Stud	C476	**2K779***	415.00	**254.25**	40.0

(*) Capacitor-start, capacitor-run.
(†) Double shafted. 48Z Double shaft extension 1½" long x 1/2" diameter with flat each end. 56Z Double shaft extension 1⅞" long x 5/8" diameter with keyway each end.

CAPACITOR-START OPEN DRIPPROOF AND TEFC MOTORS

A.O. SMITH BRAND, OPEN DRIPPROOF

Typical Uses: Machinery, tools, fans, blowers, conveyors, and many other everyday applications where maximum HP load will not exceed nameplate rating.

Bearings: All-angle sleeve or prelubricated ball

Thermal Protection: None

Insulation Class: B

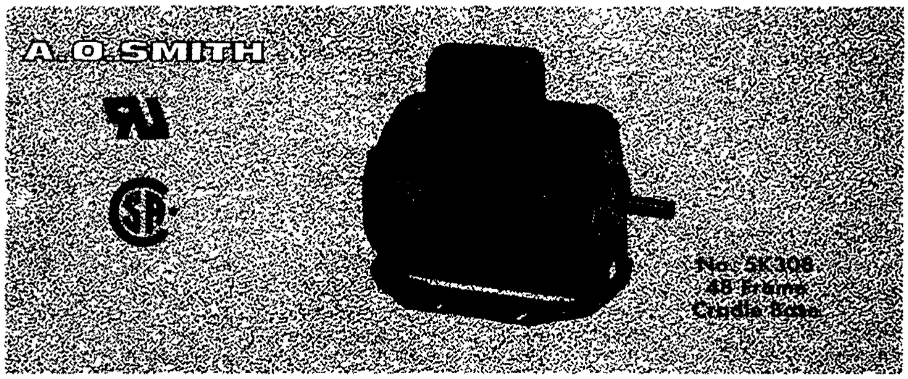
Ambient: 40°C

Duty: Continuous

Rotation: CW/CCW

Finish: Black epoxy

Brand: A.O. Smith



CRADLE BASE

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate	Bearings	Service Factor	A.O. Smith Style No.	Stock No.	List	Each	Shpg. Wt.
1/3	1725	48	115	7.0	Sleeve	1.0	316P298	**5K308**	$142.00	**$109.75**	16.0
1/2	1725	56	115/230	8.8/4.4	Ball	1.25	317P063	**6K085**	200.00	**154.25**	19.0
1	1725/1140*	56	230	6.8	Sleeve	1.0	311P397	**6K137**	392.00	**302.25**	34.0

(*) 1/3 HP at 1140 RPM

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

DAYTON AND GE BRAND, TEFC

Typical Uses: Fans, blowers, pumps, and commercial machinery.

Bearings: Ball

Mounting: Cradle

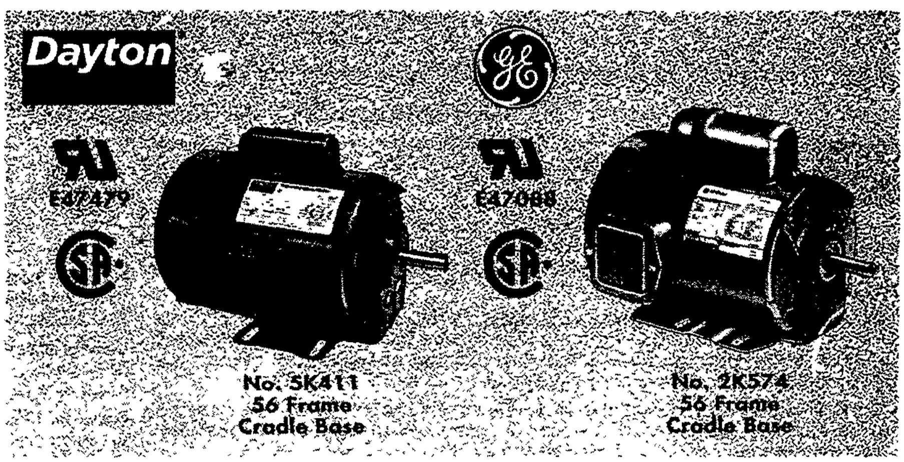
Ambient: 40°C

Duty: Continuous

Rotation: CW/CCW

Finish: Gray

Brand: Dayton and GE



DAYTON BRAND

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1/4	1725	56	Auto	115/230	5.2/2.6	1.0	Ball	A	**5K410**	$164.00	**$125.30**	20.0
1/3	1725	56	Auto	115/230	6.8/3.4	1.0	Ball	B	**5K411**	181.00	**138.30**	22.0
1/2	1725	56	Auto	115/230	9.0/4.5	1.0	Ball	B	**6K477**	222.00	**169.75**	26.0
3/4	1725	56	Auto	115/230	11.4/5.7	1.0	Ball	B	**6K478**	270.00	**206.50**	30.0
1	1725	56	Auto	115/230	13.6/6.8	1.0	Ball	B	**6K810**	303.00	**231.75**	34.0

GE BRAND

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Insulation Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/4	1725	48	None	115/230	5.4/2.7	1.0	Ball	B	C247	**1D069**	$187.00	**$112.55**	17.0
1/2	1725	56	Auto	115/230	8.2/4.1	1.0	Ball	B	C289	**2K572**	262.00	**160.50**	25.0
3/4	1725	56	Auto	115/230	11.6/5.8	1.0	Ball	B	C806	**2K573**	323.00	**198.00**	35.0
1	1725	56	Auto	115/230	13.2/6.6	1.0	Ball	B	C292	**2K574**	358.00	**219.25**	42.0

CAPACITOR-START HIGH EFFICIENCY MOTORS

Typical Uses: General purpose applications including pumps, blowers, air compressors, machinery, and other heavy-duty, hard-starting equipment.

Special Features: NEMA service factors provide a reserve margin for applications where intermittent overloading or fluctuating (high/low) voltage conditions may occur. Dual capacitors.

Type: Capacitor-start, capacitor-run

Bearings: Ball

Mounting: Cradle

Enclosure: Open dripproof

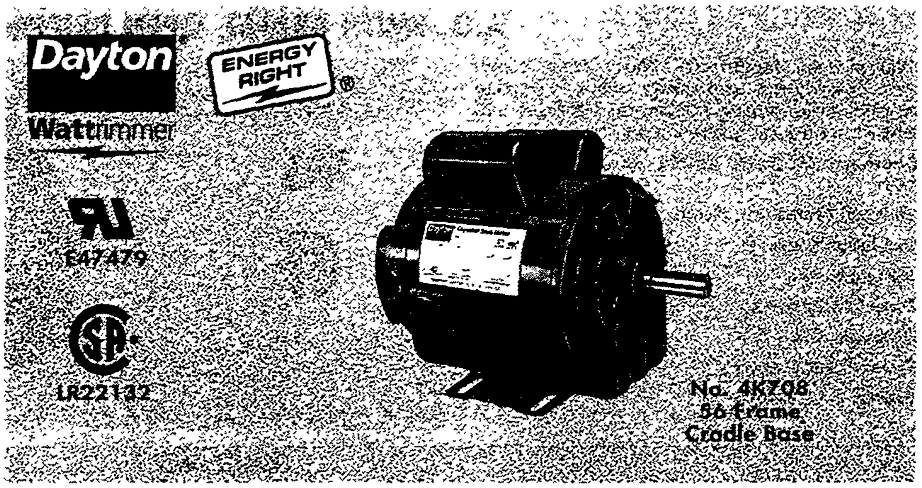
Ambient: 40°C

Duty: Continuous

Rotation: CW/CCW

Finish: Gray

Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Stock No.	List	Each	Shpg. Wt.
1/4	1725	56	None	115/230	2.8/1.4	1.35	4K700	$154.00	$117.65	21.0
	1725	56	Auto	115/230	2.8/1.4	1.35	4K101	162.00	123.80	24.0
1/3	1725	56	None	115/230	3.8/1.9	1.35	4K708	182.00	139.10	23.0
	1725	56	Auto	115/230	3.8/1.9	1.35	4K102	190.00	145.20	25.0
1/2	1725	56	None	115/230	5.5/2.8	1.25	4K715	210.00	160.75	28.0
	1725	56	Auto	115/230	5.5/2.8	1.25	4K103	218.00	166.75	28.0
3/4	1725	56	None	115/230	8.2/4.1	1.25	4K750	257.00	196.50	32.0
	1725	56	Auto	115/230	8.2/4.1	1.25	4K104	265.00	202.75	31.0
1	1725	56	None	115/230	9.2/4.6	1.25	4K757	277.00	212.00	37.0
	1725	56	Auto	115/230	9.2/4.6	1.25	4K105	285.00	217.75	38.0

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GRAINGER STOCKS A BROAD LINE OF DAYTON AND GE MOTORS

Dayton

Top Performance. Dayton motors are built to exceed industry standards such as NEMA (National Electrical Manufacturers Association). Used as a replacement motor in a wide variety of applications, each Dayton motor must outperform the best motor it may be called upon to replace, hence "best of the best" performance. You can be confident that the Dayton motor will work as well as, or better than, the motor you are replacing.

Top Quality Verified by Engineers. Grainger's Engineering Dept., with its "state-of-the-art" test lab, confirms that Dayton motors consistently meet or exceed top performance standards. Engineering also confirms the motors have applicable agency approvals such as UL and CSA.

Clearly Identified. Dayton motors are clearly identified by full fact carton labels and nameplates with wiring diagrams. Maintenance and installation instructions appear in every motor carton.

Broad Line Offering. Dayton offers one of the broadest lines of motors in the industry. One brand can be used for nearly all your motor replacement needs.

Time Proven Performance. Established in 1937, Dayton has grown to be one of the most dependable names in the motor industry.

Broad Line Offering. Grainger now offers over 2400 stock GE brand motors including AC and DC motors from 1/370 HP to 450 HP in Energy $aver™ and standard efficiency designs including severe duty, explosion proof, farm duty, HVAC, and many others.

National Recognition. GE is considered the leading national brand motor with the largest installed customer base. The GE brand is widely known for quality and reliability.

Clearly Identified. GE motors are clearly identified by full fact carton labels and nameplates. Easy-to-read wiring diagrams are included.

Premium Efficiency Leader. GE has long been recognized as an industry leader in premium efficiency motors with a wide variety of ratings and types to suit many applications.

Heritage of Excellence. General Electric is one of the pioneers in the electrical industry with a proud 100 year history dating back to the time of founder Thomas Edison.

MANY BRANDS OF MAINTENANCE EQUIPMENT AVAILABLE

gojo · UNITED RECEPTACLE · EUREKA VACUUM CLEANERS · Dayton · Rubbermaid · Hoover

SPLIT-PHASE OPEN DRIPPROOF MOTORS

COMMERCIAL MOTORS

- **NEMA 42 frame is supplied with a relay instead of centrifugal switch (relay mounting clip also included)**

Typical Uses: Fans, blowers, conveyors, tools, pumps, reducers, and similar moderate-starting torque applications. NEMA 42 frame is more frequently used on business machines, vending machines, printing equipment, door openers, and other applications where a small, compact motor is required.

Ambient: 40°C

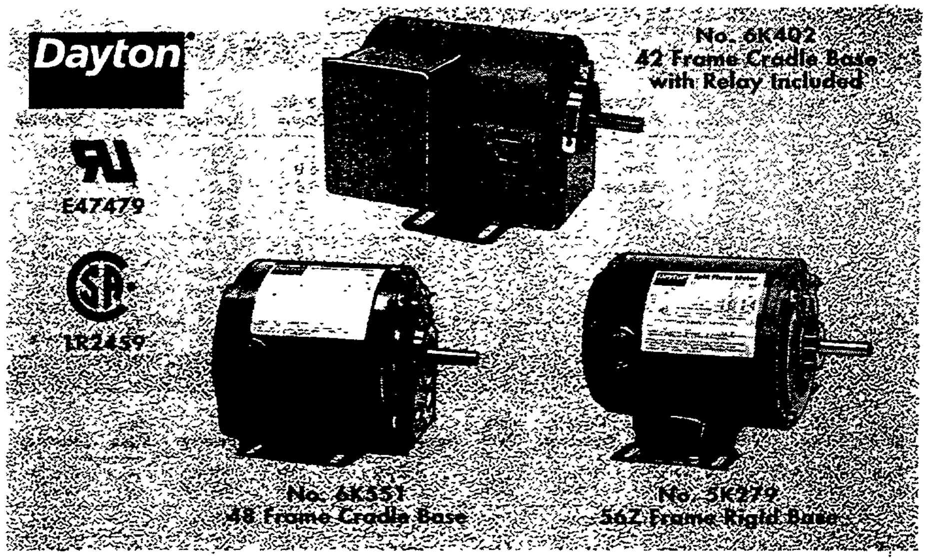
Duty: Continuous

Rotation: CW/CCW

Finish: Gray

Brand: Dayton

> **CAUTION:**
> **Not for fans in unattended areas.**
> Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



SINGLE SPEED

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Ins. Class	Mounting	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
1/12	1725	42	None	115	2.6	1.4	Ball	B	Cradle	3/8 x 1 1/8"	**6K402**	$114.00	**$82.20**	8.8
	1725	42	Auto	115	2.7	1.4	Ball	B	Cradle	3/8 x 1 1/4	**4K133**	114.00	**79.00**	8.8
1/6	1725	48	Auto	115	3.5	1.35	Sleeve	B	Cradle	1/2 x 1 1/2	**6K551**	104.00	**75.20**	13.0
	1725	48	Auto	115/230	3.6/1.8	1.35	Ball	B	Cradle	1/2 x 1 1/2	**3K613**	122.00	**86.75**	15.0
	1140	56Z*	None	115	4.6	1.35	Sleeve	A	Cradle	1/2 x 1 1/2	**5K559#†**	152.00	**109.50**	18.0
1/4	1725	48	Auto	115/230	4.6/2.3	1.35	Ball	B	Cradle	1/2 x 1 1/2	**3K614**	128.00	**92.50**	15.0
	1725	48	Auto	115	4.6	1.35	Sleeve	B	Cradle	1/2 x 1 1/2	**6K553**	112.00	**81.00**	15.0
	1725	56Z*	None	115	5.4	1.0	Sleeve	A	Rigid	1/2 x 1 1/2	**5K279**	98.00	**70.65**	15.0
	1725	48	None	115	5.4	1.0	Sleeve	A	Rigid	1/2 x 1 1/2	**5K911‡**	98.00	**70.65**	14.0
	1725	48	Auto	115	5.4	1.0	Sleeve	A	Rigid	1/2 x 1 1/2	**6K718‡**	106.00	**76 40**	14.0
	1725	48	None	115	5.4	1.0	Sleeve	A	Cradle	1/2 x 1 1/2	**5K914#**	104.00	**74.95**	14.0
	1725	48	Auto	115	5.4	1.0	Sleeve	A	Cradle	1/2 x 1 1/2	**5K915**	108.00	**77.70**	14.0
	1725	48	None	115	5.4	1.0	Ball	A	Cradle	1/2 x 1 1/2	**6K716**	112.00	**80.70**	14.0
	1725	56Z*	Auto	115	5.4	1.0	Ball	A	Cradle	1/2 x 1 1/2	**6K722†**	116.00	**89.65**	15.0
	1725	56Z*	None	115	5.7	1.0	Ball	A	Cradle	1/2 x 1 1/2	**6K731**	112.00	**80.70**	15.0
	1725	56Z*	Auto	115	5.4	1.0	Sleeve	A	Cradle	1/2 x 1 1/2	**5K220†**	108.00	**78.05**	15.0
	1725	56Z*	None	115	5.4	1.0	Sleeve	A	Cradle	1/2 x 1 1/2	**5K280#**	104.00	**74.95**	15.0
1/3	3450	48	None	115	6.6	1.0	Sleeve	A	Rigid	1/2 x 1 1/2	**5K586‡**	104.00	**75.90**	14.0
	1725	48	Auto	115	6.0	1.35	Sleeve	B	Cradle	1/2 x 1 1/2	**6K570**	130.00	**94.05**	16.0
	1725	48	Auto	115/230	6.0/3.0	1.35	Ball	B	Cradle	1/2 x 1 1/2	**3K615**	146.00	**105.55**	17.0
	1725	48	None	115	6.8	1.0	Sleeve	A	Rigid	1/2 x 1 1/2	**5K916‡**	110.00	**79.25**	14.0
	1725	48	Auto	115	6.0	1.0	Sleeve	A	Rigid	1/2 x 1 1/2	**5K601‡**	114.00	**82.15**	15.0
	1725	48	Auto	230	3.0	1.0	Sleeve	A	Rigid	1/2 x 1 1/2	**5K602‡**	122.00	**87.90**	15.0
	1725	48	None	115	6.8	1.0	Ball	A	Rigid	1/2 x 1 1/2	**6K782‡**	118.00	**85.05**	15.0
	1725	48	None	115	6.8	1.0	Sleeve	A	Cradle	1/2 x 1 1/2	**5K917**	112.00	**80.70**	14.0
	1725	48	Auto	115	6.8	1.0	Sleeve	A	Cradle	1/2 x 1 1/2	**5K918**	116.00	**85.25**	14.0
	1725	48	None	115	6.8	1.0	Ball	A	Cradle	1/2 x 1 1/2	**6K725**	120.00	**86.50**	14.0
	1725	48	Auto	115	6.8	1.0	Ball	A	Cradle	1/2 x 1 1/2	**6K744**	124.00	**96.95**	15.0
	1725	56Z*	None	115	6.0	1.0	Sleeve	A	Rigid	1/2 x 1 1/2	**5K281**	110.00	**79.25**	15.0
	1725	56Z*	Auto	115	6.0	1.0	Sleeve	A	Rigid	1/2 x 1 1/2	**6K761**	114.00	**82.15**	15.0
	1725	56Z*	Auto	115	6.0	1.0	Ball	A	Rigid	1/2 x 1 1/2	**5K412**	122.00	**87.90**	15.0
	1725	56Z*	None	115	6.0	1.0	Sleeve	A	Cradle	1/2 x 1 1/2	**5K282**	112.00	**80.70**	17.0
	1725	56Z*	Auto	115	6.0	1.0	Sleeve	A	Cradle	1/2 x 1 1/2	**5K221†**	116.00	**85.65**	18.0
	1725	56Z*	None	115	6.0	1.0	Ball	A	Cradle	1/2 x 1 1/2	**6K755**	120.00	**86.50**	16.0
	1725	56Z*	Auto	115	6.0	1.0	Ball	A	Cradle	1/2 x 1 1/2	**5K413†**	124.00	**97.25**	18.0
	1725	56Z*	None	115	6.0	1.0	Sleeve	A	Rigid	1/2 x 1 1/2	**5K533**	102.00	**73.80**	14.0
	1725	56Z*	None	115	6.0	1.0	Sleeve	A	Cradle	1/2 x 1 1/2	**5K534**	106.00	**76.40**	14.0
1/2	3450	48	None	115	8.6	1.0	Sleeve	A	Rigid	1/2 x 1 1/2	**6K844‡**	134.00	**97.40**	16.0
	1725	48	Auto	115/230	7.6/3.8	1.25	Ball	B	Cradle	1/2 x 1 1/2	**3K616**	198.00	**143.15**	20.0
	1725	48	Auto	115	7.4	1.25	Sleeve	B	Cradle	1/2 x 1 1/2	**6K589**	182.00	**131.55**	19.0
	1725	48	None	115	8.8	1.0	Sleeve	A	Rigid	1/2 x 1 1/2	**5K984**	137.00	**98.70**	18.0
	1725	48	None	115	8.8	1.0	Sleeve	A	Cradle	1/2 x 1 1/2	**6K763**	141.00	**101.60**	18.0
	1725	48	Auto	115	8.8	1.0	Sleeve	A	Cradle	1/2 x 1 1/2	**6K768**	145.00	**106.30**	18.0
	1725	48	None	115	8.8	1.0	Ball	A	Cradle	1/2 x 1 1/2	**6K764**	151.00	**108.80**	18.0

(*) Have nonstandard 1/2" diameter shaft with flat. (†) Supplied with 5/8" diameter shaft bushing
(‡) Rigid cradle base; similar to cradle base except does not have rubber rings on endshield.
(#) Has extended thru-bolts out shaft endshield for mounting fan guard

CONTINUED ON NEXT PAGE

SPLIT-PHASE OPEN DRIPPROOF MOTORS

DAYTON SPLIT-PHASE OPEN DRIPPROOF MOTORS (Cont.)

SINGLE SPEED

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Ins. Class	Mounting	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
1/2	1725	56	None	115	8.6	1.0	Sleeve	A	Rigid	5/8 x 1 7/8	**5K433**	$137.00	**$98.70**	20.0
	1725	56	None	115	8.6	1.0	Ball	A	Rigid	5/8 x 1 7/8	**6K784**	145.00	**104.45**	19.0
	1725	56	Manual	115	8.6	1.0	Ball	B	Rigid	5/8 x 1 7/8	**5K597**	155.00	**111.70**	20.0
	1725	56	None	115	8.6	1.0	Ball	A	Cradle	5/8 x 1 7/8	**6K775**	147.00	**105.95**	20.0
	1725	56	Auto	115	8.6	1.0	Ball	B	Cradle	5/8 x 1 7/8	**6K780**	155.00	**117.85**	20.0
	1725	56	None	115	8.6	1.0	Sleeve	A	Cradle	5/8 x 1 7/8	**5K283**	141.00	**101.60**	20.0
	1725	56	Auto	115	8.6	1.0	Sleeve	B	Cradle	5/8 x 1 7/8	**6K845**	145.00	**106.30**	20.0
	1725	56	None	230	4.6	1.0	Sleeve	A	Cradle	5/8 x 1 7/8	**5K288**	149.00	**107.35**	20.0
	1725	56Z*	None	115	8.1	1.0	Sleeve	A	Cradle	1/2 x 1 1/2	**4K913**	141.00	**101.60**	17.0
3/4	1725	56	Auto	115/230	11.4/5.7	1.25	Ball	B	Cradle	5/8 x 1 7/8	**3K617**	238.00	**170.25**	23.0

TWO SPEED

HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Ins. Class	Mounting	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
1/4	**1/8**	1725/1140	48Y**	None	115	5.5/4.0	1.0	Sleeve	A	Cradle	1/2 x 1 1/2	**5K671#**	$138.00	**$99.45**	17.0
	1/8	1725/1140	56Z‡	None	115	5.2/3.6	1.0	Sleeve	A	Cradle	1/2 x 1 1/2	**5K574#**	138.00	**99.45**	16.0
1/3	**1/6**	1725/1140	56Z‡	None	115	6.8/4.5	1.0	Sleeve	A	Cradle	1/2 x 1 1/2	**5K554#**	152.00	**109.50**	21.0
1/2	**1/4**	1725/1140	56	None	115	9.2/6.0	1.0	Sleeve	A	Cradle	5/8 x 1 7/8	**5K423**	196.00	**141.20**	23.0
	1/4	1725/1140	56	None	230	4.6/3.0	1.0	Sleeve	A	Cradle	5/8 x 1 7/8	**5K556**	204.00	**147.00**	23.0

(*) Have nonstandard 1/2" diameter shaft with flat.
(**) NEMA 48Y frame cradles are notched for mounting in place of 48 or 56 frame cradle.
(‡) Have nonstandard 1/2" diameter with 1 1/2"L shaft with flat and are supplied with 5/8" diameter shaft bushing.
(#) Has extended thru-bolts out shaft endshield for mounting fan guard.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

A.O. SMITH BRAND, RIGID WELDED OR CRADLE BASE

Typical Uses: Fans and blowers, air circulators, farm and home workshop tools such as jig saws, grinders, and small drill presses. Also, other moderate-starting torque applications where HP load will not exceed nameplate rating.

Enclosure: Open dripproof

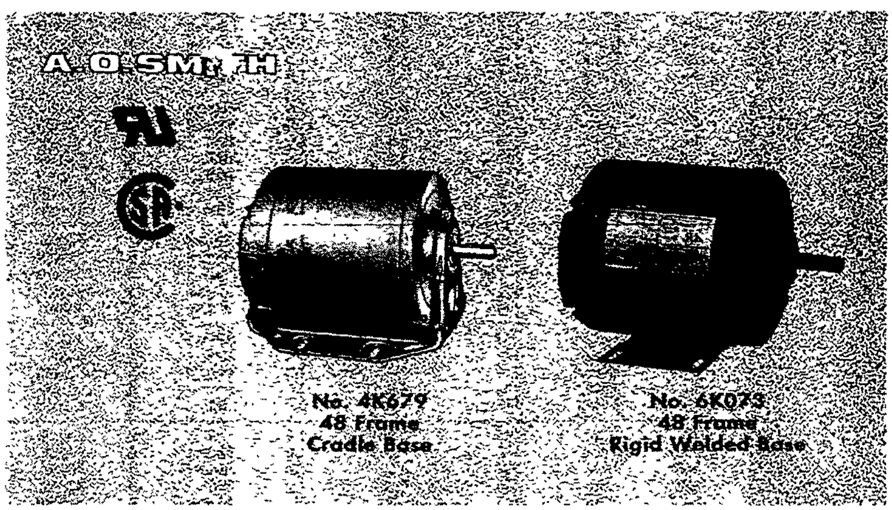
Ambient: 40°C

Duty: Continuous

Rotation: CW/CCW

Finish: Black epoxy

Brand: A.O. Smith



No. 4K679 48 Frame Cradle Base

No. 6K073 48 Frame Rigid Welded Base

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Ins. Class	A.O. Smith Model	Stock No.	List	Each	Shpg. Wt.
60 Hz, RIGID WELDED BASE													
1/3	1725	56Z*	None	115	6.2	1.0	Ball	B	317P044	**6K073**	$124.00	**$95.75**	15.0
60 Hz, CRADLE BASE													
1/4	1725	48	None	115	5.8	1.0	Sleeve	B	316P001	**4K679†**	102.00	**78.70**	13.0
	1725	48	None	115	5.8	1.0	Ball	B	316P245	**5K309**	118.00	**91.10**	12.0
1/3	1725	48	None	115	5.9	1.35	Ball	B	316P246	**5K304**	128.00	**98.85**	15.0
1/2	1725	56	None	115	8.7	1.0	Ball	B	317P037	**6K075**	157.00	**121.10**	17.0

(*) NEMA 56Z frame motors have nonstandard 1/2" diameter shaft with flat; supplied with 5/8" diameter shaft bushing.
(†) Has extended studs out shaft endshield for mounting fan guard.

SPLIT-PHASE OPEN DRIPPROOF MOTORS

Typical Uses: Commercial fans, ventilation fans, blowers, and other belt-driven air-moving applications.

Thermal Protection: None (No. 5K594 is impedance protected)

Ambient: 40°C

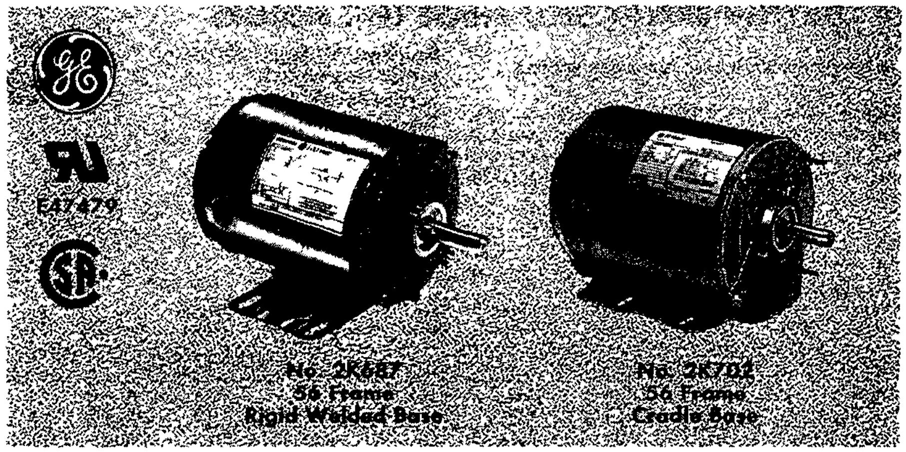
Duty: Continuous

Rotation: CW/CCW

Finish: Gray

Brand: GE

> **CAUTION:**
> **Not for fans in unattended areas.**
> Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



SINGLE SPEED

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Ins. Class	Mounting	Shaft Dimensions Dia. x Length	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/12	1725	42	115**	2.1	1.0	Sleeve	A	Cradle	3/8 x 1⅛"	—	**5K594**	$174.00	**$107.80**	10.0
1/6	1725	48	115	3.9	1.35	Sleeve	B	Cradle	1/2 x 1½	4304	**6K507**	107.00	**65.50**	12.0
	1725	48Z	115	3.9	1.35	Ball	B	Cradle/Stud	5/8 x 1⅞	H156	**3K115**	123.00	**75.30**	12.0
	1140	48	115	4.0	1.35	Sleeve	B	Cradle	5/8 x 1½	H112	**3K404**	166.00	**101.55**	20.0
	1140	48	115	4.0	1.35	Sleeve	B	Cradle/Stud	1/2 x 1½	H695	**1K085**	168.00	**102.80**	23.0
	1140	48Z	115	4.0	1.35	Ball	B	Cradle/Stud	1/2 x 1⅞	H158	**2K697**	183.00	**111.95**	19.0
	850	56	115	6.1	1.35	Ball	B	Cradle/Stud	5/8 x 1⅞	H620	**2K699**	336.00	**205.75**	29.0
1/4	1725	48	115	5.6	1.35	Ball	B	Rigid	1/2 x 1½	H239	**2K684**	128.00	**78.35**	14.0
	1725	48	115	5.1	1.35	Sleeve	B	Rigid	1/2 x 1½	4354	**2K682**	111.00	**67.95**	12.0
	1725	48	115	5.1	1.35	Sleeve	B	Cradle	1/2 x 1½	4355	**6K569**	116.00	**71.00**	13.0
	1725	48	230	2.5	1.35	Sleeve	B	Cradle	1/2 x 1½	4360	**2K690**	123.00	**75.25**	17.0
	1725	48	115	5.7	1.0	Sleeve	B	Rigid	1/2 x 1½	4351	**5K524**	107.00	**65.50**	12.0
	1725	48	115	5.7	1.0	Sleeve	B	Cradle	1/2 x 1½	4352	**5K525**	111.00	**67.95**	12.0
	1725	48Z	115	5.1	1.35	Ball	B	Cradle/Stud	1/2 x 1⅞	H160	**3K118**	131.00	**80.15**	14.0
	1725	56Z*	115	5.7	1.0	Sleeve	B	Cradle	1/2 x 1½	4359	**3K086**	113.00	**69.15**	13.0
	1140	56	115	5.6	1.35	Ball	B	Cradle/Stud	5/8 x 1⅞	H162	**2K700**	240.00	**146.85**	27.0
	850	56	115	6.9	1.25	Ball	B	Cradle/Stud	5/8 x 1⅞	H296	**2K698**	411.00	**251.75**	35.0
1/3	3450	48	115	5.6	1.35	Ball	B	Cradle	1/2 x 1½	H114	**1D078**	123.00	**74.05**	15.0
	1725	48	115	6.2	1.35	Ball	B	Cradle	1/2 x 1½	4370	**1D036**	142.00	**85.45**	15.0
	1725	48	115	6.8	1.0	Ball	B	Rigid	1/2 x 1½	H229	**2K683**	135.00	**82.60**	15.0
	1725	48	115	6.2	1.0	Sleeve	B	Rigid	1/2 x 1½	4368	**6K185**	117.00	**71.60**	14.0
	1725	48	115	6.2	1.0	Sleeve	B	Cradle	1/2 x 1½	4369	**5K527**	121.00	**74.05**	14.0
	1725	48	230	3.3	1.0	Sleeve	B	Rigid	1/2 x 1½	4373	**2K685**	126.00	**77.10**	16.0
	1725	48	230	3.3	1.0	Sleeve	B	Cradle	1/2 x 1½	4371	**5K310**	130.00	**79.55**	15.0
	1725	48Z	115	6.2	1.35	Ball	B	Cradle/Stud	1/2 x 1⅞	H164	**3K120**	153.00	**93.65**	16.0
	1725	48Z	230	3.3	1.35	Ball	B	Cradle/Stud	1/2 x 1⅞	H166	**2K701**	160.00	**97.90**	16.0
	1725	48Z	115	6.2	1.0	Sleeve	B	Rigid	1/2 x 1⅞	4376	**2K686†**	123.00	**75.25**	15.0
	1725	56Z*	115	6.2	1.0	Sleeve	B	Rigid	1/2 x 1½	4372	**3K087**	119.00	**72.80**	15.0
	1725	56Z*	115	6.2	1.0	Sleeve	B	Cradle	1/2 x 1½	4377	**6K947**	124.00	**69.55**	14.0
	1140	56	115	7.0	1.35	Ball	B	Cradle/Stud	5/8 x 1⅞	H168	**2K702**	278.00	**170.50**	31.0
1/2	1725	56	115	7.9	1.25	Ball	B	Cradle	5/8 x 1⅞	4390	**1D040**	197.00	**118.55**	20.0
	1725	56	115	9.3	1.25	Ball	B	Cradle/Stud	5/8 x 1⅞	H286	**3K122**	209.00	**127.90**	18.0
	1725	56	115	8.3	1.0	Ball	B	Rigid	5/8 x 1⅞	H230	**2K687**	168.00	**102.80**	17.0
	1725	56	115	8.3	1.0	Ball	B	Cradle	5/8 x 1⅞	4386	**1D038**	161.00	**96.90**	18.0
	1725	56	230	4.2	1.0	Ball	B	Cradle	5/8 x 1⅞	4387	**1D039**	169.00	**101.75**	18.0
3/4	1725	56	115	11.4	1.0	Ball	B	Cradle	5/8 x 1⅞	4422	**1D043**	197.00	**118.55**	21.0

TWO SPEED, CRADLE BASE

HP at High RPM	HP at Low RPM	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Ins. Class	Mounting	Shaft Dimensions Dia. x Length	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/6	**1/18**	1725/1140	48	115	3.4/1.9	1.35	Sleeve	B	Cradle	1/2 x 1½"	4322	**2K704**	$141.00	**$86.30**	17.0
1/6	**1/18**	1725/1140	48Z	115	3.4/1.9	1.35	Ball	B	Cradle/Stud	1/2 x 1⅞	H169	**2K705**	159.00	**97.30**	17.0
1/4	**1/12**	1725/1140	48Z	115	4.2/2.7	1.35	Ball	B	Cradle/Stud	1/2 x 1⅞	H171	**2K706**	183.00	**111.95**	19.0
1/4	**1/12**	1140/850	56	115	5.8/3.6	1.35	Ball	B	Cradle/Stud	5/8 x 1⅞	H300	**2K707**	353.00	**216.25**	33.0
1/3	**1/9**	1725/1140	48	115	6.3/3.1	1.0	Sleeve	B	Cradle/Stud	5/8 x 1⅞	H396	**2K708**	170.00	**104.05**	19.0
1/3	**1/9**	1725/1140	56	115	5.7/3.2	1.35	Ball	B	Cradle/Stud	5/8 x 1⅞	H173	**2K709**	232.00	**142.00**	25.0
1/2	**1/6**	1725/1140	56	115	8.4/4.8	1.0	Ball	B	Cradle	5/8 x 1⅞	H130	**1D080**	218.00	**131.20**	24.0
1/2	**1/6**	1725/1140	56	115	8.0/4.2	1.25	Ball	B	Cradle/Stud	5/8 x 1⅞	H175	**2K711**	293.00	**179.50**	29.0
1/2	**1/6**	1725/1140	56	230	3.8/1.9	1.25	Ball	B	Cradle/Stud	5/8 x 1⅞	H275	**2K712**	301.00	**184.50**	29.0

Supplied with 5/8" diameter shaft bushing. (**) 60/50 Hz. (†) Double shaft extension 1/2" diameter x 1½" long with flat each end.

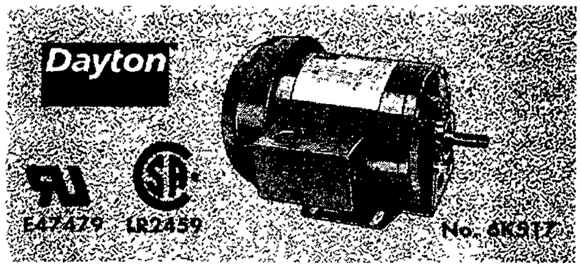
SPLIT-PHASE TEFC MOTORS

DAYTON BRAND, SPLIT-PHASE TEFC MOTORS

- **Large conduit box for easy wiring**

Typical Uses: Dependable operation in noncombustible dusty, dirty areas on pumps, machinery, fans, blowers, conveyors, and other moderate-starting torque applications.

Bearings: All-angle sleeve or prelubricated ball
Service Factor: 1.0
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Ins. Class	Mounting	Stock No.	List	Each	Shpg. Wt.
SINGLE SPEED														
1/4	–	1725	48	None	115	4.4	1.0	Sleeve	A	Cradle	**6K517**	$130.00	**$93.65**	17.0
1/3	–	1725	48	None	115	5.5	1.0	Sleeve	A	Cradle	**6K572**	148.00	**106.65**	20.0
1/2	–	1725	56	None	115	8.6	1.0	Ball	A	Rigid	**5K596**	212.00	**152.75**	23.0
TWO SPEED														
1/2	**1/4**	1725/1140	56	None	115	8.3/6.3	1.0	Ball	A	Rigid	**5K618**	288.00	**207.75**	26.0

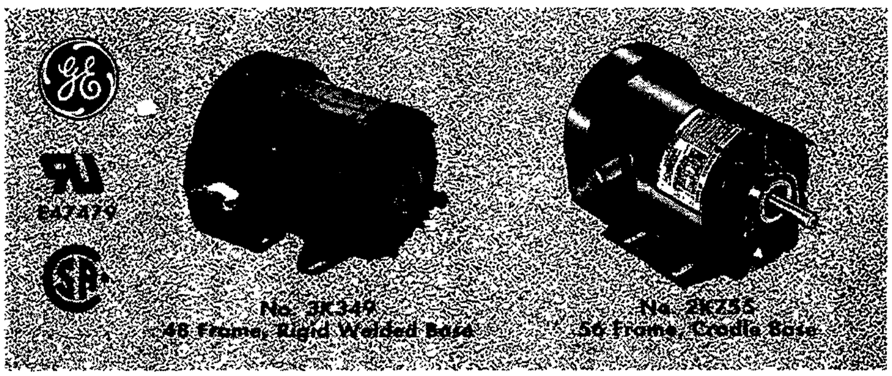
CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND, SPLIT-PHASE TEFC MOTORS

- **Large conduit box for easy wiring**

Typical Uses: Dependable operation in noncombustible dusty, dirty areas on pumps, machinery, fans, blowers, conveyors, and other moderate-starting torque applications.
Bearings: Prelubricated ball for heavy radial and thrust loads
Service Factor: 1.0
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE



No. 3K349 48 Frame, Rigid Welded Base
No. 2K755 56 Frame, Cradle Base

SINGLE SPEED

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearings	Ins. Class	Mounting	Shaft Dimensions Dia. x Length	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/8	1140	48	115	3.8	Ball	B	Cradle/Stud	1/2 x 1½	H177	**2K746**	$190.00	**$116.25**	18.0
1/6	1725	48	115	4.0	Ball	B	Rigid	1/2 x 1½	H116	**3K349**	147.00	**89.95**	14.0
	1725	48	115	4.0	Ball	B	Cradle/Stud	1/2 x 1½	H178	**2K747**	150.00	**91.80**	11.0
	1140	48	115	4.0	Ball	B	Rigid	1/2 x 1½	H118	**2K693**	205.00	**125.45**	21.0
	1140	48	115	4.0	Ball	B	Cradle/Stud	1/2 x 1½	H233	**2K749**	209.00	**127.90**	19.0
1/4	1725	48	115	5.1	Ball	B	Rigid	1/2 x 1½	H120	**3K359**	155.00	**94.85**	17.0
	1725	48	115	5.1	Ball	B	Cradle/Stud	1/2 x 1½	H181	**2K750**	159.00	**97.30**	16.0
	1140	56	115	5.6	Ball	B	Cradle/Stud	5/8 x 1⅞	H182	**2K751**	266.00	**163.00**	30.0
1/3	3450	48	115	6.4	Ball	B	Rigid	1/2 x 1½	H123	**2K695**	157.00	**96.10**	11.0
	1725	56	115	5.9	Ball	B	Cradle/Stud	5/8 x 1⅞	H185	**2K753**	196.00	**119.95**	17.0
	1140	56	115	7.0	Ball	B	Cradle/Stud	5/8 x 1⅞	H186	**2K754**	305.00	**186.75**	31.0
1/2	1725	56	115	8.5	Ball	B	Cradle/Stud	5/8 x 1⅞	H187	**2K755**	235.00	**143.80**	23.0
	1140	56	115	9.0	Ball	B	Cradle/Stud	5/8 x 1⅞	H188	**2K756**	388.00	**237.75**	40.0

TWO SPEED

HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearings	Ins. Class	Mounting	Shaft Dimensions Dia. x Length	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/4	**1/12**	1725/1140	48	115	4.2/2.7	Ball	B	Cradle/Stud	1/2 x 1½	H189	**2K757**	$209.00	**$127.90**	22.0
1/3	**1/10**	1725/1140	56	115	5.7/3.2	Ball	B	Cradle/Stud	5/8 x 1⅞	H190	**2K758**	258.00	**158.25**	27.0
1/2	**1/6**	1725/1140	56	115	8.0/4.2	Ball	A	Cradle/Stud	5/8 x 1⅞	H191	**2K759**	319.00	**195.50**	31.0
1/2	**1/6**	1725/1140	56	230	3.8/1.9	Ball	A	Cradle/Stud	5/8 x 1⅞	H293	**2K760**	327.00	**200.25**	25.0

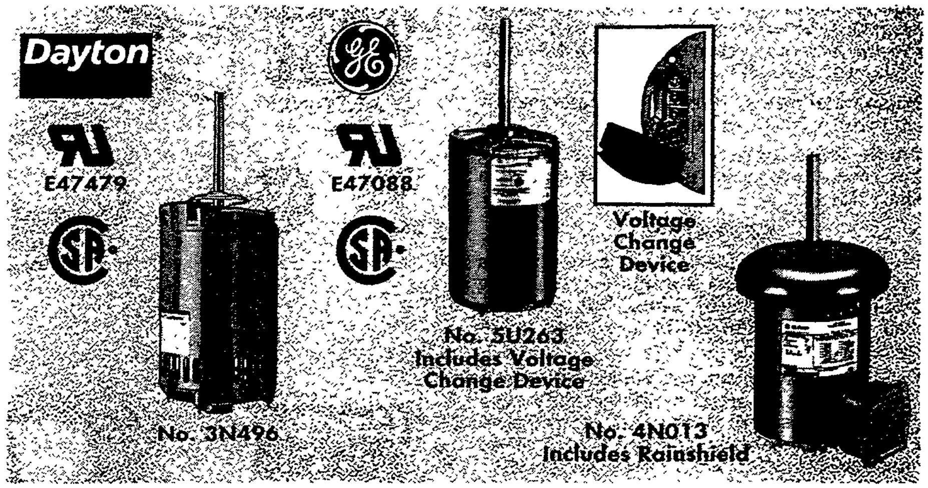
3-PHASE AND PSC COMMERCIAL CONDENSER FAN AND BLOWER MOTORS

3-PHASE COMMERCIAL CONDENSER FAN MOTORS

Typical Uses: New and replacement use in 5 to 10 ton and larger commercial outdoor condensers.

Special Features: Shaft end is enclosed for shaft-up mounting. Dual voltage. Shaft has flat and keyway 90° apart to fit all commonly used fan blades. Water slinger on shaft.

Bearings: Double-sealed ball
Mounting: Fit into most existing OEM belly bands. Enclosed shaft endshield for shaft-up mounting.
Enclosure: Open air-over
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: B
Ambient: Dayton 60°C; GE 65°C
Rotation: CW/CCW
Finish: Gray enamel
Brand: Dayton and GE



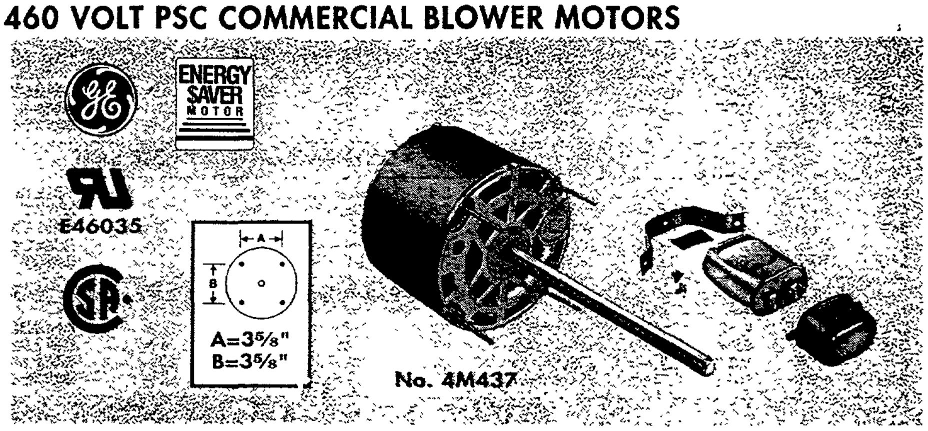
HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts 230V	460V	Efficiency	Body Dia.	Shaft Dimensions Dia. x Length	Length Less Shaft	Mfr's. Stock No.	Stock No.	List	Each	Shpg. Wt.
						DAYTON BRAND, STANDARD EFFICIENCY								
3/4	1140	56YZ	208-230/460	3.6	1.8	Standard	6 3/8"	5/8 x 6"	10 5/8"	—	**3N496**	$282.00	**$215.75**	28.0
1	1140	56Z	208-230/460	4.8	2.4	Standard	6 3/8	5/8 x 6	11 13/16	—	**3N469**	340.00	**234.75**	32.0
1 1/2	1140	56YZ	208-230/460	7.1	3.6	Standard	6 3/8	5/8 x 6	11 13/16	—	**3N470**	374.00	**286.00**	36.0
						GE BRAND, HIGH EFFICIENCY WITH VOLTAGE CHANGE DEVICE								
1/2	1140	56YZ	208-230/460	2.4	1.2	High	6 3/8	5/8 x 6	8 15/16	K578	**3N760**	291.00	**202.00**	28.0
3/4	1140	56YZ	208-230/460	3.4	1.7	High	6 3/8	5/8 x 6	9 9/16	K378	**3N646**	304.00	**211.00**	30.0
1	1140	56YZ	208-230/460	3.6	1.8	High	6 3/8	5/8 x 6	10 1/8	K379	**3N647**	338.00	**234.75**	35.0
1	850	56YZ	208-230/460	5.2	2.6	High	6 3/8	5/8 x 6	10 5/8	K1482	**5U263**	406.00	**281.75**	44.0
1 1/2	1140	56YZ	208-230/460	5.0	2.5	High	6 3/8	5/8 x 6	11 3/8	K380	**3N648**	370.00	**256.75**	43.0
						GE BRAND, STANDARD EFFICIENCY WITH RAINSHIELD								
1/2	1140	48Z	200-230/460	2.6	1.3	Standard	5 5/8	1/2 x 3 1/2	9 5/8	K1403	**4N012**	318.00	**220.75**	20.0
3/4	1140	48Z	200-230/460	3.8	1.9	Standard	5 5/8	5/8 x 4	10 1/16	K1404	**4N013**	337.00	**209.25**	23.0

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

SINGLE-PHASE 460 VOLT PSC COMMERCIAL BLOWER MOTORS

Typical Uses: High efficiency performance in furnace blowers and other shaft-mounted air-over fan and blower equipment.
Special Features: 370V capacitor kit included. 60/50 Hz operational.
Bearings: Ball
Mounting: 3/4" studs
Enclosure: Open air-over
Service Factor: 1.0
Thermal Protection: Auto
NEMA Frame: 48YZ (GE 39 frame)
Insulation Class: A
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW/CCW
Finish: Gray
Brand: GE



GE BRAND, HIGH EFFICIENCY PSC

HP	Nameplate RPM	NEMA Frame	Volts 60/50 Hz	Full-Load Amps at Nameplate Volts	Efficiency	Body Dia.	Shaft Dimensions Dia. x Length	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/4	1625/2-Spd	48YZ	460	0.8	High	5 5/8"	1/2 x 6"	5 3/4"	3470	**4M437**	$216.00	**$131.25**	13.0
1/3	1075/2-Spd	48YZ	460	1.1	High	5 5/8	1/2 x 6	5 3/4	3280	**4M438**	248.00	**150.75**	15.0
1/2	1625/2-Spd	48YZ	460	1.7	High	5 5/8	1/2 x 6	6 3/4	3490	**4M439**	249.00	**151.50**	19.0
3/4	1075/2-Spd	48YZ	460	2.1	High	5 5/8	1/2 x 6	6 3/4	3290	**4M440**	256.00	**155.75**	19.0

SINGLE-PHASE COMMERCIAL PSC CONDENSER FAN MOTORS

DAYTON FEATURES

High Efficiency: Includes resilient rings for mounting in existing base and with studs for mounting from shaft endshield. Capacitor available separately.

Standard Efficiency: Internal conduit box for enclosed wiring connections.

Cradle Units feature capacitor mounting hardware, internal conduit box, and a shaft flat.

GE FEATURES

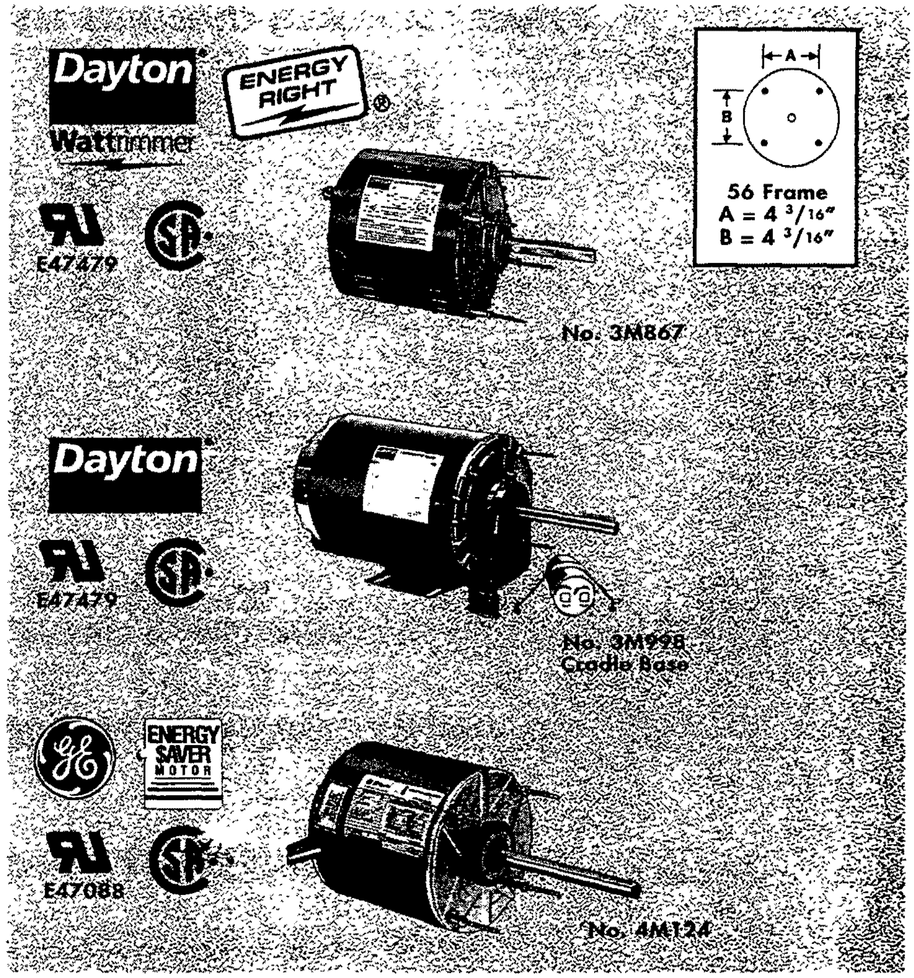
Includes resilient rings for mounting in existing base and with studs for mounting from shaft endshield. Shaft flat and keyway 90° apart. Capacitor available separately.

Typical Uses: New and replacement use in 5 ton or larger commercial outdoor condensers. Also used in commercial and industrial coolers, furnaces, and other shaft-mounted fan and blower equipment.

Special Features: Dual voltage on most ratings. Water slinger on shaft. Drive end is enclosed for shaft-up mounting. Shaft designed to fit all commonly used fan blades.

Bearings: Ball
Shaft: 1/2" dia. shafts have flat; 5/8" dia. shafts have flat and keyway 90° apart
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Rotation: CW/CCW
Brand: Dayton and GE

> **CAUTION:**
> **Not for fans in unattended areas.**
> Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



HP	Nameplate RPM	NEMA Frame	Enclosure	Volts 60 Hz	Full-Load Amps at 230 Volts	Mtg. Dimens. OC	Shaft Dimens. Dia. x L	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.	Capacitor Req'd. Stock No.	Capacitor Req'd. Each
DAYTON BRAND, HIGH EFFICIENCY, 2 1/2" RESILIENT RING MOUNT														
1/2	825	56YZ	Open	230	3.6	7 7/16"	5/8 x 4"	7 7/8"	**3M867**	$313.00	**$239.50**	27.0	5M006	$6.41
3/4	1075	56YZ	Open	230/460	4.0	7 7/16	5/8 x 6	7 7/8	**3M868**	277.00	**212.00**	29.0	5M006	6.41
1	1075	56YZ	Open	230/460	5.3	8 3/16	5/8 x 6	8 5/8	**3M869**	306.00	**234.00**	31.0	5M007	7.72
DAYTON BRAND, CRADLE BASE														
1/3	1075	48Z	TEAO	208-230/460	2.4	2 3/4 x 4 1/4	1/2 x 5	7	**3M996**	167.00	**127.60**	17.0	Included	
1/2	1075	48Z	TEAO	208-230/460	2.8	2 3/4 x 4 1/4	1/2 x 5	7	**3M997**	193.00	**147.50**	21.0	Included	
3/4	1075	48Z	Open	208-230/460	5.0	2 3/4 x 4 1/4	1/2 x 5	7 1/2	**4M001**	214.00	**163.75**	23.0	Included	
1	1075	56Z	TEAO	208-230/460	5.1	3 x 4 7/8	5/8 x 5	10 7/8	**3M998**	303.00	**231.50**	40.0	Included	
1 1/2	1075	56Z	TEAO	208-230/460	7.5	3 x 4 7/8	5/8 x 5	11 3/4	**3M999**	322.00	**246.25**	44.0	Included	
DAYTON BRAND, 2 1/2" RESILIENT RING MOUNT														
1/2	1075	48YZ	TEAO	208-230/460	3.1	7 3/8	1/2 x 5	7 3/4	**4M228**	173.00	**132.20**	20.0	5M006	6.41
3/4	1075	48YZ	TEAO	208-230/460	4.6	8 3/8	1/2 x 5	8 3/4	**4M229**	193.00	**147.50**	22.0	5M007	7.72
1	1075	56YZ	TEAO	208-230/460	5.2	10 7/16	5/8 x 5	10 7/8	**4M264**	283.00	**216.50**	40.0	5M009	10.76
1 1/2	1075	56YZ	TEAO	208-230/460	7.6	10 7/8	5/8 x 5	10 7/8	**4M265**	302.00	**230.75**	43.0	5M010	11.45

GE BRAND, HIGH EFFICIENCY, 2 1/2" RESILIENT RING MOUNT

HP	Nameplate RPM	NEMA Frame	Enclosure	Volts 60 Hz	Full-Load Amps at 230 Volts	Mtg. Dimens. OC	Shaft Dimens. Dia. x L	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.	Capacitor Req'd. Stock No.	Capacitor Req'd. Each
1/2	1075	56Z	OPAO	208-230/460	3.0	7 1/8"	5/8 x 6"	7 11/16"	P242	**4M124**	$283.00	**$196.50**	26.0	6X656	$6.43
	825	56Z	OPAO	208-230	2.7	7 1/8	5/8 x 4	7 11/16	P245	**4M125**	352.00	**237.25**	25.0	6X656	6.43
3/4	1075	56Z	OPAO	208-230/460	3.8	7 1/4	5/8 x 6	7 11/16	P243	**4M126**	311.00	**209.75**	29.0	6X656	6.43
	825	56Z	OPAO	208-230	5.4	8	5/8 x 6	8 9/16	P246	**4M127**	383.00	**258.00**	31.0	6X656	6.43
1	1075	56Z	OPAO	208-230/460	5.0	8	5/8 x 6	8 9/16	P244	**4M128**	345.00	**232.25**	34.0	6X657	7.73

COMMERCIAL AND RESIDENTIAL PSC CONDENSER/HEAT PUMP FAN MOTORS

- Quick reversing leads
- Water slinger on shaft
- Self-aligning sleeve or ball bearings
- 60°C ambient on some standard efficiency models for high temperature environments
- Standard or high efficiency

Commercial Duty Motors: Feature higher starting torque than residential duty motors and offer universal replacement. Cooler running temperature ensures longer life performance.

Typical Uses: Outdoor air conditioner condensers, refrigeration condensers, and 2-speed models used on heat pumps.

Shaft Position:

Shaft Up—Shaft endshield and shell are totally enclosed. 3/4" studs on shaft endshield. Opposite endshield open.

Shaft Up/Down—Both endshields are totally enclosed with removable drain plugs on each endshield for maximum protection. 3/4" studs on both endshields. Can be mounted vertically or horizontally.

Bearings: All-angle sleeve or prelubricated ball

Service Factor: 1.0

Thermal Protection: Auto

NEMA Frame: 48YZ (No. 3M295 is 56Z)

Body Dia.: 5⅝" (No. 3M295 is 6¾")

Shaft Dia.: 1/2 x 6" (No. 3M995 is 1/2 x 5")

Ambient: 40°C or 60°C

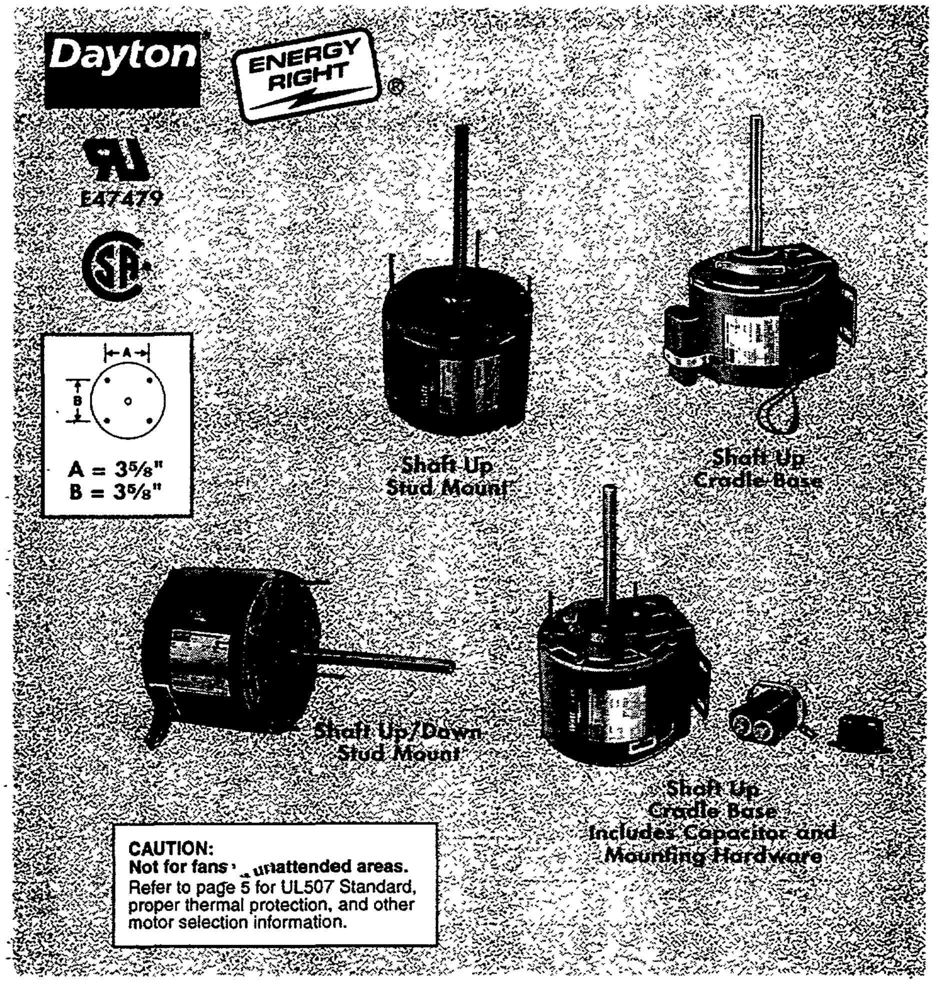
Duty: Continuous air-over

Rotation: CW/CCW

Capacitor: Required

Finish: Gray

Brand: Dayton



CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at 230 Volts	Bearings	Ins. Class	Mounting Shaft Position	Mount Type	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.	Capacitor Req'd. Stock No.	Capacitor Req'd. Each
COMMERCIAL DUTY, HIGH EFFICIENCY, 40°C AMBIENT														
1/6	1075/2-Spd	230	1.0	Sleeve	B	Up	Stud	5 3/16"	3M839	$96.00	**$73.40**	11.0	5M003	$4.25
1/4	1075/2-Spd	208-230	1.8	Ball	B	Up/Down	Stud	4 1/2	4M060	118.00	**90.20**	12.0	5M003	4.25
	1075/2-Spd	230	1.8	Sleeve	B	Up/Down	Stud	4 1/2	3M927	102.00	**77.95**	12.0	5M003	4.25
	1075/2-Spd	230	1.6	Ball	B	Up	Stud	5 7/16	3M841	115.00	**87.90**	13.0	5M003	4.25
	1075/2-Spd	230	1.6	Sleeve	B	Up	Stud	5 7/16	3M840	99.00	**75.70**	13.0	5M003	4.25
	1075	230	1.7	Ball	B	Up/Down	Stud	4 5/8	4M048	114.00	**87.10**	13.0	5M003	4.25
	1075	230	1.7	Sleeve	B	Up/Down	Stud	4 5/8	3M766	98.00	**74.90**	13.0	5M003	4.25
	1075	230	1.9	Sleeve	B	Up	Cradle	5 7/16	3M990	136.00	**103.95**	14.0	Included	
	1075	230	1.7	Ball	A	Up	Stud	5 11/16	4M051	111.00	**84.85**	15.0	5M004	4.99
	1075	230	1.7	Sleeve	A	Up	Stud	5 11/16	3M666	95.00	**72.60**	14.0	5M004	4.99
1/3	1625	230	1.8	Ball	B	Up	Cradle	5 11/16	3M989	151.00	**115.40**	15.0	Included	
	1625	230	1.8	Sleeve	B	Up	Cradle	5 11/16	3M988	135.00	**103.15**	16.0	Included	
	1075/2-Spd	208-230	2.6	Ball	B	Up/Down	Stud	4 15/16	4M061	123.00	**94.00**	16.0	5M005	5.36
	1075/2-Spd	230	2.6	Sleeve	B	Up/Down	Stud	4 15/16	3M928	107.00	**81.75**	17.0	5M005	5.36
	1075/2-Spd	230	1.9	Ball	B	Up	Stud	5 15/16	3M843	120.00	**91.70**	16.0	5M005	5.36
	1075/2-Spd	230	1.9	Sleeve	B	Up	Stud	5 15/16	3M842	104.00	**79.45**	16.0	5M005	5.36
	1075	230	2.1	Ball	B	Up/Down	Stud	5 1/8	4M049	119.00	**90.95**	14.0	5M005	5.36
	1075	230	2.1	Sleeve	B	Up/Down	Stud	5 1/8	3M767	103.00	**78.75**	16.0	5M005	5.36
	1075	230	2.2	Ball	B	Up	Cradle	5 15/16	3M992	156.00	**119.25**	16.0	Included	
	1075	230	2.2	Sleeve	B	Up	Cradle	5 15/16	3M991	142.00	**108.55**	17.0	Included	
	1075	230	2.2	Sleeve	A	Up	Stud	5 15/16	3M667	100.00	**76.40**	16.0	5M004	4.99
	1075	230	2.2	Ball	A	Up	Stud	5 13/16	3M744	116.00	**88.65**	17.0	5M004	4.99
	825	230	2.0	Sleeve	B	Up	Stud	6 3/16	3M764	145.00	**110.80**	16.0	5M005	5.36

CONTINUED ON NEXT PAGE

COMMERCIAL AND RESIDENTIAL PSC AND SHADED POLE CONDENSER FAN MOTORS

DAYTON CONDENSER/HEAT PUMP FAN MOTORS (Cont.)

HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at 230 Volts	Bearings	Ins. Class	Mounting Shaft Position	Mount Type	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.	Capacitor Req'd. Stock No.	Capacitor Req'd. Each
COMMERCIAL DUTY, HIGH EFFICIENCY, 40°C AMBIENT														
1/2	1075/2-Spd	230	3.9	Ball	B	Up/Down	Stud	5¾"	✓**4M062**	$136.00	**$103.95**	20.0	5M006	$6.41
	1075/2-Spd	230	3.9	Sleeve	B	Up/Down	Stud	5¾	✓**3M929**	120.00	**91.65**	20.0	5M006	6.41
	1075/2-Spd	230	3.2	Ball	B	Up	Stud	6 7/16	✓**3M845**	133.00	**101.65**	19.0	5M006	6.41
	1075/2-Spd	230	3.2	Sleeve	B	Up	Stud	6 7/16	✓**3M844**	117.00	**89.40**	19.0	5M006	6.41
	1075	208-230	2.5	Ball	B	Up/Down	Stud	5⅝	✓**4M050**	132.00	**100.85**	19.0	5M006	6.41
	1075	230	3.0	Sleeve	B	Up/Down	Stud	5⅝	✓**3M768**	116.00	**88.65**	18.0	5M006	6.41
	1075	230	3.1	Ball	B	Up	Cradle	6⅞	✓**3M994**	175.00	**133.75**	20.0	Included	
	1075	230	3.1	Sleeve	B	Up	Cradle	7 1/16	✓**3M993**	147.00	**112.30**	20.0	Included	
	1076	230	3.0	Ball	A	Up	Stud	6 1/16	✓**3M745**	129.00	**98.60**	18.0	5M005	5.36
	1075	230	3.0	Sleeve	A	Up	Stud	6 3/16	✓**3M668**	113.00	**86.35**	17.0	5M005	5.36
	825	230	2.8	Ball	B	Up	Stud	6⅝	✓**3M765**	172.00	**131.45**	20.0	5M007	7.72
3/4	1075/2-Spd	230	4.1	Ball	B	Up	Stud	7 1/16	✓**3M769**	147.00	**112.30**	21.0	5M008	9.45
	1075	230	4.4	Ball	B	Up	Stud	6 7/16	✓**3M922**	143.00	**109.30**	19.0	5M007	7.72
COMMERCIAL DUTY, STANDARD EFFICIENCY, 40°C AMBIENT														
1/6	1075	230	1.3	Sleeve	B	Up	Stud	4 15/16	**6M151**	70.00	**45.45**	10.0	5M001	4.25
1/4	1075	230	1.9	Sleeve	A	Up	Cradle	5 11/16	**3M226**	136.00	**103.95**	14.0	Mounted	
	1075	208-230	1.8	Ball	B	Up	Stud	5 3/16	**4M242**	78.00	**57.10**	13.0	5M003	4.25
1/3	1625	230	1.7	Sleeve	A	Up	Cradle	5 11/16	**3M265**	135.00	**103.15**	16.0	Mounted	
	1075	230	2.5	Sleeve	A	Up	Cradle	5 11/16	**3M217**	144.00	**110.05**	16.0	Included	
	1075	208-230	2.4	Ball	B	Up	Stud	5 11/16	**4M243**	83.00	**60.75**	15.0	5M005	5.36
	825	230	2.3	Sleeve	B	Up	Cradle	7 7/16	**3M995**	157.00	**119.95**	20.0	Included	
	825	230	2.3	Sleeve	A	Up	Cradle	7 7/16	**3M224**	157.00	**119.95**	20.0	Mounted	
1/2	1075	230	3.3	Sleeve	A	Up	Cradle	5 15/16	**3M221**	160.00	**122.25**	17.0	Included	
	1075	208-230	3.6	Ball	B	Up	Stud	6 3/16	**4M244**	91.00	**68.80**	18.0	5M006	6.41
	825	230	3.6	Ball	A	Up	Cradle	7⅜	**3M295**	232.00	**177.50**	29.0	Mounted	
3/4	1075	208-230	5.1	Ball	B	Up	Stud	6 15/16	**4M245**	107.00	**81.60**	23.0	5M006	6.41
COMMERCIAL DUTY, STANDARD EFFICIENCY, 60°C AMBIENT														
1/10	825	208-230	0.9	Sleeve	B	Up/Down	Stud	4⅜	**4M223**	107.00	**78.30**	12.0	5M001	4.25
1/8	825	208-230	1.0	Sleeve	B	Up/Down	Stud	4⅝	**4M224**	109.00	**79.75**	13.0	5M003	4.25
1/6	1075	208-230	1.4	Sleeve	B	Up/Down	Stud	4⅜	**4M261**	66.00	**51.25**	11.0	5M001	4.25
	825	208-230	1.1	Sleeve	B	Up/Down	Stud	4⅝	**4M225**	113.00	**82.70**	14.0	5M003	4.25
1/4	1075	208-230	1.7	Sleeve	B	Up/Down	Stud	4⅝	**4M205**	81.00	**51.40**	13.0	5M003	4.25
	825	208-230	2.0	Sleeve	B	Up/Down	Stud	4⅞	**4M226**	132.00	**96.65**	15.0	5M003	4.25
1/3	1075	208-230	2.1	Sleeve	B	Up/Down	Stud	5⅛	**4M206**	87.00	**52.75**	13.0	5M005	5.36
	825	208-230	2.1	Sleeve	B	Up/Down	Stud	5⅞	**4M262**	149.00	**109.00**	19.0	5M006	6.41
1/2	1075	208-230	2.9	Sleeve	B	Up/Down	Stud	5⅜	**4M207**	95.00	**61.50**	18.0	5M005	5.36
	825	208-230	2.8	Sleeve	B	Up/Down	Stud	6⅜	**4M263**	176.00	**128.75**	22.0	5M007	7.72
3/4	1075	208-230	4.5	Sleeve	B	Up/Down	Stud	5⅛	**4M208**	115.00	**77.30**	13.0	5M006	6.41
RESIDENTIAL DUTY, STANDARD EFFICIENCY, 40°C AMBIENT														
1/4	1075	208-230	1.8	Sleeve	B	Up	Stud	5 1/16	**4M172**	77.00	**45.90**	13.0	5M003	4.25
1/3	1075	208-230	2.4	Sleeve	B	Up	Stud	5 11/16	**4M173**	84.00	**49.80**	15.0	5M005	5.36
1/2	1075	208-230	3.6	Sleeve	B	Up	Stud	6 3/16	**4M174**	92.00	**58.00**	18.0	5M006	6.41
3/4	1075	208-230	5.1	Sleeve	B	Up	Stud	6 15/16	**4M175**	112.00	**69.90**	23.0	5M006	6.41

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

SHADED POLE CONDENSER FAN MOTORS

Typical Uses: Refrigeration condensers and central air conditioning outdoor condensers; also suited for a wide variety of other air-moving applications such as unit heaters, ventilators, and blowers.

Special Features: Includes BX connector

Bearings: All-angle, self-aligning sleeve

Mounting: Cradle base

Service Factor: 1.0

Enclosure: Open air-over

Thermal Protection: Auto

Insulation Class: B

NEMA Frame: 42

Body Diameter: 5"

Shaft Dimensions: 1/2 x 2½"

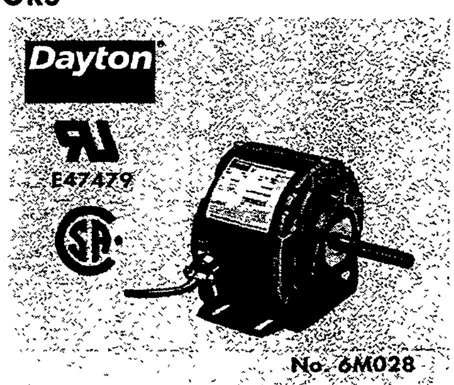
Ambient: 40°C

Duty: Continuous air-over

Rotation: CCW facing shaft

Finish: Gray enamel

Brand: Dayton



No. 6M028

HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Resilient Base Mtg. Holes OC	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
1/10	1550	115	5.2	1 11/16 x 3½"	4 7/16"	**6M028**	$91.00	**$66.30**	7.9
1/10	1550	230	2.6	1 11/16 x 3½	4 7/16	**4M017**	92.00	**70.35**	8.0
1/6	1550	115	5.4	1 11/16 x 3½	5	**6M029**	100.00	**73.30**	10.0
1/6	1550	230	2.7	1 11/16 x 3½	4 15/16	**4M016**	102.00	**78.00**	9.9

COMMERCIAL AND RESIDENTIAL PSC CONDENSER/HEAT PUMP FAN MOTORS

Commercial Duty Motors: Feature higher starting torque than residential duty motors and offer universal replacement. Cooler running temperature ensures longer life performance. Motors include two flats on shaft, 90° apart.

Typical Uses: Outdoor air conditioner condensers, refrigeration condensers. Two-speed models used on heat pumps.

Bearings: All-angle sleeve or prelubricated ball

Service Factor: 1.0

Thermal Protection: Auto

Enclosure: TEAO

NEMA Frame: 48YZ (or GE 39)

Body Diameter: 5-5/8"

Shaft Dimensions: 1/2 x 6"

Ambient: 40°C

Duty: Continuous air-over

Rotation: CW/CCW (except No. 4M342 is CW)

Capacitor: Required

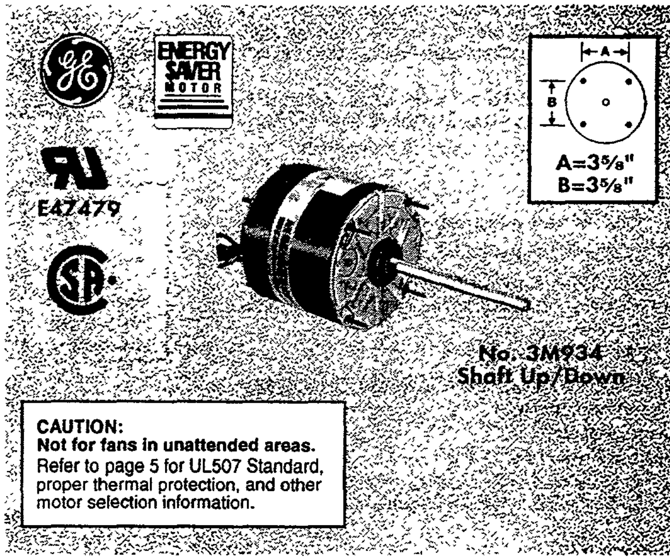
Finish: Gray

Brand: GE

Shaft Up—Shaft endshield is enclosed and shell is totally enclosed. Minimum 1/2" studs on shaft endshield. Opposite endshield open.

Shaft Down—Endshield opposite shaft is enclosed. Drain hole in shaft end for drain condensation.

Shaft Up/Down—Both endshields are totally enclosed with removable drain plugs on each for maximum protection. Minimum 1/2" studs on both endshields. Mount vertically or horizontally.



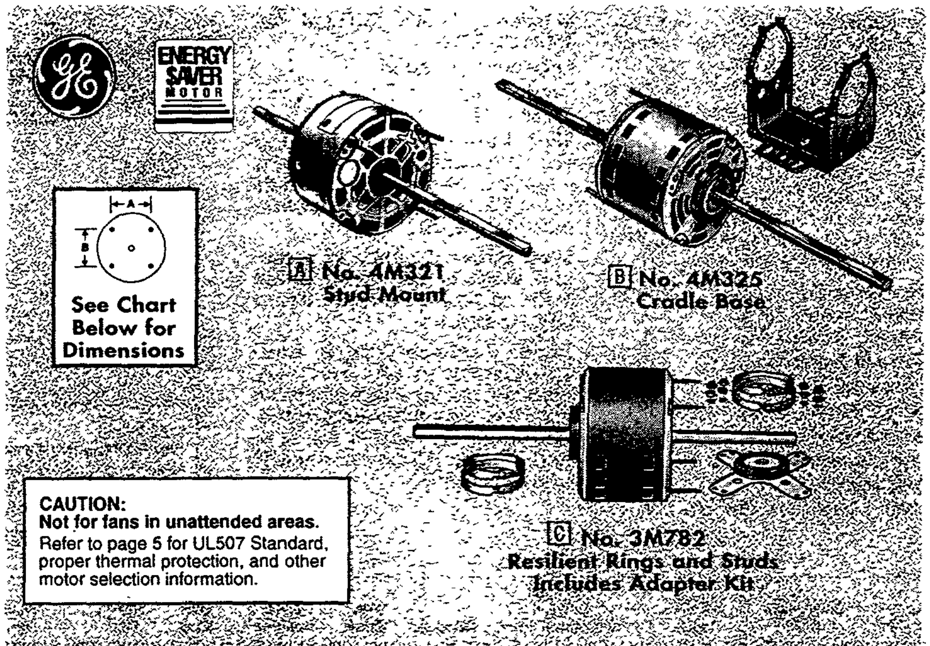
CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearings	Ins. Class	Mounting Shaft Position	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.	Capacitor Req'd Stock No.	Capacitor Req'd Each
COMMERCIAL DUTY, HIGH EFFICIENCY, STUD MOUNTED														
1/6	1075/2-Spd	208-230	1.0	Sleeve	A	Up/Down	4 1/2"	3227	**4M316**	$123.00	**$74.80**	11.0	6X653	$4.49
	1075/2-Spd	208-230*	0.9	Sleeve	A	Up	4 9/16	3027	**3M793**	120.00	**72.90**	11.0	6X653	4.49
	825	208-230	1.0	Ball	B	Up	4 13/16	3200	**4M279**	141.00	**85.70**	12.0	6X653	4.49
1/4	1075/2-Spd	208-230	1.6	Ball	A	Up/Down	4 15/16	3428	**4M129**	148.00	**89.95**	14.0	6X653	4.49
	1075/2-Spd	208-230	1.6	Sleeve	A	Up/Down	5	3228	**3M933**	128.00	**77.80**	14.0	6X653	4.49
	1075/2-Spd	208-230*	1.5	Ball	A	Up	5 1/8	3046	**3M794**	144.00	**87.55**	13.0	6X653	4.49
	1075/2-Spd	208-230*	1.5	Sleeve	A	Up	5 1/8	3028	**3M477**	125.00	**75.95**	13.0	6X653	4.49
	1075	208-230*	1.5	Sleeve	A	Down	5	3084	**3M717**	166.00	**100.85**	14.0	6X653	4.49
	825	208-230	1.5	Ball	B	Up	5 5/16	3040	**4M280**	165.00	**100.25**	14.0	6X655	5.38
1/3	1075/2-Spd	208-230	2.4	Ball	A	Up/Down	5 1/2	3429	**4M130**	154.00	**93.60**	16.0	6X655	5.38
	1075/2-Spd	208-230	2.4	Sleeve	B	Up/Down	5 1/2	3229	**3M934**	134.00	**81.45**	16.0	6X655	5.38
	1075/2-Spd	208-230*	2.1	Ball	A	Up	5 7/8	3031	**3M796**	151.00	**91.75**	16.0	6X655	5.38
	1075/2-Spd	208-230*	2.1	Sleeve	A	Up	5 7/8	3029	**3M479**	131.00	**79.60**	16.0	6X655	5.38
	1075	208-230*	2.1	Sleeve	A	Down	5 1/2	3085	**3M718**	177.00	**107.55**	16.0	6X655	5.38
	825	208-230	2.2	Ball	B	Up	6 7/8	3026	**3M795**	182.00	**110.60**	18.0	6X656	6.43
	825	115	5.0	Ball	B	Up	6 7/8	3049	**4M281**	163.00	**99.05**	18.0	6X658	8.82
1/2	1075/2-Spd	208-230	3.8	Ball	A	Up/Down	6	3430	**4M131**	171.00	**103.90**	18.0	6X656	6.43
	1075/2-Spd	208-230	3.8	Sleeve	A	Up/Down	6	3230	**3M935**	150.00	**91.15**	18.0	6X656	6.43
	1075/2-Spd	208-230*	3.2	Ball	A	Up	6 3/8	3032	**3M798**	166.00	**100.85**	18.0	6X656	6.43
	1075/2-Spd	208-230*	3.2	Sleeve	A	Up	6 3/8	3030	**3M481**	147.00	**89.30**	19.0	6X656	6.43
	1075	208-230*	3.1	Sleeve	A	Down	6	3086	**3M719**	198.00	**120.30**	18.0	6X656	6.43
	825	208-230	3.9	Ball	A	Up	6 5/8	3033	**3M964**	216.00	**131.25**	21.0	6X658	8.82
3/4	1075/2-Spd	208-230	4.7	Ball	A	Up/Down	6 7/16	3431	**4M132**	188.00	**114.25**	20.0	6X658	8.82
	1075/2-Spd	208-230*	3.9	Ball	A	Up	6 5/16	3048	**3M799**	184.00	**111.85**	20.0	6X658	8.82
COMMERCIAL DUTY, STANDARD EFFICIENCY, STUD MOUNTED														
/10	825	208-230*	0.8	Ball	B	Up/Down	4 5/16	3201	**4M313**	128.00	**81.45**	11.0	6X653	4.49
/8	825	208-230*	1.1	Ball	B	Up/Down	4 5/16	3202	**4M314**	132.00	**83.25**	12.0	6X653	4.49
/6	1075	208-230	1.0	Sleeve	B	Up/Down	4 11/16	3727	**2G645**	77.00	**46.80**	14.0	6X653	4.49
	825	208-230	1.0	Ball	B	Up/Down	6 3/32	3203	**1X063**	137.00	**80.20**	17.0	6X653	4.49
/4	1075	208-230	1.8	Ball	B	Up/Down	4 5/16	3732	**4M236**	100.00	**60.75**	13.0	6X653	4.49
	1075	208-230	1.8	Sleeve	B	Up/Down	5 1/8	3728	**4M105**	81.00	**51.45**	12.0	6X653	4.49
	825	208-230	1.5	Ball	B	Up/Down	5 13/16	3204	**2G639**	143.00	**86.90**	19.0	6X655	5.38
/3	1075	208-230	2.4	Ball	B	Up/Down	4 5/8	3733	**4M237**	107.00	**65.00**	16.0	6X655	5.38
	1075	208-230	2.4	Sleeve	B	Up/Down	4 15/16	3729	**4M106**	87.00	**52.25**	15.0	6X655	5.38
	825	208-230	2.2	Ball	B	Up/Down	4 5/16	3205	**2G641**	151.00	**91.75**	23.0	6X656	6.43
2	1075	208-230	3.7	Ball	B	Up/Down	5 5/8	3734	**4M238**	115.00	**69.85**	18.0	6X656	6.43
	1075	208-230	3.7	Sleeve	B	Up/Down	5 11/16	3730	**4M107**	95.00	**60.95**	16.0	6X656	6.43
	825	208-230	3.9	Ball	B	Up/Down	5 5/16	3207	**2G643**	183.00	**111.20**	24.0	6X658	8.82
4	1075	208-230	5.1	Ball	B	Up/Down	6	3735	**4M239**	134.00	**81.45**	20.0	6X656	6.43
	1075	208-230	5.2	Sleeve	B	Up/Down	6 3/16	3731	**4M108**	115.00	**76.55**	20.0	6X658	8.82
	1075	200-230/460	6.8/3.4	Ball	B	Up/Down	12 7/16	P190	**4M342** †	329.00	**221.25**	43.0	6X661	12.81
RESIDENTIAL DUTY, STANDARD EFFICIENCY, STUD MOUNTED														
6	1075	208-230	0.9	Sleeve	B	Up	4 5/8	3327	**4M230**	73.00	**45.00**	11.0	6X653	4.49
4	1075	208-230	1.8	Sleeve	B	Up	5 1/16	3328	**4M231**	77.00	**45.90**	13.0	6X653	4.49
3	1075	208-230	2.4	Sleeve	B	Up	5 3/8	3329	**4M232**	84.00	**49.80**	15.0	6X655	5.38
2	1075	208-230	3.6	Sleeve	A	Up	5 7/8	3330	**4M233**	92.00	**58.00**	18.0	6X656	6.43
4	1075	208-230	5.1	Sleeve	B	Up	6 5/8	3331	**4M234**	112.00	**69.90**	19.0	6X656	6.43

*60/50 Hz. (†) Features rainshield, 5/8 x 4" shaft, 65°C ambient, open enclosure, 6-1/8" body diameter, band mount, and CW rotation facing shaft end.

ROOM AIR CONDITIONER MOTORS

Typical Uses: Room air conditioners and through-the-wall sleeve units. Also adaptable to other shaft-mounted fan and blower applications.
Special Features: All models have capacitor mounting holes in shell except No. 4M320.
Bearings: All-angle sleeve (except No. 4M320 is ball)
Mounting:
[A] Stud mount has four studs on lead end
[B] Cradle with four studs
[C] Resilient ring opposite lead end with four studs on lead end. Includes length adapter kit.
[D] PSC
Enclosure: Open air-over (except No. 4M320 is open dripproof)
Service Factor: 1.0
Thermal Protection: Auto
NEMA Frame: 42YZ, 5" dia. (GE 29 frame); 48YZ, 5 5/8" dia. (GE 39 frame); 56YZ, 6 3/8" dia.
Ambient: 40°C
Duty: Continuous air-over
Finish: Gray enamel
Brand: GE



CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

PSC, HIGH EFFICIENCY

HP	Nameplate RPM	NEMA Frame	Rotation Facing Lead End	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Mtg. Style	Studs OC A & B	Body Dia.	Shaft Dimensions Dia. x L	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.	Capacitor Req'd. Stock No.	Capacitor Req'd. Each
1/15	1075/4-Spd	42YZ	CCW	115	1.4	B	3 1/4"	5"	1/2 x 10 1/2 & 10 1/2"	5"	2830	**4M325**	$129.00	**$79.95**	10.0	6X653	$4.49
1/10	1625/4-Spd	42YZ	CCW	115	1.3	B	3 1/4	5	1/2 x 8 & 8	5 1/2	2835	**4M326**	126.00	**78.05**	11.0	6X653	4.49
	1075/4-Spd	42YZ	CCW	115*	1.9	B	3 1/4	5	1/2 x 8 & 8	5 1/4	2831	**4M327**	134.00	**83.05**	10.0	6X653	4.49
	1075/3-Spd	48YZ	CCW	115*	1.2	C	3 5/8	5 5/8	1/2 x 7 & 9	4	3631	**4M324**	110.00	**66.85**	13.0	6X653	4.49
	1075/3-Spd	48YZ	CCW	208-230*	0.8	C	3 5/8	5 5/8	1/2 x 7 & 9	4	3632	**4M333**	113.00	**68.70**	11.0	6X651	4.49
1/8	1075/4-Spd	42YZ	CCW	115	2.7	B	3 1/4	5	1/2 x 10 & 10	5 1/2	2832	**4M328**	138.00	**85.50**	11.0	6X653	4.49
	1075/3-Spd	48YZ	CCW	115*	1.8	C	3 5/8	5 5/8	1/2 x 7 & 9	4	3641	**3M782**	110.00	**66.85**	11.0	6X653	4.49
	1075/4-Spd	42YZ	CCW	208-230	1.1	B	3 1/4	5	1/2 x 10 & 10	5 1/2	2836	**4M329**	140.00	**86.70**	11.0	6X653	4.49
	1075/3-Spd	48YZ	CCW	208-230*	0.8	C	3 5/8	5 5/8	1/2 x 7 & 9	4	3642	**4M334**	113.00	**68.70**	11.0	6X653	4.49
1/6	1625/4-Spd	42YZ	CCW	115*	2.1	B	3 1/4	5	1/2 x 8 & 8	5 3/4	2837	**4M330**	138.00	**85.50**	10.0	6X653	4.49
	1625/3-Spd	48YZ	CCW	115*	2.0	C	3 5/8	5 5/8	1/2 x 7 & 8 3/4	4 7/16	3851	**4M335**	137.00	**83.25**	11.0	6X653	4.49
	1625/3-Spd	48YZ	CCW	208-230*	0.9	C	3 5/8	5 5/8	1/2 x 7 & 8 3/4	4 7/16	3852	**4M336**	139.00	**84.50**	11.0	6X653	4.49
	1075/3-Spd	48YZ	CCW	115*	2.4	C	3 5/8	5 5/8	1/2 x 7 & 8 3/4	3 3/16	3651	**3M783**	110.00	**66.85**	12.0	6X653	4.49
	1075/3-Spd	48YZ	CCW	208-230*	1.0	C	3 5/8	5 5/8	1/2 x 7 & 8 3/4	3 3/16	3652	**3M784**	113.00	**68.70**	11.0	6X653	4.49
	1075/3-Spd	48YZ	CCW	208-230*	1.0	A	3 5/8	5 5/8	1/2 x 7 1/2 & 8 7/8	3 3/4	3656	**4M321**	97.00	**58.95**	11.0	6X653	4.49
1/5	1625/3-Spd	48YZ	CCW	208-230*	1.1	C	3 5/8	5 5/8	1/2 x 8 1/2 & 7	4 7/16	3862	**4M337**	139.00	**84.50**	11.0	6X653	4.49
1/4	1625/3-Spd	48YZ	CCW	115*	2.9	C	3 5/8	5 5/8	1/2 x 7 & 8 1/4	4 11/16	3871	**4M338**	150.00	**91.15**	13.0	6X653	4.49
	1625/3-Spd	48YZ	CCW	208-230*	1.2	C	3 5/8	5 5/8	1/2 x 7 & 8 1/4	4 11/16	3872	**4M339**	152.00	**92.35**	13.0	6X653	4.49
	1075/4-Spd	42YZ	CCW	115*	4.7	B	3 1/4	5	1/2 x 8 & 8	6 1/2	2833	**4M331**	156.00	**96.60**	14.0	6X653	4.49
	1075/4-Spd	42YZ	CCW	208-230*	2.1	B	3 1/4	5	1/2 x 8 & 8	6 1/2	2834	**4M332**	158.00	**97.85**	15.0	6X653	4.49
	1075/3-Spd	48YZ	CCW	115*	3.7	C	3 5/8	5 5/8	1/2 x 8 & 7 1/2	4 7/16	3671	**4M171**	120.00	**72.90**	14.0	6X653	4.49
	1075/3-Spd	48YZ	CCW	208-230*	1.7	A	3 5/8	5 5/8	1/2 x 8 1/2 & 7 1/2	4	3676	**4M165**	100.00	**60.75**	15.0	6X653	4.49
	1075/3-Spd	48YZ	CCW	208-230*	1.7	C	3 5/8	5 5/8	1/2 x 8 & 7 1/2	4 7/16	3672	**3M785**	119.00	**72.35**	13.0	6X653	4.49
	825/3-Spd	48YZ	CCW	208-230	1.9	C	3 5/8	5 5/8	1/2 x 7 & 7 1/4	5 11/16	3094	**4M322**	185.00	**112.40**	17.0	6X653	4.49
1/3	1625/3-Spd	48YZ	CCW	115*	4.1	C	3 5/8	5 5/8	1/2 x 6 1/2 & 8 1/4	5 3/16	3881	**4M340**	156.00	**94.80**	15.0	6X653	4.49
	1625/3-Spd	48YZ	CCW	208-230*	1.9	C	3 5/8	5 5/8	1/2 x 6 1/2 & 8 1/4	5 3/16	3882	**3M788**	158.00	**96.00**	14.0	6X653	4.49
	1075/3-Spd	48YZ	CCW	115*	5.1	C	3 5/8	5 5/8	1/2 x 7 1/2 & 7 1/4	5	3681	**3M786**	129.00	**78.40**	16.0	6X653	4.49
	1075/3-Spd	48YZ	CCW	208-230*	2.5	C	3 5/8	5 5/8	1/2 x 7 1/2 & 7 1/4	5 3/16	3682	**3M787**	128.00	**77.80**	15.0	6X653	4.49
	1075/3-Spd	48YZ	CCW	208-230*	2.5	A	3 5/8	5 5/8	1/2 x 7 3/4 & 7 7/16	4 3/4	3686	**4M166**	105.00	**63.80**	15.0	6X653	4.49
	1075/2-Spd	48YZ	CCW	208-230*	2.4	A	3 5/8	5 5/8	1/2 x 6 [illegible] & 9 1/16	6 3/8	3091	**4M343**	121.00	**73.55**	15.0	6X653	4.49
	825/3-Spd	48YZ	CCW	208-230	2.8	C	3 5/8	5 5/8	1/2 x 7 & 7 1/4	5 11/16	3103	**4M323**	198.00	**120.30**	19.0	6X653	4.49
1/2	1625/3-Spd	48YZ	CCW	115*	6.4	C	3 5/8	5 5/8	1/2 x 7 & 7 1/2	5 1/2	3891	**4M341**	171.00	**103.90**	17.0	6X653	4.49
	1625/3-Spd	48YZ	CCW	208-230*	3.0	C	3 5/8	5 5/8	1/2 x 7 & 7 1/2	5 1/2	3892	**3M790**	173.00	**105.15**	17.0	6X653	4.49
	1075/3-Spd	48YZ	CCW	115*	7.3	C	3 5/8	5 5/8	1/2 x 7 & 7 1/4	5 11/16	3691	**4M170**	151.00	**91.75**	19.0	6X656	6.43
	1075/3-Spd	48YZ	CCW	208-230*	3.5	C	3 5/8	5 5/8	1/2 x 7 & 7 1/4	5 11/16	3692	**3M789**	149.00	**90.55**	19.0	6X655	5.38
	1075/3-Spd	48YZ	CCW	208-230*	3.5	A	3 5/8	5 5/8	1/2 x 7 1/2 & 7 3/16	5 1/4	3696	**4M167**	125.00	**75.95**	16.0	6X655	5.38
	1075/2-Spd	48YZ	CCW	208-230	3.8	B	3 5/8	5 5/8	1/2 x 8 & 8 5/8	6 15/32	3092	**4M318**	141.00	**85.65**	19.0	6X653	4.49
3/4	1625/3-Spd	48YZ	CCW	208-230*	3.9	C	3 5/8	5 5/8	1/2 x 7 & 7	6	3898	**3M792**	202.00	**122.75**	20.0	6X655	5.38
	1075/3-Spd	48YZ	CCW	208-230	5.0	C	3 5/8	5 5/8	1/2 x 7 & 7 1/4	5 11/16	3698	**3M791**	197.00	**119.70**	20.0	6X655	5.38
	1075	56YZ	CW/CCW	200-230	3.8	B	4 1/8	6 3/8	5/8 x 6 3/4 & 6 3/4	10	P233	**4M320**†	378.00	**254.50**	33.0	6X656	6.43

(*) 60/50 Hz operation. (†) Standard efficiency.

ROOM AIR CONDITIONER MOTORS

GE BRAND, PSC AND SHADED POLE, 3.3" DIAMETER

Typical Uses: Room air conditioners, space heaters, fans, range hoods, and dehumidifiers.

Special Features: 12" leads, #8-32 mounting studs. Double shaft.

Bearings: Sleeve

Mounting: Two studs (except No. 4M638 has none; 4M634 and 4M639 have four)

Service Factor: 1.0

Thermal Protection: Auto

Insulation Class: A (except Nos. 4M637 and 4M639 are B)

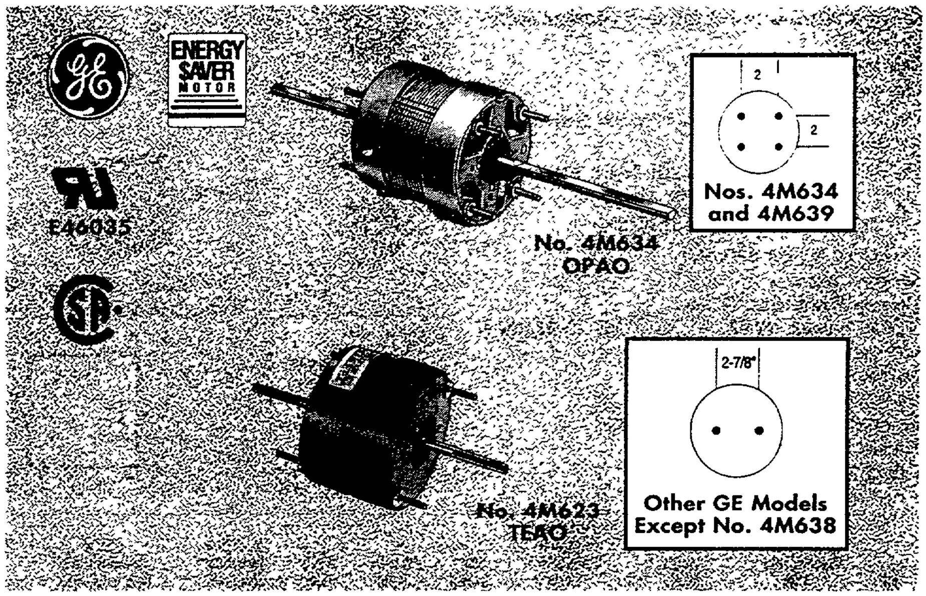
Body Diameter: 3.3" (GE 59 frame)

Ambient: 50°C

Duty: Continuous air-over

Finish: Gray

Brand: GE



PSC, HIGH EFFICIENCY

HP	Nameplate RPM	Rotation Facing Lead End	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Shaft Dimensions Dia. & Length	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
1/20	1550/3-Spd	CCW	OPAO	115	0.8	5/16 x 4½" Each	3 9/16"	6079	**4M643**	$103.00	**$63.85**	5.0	Included	
1/15	1600/3-Spd	CW	OPAO	115	1.0	5/16 x 3¾ & 4 13/16	3 13/16	6291	**3M780**	96.00	**59.45**	4.4	6X652	$4.49
1/10	1600/3-Spd	CW	OPAO	115	2.0	5/16 x 2¾ & 5 5/16	4 3/16	6293	**3M781**	100.00	**61.95**	5.3	6X652	4.49

SHADED POLE

HP	Nameplate RPM	Rotation Facing Lead End	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Shaft Dimensions Dia. x L	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/150	1550	CCW	OPAO	115	0.4	1/4 x 1½ & 1½"	2¼"	6150	**4M621**	$55.00	**$34.10**	2.0
1/80	1550/3-Spd	CCW	OPAO	115	0.8	1/4 x 1½ & 1½	2¼	6231	**4M622**	64.00	**39.70**	2.0
	1550	CCW	TEAO	115	0.7	1/4 x 2 & 2	2½	6180	**4M623**	61.00	**37.80**	3.0
1/70	1550	CCW	OPAO	115	0.7	1/4 x 1½ & 1½	2½	6170	**4M624**	58.00	**36.00**	3.0
	1550	CCW	OPAO	115	0.7	1/4 x 1½ & 1½	2¾	6171	**4M625**	62.00	**38.45**	3.0
1/60	1550/3-Spd	CCW	OPAO	115	1.0	1/4 x 1½ & 1½"	2½	6232	**4M626**	66.00	**40.90**	3.0
1/50	1550/3-Spd	CCW	OPAO	115	1.0	1/4 x 2½ & 2½	2¾	6233	**4M627**	70.00	**43.40**	3.0
	1550/3-Spd	CCW	TEAO	115	1.0	1/4 x 2 & 2	2½	6271	**4M628**	68.00	**42.15**	3.0
	1550/3-Spd	CW	OPAO	230	0.5	3/16 x 3¾ & 1¾	3	6234	**4M629**	82.00	**50.85**	3.5
1/40	1550	CCW	OPAO	115	1.1	3/16 x 1½ & 1½	2¾	6140	**4M630**	62.00	**38.45**	3.0
1/35	1550/3-Spd	CCW	OPAO	115	1.5	5/16 x 2½ & 2½	2½	6235	**4M631**	68.00	**42.15**	3.0
1/30	1550	CCW	TEAO	115	1.4	5/16 x 2 & 2	3¼	6130	**4M632**	70.00	**43.40**	4.0
1/25	1550/3-Spd	CW	OPAO	115	1.9	5/16 x 3¾ & 4½	3½	6236	**4M634**	85.00	**52.70**	4.0
	1550/3-Spd	CCW	OPAO	115	1.8	5/16 x 1½ & 1½	2¾	6237	**4M635**	70.00	**43.40**	3.0
	1550/3-Spd	CCW	OPAO	115	1.8	5/16 x 2 & 2	3	6238	**4M636**	74.00	**45.90**	4.0
	1550/3-Spd	CCW	TEAO	115	1.8	5/16 x 1½ & 1½	3	6272	**4M637**	74.00	**45.90**	3.5
	1550	CCW	OPAO	115	1.7	5/16 x 2 & 2	3	6125	**4M633**	65.00	**40.30**	3.5
1/20	1550/3-Spd	CW	OPAO	115	1.8	5/16 x 1½ & 1½	3⅜	6239	**4M638**	77.00	**47.75**	3.4
	1550/3-Spd	CCW	OPAO	115	2.1	5/16 x 4½ & 4¾	3	6240	**4M639**	82.00	**50.85**	4.0
	1550/3-Spd	CCW	OPAO	115	2.2	5/16 x 2½ & 2½	3¼	6241	**4M640**	78.00	**48.35**	4.0
	1550/3-Spd	CCW	TEAO	115	1.8	5/16 x 2¼ & 2¼	3¼	6273	**4M641**	81.00	**50.20**	4.0
	1550/3-Spd	CCW	OPAO	230	1.1	5/16 x 2½ & 2½	3¼	6242	**4M642**	87.00	**53.90**	4.0

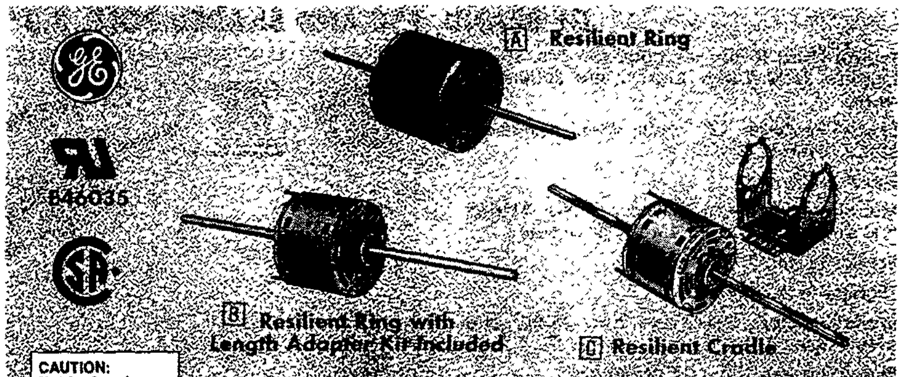
CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

Complete Index at Back of Catalog Will Help You Quickly Locate Your Product Needs

ROOM AIR CONDITIONER MOTORS

Typical Uses: Room air conditioners, evaporative coolers, remote fan coil units, and other shaft-mounted fan and blower applications.
Bearings: All-angle sleeve
Mounting:
[A] Resilient ring mount with four 10-32 tapped holes
[B] Resilient rings with four extended studs and length adapter kit
[C] Cradle base with four studs
Enclosure: Open air-over
Service Factor: 1.0
Thermal Protection: Auto
NEMA Frame: 42YZ, 5" dia (GE 29 frame); 48YZ, 5 5/8" dia (GE 39 frame)
Ambient: 40°C
Duty: Continuous air-over
Rotation: CCW facing lead end
Finish: Gray enamel
Brand: GE



CAUTION: Not for fans in unattended areas. Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

OC Dimensions for:	A	B
5" Dia. 1000 & 1050 RPM	2 5/8"	3 1/4"
5 Dia. 1500 & 1550 RPM	3 1/4	3 1/4
5 5/8 Dia. 1050 RPM	3	4 1/4
5 5/8 Dia. 1550 RPM	3 5/8	3 5/8

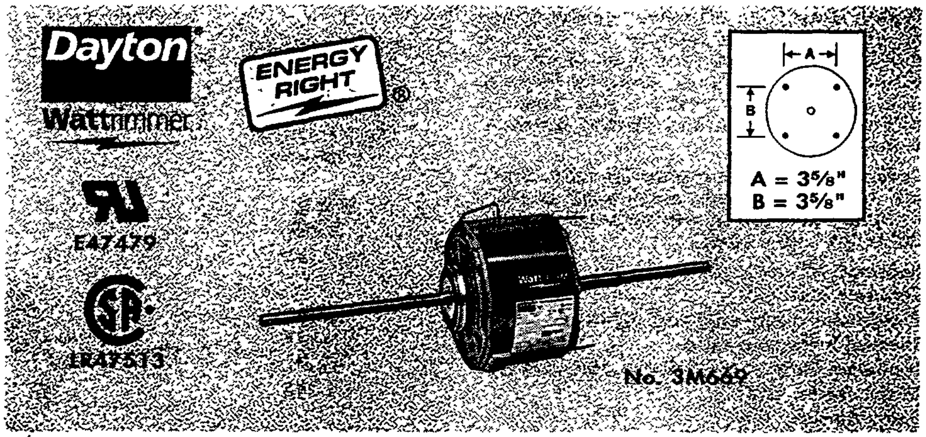
HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Ins. Class	Mount Style	Body Dia.	2 1/4" Dia. Resilient Ring OC	Shaft Dimensions Dia. x Length	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/35	1050/4-Spd	115	2.0	B	C	5"	4 3/16"†	1/2 x 8" Each	4 13/16"	2811	**4M365**	$118.00	**$73.10**	8.5
1/20	1550	115/208-230*	3.5/1.7	A	A	5	4 15/16	3/8 x 5 & 4 13/16	5 1/2	2934	**4M394**	248.00	**153.75**	6.8
	1050/3-Spd	115	2.5	A	B	5	3 3/4	1/2 x 8 & 7 13/16	4 3/16	—	**3M686**	129.00	**79.95**	8.2
	1050	115/208-230*	3.0/1.5	A	A	5	4 15/16	3/8 x 5 & 4 13/16	5 1/2	2935	**4M395**	284.00	**176.25**	6.6
1/15	1550	115/208-230*	3.2/1.6	A	A	5	5 3/16	3/8 x 5 & 4 13/16	5 13/16	2937	**4M396**	275.00	**170.50**	7.8
	1050/4-Spd	115	2.5	B	C	5	4 7/16†	1/2 x 10 1/2 Each	4 3/4	2812	**4M266**	120.00	**74.30**	10.0
	1050/4-Spd	115	2.5	B	C	5	4 3/16†	3/8 x 8 Each	4 13/16	2847	**4M366**	121.00	**74.95**	8.0
	1050	115/208-230	4.0/2.0	A	A	5	5 3/16	3/8 x 5 & 4 13/16	5 13/16	2936	**4M397**	284.00	**176.25**	7.6
	1000/4-Spd	115*	2.7	A	B	5	3 15/16	1/2 x 10 1/2 & 10 9/16	4 3/8	—	**3M369**	115.00	**71.25**	8.3
	1000/4-Spd	208/230*	1.4	A	B	5	3 15/16	1/2 x 10 1/2 & 10 9/16	4 3/8	—	**3M373**	117.00	**72.50**	8.0
	1000	115*	2.7	A	B	5	3	3/8 x 8 Each	4	2912	**5U115**	116.00	**71.85**	10.0
	1000	208-230	1.4	A	B	5	[illegible]	1/2 x 8 Each	4	2907	**5U112**	115.00	**71.20**	10.0
1/12	1500/3-Spd	115*	4.1	A	B	5	3 15/16	3/8 x 6 & 6 1/16	4 5/16	—	**3M371**	108.00	**66.90**	9.0
	1500/3-Spd	115*	4.1	A	B	5	3 15/16	1/2 x 6 3/4 & 6 13/16	4 5/16	—	**3M372**	107.00	**6[illegible].30**	8.1
	1050/3-Spd	115	4.1	A	B	5	3 11/16	1/2 x 8 & 7 13/16	4 3/16	—	**3M687**	132.00	**81.80**	8.1
	1050	115/208-230*	3.6/1.8	A	A	5	5 3/16	3/8 x 5 & 4 13/16	5 13/16	2028	**4M398**	321.00	**199.00**	9.0
1/10	1550/4-Spd	115	3.3	B	C	5	4 11/16†	1/2 x 8 Each	5 3/16	2813	**4M267**	115.00	**71.20**	10.0
	1550/4-Spd	115	3.3	B	C	5	4 11/16†	3/8 x 8 Each	5 3/16	2848	**4M268**	116.00	**71.85**	10.0
	1550/4-Spd	208-230	1.8	B	C	5	4 11/16†	3/8 x 8 Each	5 5/16	2849	**4M367**	119.00	**73.75**	9.6
	1550	115/208-230*	4.0/2.0	A	A	5	6 3/16	3/8 x 5 & 5 1/16	6 11/16	2939	**4M399**	291.00	**180.50**	9.1
	1050/4-Spd	115	3.8	B	C	5	4 7/16†	1/2 x 8 Each	4 7/8	2814	**4M269**	126.00	**78.05**	10.0
	1000	115	4.5	A	B	5	3	3/8 x 10 1/2 & 6 1/2	4	2910	**5U114**	123.00	**76.20**	10.0
	1000	115	4.5	A	B	5	3	1/2 x 8 Each	4	2901	**5U111**	122.00	**75.60**	10.0
	1000	208-230	2.3	A	B	5	3	1/2 x 10 1/2 & 6 1/2	4	2909	**5U113**	126.00	**78.05**	10.0
	1000	115	4.5	A	B	5 5/8	—	1/2 x 7 1/2 & 8 1/2	4	3531	**4M415**	171.00	**103.95**	11.0
	1050/3-Spd	208-230*	1.9	A	B	5 5/8	—	1/2 x 7 1/2 & 8 1/2	4	3532	**4M416**	174.00	**105.80**	11.0
	1050	115/208-230*	4.0/2.0	A	A	5	5 7/16	3/8 x 5 & 5 1/16	6	2938	**4M400**	307.00	**190.50**	8.5
	1000/5-Spd	115	4.5	A	B	5	3 15/16	1/2 x 10 & 9 13/16	4 7/16	—	**3M688**	143.00	**88.60**	9.7
1/8	1550/4-Spd	115	4.1	B	C	5	4 15/16†	1/2 x 8 Each	5 1/2	2815	**4M368**	125.00	**77.40**	11.0
	1550/4-Spd	115	4.1	B	C	5	4 15/16†	3/8 x 8 Each	5 1/2	2850	**4M270**	126.00	**78.05**	10.0
	1550/3-Spd	115*	4.5	A	B	5 5/8	—	1/2 x 8 1/2 & 7 1/4	4 3/16	3741	**4M417**	172.00	**104.55**	11.0
	1550/3-Spd	208-230*	2.2	A	B	5 5/8	—	1/2 x 8 1/2 & 7 1/4	4 3/16	3742	**4M418**	176.00	**106.95**	11.0
	1500/3-Spd	115*	5.5	A	B	5	4 3/16†	3/8 x 8 & 8 1/16	4 11/16	—	**3M374**	118.00	**73.10**	9.8
	1050/4-Spd	115	4.4	B	C	5	4 15/16†	1/2 x 10 Each	5 1/2	2816	**4M369**	134.00	**83.05**	12.0
	1050/3-Spd	115	4.5	A	B	5 5/8	—	1/2 x 8 1/2 & 7 1/4	4 3/16	3541	**4M419**	176.00	**106.95**	12.0
	1050/3-Spd	208-230*	2.2	A	B	5 5/8	—	1/2 x 8 1/2 & 7 1/4	4 3/16	3542	**4M420**	179.00	**108.80**	12.0
1/6	1550/4-Spd	115	4.8	B	C	5	4 15/16†	1/2 x 8 Each	5 1/2	2817	**4M370**	129.00	**79.95**	11.0
	1550/3-Spd	115*	5.0	A	B	5 5/8	—	1/2 x 7 & 8 1/2	4 1/2	3751	**4M421**	177.00	**107.55**	13.0
	1550/3-Spd	208-230*	2.5	A	B	5 5/8	—	1/2 x 7 & 8 1/2	4 1/2	3752	**4M422**	182.00	**110.60**	13.0
	1050/4-Spd	115	6.8	B	C	5	4 15/16†	1/2 x 8 Each	5 1/2	2818	**4M371**	139.00	**86.10**	11.0
	1050/3-Spd	115	5.8	A	B	5 5/8	—	1/2 x 7 & 8 1/2	4 1/2	3551	**4M423**	183.00	**111.20**	14.0
	1050/3-Spd	208-230*	2.8	A	B	5 5/8	—	1/2 x 7 & 8 1/2	4 1/2	3552	**4M424**	185.00	**112.40**	14.0
	1000/3-Spd	230	3.3	A	B	5	4 7/16	1/2 x 10 & 9 13/16	4 15/16	—	**3M689**	147.00	**91.05**	12.0
1/4	1550/3-Spd	115*	7.5	A	B	5 5/8	—	1/2 x 7 1/2 Each	5	3771	**4M425**	188.00	**114.25**	15.0
	1550/3-Spd	208-230*	3.7	A	B	5 5/8	—	1/2 x 7 1/2 Each	5	3772	**4M426**	190.00	**115.45**	16.0
	1050/4-Spd	115	8.5	A	C	5	5 15/16	1/2 x 8 Each	6 1/2	2819	**4M372**	157.00	**97.20**	15.0
	1050/3-Spd	115	9.2	A	B	5 5/8	—	1/2 x 8 1/2 & 6 1/2	5	3571	**4M427**	198.00	**120.30**	16.0
	1050/3-Spd	208-230*	4.7	A	B	5 5/8	—	1/2 x 8 1/2 & 6 1/2	5	3572	**4M428**	201.00	**122.15**	16.0

(*) 60/50 Hz. (†) 2 1/2" Diameter resilient rings.

ROOM AIR CONDITIONER MOTORS

DAYTON BRAND, PSC, HIGH EFFICIENCY

Typical Uses: High efficiency performance in room air conditioners. Also adaptable to other shaft-mounted fan and blower applications.
Special Features: Capacitor mounting holes in shell. Double shaft.
Bearings: All-angle, self-aligning sleeve
Mounting: Resilient ring on lead-end endshield; four studs out opposite endshield
Service Factor: 1.0
Enclosure: Open air-over
Thermal Protection: Auto
NEMA Frame: 48YZ
Ambient: 40°C
Duty: Continuous air-over
Rotation: CCW facing lead end
Finish: Gray enamel
Brand: Dayton



RESILIENT RING BASE

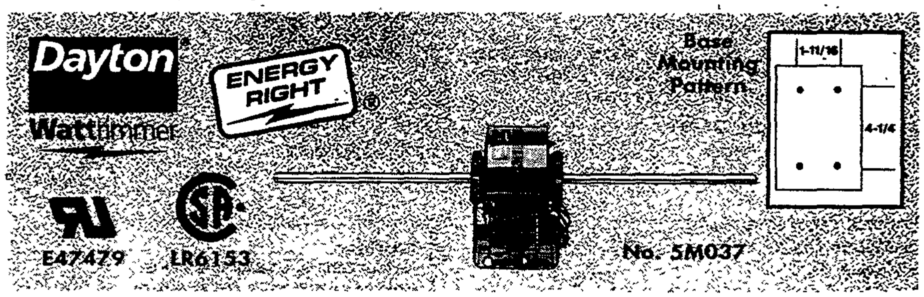
HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Ins. Class	Body Dia.	Shaft Dimensions Dia. x Length	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.	Capacitor Req'd. Stock No.	Capacitor Req'd. Each
1/6	1075/3-Spd	230	1.0	A	5⅝"	1/2 x 7" ea	4⅜"	**3M669**	$90.00	**$68.75**	11.0	5M004	$4.99
1/4	1625/3-Spd	115	3.1	A	5⅝	1/2 x 7	4⅞	**3M878**	82.00	**62.70**	12.0	5M005	5.36
	1625/3-Spd	230	1.6	A	5⅝	1/2 x 7	4⅝	**3M672**	105.00	**80.25**	12.0	5M004	4.99
	1075/3-Spd	115	3.4	A	5⅝	1/2 x 7	5⅛	**3M877**	88.00	**67.25**	14.0	5M006	6.41
	1075/3-Spd	230	1.4	A	5⅝	1/2 x 7	5⅛	**3M670**	90.00	**68.75**	15.0	5M006	6.41
	1075/3-Spd	277	1.4	A	5⅝	1/2 x 7¾†	4⅞	**3M930**	146.00	**111.60**	14.0	5M003	4.25
1/3	1625/3-Spd	230	1.9	A	5⅝	1/2 x 7	4⅞	**3M673**	126.00	**96.30**	14.0	5M005	5.36
	1075/3-Spd	115	4.4	A	5⅝	1/2 x 7	5⅜	**3M879**	103.00	**78.75**	16.0	5M006	6.41
	1075/3-Spd	230	1.9	A	5⅝	1/2 x 7	5⅜	**3M671**	105.00	**80.25**	16.0	5M006	6.41
1/2	1625/3-Spd	230	2.7	A	5⅝	1/2 x 7	5⅜	**3M904**	138.00	**105.45**	17.0	5M005	5.36
	1075/3-Spd	230	2.9	B	5⅝	1/2 x 7	5⅝	**3M880**	122.00	**93.25**	17.0	5M006	6.41
3/4	1625/3-Spd	230	3.9	B	5⅝	1/2 x 7	5⅞	**3M905**	161.00	**123.05**	20.0	5M006	6.41

(†) Second shaft dimension: 1/2 x 7½".

DAYTON BRAND, PSC, HIGH EFFICIENCY

Typical Uses: High efficiency performance in fan coil heating/air conditioning, furnace blowers, unit heaters, and other shaft-mounted fan/blower applications.
Special Features: Mounted capacitor with protective boot. Double shaft.
Bearings: All-angle, self-aligning sleeve
Mounting: Cradle base
Enclosure: Open air-over
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: B
NEMA Frame: 42YZ
Body Diameter: 5"
Shaft Dimensions: 1/2 x 9¼" each with full flat
Ambient: 40°C
Duty: Continuous air-over
Rotation: CCW facing lead end
Finish: Gray enamel
Brand: Dayton

> **CAUTION:**
> **Not for fans in unattended areas.**
> Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



CRADLE BASE WITH MOUNTED CAPACITOR

HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
1/25	1625/3-Spd	115	0.7	4⅜"	**5M037**	$119.00	**$89.95**	9.2
	1075/3-Spd	115	0.7	4⅜	**5M038**	107.00	**80.90**	9.2
1/10	1625/3-Spd	115	1.2	5	**5M039**	124.00	**93.75**	12.0
	1075/3-Spd	115	1.5	5	**5M040**	112.00	**84.70**	12.0
	1625/3-Spd	208-230*	0.6	5	**5M041**	127.00	**96.00**	12.0
	1075/3-Spd	208-230*	0.8	5	**5M042**	115.00	**86.95**	12.0
1/8	1625/3-Spd	115	1.6	5³⁄₁₆	**5M043**	129.00	**97.50**	13.0
	1075/3-Spd	115	1.9	5³⁄₁₆	**5M044**	117.00	**88.45**	13.0
1/6	1625/3-Spd	115	1.8	5½	**5M045**	134.00	**101.30**	15.0
	1075/3-Spd	115	2.5	5½	**5M046**	122.00	**92.20**	15.0
	1625/3-Spd	208-230*	0.9	5½	**5M047**	137.00	**103.55**	15.0
	1075/3-Spd	208-230*	1.3	5½	**5M048**	125.00	**94.45**	15.0

(*) 60/50 Hz.

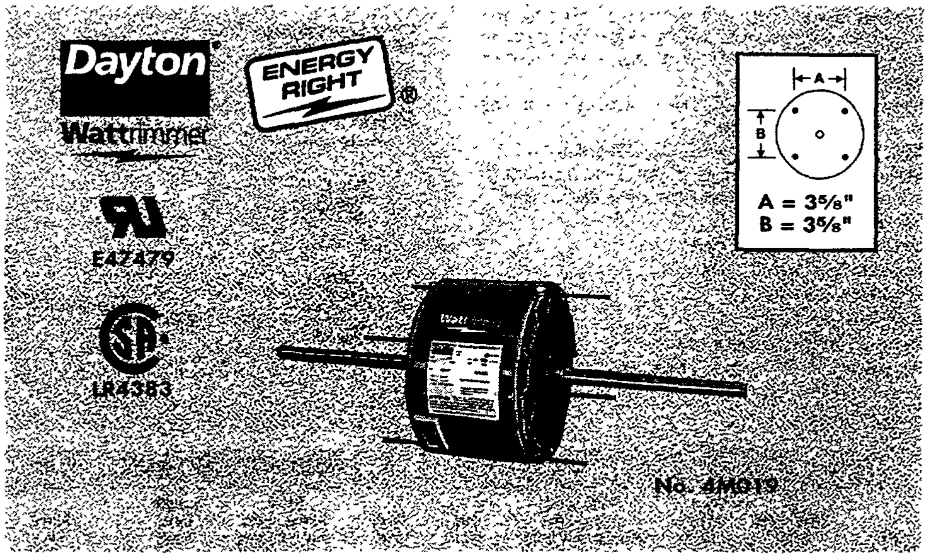
ROOM AIR CONDITIONER MOTORS

PSC, HIGH EFFICIENCY, TEAO, UNIVERSAL OEM REPLACEMENT

Typical Uses: High efficiency performance as universal replacements for original motors used in specific brands of air conditioners, fan coil units, and unit heaters. Also used for other resilient ring, base, or band-mounted fan and blower applications.

Special Features: Contractor friendly. Studs are 1½" at both ends. Each shaft is 1/2 x 6" long. Capacitor mounting holes in shell, 26" color-coded leads.

Bearings: All-angle sleeve
Service Factor: 1.0
Enclosure: Totally enclosed air-over
Thermal Protection: Auto
Insulation Class: A (except No. 4M022 is B)
NEMA Frame: 48YZ
Body Diameter: 5⅝"
Ambient: 40°C
Duty: Continuous air-over
Rotation: CCW facing lead end
Finish: Gray enamel
Brand: Dayton



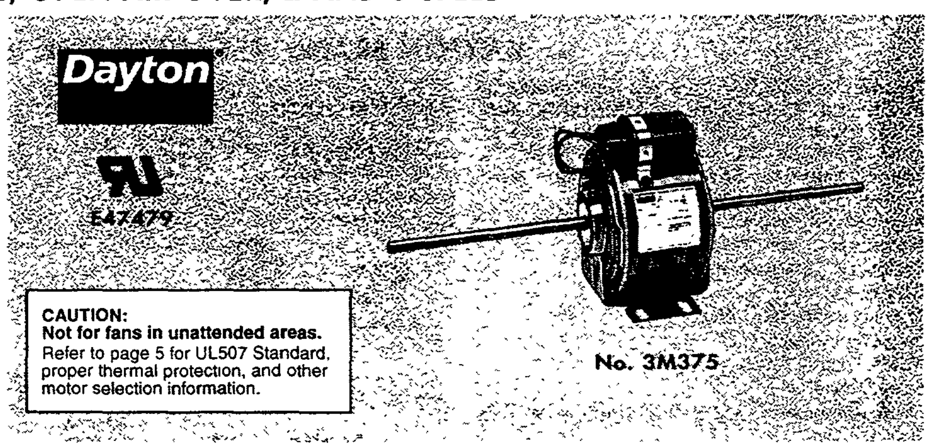
Equipment Manufacturer	HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
Amana, Friedrich, Frigidaire, GE, Philco, Whirlpool	**1/8**	1075/3-Spd	115	2.1	3½"	**4M019**	$126.00	**$96.35**	12.0	5M003	$4.25
Amana, Friedrich, GE	**1/8**	1075/3-Spd	230	0.9	3½	**4M020**	129.00	**98.60**	12.0	5M003	4.25
Addison, Belding (Gibson), Emerson Quiet Kool, Frigidaire, GE	**1/5**	1075/3-Spd	208-230	1.4	3¾	**4M022**	137.00	**104.70**	12.0	5M003	4.25
Addison, Whirlpool	**1/4**	1075/3-Spd	208-230	1.9	4	**4M023**	141.00	**107.75**	14.0	5M003	4.25
Friedrich, Frigidaire, Rheem, Whirlpool	**1/3**	1075/3-Spd	208-230	3.0	4½	**4M024**	150.00	**114.60**	16.0	5M003	4.25

PSC, OPEN AIR-OVER, 2 AND 3 SPEED

Typical Uses: Room air conditioners, fan coil console units, packaged heat pumps, and other double shaft and shaft-mounted fan and blower applications.

Special Features: Supplied with capacitor and resilient mounting base. Capacitor mounted on shell and connected.

Bearings: All-angle sleeve
Mounting: Cradle base
Enclosure: Open air-over
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: A
Ambient: 40°C
Duty: Continuous air-over
Rotation: CCW facing lead end
Finish: Gray enamel
Brand: Dayton



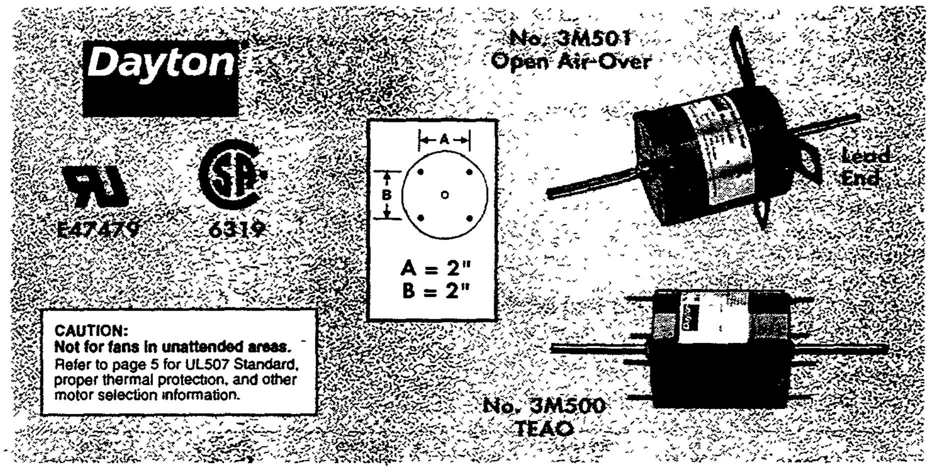
CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Body Dia.	Resilient Base Mounting Holes OC	Shaft Dimensions	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
1/6	1075/3-Spd	48YZ	115	2.9	5⅝"	1 11/16 x 4¾"	1/2 x 7"	4 11/16"	**3M375**	$88.00	**$67.25**	12.0
	1075/3-Spd	48YZ	230	1.5	5⅝	1 11/16 x 4¾	1/2 x 7	4 11/16	**3M376**	90.00	**68.75**	11.0
1/4	1625/2-Spd	48YZ	115	3.6	5⅝	1 11/16 x 4¾	1/2 x 7	4 15/16	**3M064**	100.00	**76.40**	13.0
	1625/2-Spd	48YZ	230	1.8	5⅝	1 11/16 x 4¾	1/2 x 7	4 15/16	**3M065**	102.00	**78.00**	12.0
	1075/2-Spd	48YZ	115	4.4	5⅝	1 11/16 x 4¾	1/2 x 7	5 7/16	**3M008**	94.00	**71.85**	15.0
	1075/2-Spd	48YZ	230	2.2	5⅝	1 11/16 x 4¾	1/2 x 7	5 7/16	**3M009**	96.00	**73.40**	15.0
1/3	1625/3-Spd	48YZ	230	2.0	5⅝	1 11/16 x 4¾	1/2 x 7	5 7/16	**3M377**	97.00	**74.10**	14.0
	1075/3-Spd	48YZ	230	2.5	5⅝	1 11/16 x 4¾	1/2 x 7	5 11/16	**3M378**	106.00	**81.00**	18.0
	1075/2-Spd	48YZ	230	2.5	5⅝	1 11/16 x 4¾	1/2 x 7	5 11/16	**3M048**	102.00	**77.95**	17.0
1/2	1075/2-Spd	48YZ	230	3.3	5⅝	1 11/16 x 4¾	1/2 x 7	5 15/16	**3M178**	118.00	**90.15**	18.0

ROOM AIR CONDITIONER MOTORS

PSC, OPEN AND TEAO, 2 AND 3 SPEED

Typical Uses: Open motor is replacement for Frigidaire, Carrier, and Keeprite room air conditioners and is supplied with three mounting brackets welded to body. TEAO motor is replacement for Whirlpool, Sears, and Quiet Kool room air conditioners and is supplied with studs for mounting from either endshield.
Special Features: Capacitor and mounting hardware available separately. Double shaft.
Bearings: All-angle sleeve
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: B
Body Diameter: 3.3"
Ambient: 40°C
Duty: Continuous air-over
Finish: Gray enamel
Brand: Dayton



HP	Nameplate RPM	Rotation Facing Lead End	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Shaft Dimensions Dia. x L	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.	Capacitor Req'd Stock No.	Capacitor Req'd Each
1/20	1625/2-Spd	CCW	OPAO	115	1.0	5/16 x 2¾"	4½"	**3M501**	$73.00	**$55.25**	4.2	5M003	$4.25
1/15	1625/3-Spd	CCW	TEAO	115	1.1	5/16 x 2 9/16	4¼	**3M500**	71.00	**53.75**	4.4	5M001	4.25

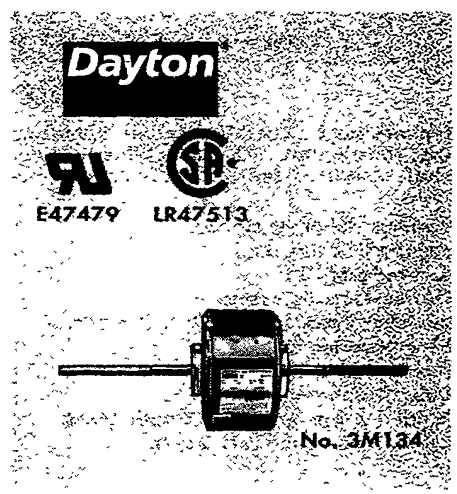
PSC, OPEN AIR-OVER, 3 SPEED

Typical Uses: Fan coil heating/air conditioning console units for brands such as Nesbitt, U.S. Radiator and American Standard. Also adaptable to other shaft-mounted fan and blower applications.
Special Features: Variable capacitor/load performance capability (see table below). Capacitor and mounting hardware available separately.
HP: 1/15
Nameplate RPM: 1075/3-Speed
Volts 60 Hz: 115
Full-Load Amps: 1.0
Bearings: All-angle sleeve
Mounting: Resilient ring, 2½" dia., 3 15/16" OC
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: A
NEMA Frame: 48YZ
Body Diameter: 5⅝"
Shaft Dimensions: 1/2 x 6" each
Length Less Shaft: 4 7/16"
Ambient: 40°C
Duty: Continuous air-over
Rotation: CCW facing lead end
Finish: Gray enamel
Brand: Dayton

No. 3M134. Shpg. wt. 8.7 lbs. List $105.00. Each $80.30

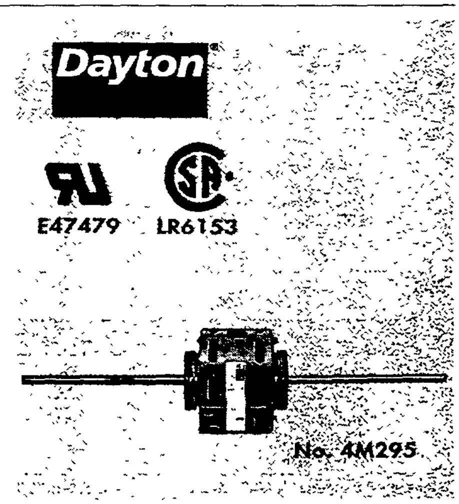
CAPACITORS

Size 370V	Application Blower	Load	Stock No.	Each	Shpg. Wt.
3 Mfd.	Single	Light	**5M001**	$4.25	0.3
4 Mfd.	Double	Normal	**5M002**	4.25	0.3
5 Mfd.	Triple	Heavy	**5M003**	4.25	0.4



SHADED POLE, OPEN AIR-OVER, 3 AND 4 SPEED, 4.4" DIA.

Typical Uses: Fan coil console-type units where coolant or heat is pumped to the console from a central system. Also adaptable to other shaft-mounted blower applications.
Bearings: All-angle sleeve
Mounting: Resilient ring, 2½" dia.
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: A
Body Diameter: 4.4"
Ambient: 40°C
Duty: Continuous air-over
Rotation: CCW facing lead end
Finish: Gray enamel
Brand: Dayton



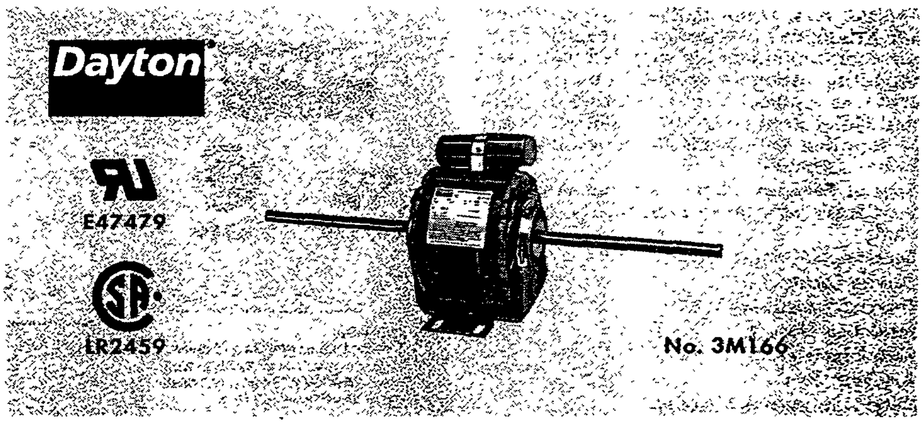
HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	2½" Dia. Resilient Rings OC	Shaft Dimensions Dia. x L	Length Less Shaft	No. No.	List	Each	Shpg. Wt.
1/25	1550/3-Spd	115	1.4	3 15/16"	3/8 x 7"	4⅜"	**4M295**	$83.00	**$62.75**	6.0
1/20	1550/3-Spd	115	1.9	3 15/16	1/2 x 7	4⅜	**4M296**	87.00	**65.80**	6.0
1/15	1550/3-Spd	115	2.4	3 15/16	1/2 x 7	4⅜	**4M297**	90.00	**68.05**	6.5
1/10	1550/3-Spd	115	3.5	4⅜	3/8 x 7	4⅞	**4M161**	91.00	**68.80**	6.5
	1550/3-Spd	115	3.5	4¼	1/2 x 7	4⅞	**4M162**	91.00	**68.80**	6.5
1/8	1550/4-Spd	115	4.1	4½	1/2 x 7	4 15/16	**4M163**	99.00	**74.85**	7.4
1/6	1550/4-Spd	115	5.4	5	1/2 x 6⅝	5 7/16	**4M164**	103.00	**77.90**	9.3

ROOM AIR CONDITIONER MOTORS

PSC, OPEN AIR-OVER

Typical Uses: Room air conditioners, fan coil console units, packaged heat pumps, and other shaft-mounted fan and blower applications.

Bearings: All-angle, self-aligning sleeve
Mounting: Cradle base
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: A
Body Diameter: 5"
Ambient: 40°C
Duty: Continuous air-over
Rotation: CCW facing lead end (except No. 3M166 is reversible)
Finish: Gray enamel
Capacitor: Included
Brand: Dayton



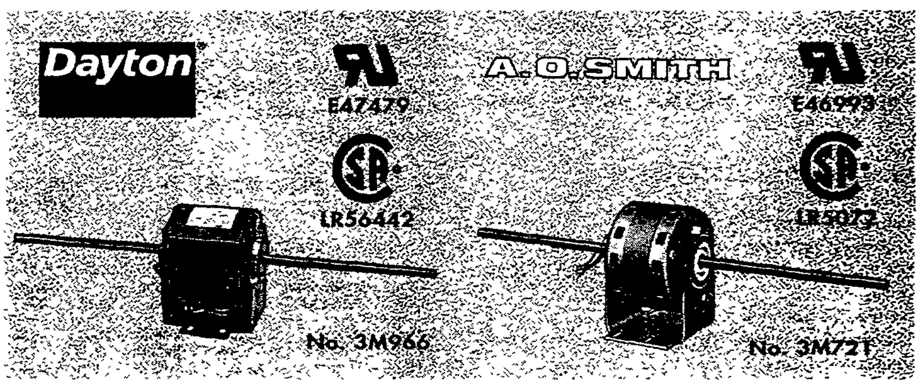
HP	Nameplate RPM	NEMA Frame	Rotation Facing Lead End	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Resilient Mounting Holes OC	Shaft Dimensions Dia. x Length	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
1/6	1625/2-Spd	42YZ	CW/CCW	115	2.3	1 11/16 x 4 3/4"	1/2 x 7" ea	4 15/16"	**3M166**	$122.00	**$93.25**	12.0
	1625/2-Spd	42YZ	CCW	230	1.2	1 11/16 x 4 3/4	1/2 x 7	4 15/16	**3M167**	124.00	**94.80**	11.0
1/4	1625/2-Spd	42YZ	CCW	115	3.6	1 11/16 x 4 3/4	1/2 x 7	5 7/16	**3M168**	132.00	**100.90**	13.0
	1625/2-Spd	42YZ	CCW	230	1.8	1 11/16 x 4 3/4	1/2 x 7	5 7/16	**3M169**	134.00	**102.40**	13.0

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

SHADED POLE AND PSC, OPEN AIR-OVER, 2, 3, 4 AND 5 SPEED

Typical Uses: Fan coil heating/air conditioning console units. Also adaptable to other shaft-mounted fan and blower applications.

Bearings: All-angle sleeve
Mounting: Cradle base
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: Dayton, B; A.O. Smith, A
Body Diameter: 5"
Ambient: 40°C
Duty: Continuous air-over
Finish: Dayton, gray; A.O. Smith, black
Brand: Dayton and A.O. Smith



HP	Nameplate RPM	NEMA Frame	Rotation Facing Lead End	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Resil. Base Mounting Holes OC	Shaft Dimensions Dia. x Length	Length Less Shaft	Mfr's Model	Stock No.	List	Each	Shpg. Wt.
DAYTON BRAND, SHADED POLE													
1/10	1550/3-Spd	42YZ	CCW	115	3.5	1 11/16 x 3 3/4"	1/2 x 8 3/8" ea	5 1/4"	—	**3M966**	$94.00	**$71.85**	12.0
	1050/5-Spd	42YZ	CW	115	4.7	1 11/16 x 3 3/4	3/8 x 8	5	—	**4M037**	78.00	**59.65**	9.0
	1050/5-Spd	42YZ	CW	115	4.7	1 11/16 x 3 3/4	1/2 x 10	5	—	**4M038**	78.00	**59.65**	9.0
	1050/4-Spd	42YZ	CCW	115	3.8	1 11/16 x 3 3/4	1/2 x 8 3/8	5 1/4	—	**3M965**	100.00	**76.40**	13.0
	1050/4-Spd	42YZ	CCW	277	1.5	1 11/16 x 3 3/4	1/2 x 8 3/8	5 1/4	—	**3M967**	104.00	**79.50**	13.0
	1050/2-Spd	42YZ	CCW	115	3.7	1 11/16 x 3 1/2	1/2 x 4 1/2	4 15/16	—	**3M592**	85.00	**65.00**	10.0
	1050/2-Spd	42YZ	CCW	230	1.8	1 11/16 x 3 1/2	1/2 x 4 1/2	4 15/16	—	**3M593**	86.00	**65.75**	10.0
	1050	42YZ	CCW	115	3.4	1 11/16 x 3 1/2	1/2 x 4 1/2	4 15/16	—	**3M590**	79.00	**60.40**	11.0
1/6	1050/2-Spd	42YZ	CCW	115	5.9	1 11/16 x 4 3/4	1/2 x 7	5 3/16	—	**3M018**	128.00	**97.85**	12.0
	1050/2-Spd	42YZ	CCW	230	2.8	1 11/16 x 4 3/4	1/2 x 7	5 3/16	—	**3M019**	130.00	**99.35**	14.0
A.O. SMITH BRAND, SHADED POLE AND PSC													
1/10	1550/3-Spd	42YZ	CCW	115	3.5	1 11/16 x 3 1/2	1/2 x 8 3/8"	4 7/16	322P116	**3M721**	94.00	**71.30**	12.0
	1550/3-Spd	42YZ	CCW	230*	1.8	1 11/16 x 3 1/2	1/2 x 8 3/8	4 7/16	322P218	**3M748**	104.00	**78.85**	12.0
	1075/4-Spd	42YZ	CCW	115	1.7	1 11/16 x 3 1/2	1/2 x 8 3/8	4 7/16	322P482	**3M771**†	124.00	**94.00**	11.0
	1050/4-Spd	42YZ	CCW	115	3.4	1 11/16 x 3 1/2	1/2 x 9 3/4	4 7/16	322P288	**3M720**	100.00	**80.35**	11.0
	1050/4-Spd	42YZ	CCW	230*	1.6	1 11/16 x 3 1/2	1/2 x 8 3/8	4 7/16	322P073	**3M747**	109.00	**82.60**	10.0
	1050/4-Spd	42YZ	CCW	277	1.3	1 11/16 x 3 1/2	1/2 x 8 3/8	4 7/16	322P226	**3M864**	104.00	**81.90**	12.0

(*) Designed to operate on 208-230V. (†) PSC, requires No. 6X653 5 MFD, 370 VAC capacitor.

265-277 VOLT FAN OR BLOWER MOTORS

Typical Uses: Direct-drive furnace blowers, unit heaters, air conditioners, and many other shaft-mounted fan and blower applications for use in textile industry, hotels, and other institutional settings where 277 volt power is commonly found.

Bearings: Sleeve

Enclosure: Open air-over

Service Factor: 1.0

Thermal Protection: Auto

Insulation Class: A

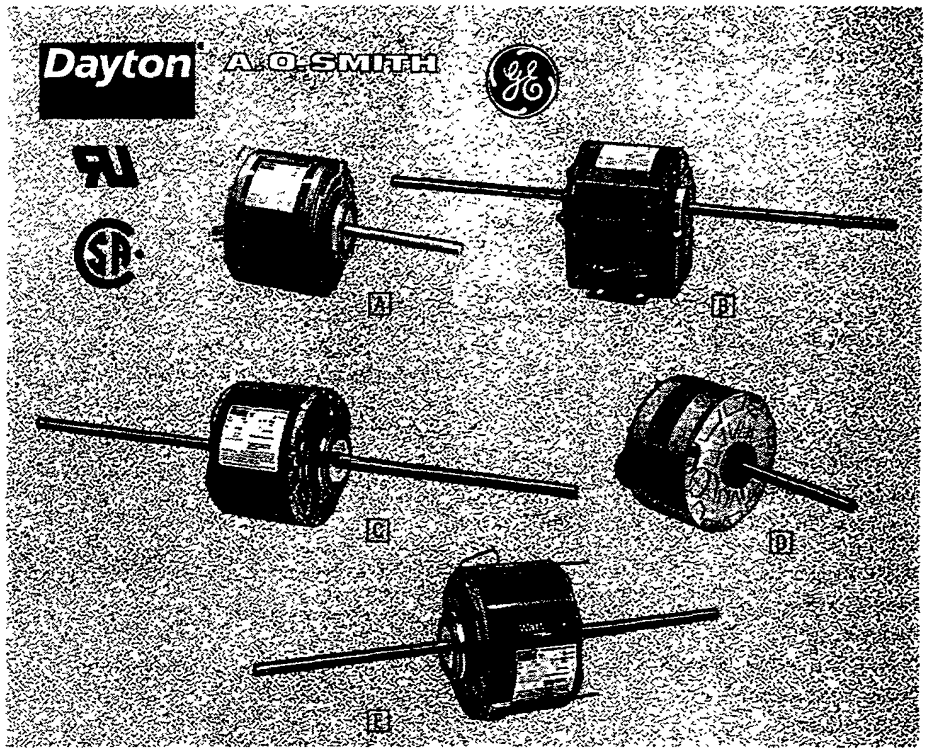
Ambient: 40°C

Duty: Continuous air-over

Finish: Dayton and GE gray; A.O. Smith, black

Brands: Dayton, GE and A.O. Smith

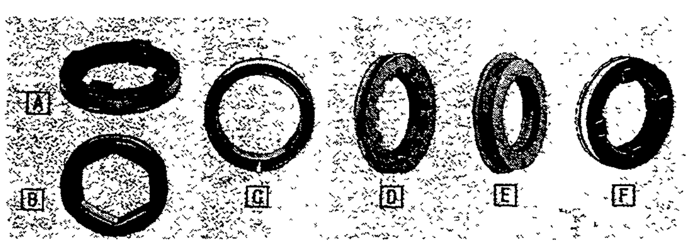
> **CAUTION:**
> **Not for fans in unattended areas.**
> Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



HP	Key	Nameplate RPM	NEMA Frame	Rotation	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Mount Style	Shaft Dimensions Dia. x Length	Length Less Shaft	Mfr.	Mfr's. Model	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
PSC, SINGLE SHAFT BLOWER MOTORS																	
1/4	A	1075/3-Spd	48YZ	CW/VFSE	277	2.0	2½" Dia. Ring	1/2 x 5"	5⅜"	Dayton	—	**3M712**	$115.00	**$87.90**	13.0	5M002	$4.25
1/3	A	1075/3-Spd	48YZ	CW/VFSE	277	2.2	2½" Dia. Ring	1/2 x 5	5⅝	Dayton	—	**3M713**	123.00	**94.05**	14.0	5M002	4.25
1/2	A	1075/3-Spd	48YZ	CW/VFSE	277	3.4	2½" Dia. Ring	1/2 x 5	5⅞	Dayton	—	**3M714**	139.00	**106.25**	15.0	5M004	4.99
SHADED POLE, DOUBLE SHAFT FAN AND BLOWER MOTORS																	
1/10	B	1050/4-Spd	42YZ	CCW/VFLE	277	1.4	Cradle	1/2 x 8⅜ & 8⅜	5 3/16	Dayton	—	**3M967**	104.00	**79.50**	13.0	None	
	B	1050/4-Spd	42YZ	CCW/VFLE	277	1.3	Cradle	1/2 x 8⅜ & 8⅜	4 7/16	A.O. Smith	322P226	**3M864**	104.00	**81.90**	12.0	None	
PSC, DOUBLE SHAFT FAN AND BLOWER MOTORS																	
1/8	C	1075/3-Spd	42YZ	CCW/VFLE	277	0.8	2¼" Dia. Ring	1/2 x 8½ & 8½	4⅝	Dayton	—	**3M883**	106.00	**81.05**	9.0	5M003	4.25
1/5	D	1075/3-Spd	48YZ	CW/VFLE	265	1.3	Lug	1/2 x 2 & 2	4 11/16	GE	3077	**4M551**	123.00	**88.70**	11.0	5M002	4.25
1/4	E	1075/3-Spd	48YZ	CCW/VFLE	277	1.5	Ring/Stud	1/2 x 7½ & 7½	4⅞	Dayton	—	**3M930**	146.00	**111.60**	14.0	5M003	4.25

MOTOR MOUNTING RINGS

2½ and 2¼" OD resilient mount rubber rings reduce vibration and are designed to replace mounting rings on NEMA 48 and 56 frame resilient ring mounted motors. Two rings per bag.



For NEMA Frames	Key	Brand	OD	ID	Thick	Stock No.	List	Each Bag	Shpg. Wt.
48	A	Dayton	2¼"	1½"	1/2"	**3M143**	$10.82	**$6.48**	0.1
	D	GE	2¼	1 11/16	7/16	**4M737**	7.00	**6.08**	0.1
	D	GE	2½	1 11/16	7/16	**4M751**	7.00	**6.08**	0.2
	E	GE	2½	1 11/16	7/16	**4M752**	7.00	**6.08**	0.2
48 & 56	B	A.O. Smith	2½	1 9/16	3/8	**2X456**	7.00	**6.37**	0.1
56	F	Dayton	2¼	1 11/16	1/2	**5M073**	7.00	**6.39**	0.1
56	C	Dayton	2½	1⅞	7/16	**2X284**	7.00	**6.40**	0.1

MOTOR MOUNT SPLIT RING ADAPTERS AND LATCHES

[A] **Motor mount split ring adapters.** Overlapping aluminum split ring adapters enlarge 2¼" dia. resilient frame mounting rings to 2½" dia. Two overlapping rings required for each side of motor. Sold in packages of 4 rings. GE brand.

No. 1A682. Shpg. wt. 0.2 lbs. List .....$4.00. Each pkg. **$2.79**

[B] **Mounting Latches.** Fasten motor to cradle.

No. 2X234. Shpg. wt. 0.1 lbs. List......$4.20. Pair **$3.21**

HIGH EFFICIENCY PSC DIRECT-DRIVE FURNACE BLOWER MOTORS

Typical Uses: High efficiency performance on furnace blowers and other air-over shaft-mounted fan and blower equipment.

Type: PSC

Bearings: All-angle, self-aligning iron graphite sleeve (except No. 3M881 has ball)

Mounting: 2½" diameter resilient rings

[A] Includes flexible mounting bracket and capacitor mounting hardware. Capacitor mounting holes in shell.

[B] Includes 4 mounting studs and capacitor with mounting hardware. Capacitor mounting holes in shell.

[C] Resilient ring.

[D] Resilient ring with studs.

Enclosure: Open air-over

Service Factor: 1.0

Thermal Protection: Auto

Insulation Class: A (except Nos. 3M857 and 3M881 are B)

NEMA Frame: 48YZ

Body Diameter: 5⅝"

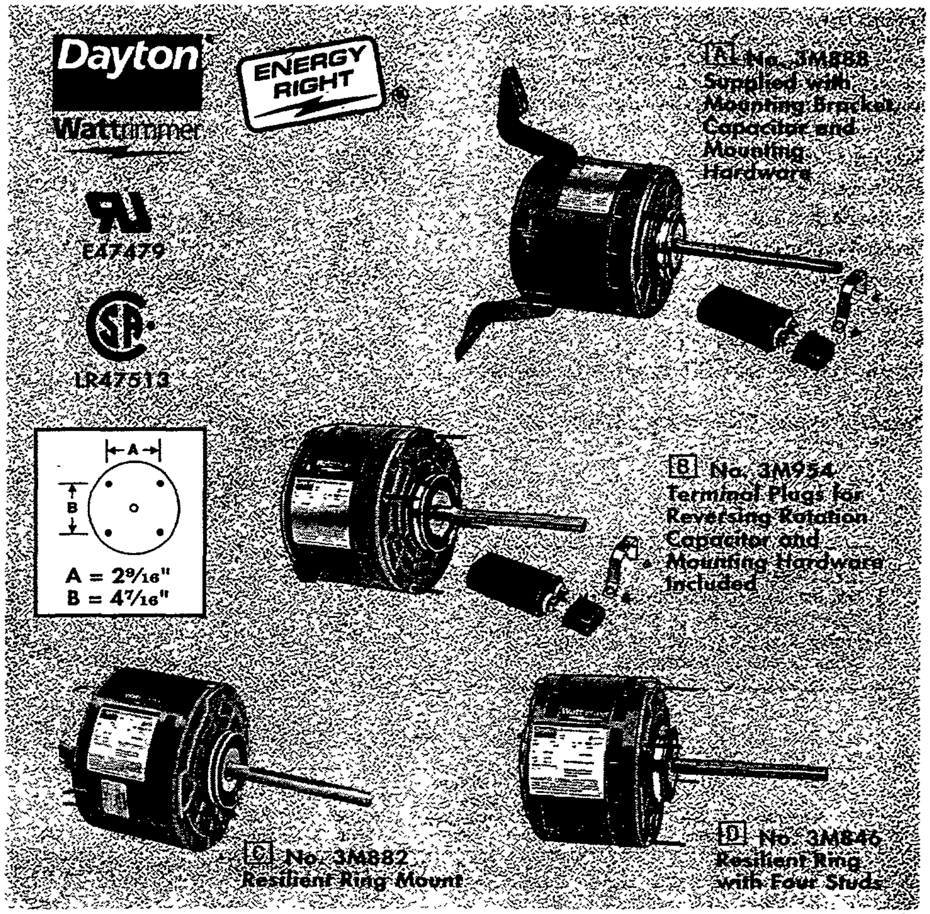
Ambient: 40°C

Duty: Continuous air-over

Finish: Gray enamel

Brand: Dayton

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Mount Style	2½" Dia. Resilient Rings OC	Shaft Dimensions Dia. x Length	Length Less Shaft	Rotation Facing Shaft End	Stock No.	List	Each	Shpg. Wt.	Capacitor Req'd Stock No.	Capacitor Req'd Each
1/6	1075/4-Spd	115	2.2	A	4⅝"	1/2 x 6"	5³⁄₁₆"	CW/CCW	3M885	$128.00	**$97.85**	12.0	Included	
	1075/3-Spd	115	2.3	C	4¹¹⁄₁₆	1/2 x 5	5³⁄₁₆	CW/CCW	3M882	90.00	**68.75**	11.0	5M003	$4.25
	1075/3-Spd	230	1.1	C	4¹¹⁄₁₆	1/2 x 5	5³⁄₁₆	CW/CCW	3M902	92.00	**70.35**	10.0	5M003	4.25
	1075	230	1.1	D	4⁷⁄₁₆	1/2 x 5	4¹⁵⁄₁₆	CW	3M846	84.00	**64.20**	10.0	5M003	4.25
1/4	1625/3-Spd	115	2.8	C	4¹¹⁄₁₆	1/2 x 5	5³⁄₁₆	CW/CCW	3M896	112.00	**85.60**	11.0	5M006	6.41
	1075/4-Spd	115	3.8	A	4⅞	1/2 x 6	5⁷⁄₁₆	CW/CCW	3M886	136.00	**103.95**	17.0	Included	
	1075/3-Spd	115	3.8	B	5⅜	1/2 x 5	5¹⁵⁄₁₆	CW/CCW	4M043	132.00	**100.90**	13.0	Included	
	1075/3-Spd	115	3.8	C	4¹⁵⁄₁₆	1/2 x 5	5⁷⁄₁₆	CW/CCW	3M851	93.00	**62.85**	12.0	5M003	4.25
	1075/3-Spd	230	1.7	C	4¹⁵⁄₁₆	1/2 x 5	5⁷⁄₁₆	CW/CCW	3M852	95.00	**72.60**	13.0	5M003	4.25
	1075	115	3.8	D	4¹¹⁄₁₆	1/2 x 5	5³⁄₁₆	CW/CCW	3M954	90.00	**68.75**	12.0	5M003	4.25
	1075	115	3.8	D	4¹¹⁄₁₆	1/2 x 5	5³⁄₁₆	CW	3M847	83.00	**63.45**	11.0	5M003	4.25
	1075	230	1.8	D	4¹¹⁄₁₆	1/2 x 5	5³⁄₁₆	CW	3M848	85.00	**65.00**	11.0	5M003	4.25
	1075	230	1.8	D	4¹¹⁄₁₆	1/2 x 5	5³⁄₁₆	CW/CCW	3M955	92.00	**70.35**	12.0	5M003	4.25
1/3	1625/3-Spd	115	3.8	C	4¹⁵⁄₁₆	1/2 x 5	5⁷⁄₁₆	CW/CCW	3M897	117.00	**89.40**	13.0	5M008	9.45
	1075/4-Spd	115	4.6	A	5¼	1/2 x 6	5¹¹⁄₁₆	CW/CCW	3M887	144.00	**110.05**	17.0	Included	
	1075/3-Spd	115	4.6	B	5⅜	1/2 x 5	5¹⁵⁄₁₆	CW/CCW	3M865	140.00	**107.00**	14.0	Included	
	1075/3-Spd	115	4.6	C	5⁷⁄₁₆	1/2 x 5	5¹⁵⁄₁₆	CW/CCW	3M853	98.00	**67.25**	16.0	5M005	5.36
	1075/3-Spd	230	2.2	B	5⅛	1/2 x 5	5¹¹⁄₁₆	CW/CCW	3M866	142.00	**108.55**	14.0	Included	
	1075/3-Spd	230	2.2	C	5³⁄₁₆	1/2 x 5	5¹¹⁄₁₆	CW/CCW	3M854	100.00	**72.35**	14.0	5M004	4.99
	1075	115	5.1	D	5³⁄₁₆	1/2 x 5	5¹¹⁄₁₆	CW/CCW	3M956	96.00	**73.40**	13.0	5M003	4.25
	1075	115	5.1	D	5³⁄₁₆	1/2 x 5	5¹¹⁄₁₆	CW	3M849	89.00	**68.05**	13.0	5M003	4.25
	1075	230	2.2	D	5³⁄₁₆	1/2 x 5	5¹¹⁄₁₆	CW/CCW	3M957	98.00	**74.90**	13.0	5M003	4.25
	1075	230	2.2	D	5³⁄₁₆	1/2 x 5	5¹¹⁄₁₆	CW	3M850	91.00	**69.55**	13.0	5M003	4.25
	825	230	2.0	D	5¹¹⁄₁₆	1/2 x 5	6³⁄₁₆	CW/CCW	3M881	124.00	**94.75**	15.0	5M005	5.36
1/2	1625/3-Spd	115	5.8	C	5¹¹⁄₁₆	1/2 x 5	6³⁄₁₆	CW/CCW	3M898	127.00	**97.05**	16.0	5M008	9.45
	1075/4-Spd	115	7.6	A	5⁷⁄₁₆	1/2 x 6	5¹⁵⁄₁₆	CW/CCW	3M888	160.00	**122.25**	16.0	Included	
	1075/3-Spd	115	7.1	C	5¹⁵⁄₁₆	1/2 x 5	6⁷⁄₁₆	CW/CCW	3M855	110.00	**75.50**	17.0	5M005	5.36
	1075/3-Spd	230	3.1	B	5⅝	1/2 x 5	6³⁄₁₆	CW/CCW	4M059	158.00	**120.75**	18.0	Included	
	1075/3-Spd	230	3.1	C	5¹¹⁄₁₆	1/2 x 5	6³⁄₁₆	CW/CCW	3M856	112.00	**85.60**	17.0	5M005	5.36
	1075	230	3.3	D	5¹¹⁄₁₆	1/2 x 5	6³⁄₁₆	CW	3M903	104.00	**79.45**	17.0	5M005	5.36
3/4	1075/3-Spd	115	9.5	C	6⁷⁄₁₆	1/2 x 5	6¹⁵⁄₁₆	CW/CCW	3M857	150.00	**103.00**	21.0	5M007	7.72
	1075/3-Spd	230	4.3	C	6⁷⁄₁₆	1/2 x 5	6¹⁵⁄₁₆	CW/CCW	3M858	152.00	**109.95**	18.0	5M006	6.41

HIGH EFFICIENCY PSC DIRECT-DRIVE FURNACE BLOWER MOTORS

Typical Uses: High efficiency performance in furnace blowers. Also for other air-over shaft-mounted fans and blowers.

Special Features: Capacitor and mounting hardware available separately. Capacitor mounting holes in shell. Quick reversing leads on CW/CCW models.

Bearings: All-angle sleeve (except Nos. 4M356 and 4M357 are ball)

Enclosure: Open air-over

Service Factor: 1.0

Thermal Protection: Auto

NEMA Frame: 42YZ, 5" dia. (GE 29 frame); 48YZ, 5 5/8" dia. (GE 39 frame); 56YZ, 6 3/8" dia.

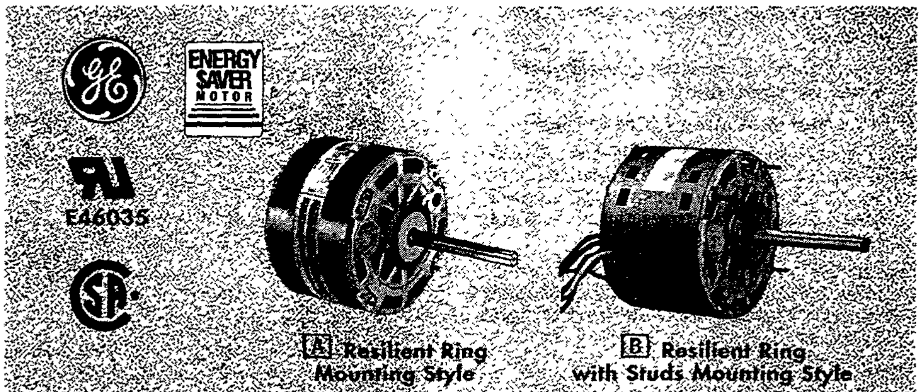
Shaft Dimensions: 1/2 x 4" on 42YZ and 48YZ; 5/8 x 4" on 56YZ; 5/8 x 6" on 3/4 HP and above

Ambient: 40°C

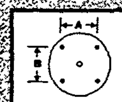
Duty: Continuous air-over

Finish: Gray enamel

Brand: GE



CAUTION: Not for fans in unattended areas. Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



Diameter	A	B	Shaft Dia.	Shaft Length
5"	3 1/4"	3 1/4"	1/2"	4"
5 5/8	3 5/8	3 5/8	1/2	4
6 3/8	4 1/8	4 1/8	5/8	6

HP	Nameplate RPM	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Mount Style	Body Dia.	2 1/4" Dia. Resilient Rings OC	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.	Cap Req'd. Stock No.	Cap Req'd. Each
1/30	1075/3-Spd	CW/CCW†	115	0.6	B	5"	4 7/16"	4 7/8"	2840	4M401#	$119.00	**$73.75**	9.9	6X653	$4.49
1/8	1075/3-Spd	CW/CCW†	115	2.5	B	5	4 15/16	5 3/8	2824	4M402	119.00	**73.75**	9.0	6X653	4.49
	1075	CW/CCW	115	2.6	B	5	4 15/16	5 3/8	2820	4M344	110.00	**68.10**	8.6	6X653	4.49
1/6	1625	CW	208-230*	0.9	A	5 5/8	4 3/16	4 5/8	3452	4M408	145.00	**88.10**	9.6	6X653	4.49
	1075	CW/CCW†	115	3.0	B	5	5 3/16	5 11/16	2821	4M345	113.00	**70.00**	9.7	6X653	4.49
	1075	CW	115*	2.3	A	5 5/8	4 3/16	4 5/8	3251	4M409	132.00	**80.25**	9.8	6X653	4.49
	1075	CW	208-230*	0.9	A	5 5/8	4 3/16	4 5/8	3252	3M804	134.00	**81.45**	9.7	6X653	4.49
	1075	CCW	208-230*	0.9	A	5 5/8	4 3/16	4 5/8	3254	4M410	134.00	**81.45**	9.3	6X653	4.49
1/5	1075/3-Spd	CW/CCW†	115	3.5	B	5	5 7/16	5 7/8	2825	4M403	126.00	**78.05**	11.0	6X653	4.49
	1075/3-Spd	CW/CCW†	208-230	1.7	B	5	5 7/16	5 7/8	2826	4M404	128.00	**79.30**	11.0	6X653	4.49
	1075	CW/CCW	115	3.5	B	5	5 7/16	5 7/8	2822	4M346	119.00	**73.75**	11.0	6X653	4.49
1/4	1625/3-Spd	CW/CCW†	115*	2.7	B	5 5/8	4 11/16	5 1/8	3992	4M133	153.00	**93.00**	11.0	6X656	6.43
	1625/3-Spd	CW/CCW†	208-230*	1.2	B	5 5/8	4 11/16	5 1/8	3993	4M134	155.00	**94.20**	11.0	6X653	4.49
	1625	CW	115*	3.2	A	5 5/8	4 11/16	5 1/8	3471	4M411	148.00	**89.95**	11.0	6X653	4.49
	1625	CW	208-230*	1.4	A	5 5/8	4 11/16	5 1/8	3472	3M808	143.00	**86.95**	11.0	6X653	4.49
	1075/3-Spd	CW/CCW†	115	3.7	B	5 5/8	5 3/16	5 5/8	3983	3M813	111.00	**67.45**	13.0	6X655	5.38
	1075/3-Spd	CW/CCW†	115	4.8	B	5	5 11/16	6 3/16	2827	4M405	138.00	**85.50**	12.0	6X653	4.49
	1075/3-Spd	CW/CCW†	208-230	2.2	B	5	5 11/16	6 3/16	2828	4M406	140.00	**86.70**	12.0	6X653	4.49
	1075/3-Spd	CW/CCW†	208-230*	1.7	B	5 5/8	5 3/16	5 5/8	3984	3M814	113.00	**68.70**	12.0	6X653	4.49
	1075	CW/CCW	115	4.7	B	5	5 11/16	6 3/16	2823	4M347	132.00	**81.75**	12.0	6X653	4.49
	1075	CW	115*	3.5	A	5 5/8	4 7/16	4 7/8	3271	3M805	140.00	**85.05**	11.0	6X653	4.49
	1075	CW	208-230*	1.5	A	5 5/8	4 7/16	4 7/8	3272	3M806	143.00	**86.95**	11.0	6X653	4.49
	1075	CCW	208-230*	1.5	A	5 5/8	4 7/16	4 7/8	3274	3M807	143.00	**86.95**	10.0	6X653	4.49
1/3	1625/3-Spd	CW/CCW†	115*	3.9	B	5 5/8	5 3/16	5 5/8	3994	4M135	159.00	**89.40**	13.0	6X658	8.82
	1625/3-Spd	CW/CCW†	208-230*	1.9	B	5 3/8	5 3/16	5 5/8	3995	4M136	161.00	**97.85**	13.0	6X653	4.49
	1625	CW	115*	4.7	A	5 5/8	5 3/16	5 5/8	3481	4M412	156.00	**94.80**	12.0	6X653	4.49
	1625	CW	208-230*	2.2	A	5 5/8	5 3/16	5 5/8	3482	4M413	158.00	**96.05**	12.0	6X653	4.49
	1075/3-Spd	CW/CCW†	115	5.8	B	5	5 11/16	6 1/16	2829	4M407	153.00	**94.80**	13.0	6X658	8.82
	1075/3-Spd	CW/CCW†	115	4.9	B	5 5/8	5 3/16	5 5/8	3985	3M815	117.00	**71.10**	16.0	6X655	5.38
	1075/3-Spd	CW/CCW†	208-230*	2.5	B	5 5/8	5 3/16	5 5/8	3986	3M816	119.00	**72.35**	14.0	6X653	4.49
	1075	CW	115*	5.0	A	5 5/8	5 3/16	5 5/8	3281	3M809	152.00	**92.35**	14.0	6X653	4.49
	1075	CW	208-230*	2.4	A	5 5/8	5 3/16	5 5/8	3282	3M810	154.00	**93.60**	13.0	6X653	4.49
	1075	CCW	208-230*	2.4	B	5 5/8	5 3/16	5 5/8	3284	3M811	154.00	**93.60**	13.0	6X653	4.49
1/2	1625/3-Spd	CW/CCW†	115*	6.0	B	5 5/8	5 7/16	5 7/8	3996	4M137	172.00	**104.55**	16.0	6X658	8.82
	1625/3-Spd	CW/CCW†	208-230*	2.8	B	5 5/8	5 7/16	5 7/8	3997	4M138	174.00	**105.75**	16.0	6X655	5.38
	1075/3-Spd	CW/CCW†	115*	7.3	B	5 5/8	5 11/16	6 1/8	3987	3M817	131.00	**77.30**	18.0	6X656	6.43
	1075/3-Spd	CW/CCW†	208-230*	3.5	B	5 5/8	5 11/16	6 1/8	3988	3M818	133.00	**80.80**	19.0	6X655	5.38
	1075	CW	208-230*	3.4	A	5 5/8	5 11/16	6 1/8	3292	3M812	176.00	**106.90**	17.0	6X655	5.38
3/4	1625/3-Spd	CW/CCW†	115*	8.5	B	5 5/8	5 15/16	6 3/8	3998	4M139	190.00	**115.45**	18.0	6X658	8.82
	1625/3-Spd	CW/CCW†	208-230*	4.0	A	5 5/8	5 15/16	6 3/8	3999	4M140	192.00	**116.70**	18.0	6X655	5.38
	1075/3-Spd	CW/CCW†	115	10.3	B	5 5/8	5 11/16	6 1/8	3989	3M819	179.00	**103.00**	19.0	6X658	8.82
	1075/3-Spd	CW/CCW†	208-230	4.8	B	5 5/8	5 11/16	6 1/8	3990	3M820	181.00	**109.95**	17.0	6X656	6.43
1	1075/3-Spd	CW/CCW	115	10.8	B	6 3/8	9 1/16‡	9 3/16	P184	4M356	355.00	**217.00**	35.0	6X658	8.82
	1075/3-Spd	CW/CCW	200-230	5.0	B	6 3/8	9 1/16‡	9 3/16	P185	4M357	355.00	**239.25**	43.0	6X657	7.73

(*) 60/50 Hz. (†) Three-speed CW/CCW motors include split ring to increase resilient ring diameter from 2 1/4 to 2 1/2"
(‡) 2 1/2" diameter resilient rings. (#) Includes cradle base, length adapter kit, and 8" shaft.

COMMERCIAL AND RESIDENTIAL DUTY DIRECT-DRIVE BLOWER MOTORS

- **Quick reversing leads on CW/CCW models**
- **Capacitor and mounting hardware available separately**
- **Capacitor mounting holes in shell**

Commercial Duty Motors: Feature higher starting torque than residential duty motors and offer universal replacement. Cooler running temperature ensures longer life performance.

Typical Uses: Direct-drive furnace blowers, unit heaters, air conditioners, and many other shaft-mounted fan and blower applications.

Type: PSC

Bearings: All-angle, self-aligning sleeve

Mounting: Resilient ring

Enclosure: Open air-over

Service Factor: 1.0

Thermal Protection: Auto

NEMA Frame: 48YZ

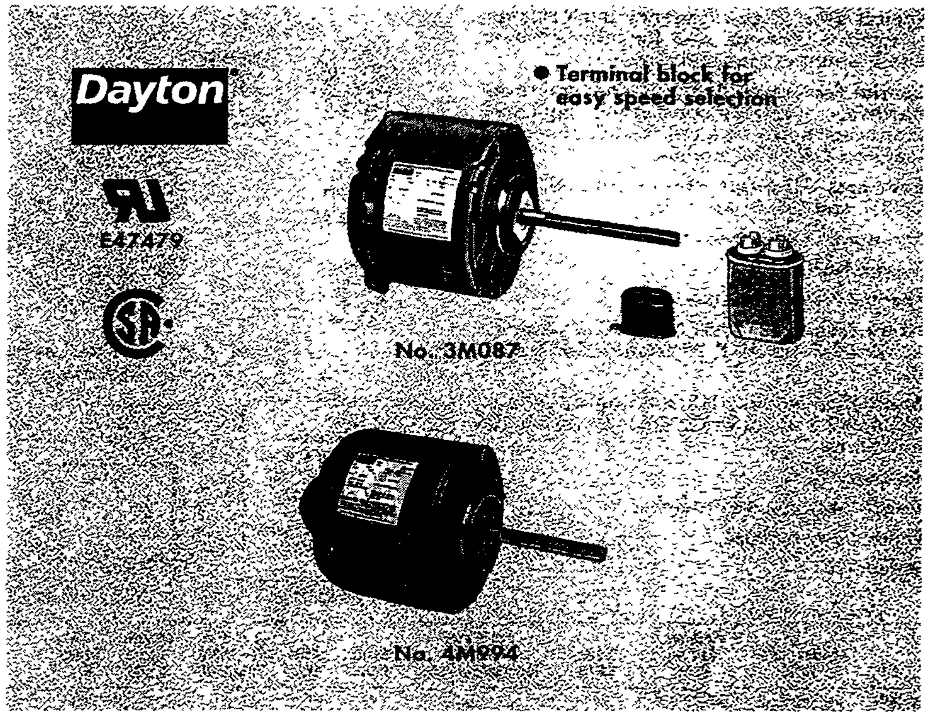
Body Diameter: 5 5/8"

Ambient: 40°C

Duty: Continuous air-over

Finish: Gray enamel

Brand: Dayton



HP	Nameplate RPM	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Ins. Class	2 1/2" Dia. Resilient Rings OC	Shaft Dimensions Dia. x Length	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
COMMERCIAL DUTY, STANDARD EFFICIENCY														
1/4	1075/4-Spd	CW/CCW	115	4.6	A	4 15/16"	1/2 x 5"	5 7/16"	**3M087**	$123.00	**$94.05**	14.0	Included	
	1075/3-Spd	CW	277	2.0	A	4 15/16	1/2 x 5	5 7/16	**3M712**	115.00	**87.90**	13.0	5M002	$4.25
1/3	1075/4-Spd	CW	115	6.5	A	4 7/8	1/2 x 5	5 5/16	**3M118**	112.00	**85.60**	14.0	5M002	4.25
	1075/3-Spd	CW	277	2.2	A	5 3/16	1/2 x 5	5 11/16	**3M713**	123.00	**94.05**	14.0	5M002	4.25
1/2	1075/4-Spd	CW	115	8.0	A	5 3/16	1/2 x 5	5 11/16	**3M142**	128.00	**97.80**	14.0	5M003	4.25
	1075/3-Spd	CW	277	3.4	A	5 3/16	1/2 x 5	5 15/16	**3M714**	139.00	**106.25**	15.0	5M004	4.99
3/4	1075/4-Spd	CW	115	11.0	B	6 7/16	1/2 x 5	6 15/16	**3M300**	161.00	**123.05**	18.0	5M006	6.41
	1075/4-Spd	CW	230	5.5	A	6 7/16	1/2 x 5	6 15/16	**3M222**	163.00	**124.60**	18.0	5M005	5.36
RESIDENTIAL DUTY, STANDARD EFFICIENCY														
1/4	1075/3-Spd	CW/CCW	115	4.2	B	4 7/8	1/2 x 4	5 3/16	**4M096**	88.00	**49.00**	12.0	5M003	4.25
	1075/2-Spd	CW/CCW	115	4.0	B	4 3/4	1/2 x 4	5 3/16	**4M991**	84.00	**47.50**	12.0	5M003	4.25
	1075/3-Spd	CW/CCW	208-230	2.0	B	4 7/8	1/2 x 4	5 3/16	**4M097**	90.00	**50.15**	14.0	5M003	4.25
	1075/2-Spd	CW/CCW	208-230	1.7	B	4 3/4	1/2 x 4	5 3/16	**4M992**	86.00	**48.60**	14.0	5M003	4.25
1/3	1075/3-Spd	CW/CCW	115	6.2	B	5 1/8	1/2 x 4	5 11/16	**4M098**	92.00	**51.55**	15.0	5M003	4.25
	1075/2-Spd	CW/CCW	115	6.0	B	5 1/8	1/2 x 4	5 11/16	**4M993**	89.00	**49.95**	15.0	5M003	4.25
	1075/3-Spd	CW/CCW	208-230	2.9	B	5 1/8	1/2 x 4	5 11/16	**4M099**	94.00	**52.95**	14.0	5M003	4.25
	1075/2-Spd	CW/CCW	208-230	2.4	B	5 1/8	1/2 x 4	5 11/16	**4M994**	91.00	**51.35**	14.0	5M005	5.36
1/2	1075/3-Spd	CW/CCW	115	9.0	B	6 1/8	1/2 x 4	6 7/16	**4M100**	111.00	**60.60**	19.0	5M003	4.25
	1075/2-Spd	CW/CCW	115	8.1	B	6 1/8	1/2 x 4	6 7/16	**4M995**	104.00	**57.55**	18.0	5M003	4.25
	1075/3-Spd	CW/CCW	208-230	4.3	B	5 7/8	1/2 x 4	6 3/16	**4M101**	113.00	**62.05**	18.0	5M003	4.25
	1075/2-Spd	CW/CCW	208-230	4.5	B	5 7/8	1/2 x 4	6 3/16	**4M996**	106.00	**58.90**	18.0	5M005	5.36
3/4	1075/3-Spd	CW/CCW	115	9.1	B	6 1/8	1/2 x 4	6 7/16	**4M183**	150.00	**84.80**	20.0	5M008	9.45
	1075/2-Spd	CW/CCW	115	10.0	B	6 1/8	1/2 x 4	6 7/16	**4M997**	140.00	**82.35**	20.0	5M008	9.45
	1075/3-Spd	CW/CCW	208-230	4.6	B	6 1/8	1/2 x 4	6 7/16	**4M184**	152.00	**86.15**	19.0	5M006	6.41
	1075/2-Spd	CW/CCW	208-230	4.9	B	6 1/8	1/2 x 4	6 7/16	**4M998**	142.00	**83.60**	20.0	5M006	6.41

CAUTION: Not for fans in unattended areas.

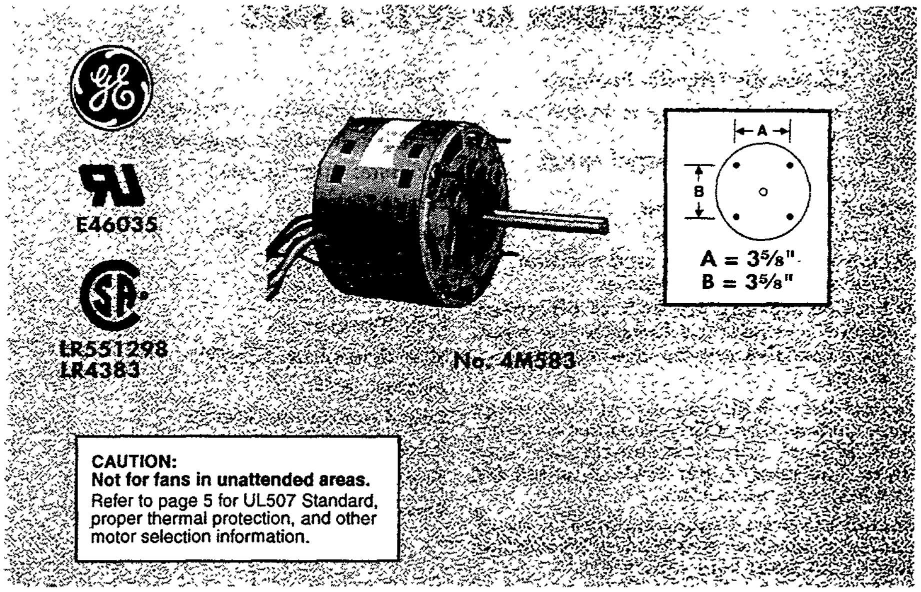
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

RESIDENTIAL DUTY DIRECT-DRIVE FURNACE BLOWER MOTORS

- Quick reversing leads on CW/CCW models
- Capacitor and mounting hardware available separately
- Capacitor mounting holes in shell

Typical Uses: Direct-drive furnace blowers, unit heaters, air conditioners, and many other shaft-mounted fan and blower applications.

Type: PSC
Bearings: All-angle sleeve
Mounting: Resilient ring with studs
Enclosure: Open air-over
Service Factor: 1.0
Thermal Protection: Auto
NEMA Frame: 48YZ (GE 39 frame)
Body Diameter: 5⅝"
Shaft Dimensions: 1/2 x 4"
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray enamel
Brand: GE



CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Ins. Class	2¼" Dia. Resilient Rings OC*	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.	Capacitor Req'd. Stock No.	Capacitor Req'd. Each
RESIDENTIAL DUTY, STANDARD EFFICIENCY, THREE SPEED													
1/4	1075-3-Spd	115	4.2	B	4 11/16"	5⅛"	3583	**4M583**	$88.00	**$49.00**	12.0	6X653	$4.49
	1075-3-Spd	208-230	2.0	B	4 11/16	5⅛	3584	**4M584**	90.00	**50.15**	12.0	6X653	4.49
1/3	1075-3-Spd	115	6.2	B	4 15/16	5⅜	3585	**4M585**	92.00	**51.55**	15.0	6X653	4.49
	1075-3-Spd	208-230	2.7	B	4 15/16	5⅜	3586	**4M586**	94.00	**52.95**	15.0	6X653	4.49
1/2	1075-3-Spd	115	9.0	B	5 15/16	6⅜	3587	**4M587**	111.00	**60.60**	19.0	6X653	4.49
	1075-3-Spd	208-230	4.3	B	5 15/16	6⅛	3588	**4M588**	113.00	**62.05**	19.0	6X653	4.49
3/4	1075-3-Spd	115	11.2	B	5 15/16	6⅜	3589	**4M589**	150.00	**84.80**	20.0	6X658	8.82
	1075-3-Spd	208-230	5.0	B	5 15/16	6	3590	**4M590**	152.00	**86.15**	20.0	6X656	6.43
RESIDENTIAL DUTY, STANDARD EFFICIENCY, TWO SPEED													
1/4	1075-2-Spd	115	4.2	B	4 11/16	5⅛	3383	**4M383**	84.00	**47.50**	12.0	6X653	4.49
	1075-2-Spd	208-230#	2.0	B	4 11/16	5⅛	3384	**4M384**	86.00	**48.60**	11.0	6X653	4.49
1/3	1075-2-Spd	115	6.2	B	4 15/16	5⅜	3385	**4M385**	89.00	**49.95**	14.0	6X653	4.49
	1075-2-Spd	208-230#	2.9	B	4 15/16	5⅜	3386	**4M386**	91.00	**51.35**	14.0	6X653	4.49
1/2	1075-2-Spd	115#	9.0	B	5 15/16	6⅜	3387	**4M387**	104.00	**57.55**	18.0	6X653	4.49
	1075-2-Spd	208-230#	4.3	B	5 11/16	6⅛	3388	**4M388**	106.00	**58.90**	17.0	6X653	4.49
3/4	1075-2-Spd	115	10.3	B	5 15/16	6⅜	3389	**4M389**	140.00	**82.35**	19.0	6X658	8.82
	1075-2-Spd	208-230	5.2	B	5 15/16	6⅜	3390	**4M390**	142.00	**83.60**	19.0	6X656	6.43

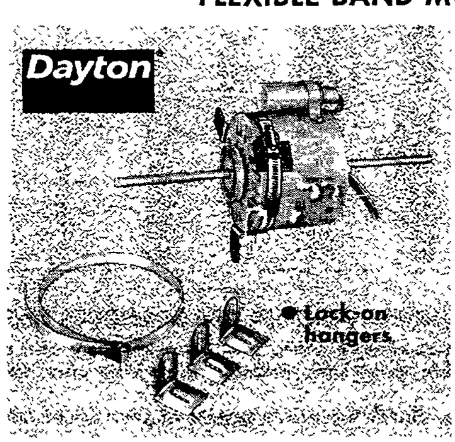
(*) Ring kit furnished to provide both 2¼ and 2½" diameters. (#) 60/50 Hz operation.

WE OFFER A WIDE RANGE OF ENERGY SAVING PRODUCTS
Electric motors, controls, blowers, fans and ventilators, lighting, boilers, ballasts, pumps, furnaces, water heaters, and other products. See Index under Energy Saving Products for complete listings.

UL LISTING AND CSA CERTIFICATION

When choosing products from this section, look for the UL and CSA symbols. Those approved products meet or exceed rigid standards established for personal safety and maximum product life. UL file number and CSA Certification are indicated in the individual listings.

FLEXIBLE BAND MOUNTING BRACKET



Stainless steel band adjusts to fit motors 3 to 7" in diameter. Lock-on hangers slide on band for ease of handling. Hangers have 1/4 x 7/8" slots. Knockouts expand slots to 3/4 x 1 5/16".

No. 3M133. Shpg. wt. 0.5 lbs. List $12.40. Each....................**$9.92**

For More Motor Accessories Including Motor Mounting Bases, Capacitors, Fan Blades and Impellers, Blower Wheels, Mounting Brackets, Switches, and More

See Pages 184 thru 193

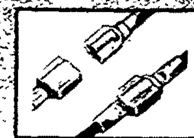
DIRECT-DRIVE FURNACE BLOWER MOTORS

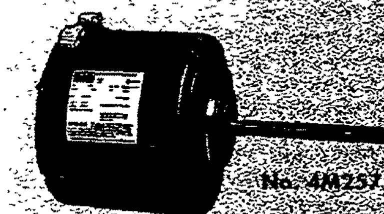
PSC, OPEN AIR-OVER, 4 SPEED

Dayton

E47479

LR47513


Quick Reversing Leads


No. 4M257

Motor can be wired for 2 of 4 speeds to accommodate winter/summer modes. To change speeds, simply move external plugs to the desired settings. Simple reconnection chart notes need for major rewiring.

Contractor Friendly Features

- Versatile, strong, easy to install and adjust
- Four speeds with external speed selection
- Resilient mounting rings
- Quick reversing leads
- Fine-tune air delivery and rotation without major reconnection
- Four ratings replace 85% of all motors found in residential furnaces; no need for expensive one-on-one replacements

Typical Uses: Wide variety of air-moving uses such as direct-drive furnace blowers, unit heaters, air conditioners, air handlers, and many other shaft-mounted fan and blower applications.

Special Features: Unique method of quick and easy speed selection. Quick reversing leads. Capacitor sold separately.

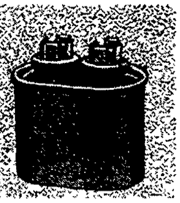
Type: PSC
Bearings: All-angle, self-aligning sleeve
Mounting: Resilient rings or belly band
Enclosure: Open air-over
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: B
NEMA Frame: 48YZ
Body Diameter: 5 5/8"
Shaft Dimensions: 1/2 x 5"
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW/CCW
Finish: Gray enamel
Brand: Dayton

HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	2 1/2" Dia. Resilient Rings OC	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
1/4	1075/4-Spd	115	3.8	5 7/16"	5 7/8"	**4M257**	$85.00	**$66.85**	14.0	5M003	$4.25
1/3	1075/4-Spd	115	4.6	6	6 3/8	**4M258**	90.00	**70.70**	17.0	5M005	5.36
1/2	1075/4-Spd	115	7.1	6 3/16	6 5/8	**4M259**	103.00	**80.95**	19.0	5M005	5.36
3/4	1075/4-Spd	115	10.8	6 7/8	7 3/8	**4M260**	141.00	**110.80**	22.0	5M007	7.72

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

SUPERMET® OVAL CAPACITORS



E51176 LR58450

For mounting kits, see page 188

- Corrosive resistant metal case
- Self-clearing to insure performance
- Uses environmentally compatible and biodegradable Supernol® fluid to prolong life
- Metallized polypropylene film dielectric
- Ambient operating temperature range -40°C to 70°C within ±10% of nominal rating
- Built to EIA Standard RS456A
- UL Class 94V-2 and 746C for direct support of live electrical parts. Also UL E51176 and CSA LR58450

370 VAC OVAL CAPACITORS

MFD Rating	Case Dimensions Width	Depth	Height	E.I.A. UL Base	Aerovox Model	Stock No.	List	Each	Shpg. Wt.
2	2 3/16"	1 5/16"	1 9/16"	A	Z50P3702M	**4M999**	$5.35	**$4.25**	0.3
3	2 3/16	1 5/16	1 9/16	A	Z50P3703M	**5M001**	5.35	**4.25**	0.3
4	2 3/16	1 5/16	1 9/16	A	Z50P3704M	**5M002**	5.35	**4.25**	0.3
5	2 3/16	1 5/16	1 9/16	A	Z50P3705M	**5M003**	5.35	**4.25**	0.4
6	2 3/16	1 5/16	2 3/8	A	Z50P3706M	**5M004**	5.95	**4.99**	0.4
7.5	2 3/16	1 5/16	2 3/8	A	Z50P3707N	**5M005**	6.40	**5.36**	0.2
10	2 3/16	1 5/16	2 3/4	A	Z50P3710M	**5M006**	7.65	**6.41**	0.4
12.5	2 3/16	1 5/16	3 1/4	A	Z50P3712N	**5M007**	9.20	**7.72**	0.5
15	2 3/16	1 5/16	3 3/4	A	Z50P3715M	**5M008**	10.50	**9.45**	0.5
17.5	2 15/16	1 15/16	2 3/8	C	Z64P3717N	**5M009**	12.80	**10.76**	0.6
20	2 15/16	1 15/16	2 3/4	C	Z64P3720M	**5M010**	13.65	**11.45**	0.6
25	2 15/16	1 15/16	2 3/4	C	Z64P3725M	**5M011**	15.25	**12.81**	0.6
30	2 15/16	1 15/16	3 1/4	C	Z64P3730M	**5M012**	17.20	**14.44**	0.8
35	2 15/16	1 15/16	3 1/4	C	Z64P3735M	**5M013**	18.40	**15.44**	0.8
40	2 15/16	1 15/16	3 3/4	C	Z64P3740M	**5M014**	20.50	**17.22**	0.8
45	2 15/16	1 15/16	4 1/4	C	Z64P3745M	**5M015**	23.15	**19.43**	1.1
50	2 15/16	1 15/16	4 1/4	C	Z64P3750M	**5M016**	24.70	**20.69**	1.0
15/5	2 15/16	1 15/16	2 3/8	C	Z64P3720W	**5M017**	16.30	**13.65**	0.5
17.5/5	2 15/16	1 15/16	2 3/8	C	Z64P3722W	**5M018**	17.00	**14.28**	0.6
20/5	2 15/16	1 15/16	2 3/8	C	Z64P3725W	**5M019**	17.35	**14.54**	0.5
25/5	2 15/16	1 15/16	2 3/4	C	Z64P3730W	**5M020**	19.65	**16.49**	0.5
30/5	2 15/16	1 15/16	3 1/4	C	Z64P3735W	**5M021**	21.20	**17.77**	0.5
35/5	2 15/16	1 15/16	3 1/4	C	Z64P3740W	**5M022**	22.20	**18.64**	0.5
60	3 5/8	2	3 1/4	D	Z62P3760M	**5M076**	25.85	**22.59**	0.8
80	3 5/8	2	3 1/4	D	Z62P3780M	**5M077**	33.00	**28.90**	0.8

HIGH EFFICIENCY PSC AND SHADED POLE DIRECT-DRIVE FURNACE BLOWER MOTORS

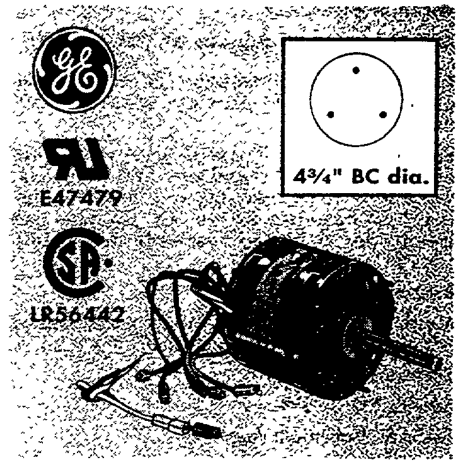
GE BRAND, SHADED POLE, OPEN AIR-OVER, 4 SPEED

Typical Uses: Shaft-mounted small furnace and mobile home furnace blowers. Also used for other shaft-mounted fan and blower equipment.

Special Features: Male and female Safety Speed Selector Plugs included to prevent misconnection and motor burnout. Plugs can be separated or easily snapped together in a variety of configurations. 12" leads for connecting to Speed Selector Plugs.

Bearings: All-angle, self-aligning sleeve

Mounting: 3-way, 2 1/2" resilient rings, 4 3/4" OC, 1/2" studs, or band mount, SE
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: A
NEMA Frame: 42YZ
Body Diameter: 5"
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW facing shaft
Finish: Gray enamel
Brand: GE



HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Shaft Dimensions Dia. x Length	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/5	1050/3-Spd	230*	3.7	1/2 x 3 1/2"	5 1/8"	2986	**4M015**	$112.00	**$71.75**	11.0
1/5	1050/4-Spd	115	8.3	1/2 x 3 1/2	5 1/8	2985	**4M014**	111.00	**71.10**	11.0

(*) Designed to operate on 208-230V.

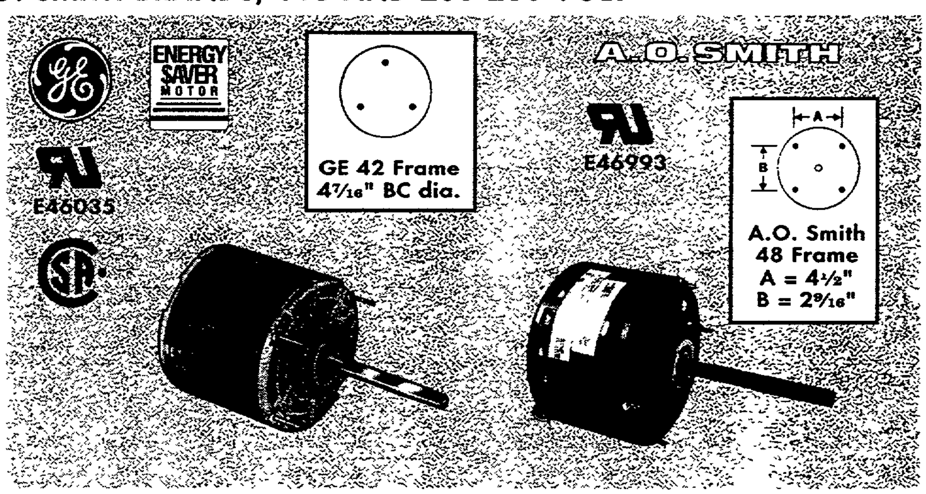
CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE AND A.O. SMITH BRANDS, 115 AND 208-230 VOLT

Typical Uses: Furnace blowers. Also used for other air-over shaft-mounted fan and blower applications.

Special Features: Capacitor and mounting hardware for PSC models available separately. Capacitor mounting holes in shell.

Bearings: All-angle sleeve
Mounting: Resilient rings and studs (except No. 3M862 has resilient rings only)
Enclosure: Open air-over
Service Factor: 1.0
Thermal Protection: Auto
Shaft Dimensions: 1/2 x 5" (except No. 3M021 is 2 1/8" long)
Ambient: 40°C
Duty: Continuous air-over
Rotation: PSC models are CW/CCW; shaded pole models are CW facing shaft
Finish: GE, gray; A.O. Smith, black
Brands: GE and A.O. Smith



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Ins. Class	Body Dia.	2 1/2" Dia. Resilient Rings OC	Less Shaft	Mfr's. Model	Stock No.	List	Each	Shpg. Wt.
					GE BRAND, HIGH EFFICIENCY PSC								
1/5	1075/3-Spd	42YZ	115	3.8	B	5"	4 5/8"	5"	5KCP29GK6382S	**3M710†**	$113.00	**$72.35**	10.0
	1075/3-Spd	42YZ	208-230	1.4	B	5	4 5/8	5	5KCP29GK6381S	**3M711†**	116.00	**74.30**	10.0
					GE BRAND, SHADED POLE								
1/8	1050	42YZ	115	5.2	B	5	4 1/8	4 7/16	5KSP29DK7352S	**3M860**	85.00	**54.45**	8.0
	1050	42YZ	208-230	2.6	B	5	4 1/8	4 7/16	5KSP29DK7353S	**3M861**	92.00	**58.95**	9.0
1/5	1050/4-Spd	42YZ	115	6.5	B	5	4 5/8	5	5KSP29KK7364S	**3M021**	108.00	**79.35**	11.0
	1050/3-Spd	42YZ	115	6.5	B	5	4 5/8	5	5KSP29HK7351S	**3M648**	95.00	**69.80**	11.0
	1050/3-Spd	42YZ	208-230	3.2	B	5	4 5/8	5	5KSP29KK7354S	**3M649**	104.00	**76.40**	10.0
	1050	42YZ	115	6.0	B	5	4 1/8	4 7/16	5KSP29FK7350S	**3M862***	90.00	**57.65**	9.0
					A.O. SMITH BRAND, SHADED POLE								
1/4	1050/3-Spd	48YZ	115	8.5	A	5 5/8	4 3/8	4 3/4	321P621	**3M598**	92.00	**69.75**	11.0
	1050/3-Spd	48YZ	208-230	4.3	A	5 5/8	4 3/8	4 3/4	321P628	**3M863**	95.00	**72.00**	12.0
	1050	48YZ	115	8.5	A	5 5/8	4 3/8	4 3/4	321P627	**3M646**	90.00	**71.65**	12.0
	1050	48YZ	208-230	4.3	A	5 5/8	4 3/8	4 3/4	321P630	**3M647**	93.00	**74.05**	11.0
1/3	1050/4-Spd	48YZ	115	10.0	A	5 5/8	4 7/8	5 1/4	321P622	**3M599**	121.00	**91.75**	15.0

(*) Two studs, not extended. (†) Requires No. 6X655 capacitor.

DIRECT-DRIVE FURNACE BLOWER MOTORS

- **Welded bracket**
- **Quiet operation**
- **Quick reversing leads on PSC models**

Typical Uses: Exceptionally quiet operation on shaft-mounted blowers with 9 or 10" diameter wheels.

Special Features: Torsion flex mounting effectively isolates and prevents torsional vibrations from reaching the blower housing and causing noise. Capacitor and mounting hardware available separately for PSC motors.

Bearings: All-angle sleeve

Mounting: Three torsion-flex mounting brackets welded to motor shell

Enclosure: Open air-over

Service Factor: 1.0

Thermal Protection: Auto

Insulation Class: PSC models are B; shaded pole models are A

NEMA Frame: 42YZ, 5" dia. (GE 29 frame); 48YZ, $5\frac{5}{8}$" dia. (GE 39 frame)

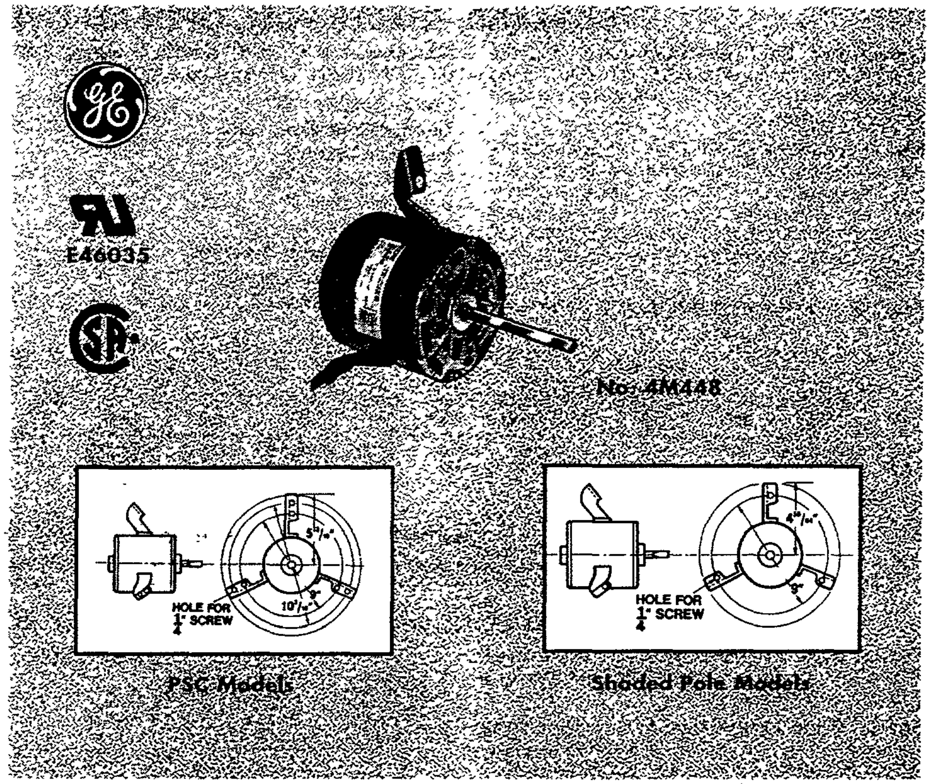
Ambient: 40°C

Duty: Continuous air-over

Rotation: PSC models are CW/CCW with quick reversing leads; shaded pole models are CW facing shaft

Finish: Gray enamel

Brand: GE



PSC

HP	Nameplate RPM	NEMA Frame	Rotation	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Ins. Class	Body Dia.	Shaft Dimensions Dia. x L	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
1/6	1075/3-Spd	48YZ	CW/CCW	115	2.5	B	$5\frac{5}{8}$"	1/2 x 5"	$4\frac{1}{16}$"	3782	**4M448**	$106.00	**$64.40**	12.0	6X653	$4.49
1/4	1075/4-Spd	48YZ	CW/CCW	115	4.2	B	$5\frac{5}{8}$	1/2 x 5	$5\frac{1}{8}$	—	**3M977**	125.00	**75.95**	13.0	6X653	4.49
	1075/3-Spd	48YZ	CW/CCW	208-230*	1.7	B	$5\frac{5}{8}$	1/2 x 5	$4\frac{5}{16}$	3784	**4M450**	124.00	**75.40**	13.0	6X653	4.49
1/3	1075/4-Spd	48YZ	CW/CCW	115	6.4	B	$5\frac{5}{8}$	1/2 x 5	$5\frac{7}{8}$	—	**3M874**	132.00	**80.20**	17.0	6X653	4.49
	1075/3-Spd	48YZ	CW/CCW	208-230*	2.5	B	$5\frac{5}{8}$	1/2 x 5	$4\frac{13}{16}$	3786	**4M452**	132.00	**80.20**	15.0	6X653	4.49
1/2	1075/4-Spd	48YZ	CW/CCW	115	9.2	B	$5\frac{5}{8}$	1/2 x 5	$6\frac{1}{8}$	—	**3M875**	148.00	**89.95**	17.0	6X655	5.38
	1075/3-Spd	48YZ	CW/CCW	208-230*	3.5	B	$5\frac{5}{8}$	1/2 x 5	$5\frac{5}{16}$	3788	**4M454**	148.00	**89.95**	18.0	6X655	5.38
3/4	1075/4-Spd	48YZ	CW/CCW	115	11.2	B	$5\frac{5}{8}$	1/2 x 5	$6\frac{5}{8}$	—	**3M876**	201.00	**122.10**	18.0	6X658	8.82
	1075/3-Spd	48YZ	CW/CCW	208-230*	4.8	B	$5\frac{5}{8}$	1/2 x 5	$5\frac{5}{8}$	3790	**4M456**	201.00	**122.10**	20.0	6X656	6.43

SHADED POLE

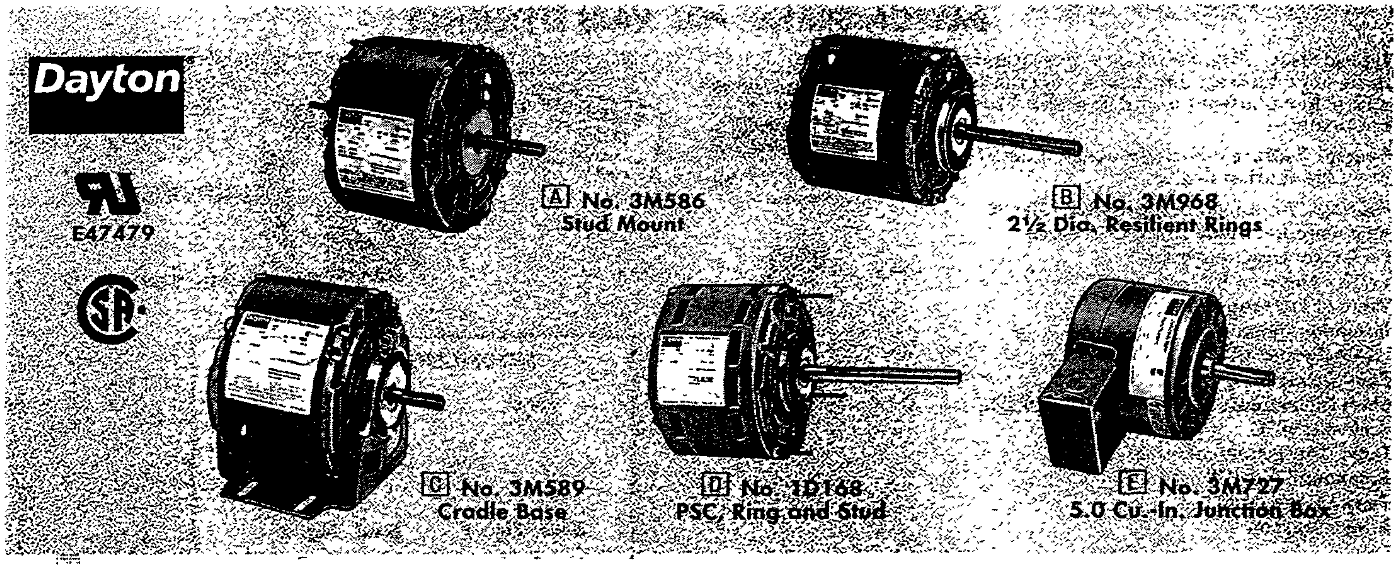
HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft†	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Ins. Class	Body Dia.	Shaft Dimensions Dia. x L	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/10	1050/3-Spd	42YZ	CW	115	3.6	A	5"	1/2 x $4\frac{5}{8}$"	$4\frac{1}{2}$"	2781	**4M373**	$95.00	**$58.85**	9.7
1/6	1050/3-Spd	42YZ	CW	115	5.3	A	5	1/2 x $4\frac{5}{8}$	$4\frac{1}{2}$	2782	**4M374**	106.00	**65.65**	10.0
	1050	42YZ	CW	115	5.8	A	5	1/2 x $3\frac{1}{2}$	$4\frac{5}{8}$	—	**3M872**	106.00	**65.65**	11.0
1/4	1050/3-Spd	42YZ	CW	115	8.2	A	5	1/2 x $4\frac{5}{8}$	$5\frac{3}{16}$	2783	**4M375**	126.00	**78.00**	13.0
	1050	42YZ	CW	115	8.9	A	5	1/2 x $4\frac{1}{2}$	$5\frac{3}{8}$	—	**3M873**	119.00	**73.75**	12.0

(*) 60/50 Hz operational. (†) GE motors are nameplated rotation viewing lead end.

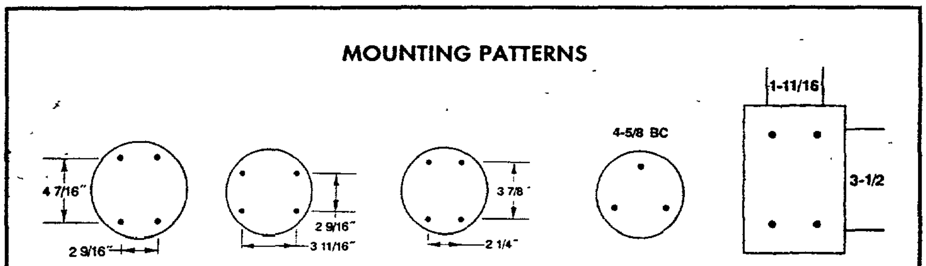
CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

DIRECT-DRIVE FAN AND BLOWER MOTORS



Typical Uses: Furnace blowers, unit heaters, air circulators, and fans.
Bearings: All-angle, self-aligning sleeve
Service Factor: 1.0
Thermal Protection: Auto
Body Diameter: NEMA frame 42YZ, 5"; NEMA frame 48YZ, $5\frac{5}{8}$"
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW facing shaft
Finish: Gray enamel
Brand: Dayton



Stud, Fig. 1 | Stud, Fig. 2 | Stud, Fig. 3 | Stud, Fig. 4 | Stud, Fig. 5

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Mount Style	Mounting Pattern	Stud Location#	$2\frac{1}{2}$" Dia. Resilient Rings OC	Shaft Dimensions Dia. x Length	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
SHADED POLE, OPEN AIR-OVER														
1/15	1050/2-Spd	42YZ	115	2.8	A	3	OSE	—	3/8 x $1\frac{7}{8}$"	$3\frac{5}{16}$"	**3M583†**	$65.00	**$49.70**	8.0
	1050	42YZ	115	2.6	A	3	OSE	—	3/8 x $1\frac{7}{8}$	$3\frac{5}{16}$	**3M586**	62.00	**47.40**	8.0
	1050	42YZ	115	2.6	C	5	—	—	3/8 x $1\frac{5}{16}$	$4\frac{7}{16}$	**3M589**	70.00	**53.50**	9.0
1/10	1050	42YZ	115	3.4	A	3	OSE	—	3/8 x $1\frac{7}{16}$	$3\frac{13}{16}$	**3M585**	65.00	**49.70**	10.0
1/8	1050	42YZ	115	5.5	B	2	SE	5"	1/2 x 5	$5\frac{1}{4}$	**4M176**	74.00	**56.55**	11.0
1/6	1050	42YZ	115	5.9	B	2	SE	$4\frac{1}{8}$	1/2 x 3	$5\frac{1}{8}$	**3M601**	79.00	**60.40**	11.0
	1050	42YZ	115	5.6	E	4	SE	—	1/2 x $1\frac{7}{8}$	$4\frac{1}{2}$	**3M727***	84.00	**63.50**	10.0
	1050	42YZ	115	6.0	B	—	—	$4\frac{15}{16}$	1/2 x 4	$5\frac{7}{16}$	**3M968††**	78.00	**59.60**	12.0
1/5	1050/3-Spd	42YZ	115	7.1	B	2	SE	$5\frac{1}{2}$	1/2 x 5	$5\frac{7}{8}$	**4M177**	85.00	**64.95**	12.0
	1050/3-Spd	42YZ	208-230	3.8	B	2	SE	$5\frac{1}{2}$	1/2 x 5	$5\frac{7}{8}$	**4M178**	87.00	**66.50**	12.0
	1050	42YZ	115	8.0	B	2	SE	$5\frac{1}{2}$	1/2 x $2\frac{1}{4}$	$5\frac{7}{8}$	**3M030**	106.00	**81.05**	11.0
	1050	42YZ	115	6.7	B	2	SE	$5\frac{1}{4}$	1/2 x $2\frac{1}{4}$	$5\frac{7}{16}$	**3M392**	80.00	**61.15**	12.0
1/4	1050	42YZ	115	9.0	B	2	SE	$5\frac{3}{4}$	1/2 x $2\frac{5}{8}$	$6\frac{1}{8}$	**3M393**	94.00	**71.85**	12.0
SHADED POLE, TOTALLY ENCLOSED AIR-OVER														
1/15	1050	42YZ	115	2.5	A	3	SE	—	1/2 x $2\frac{9}{16}$	$3\frac{13}{16}$	**3M582***	71.00	**54.25**	10.0
	1050	42YZ	115	2.5	C	5	—	—	1/2 x $2\frac{9}{16}$	$4\frac{15}{16}$	**3M588**	81.00	**61.90**	10.0
PSC, OPEN AIR-OVER														
1/4	1075/3-Spd	48YZ	115	4.8	D	1	SE	$4\frac{7}{8}$	1/2 x 5	$5\frac{1}{8}$	**1D168**	105.00	**76.30**	12.0
	1075	48YZ	115	4.0	D	1	SE	$4\frac{5}{8}$	1/2 x $2\frac{1}{2}$	$5\frac{1}{8}$	**1D167**	104.00	**75.60**	12.0
1/3	1075/3-Spd	48YZ	115	6.7	D	1	SE	$5\frac{1}{8}$	1/2 x 5	$5\frac{3}{8}$	**1D169**	119.00	**86.50**	13.0

(*) Has 5.0 cu.-in. junction box. (†) Use with No. 2W333, 10 ft. SJ cordset with 2-speed switch. (††) Resilient rings are $2\frac{1}{2}$" diameter $4\frac{15}{16}$" OC.
(#) SE = Shaft End; OSE = Opposite Shaft End.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

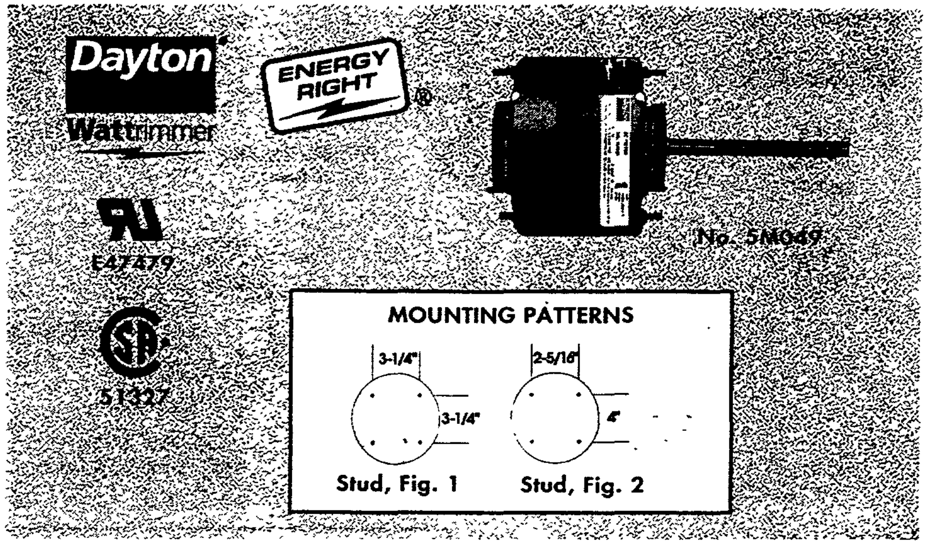
DIRECT-DRIVE FAN AND BLOWER MOTORS

DAYTON BRAND, PSC, HIGH EFFICIENCY

Typical Uses: High efficiency performance in furnace blower, unit heater, ventilators, and other shaft-mounted fan and blower applications.

Special Features: Sturdy steel case with open lamination design.

Bearings: All-angle, self-aligning sleeve
Mounting: Resilient rings with studs
Enclosure: Open air-over
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: B
NEMA Frame: 42YZ
Body Diameter: 5"
Shaft Dimensions: 1/2 x 5¼" with full flat
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW/CCW
Finish: Gray enamel
Brand: Dayton



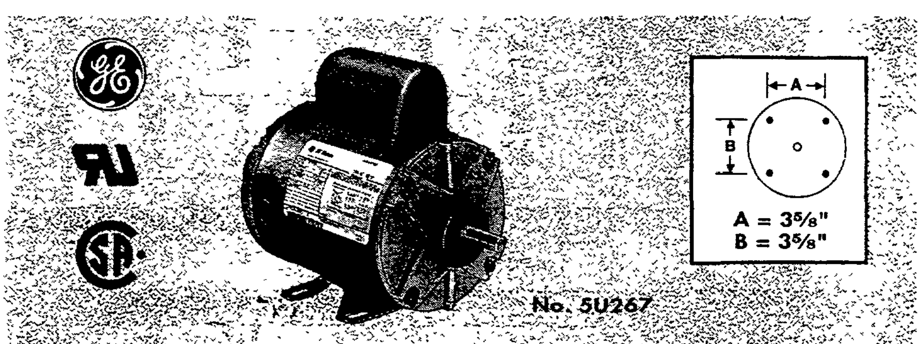
HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Mounting Pattern	Stud Location†	2½" Dia. Resilient Rings OC	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
1/10	1625/3-Spd	115	1.2	1	BE	4⁹⁄₁₆"	5	5M049	$127.00	**$81.10**	8.5	5M003	$4.25
	1075/3-Spd	115	1.5	2	BE	4⁹⁄₁₆	5	5M050	117.00	**74.70**	8.5	5M003	4.25
	1625/3-Spd	208-230*	0.6	1	BE	4⁹⁄₁₆	5	5M051	130.00	**83.00**	8.5	5M003	4.25
	1075/3-Spd	208-230*	0.8	2	BE	4⁹⁄₁₆	5	5M052	120.00	**76.60**	8.5	5M003	4.25
1/8	1625/3-Spd	115	1.6	1	BE	4⅞	5³⁄₁₆	5M053	132.00	**84.30**	9.5	5M003	4.25
	1075/3-Spd	115	1.9	2	BE	4⅞	5³⁄₁₆	5M054	122.00	**77.90**	9.5	5M003	4.25
1/6	1625/3-Spd	115	1.8	1	BE	5¹⁄₁₆	5½	5M055	137.00	**87.45**	11.0	5M003	4.25
	1075/3-Spd	115	2.5	2	BE	5¹⁄₁₆	5½	5M056	127.00	**81.10**	11.0	5M003	4.25
1/4	1625/3-Spd	115	3.0	1	BE	5½	6	5M057	142.00	**90.65**	13.0	5M005	5.36
	1075/3-Spd	115	3.7	2	BE	5½	6	5M058	132.00	**84.25**	13.0	5M005	5.36
	1625/3-Spd	208-230*	1.5	1	BE	5½	6	5M059	145.00	**92.55**	13.0	5M003	4.25
	1075/3-Spd	208-230*	1.9	2	BE	5½	6	5M060	137.00	**87.45**	13.0	5M003	4.25

(*) 60/50 Hz. (†) BE = Both Ends.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND, PSC, HIGH EFFICIENCY TRANSFORMER COOLING FAN MOTORS

Typical Uses: Specifically designed for use on outdoor transformer cooling fans.
Special Features: Stainless steel shaft and 60/50 Hz operation.
Bearings: Double-sealed ball bearings
Mounting: Rigid welded base on No. 5U267; rigid welded base with studs on No. 5U268
Enclosure: TEAO
Thermal Protection: Auto
Insulation Class: B
Ambient: 65°C
Duty: Continuous air-over
Rotation: CCW facing shaft
Finish: Gray enamel
Brand: GE

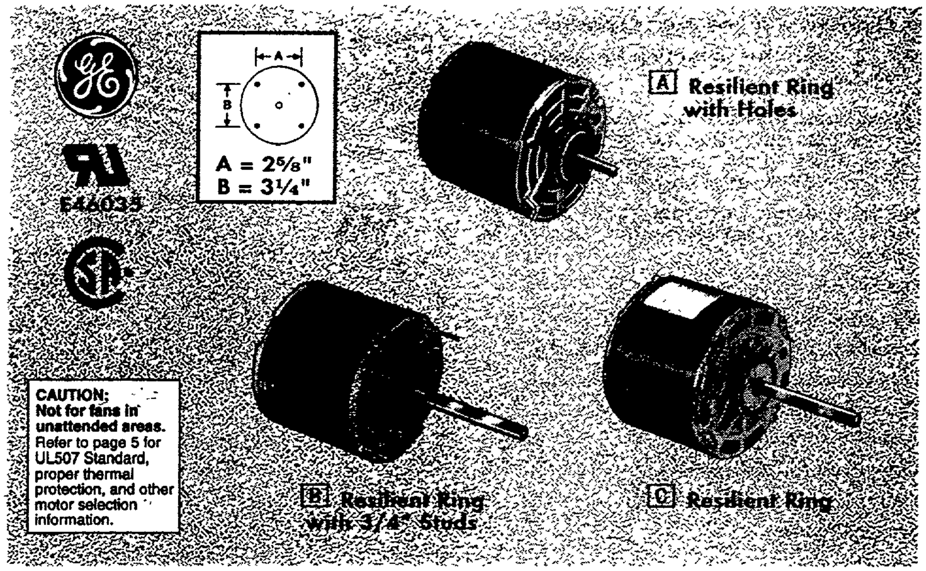


HP	Nameplate RPM	NEMA Frame	Volts 60/50 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Body Dia.	Shaft Dimensions Dia. x Length	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/20	1625/1350	48Z*	115/200-230	1.5/0.7	1.5	5⅝"	1/2 x 2½"	P240	5U267	$203.00	**$140.80**	12.0
1/3	1075/900	56Z*	115/200-230	4.0/2.0	1.5	5⅝	1/2 x 2	P241	5U268	285.00	**198.00**	20.0

(*) Has nonstandard 1/2" diameter shaft with flat.

DIRECT-DRIVE FAN AND BLOWER MOTORS

Typical Uses: Room air conditioners, unit heaters, condensers, furnace blowers, and a wide range of other shaft-mounted fan and blower equipment.
Special Features: Operable on 60/50 Hz.
Type: Shaded Pole
Bearings: All-angle sleeve
Mounting:
[A] Resilient rings and four No. 10-32 holes
[B] Resilient rings and 3/4" studs
[C] Resilient rings
Enclosure: Open air-over
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: A (except Nos. 4M288, 4M430, 4M434, 4M467, and 4M469 are B)
NEMA Frame: 42YZ, 5" dia. (GE 21/29 frame); 48YZ, 5 5/8" dia. (GE 39 frame)
Ambient: 40°C
Duty: Continuous air-over
Finish: Gray
Brand: GE



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft‡	Volts 60/50 Hz	Full-Load Amps at Nameplate Volts	Mount Style	Body Dia.	2 1/4" Dia. Resilient Rings OC	Shaft Dimensions Dia. x L	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/20	1550	42YZ	CCW	115	2.5	A	5"	5"	3/8 x 1 1/2"	5 5/8"	2331	**3M463**	$135.00	**$83.65**	6.0
	1550	42YZ	CW	115	2.5	A	5	5	3/8 x 1 1/2	5 5/8	2341	**3M456**	135.00	**83.65**	6.0
	1550	42YZ	CCW	208-230	1.2	A	5	5	3/8 x 1 1/2	5 5/8	2332	**3M464**	138.00	**85.50**	6.1
	1550	42YZ	CW	208-230	1.2	A	5	5	3/8 x 1 1/2	5 5/8	2342	**3M457**	138.00	**85.50**	6.0
	1050	42YZ	CCW	115	3.1	A	5	5	3/8 x 1 1/2	5 5/8	2311	**4M457**	165.00	**102.20**	5.8
	1050	42YZ	CW	115	3.1	A	5	5	3/8 x 1 1/2	5 5/8	2321	**4M458**	165.00	**102.20**	6.0
	1050	42YZ	CCW	208-230	1.6	A	5	5	3/8 x 1 1/2	5 5/8	2312	**4M459**	170.00	**105.30**	5.8
	1050	42YZ	CW	208-230	1.6	A	5	5	3/8 x 1 1/2	5 5/8	2322	**4M460**	170.00	**105.30**	5.8
1/15	1550	42YZ	CCW	115	2.8	A	5	5 3/16	3/8 x 1 1/2	5 13/16	2231	**3M465**	147.00	**91.05**	6.9
	1550	42YZ	CW	115	2.8	A	5	5 3/16	3/8 x 1 1/2	5 13/16	2241	**3M458**	147.00	**91.05**	7.0
	1550	42YZ	CCW	208-230	1.6	A	5	4 13/16	3/8 x 1 1/2	5 3/8	2003	**4M461**	163.00	**101.00**	7.8
	1550	42YZ	CCW	208-230	1.4	A	5	5 3/16	3/8 x 1 1/2	5 13/16	2232	**3M470**	150.00	**92.90**	7.0
	1550	42YZ	CW	208-230	1.4	A	5	5 3/16	3/8 x 1 1/2	5 13/16	2242	**3M459**	150.00	**92.90**	7.1
	1050	42YZ	CCW	115/208-230	4.0/2.0	A	5	5 3/16	3/8 x 1 1/2	5 13/16	2213	**4M462**	193.00	**119.60**	6.7
	1050	42YZ	CW	115/208-230	4.0/2.0	A	5	5 3/16	3/8 x 1 1/2	5 13/16	2223	**4M463**	193.00	**119.60**	7.0
1/10	1550	42YZ	CCW	115	4.6	A	5	5 7/16	3/8 x 1 1/2	6 1/8	2131	**3M471**	152.00	**94.15**	8.0
	1550	42YZ	CW	115	4.6	A	5	5 7/16	3/8 x 1 1/2	6 1/8	2141	**3M461**	152.00	**94.15**	7.9
	1550	42YZ	CCW	208-230	2.1	A	5	5 7/16	3/8 x 1 1/2	6 1/8	2132	**3M467**	154.00	**95.45**	8.2
	1550	42YZ	CW	208-230	2.1	A	5	5 7/16	3/8 x 1 1/2	6 1/8	2142	**3M462**	154.00	**95.45**	9.0
	1050/3-Spd	48YZ	CW	115	3.9	C	5 5/8	3 11/16*	1/2 x 4	4 1/8	3931	**4M433**	129.00	**78.40**	8.0
	1050	42YZ	CW	115	4.7	A	5	5 7/16	3/8 x 2	6 1/8	2121	**3M460**	177.00	**109.65**	7.6
	1050	42YZ	CW	208-230	2.5	A	5	5 7/16	3/8 x 2	6 1/8	2122	**3M624**	180.00	**111.50**	8.0
	1050	42YZ	CCW	115/208-230	4.0/2.0	A	5	5 7/16	3/8 x 2	6 1/8	2113	**3M466**	180.00	**111.50**	7.6
1/8	1550	48YZ	CW	115	4.5	C	5 5/8	4 3/16	1/2 x 4	4 5/8	3341	**4M464**	120.00	**72.90**	9.6
	1550	48YZ	CW	208-230	2.2	C	5 5/8	4 3/16	1/2 x 4	4 5/8	3342	**4M465**	122.00	**74.15**	9.7
	1550	48YZ	CCW	208-230	2.2	C	5 5/8	4 3/16	1/2 x 4	4 5/8	3344	**4M466**	125.00	**75.95**	9.6
	1050/3-Spd	42YZ	CW	115†	4.3	B	5	4 15/16*	1/2 x 4	5 3/8	2806	**4M434**	97.00	**60.10**	9.2
	1050/3-Spd	48YZ	CW	115	5.4	C	5 5/8	3 15/16*	1/2 x 4	4 3/8	3941	**3M430**	133.00	**80.85**	9.9
	1050	42YZ	CW	115†	4.3	B	5	4 15/16*	1/2 x 4	5 3/8	2802	**4M467**	93.00	**57.60**	9.3
	1050	48YZ	CW	115	4.5	C	5 5/8	4 3/16	1/2 x 4	4 5/8	3141	**3M429**	126.00	**76.55**	11.0
	1050	48YZ	CW	208-230	2.2	C	5 5/8	4 3/16	1/2 x 4	4 5/8	3142	**3M953**	129.00	**78.40**	11.0
1/6	1550	48YZ	CW	115	5.0	C	5 5/8	4 7/16	1/2 x 4	4 7/8	3351	**4M468**	128.00	**77.80**	11.0
	1550	48YZ	CW	208-230	2.9	C	5 5/8	4 7/16	1/2 x 4	4 7/8	3352	**3M401**	131.00	**79.60**	11.0
	1050/3-Spd	42YZ	CW	115†	6.3	B	5	4 15/16*	1/2 x 4	5 7/16	2807	**4M288**	97.00	**60.10**	9.0
	1050	42YZ	CW	115†	5.8	B	5	4 15/16*	1/2 x 4	5 3/8	2803	**4M469**	93.00	**57.60**	9.4
	1050	48YZ	CW	115	5.8	C	5 5/8	4 7/16	1/2 x 4	4 7/8	3151	**3M402**	133.00	**80.85**	12.0
	1050	48YZ	CW	208-230	2.8	C	5 5/8	4 7/16	1/2 x 4	4 7/8	3152	**3M403**	135.00	**82.05**	11.0
1/5	1050/3-Spd	42YZ	CW	115†	7.4	B	5	5 7/16*	1/2 x 4	5 15/16	2808	**4M289**	107.00	**66.30**	11.0
	1050/3-Spd	48YZ	CW	115	6.8	C	5 5/8	4 3/16*	1/2 x 4	4 5/8	3961	**3M412**	140.00	**85.05**	11.0
	1050/3-Spd	42YZ	CW	208-230†	3.5	B	5	5 7/16*	1/2 x 4	5 7/8	2842	**4M435**	109.00	**67.55**	11.0
	1050	42YZ	CW	115†	6.5	B	5	5 3/16*	1/2 x 4	5 11/16	2804	**4M430**	103.00	**63.80**	11.0
1/4	1550	48YZ	CW	115	7.5	C	5 5/8	4 15/16	1/2 x 4	5 3/8	3371	**4M431**	139.00	**84.50**	14.0
	1550	48YZ	CW	208-230	3.7	C	5 5/8	4 15/16	1/2 x 4	5 3/8	3372	**3M404**	141.00	**85.70**	14.0
	1050/3-Spd	42YZ	CW	115†	8.6	B	5	5 7/16*	1/2 x 4	5 15/16	2809	**4M290**	120.00	**74.30**	12.0
	1050/3-Spd	48YZ	CW	115	9.0	C	5 5/8	4 15/16*	1/2 x 4	5 3/8	3971	**3M413**	157.00	**95.40**	15.0
	1050	42YZ	CW	115†	9.4	B	5	5 7/16*	1/2 x 4	5 7/8	2805	**4M432**	113.00	**70.00**	11.0
	1050	48YZ	CW	115	9.2	C	5 5/8	4 15/16	1/2 x 4	5 3/8	3171	**3M405**	148.00	**89.95**	14.0
	1050	48YZ	CW	208-230	4.7	C	5 5/8	4 15/16	1/2 x 4	5 3/8	3172	**3M406**	151.00	**91.75**	16.0
1/3	1050/3-Spd	42YZ	CW	115†	11.0	B	5	5 7/16*	1/2 x 4	5 7/8	2810	**4M436**	135.00	**83.60**	11.0

(*) 2 1/2" diameter resilient rings. (†) 60 Hz only. (‡) GE motors are nameplated rotation viewing end opposite shaft.

DIRECT-DRIVE FAN MOTORS

- **Supplied with mounted capacitor**
- **1/2" studs for mounting fan guard on 48 frame**

Typical Uses: Exhaust and poultry fans, air circulators, and other equipment operating in dusty, dirty, noncombustible environments. High efficiency or standard.

Special Features: Terminal board on all 48 frame. Large internal conduit box on 56 frame.

Type: PSC

Mounting: Resilient cradle base

Enclosure: TEAO (No. 3M742 is TENV)

Service Factor: 1.0

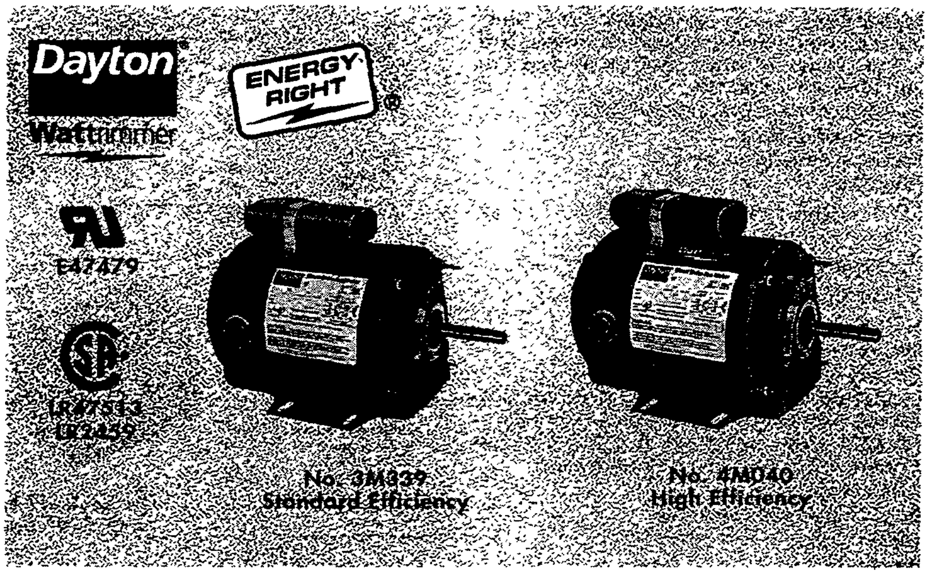
Thermal Protection: Auto

Ambient: 40°C

Duty: Continuous air-over

Finish: Gray

Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft End	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Efficiency	Bearings	Ins. Class	Shaft Dimensions Dia. x Length	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
1/4	1075/2-Spd	48	CW/CCW	115	3.3	Standard	Sleeve	A	1/2 x 2½"	7⅞"	**3M340**	$140.00	**$106.95**	17.0
	1075	48	CW/CCW	115	3.6	Standard	Sleeve	A	1/2 x 2½	7⅜	**3M339**	135.00	**103.15**	16.0
1/4	1075	48	CW/CCW	115	3.4	High	Ball	B	1/2 x 2½	7⅞	**4M042**	151.00	**115.40**	16.0
1/3	1075	48	CW/CCW	115	4.6	High	Sleeve	B	1/2 x 2½	7 15/16	**4M041**	143.00	**109.30**	18.0
1/2	1075	48	CW/CCW	115	7.0	High	Sleeve	B	1/2 x 2½	8⅜	**4M040**	159.00	**121.50**	21.0
3/4	1075	56	CW	115/230	9.2/4.6	High	Ball	A	5/8 x 1⅞	9 7/16	**3M742**	261.00	**199.75**	31.0

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GRAINGER STOCKS A BROAD LINE OF DAYTON AND GE MOTORS

Top Performance. Dayton motors are built to exceed industry standards such as NEMA (National Electrical Manufacturers Association). Used as a replacement motor in a wide variety of applications, each Dayton motor must outperform the best motor it may be called upon to replace, hence "best of the best" performance. You can be confident that the Dayton motor will work as well as, or better than, the motor you are replacing.

Top Quality Verified by Engineers. Grainger's Engineering Dept., with its "state-of-the-art" test lab, confirms that Dayton motors consistently meet or exceed top performance standards. Engineering also confirms the motors have applicable agency approvals such as UL and CSA.

Clearly Identified. Dayton motors are clearly identified by full fact carton labels and nameplates with wiring diagrams. Maintenance and installation instructions appear in every motor carton.

Broad Line Offering. Dayton offers one of the broadest lines of motors in the industry. One brand can be used for nearly all your motor replacement needs.

Time Proven Performance. Established in 1937, Dayton has grown to be one of the most dependable names in the motor industry.

Broad Line Offering. Grainger now offers over 2400 stock GE brand motors including AC and DC motors from 1/370 HP to 450 HP in Energy $aver™ and standard efficiency designs including severe duty, explosion proof, farm duty, HVAC, and many others.

National Recognition. GE is considered the leading national brand motor with the largest installed customer base. The GE brand is widely known for quality and reliability.

Clearly Identified. GE motors are clearly identified by full fact carton labels and nameplates. Easy-to-read wiring diagrams are included.

Premium Efficiency Leader. GE has long been recognized as an industry leader in premium efficiency motors with a wide variety of ratings and types to suit many applications.

Heritage of Excellence. General Electric is one of the pioneers in the electrical industry with a proud 100 year history dating back to the time of founder Thomas Edison.

MANY BRANDS OF FAN BLOWERS/CONTROLS AVAILABLE

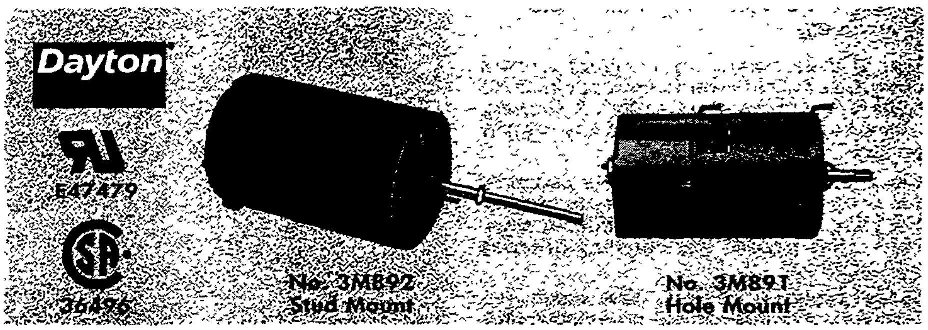
EMERSON · BROAN · Dayton · Honeywell · FASCO CONSUMER PRODUCTS FASCO INDUSTRIES, INC.

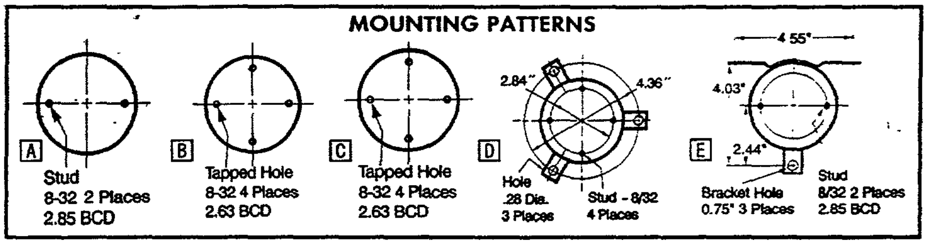
DIRECT OEM REPLACEMENT MOTORS

DRAFT BOOSTER SWITCH MOTORS, SINGLE SPEED

- **Single Pole, Single Throw switch configuration**
- **120VA at 120VAC-pilot duty**
- **16" Auxiliary leads on all but No. 1D090**

Typical Uses: Replacements for draft booster and flue exhaust switch motors in specific brands of furnaces, such as Adams, Roberts Gordon, Wayne Home, J. Zink, Coleman, and Carrier.
Also used on other shaft-mounted blower applications where auxiliary equipment needs to be turned on/off when motor develops full operating speed or when motor is deenergized and speed drops (switch not available on No. 1D090).
Special Features: Includes centrifugal safety switch on all but No. 1D090
Type: Shaded pole and PSC
Service Factor: 1.0
Body Diameter: 3.3"
Ambient: 40°C
Duty: Continuous
Finish: Gray enamel
Brand: Dayton





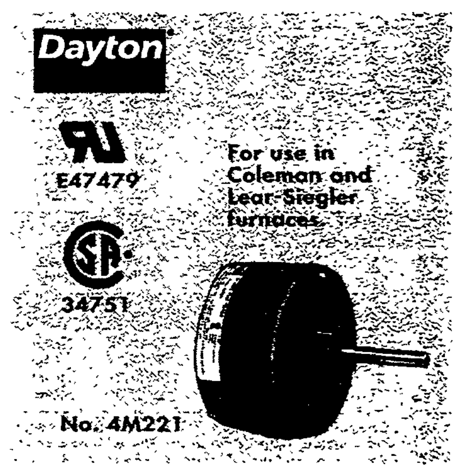
HP	Nameplate RPM	Rotation Facing Shaft	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Mounting Patterns	Bearings	Ins. Class	Shaft Dimensions Dia. x L	Approximate Switch RPM Contact	Approximate Switch RPM Break	Stock No.	List	Each	Shpg. Wt.
SHADED POLE SWITCH MOTOR, OPEN AIR-OVER, STUD MOUNT															
1/60	3000	CCW	Auto	115	0.78	A	Sleeve	A	5/16 x 1"	2600	800	**3M893**	$53.00	**$39.70**	2.7
1/35	3000	CW	Auto	208/230	0.62	A	Sleeve	B	1/4 x 3 1/2	2500	800	**3M892** *	70.00	**52.80**	3.7
1/25	3200	CW	Auto	115	1.75	A	Ball	A	5/16 x 1	2500	800	**3M895**	69.00	**52.15**	4.0
1/15	3000	CW	Auto	208/230	1.1/1.0	C	Ball	B	1/4 x 2 3/4	2500	800	**1D091**	81.00	**58.40**	5.0
1/15	3000	CW	Auto	115/230	2.0/1.0	C	Ball	B	1/4 x 2 3/4	2500	800	**1D092**	81.00	**58.40**	5.0
1/30	3000	CCW	Auto	115/230	1.3/.65	A	Ball	B	1/4 x 2 3/4	2500	800	**1D093**	79.00	**56.95**	3.8
1/15	3000	CCW	Auto	115/230	2.0/1.0	C	Ball	B	1/4 x 2 3/4	2500	800	**1D094**	81.00	**58.40**	5.0
SHADED POLE SWITCH MOTOR, OPEN FAN COOLED, 4 HOLE MOUNT															
1/180	3000	CW	Impedance†	115	0.50	B	Sleeve	A	5/16 x 1 1/4	1500	400	**3M891**	63.00	**47.15**	2.9
SHADED POLE MOTOR, OPEN AIR-OVER, BRACKET MOUNT															
1/30	3000	CW	Auto	115	1.5	E	Sleeve	B	5/16 x 2 1/4	No Switch		**1D090**	69.00	**49.75**	3.0
PSC SWITCH MOTOR, OPEN AIR-OVER, BRACKET MOUNT															
1/9	3000	CW/CCW	Auto	230	0.70	D	Ball	A	1/4 x 3 3/4	2000	1700	**1D089**	122.00	**88.00**	5.7

(*) Includes 5/16" diameter shaft bushing. (†) UL Recognized E40077.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

MOBILE HOME FURNACE BLOWER MOTORS

Typical Uses: Replacements for original equipment motor in mobile home furnaces.
Special Features: Nos. 3M663 and 3M665 are used in Coleman furnaces; resilient rings not supplied since motors are generally mounted in original belly band. No. 3M664 is for Lear-Siegler furnaces; resilient rings supplied for mounting in existing base.
Bearings: All-angle, self-aligning sleeve
Enclosure: Open air-over
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: A
NEMA Frame: 42YZ
Body Diameter: 5"
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW facing shaft
Finish: Gray enamel
Brand: Dayton



HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Shaft Dimensions Dia. x L	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
1/12	1050	115	3.1	1/2 x 2 1/2"	4"	**4M221**	$65.00	**$49.20**	5.2
1/10	1050†	115	4.2	1/2 x 2 1/2	4 5/8	**3M663**	70.00	**52.95**	6.1
1/8	1050	115	5.1	1/2 x 2 1/4	4 1/4	**3M664***	81.00	**61.25**	7.6
1/6	1050†	115	7.1	1/2 x 2 1/2	5	**3M665**	80.00	**60.50**	7.5

(*) 2 1/2" Diameter resilient rings are 3 7/8" on center. (†) Operates at 860 RPM in OEM application

HOT WATER CIRCULATOR PUMP MOTORS

- **Single and three-phase**
- **Resilient bracket, ring, and C-face mounting**

Typical Uses: Exact replacement motors complete with mounting brackets to replace specific motors on Bell & Gossett, Armstrong, and Teel brand circulator pumps.

Certain models require a coupler assembly for proper Bell & Gossett replacement. Coupling assembly must be ordered separately. See page 77 for coupling ordering information.

Special Features: All units have exact performance and mechanical interchangeability with the OEM motor.

Enclosure: Open dripproof

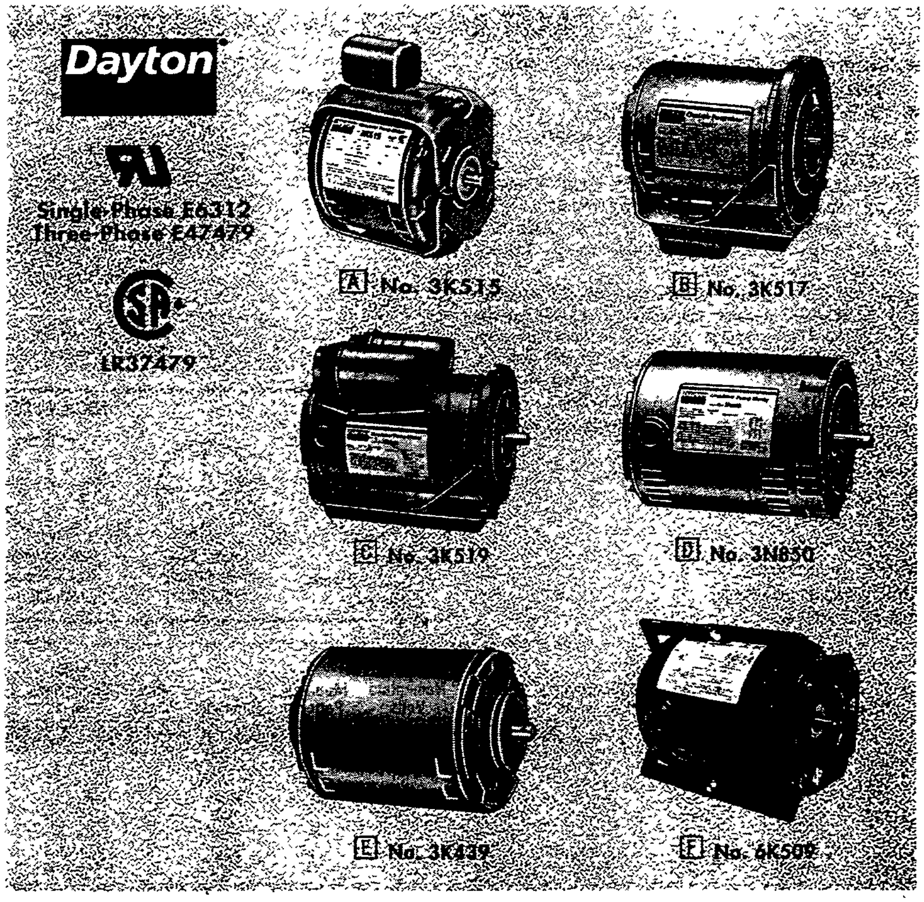
Duty: Continuous

Finish: Red or gray enamel

Brand: Dayton

For Hot Water Circulator Pump Motor Cross Reference Guide, See Page 77

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



HP	Key	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Thermal Protection	Volts	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Mounting	Bolt Circle	Rings OC	Stock No.	List	Each	Shpg. Wt.
							SPLIT-PHASE, 60 Hz									
1/12	A	1725	48YZ	CW	Auto	115	2.5	1.75	Sleeve	Bracket	4 5/8"	—	**3K515***	$155.00	**$104.15**	10.0
1/12	E	1725	48YZ	CW/CCW	Auto	115	2.2	1.4	Sleeve	Ring	—	5 15/16"	**3K439**	100.00	**76.45**	9.0
1/12	E	1725	48YZ	CW	Auto	115	2.8	1.0	Sleeve	Ring	—	5 7/8	**3K350**	100.00	**76.45**	8.0
1/8	F	1725	48YZ	CW/CCW	Auto	115	2.7	1.0	Sleeve	Bracket	4 5/8	—	**6K509**	123.00	**94.05**	12.0
1/6	A	1725	48YZ	CW	Auto	115	3.6	1.75	Sleeve	Bracket	5	—	**3K516***	234.00	**173.00**	14.0
1/6	A	1725	48YZ	CW	Auto	115	3.6	1.75	Sleeve	Bracket	4 5/8	—	**3K520***	250.00	**173.00**	13.0
1/6	E	1725	48YZ	CW/CCW	Auto	115	3.5	1.35	Sleeve	Ring	—	7 5/8	**6K521†**	123.00	**94.05**	12.0
1/6	E	1725	48YZ	CW/CCW	Auto	115	3.5	1.0	Sleeve	Ring	—	7 15/16-9 1/8	**6K864‡**	123.00	**94.05**	14.0
1/4	B	1725	48YZ	CCW	Auto	115	5.0	1.25	Sleeve	Bracket	5 7/8	—	**3K517***	348.00	**264.00**	15.0
1/4	A	1725	48YZ	CW	Auto	115	5.0	1.25	Sleeve	Bracket	5	—	**3K518***	369.00	**264.25**	15.0
1/3	B	1725	48YZ	CCW	Auto	115	5.4	1.3	Sleeve	Bracket	5 7/8	—	**3K521***	499.00	**340.50**	15.0
							SPLIT-PHASE, 50 Hz									
1/12	A	1425	48YZ	CW	Auto	220	1.2	1.0	Sleeve	Bracket	4 5/8	—	**1N795**	159.00	**111.35**	12.0
1/6	A	1425	48YZ	CW	Auto	220	2.3	1.0	Sleeve	Bracket	5	—	**1N794**	237.00	**166.25**	14.0
1/4	B	1425	48YZ	CW	Auto	220	2.8	1.0	Sleeve	Bracket	5	—	**1N793**	375.00	**262.75**	16.0
1/3	B	1425	48YZ	CW	Auto	220	3.5	1.0	Sleeve	Bracket	5 7/8	—	**1N792**	470.00	**329.25**	16.0
							CAPACTIOR-START, 60 Hz									
1/2	C	1725	56CZ	CCW	Auto	115/208-230	5.8/2.8-2.9	1.5	Sleeve	Bracket	5 7/8	—	**3K519***	640.00	**457.00**	33.0
3/4	C	1725	56CZ	CCW	Auto	115/208-230	8.8/4.5-4.4	1.5	Sleeve	Bracket	5 7/8	—	**3K522***	728.00	**494.00**	27.0
							THREE-PHASE, 60 Hz									
1/2	D	1725	56CZ	CW/CCW	None	208-230/460	2.3-2.4/1.2	1.5	Ball	C-Face	5 7/8	—	**3N850***	640.00	**486.75**	21.0
3/4	D	1725	56CZ	CW/CCW	None	208-230/460	2.9-3.0/1.5	1.5	Ball	C-Face	5 7/8	—	**3N824***	728.00	**543.00**	23.0
1	D	1725	56CZ	CW/CCW	None	208-230/460	3.5-3.6/1.8	1.4	Ball	C-Face	5 7/8	—	**3N825***	738.00	**552.50**	25.0
1 1/2	D	1725	56CZ	CW/CCW	None	208-230/460	4.8-4.8/2.4	1.35	Ball	C-Face	5 7/8	—	**3N826***	822.00	**614.50**	28.0

(†) No. 6K521 fits old style bracket. (‡) No. 6K864 fits new style bracket.
(*) Coupling assembly required for proper Bell & Gossett replacement; order separately from page 77.
NOTE: To ensure correct motor selection, measure the bolt circle of old unit.

HOT WATER CIRCULATOR PUMP MOTORS

Dayton®

COUPLING ORDERING DATA AND CROSS REFERENCE GUIDE FOR DAYTON HOT WATER CIRCULATOR PUMP MOTORS ON FACING PAGE

COUPLINGS FOR CIRCULATOR PUMP MOTORS

Motor Stock No.	Motor Shaft Size	Pump Shaft Size	Required Coupling Stock No.	List	Each	Shpg. Wt.
3K515	1/2"	1/2"	**1R462**	$10.00	**$9.29**	0.4
3K516	1/2	1/2	**1R462**	10.00	**9.29**	0.4
3K517	1/2	1/2	**1R463**	20.00	**18.67**	0.3
3K518	1/2	1/2	**1R464**	35.00	**29.95**	0.5
3K518	1/2	5/8	**1R465**	30.00	**29.45**	0.5
3K519	5/8	1/2	**1R464**	35.00	**29.95**	0.5
3K519	5/8	5/8	**1R465**	30.00	**29.45**	0.5
3K520	1/2	1/2	**1R462**	10.00	**9.29**	0.4
3K521	1/2	1/2	**1R464**	35.00	**29.95**	0.5
3K521	1/2	5/8	**1R465**	30.00	**29.45**	0.5
3K522	5/8	1/2	**1R465**	30.00	**29.45**	0.5
3N824	5/8	1/2	**1R465**	30.00	**29.45**	0.5
3N824	5/8	5/8	**1R466**	68.00	**64.25**	1.0
3N825	5/8	1/2	**1R465**	30.00	**29.45**	0.5
3N825	5/8	5/8	**1R466**	68.00	**64.25**	1.0
3N826	5/8	1/2	**1R465**	30.00	**29.45**	0.5
3N826	5/8	5/8	**1R466**	68.00	**64.25**	1.0
3N850	5/8	1/2	**1R465**	30.00	**29.45**	0.5
3N850	5/8	5/8	**1R466**	68.00	**64.25**	1.0

CIRCULATOR PUMP MOTOR CROSS REFERENCE GUIDE

Bell & Gossett	Armstrong	Teel	Stock No.
*	817025-253	2P610	1N792
*	817025-153	2P433	1N793
*	817005-053	1P900, 1P902, 2P432, 2P609	1N794
*	805316-053	1P899, 1P903	1N795
111034	805316-010	1P899, 1P903	3K515
111036	817025-001	1P900, 1P902, 2P432, 2P609	3K516
111040	817025-007	2P433	3K518
111044†	811757-001	2P435, 2P612	3K519
111046	831001-083	3P720	3N850
111047†	811757-002	2P436	3K522
111049	831012-083	2P611	3N824
111061	817025-005	—	3K520
169035	816141-001	2P434	3K517
169038	816141-002	2P610	3K521
169090	816676-069	3P701	3N825
169092	816678-069	3P702	3N826

(*) 50 Hz applications.
(†) Requires No. 1R465 coupler assembly for proper Bell & Gossett replacement.

For Dayton hot water circulator pumps ordering information, see page 76.

See Cross Reference Information on page opposite inside back cover.

OEM REPLACEMENT HOT WATER CIRCULATOR PUMP MOTORS

Typical Uses: Replace original equipment motors on hot water circulator pumps from Bell & Gossett, Armstrong, Teel, and Taco. Also for other close coupled pump applications.

Type: Split-phase

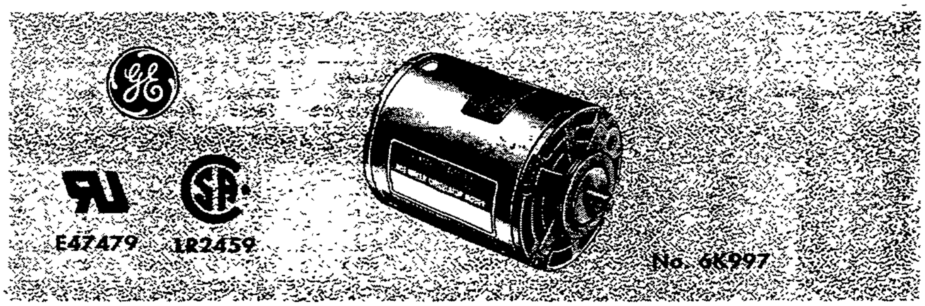
Enclosure: Open dripproof

Ambient: 40°C

Duty: Continuous

Finish: Gray

Brand: GE



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Mounting	Rings OC	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
SPLIT-PHASE, 60 Hz															
1/12	1725	48YZ	CW	Auto	115	2.1	1.4	Sleeve	Ring	5 15/16"	4722	**6K996**	$135.00	**$99.45**	9.1
1/8	1725	42YZ	CW	Auto	115	1.8	1.0	Sleeve	Ring	6 15/16	2987	**3K251**†	129.00	**87.25**	10.0
1/8	1725/1425	48YZ	CW	Auto	115*	1.6	1.0	Sleeve	Ring	6 15/16	2800	**6K997**‡	126.00	**99.95**	10.0
1/8	1725	48YZ	CW	Auto	115	2.6	1.4	Sleeve	Ring	7	4404	**6K998**	146.00	**111.00**	11.0
1/6	1725	48YZ	CW	Auto	115	3.0	1.0	Sleeve	Ring	7 11/16	2801	**6K999**	166.00	**126.15**	12.0

NOTE: To ensure correct motor selection, measure the bolt circle of old motor Nos. 3K251, 6K997, and 6K999 have round shaft with setscrew.
NOTE: No. 6K998 has flat shaft, all others have round shaft. (*) 60/50 Hz. (†) No. 3K251 fits old and new style brackets. (‡) No. 6K997 uses base of original motor.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

HEATING/COOLING MOTORS

FLANGE-MOUNT OIL BURNER MOTORS

Typical Uses: NEMA oil burner flange for direct-coupling to domestic oil burners. Also widely used for replacements in applications where a NEMA 48M, 48N, or 56N flange mounting is required.

Special Features: All Dayton models (except No. 6K149) have holes drilled and tapped in shell for mounting optional No. 4X510 conduit box (sold separately below). GE and Dayton models feature quick-change reversing terminals.

Service Factor: 1.0

Thermal Protection: Manual reset

Ambient: 40°C

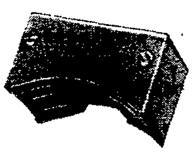
Duty: Continuous

Rotation: CW/CCW (except No. 3K036 is CCW facing shaft)

Finish: Black enamel

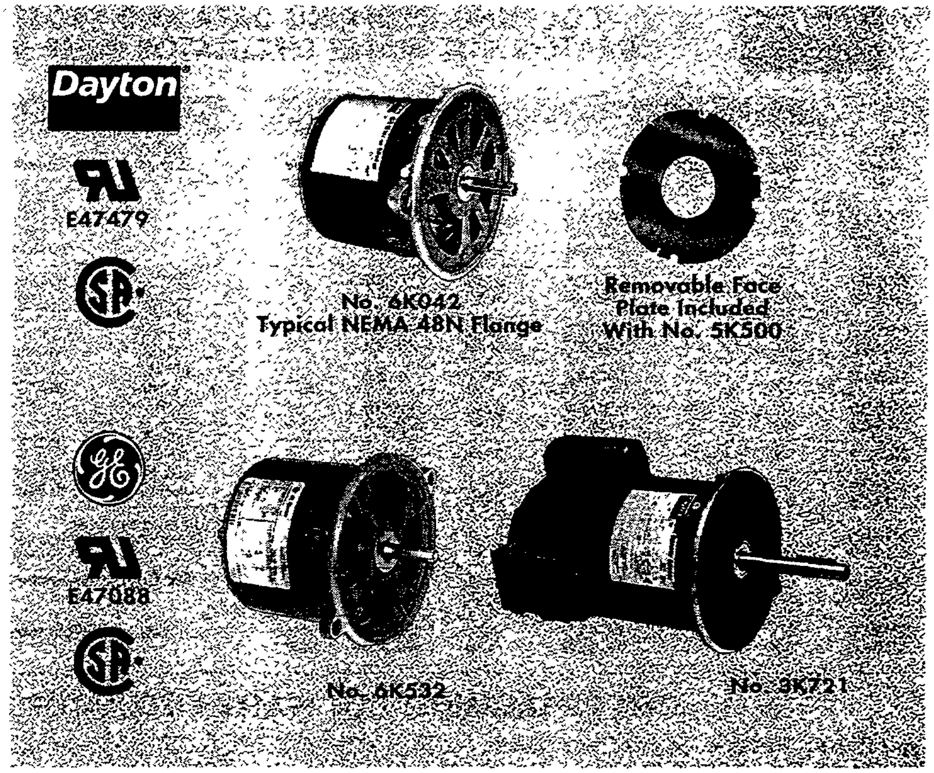
Brand: Dayton and GE

CONDUIT BOX FOR OIL BURNER MOTORS



Fits Dayton oil burner motors listed below (except No. 6K149).

No. 4X510. Shpg. wt. 0.6 lb. List ....$6.55.
Each..**$5.00**



HP	Nameplate RPM	NEMA Flange	Enclosure When Mounted	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Ins. Class	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
DAYTON BRAND, SPLIT-PHASE AND CAPACITOR-START, VENTILATED FLANGE													
1/8	1725	48N	Totally Enclosed	115	2.8	1.0	Sleeve	B	1/2 x 2"	**6K042**	$89.00	**$49.55**	11.0
1/7	3450	48M	Totally Enclosed	115	2.0	1.0	Sleeve	A	1/2 x 2	**3K036***†	95.00	**56.85**	15.0
1/7	3450	48M	Totally Enclosed	115	2.4	1.0	Sleeve	A	1/2 x 2	**6K149***	93.00	**46.20**	8.7
1/4	3450	48N	Totally Enclosed	115	3.5	1.0	Sleeve	A	1/2 x 2	**6K315**	116.00	**75.40**	16.0
1/3	3450	48N	Totally Enclosed	115	4.9	1.0	Sleeve	B	1/2 x 2	**6K705**	137.00	**92.90**	17.0
1/2	3450	48N	Totally Enclosed	115/230	7.6/3.8	1.0	Sleeve	B	5/8 x 4 1/8	**3K721‡**	196.00	**123.70**	20.0
DAYTON BRAND, SPLIT-PHASE, VENTILATED/NONVENTILATED FLANGE													
1/8	1725	48N	Totally Enclosed	115	2.6	1.0	Sleeve	A	1/2 x 2	**5K500**	89.00	**49.55**	11.0
DAYTON BRAND, SPLIT-PHASE, NONVENTILATED FLANGE													
1/6	1725	48N	Totally Enclosed	115	3.4	1.0	Sleeve	B	1/2 x 2	**5K501**	88.00	**49.20**	15.0
1/4	1725	48N	Totally Enclosed	115	4.1	1.0	Sleeve	B	1/2 x 2	**6K711**	123.90	**81.55**	20.0
1/3	1725	48N	Totally Enclosed	115	4.8	1.0	Sleeve	A	1/2 x 2	**6K865**	143.90	**93.80**	27.0

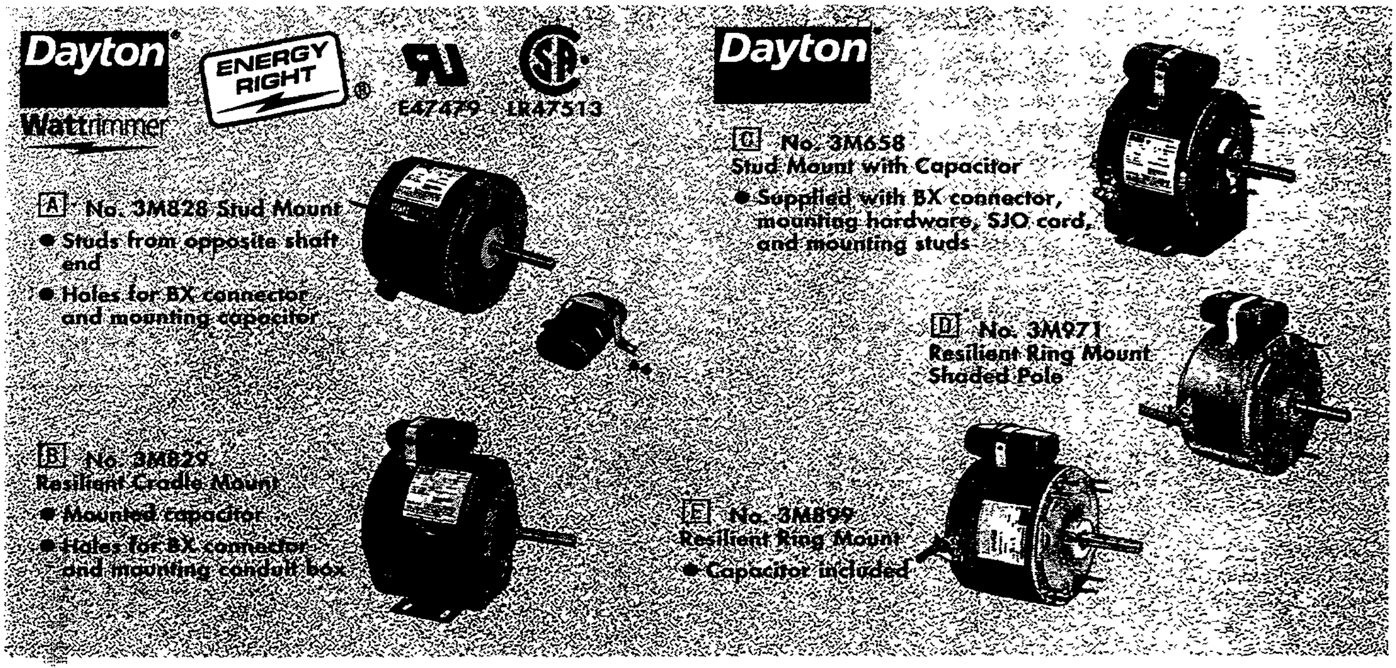
HP	Nameplate RPM	NEMA Flange	Enclosure When Mounted	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Ins. Class	Shaft Dimensions Dia. x Length	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
GE BRAND, SPLIT-PHASE, VENTILATED FLANGE														
1/8	3450	48N	Totally Enclosed	115	2.4	1.0	Sleeve	B	1/2 x 1 7/8	4773	**5K722**	$84.00	**$54.25**	12.0
	1725	48N	Totally Enclosed	115	2.9	1.0	Sleeve	B	1/2 x 1 7/8	4782	**6K532**	88.00	**50.75**	10.0
1/7	3450	48M	Totally Enclosed	115	2.4	1.0	Sleeve	A	1/2 x 1 7/8	4779	**5K723***	84.00	**49.65**	9.0
1/6	1725	48N	Totally Enclosed	115	3.3	1.0	Sleeve	B	1/2 x 1 7/8	4784	**6K543**	92.00	**52.95**	11.0
1/4	3450	48N	Totally Enclosed	115	4.1	1.0	Sleeve	B	1/2 x 1 7/8	4785	**5K724**	121.00	**77.20**	12.0
	1725	48N	Totally Enclosed	115	4.1	1.0	Sleeve	B	1/2 x 1 7/8	4786	**6K544**	121.00	**85.45**	12.0
1/3	3450	48N	Totally Enclosed	115	4.9	1.0	Sleeve	B	1/2 x 1 7/8	4774	**5K725**	144.00	**102.00**	13.0
	1725	48N	Totally Enclosed	115	4.8	1.0	Sleeve	B	1/2 x 1 7/8	4787	**6K545**	144.00	**98.95**	13.0
GE BRAND, CAPACITOR-START, VENTILATED FLANGE														
1/3	3450	48N	Open Dripproof	115/230	6.0/3.0	1.35	Ball	B	1/2 x 1 7/8	4788	**6K546**	181.00	**131.30**	14.0
1/2	1725	48N	Open Dripproof	115/230	8.2/4.1	1.25	Ball	B	1/2 x 1 7/8	4781	**6K547**	193.00	**140.25**	16.0

(*) 24" long #18 SO, 2-conductor cord out of shell at 11 o'clock position. (†) No. 3K036 is a direct replacement for Beckett. (‡) Capacitor-start.

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

UNIT HEATER BLOWER MOTORS



Typical Uses: Unit heaters and other shaft-mounted fan and blower equipment in dusty, dirty, noncombustible environments. Capacitor included.
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: B
NEMA Frame: 48YZ, $5\frac{5}{8}$" dia.; 42YZ, 5" dia.
Ambient: 40°C
Duty: Continuous air-over
Finish: Gray enamel
Brand: Dayton

STUD PATTERNS

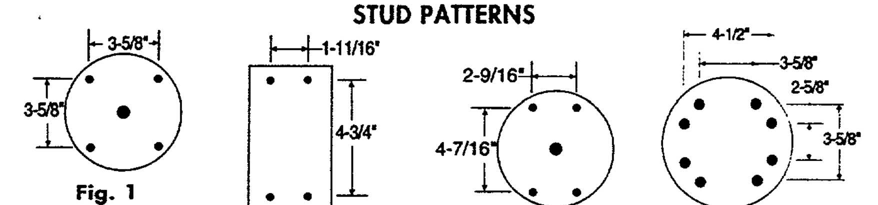


Fig. 1 Opposite Shaft End | Fig. 2 | Fig. 3 | Fig. 4

HP	Key	Nameplate RPM	NEMA Frame	Rotation Facing Shaft End	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Efficiency	Bearings	Stud Pattern	Body Dia.	Shaft Dimension Dia. x L	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
PSC TOTALLY ENCLOSED AIR-OVER CRADLE MOUNT																
1/8	C	1075	42YZ	CW	115	2.3	Standard	Sleeve	—	5"	1/2 x $2\frac{1}{4}$"	$5\frac{7}{16}$"	**3M657***	$120.00	**$91.70**	12.0
1/6	B	1075/2-Spd	48YZ	CW/CCW	115	2.3	High	Sleeve	2	$5\frac{5}{8}$	1/2 x $2\frac{3}{4}$	$5\frac{11}{16}$	✓**3M831**	132.00	**100.90**	13.0
	B	1075	48YZ	CW/CCW	115	2.3	High	Sleeve	2	$5\frac{5}{8}$	1/2 x $2\frac{3}{4}$	$5\frac{11}{16}$	✓**3M829**	127.00	**97.05**	11.0
	C	1075	48YZ	CW	115	2.6	Standard	Sleeve	4	$5\frac{5}{8}$	1/2 x $2\frac{3}{8}$	$5\frac{7}{16}$	**3M658**	133.00	**101.70**	13.0
1/3	B	1075	48YZ	CW/CCW	115	4.2	High	Sleeve	2	$5\frac{5}{8}$	1/2 x $2\frac{3}{4}$	$5\frac{15}{16}$	✓**3M835**	147.00	**112.30**	18.0
	C	1075	48YZ	CW	115	5.0	Standard	Sleeve	4	$5\frac{5}{8}$	1/2 x $2\frac{3}{8}$	$5\frac{9}{16}$	**3M659**	149.00	**113.90**	16.0
	B	1075	48YZ	CW/CCW	230	1.8	High	Sleeve	2	$5\frac{5}{8}$	1/2 x $2\frac{3}{4}$	$5\frac{15}{16}$	✓**3M837**	149.00	**113.90**	17.0
PSC TOTALLY ENCLOSED AIR-OVER STUD MOUNT																
1/6	A	1075/2-Spd	48YZ	CW/CCW	115	2.3	High	Sleeve	1	$5\frac{5}{8}$	1/2 x $2\frac{3}{4}$	$4\frac{9}{16}$	✓**3M830**	118.00	**90.20**	11.0
	E	1075	48YZ	CW	115	2.6	Standard	Ball	4	$5\frac{5}{8}$	1/2 x $2\frac{1}{2}$	$5\frac{3}{8}$	**3M899**	134.00	**102.45**	10.0
	A	1075	48YZ	CW/CCW	115	2.3	High	Ball	1	$5\frac{5}{8}$	1/2 x $2\frac{3}{4}$	$4\frac{9}{16}$	✓**4M044**	116.00	**88.70**	9.5
	A	1075	48YZ	CW/CCW	115	2.3	High	Sleeve	1	$5\frac{5}{8}$	1/2 x $2\frac{3}{4}$	$4\frac{9}{16}$	✓**3M828**	108.00	**82.55**	9.5
1/4	A	1075/2-Spd	48YZ	CW/CCW	115	3.3	High	Sleeve	1	$5\frac{5}{8}$	1/2 x $2\frac{3}{4}$	$4\frac{9}{16}$	✓**3M833**	121.00	**92.45**	15.0
	E	1075	48YZ	CW	115	3.6	Standard	Ball	4	$5\frac{5}{8}$	1/2 x $2\frac{1}{2}$	$6\frac{1}{8}$	**3M970**	142.00	**108.55**	14.0
	A	1075	48YZ	CW/CCW	115	3.4	High	Ball	1	$5\frac{5}{8}$	1/2 x $2\frac{3}{4}$	$4\frac{9}{16}$	✓**4M045**	124.00	**94.75**	14.0
	A	1075	48YZ	CW/CCW	115	3.4	High	Sleeve	1	$5\frac{5}{8}$	1/2 x $2\frac{3}{4}$	$4\frac{9}{16}$	✓**3M832**	116.00	**88.65**	14.0
1/3	D	1075/2-Spd	48YZ	CW/CCW	115	4.6	Standard	Ball	3	$5\frac{5}{8}$	1/2 x 5	6	**3M971**	159.00	**121.55**	15.0
	A	1075/2-Spd	48YZ	CW/CCW	115	4.3	High	Sleeve	1	$5\frac{5}{8}$	1/2 x $2\frac{3}{4}$	$4\frac{13}{16}$	✓**3M838**	135.00	**103.95**	15.0
	D	1075/2-Spd	48YZ	CW/CCW	230	2.4	Standard	Ball	3	$5\frac{5}{8}$	1/2 x 5	$5\frac{3}{4}$	**3M901**	161.00	**123.05**	15.0
	E	1075	48YZ	CW	115	5.1	Standard	Ball	4	$5\frac{5}{8}$	1/2 x $2\frac{1}{2}$	$6\frac{1}{8}$	**3M900**	150.00	**114.60**	14.0
	A	1075	48YZ	CW/CCW	115	4.2	High	Ball	1	$5\frac{5}{8}$	1/2 x $2\frac{3}{4}$	$4\frac{13}{16}$	✓**4M046**	132.00	**100.90**	15.0
	A	1075	48YZ	CW/CCW	115	4.2	High	Sleeve	1	$5\frac{5}{8}$	1/2 x $2\frac{3}{4}$	$4\frac{13}{16}$	✓**3M834**	124.00	**94.75**	15.0
	A	1075	48YZ	CW/CCW	230	1.8	High	Sleeve	1	$5\frac{5}{8}$	1/2 x $2\frac{3}{4}$	$4\frac{13}{16}$	✓**3M836**	126.00	**96.30**	15.0

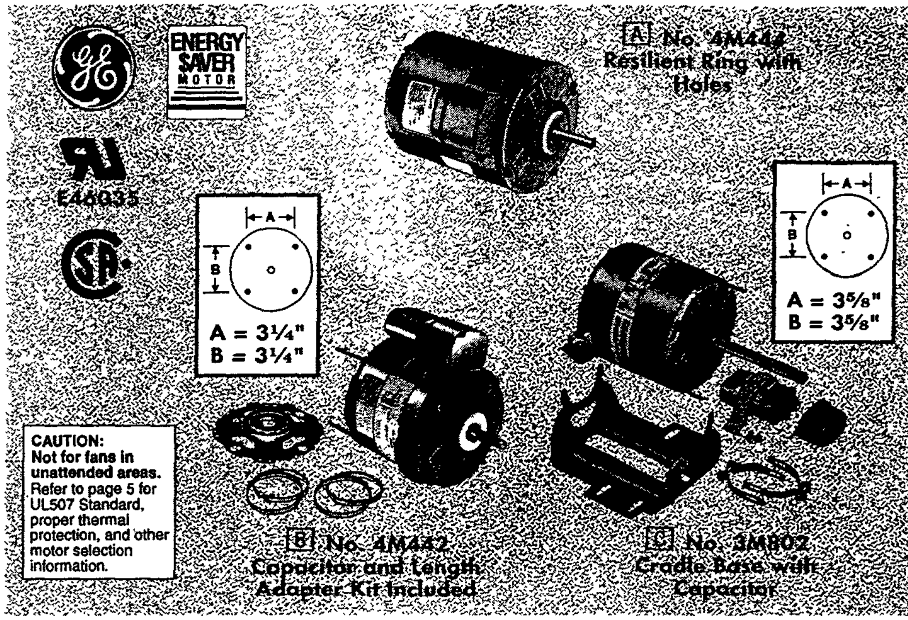
(*) Three stud; $4\frac{7}{16}$" bolt circle.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

UNIT HEATER BLOWER MOTORS AND HALO MOUNT OEM REPLACEMENT MOTORS

GE BRAND, PSC UNIT HEATER BLOWER MOTORS

Typical Uses: Unit heaters and other shaft-mounted fan and blower equipment in dusty, dirty, **noncombustible** environments.
Special Features: Operable on 60/50 Hz.
Bearings: Prelubricated ball or sleeve
Mounting:
[A] Resilient ring with holes
[B] Resilient ring with studs, capacitor and length adapter kit included
[C] Cradle base with studs. Capacitor, and mounting kit included. Mounting base holes are 1 7/8 x 4 13/16"
Enclosure: TEAO
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: A
Body Diameter: 42YZ, 5" dia. (GE 29 frame); 48YZ, 5 5/8" dia. (GE 39 frame)
Shaft Dimensions: 42YZ, 3/8 x 1 1/2"; 48YZ, 1/2 x 5"
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW/CCW
Finish: Gray
Brand: GE



HP	Key	Name-plate RPM	NEMA Frame	Volts 60/50 Hz	Full-Load Amps at Nameplate Volts	Efficiency	Bearings	2 1/2" Dia. Resilient Rings OC	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.	Capacitor Req'd. Stock No.	Capacitor Req'd. Each
1/15	B	1550	42YZ	115	1.3	Standard	Sleeve	4 15/16"	5 5/8"	2925	**3M691**	$183.00	**$113.40**	9.2	Included	
	B	1550	42YZ	208-230	0.7	Standard	Sleeve	4 15/16	5 5/8	2950	**4M442**	218.00	**135.10**	9.1	Included	
	B	1050	42YZ	115	1.6	Standard	Sleeve	4 15/16	5 5/8	2926	**3M690**	210.00	**130.10**	8.3	Included	
	B	1050	42YZ	208-230	0.7	Standard	Sleeve	4 15/16	5 5/8	2952	**4M443**	251.00	**155.50**	9.4	Included	
1/12	A	1550	42YZ	115	1.6	Standard	Sleeve	6 7/16	7	2927	**4M444**	223.00	**138.15**	9.8	6X653	$4.49
	A	1550	42YZ	208-230	0.7	Standard	Sleeve	6 7/16	7	2953	**4M446**	235.00	**145.60**	9.9	6X653	4.49
	A	1050	42YZ	115	1.9	Standard	Sleeve	6 7/16	7	2928	**4M445**	247.00	**153.00**	9.5	6X653	4.49
	A	1050	42YZ	208-230	0.7	Standard	Sleeve	6 7/16	7	2954	**4M447**	258.00	**160.00**	10.0	6X653	4.49
1/6	C	1075	48YZ	115	2.2	High	Ball	4 11/16	5 1/8	3206	**3M800**	158.00	**96.05**	12.0	Included	
1/4	C	1075	48YZ	115	3.3	High	Ball	4 15/16	5 3/8	3208	**3M801**	171.00	**103.90**	17.0	Included	
	C	1075	48YZ	208-230	1.4	High	Ball	4 15/16	5 3/8	3210	**4M441**	173.00	**105.15**	15.0	Included	
1/3	C	1075	48YZ	115	5.0	High	Ball	5 15/16	6 3/8	3212	**3M802**	183.00	**111.20**	21.0	Included	
	C	1075	48YZ	208-230	2.0	High	Ball	5 15/16	6 3/8	3214	**3M803**	185.00	**112.40**	20.0	Included	

A.O. SMITH BRAND, HALO MOUNT, PSC, DIRECT OEM REPLACEMENT MOTORS

Typical Uses: Original equipment replacement motor for many Halo mount room air conditioner designs (See Original Equipment Motor Replacement Guide).
Bearings: All-angle sleeve
Enclosure: TEAO
Service Factor: 1.0
Thermal Protection: Auto
NEMA Frame: 42
Ambient: 40°C
Duty: Continuous air-over
Rotation: CCW at lead end
Finish: Black epoxy
Brand: A.O. Smith

HP	Nameplate RPM	Volts* 60 Hz	Full-Load Amps at Nameplate Volts	Ins. Class	Shaft Dimensions Dia. x L	A.O. Smith Model	Stock No.	List	Less Cap Each	Shpg. Wt.	Cap Req'd.† Stock No.	Cap Req'd.† Each
1/4	1330/2-Spd	230	1.9	B	1/2 x 2 1/2"	322P755	**4M148**	$126.00	**$95.50**	9.9	6X653	$4.49
1/3	1450/3-Spd	230	2.5	A	1/2 x 4 7/8	322P754	**4M149**	139.00	**105.35**	12.0	6X654	5.00

(*) Motors designed to operate on 208V. (†) No. 4M148 requires a 7.5 MFD capacitor on 208V.

ORIGINAL EQUIPMENT MOTOR REPLACEMENT GUIDE

No. 4M148	No. 4M149					
319P639	319P387	319P821	395P889	395P908	C274724	C275403
322P402	319P390	319P824	395P890	395P959	C274727	C277315
322P424	319P393	319P925	395P892	395P960	C274731	C279266
322P499	319P403	322P401	395P893	395P964	C274734	C279269
322P755	319P417	322P436	395P896	395P965	C274736	846A915G01
395P931	319P487	322P439	395P897	396P032	C274740	846A915G05
395P935	319P488	322P461	395P898	396P036	C275387	846A915G08
C275399	319P490	322P468	395P902	396P043	C275388	846A915G18
	319P493	322P754	395P904	396P046	C275390	
	319P497	395P887	395P906	396P047	C275393	
	319P700	395P888	395P907	396P048	C275402	

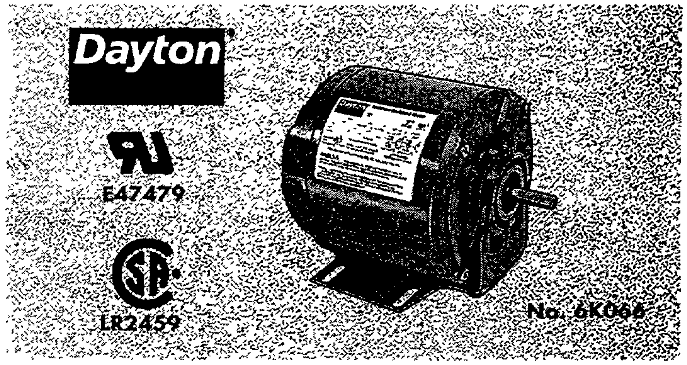
EVAPORATIVE COOLER MOTORS

SPLIT-PHASE, MOISTURE-RESISTANT, SINGLE, 2, AND 3 SPEED

Typical Uses: Evaporative coolers, pumps, and other devices in high moisture environments.

Special Features: Moisture-resistant features include corrosion-resistant rotor core, internally and externally painted shell, finished hardware, and nylon actuator bracket. Cradle base included.

Bearings: All-angle sleeve
Mounting: Cradle base
Enclosure: Open dripproof
Ambient: 40°C
Insulation Class: B
Thermal Protection: Auto
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	Volts 60 Hz	NEMA Frame	Full-Load Amps at Nameplate Volts	Stock No.	List	Each	Shpg. Wt.
1/3	—	1725	115	56Z*	6.6	**6K298**	$118.00	**$71.35**	17.0
	1/6	1725/1140	115	56Z*	6.8/4.5	**6K066**	158.00	**90.45**	20.0
1/2	—	1725	115	56Z*	8.5	**6K069**	147.00	**83.60**	19.0
	1/4	1725/1140	115	56Z*	9.2/6.0	**6K203**	202.00	**104.45**	22.0
	1/4	1725/1140/850†	115	56Z*	8.9/6.3/3.2	**6K737**	216.00	**125.40**	22.0
3/4	—	1725	115	56	11.9	**6K222**	209.00	**112.90**	21.0
	1/3	1725/1140	115	56	11.4/7.0	**6K214**	280.00	**139.30**	27.0

(*) NEMA 56Z frame motors have nonstandard 1/2" dia. shaft with flat and are supplied with 5/8" dia. shaft bushing.
(†) 1/12 HP at 850 RPM.

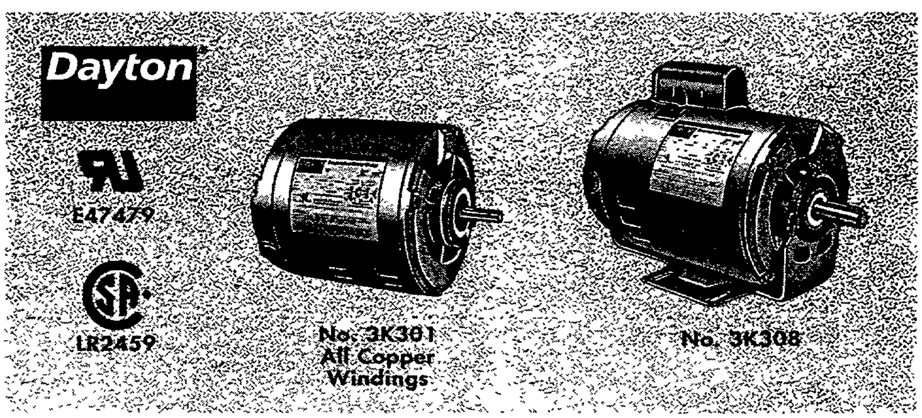
CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

SPLIT-PHASE AND CAPACITOR-START, SINGLE AND 2 SPEED

Typical Uses: Evaporative cooler fans and blowers. Use on other applications voids warranty.

Special Features: All copper windings. Corrosion-resistant internal parts. Thru-bolts on endshields facilitate easy access for servicing internal components.

Bearings: All-angle sleeve, with oil ports
Enclosure: Open dripproof
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW facing shaft (except Nos. 3K307 and 3K308 are CW/CCW)
Finish: Gray enamel
Brand: Dayton



HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	Volts 60 Hz	NEMA Frame	Full-Load Amps at Nameplate Volts	2 1/2" Dia. Resilient Rings OC	Stock No.	List	Each	Shpg. Wt.
SPLIT-PHASE, RESILIENT RING MOUNTING, SINGLE AND TWO SPEED										
1/3	—	1725	115	56Z*	6.0	7 7/16"	**3K301**	$114.00	**$48.90**	19.0
	1/9	1725/1140	115	56Z*	6.4/3.7	7 7/16	**3K302**	154.00	**55.50**	16.0
1/2	—	1725	115	56Z*	7.9	7 7/16	**3K303**	143.00	**55.05**	18.0
	1/6	1725/1140	115	56Z*	8.2/4.3	7 7/16	**3K304**	198.00	**62.10**	16.0
	1/6	1725/1140	230	56Z	4.5	7 7/16	**3K309**	206.00	**73.55**	18.0
3/4	—	1725	115	56Z*	11.0	7 7/16	**3K305**	205.00	**68.95**	20.0
	1/4	1725/1140	115	56Z*	10.9/5.1	7 7/16	**3K306**	276.00	**88.40**	19.0
	1/4	1725/1140	230	56Z	5.5	7 7/16	**3K310**	284.00	**113.70**	18.0
CAPACITOR-START, CRADLE BASE, TWO SPEED										
1	**1/3**	1725/1140	115	56	14.4/7.2	—	**3K308**	392.00	**148.95**	32.0
	1/3	1725/1140	230	56	7.2/3.6	—	**3K307**	398.00	**160.00**	32.0

(*) NEMA 56Z frame motors have nonstandard 1/2" dia. shaft with flat.

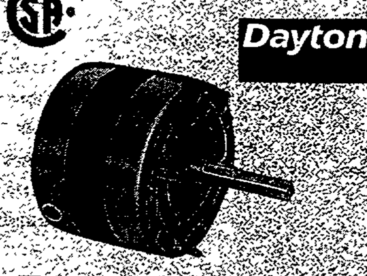
DIRECT OEM REPLACMENT MOTORS

Here, and on the next 11 pages, you will find OEM replacement motors listed alphabetically by OEM and then horsepower. All motors feature automatic thermal protection (except Nos. 4M246 and 4M247 are impedance protected). 230V models operate on 208-230V. All are recognized by UL for construction: Dayton E47479 and GE E46035 under the Motor Component Recognition Program. CSA Certified. 40°C ambient. Gray finish.

Abbreviation Glossary

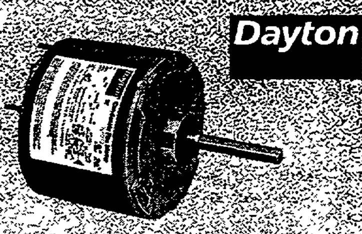
TEAO . . . .Totally Enclosed Air-Over
OPAO . . . . .Open Air-Over
CW . . . . .Clockwise
CCW . . . . .Counterclockwise
VFLE . . . . .View Facing Lead End
VFSE . . . . .View Facing Shaft End

OEM REPLACEMENT INDEX



[A] No. 4M222
Shaded pole roof ventilator and fan motor

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

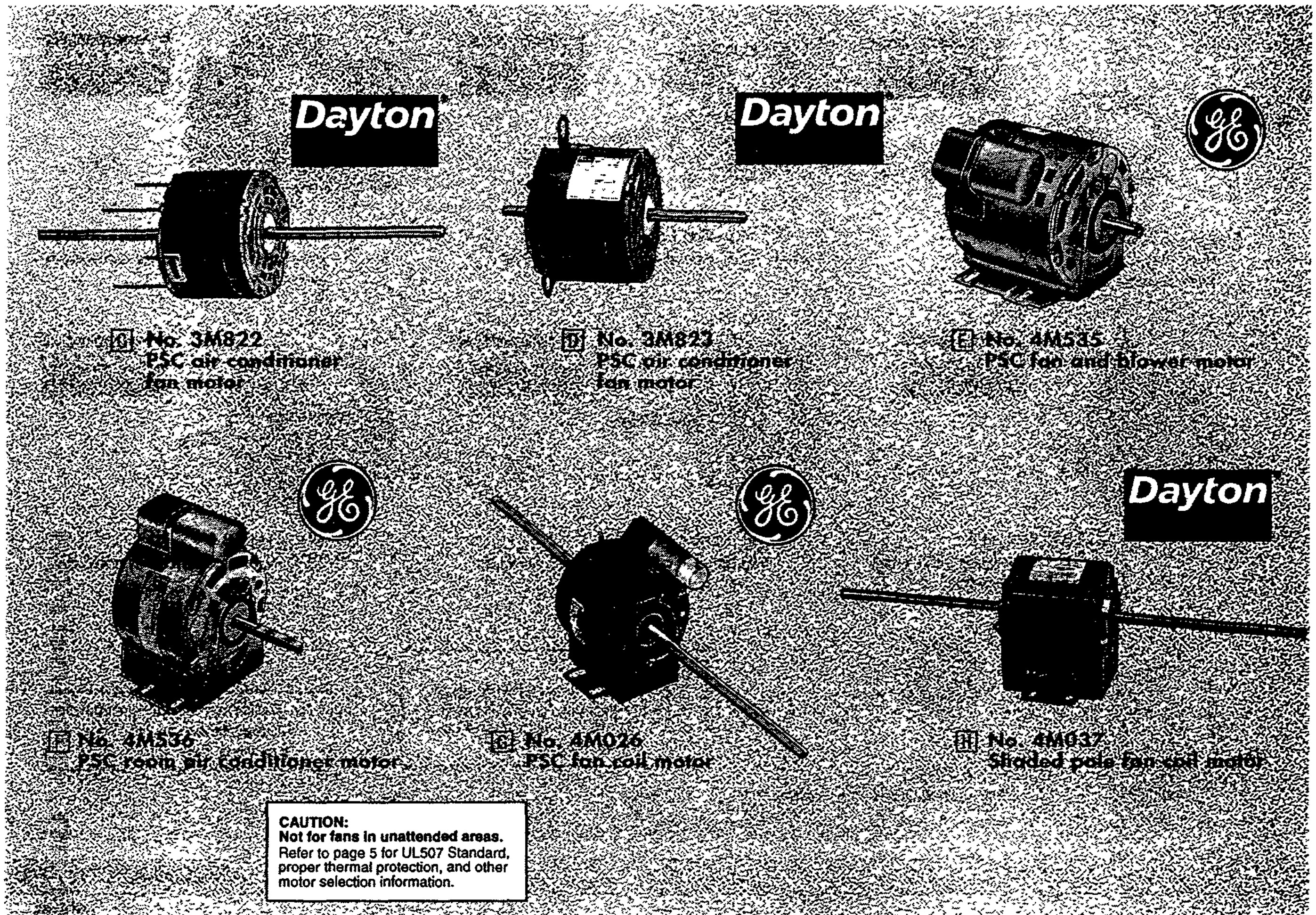


[B] No. 4M002
PSC condenser fan motor

SPECIFICATIONS AND

Key	OEM Motor	Replaces	HP	Nameplate RPM	Volts	Hz	Full-Load Amps at Nameplate Volts
A	**Acme Engineering**	Fasco D119	1/11	1500/3-Spd	115	60	3.4
B	**Addison, Rheem, Day & Night**	8101-193; 8101-279; F55BWM-1119; K55EBC-2608; F54CKY-1397; F55CDR-1259; F55CSH-1352; K55ERC-3004; 19906-01-02; 1847-01-05; 18471-01-05; and Emerson K8537	1/5	1075/2-Spd	230	60	1.4
C	**AMC, Chrysler, Coldspot, Emerson, Gibson, Hotpoint, Kelvinator, Penncrest, Philco, Quiet Kool, Wizard**	Marathon X217; Fasco D855; S88-421; and Emerson RAK7024	1/3	1365/3-Spd	230	60	2.7
D	**AMC, Chrysler, Coldspot, Emerson, Gibson, Hotpoint, Kelvinator, Peencrest, Philco, Quiet Kool, Wizard**	Emerson RAK 7091	1/3	1300/4-Spd	230	60	3.2
E	**American Air Filter**	GE 5KCP39KGB909T; 5KCP36KG317S; 5KCP36KG583S; 5KCP36KG246S; 5KCP38PG200S	1/8	700	115	60/50	2.0
F	**American Standard**	GE 5KCP39HG7728S; 5KCP39HG3692S	1/3	1075	230	60	3.3
G	**American Standard, Bohn, Carrier, Dunham Bush, Fedders, Nesbitt, Singer, Trane, York**	Fasco D291; GE 2362; 5KCP29CK4534T; Universal 362	1/10	1075/4-Spd	115	60	1.7
H	**American Standard, Dunham Bush, Fedders, Modine, Nesbitt, Singer, Trane, York**	Fasco D293; GE 5KSP29BK2649T; Universal 93	1/10	1050/5-Spd	115	60	3.4
H	**American Standard, Dunham Bush, Fedders, Modine, Nesbitt, Singer, Trane, York**	Fasco D289; GE KSP29BK2660S; 2089; Universal 89	1/10	1050/5-Spd	115	60	3.4

DIRECT OEM REPLACMENT MOTORS



C No. 3M822 PSC air conditioner fan motor

D No. 3M823 PSC air conditioner fan motor

E No. 4M535 PSC fan and blower motor

F No. 4M536 PSC room air conditioner motor

G No. 4M026 PSC fan coil motor

H No. 4M037 Shaded pole fan coil motor

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

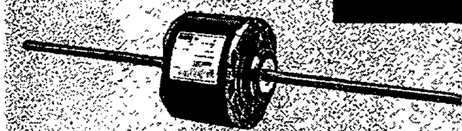
ORDERING DATA

Key	Bearings	Mounting	Encl.	NEMA Frame	Body Dia.	Shaft Dimensions Dia. x Length	Length Less Shaft	Rotation	Brand	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
A	Ball	Stud	OPAO	—	4 3/8"	1/2 x 2 5/8"	3 3/8"	CCW-VFSE	Dayton	**4M222**	$104.00	**$78.60**	6.5	None	
B	Sleeve	Stud	TEAO	48YZ	5 5/8	1/2 x 3 1/4	4 11/16	CW-VFSE	Dayton	**4M002**	112.00	**85.60**	13.0	5M003	$4.25
C	Sleeve	Stud	OPAO	48YZ	5 5/8	1/2 x 8 ea	4 5/16	CCW-VFLE	Dayton	**3M822**	130 00	**99.35**	12.0	5M003	4.25
D	Sleeve	Lug	OPAO	48YZ	5 5/8	1/2 x 2 & 4 3/16	3 9/16	CCW-VFLE	Dayton	**3M823**	134.00	**102.40**	14.0	5M003	4.25
E	Sleeve	Cradle	OPAO	48YZ	5 5/8	1/2 x 1 1/2	6 13/32	CCW-VFSE	GE (3134)	**4M535**	142.00	**86.30**	16.0	Included	
F	Sleeve	Cradle	OPAO	48YZ	5 5/8	1/2 x 3 1/4	5 3/32	CW-VFSE	GE (3114)	**4M536**	162.00	**98.45**	15.0	Included	
G	Sleeve	Cradle	OPAO	42YZ	5	1/2 x 9 9/16 & 10 1/2	4 29/32	CW-VFLE	GE (2362)	**4M026**	147.00	**91.05**	10.0	Included	
H	Sleeve	Cradle	OPAO	42YZ	5	3/8 x 8 ea	4 29/32	CW-VFLE	Dayton	**4M037**	78.00	**59.65**	9.0	None	
H	Sleeve	Cradle	OPAO	42YZ	5	1/2 x 10 ea	5 1/8	CW-VFLE	Dayton	**4M038**	78.00	**59.65**	9.0	None	

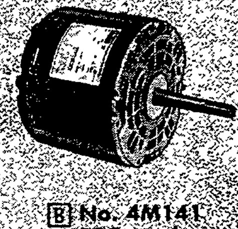
SEE WARRANTY INFORMATION ON PAGE OPPOSITE INSIDE BACK COVER

HEATING/COOLING MOTORS

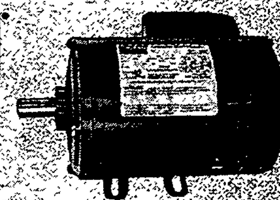
DIRECT OEM REPLACEMENT MOTORS



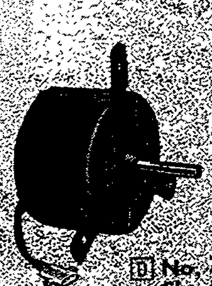
A No. 3M883 PSC air conditioner fan motor



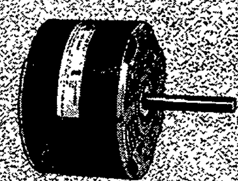
B No. 4M141 PSC condenser fan motor



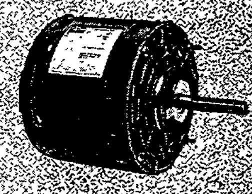
C No. 4K038 Capacitor-start gas air conditioner solution pump motor



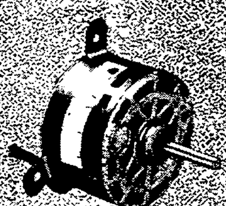
D No. 4M248 Shaded-pole fan and blower motor



E No. 4M984 Shaded pole attic fan motor



F No. 3M884 PSC furnace blower motor



G No. 4M283 PSC condenser fan motor

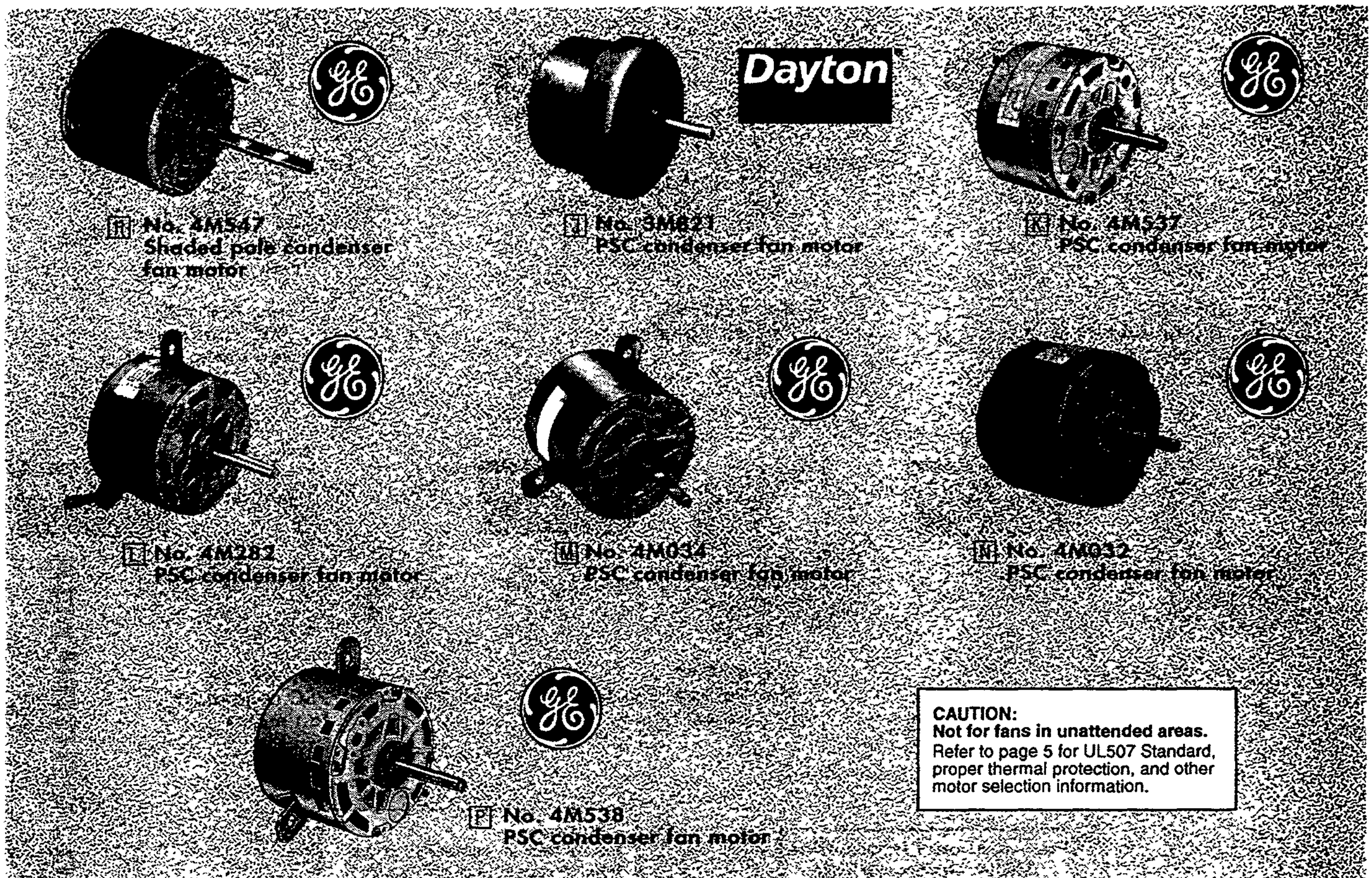
CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

For Additional Information About Motors on This Spread See Page 82

SPECIFICATIONS AND

Key	OEM Motor	Replaces	HP	Nameplate RPM	Volts	Hz	Full-Load Amps at Nameplate Volts
A	American Standard, Singer	EWDQ-5790; K47HY-605; Emerson RAK1012	1/8	1075/3-Spd	277	60	0.76
B	Arkla	B14506-393; B14506-363; 0KB1038; K234Z; Fasco D795	1/3	825	115	60	4.5
B	Arkla	B14506-396; B14506-354; 0KB1058; K8075	1/2	825	230	60	2.9
C	Arkla	1450-275; OKA1052; K2649	1/2	3450	115	60	7.0
C	Arkla	14506-259; OKA1072; Emerson K2650	3/4	3450	230	60	3.7
D	Broan	365, 99-08-0178; Fasco 7151-3160	1/12	1050	115	60	2.9
E	Broan	Broan 99080238; McMillan A0510B2157; A0510B2006	1/15	950	115	60	3.7
E	Broan	Broan 99080237; McMillan A0510B2159; A0510B2055	1/12	1000	115	60	4.0
E	Broan	Broan 99080239, McMillan A0510B2158; A0510B2019	1/10	1100	115	60	4.2
F	Bryant Furnace	62814-05; Emerson K1410	1/3	1075/4-Spd	115	60	5.3
G	Carrier	GE 5KCP39CGA677S; 5KCP39CGP031S	1/6	1075/2-Spd	208-230	60	1.2
H	Carrier, Day & Night	GE 5KSP29KK1818T	1/5	1030/4-Spd	115	60	7.6
J	Carrier	HC39VL-701; Emerson K1552	1/4	1075	208-230	60	2.4
K	Carrier	GE 5KCP39FGP028S; 5KCP39FGG262S	1/4	1075	230	601	2.1
L	Carrier	GE KCP39HGD797S; 5KCP39HGP029S	1/3	1075/2-Spd	208-230	60	2.3
M	Carrier, Bryant	Emerson K55XLKK5918; Fasco D803; GE 5KCP39KGB703S; 5KCP39JGJ997T; 3066; A.O. Smith OCA1036	1/3	1075/2-Spd	230	60	3.1
N	Carrier, Day & Night	Carrier PS2126-2; Fasco D845; 5KCP39HG7611S; 5KCP39HGA2026T; 3123; Marathon X226	1/3	1075/2-Spd	230	60	2.8
P	Carrier	GE 5KCP39HGP030S; 5KCP39HG9866S	1/3	1075	208-230	60	2.8

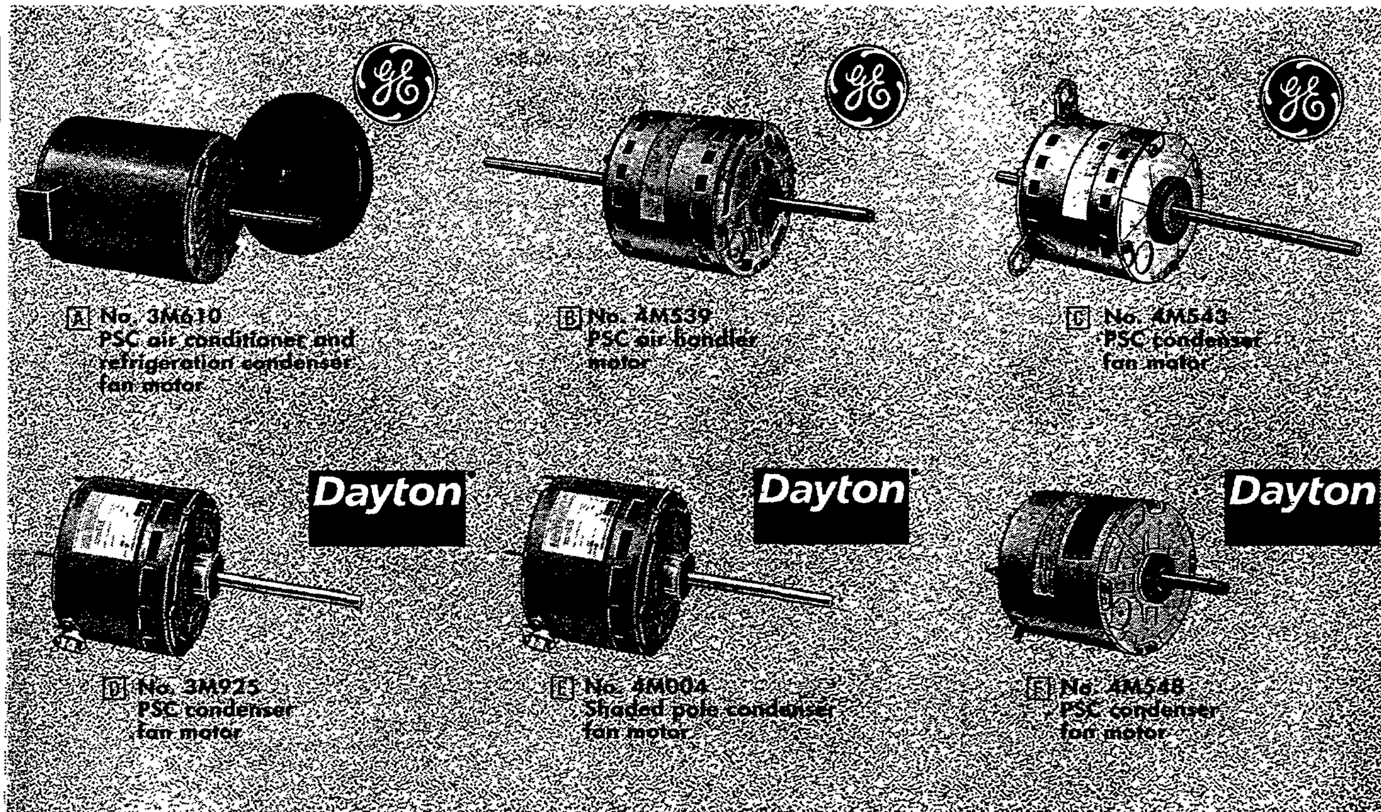
DIRECT OEM REPLACEMENT MOTORS



ORDERING DATA

Key	Bearings	Mounting	Encl.	NEMA Frame	Body Dia.	Shaft Dimensions Dia. x Length	Length Less Shaft	Rotation	Brand	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
A	Sleeve	Ring, 2 1/4" dia, 4 1/4" OC	OPAO	42YZ	5"	1/2 x 8 1/2" ea	4 5/8"	CW-VFLE	Dayton	**3M883**	$106.00	**$81.05**	9.0	5M003	$4.25
B	Ball	Band	OPAO	48Y	5 5/8	1/2 x 3 3/16	4 9/16	CW-VFSE	Dayton	**4M141**	147.00	**112.35**	14.0	5M003	4.25
B	Ball	Band	OPAO	48Y	5 5/8	1/2 x 3 7/8	5 1/16	CW-VFSE	Dayton	**3M824**	167.00	**127.60**	16.0	5M007	7.72
C	Ball	Rigid	OPDPF	56Y	6 3/8	5/8 x 1 1/2	9 5/16	CW-VFSE	Dayton	**4K038**	173.00	**132.25**	20.0	Included	
C	Ball	Rigid	OPDPF	56Y	6 3/8	5/8 x 1 1/2	9 5/16	CW-VFSE	Dayton	**4K039**	210.00	**160.75**	21.0	Included	
D	Sleeve	Lug 6 3/4" dia, BC	OPAO	42YZ	5	1/2 x 2 1/4	4 3/16	CW-VFSE	Dayton	**4M248**	78.00	**59.00**	6.2	None	
E	Sleeve	Band	OPAO	—	5 1/8	1/2 x 3	3 9/16	CW-VFSE	Dayton	**4M984**	69.00	**52.15**	6.0	None	
E	Sleeve	Band	OPAO	—	5 1/8	1/2 x 3	3 9/16	CW-VFSE	Dayton	**4M985**	72.00	**54.40**	6.0	None	
E	Sleeve	Band	OPAO	—	5 1/8	1/2 x 2 11/16	4 1/16	CW-VFSE	Dayton	**4M986**	74.00	**55.95**	6.0	None	
F	Sleeve	Ring	OPAO	48YZ	5 5/8	1/2 x 2 1/2	5 7/8	CW/CCW	Dayton	**3M884**	134.00	**102.40**	14.0	5M005	5.36
G	Sleeve	Lug	OPAO	48YZ	5 5/8	1/2 x 2 13/16	4 19/32	CW-VFSE	GE (3160)	**4M283**	108.00	**65.65**	12.0	6X652	4.49
H	Sleeve	Ring/Stud	OPAO	48YZ	5	1/2 x 3 1/2	5 3/16	CW-VFSE	GE (2981)	**4M547**	90.00	**55.75**	10.0	None	
J	Sleeve	Band	OPAO	48YZ	5 5/8	1/2 x 2 3/4	4 3/8	CW-VFSE	Dayton	**3M821**	117.00	**89.40**	12.0	5M003	4.25
K	Sleeve	Band	OPAO	48YZ	5 5/8	1/2 x 2 3/4	4 1/2	CW-VFSE	GE (3158)	**4M537**	115.00	**69.90**	11.0	6X653	4.49
L	Sleeve	Lug	OPAO	48YZ	5 5/8	1/2 x 3	5 3/32	CW-VFSE	GE (3159)	**4M282**	133.00	**80.85**	13.0	6X652	4.49
M	Sleeve	Lug	OPAO	48YZ	5 5/8	1/2 x 3	5 19/32	CW/CCW	GE (3066)	**4M034**	146.00	**88.70**	14.0	6X653	4.49
N	Sleeve	Band	OPAO	48YZ	5 5/8	1/2 x 3	4 7/16	CCW-VFSE	GE (3123)	**4M032**	141.00	**85.75**	13.0	6X653	4.49
P	Sleeve	Lug	OPAO	48YZ	5 5/8	1/2 x 3	3 31/32	CW-VFSE	GE (3161)	**4M538**	122.00	**74.15**	14.0	6X653	4.49

DIRECT OEM REPLACEMENT MOTORS



A No. 3M610 PSC air conditioner and refrigeration condenser fan motor

B No. 4M539 PSC air handler motor

C No. 4M543 PSC condenser fan motor

D No. 3M925 PSC condenser fan motor

E No. 4M004 Shaded pole condenser fan motor

F No. 4M548 PSC condenser fan motor

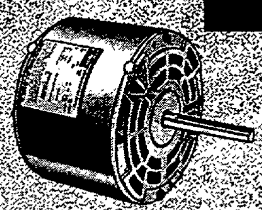
For Additional Information About Motors on This Spread See Page 82

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

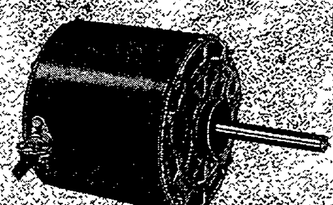
SPECIFICATIONS AND

Key	OEM Motor	Replaces	HP	Nameplate RPM	Volts	Hz	Full-Load Amps at Nameplate Volts
A	Carrier	Carrier HC445L230; GE 5KCP39PG190S; 5KCP39PG361S; Universal 655; Fasco D804	1/2	1075	208-230	60/50	4.0
B	Carrier	GE 5KCP39NGP032S; 5KCP39NGJ515S	1/2	1075/4-Spd	115	60	7.7
C	Carrier	GE 5KCP39MGP041S; 5KCP39MGB284S	1/2	1075/3-Spd	208-230	60	2.9
D	Coleman, Friedrich, G&S, Rheem, York	Emerson K8008	1/3	1075/2-Spd	230	60	2.2
E	Coleman, Friedrich, G&S, Rheem, York	Emerson K8009	1/4	1075/2-Spd	230	60	2.0
F	Copeland	GE 5KSP39FG4144S	1/6	1550	230	60	2.6
G	Copeland	050-0238-00; K55BZY-1439, 5KCP39GG3537S; Emerson K6124	1/4	1550	230	60	2.1
H	Copeland	GE 5KCP39PG3224S; 5KCP39PG915S, 5KCP39PGC092S; Universal 558	1/3	825	230	60	2.4
J	Copeland	GE 5KCP39KGB906T; 5KCP32KG175S, 5KCP32KG259S	1/3	1625	230	60/50	3.2
K	Fedders	Fasco D1016; GE 2090; 5KCP29GK4566T; Universal 515	1/4	1100	230	60	1.6
L	Fedders	S199-00011-001; S199-00011-002; K63TXMR1109; 5KCP45PG133T; Emerson K2328	3/4	1075	208-230	60	4.0
M	First Company	GE 5KSP29HK1672S; 5KCP29FK630S	1/5	1550/3-Spd	208-230	60	2.1
N	Friedrich	GE 3056, 5KCP39LGK010T; 5KCP39LGM011T, 5KCP39MGB109S; 5KCP39MG9679S; 5KCP39MG7145S; 5KCP39LGC720S, 5KCP39LGD804S, 5KCP39KGE992S; 5KCP39MG9096T; Fasco D868; Universal 118	1/3	1075/5-Spd	230	60	1.9

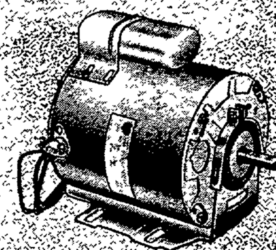
DIRECT OEM REPLACEMENT MOTORS



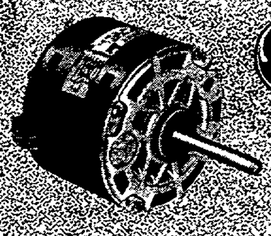
G No. 4M003
PSC condenser fan motor



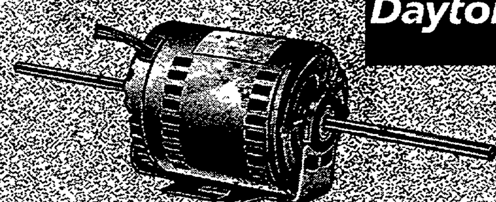
H No. 3M611
PSC air conditioner and refrigeration condenser fan motor



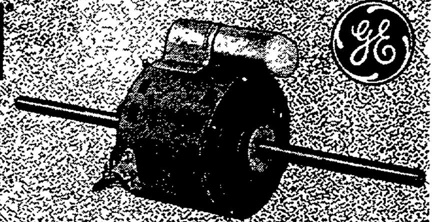
J No. 4M549
PSC outdoor fan and blower motor



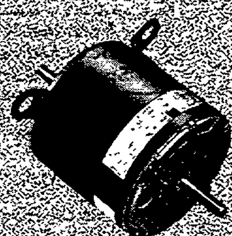
K No. 4M028
PSC condenser fan motor



L No. 3M825
PSC air conditioner motor



M No. 4M182
PSC fan coil motor



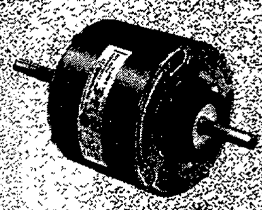
N No. 4M031
PSC room air conditioner motor

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

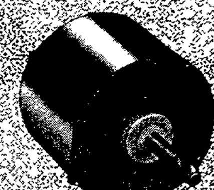
ORDERING DATA

Key	Bearings	Mounting	Encl.	NEMA Frame	Body Dia.	Shaft Dimensions Dia. x Length	Length Less Shaft	Rotation	Brand	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
A	Ball	Band	OPAO	48YZ	5 5/8	1/2 x 3 1/2	7 19/32"	CW-VFSE	GE (3132)	**3M610**	$167.00	**$101.45**	20.0	6X655	$5.38
B	Sleeve	Band	OPAO	48YZ	5 5/8	1/2 x 3 3/4 & 7 1/4	6 3/16	CCW-VFLE	GE (3162)	**4M539**	157.00	**95.40**	18.0	6X655	5.38
C	Sleeve	Lug	OPAO	48YZ	5 5/8	1/2 x 7 & 2 13/16	5 1/2	CCW-VFLE	GE (3166)	**4M543**	140.00	**85.05**	17.0	4M875	7.70
D	Sleeve	Stud	OPAO	48YZ	5 5/8	1/2 x 5	4 13/16	CW/CCW	Dayton	**3M925**	129.00	**98.60**	12.0	5M003	4.25
E	Sleeve	Stud	OPAO	48YZ	5 5/8	1/2 x 5	4 13/16	CW/CCW	Dayton	**4M004**	121.00	**92.50**	12.0	5M003	4.25
F	Sleeve	Band	OPAO	48YZ	5 5/8	1/2 x 2 1/2	4 29/32	CCW-VFSE	GE (3051)	**4M548**	128.00	**77.80**	11.0	None	
G	Sleeve	Band	OPAO	48YZ	5 5/8	1/2 x 3	4 1/16	CCW-VFSE	Dayton	**4M003**	118.00	**90.20**	13.0	Included	
H	Ball	Band	OPAO	48YZ	5 5/8	1/2 x 3 1/2	5 11/16	CCW-V[illegible]E	GE (3005)	**3M611**	157.00	**95.40**	18.0	6X657	7.73
J	Sleeve	Cradle	OPAO	48YZ	5 5/8	1/2 x 1 1/2	7 13/32	CCW-VFSE	GE (3124)	**4M549**	162.00	**98.45**	18.0	Included	
K	Sleeve	Ring	OPAO	42YZ	5	1/2 x 3 1/2	5 13/32	CW-VFSE	GE (2090)	**4M028**	138.00	**85.50**	9.0	6X653	4.49
L	Sleeve	Cradle	OPAO	56Z	6 5/8	5/8 x 7 5/8 ea	8 7/8	CCW-VFLE	Dayton	**3M825**	252.00	**192.75**	34.0	5M006	6.41
M	Sleeve	Ring	OPAO	42YZ	5	1/2 x 6 ea	4 29/32	CCW-VFLE	GE (2984)	**4M182**	150.00	**92.90**	9.5	Included	
N	Sleeve	Lug	TEAO	48	5 5/8	1/2 x 2 1/2 & 2 1/4	5 3/32	CCW-VFLE	GE (3056)	**4M031**	148.00	**89.95**	15.0	6X653	4.49

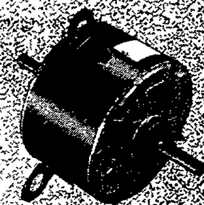
DIRECT OEM REPLACEMENT MOTORS



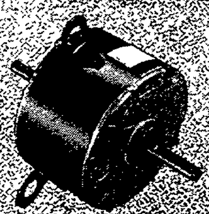
A No. 4M035
PSC room air conditioner motor



B No. 4M013
Shaded pole refrigeration condenser fan motor

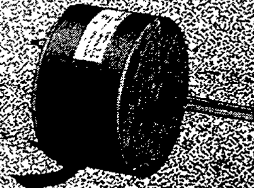


C No. 4M551
PSC room air conditioner motor

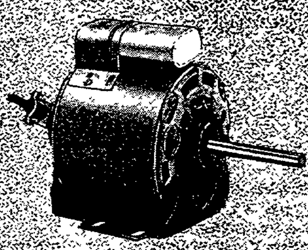


D No. 4M552
PSC room air conditioner motor

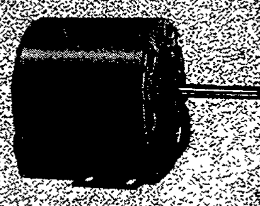
E No. 4M029
PSC room air conditioner motor



F No. 4M287
PSC air moving motor



G No. 3M612
PSC air conditioner and refrigeration condenser motor



H No. 4M012
PSC air conditioner and refrigeration condenser motor

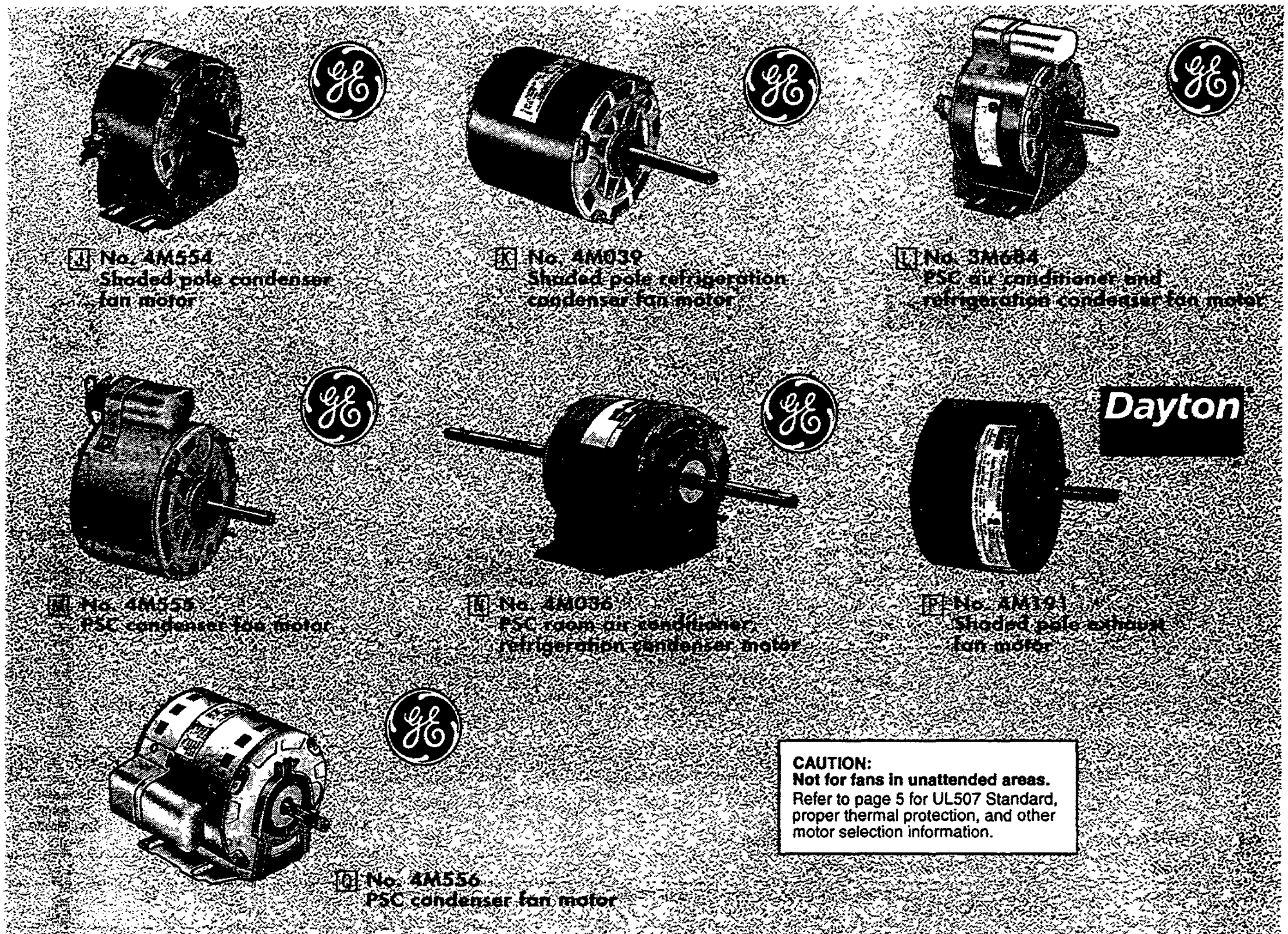
For Additional Information About Motors on This Spread, See Page 82

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

SPECIFICATIONS AND

Key	OEM Motor	Replaces	HP	Nameplate RPM	Volts	Hz	Full-Load Amps at Nameplate Volts
A	Frigidaire	Emerson K4340; Fasco D891, GE 5KCP39HG9762S; 5KCP39HGA857T	1/3	1420/3-Spd	230	60	3.0
B	GE	GE 5KSP29DK1728S, 5KSP29FK2458S; 5KSP29FK2763T, Universal 492; 598	1/8	1550	230	60	1.9
C	GE	GE 5KCP39DGK013T, 5KCP39EG5967S	1/5	1075/3-Spd	265	60	1.3
D	GE	GE 5KCP39DGK014S; 5KCP39EG5480S	1/5	1075/4-Spd	230	60	1.5
E	Gibson-Belding, Kelvinator	Fasco D852; Franklin 80431; GE 5KCP39DGK136T, 3068	1/5	1075/3-Spd	230	60	1.3
F	Goodman	GE 5KCP39BGK335S	1/6	1075	208-230	60	1.0
G	Hill Refrigeration	GE 5KCP39KG1369S, Fasco D801; Universal 160	1/3	1625	208-230	60/50	2.9
H	Hill Refrigeration	GE 5KCP39PGC030S; 5KCP39PGC910S; Hill PP19162G; A.O. Smith OHR1106	1	1075	208-230	60	7.1/6.4
J	Hussman	GE 5KSP39DG4220S	1/8	1550	230	60	2.1
K	Hussman	GE 5KSP39FG4771S; Fasco D807; Universal 174	1/6	1550	208-230	60	2.5
L	Hussman	GE 5KCP39GG3611AS; Fasco D805; A.O. Smith OHS1016	1/5	1075	230	60	1.7
M	Hussman	GE 5KCP39GG5606S	1/5	1075	208-230	60	1.7
N	Intertherm	Fasco D871; GE 5KCP39PG502S; 5KCP39PG577T; 5KCP39PGH508T, Universal 428	1	1625	230	60	6.4
P	Jenn Air	07704D	1/12	1450	115	60	3.1
Q	Kramer Trenton	GE 5KCP39KGC100T; 5KCP35KG144S; 5KCP35KG554S	1/4	1075	115/208-230	60/50	3.4/1.7

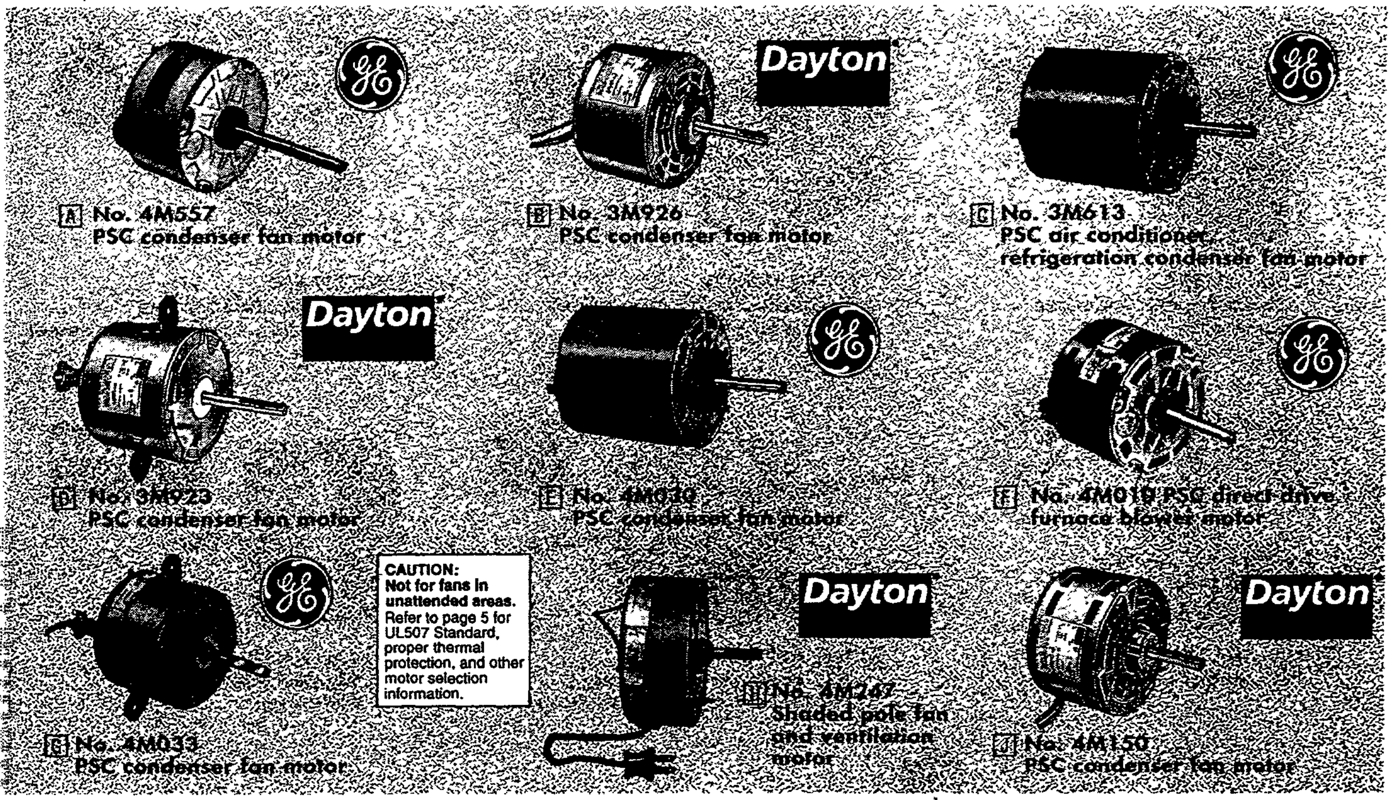
DIRECT OEM REPLACEMENT MOTORS



ORDERING DATA

Key	Bearings	Mounting	Encl.	NEMA Frame	Body Dia.	Shaft Dimensions Dia. x Length	Length Less Shaft	Rotation	Brand	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
A	Sleeve	Ring	OPAO	48YZ	5 5/8"	1/2 x 3 5/8 & 2	5 11/16"	CCW-VFLE	GE (3593)	**4M035**	$157.00	**$95.40**	13.0	6X653	$4.49
B	Sleeve	Band	OPAO	42YZ	5	1/2 x 2 1/2	4 19/32	CW-VFSE	GE (2742)	**4M013**	84.00	**52.05**	8.0	None	
C	Sleeve	Lug	OPAO	48YZ	5 5/8	1/2 x 2 & 2 1/8	4 11/16	CW-VFLE	GE (3077)	**4M551**	123.00	**88.70**	11.0	6X652	4.49
D	Sleeve	Lug	OPAO	48YZ	5 5/8	1/2 x 2 & 2 1/8	4 11/16	CW-VFLE	GE (3078)	**4M552**	140.00	**91.75**	11.0	6X652	4.49
E	Sleeve	Lug	OPAO	48YZ	5 5/8	1/2 x 4 11/16 ea.	4 5/16	CCW-VFLE	GE (3068)	**4M029**	157.00	**95.40**	13.0	Included	
F	Sleeve	Stud	TEAO	48YZ	5 5/8	1/2 x 3 5/16	4 3/16	CW-VFSE	GE (3216)	**4M287**	113.00	**68.70**	12.0	6X653	4.49
G	Sleeve	Cradle	OPAO	48YZ	5 5/8	1/2 x 3 1/2	5 19/32	CCW-VFSE	GE (3001)	**3M612**	148.00	**89.95**	17.0	Included	
H	Ball	Cradle	OPAO	48YZ	5 5/8	1/2 x 3 1/4	6 13/32	CW-VFSE	GE (3067)	**4M012**	250.00	**152.00**	21.0	6X658	8.82
J	Sleeve	Cradle	OPAO	48YZ	5 5/8	1/2 x 1 1/2	4 19/32	CCW-VFSE	GE (3011)	**4M554**	141.00	**85.70**	13.0	None	
K	Sleeve	Stud	OPAO	48YZ	5 5/8	1/2 x 1 1/2	4 29/32	CCW-VFSE	GE (3057)	**4M039**	139.00	**84.50**	13.0	None	
L	Sleeve	Cradle	OPAO	48YZ	5 5/8	1/2 x 2 1/2	4 29/32	CCW-VFSE	GE (3009)	**3M684**	151.00	**91.75**	13.0	Included	
M	Sleeve	Stud	OPAO	48YZ	5 5/8	1/2 x 2 1/2	4 29/32	CCW-VFSE	GE (3012)	**4M555**	154.00	**93.60**	12.0	Included	
N	Ball	Cradle	OPAO	56Z	6 3/8	1/2 x 5 & 9 1/8	6 13/32	CW-VFLE	GE (3594)	**4M036**	228.00	**138.55**	21.0	6X655	5.38
P	Sleeve	Band	OPAO	—	4 3/8	3/8 x 1 1/2	3 9/16	CCW-VFSE	Dayton	**4M191**	75.00	**56.70**	4.2	None	
Q	Ball	Cradle	OPAO	48YZ	5 5/8	1/2 x 2	6 13/32	CW-VFSE	GE (3128)	**4M556**	164.00	**99.70**	16.0	Included	

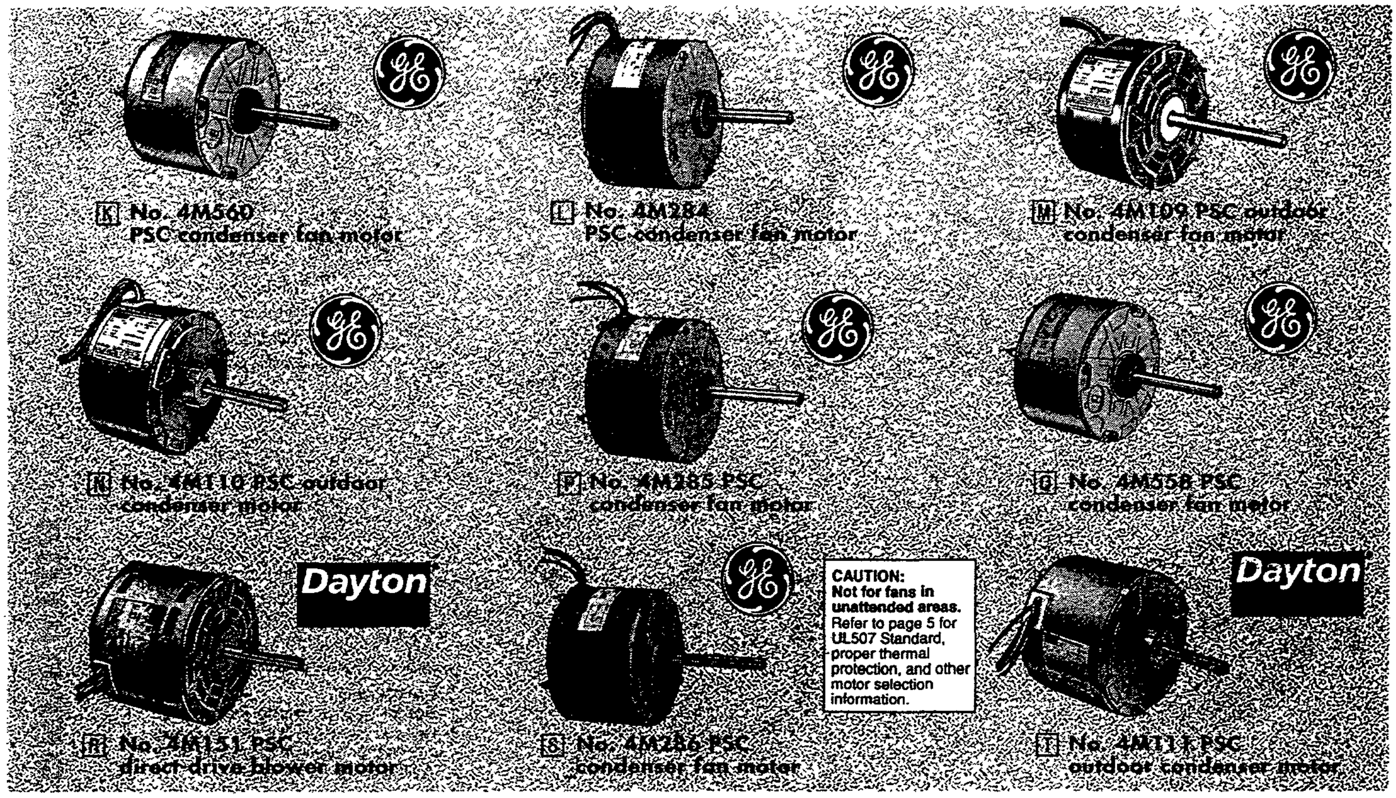
DIRECT OEM REPLACEMENT MOTORS



SPECIFICATIONS AND

Key	OEM Motor	Replaces	HP	Nameplate RPM	Volts	Hz	Full-Load Amps at Nameplate Volts
A	Lennox	GE 5KCP39CGP070S; 5KCP39CGM718S	1/6	1075	208-230	60	1.0
B	Lennox	Lennox P-8-2702; K55BWE1351; S3004; Fasco D814; Johnstone S88261; Emerson K8054; GE 3004	1/4	1075	230	60	1.9
C	Lennox	Lennox P-8-9080; GE 5KCP39PG3490S; 5KCP39PG9701S; Marathon X209; Johnstone S-87-957; Fasco D2017; D2817; Universal 117	1/3	825	230	60	3.2
D	Lennox	Lennox P-8-8041; K55FCM3264; OLG1036; 5KCP39HGD766T; 3041; HD9530S; Fasco D816; Emerson K7994	1/3	1050	230	60	2.2
E	Lennox	GE 5KCP39NGC119S	1/3	825	230	60	2.5
F	Lennox	GE 5KCP39HG9546S; 5KCP39HGK020T	1/3	1075/4-Spd	208-230	60	2.3
F	Lennox	GE 5KCP39HG9174S, P-8-7505; K55HXENB8874; Fasco 7126-0107; D812; Marathon 48A11650; Johnstone S88-257; Universal 565	1/3	1075/4-Spd	115	60	6.0
G	Lennox	Lennox P-8-8041; S-3044; Fasco D816; GE 5KCP39HG9530S; 5KCP39HGD766T; Marathon X227; Universal 681	1/3	1075	230	60	2.2
H	Penn Ventilator	Penn Z-6; Fasco D340	1/40	1050	115	60	0.9
H	Penn Ventilator	Penn Z-8; Fasco D1036	1/20	1050	115	60	2.0
J	Rheem / Ruud	Rheem 51-20671-01; F55HXCWT-1579; Johnstone S88263; Emerson K3484	1/8	1075	230	60	1.0
K	Rheem / Ruud	GE 5KCP39GGN333T; 5KCP39GGK789S; 5KCP39GGD121S; Emerson K9735; A.O. Smith ORM1008; Rheem 20760-11; 2076001; Universal 542	1/8	825	208-230	60	1.2
L	Rheem / Ruud	GE 5KCP39BGN253S; 5KCP39BGP085S	1/6	1075	208-230	60	0.9
M	Rheem / Ruud	Rheem 51-20675-01; Emerson KA55HXMPT-6557	1/6	1075	208-230	60	0.9
N	Rheem / Ruud	Rheem 51-20682-01; Emerson KA55HXMPZ-6560	1/5	1075	208-230	60	1.3
P	Rheem / Ruud	GE 5KCP39CGN409S; 5KCP39CGK082S; 5KCP39CGP088S	1/5	1075	208-230	60	1.0
Q	Rheem / Ruud	GE 5KCP39CGN330T, 5KCP39CGK787S; 5KCP39CGE717S, Emerson K136; A.O. Smith 0RM1016; Rheem 20679-11; 20679-01	1/5	1075	208-230	60	1.7
R	Rheem / Ruud	51-20550-01; KA55HXJYZ-5490; Emerson K1549	1/4	1075/3-Spd	115	60	4.3
S	Rheem / Ruud	GE 5KCP39FGN407S; 5KCP39FGK074S; 5KCP39FGP087S	1/3	1075	208-230	60	2.0
T	Rheem / Ruud	Rheem 51-21189-01; Emerson KA55HZRGR-7898	1/3	1075	208-230	60	2.0

DIRECT OEM REPLACEMENT MOTORS

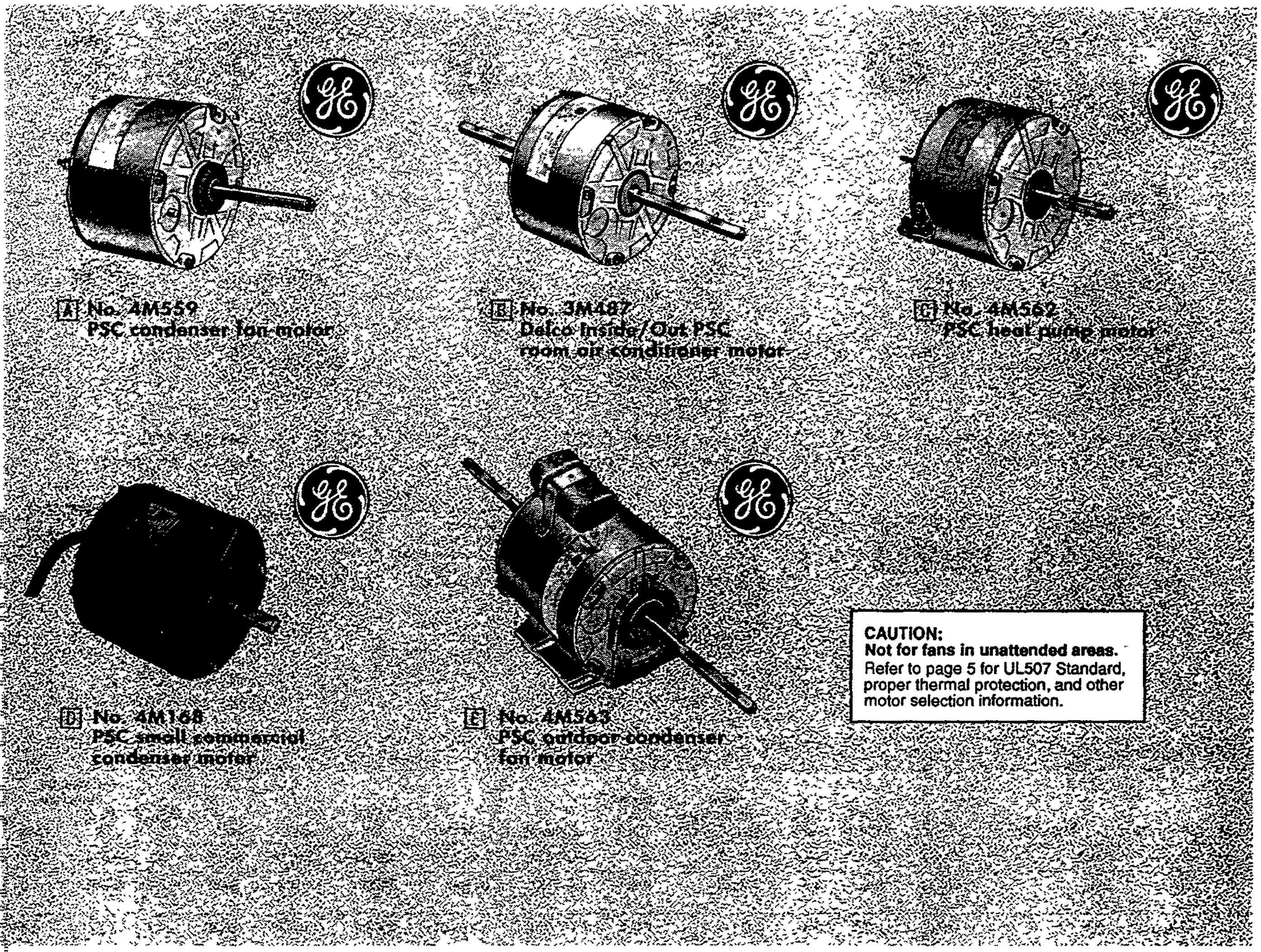


ORDERING DATA

Key	Bearings	Mounting	Encl.	NEMA Frame	Body Dia.	Shaft Dimensions Dia. x Length	Length Less Shaft	Rotation	Brand	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
A	Sleeve	Band	TEAO	48YZ	5 5/8"	1/2 x 5"	4"	CW-VFSE	GE (3215)	**4M557**	$101.00	**$61.40**	9.7	6X653	$4.49
B	Sleeve	Ring	OPAO	48YZ	5 5/8	1/2 x 3	4 7/8	CW-VFSE	Dayton	**3M926**	110.00	**84.05**	11.0	5M002	4.25
C	Sleeve	Ring	OPAO	48YZ	5 5/8	1/2 x 3	6 29/32	CW-VFSE	GE (3050)	**3M613**	147.00	**89.30**	18.0	6X652	4.49
D	Sleeve	Lug	TEAO	48YZ	5 5/8	1/2 x 3 3/4	4 9/16	CW-VFSE	Dayton	**3M923**	133.00	**101.65**	15.0	5M003	4.25
E	Ball	Ring	OPAO	48YZ	5 5/8	1/2 x 3	6 29/32	CW-VFSE	GE (3591)	**4M030**	190.00	**115.45**	16.0	6X652	4.49
F	Sleeve	Ring	OPAO	48YZ	5 5/8	1/2 x 2 1/2	5 13/32	CW-VFSE	GE (3087)	**4M010**	154.00	**93.60**	13.0	6X653	4.49
F	Sleeve	Ring	OPAO	48YZ	5 5/8	1/2 x 2 1/2	5 3/32	CW-VFSE	GE (3082)	**4M169**	151.00	**91.80**	9.5	6X653	4.49
G	Sleeve	Lug	TEAO	48YZ	5 5/8	1/2 x 3 1/4	5 3/32	CW-VFSE	GE (3592)	**4M033**	135.00	**82.05**	13.0	6X653	4.49
H	Sleeve	Stud	OPAO	42YZ	5	3/8 x 1 1/2	3 1/4	CW-VFSE	Dayton	**4M246**	67.00	**50.70**	4.5	None	
H	Sleeve	Stud	OPAO	42YZ	5	3/8 x 1 11/16	3 1/4	CW-VFSE	Dayton	**4M247**	72.00	**54.45**	4.5	None	
J	Sleeve	Stud	OPAO	48Y	5 5/8	1/2 x 4	4 1/16	CW-VFSE	Dayton	**4M150**	120.00	**76.40**	11.0	5M003	4.25
K	Sleeve	Stud	TEAO	48YZ	5 5/8	1/2 x 3 3/4	4 3/16	CW-VFSE	GE (3155)	**4M560**	126.00	**76.55**	12.0	6X653	4.49
L	Sleeve	1/4" studs & holes	TEAO	48YZ	5 5/8	1/2 x 3 3/16	4 1/16	CW-VFSE	GE (3222)	**4M284**	96.00	**58.35**	12.0	6X651	4.49
M	Sleeve	Stud	OPAO	48YZ	5 5/8	1/2 x 4 11/16	3 9/16	CW-VFSE	Dayton	**4M109**	100.00	**76.45**	9.2	5M001	4.25
N	Sleeve	Stud	OPAO	48YZ	5 5/8	1/2 x 3 1/4	4 1/16	CW-VFSE	Dayton	**4M110**	105.00	**80.25**	10.0	5M001	4.25
P	Sleeve	1/4" studs & holes	TEAO	48YZ	5 5/8	1/2 x 4	4 3/16	CW-VFSE	GE (3220)	**4M285**	126.00	**76.55**	12.0	6X651	4.49
Q	Sleeve	Stud	TEAO	48YZ	5 5/8	1/2 x 3 1/4	4 3/16	CW-VFSE	GE (3153)	**4M558**	127.00	**77.20**	9.6	6X651	4.49
R	Sleeve	Stud	OPAO	48Y	5 5/8	1/2 x 3	4 5/16	CW-VFSE	Dayton	**4M151**	110.00	**83.95**	13.0	5M003	4.25
S	Sleeve	1/4" studs & holes	TEAO	48YZ	5 5/8	1/2 x 4	4 1/2	CW-VFSE	GE (3221)	**4M286**	141.00	**85.70**	11.0	6X653	4.49
T	Sleeve	Stud	TEAO	48YZ	5 5/8	1/2 x 2 1/4	4 13/16	CW-VFSE	Dayton	**4M111**	135.00	**86.05**	13.0	5M003	4.25

SEE WARRANTY INFORMATION ON PAGE OPPOSITE INSIDE BACK COVER

DIRECT OEM REPLACEMENT MOTORS



A No. 4M559
PSC condenser fan motor

B No. 3M487
Delco Inside/Out PSC room air conditioner motor

C No. 4M562
PSC heat pump motor

D No. 4M168
PSC small commercial condenser motor

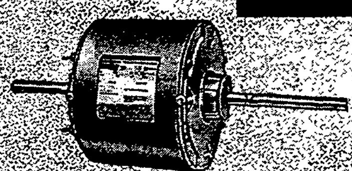
E No. 4M563
PSC outdoor condenser fan motor

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

SPECIFICATIONS AND

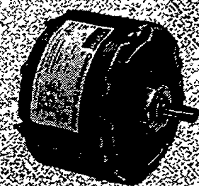
Key	OEM Motor	Replaces	HP	Nameplate RPM	Volts	Hz	Full-Load Amps at Nameplate Volts
A	Rheem/Ruud	GE 5KCP39FGN329T; 5KCP39FGK786S; 5KCP39GGE879S; A.O Smith ORM1036; Rheem 21185-11; 21185-01; Universal 444	1/3	1075	208-230	60	1.8
B	Sears/Whirlpool	GE 5KCP39GGB158T; 5KCP39GGA332S	1/3	1075/3-Spd	208-230	60/50	1.9
C	Snyder/Arco	GE 5KCP39DGP089S; 5KCP39DGK093S	1/10	825	208-230	60	0.7
D	Trane/GE	GE 5KCP29BK4074S; 5KCP29CK4629S; 5KSP29DK1728S; 5KSP29FK2458AS; Trane 21A131098P01; 21A135055P01; 21A120676P01; 21A135217P01; GE WW94X236; WW94X381; Fasco D1050	1/6	1650	200-230	60	0.9
E	Westinghouse	GE 5KCP39GGB907T; 5KCP32GG167S; 5KCP32GG210S; 5KCP32GG258S	1/3	1625	208-240/220	60/50	2.5
F	Whirlpool	997346; K55RGM-7901; Emerson RAK8558	1/3	1075/3-Spd	230	60	1.9
G	York	GE 5KCP39BGP931S	1/8	1075	208-230	60/50	0.8
H	York (Borg Warner)	Emerson F47HXBGM927; K1124; Fasco D1042; GE 5KCP29GK4685T	1/5	1075	230	60	1.4
J	York (Borg Warner)	Emerson F47HXBGM927; K1124; Fasco D1042; GE 5KCP29GK4685T	1/5	1075	208-230	60/50	1.3
G	York	GE 5KCP39JFP984S	1/4	850	208-230	60/50	1.6
K	York	GE 5KCP39NGP941S	1/2	1110	115	60	8.8
G	York	GE 5KCP39LGN418S; Marathon W48A11T388	1/2	1090	208-230	60	2.3
K	York	GE 5KCP39PGN812S; A.O. Smith F48SU6V15	1	1075	115	60	13.0

Dayton

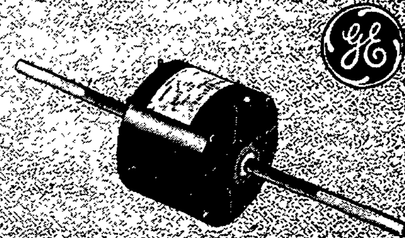


F No. 4M005
PSC air conditioner fan motor

Dayton

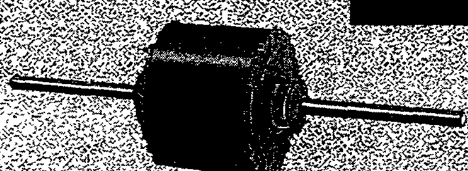


G No. 1D209
PSC condenser fan motor



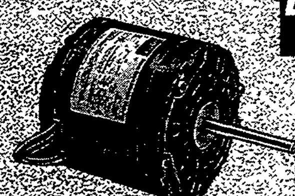
H No. 4M027
PSC room air conditioner motor

Dayton



J No. 4M152
PSC room air conditioner motor

Dayton



K No. 1D207
PSC blower motor

For Additional Information About Motors on This Spread See Page 82

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

ORDERING DATA

Key	Bearings	Mounting	Encl.	NEMA Frame	Body Dia.	Shaft Dimensions Dia. x Length	Length Less Shaft	Rotation	Brand	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
A	Sleeve	Stud	TEAO	48YZ	5 5/8"	1/2 x 3 3/4"	4 1/2"	CW-VFSE	GE (3154)	**4M559**	$101.00	**$61.40**	12.0	6X653	$4.49
B	Sleeve	Stud	OPAO	48YZ	5 5/8	1/2 x 4 3/4 & 5 3/16	4 3/32	CCW-VFLE	GE (3070)	**3M487**	157.00	**95.40**	13.0	6X653	4.49
C	Sleeve	Stud	TEAO	48YZ	5 5/8	1/2 x 3	3 13/32	CW-VFSE	GE (3219)	**4M562**	119.00	**72.35**	9.7	6X653	4.49
D	Sleeve	Band	TEAO	42YZ	5	1/2 x 1 1/4	4 3/32	CW-VFSE	GE	**4M168**	120.00	**74.30**	8.0	6X652	4.49
E	Sleeve	Cradle	OPAO	48YZ	5 5/8	1/2 x 6 & 6 5/8	6 29/32	CCW-VFLE	GE (3122)	**4M563**	167.00	**101.50**	16.0	Included	
F	Sleeve	Stud	TEAO	48YZ	5 5/8	1/2 x 4 9/16 & 3 3/4	5 1/16	CCW-VFLE	Dayton	**4M005**	134.00	**97.35**	15.0	5M003	4.25
G	Sleeve	Stud	TEAO	48Y	5 5/8	1/2 x 1 7/16	4 1/16	CCW-VFSE	Dayton	**1D210**	127.00	**101.05**	9.0	5M002	4.25
H	Sleeve	Band	OPAO	42YZ	5	1/2 x 5 5/16 ea	4 29/32	CW-VFLE	GE (2091)	**4M027**	135.00	**83.60**	11.0	6X653	4.49
J	Sleeve	Band	OPAO	42YZ	5	1/2 x 5 5/8 ea	5 1/8	CW-VFLE	Dayton	**4M152**	102.00	**85.20**	14.0	5M003	4.25
G	Sleeve	Stud	TEAO	48Y	5 5/8	1/2 x 2 3/4	4 13/16	CCW-VFSE	Dayton	**1D211**	131.00	**104.20**	13.0	5M003	4.25
K	Sleeve	Band	OPAO	48Y	5 5/8	1/2 x 4 1/2	4 13/16	CW-VFSE	Dayton	**1D208**	152.00	**120.90**	15.0	5M006	6.41
G	Sleeve	Stud	TEAO	48Y	5 5/8	1/2 x 3 1/2	4 13/16	CCW-VFSE	Dayton	**1D209**	138.00	**109.80**	15.0	5M005	5.36
K	Sleeve	Band	OPAO	48Y	5 5/8	1/2 x 3 1/2	6 1/16	CW-VFSE	Dayton	**1D207**	173.00	**137.60**	21.0	5M008	9.45

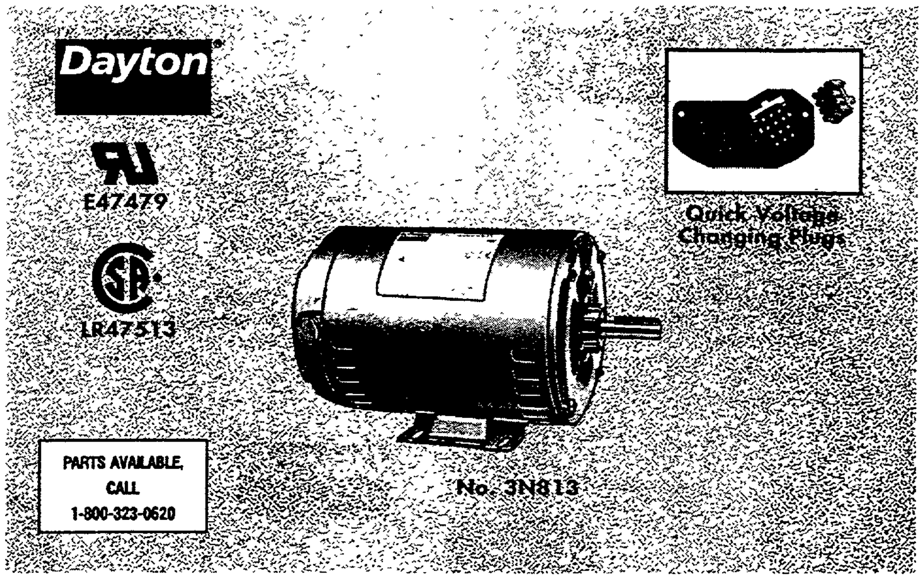
3-PHASE COMMERCIAL ROOFTOP BELT-DRIVE FAN AND BLOWER MOTORS

3-PHASE OPEN DRIPPROOF, RIGID WELDED BASE

CONTRACTOR FRIENDLY™ FEATURES

- **Three posts replace line leads for quick and easy wiring**
- **Quick voltage change plugs change voltage without major reconnection**
- **Copper windings**

Typical Uses: New and replacement use in 5 to 15 ton and larger commercial outdoor condensers.
Special Features: Quick voltage changing plug for ease of installation. Dual voltage. Water slinger on shaft.
Bearings: Double-sealed, permanent lubricated ball
Mounting: Rigid welded base
Enclosure: Open dripproof
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton

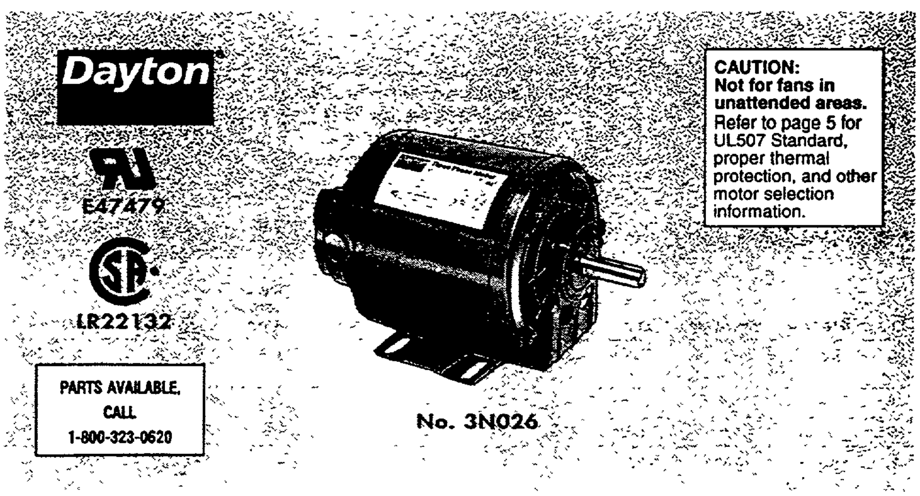


HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Length Less Shaft	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
1	1725	56	208-230/460	3.4/1.7	1.0	10"	5/8 x 1⅞"	**3N813**	$275.00	**$205.00**	24.0
1½	1725	56H	208-230/460	5.0/2.5	1.0	10½	5/8 x 1⅞	**3N814**	297.00	**221.25**	27.0
2	1725	56H	208-230/460	6.6/3.3	1.0	10¾	5/8 x 1⅞	**3N815**	327.00	**243.25**	29.0
3	1725	143T	208-230/460	8.8/4.4	1.0	11¼	7/8 x 2¼	**3N816**	366.00	**272.50**	45.0

3-PHASE OPEN DRIPPROOF, CRADLE BASE

- **NEMA service factors up to 1.35 provide a reserve margin for intermittent overloading or fluctuating (high/low) voltage conditions**
- **Operable on 60/50 Hz at same HP rating and service factor**
- **NEMA design B**

Typical Uses: Pumps, fans, blowers, machine tools, air compressors, and other moderate to hard-starting applications where 3-phase power is available.
Bearings: Double-shielded ball
Mounting: Cradle base
Enclosure: Open dripproof
Windings: Copper
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM at 60 Hz	Nameplate RPM at 50 Hz	NEMA Frame	Thermal Protection	Volts 60/50 Hz*	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Ins. Class	Stock No.	List	Each	Shpg. Wt.
1/3	1725	1425	56	None	208-220/440	1.4-1.4/0.7	1.35	66.0	A	**3N026**	$168.00	**$128.45**	18.0
1/2	3450	2850	56	Auto	208-220/440	2.2-2.4/1.2	1.25	66.0	A	**3N634**	166.00	**126.85**	20.0
1/2	1725	1425	56	None	208-220/440	2.0-2.0/1.0	1.25	72.0	A	**3N027**	193.00	**147.55**	22.0
3/4	3450	2850	56	Auto	208-220/440	2.8-3.0/1.5	1.25	70.0	A	**3N635**	193.00	**147.50**	21.0
3/4	1725	1425	56	None	208-220/440	2.8-2.7/1.4	1.25	77.0	A	**3N487**	203.00	**155.25**	23.0
1	3450	2850	56	Auto	208-220/440	3.5-3.6/1.8	1.25	77.0	A	**3N636**	221.00	**169.00**	23.0
1	1725	1425	56	None	208-220/440	3.4-3.4/1.7	1.25	78.5	A	**3N488**	231.00	**176.75**	26.0
1½	3450	2850	56	Auto	208-220/440	4.4-4.2/2.1	1.15	78.5	A	**3N637**	263.00	**201.25**	28.0
1½	1725	1425	56	None	208-220/440	4.9-4.8/2.4	1.20	81.5	A	**3N489**	273.00	**208.75**	33.0
2	3450	2850	56	Auto	208-220/440	5.8-5.6/2.8	1.15	81.5	B	**3N638**	304.00	**232.50**	31.0

(*) Operable on 50 Hz, 190/380V, at 50 Hz RPM.

3-PHASE BELT-DRIVE FAN AND BLOWER MOTORS

Typical Uses: Designed for commercial and industrial fans, air handlers, exhaust fans, blowers, and other air-moving applications.

Special Features: Cast aluminum endshields.

Bearings: Ball

Thermal Protection: None

Insulation Class: B (except No. 4N049 is Class A)

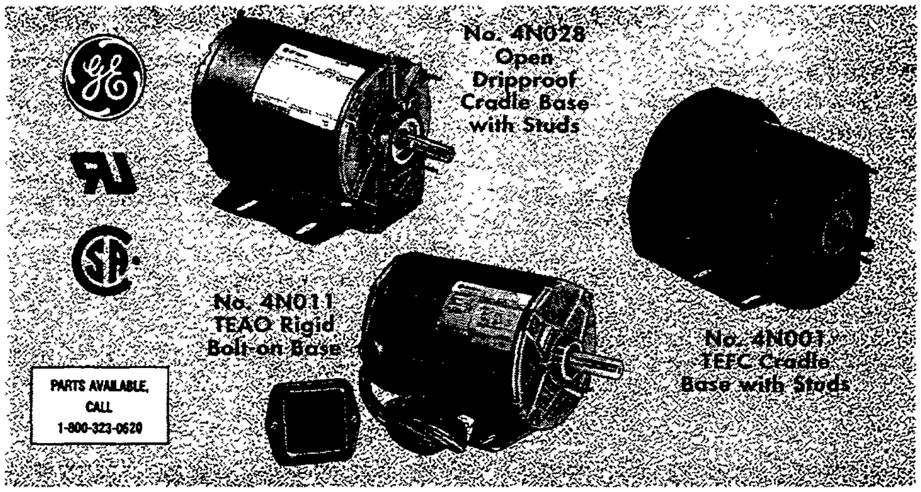
Ambient: 40°C (except No. 4N011 is 65°C)

Duty: Continuous

Rotation: CW/CCW

Finish: Gray

Brand: GE



OPEN DRIPPROOF

HP	Nameplate RPM	NEMA Frame	Enclosure	Volts 60Hz	Full-Load Amps At Nameplate Volts	Service Factor	Mounting	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/4	1725	48Z*	Op Dpf	230/460	1.4/0.7	1.35	Cradle/Stud	K275	**4N025**	$166.00	**$115.15**	14.0
1/2	1725	56	Op Dpf	203-230/460	2.1-2.2/1.1	1.25	Cradle/Stud	K381	**4N026**	216.00	**149.80**	19.0
3/4	1725	56	Op Dpf	230/460	2.8/1.4	1.25	Cradle/Stud	K277	**4N028**	241.00	**167.25**	21.0
1	1725	56	Op Dpf	208-230/460	3.4-3.2/1.6	1.15	Cradle/Stud	K278	**4N029**	253.00	**175.75**	24.0

OPEN DRIPPROOF, TWO SPEED

HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	NEMA Frame	Enclosure	Volts 60Hz	Full-Load Amps At Nameplate Volts	Service Factor	Mounting	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/2	1/6	1725/1140	56	Op Dpf	200-230	2.4/1.6	1.25	Cradle/Stud	K544	**4N047**	$346.00	**$240.25**	26.0
		1725/1140	56	Op Dpf	460	1.1/0.68	1.25	Cradle/Stud	K546	**4N049**	346.00	**240.25**	25.0
3/4	1/4	1725/1140	56	Op Dpf	200-230	3.0/1.9	1.25	Cradle/Stud	K279	**4N050**	411.00	**285.25**	32.0
		1725/1140	56	Op Dpf	460	1.3/0.9	1.25	Cradle/Stud	K280	**4N052**	411.00	**285.25**	33.0
1	1/3	1725/1140	56	Op Dpf	200-230	3.9/2.3	1.15	Cradle/Stud	K518	**4N053**	427.00	**296.25**	37.0
		1725/1140	56	Op Dpf	460	1.8/1.3	1.15	Cradle/Stud	K519	**4N055**	427.00	**296.25**	38.0
1½	1/2	1725/1140	56H	Op Dpf	200-230	5.3/3.0	1.15	Cradle/Stud	K520	**4N056**	454.00	**315.00**	48.0
		1725/1140	56H	Op Dpf	460	2.3/1.4	1.15	Cradle/Stud	K549	**4N058**	454.00	**315.00**	47.0

TOTALLY ENCLOSED

HP	Nameplate RPM	NEMA Frame	Enclosure	Volts 60Hz	Full-Load Amps At Nameplate Volts	Service Factor	Mounting	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/4	1725	48	TEFC	230/460	1.4/0.7	1.0	Cradle/Stud	K538	**4N001**	$214.00	**$148.45**	16.0
	1725	48	TEAO	230/460	1.4/0.7	1.0	Cradle/Stud	K281	**4N003**	175.00	**121.35**	14.0
	1140	56	TEAO	230/460	1.4/0.7	1.0	Cradle/Stud	K282	**4N004**	279.00	**193.75**	18.0
1/3	1725	48	TEAO	230/460	1.5/0.8	1.0	Cradle/Stud	K283	**4N005**	197.00	**136.70**	15.0
1/2	1140	56	TEFC	230/460	2.6/1.3	1.0	Cradle/Stud	K541	**4N002**	354.00	**245.75**	28.0
	1725	56	TEAO	230/460	2.2/1.1	1.0	Cradle/Stud	K284	**4N006**	229.00	**159.00**	18.0
	1140	56	TEAO	230/460	2.6/1.3	1.0	Cradle/Stud	K285	**4N007**	328.00	**227.75**	26.0
3/4	1725	56	TEAO	230/460	2.8/1.4	1.0	Cradle/Stud	K286	**4N009**	275.00	**190.75**	21.0
1	1725	56	TEAO	230/460	3.8/1.9	1.0	Cradle/Stud	K525	**4N010**	258.00	**179.00**	27.0
2	1725	145T	TEAO	208-230/460	6.5-6.6/3.3	1.0	Rigid	K1396	**4N011**†	413.00	**286.75**	33.0

(*) Nonstandard 1⅞" shaft. (†) Designed for 65°C ambient, 30" leads out 3/4-14 conduit adapter welded to shell at 3 o'clock position. Conduit box furnished with motor.

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

FAN/BLOWER MOTORS

BELT-DRIVE FAN AND BLOWER MOTORS

CAPACITOR-START, OPEN DRIPPROOF, SINGLE AND 2 SPEED

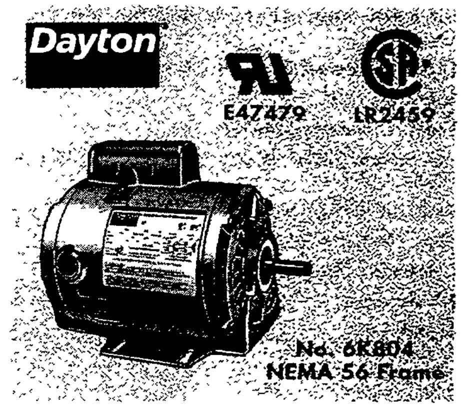
- **High starting torque**
- **Quick connect terminals**
- **Electrically reversible**
- **Copper windings**
- **Tri-voltage models operate on all three voltage systems without derating**

Typical Uses: Furnace blowers, attic exhaust fans, industrial blowers, and other similar belt-drive applications where smooth, quiet starting and running characteristics are desired.

Special Features: Single speed motors meet NEMA performance requirements at 115/208-230V, 60 Hz and are capable of operating on a 208V system.

Two speed models are specifically designed for diminishing torque, air-moving applications, such as belted or direct-drive fans and blowers.

Mounting: Cradle base
Thermal Protection: Auto
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray enamel
Brand: Dayton



SINGLE SPEED

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1/2	3450	48	115/208-230	8.6/4.3	1.25	Sleeve	A	**6K804**	$152.00	**$93.55**	17.0
3/4	3450	48	115/208-230	9.2/4.6	1.25	Sleeve	A	**5K900**	198.00	**125.05**	21.0
1	3450	56	115/208-230	11.6/5.8	1.25	Sleeve	A	**5K901**	230.00	**147.50**	24.0
1	1725	56	115/208-230	14.0/7.0	1.15	Sleeve	A	**6K157**	312.00	**200.75**	30.0
1½	3450	56	115/208-230	17.0/8.5	1.15	Ball	A	**6K830**	318.00	**208.50**	33.0

TWO SPEED

HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1/2	1/4	1725/1140	56	115	9.2/6.0	1.0	Sleeve	A	**5K529**	$216.00	**$155.00**	26.0
3/4	1/3	1725/1140	56	115	11.7/7.5	1.0	Sleeve	B	**6K050**	350.00	**243.50**	30.0
3/4	1/3	1725/1140	56	230	5.9/3.8	1.0	Sleeve	B	**6K051**	358.00	**249.00**	27.0
1	1/3	1725/1140	56	230	7.2/3.5	1.0	Sleeve	B	**6K054**	398.00	**296.50**	33.0

CAUTION: Not for fans in unattended areas.

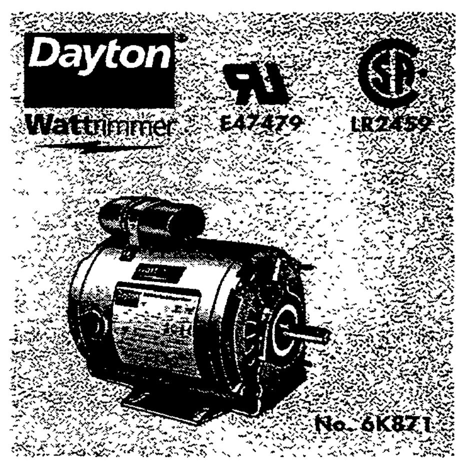
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

HIGH EFFICIENCY SPLIT-PHASE START/CAPACITOR-RUN, OPEN DRIPPROOF, SINGLE SPEED

Typical Uses: High efficiency performance in furnace blowers, and other belt-driven fan and blower applications. All models have the starting torque of split-phase motors but use less electricity when running because they are capacitor-run.

Special Features: Studs extend out shaft endshield for mounting to fan guard. Capacitor included.

Bearings: All-angle sleeve
Mounting: Cradle base
Thermal Protection: Auto
Insulation Class: A
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray enamel
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Stock No.	List	Each	Shpg. Wt.
1/4	1725	48Y*	115	3.2	1.35	**6K870**	$132.00	**$91.45**	16.0
1/3	1725	48Y*	115	4.1	1.35	**6K871**	150.00	**103.65**	19.0
1/2	1725	56Z†	115	5.2	1.25	**6K872**	202.00	**139.60**	25.0
3/4	1725	56	115	9.0	1.25	**6K857**	256.00	**177.25**	25.0

(*) NEMA 48Y frame motors have cradle base with holes and slots to match mounting dimensions of either NEMA 48 or 56 frame.
(†) NEMA 56Z frame motor has nonstandard 1/2" dia. shaft with flat and is supplied with 5/8" dia. shaft bushing.

ESTIMATED YEARLY POWER COST SAVINGS FOR HEATING/COOLING

Dayton Wattrimmer Compared to Standard Fan and Blower Motor

HP	Average Expected Watts Saved	Typical‡ Hrs. Usage per Year	Savings per Year at 5¢ per KwH	at 8¢ per KwH	at 10¢ per KwH	at 12¢ per KwH
1/4	60	2400	$8.64	$11.52	$14.40	$17.28
1/3	86	2400	12.38	16.51	20.64	24.77
1/2	82	2400	11.81	15.74	19.68	23.62
3/4	88	2400	12.67	16.90	21.12	25.34

(‡) Hours will vary depending on weather and personal preference.

BELT-DRIVE FAN AND BLOWER MOTORS

Typical Uses: Belt-drive furnace blowers, exhaust fans, circulating fans, and other similar belt-driven applications where a motor with smooth, quiet starting and running characteristics is desired.

Special Features: Single speed motors meet NEMA performance requirements at 115/208-230V, 60 Hz and are capable of operating on a 208V system. Serv-S-Line® models have studs that extend out shaft endshield for mounting fan guard.

Two speed models are specifically designed for diminishing torque, air-moving applications, such as belted or direct-drive fans and blowers.

Type: Capacitor-start

Bearings: Prelubricated ball

Enclosure: Open dripproof

Thermal Protection: Auto

Insulation Class: B

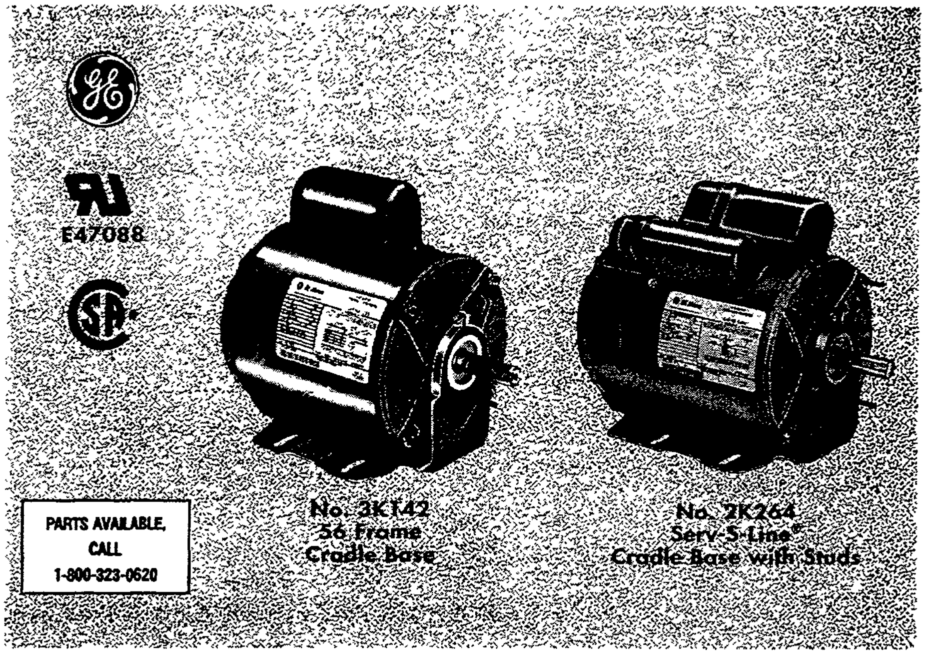
Ambient: 40°C

Duty: Continuous

Rotation: CW/CCW

Finish: Gray

Brand: GE



SINGLE SPEED

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Mounting	Shaft Dimensions Dia. x Length	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/2	3450	48	115/208-230*	8.2/4.5-4.1	1.25	Cradle	1/2 x 1 1/2"	C1152	**3K092**	$157.00	**$108.90**	20.0
	3450	48Z	115/230*	7.4/3.7	1.25	Cradle/Stud	1/2 x 2 1/4	4799	**2K250**	183.00	**126.90**	17.0
	1725	56	115/208-230*	8.6/4.1-4.3	1.25	Cradle/Stud	5/8 x 1 7/8	C1153	**3K093**	225.00	**156.25**	19.0
3/4	3450	48	115/208-230*	10.0/5.5-5.0	1.25	Cradle	1/2 x 1 1/2	C1154	**2K253**	201.00	**139.40**	18.0
	3450	56	115/208-230*	10.0/5.5-5.0	1.25	Cradle	5/8 x 1 7/8	C1155	**3K094**	205.00	**142.15**	21.0
	3450	56Z	115/230*	9.8/4.9	1.25	Cradle/Stud	1/2 x 2 1/4	4800	**2K254**	234.00	**162.50**	22.0
	1725	56	115/208-230	13.3/6.5-6.0	1.25	Cradle/Stud	5/8 x 1 7/8	C1156	**3K095**	278.00	**193.00**	30.0
	1725	56Z	115/208-230*	11.4/5.6-5.7	1.25	Cradle/Stud	5/8 x 2 1/4	4686	**6K563**	326.00	**226.25**	27.0
1	3450	56	115/208-230*	13.4/7.4-6.7	1.25	Cradle	5/8 x 1 7/8	C1157	**3K096**	239.00	**166.00**	23.0
	3450	56Z	115/230*	12.4/6.2	1.25	Cradle/Stud	5/8 x 2 1/4	4801	**2K257**	269.00	**186.75**	25.0
	1725	56	115/208-230	14.7/7.2-7.4	1.15	Cradle	5/8 x 1 7/8	C1158	**3K097**	319.00	**221.50**	30.0
	1725	56Z	115/208-230*	14.4/7.2-7.2	1.15	Cradle/Stud	5/8 x 2 1/4	4688	**6K767**	358.00	**248.50**	35.0
1 1/2	3450	56H	115/208-230	19.6/10.8-9.8	1.15	Cradle	5/8 x 1 7/8	C1159	**3K098**	312.00	**216.50**	33.0
	1725	56H	115/208-230	16.4/8.4-8.2	1.15	Cradle	5/8 x 1 7/8	C1160	**2K258†**	364.00	**252.75**	35.0
2	3450	56H	115/208-230	19.6/10.8-9.8	1.20	Cradle	5/8 x 1 7/8	C1161	**3K099†**	392.00	**272.00**	37.0
	1725	56H	115/208-230	24.6/13.6-12.3	1.15	Cradle	5/8 x 1 7/8	C1162	**2K259†**	512.00	**355.25**	58.0

TWO SPEED

HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Mounting	Shaft Dimensions Dia. x Length	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/2	**1/6**	1725/1140	56	115	8.2/3.9	1.25	Cradle/Stud	5/8 x 1 7/8"	C419	**2K261**	$346.00	**$240.25**	31.0
3/4	**1/4**	1725/1140	56	115	10.6/6.4	1.25	Cradle/Stud	5/8 x 1 7/8	C474	**2K264†**	378.00	**262.50**	40.0
		1725/1140	56	230	4.5/3.2	1.25	Cradle/Stud	5/8 x 1 7/8	C486	**2K267†**	386.00	**267.75**	42.0
1	**1/3**	1725/1140	56	115	13.8/8.4	1.15	Cradle/Stud	5/8 x 1 7/8	C1478	**3K083†**	415.00	**288.00**	43.0
		1725/1140	56	230	6.9/4.2	1.15	Cradle/Stud	5/8 x 1 7/8	C1479	**3K084†**	423.00	**293.50**	43.0

(*) Usable on 200V at 1.0 service factor. (†) Capacitor-start, capacitor-run.

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

COMMERCIAL AND RESIDENTIAL BELT-DRIVE FAN AND BLOWER MOTORS

- **Heavy 12 gauge steel base**
- **Quick connect terminal board**

Typical Uses: Fans, blowers, air circulators, and air coolers where a quiet running single or two speed motor is required.

Special Features: NEMA service factors of 1.25 to 1.4 are needed when intermittent overloading or fluctuating (high/low) voltage conditions may occur.

NEMA 42 frame is supplied with a relay and relay mounting clip instead of centrifugal switch.

NEMA 48Y frame cradles are notched for mounting in place of 48 or 56 frame cradle.

NEMA 56Z frame motors feature 1/2 x 1½" shaft with flat and are supplied with a 5/8" diameter shaft bushing.

Two speed models are specifically designed for diminishing torque, air-moving applications, such as belted or direct-drive fans and blowers.

Commercial Duty Motors: Feature higher starting torque than residential duty motors. Cooler running temperature ensures longer life performances.

Mounting: Cradle base

Thermal Protection: Auto

Shaft Diameters: NEMA 42, 3/8"; NEMA 48, 1/2", NEMA 56, 5/8"

Ambient: 40°C

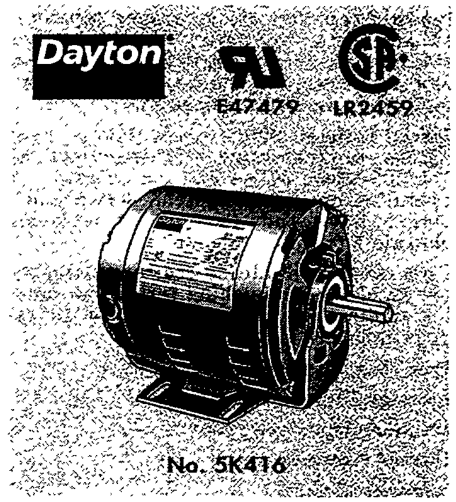
Duty: Continuous

Rotation: CW/CCW

Finish: Gray except Nos. 3K771, 6K778, and 3K772, which are black

Brand: Dayton

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



HP	Name-plate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Ins. Class	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
SPLIT-PHASE, OPEN DRIPPROOF, COMMERCIAL DUTY												
1/12	1725	42	115	2.9	1.4	Sleeve	B	3/8 x 1⅛"	**4K133**	$114.00	**$79.00**	8.8
1/6	1725	48	115	3.5	1.35	Sleeve	B	1/2 x 1½	**6K551**	104.00	**75.20**	13.0
	1725	48Y	115	3.3	1.35	Sleeve	A	1/2 x 1½	**5K906**	104.00	**71.90**	13.0
	1725	48	115/230	3.6/1.8	1.35	Ball	B	1/2 x 1½	**3K613**	122.00	**86.75**	15.0
1/4	1725	48	115	4.6	1.35	Sleeve	B	1/2 x 1½	**6K553**	112.00	**81.00**	15.0
	1725	48	115	5.4	1.0	Sleeve	A	1/2 x 1½	**5K915**	108.00	**77.70**	14.0
	1725	48	115/230	4.6/2.3	1.35	Ball	B	1/2 x 1½	**3K614**	128.00	**92.50**	15.0
	1725	48Y	115	4.4	1.35	Sleeve	A	1/2 x 1½	**5K907**	112.00	**77.45**	15.0
	1725	48Y	115	5.3	1.0	Sleeve	A	1/2 x 1½	**5K908**	108.00	**74.35**	13.0
	1725	48Y	115/208-230	5.2/2.6	1.35	Sleeve	B	1/2 x 1½	**3K091**†	120.00	**82.95**	15.0
	1725	56Z	115	5.4	1.0	Ball	A	1/2 x 1½	**6K722**	116.00	**89.65**	15.0
	1725	56Z	115	4.4	1.35	Sleeve	A	1/2 x 1½	**5K977**†	112.00	**79.25**	16.0
	1725	56Z	115	5.4	1.0	Sleeve	A	1/2 x 1½	**5K220**	108.00	**78.05**	15.0
	1725	56	115	4.4	1.35	Sleeve	A	5/8 x 1½	**5K260**	112.00	**77.45**	16.0
1/3	1725	48	115	6.8	1.0	Ball	A	1/2 x 1½	**6K744**	124.00	**96.95**	15.0
	1725	48	115	6.0	1.35	Sleeve	B	1/2 x 1½	**6K570**	130.00	**94.05**	16.0
	1725	48	115	6.8	1.0	Sleeve	A	1/2 x 1½	**5K918**	116.00	**85.25**	14.0
	1725	48	115	6.3	1.0	Sleeve	B	1/2 x 1½	**3K384**‡	118.00	**81.55**	14.0
	1725	48	115/230	6.0/3.0	1.35	Ball	B	1/2 x 1½	**3K615**	146.00	**105.55**	17.0
	1725	48Y	115	5.8	1.35	Sleeve	A	1/2 x 1½	**5K682**	130.00	**89.80**	16.0
	1725	48Y	115	6.3	1.0	Sleeve	A	1/2 x 1½	**5K909**	118.00	**81.60**	13.0
	1725	48Y	230	2.8	1.35	Sleeve	A	1/2 x 1½	**6K717**	138.00	**95.35**	17.0
	1725	48Y	115/208-230	6.6/3.3	1.35	Sleeve	B	1/2 x 1½	**4K252**†	138.00	**95.35**	19.0
	1725	56Z	115	6.0	1.0	Ball	A	1/2 x 1½	**5K413**	124.00	**97.25**	18.0
	1725	56Z	115	5.8	1.35	Sleeve	A	1/2 x 1½	**6K030**	130.00	**92.00**	17.0
	1725	56Z	115	6.0	1.0	Sleeve	A	1/2 x 1½	**5K221**	116.00	**85.65**	18.0
	1725	56	115	5.8	1.35	Sleeve	A	5/8 x 1⅞	**5K261**	130.00	**89.80**	19.0
1/2	1725	48	115	7.4	1.25	Sleeve	B	1/2 x 1½	**6K589**	182.00	**131.55**	19.0
	1725	48	115	8.8	1.0	Sleeve	A	1/2 x 1½	**6K768**	145.00	**106.30**	18.0
	1725	48	115/230	7.6/3.8	1.25	Ball	B	1/2 x 1½	**3K616**	198.00	**143.15**	20.0
	1725	48Y	115	7.0	1.25	Sleeve	A	1/2 x 1½	**5K910**	182.00	**125.80**	19.0
	1725	48Y	115/208-230	8.6/4.3	1.25	Sleeve	B	1/2 x 1½	**4K259**†	190.00	**131.30**	21.0
	1725	56Z	115	7.0	1.25	Sleeve	A	1/2 x 1½	**5K258**	182.00	**117.20**	20.0
	1725	56	115	8.6	1.0	Ball	B	5/8 x 1⅞	**6K780**	155.00	**117.85**	20.0
	1725	56	115	8.3	1.25	Sleeve	A	5/8 x 1⅞	**5K416**	182.00	**125.75**	20.0
	1725	56	115	8.2	1.0	Sleeve	A	5/8 x 1⅞	**6K399**	147.00	**101.60**	18.0
	1725	56	115	8.6	1.0	Sleeve	B	5/8 x 1⅞	**6K845**	145.00	**106.30**	20.0
	1725	56	230	4.4	1.25	Sleeve	A	5/8 x 1⅞	**6K729**	190.00	**131.30**	21.0
3/4	1725	56	115/230	11.4/5.7	1.25	Ball	B	5/8 x 1⅞	**3K617**	238.00	**170.25**	23.0
	1725	56	115/230	11.2/5.6	1.25	Sleeve	A	5/8 x 1⅞	**6K624**	230.00	**166.75**	24.0
SPLIT-PHASE, OPEN DRIPPROOF, RESIDENTIAL DUTY												
1/4	1725	48Y	115	5.3	1.35	Sleeve	A	1/2 x 1½	**3K771**†	109.00	**47.75**	13.0
1/3	1725	48Y	115	6.6	1.35	Sleeve	A	1/2 x 1½	**6K778**†	121.00	**51.25**	16.0
1/2	1725	48Y	115	8.1	1.25	Sleeve	B	1/2 x 1½	**3K772**†	161.00	**70.25**	19.0
3/4	1725	56	115	11.0	1.0	Sleeve	B	5/8 x 1⅞	**1D170**	185.00	**121.15**	17.0

(†) Supplied with 5/8" dia. shaft bushing. (‡) Shaft extends from lead end.

CONTINUED ON NEXT PAGE

COMMERCIAL BELT-DRIVE MOTORS AND WHOLE-HOUSE/MOBILE FAN MOTORS

DAYTON BELT-DRIVE FAN AND BLOWER MOTORS (Cont.)

HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Insulation Class	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
TWO SPEED, COMMERCIAL DUTY													
1/4	**1/8**	1725/1140	56Z*	115	5.2/3.6	1.0	Sleeve	B	1/2 x 1½"	**6K425**	$144.00	**$99.55**	17.0
1/3	**1/6**	1725/1140	56Z*	115	6.8/4.5	1.0	Sleeve	A	1/2 x 1½	**6K426**	158.00	**109.20**	20.0
		1725/1140	56	115	6.8/4.5	1.35	Sleeve	A	5/8 x 1⅞	**5K654**	202.00	**139.60**	21.0
1/2	**1/4**	1725/1140	56	115	9.2/6.0	1.0	Sleeve	A	5/8 x 1⅞	**5K620**	202.00	**139.60**	22.0
		1725/1140	56	115	9.2/6.0	1.25	Sleeve	A	5/8 x 1⅞	**6K394**	258.00	**178.75**	24.0

(*) Has extended studs out shaft endshield for mounting fan guard. 4³⁄₁₆" OC.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

WHOLE-HOUSE/MOBILE FAN MOTORS

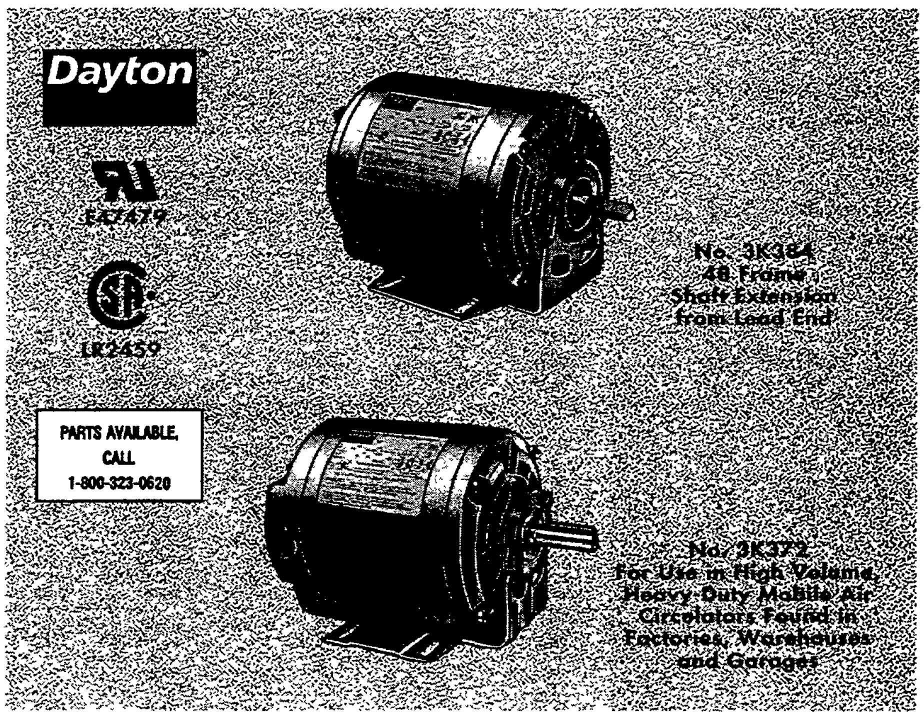
- **Quick connect terminal board for easy wiring on 1/3 HP models**
- **Heavy-duty 12 gauge steel base**

Typical Uses: Replacement of original single and two speed belt-drive motors. Also suitable for use in other belt-drive fan and blower applications.

Special Features: On 48 frame models, shaft extends from lead end so motor can be mounted and wired without lead interference that may occur in some fans.

Two speed models are specifically designed for diminishing torque, air-moving applications, such as belted or direct-drive fans and blowers.

Type: Split-phase
Bearings: All-angle sleeve or prelubricated ball
Mounting: Cradle base
Enclosure: Open dripproof
Service Factor: 1.0
Thermal Protection: Auto
Ambient: 40°C
Duty: Nos. 3K384, 3K386, and 3K371 are continuous; **No. 3K372 is continuous air-over**
Rotation: CW/CCW
Finish: Gray enamel
Brand: Dayton



SINGLE SPEED

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearings	Insulation Class	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
1/3	1725	48	115	6.3	Sleeve	B	1/2 x 1½"	**3K384**	$118.00	**$81.55**	14.0

TWO SPEED

HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearings	Insulation Class	Shaft Dimensions Length	Stock No.	List	Each	Shpg. Wt.
1/3	**1/9**	1725/1140	48	115	7.1/3.3	Sleeve	B	1/2 x1½"	**3K386**	$158.00	**$109.20**	21.0
1/3	**1/10**	1725/1140	48	115	7.1/3.3	Ball	B	1/2 x1½	**3K371**	174.00	**129.40**	21.0
1/2	**1/4**	1725/1140	56	115	7.8/4.5	Ball	B	1/2 x1½	**3K372**	218.00	**162.25**	21.0

USE AIR MOTORS WHERE ELECTRIC MOTORS ARE IMPRACTICAL

A compact, lightweight source of smooth, vibrationless power, Gast rotary vane air motors can be used in applications where electric or hydraulic motors are impractical. Unlike an electric motor, the air motor runs cool to prevent heat buildup and provides smooth startups. Use air motors in batch mixers, conveyors, and hoists. With no heat buildup or sparks, air motors are ideal for explosion-proof applications. See Index under Air Motors.

FAN/BLOWER MOTORS

COMMERCIAL AND RESIDENTIAL BELT-DRIVE FAN AND BLOWER MOTORS

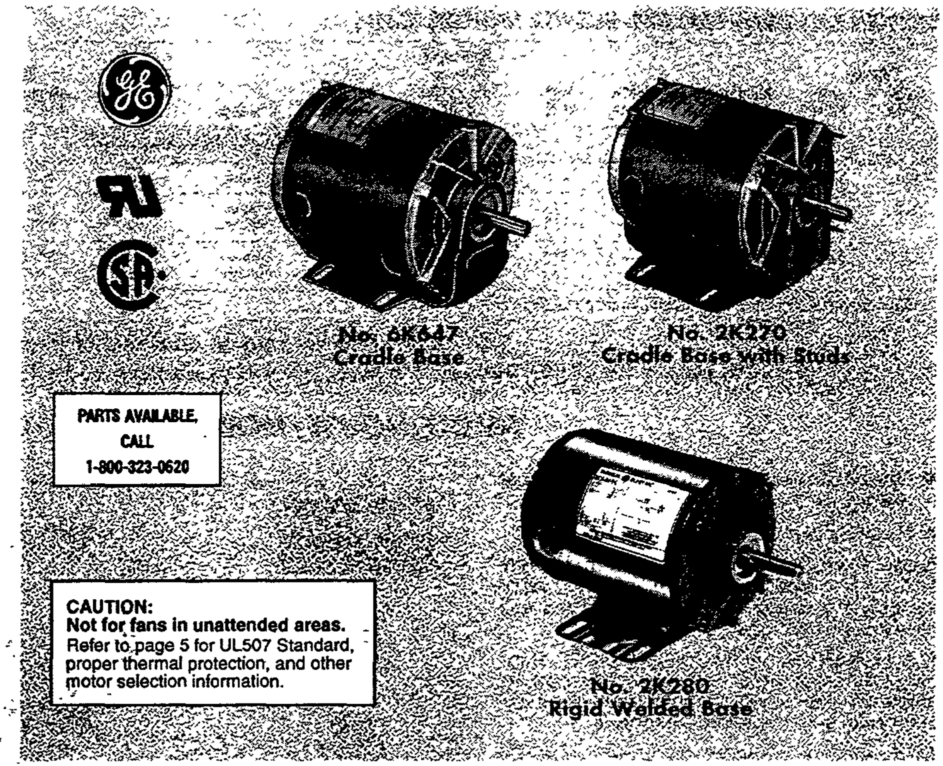
Typical Uses: Belt-drive furnace blowers, exhaust and circulating fans, and air coolers.

Special Features: NEMA 42 frame includes relay. NEMA 48Z frame has 1/2 x $1\frac{7}{8}$" shaft. NEMA 48Y frame has cradle base with holes and slots to match mounting dimensions of either NEMA 48 or 56. Also supplied with 5/8" dia. shaft bushing. NEMA 56Z frame has nonstandard 1/2" dia. shaft with flat and is supplied with 5/8" dia. shaft bushing.

Two speed models are specifically designed for diminishing torque, air-moving applications, such as belted or direct-drive fans and blowers.

Commercial Duty Motors: Feature higher starting torque than residential duty motors and offer universal replacement. Cooler running temperature ensures longer life expectancy.

Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE



HP	Nameplate RPM	NEMA Frame	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Mounting	Shaft Dimensions Dia. x Length	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
SINGLE SPEED, COMMERCIAL														
1/12	1725	42	Op Dpf	115†	2.1	1.4	Sleeve	Cradle	3/8 x $1\frac{1}{8}$"	—	**3K403‡**	$183.00	**$113.40**	10.0
	1140	48Z	Op Dpf	115	2.4	1.4	Ball	Cradle/Stud	1/2 x $1\frac{7}{8}$	H152	**2K270**	155.00	**107.50**	15.0
1/8	1140	48Z	Op Dpf	115	3.8	1.4	Ball	Cradle/Stud	1/2 x $1\frac{7}{8}$	H154	**2K275**	171.00	**118.60**	16.0
	850	56	Op Dpf	115	4.6	1.4	Ball	Cradle/Stud	5/8 x $1\frac{7}{8}$	H155	**2K277**	303.00	**210.50**	24.0
1/6	1725	48	Op Dpf	115	3.9	1.35	Sleeve	Rigid	1/2 x $1\frac{1}{2}$	4349	**2K280**	109.00	**75.65**	11.0
	1725	48	Op Dpf	115	3.9	1.35	Sleeve	Cradle	1/2 x $1\frac{1}{2}$	4314	**6K566**	114.00	**79.10**	12.0
	1725	48Z	Op Dpf	115	3.9	1.35	Ball	Cradle/Stud	1/2 x $1\frac{7}{8}$	H157	**3K116**	130.00	**90.15**	12.0
	1725	56Z	Op Dpf	115	3.9	1.35	Sleeve	Cradle	1/2 x $1\frac{7}{8}$	4350	**2K292**	116.00	**80.45**	12.0
	1140	48	Op Dpf	115	4.0	1.35	Sleeve	Cradle	1/2 x $1\frac{1}{2}$	H113	**2K285**	173.00	**120.00**	19.0
	1140	48Z	Op Dpf	115	4.0	1.35	Ball	Cradle/Stud	1/2 x $1\frac{7}{8}$	H159	**3K117**	190.00	**131.75**	21.0
1/4	1725	48	Op Dpf	115	5.1	1.35	Sleeve	Cradle	1/2 x $1\frac{1}{2}$	4305	**6K576**	109.00	**75.65**	13.0
	1725	48	Op Dpf	115	5.1	1.35	Sleeve	Rigid	1/2 x $1\frac{1}{2}$	4362	**2K290**	118.00	**81.85**	13.0
	1725	48	Op Dpf	115	5.7	1.0	Sleeve	Cradle	1/2 x $1\frac{1}{2}$	4301	**6K461**	118.00	**81.85**	12.0
	1725	56Z	Op Dpf	115	5.1	1.35	Sleeve	Cradle	1/2 x $1\frac{7}{8}$	4363	**6K689**	124.00	**86.05**	13.0
	1725	56Z	Op Dpf	115	5.7	1.0	Sleeve	Cradle	1/2 x $1\frac{1}{2}$	4364	**2K293**	120.00	**83.25**	13.0
	1725	48Z	Op Dpf	115	5.1	1.35	Ball	Cradle/Stud	1/2 x $1\frac{7}{8}$	H161	**3K119**	141.00	**97.80**	14.0
	1725	48	Op Dpf	230	2.5	1.35	Sleeve	Cradle	1/2 x $1\frac{1}{2}$	4306	**2K295**	130.00	**90.15**	13.0
	1725	48Z	Op Dpf	115/230	5.0/2.5	1.35	Ball	Cradle/Stud	1/2 x $2\frac{1}{4}$	4680	**6K555**	141.00	**97.80**	13.0
	1140	56	Op Dpf	115	5.6	1.35	Ball	Cradle/Stud	5/8 x $1\frac{7}{8}$	H163	**2K299**	247.00	**171.50**	25.0
1/3	3450	48	Op Dpf	115	5.6	1.35	Ball	Cradle	1/2 x $1\frac{1}{2}$	H115	**1D079**	131.00	**89.55**	15.0
	3450	48Z	Op Dpf	115/230	6.8/3.4	1.35	Ball	Cradle/Stud	1/2 x $2\frac{1}{4}$	4798	**2K304**	143.00	**99.20**	15.0
	1725	48	Op Dpf	115	5.6	1.35	Ball	Cradle	1/2 x $1\frac{1}{2}$	4308	**1D033**	148.00	**101.15**	14.0
	1725	48	Op Dpf	115	6.2	1.0	Sleeve	Cradle	1/2 x $1\frac{1}{2}$	4310	**6K647**	128.00	**88.80**	14.0
	1725	48	Op Dpf	115	6.2	1.0	Sleeve	Rigid	1/2 x $1\frac{1}{2}$	4380	**6K646**	123.00	**78.30**	15.0
	1725	48Z	Op Dpf	115	6.2	1.35	Ball	Cradle/Stud	1/2 x $1\frac{7}{8}$	H165	**3K121**	159.00	**110.30**	16.0
	1725	56Z	Op Dpf	115	6.2	1.35	Ball	Cradle	1/2 x $1\frac{1}{2}$	4383	**1D037**	151.00	**103.20**	16.0
	1725	56Z	Op Dpf	115	6.2	1.0	Sleeve	Cradle	1/2 x $1\frac{1}{2}$	4381	**2K309**	130.00	**90.15**	15.0
	1725	48	Op Dpf	230	3.1	1.35	Ball	Cradle	1/2 x $1\frac{1}{2}$	4309	**1D034**	157.00	**107.30**	15.0
	1725	48	Op Dpf	230	3.3	1.0	Sleeve	Cradle	1/2 x $1\frac{1}{2}$	4311	**6K653**	139.00	**96.40**	14.0
	1725	56Z	Op Dpf	230	3.1	1.35	Ball	Cradle/Stud	1/2 x $1\frac{1}{2}$	4757	**1D052**	157.00	**107.30**	16.0
	1725	48Z	Op Dpf	230	3.3	1.35	Ball	Cradle/Stud	1/2 x $1\frac{7}{8}$	H167	**2K313**	169.00	**117.25**	16.0
	1725	56Z	Op Dpf	115/230*	6.2/3.1	1.35	Ball	Cradle/Stud	1/2 x $2\frac{1}{4}$	4682	**6K560**	159.00	**110.30**	17.0
	1140	56	Op Dpf	115	7.0	1.35	Ball	Cradle/Stud	5/8 x $1\frac{7}{8}$	H621	**2K314**	289.00	**200.75**	32.0

(*) Usable on 200V at 1.0 service factor. (†) 60/50 Hz. (‡) Includes relay.

CONTINUED ON NEXT PAGE

COMMERCIAL AND RESIDENTIAL BELT-DRIVE FAN AND BLOWER MOTORS

GE SPLIT-PHASE BELT-DRIVE FAN AND BLOWER MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Mounting	Shaft Dimensions Dia. x L	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
SINGLE SPEED, COMMERCIAL														
1/2	1725	56	Op Dpf	115	7.9	1.25	Ball	Cradle	5/8 x 1 7/8"	4392	**1D041**	$204.00	**$139.40**	18.0
	1725	56	Op Dpf	115	8.3	1.0	Ball	Cradle	5/8 x 1 7/8	4601	**1D044**	168.00	**114.85**	18.0
	1725	56Z	Op Dpf	115	7.9	1.25	Ball	Cradle/Stud	1/2 x 1 1/2	4758	**1D053**	204.00	**139.40**	23.0
	1725	56Z	Op Dpf	115	8.3	1.0	Ball	Cradle/Stud	1/2 x 1 1/2	4778	**1D055**	168.00	**114.85**	20.0
	1725	56	Op Dpf	115	8.9	1.25	Ball	Cradle/Stud	5/8 x 1 7/8	H248	**3K123**	216.00	**149.80**	18.0
	1725	48	Op Dpf	115	7.1	1.25	Ball	Cradle/Stud	1/2 x 1 1/2	H694	**1D088**	205.00	**140.10**	20.0
	1725	56	Op Dpf	230	4.5	1.25	Ball	Cradle	5/8 x 1 7/8	4393	**1D042**	212.00	**144.90**	19.0
	1725	56	Op Dpf	230	4.2	1.0	Ball	Cradle	5/8 x 1 7/8	4602	**1D045**	176.00	**120.30**	19.0
	1725	56Z	Op Dpf	230	4.0	1.25	Ball	Cradle/Stud	1/2 x 1 1/2	4759	**1D054**	212.00	**144.90**	19.0
	1725	56Z	Op Dpf	115/230	8.9/4.5	1.25	Ball	Cradle/Stud	1/2 x 2 1/4	4684	**6K561**	216.00	**132.20**	18.0
	1140	56	Op Dpf	115	9.0	1.25	Ball	Cradle/Stud	5/8 x 1 7/8	H298	**2K326**	369.00	**256.00**	39.0
3/4	1725	56	Op Dpf	115	11.4	1.0	Ball	Cradle	5/8 x 1 7/8	4338	**1D035**	204.00	**139.40**	21.0
SINGLE SPEED, RESIDENTIAL														
1/4	1725	48Y	Open	115	5.1	1.35	Sleeve	Cradle	1/2 x 1 1/2	4701	**3K110**	87.00	**47.75**	13.0
1/3	1725	48Y	Open	115	6.6	1.35	Sleeve	Cradle	1/2 x 1 1/2	4706	**3K111**	93.00	**51.25**	15.0
1/2	1725	48Y	Open	115	7.9	1.25	Ball	Cradle	1/2 x 1 1/2	4708	**1D046**	124.00	**70.25**	17.0

HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	NEMA Frame	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Mounting	Shaft Dimensions Dia. x L	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
TWO SPEED, COMMERCIAL															
1/6	**1/18**	1725/1140	48	Op Dpf	115	3.4/1.9	1.35	Sleeve	Cradle	1/2 x 1 1/2"	4389	**2K278**	$149.00	**$103.35**	16.0
		1725/1140	48Z	Op Dpf	115	3.4/1.9	1.35	Ball	Cradle/Stud	1/2 x 1 7/8	H170	**2K279**	167.00	**115.85**	16.0
1/4	**1/12**	1725/1140	48	Op Dpf	115	4.2/2.7	1.35	Sleeve	Cradle/Stud	1/2 x 1 1/2	4399	**3K597**	173.00	**120.00**	18.0
		1725/1140	48Z	Op Dpf	115	4.2/2.7	1.35	Ball	Cradle/Stud	1/2 x 1 7/8	H172	**2K287**	190.00	**131.75**	20.0
		1725/1140	48	Op Dpf	230	2.1/1.3	1.35	Sleeve	Cradle	1/2 x 1 1/2	4412	**2K228**	181.00	**125.55**	21.0
1/3	**1/9**	1725/1140	48	Op Dpf	115	6.3/3.1	1.0	Sleeve	Cradle/Stud	1/2 x 1 1/2	4319	**6K514**	178.00	**108.90**	21.0
		1725/1140	56	Op Dpf	115	5.7/3.2	1.35	Ball	Cradle/Stud	5/8 x 1 7/8	H174	**2K305**	239.00	**166.00**	25.0
1/2	**1/16**	1725/1140	56	Op Dpf	115	8.4/4.8	1.0	Ball	Cradle/Stud	5/8 x 1 7/8	H131	**1D081***	225.00	**153.75**	21.0
		1725/1140	56	Op Dpf	115	8.0/4.2	1.25	Ball	Cradle/Stud	5/8 x 1 7/8	H176	**2K318**	299.00	**207.75**	29.0
		1725/1140	56	Op Dpf	230	4.1/2.4	1.0	Ball	Cradle/Stud	5/8 x 1 7/8	H133	**1D082***	235.00	**160.75**	21.0

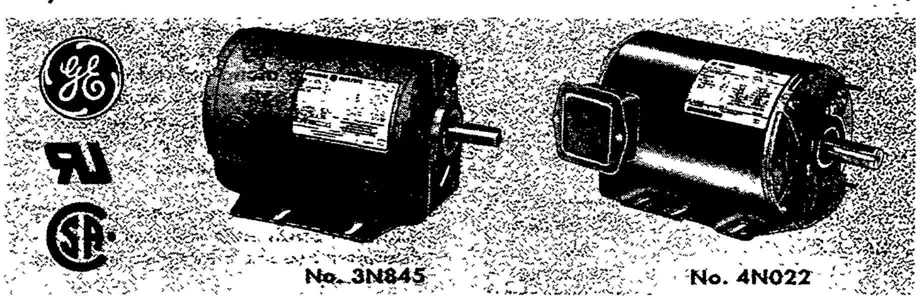
(*) Duty: air-over.

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE 3-PHASE, AUTOMATIC THERMAL PROTECTION

Typical Uses: Commercial and industrial air handlers, exhaust fans and blowers.
Bearings: Ball
Mounting: Cradle base
Enclosure:: Open dripproof
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/2	1725	56	208-230/460	2.1-2.2/1.1	1.25	K1408	**3N845**	$251.00	**$187.00**	19.0
3/4	3450	56	208-230/460	2.6-2.6/1.3	1.25	K1409	**4N016**	249.00	**185.75**	17.0
3/4	1725	56	208-230/460	2.8-2.8/1.4	1.25	K1410	**3N846**	273.00	**203.50**	22.0
1	3450	56	208-230/460	3.3-3.2/1.6	1.25	K1411	**4N017**	270.00	**201.25**	22.0
1	1725	56	208-230/460	3.4-3.2/1.6	1.15	K1412	**3N847**	286.00	**213.25**	25.0
1 1/2	3450	56H	208-230/460	5.0-4.8/2.4	1.15	K1413	**4N018**	304.00	**226.50**	24.0
1 1/2	1725	145T	208-230/460	5.1-5.0/2.5	1.15	K1414	**4N019**	356.00	**265.25**	33.0
1 1/2	1725	56H	208-230/460	5.1-5.0/2.5	1.15	K1415	**3N848**	302.00	**225.00**	33.0
2	3450	56H	208-230/460	6.6-6.0/3.0	1.15	K1416	**4N020**	355.00	**264.50**	32.0
2	1725	145T	208-230/460	6.5-6.6/3.3	1.15	K1417	**4N021**	386.00	**287.75**	42.0
2	1725	56H	208-230/460	6.5-6.6/3.3	1.15	K1418	**3N849**	347.00	**258.50**	41.0
3	3450	145T	208-230/460	8.4-7.6/3.8	1.15	K1419	**4N022**	386.00	**287.75**	46.0
3	1725	145T	208-230/460	9.6-9.2/4.6	1.15	K1420	**4N023†**	381.00	**283.75**	58.0
5	3450	145T	230/460	13.0/6.5	1.0	K1421	**4N024†**	489.00	**364.25**	57.0

(†) 16 cu.-in. conduit box.

COMMERCIAL BELT-DRIVE FAN AND BLOWER MOTORS

SPLIT-PHASE, OPEN DRIPPROOF, ADJUSTABLE MOUNTING RING

Typical Uses: Replacing NEMA 48 and 56 frame belt-driven furnace blower motors.

Special Features: Designed with the contractor in mind. Adjustable resilient mounting rings can be varied as much as 1 1/16" to fit most existing base lengths. All models have extra features shown for maximum flexibility on field service calls.

Bearings: All-angle sleeve

Thermal Protection: Auto

Insulation Class: B

NEMA Frame: 48Y

Ambient: 40°C

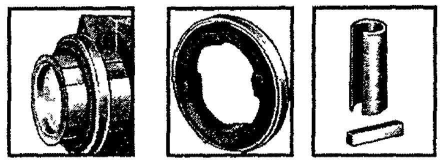
Duty: Continuous

Rotation: CW/CCW

Finish: Gray enamel

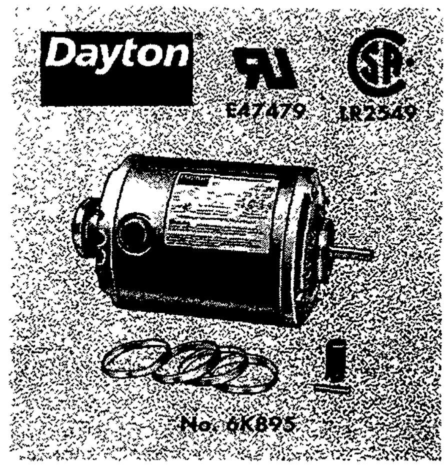
Brand: Dayton

PARTS AVAILABLE, CALL 1-800-323-0620



CONTRACTOR FRIENDLY™ FEATURES

- **Adjustable mounting ring. Align shaft end resilient ring and adjust other resilient ring along extended hub until it matches length of old motor.**
- **Two ring diameters. Supplied with 2 1/2" diameter rings. If 2 1/4" diameter is required, remove snap-on split bands (included).**
- **Two shaft diameters. Motor has 1/2" dia. shaft with flat. For 5/8" dia. use shaft adapter with key (included).**



HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Resilient Mounting Rings OC	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
1/4	1725	115	5.1	1.35	6 7/16 to 7 1/2"	8"	**6K890**	$91.00	**$58.65**	12.0
1/3	1725	115	5.5	1.35	6 15/16 to 8	8 1/2	**6K892**	98.00	**70.15**	16.0
1/2	1725	115	8.0	1.25	7 15/16 to 9	9 1/2	**6K895**	182.00	**82.10**	17.0

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

SPLIT-PHASE, OPEN DRIPPROOF, PDQ ADJUSTABLE MOUNTING RING

Typical Uses: Replacing NEMA 48 and 56 frame belt-driven furnace blower motors.

Special Features: Distance between resilient mounting rings can be varied as much as 1 1/4" to fit most existing base lengths. All models have extra features shown for maximum flexibility on field service calls.

Bearings: Ball

Thermal Protection: Auto

Insulation Class: B

NEMA Frame: 48Y

Ambient: 40°C

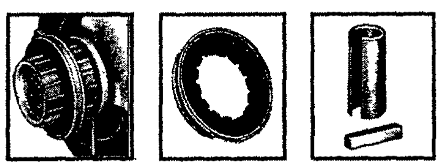
Duty: Continuous

Rotation: CW/CCW

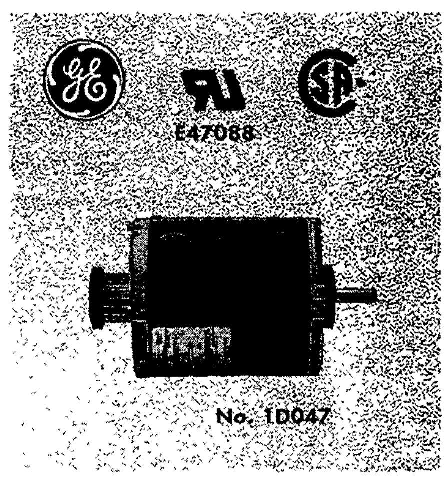
Finish: Gray

Brand: GE

PARTS AVAILABLE, CALL 1-800-323-0620



- **Adjustable mounting ring. Align shaft end resilient ring and adjust other resilient ring along extended hub until it matches length of old motor.**
- **Two ring diameters. Supplied with 2 1/2" diameter rings. If 2 1/4" diameter is required, remove snap-on split bands (included).**
- **Two shaft diameters. Motor has 1/2" diameter shaft with flat. For 5/8" diameter use shaft adapter with key (included).**



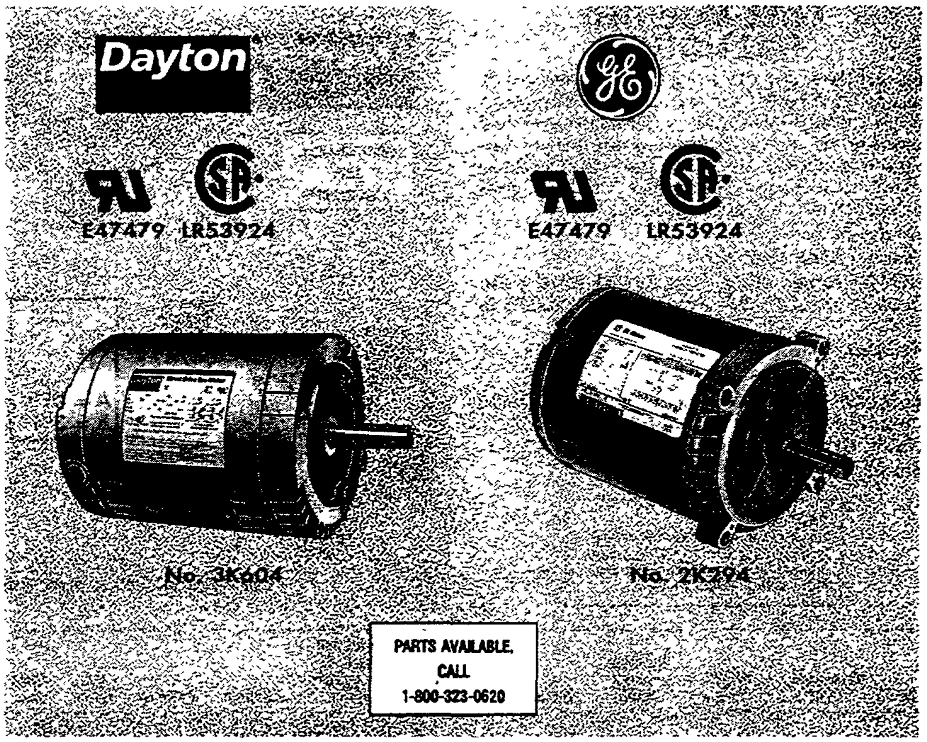
HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Resilient Mounting Rings OC	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/4	1725	115	5.0	1.35	6 5/16 to 7 5/8"	8"	4730	**1D047**	$87.00	**$62.25**	12.0
1/3	1725	115	5.8	1.35	7 1/16 to 8 5/16	8 11/16	4731	**1D048**	93.00	**75.20**	15.0
	1725	230	3.1	1.35	7 1/16 to 8 6/16	8 11/16	4738	**1D050**	153.00	**112.65**	15.0
1/2	1725	115	7.9	1.25	7 3/8 to 8 3/4	9 3/16	4732	**1D049**	124.00	**91.25**	17.0
	1725	230	4.0	1.25	7 3/8 to 8 3/4	9 3/16	4739	**1D051**	191.00	**136.90**	19.0

FACE-MOUNTED FAN MOTORS

- Dayton models provide direct replacement in many Jenn-Air and similar commercial kitchen exhaust ventilators
- NEMA service factors up to 1.4 provide a reserve margin for applications where intermittent overloading or fluctuating (high/low) voltage conditions may occur

Typical Uses: Exhaust ventilators in commercial cooking areas and other moderate-starting torque equipment that can be directly connected to a NEMA 56CZ face-mounted motor. (Not intended for power transmission applications.)

Bearings: Ball
Enclosure: Open dripproof
Thermal Protection: Auto
NEMA Frame: 56CZ
Shaft Dimensions: 5/8 x 2¼"
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray enamel
Brand: Dayton and GE



DAYTON BRAND, SINGLE SPEED

HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1/12	850	115	3.2	1.4	A	**3K604**	$242.00	**$177.75**	24.0
1/8	1140	115	3.8	1.4	A	**3K474**	169.00	**124.05**	17.0
1/6	1140	115	4.0	1.35	A	**3K479**	188.00	**137.90**	17.0
1/4	1725	115	5.6	1.35	A	**3K493**	134.00	**102.70**	13.0
	1140	115	5.6	1.35	A	**3K492**	242.00	**177.75**	24.0
	850	115	6.9	1.35	B	**3K491**	405.00	**297.50**	30.0
1/3	1725	115	6.6	1.35	A	**3K497**	159.00	**116.65**	15.0
	850	115	9.2	1.0	B	**3K496**	406.00	**325.75**	36.0

DAYTON BRAND, TWO SPEED

HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate RPM	Service Factor	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1/4	1/12	1725/1140	115	4.2/2.7	1.35	B	**3K494**	$180.00	**$138.00**	17.0
1/3	1/9	1725/1140	115	5.7/3.2	1.35	B	**3K495**	224.00	**179.75**	20.0
1/2	1/6	1725/1140	115	8.0/4.2	1.25	B	**3K498**	292.00	**214.50**	22.0

GE BRAND, SINGLE SPEED

HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/12	850	115	3.2	1.4	B	H278	**2K271**	$253.00	**$155.00**	20.0
1/8	1140	115	3.8	1.4	A	H287	**2K276**	177.00	**108.30**	15.0
1/6	1140	115	4.0	1.35	B	H210	**2K286**	197.00	**120.55**	19.0
1/4	1725	115	4.4	1.35	B	H213	**2K294**	147.00	**89.95**	13.0
	1140	115	5.6	1.35	B	H215	**2K300**	253.00	**155.00**	23.0
	850	115	6.9	1.35	B	H288	**2K301**	424.00	**259.75**	32.0
1/3	1725	115	5.4	1.35	B	H218	**2K308**	167.00	**102.20**	14.0

GE BRAND, TWO SPEED

HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate RPM	Service Factor	Insulation Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/2	1/6	1725/1140	115	8.0/4.2	1.25	B	H282	**2K317**	$305.00	**$186.75**	27.0

CAUTION: Not for fans in unattended areas.

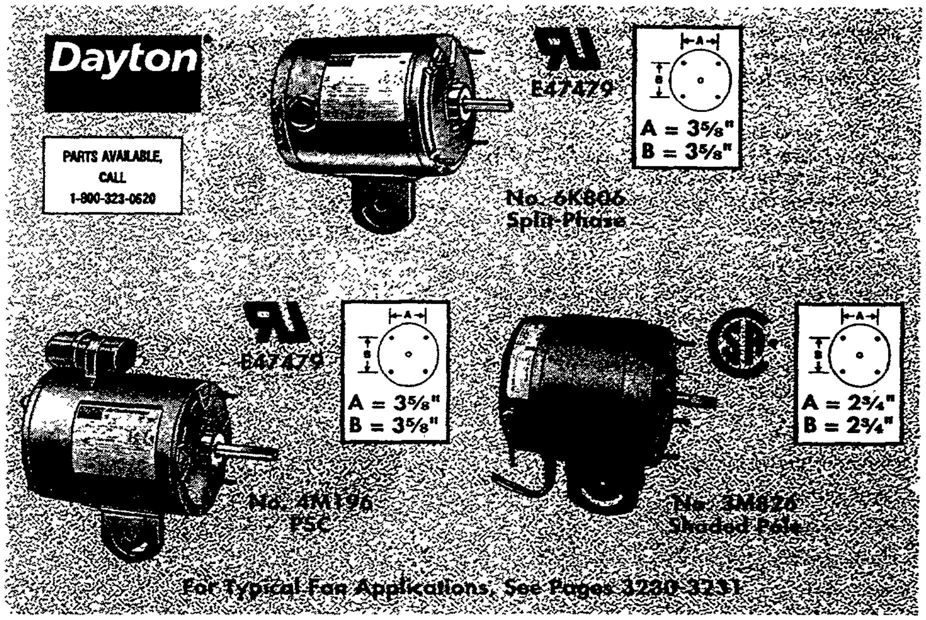
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

YOKE-MOUNTED FAN AND OSCILLATING AIR CIRCULATOR MOTORS

YOKE-MOUNTED FAN MOTORS

Typical Uses: Air circulators where motor is mounted directly to fan column. Supplied with durable Dayton yoke-type welded bracket or strap. Studs for mounting fan guard directly to shaft endshield. Also used on exhaust fans, unit heaters, and other air-moving applications.
Service Factor: 1.0
Thermal Protection: Auto
NEMA Frame: 48YZ (except shaded pole models are 4.4" diameter and No. 1D172 is 6⅜")
Ambient: 40°C or 60°C
Duty: Continuous air-over
Rotation: CW/CCW (except shaded pole models are CW facing shaft)
Finish: Gray enamel
Brand: Dayton

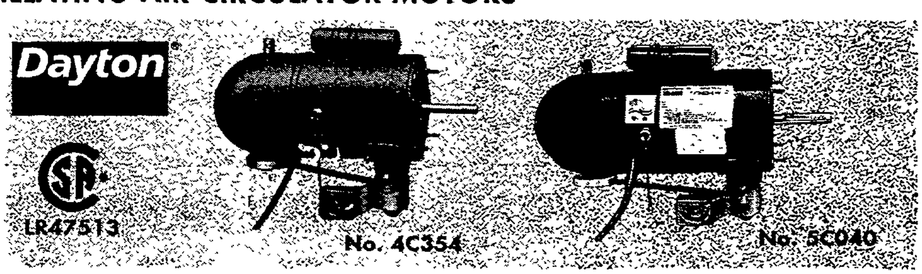
CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Ambient	Bearing	Ins. Class	Body Dia.	Shaft Dimensions Dia. x L	Overall Length	Stock No.	List	Each	Shpg. Wt.
SPLIT-PHASE, YOKE-TYPE WELDED TAB																
1/4	1725	48YZ	CW/CCW	OPAO	115	4.5	40	Sleeve	A	5⅝"	1/2 x 2"	10 7/16"	**6K403**	$106.00	**$81.80**	13.0
	1725	48YZ	CW/CCW	TEAO	115	4.5	40	Sleeve	A	5⅝	1/2 x 2	10 7/16	**6K406**	120.00	**92.65**	15.0
	1725	48YZ	CW/CCW	TEAO	115	4.3	40	Ball	A	5⅝	1/2 x 2	10⅜	**6K806**	136.00	**105.05**	14.0
1/3	1725	48YZ	CW/CCW	OPAO	115	6.3	40	Sleeve	A	5⅝	1/2 x 2	10 1/16	**6K410**	128.00	**98.80**	18.0
	1725	48YZ	CW/CCW	TEAO	115	4.8	40	Sleeve	A	5⅝	1/2 x 2	10 7/16	**6K807**	138.00	**106.35**	18.0
1/2	1725	48YZ	CW/CCW	OPAO	115	8.3	40	Sleeve	A	5⅝	5/8 x 2	10 7/16	**6K405**	145.00	**111.90**	17.0
	1725	48YZ	CW/CCW	TEAO	115	6.6	40	Sleeve	A	5⅝	5/8 x 2	10 11/16	**6K809**	190.00	**146.65**	22.0
	1725	48YZ	CW/CCW	TEAO	115/230	6.8/3.4	40	Ball	A	5⅝	5/8 x 2	10 5/16	**6K411**	215.00	**166.25**	18.0
PSC, YOKE-TYPE WELDED TAB, CAPACITOR INCLUDED																
1/4	1075/2-Spd	48YZ	CW/CCW	TEAO	115	4.0	40	Sleeve	A	5⅝	1/2 x 2½	10 5/16	**3M504**	143.00	**110.25**	16.0
	1075/2-Spd	48YZ	CW/CCW	TEAO	115	4.0	40	Ball	A	5⅝	1/2 x 2½	10 9/16	**4M196**	159.00	**122.75**	15.0
	1075/2-Spd	48YZ	CW/CCW	TEAO	115	4.0	60	Sleeve	B	5⅝	1/2 x 2½	10 5/16	**1D171**	168.00	**122.75**	21.0
1/3	1075/2-Spd	48YZ	CW/CCW	TEAO	115	5.3	40	Sleeve	B	5⅝	1/2 x 2½	10 5/16	**3M469**	151.00	**109.80**	18.0
1/2	1075/2-Spd	48YZ	CW/CCW	TEAO	115	7.1	40	Sleeve	B	5⅝	5/8 x 2½	11 3/16	**3M505**	171.00	**131.85**	24.0
	1075/2-Spd	48YZ	CW/CCW	TEAO	115	7.1	40	Ball	B	5⅝	5/8 x 2½	10 13/16	**4M197**	187.00	**144.30**	23.0
	1075/2-Spd	56YZ	CW/CCW	TEAO	115	5.6	60	Sleeve	B	6⅜	5/8 x 2½	11 9/16	**1D172**	261.00	**190.50**	32.0
SHADED POLE, YOKE-TYPE WELDED TAB																
1/15	1550/2-Spd	—	CW	OPAO	115	2.3	40	Sleeve	A	4⅜	3/8 x 1⅜	6 15/16	**3M827**	95.00	**71.80**	7.0
	1550	—	CW	OPAO	115	2.3	40	Sleeve	A	4⅜	3/8 x 1¼	6½	**3M826**	81.00	**61.25**	6.0

OSCILLATING AIR CIRCULATOR MOTORS

Typical Uses: No. 4C354 is for use on Dayton 20 and 24" oscillating fans. No. 5C040 is for use on Dayton 30" oscillating fans.
Special Features: Hardened metal precision gearing and durable clutch assembly. Four extended studs 3⅝" OC for mounting guard. 10 ft., 3-conductor cord with grounding type molded plug. 90 or 45° sweep or to blow straight. Two-speed pull chain switch.
Motor Type: PSC
Enclosure: TEAO
Thermal Protection: Auto
Finish: Gray enamel
Brand: Dayton



HP	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Shaft Dia.	Ins. Class	Stock No.	List	Each	Shpg. Wt.
1/4	1075/2 Spd	115	4.4	1/2"	B	**4C354**	$277.00	**$204.75**	22.0
1/2	1075/2 Spd	115	6.0	5/8	B	**5C040**	299.00	**221.00**	31.0

DIRECT-DRIVE FAN AND BLOWER MOTORS

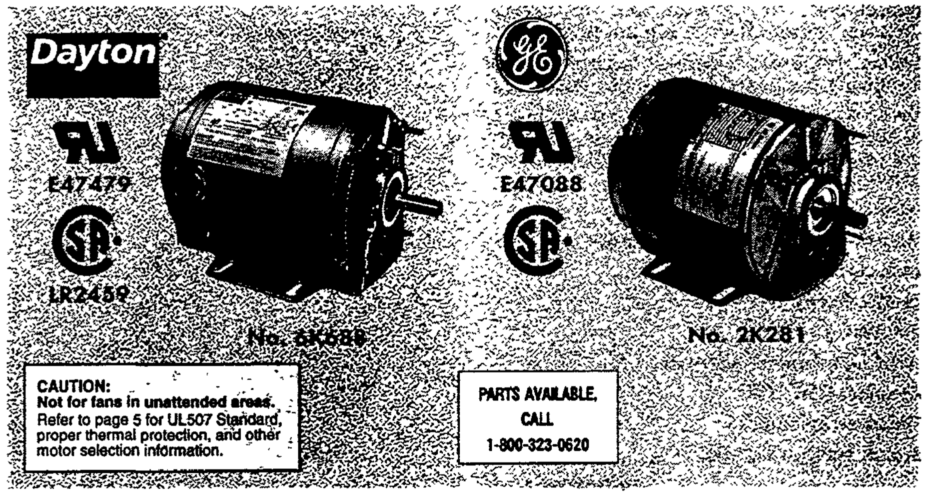
SPLIT-PHASE, AUTOMATIC THERMAL PROTECTION

Typical Uses: For exhaust fans, air circulators, and other air-over fan applications.

Special Features: Supplied with extended studs for mounting fan guard from shaft endshield.

Two speed models are specifically designed for diminishing torque, air-moving applications, such as belted or direct-drive fans and blowers.

Type: Split-phase
Mounting: Cradle base with studs (except Nos. 2K291, 2K298, and 2K302 are rigid without studs).
Thermal Protection: Auto
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW/CCW
Finish: Gray
Brand: Dayton and GE



DAYTON BRAND, SINGLE SPEED

HP	Nameplate RPM	NEMA Frame	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Insulation Class	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
1/6	1140	48Y*	TEAO	115	4.1	1.0	Sleeve	B	1/2 x 1½"	**6K688**	$159.00	**$108.30**	18.0
	1140	56Z†	TEAO	115	4.6	1.0	Sleeve	B	1/2 x 1½	**1K139**	159.00	**108.35**	18.0
1/4	1725	48Y*	TEAO	115	4.8	1.0	Sleeve	B	1/2 x 1½	**6K665**	112.00	**76.25**	15.0
	1725	48Y*	TEAO	115	4.8	1.0	Ball	B	1/2 x 1½	**3K355**	126.00	**85.75**	15.0
	1725	56Z†	TEAO	115	4.7	1.0	Sleeve	B	1/2 x 1½	**1K140**	116.00	**79.00**	16.0
	1725	56Z†	TEAO	115	4.3	1.0	Ball	B	1/2 x 1½	**1K141**	126.00	**85.80**	16.0
	1725	56	TEAO	115/230	4.4/2.2	1.35	Ball	B	5/8 x 1⅞	**6K687**	148.00	**113.45**	18.0
	1140	48Y*	TEAO	115	6.1	1.0	Sleeve	B	1/2 x 1½	**6K692**	213.00	**145.10**	26.0
	1140	56Z†	TEAO	115	6.0	1.0	Sleeve	B	1/2 x 1½	**1K142**	213.00	**145.15**	21.0
1/3	1725	48Y*	TEAO	115	5.2	1.0	Sleeve	B	1/2 x 1½	**6K666**	135.00	**94.65**	19.0
	1725	48Y*	TEAO	115	5.2	1.0	Ball	B	1/2 x 1½	**3K356**	146.00	**101.35**	21.0
	1725	56Z†	TEAO	115	5.5	1.0	Sleeve	A	1/2 x 1½	**6K312**	140.00	**94.60**	18.0
	1725	56Z†	TEAO	115	5.5	1.0	Ball	B	1/2 x 1½	**1K143**	146.00	**101.35**	19.0
	1725	56Z†	TEAO	230	2.8	1.0	Sleeve	B	1/2 x 1½	**1K144**	137.00	**93.30**	20.0
	1725	56	TEAO	115/230	5.2/2.6	1.35	Ball	B	5/8 x 1⅞	**6K691**	166.00	**127.30**	19.0
1/2	1725	56	TEAO	115	6.5	1.0	Sleeve	B	5/8 x 1⅞	**6K667**	184.00	**125.25**	26.0
	1725	56	TEAO	115	6.5	1.0	Ball	B	5/8 x 1⅞	**3K357**	200.00	**153.50**	26.0

DAYTON BRAND, TWO SPEED

HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	NEMA Frame	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate RPM	Service Factor	Bearings	Insulation Class	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
1/4	1/12	1725/1140	48Y*	TEAO	115	4.6/2.5	1.0	Ball	B	1/2 x 1½"	**3K006**	$176.00	**$134.90**	19.0
1/4	1/12	1725/1140	56Z	TEAO	115	4.7/3.2	1.0	Sleeve	B	1/2 x 1½	**1K145**	160.00	**109.15**	23.0
1/3	1/8	1725/1140	56Z*	TEAO	115	6.4/4.5	1.0	Sleeve	B	1/2 x 1½	**1K146**	206.00	**140.35**	23.0

(*) NEMA 48Y frame motors have cradle base with holes and slots to match mounting dimensions of either NEMA 48 or 56 frame.
(†) NEMA 56Z frame motors have nonstandard 1/2" dia. shaft with flat.

GE BRAND, SINGLE SPEED

HP	Nameplate RPM	NEMA Frame	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Ins. Class	Shaft Dimensions Dia. x Length	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/6	1725	48	TEAO	115	3.5	1.0	Ball	B	1/2 x 1½"	H196	**2K281**	$130.00	**$79.55**	19.0
	1725	48	TEFC	115	4.0	1.0	Ball	A	1/2 x 1½	H291	**1D084**	158.00	**108.00**	15.0
	1140	48	TEAO	115	3.7	1.0	Ball	B	1/2 x 1½	H198	**3K726**	190.00	**116.25**	17.0
1/4	1725	48	TEFC	115	5.1	1.0	Ball	B	1/2 x 1½	H234	**3K389**	166.00	**101.60**	17.0
	1725	48	TEFC	115	5.1	1.0	Ball	B	1/2 x 1½	H121	**2K291** ‡	162.00	**99.15**	15.0
	1725	48	TEAO	115	5.1	1.0	Ball	B	1/2 x 1½	H135	**3K010**	141.00	**86.30**	15.0
	1725	48	TEAO	230	2.3	1.0	Ball	B	1/2 x 1½	H277	**2K296**	149.00	**91.20**	16.0
	1725	48	TEFC	230	2.7	1.0	Ball	B	1/2 x 1½	H243	**2K298** ‡	171.00	**104.65**	15.0
	1140	56	TEAO	115	5.6	1.0	Ball	B	5/8 x 1⅞	H137	**3K743**	247.00	**151.25**	26.0
1/3	3450	48	TEFC	115	6.4	1.0	Ball	B	1/2 x 1½	H124	**2K302** ‡	164.00	**100.35**	15.0
	1725	48	TEAO	115	6.2	1.0	Ball	B	1/2 x 1½	H139	**3K013**	159.00	**97.30**	18.0
	1725	56	TEFC	115	5.9	1.0	Ball	B	5/8 x 1⅞	H236	**2K307**	203.00	**124.25**	19.0
	1725	48	TEAO	230	2.7	1.0	Ball	B	1/2 x 1½	H141	**3K747**	169.00	**103.40**	18.0
1/2	1725	56	TEAO	115/230	8.0/4.0	1.0	Ball	B	5/8 x 1⅞	H247	**3K023**	227.00	**138.95**	22.0

(‡) Rigid welded base without studs.

DIRECT-DRIVE FAN AND BLOWER MOTORS

SPLIT-PHASE, NO THERMAL PROTECTION

Typical Uses: For exhaust fans, air circulators, and other air-over fan applications.

Special Features: Supplied with studs for mounting fan guard from shaft endshield.

Two speed models are specifically designed for diminishing torque, air-moving applications, such as belted or direct-drive fans and blowers.

Type: Split-phase

Mounting: Cradle base with studs

Enclosure: TEAO

Service Factor: 1.0

Ambient: 40°C

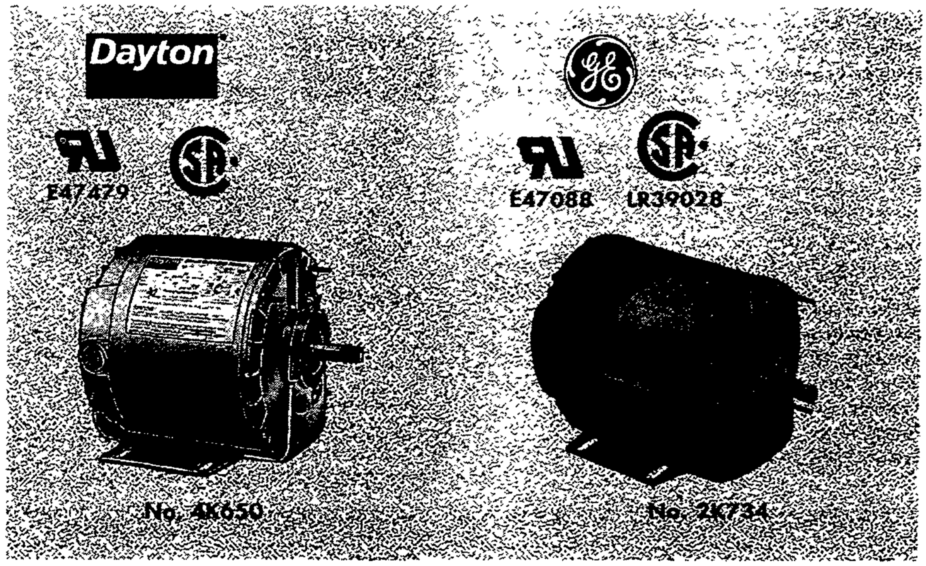
Duty: Continuous air-over

Rotation: CW/CCW

Finish: Gray enamel

Brand: Dayton and GE

PARTS AVAILABLE, CALL 1-800-323-0620



DAYTON BRAND, SINGLE SPEED

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearings	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1/6	1140	56Z*	None	115	4.6	Sleeve	A	**4K650**	$159.00	**$108.35**	18.0
1/4	1725	56Z*	None	115	4.7	Sleeve	A	**4K638**	112.00	**76.25**	16.0
	1725	56Z*	None	115	4.3	Ball	A	**6K167**	126.00	**85.75**	16.0
	1140	56Z*	None	115	6.0	Sleeve	A	**5K523**	213.00	**138.20**	21.0
1/3	1725	56Z*	None	115	5.5	Sleeve	A	**5K019**	135.00	**94.65**	20.0
	1725	56Z*	None	115	5.5	Ball	A	**6K083**	146.00	**101.10**	19.0
	1725	56Z*	None	230	2.8	Sleeve	A	**5K670**	137.00	**94.50**	20.0
1/2	1725	56	None	115	7.0	Sleeve	A	**5K401**	186.00	**142.55**	27.0
	1725	56	None	115	7.0	Ball	A	**6K084**	200.00	**136.15**	27.0
	1725	56	None	230	3.6	Sleeve	A	**6K129**	194.00	**146.20**	26.0

DAYTON BRAND, TWO SPEED

HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearings	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1/4	1/12	1275/1140	56Z*	None	115	4.7/3.2	Sleeve	A	**5K547**	$158.00	**$107.10**	23.0
1/3	1/9	1725/1140	56Z*	None	115	6.4/4.5	Sleeve	A	**5K557**	206.00	**158.00**	23.0

GE BRAND, SINGLE SPEED

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearings	Insulation Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/6	1725	48	None	115	3.5	Ball	B	H195	**2K734**	$123.00	**$75.25**	14.0
	1140	48	None	115	3.7	Ball	B	H197	**2K735**	183.00	**112.00**	17.0
1/4	1725	48	None	115	5.1	Ball	B	H134	**2K737**	131.00	**80.15**	13.0
	1140	56	None	115	5.6	Ball	B	H136	**2K738**	240.00	**146.85**	24.0
1/3	1725	48	None	115	6.2	Ball	B	H138	**2K740**	153.00	**93.65**	15.0
	1725	48	None	230	2.7	Ball	B	H140	**2K741**	160.00	**97.90**	18.0
	1140	56	None	115	7.0	Ball	B	H142	**2K742**	278.00	**170.50**	27.0
1/2	1725	56	None	115	8.0	Ball	B	H143	**2K743**	209.00	**127.90**	22.0
	1725	56	None	115/230	8.0/4.0	Ball	B	H276	**2K744**	218.00	**133.40**	22.0

GE BRAND, TWO SPEED

HP at 1725 RPM	HP at 1140 RPM	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearings	Insulation Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/4	1/12	1275/1140	48	None	115	4.2/2.7	Ball	B	H203	**1D083**	$173.00	**$118.25**	20.0

(*) NEMA 56Z frame motors have nonstandard 1/2 x 1½" shaft with flat.

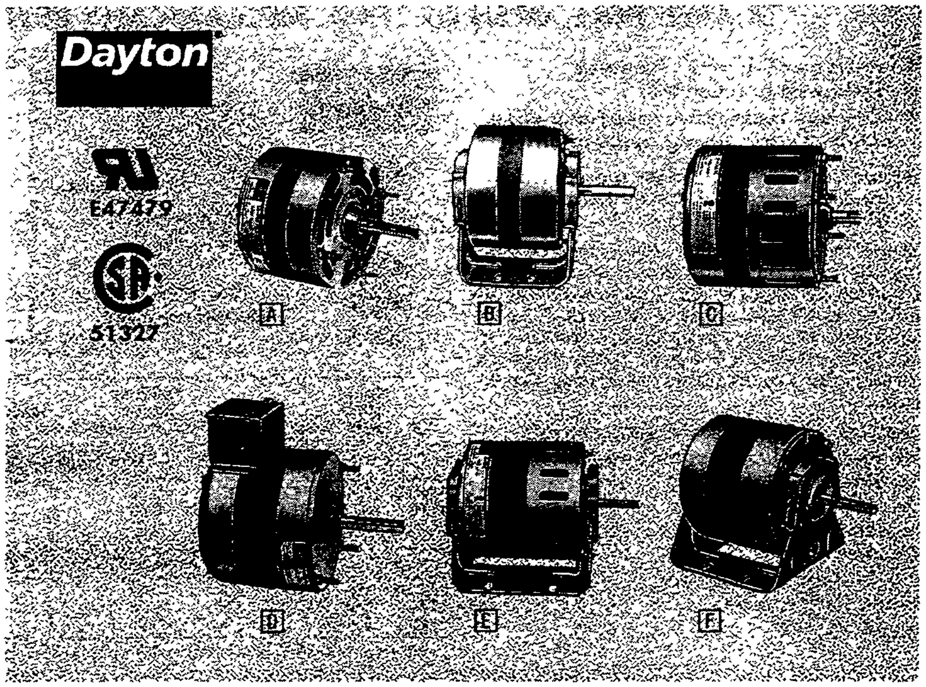
CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

4.4" DIAMETER FAN AND BLOWER MOTORS

- Sturdy all-steel construction
- Bearings surrounded by Permawick® lubrication
- Stators press-fitted into a rugged steel sleeve

Typical Uses: New and replacement use on a wide range of small fan and blower applications.
Type: Shaded pole
Bearings: All-angle, self-aligning sleeve (except No. 4M222 has ball bearings)
Mounting: Studs for mounting from shaft endshield or attaching fan guard and cradle base.
Enclosure: Open or TEAO
Service Factor: 1.0
Thermal Protection: Auto
Ambient: 40°C
Duty: Air-over or fan-cooled
Finish: Gray enamel
Brand: Dayton



ADAPTER BUSHING

3/8 ID x 1/2" OD adapter bushing for adapting 3/8" diameter shaft to 1/2" diameter. Has hole for set screw. 1⅛" long. Dayton brand.
No. 6X452. Shpg. wt. 0.1 lbs. List $5.50.
Each...$3.14

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

MOUNTING PATTERNS

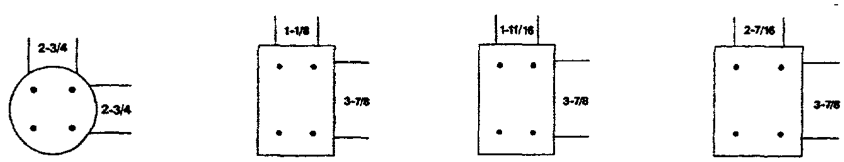


Fig. 1 Studs, Shaft End | Fig. 2 Base | Fig. 3 Base | Fig. 4 Base

HP	Key	Nameplate RPM	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Insulation Class	Mounting	Mounting Pattern	Shaft Dimen.	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
SHADED POLE, OPEN AIR-OVER, SINGLE SPEED														
1/15	A	1550	CW	115	2.3	A	Studs	1	3/8 x 2"	3½"	**3M569**	$53.00	**$40.10**	4.8
	A	1550	CW	115	2.3	A	Studs	1	3/8 x 1¼	5½	**3M826***	81.00	**61.25**	6.0
	B	1550	CW	115	2.3	A	Cradle	2	3/8 x 2	4½	**3M577**	64.00	**48.40**	6.0
	B	1550	CW	230	1.3	A	Cradle	2	3/8 x 2	4½	**3M578**	64.00	**48.40**	5.9
1/10	A	1550	CW	115	3.5	B	Studs	1	3/8 x 2	4	**3M059**	66.00	**49.90**	6.8
	A	1550	CW	115	3.1	A	Studs	1	3/8 x 2	4⅜	**3M574**	65.00	**49.20**	6.8
SHADED POLE, OPEN AIR-OVER, TWO SPEED														
1/15	A	1550/2-Spd	CW	115	2.6	A	Studs	1	3/8 x 2	3¾	**3M571†**	63.00	**47.65**	6.4
	A	1550/2-Spd	CW	115	2.3	A	Studs	1	3/8 x 1⅜	5½	**3M827***	95.00	**71.80**	7.0
1/10	A	1550/2-Spd	CW	115	3.5	A	Studs	1	3/8 x 2	4	**3M779‡**	77.00	**58.25**	6.0
SHADED POLE, OPEN AIR-OVER, THREE SPEED														
1/11	A	1550/3-Spd	CCW	115	3.4	A	Studs		1/2 x 2⅝	3⅜	**4M222#**	104.00	**78.60**	6.5
SHADED POLE, OPEN FAN-COOLED, SINGLE SPEED														
1/15	C	1550	CW	115	2.8	A	Studs	1	3/8 x 2	4⅛	**3M573**	58.00	**43.90**	5.1
1/10	C	1550	CW	115	3.3	A	Studs	1	3/8 x 2	5	**3M576‡**	69.00	**52.15**	7.2
	E	1550	CW	115	3.3	A	Cradle	4	3/8 x 2	5¾	**3M580**	78.00	**59.00**	8.0
SHADED POLE, TEAO, SINGLE SPEED														
1/20	D	1550	CW	115	2.2	A	Studs	1	3/8 x 2	4	**3M567**	59.00	**44.65**	6.7
	D	1550	CW	115	2.2	A	Studs	1	3/8 x 2	4	**3M568‡**	62.00	**46.90**	6.8
	F	1550	CW	115	2.2	A	Cradle	3	3/8 x 2	5	**3M581**	71.00	**53.70**	7.8

(*) Includes 10 ft. 18 ga. 3-cond. cord with plug; also motor-mounted pull-chain On-Off switch (No. 3M826) or motor-mounted pull-chain two-speed switch (No. 3M827). Yoke mounted strap included. (†) Use with No. 2W333, 16/3# 10 ft. SJ cord with SPDT feed-thru switch. (‡) Has 5.0 cubic inch junction box. (#) Ball bearings.

3.3" DIAMETER FAN AND BLOWER MOTORS

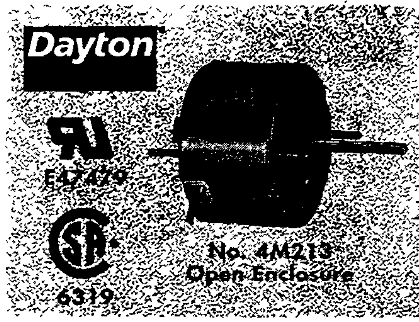
SHADED POLE, OPEN OR TEAO, MECHANICALLY REVERSIBLE, SINGLE SPEED

- Contractor Friendly™ Features
- Mechanically reversible
- OEM and replacement use for a wide variety of air-moving applications

Typical Uses: Designed with the contractor in mind for increased versatility and range of air-moving applications.

Special Features: Unique design for reversing the rotation of the motor shaft. Easily removable clips enable quick removal of motor endshield allowing the rotor to be reversed, thereby changing the rotation. A specially designed stator/rotor ensures nameplate performance in either direction.

Bearings: All-angle, self-aligning sleeve
Mounting: Stud, 3/4" on both endshields
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: A
Ambient: 40°C
Duty: Continuous air-over
Finish: Gray enamel
Brand: Dayton



No. 4M213
Open Enclosure

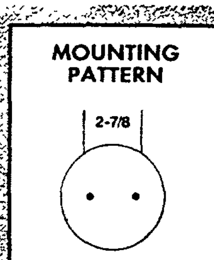
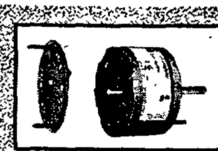


Fig. 1


Endshield is easily removed allowing rotor and shaft to be rotated, thereby reversing rotation of motor.

HP	Nameplate RPM	Rotation*	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Mounting Pattern	Mounting Location†	Shaft Dimensions Dia. x L	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
OPEN AIR-OVER, SINGLE SPEED												
1/100	1550	CW/CCW	115	0.64	1	BE	1/4 x 2"	2 3/8"	**4M213**	$28.00	**$22.44**	2.0
1/70	1550	CW/CCW	115	0.68	1	BE	1/4 x 2	2 3/8	**4M214**	29.00	**23.25**	2.3
1/50	1550	CW/CCW	115	0.84	1	BE	1/4 x 2	2 3/4	**4M215**	32.00	**24.55**	2.5
TOTALLY ENCLOSED AIR-OVER, SINGLE SPEED												
1/100	1550	CW/CCW	115	0.64	1	BE	1/4 x 2	2 3/8	**4M216**	29.00	**22.25**	2.0
1/70	1550	CW/CCW	115	0.68	1	BE	1/4 x 2	2 3/4	**4M217**	32.00	**24.55**	3.6
1/40	1550	CW/CCW	115	0.95	1	BE	5/16 x 2	3	**4M218**	35.00	**26.90**	3.3

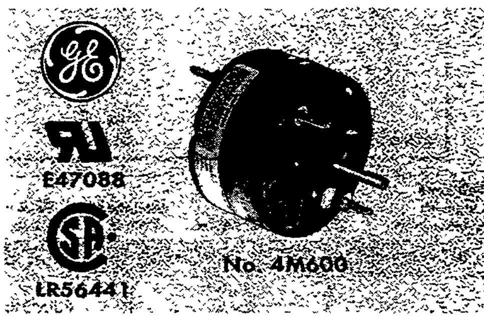
(*) Motors are set up CW rotation facing shaft end (welded end). (†) BE=Both Ends.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

SHADED POLE, OPEN OR TEAO, 3 SPEED

Typical Uses: Refrigerators, freezers, vending machines, food and beverage coolers, blowers and fans.

Bearings: All-angle sleeve
Mounting: Stud
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: A (except No. 4M619 is B)
Body Diameter: 3.3" (GE 59 frame)
Ambient: 50°C
Duty: Continuous air-over
Finish: Gray
Brand: GE



No. 4M600

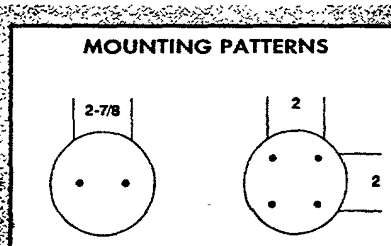


Fig. 1 Fig. 2

HP	Nameplate RPM	Rotation Facing Shaft*	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Mounting Pattern	Mounting Location†	Shaft Dimensions Dia. x L	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/80	1550/3-Spd	CCW	OPAO	115	0.8	1	BE	1/4 x 1 1/2"	2 1/4"	6202	**4M600**	$55.00	**$34.10**	2.0
	1550/3-Spd	CW	OPAO	115	0.8	1	BE	1/4 x 1 1/2	2 1/4	6203	**4M601**	55.00	**34.10**	2.0
	1550/3-Spd	CCW	TEAO	115	0.8	1	BE	1/4 x 2	2 1/4	6253	**4M602**	56.00	**34.70**	2.0
	1550/3-Spd	CW	TEAO	115	0.8	1	BE	1/4 x 2	2 1/4	6254	**4M603**	56.00	**34.70**	2.2
1/60	1550/3-Spd	CW	OPAO	115	1.0	1	BE	1/4 x 1 1/2	2 1/2	6206	**4M604**	58.00	**36.00**	2.5
1/50	1550/3-Spd	CCW	OPAO	115	1.0	1	BE	1/4 x 2 1/2	2 3/4	6207	**4M605**	63.00	**39.10**	3.0
	1550/3-Spd	CW	OPAO	115	1.0	1	BE	1/4 x 2 1/2	2 3/4	6208	**4M606**	63.00	**39.10**	3.0
	1550/3-Spd	CCW	TEAO	115	1.0	1	BE	1/4 x 2	2 1/2	6255	**4M607**	61.00	**37.80**	2.8
	1550/3-Spd	CW	TEAO	115	1.0	1	BE	1/4 x 2	2 1/2	6256	**4M608**	61.00	**37.80**	2.8
1/40	1550/3-Spd	CW	TEAO	115	1.3	1	BE	1/4 x 1 1/2	2 3/4	6257	**4M609**	64.00	**39.70**	3.0
	1550/3-Spd	CW	OPAO	115	1.5	1	BE	5/16 x 1 3/4	2 1/2	6211	**4M611**	58.00	**36.00**	3.0
1/35	1550/3-Spd	CCW	TEAO	115	1.5	1	BE	1/4 x 2 1/4	2 3/4	6258	**4M610**	64.00	**39.70**	3.0
	1550/3-Spd	CCW	OPAO	115	1.5	1	BE	5/16 x 2 1/2	2 1/2	6212	**4M612**	58.00	**36.00**	2.5
	1550/3-Spd	CW	OPAO	115	1.5	1	BE	5/16 x 2 1/2	2 1/2	6213	**4M613**	58.00	**36.00**	2.5
	1550/3-Spd	CW	OPAO	115	1.5	1	BE	5/16 x 1 1/2	2 3/4	6215	**4M615**	64.00	**39.70**	3.0
1/25	1550/3-Spd	CCW	OPAO	115	1.8	1	BE	5/16 x 1 1/2	2 3/4	6216	**4M616**	63.00	**39.10**	3.0
	1550/3-Spd	CW	OPAO	115	1.8	1	BE	5/16 x 1 1/2	2 3/4	6217	**4M617**	63.00	**39.10**	3.0
1/20	1550/3-Spd	CCW	OPAO	115	1.7	2	BE	5/16 x 1	3 1/2	6218	**4M618**	75.00	**46.50**	4.0
	1550/3-Spd	CW	OPAO	115	2.1	2	BE	5/16 x 2	3	6219	**4M619**	68.00	**42.15**	2.8
	1550/3-Spd	CCW	TEAO	115	1.7	2	BE	5/16 x 1	3 1/2	6259	**4M620**	77.00	**47.70**	4.0

(*) GE motors are nameplated rotation viewing end opposite shaft. (†) BE=Both Ends.

3.3" DIAMETER FAN AND BLOWER MOTORS

SHADED POLE, OPEN AIR-OVER, SINGLE AND 2 SPEED

- **Sturdy all-steel construction**
- **Bearings surrounded by Permawick® lubrication**
- **Stators press-fitted into a rugged steel sleeve**

Typical Uses: OEM and replacement use in a wide variety of air-over fan and blower applications such as bathroom fans and rangehoods.

Type: Shaded pole

Mounting: Stud, lug, or flange

Bearings: All-angle, self-aligning sleeve

Enclosure: Open air-over

Service Factor: 1.0

Thermal Protection: Auto

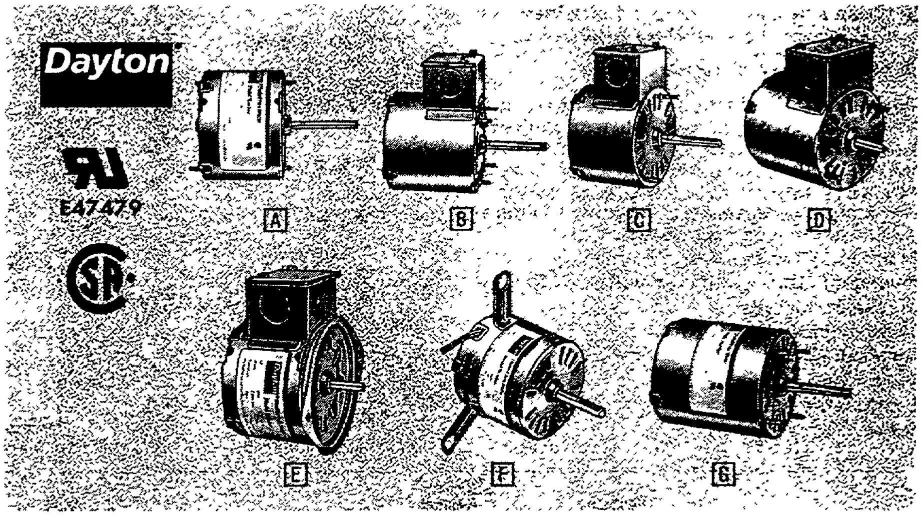
Ambient: 40°C

Duty: Continuous air-over

Finish: Gray enamel

Brand: Dayton

> **CAUTION:**
> **Not for fans in unattended areas.**
> Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



MOUNTING PATTERNS

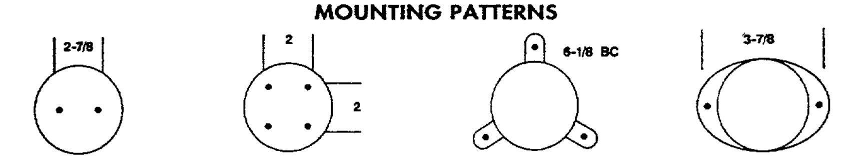


Fig. 1, Stud — Fig. 2, Stud — Fig. 3, Lug — Fig. 4, Flange

HP	Key	Nameplate RPM	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Ins. Class	Mounting Pattern	Mounting Location#	Shaft Dimensions	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
SINGLE SPEED														
1/125	E	3000	CCW	115	0.42	B	4	—	1/4 x 1"	2 3/8"	**4M298**	$40.00	**$30.40**	3.0
1/100	A	3000	CW	115	0.59	A	1	BE	1/4 x 2	2 3/4	**3M537**	27.00	**20.08**	2.1
	A	1550	CW	115	0.73	A	1	SE	1/4 x 2	2 3/8	**3M534**	26.00	**19.94**	2.0
	A	1550	CCW	115	0.73	A	1	SE	1/4 x 2	2 3/8	**3M535**	26.00	**19.94**	1.9
	A	1550	CW	115	0.73	A	1	BE	1/4 x 2	2 3/8	**3M536**	26.00	**19.94**	1.9
1/70	A	3000	CW	115	0.85	A	1	SE	1/4 x 2	3	**3M540**	30.00	**22.45**	2.5
	A	3000	CW	115	0.85	A	1	OSE	1/4 x 2	3	**3M541††**	31.00	**23.36**	2.5
	A	1550	CW	115	0.75	A	1	BE	1/4 x 2	2 3/8	**3M538**	27.00	**20.71**	2.2
	A	1550	CCW	115	0.75	A	1	BE	1/4 x 2	2 3/8	**3M539**	27.00	**20.71**	2.2
1/50	A	3000	CW	115	0.9	A	1	SE	1/4 x 2	3	**3M729**	30.00	**22.44**	2.5
	A	1550	CW	115	0.86	A	1	BE	1/4 x 2	2 3/4	**3M542**	29.00	**22.25**	2.5
	C	1550	CW	230	0.6	A	1	SE	5/16 x 2	2 3/4	**3M726‡**	42.00	**32.25**	2.7
1/40	A	3000	CW	115	1.2	A	1	BE	1/4 x 2	3 1/8	**3M545**	31.00	**22.90**	2.8
	C	3000	CW	115	1.3	A	1	SE	1/4 x 2	3	**3M728‡**	36.00	**27.10**	2.9
	C	3000	CW*	115	1.1	A	1	BE	1/4 x 2 ea*	3 1/8	**3M730‡**	34.00	**25.65**	2.5
	A	1550	CW	115	1.1	A	1	BE	5/16 x 2	2 3/4	**3M543**	29.00	**22.25**	2.5
	A	1550	CCW	115	1.1	A	1	BE	5/16 x 2	2 3/4	**3M544**	29.00	**22.25**	2.5
	C	1550	CW	115	1.1	A	1	SE	5/16 x 2	2 3/4	**3M722‡**	40.00	**30.75**	2.8
	C	1550	CCW*	115	1.1	A	1	BE	5/16 x 2 ea*	3 1/4	**3M724‡**	48.00	**36.85**	4.0
1/30	C	3000	CW	230	0.6	A	1	SE	5/16 x 2	3 3/8	**3M725‡**	43.00	**32.55**	3.6
	C	3000	CW	115**	1.2	A	1	SE	5/16 x 2	3 1/2	**3M777‡**	43.00	**32.55**	3.4
	G	1550	CW	115	1.3	A	2	BE	5/16 x 2	3	**3M546**	33.00	**25.35**	3.2
1/25	D	3000	CW	115	1.37	B	1	SE	1/4 x 1	3 3/8	**4M300††**	48.00	**36.30**	3.6
1/20	G	1550	CW	115	1.7	A	2	BE	5/16 x 2	3 7/16	**3M547**	36.00	**27.65**	3.6
	B	1550	CW	115	1.9	A	2	SE	5/16 x 2	3 1/4	**3M778‡**	45.00	**34.55**	3.8
	G	1550	CW*	115	2.0	A	2	BE	5/16 x 2 ea*	3 1/2	**3M083**	44.00	**33.75**	3.6
1/15	G	3000	CW	115	2.4	A	2	SE	5/16 x 2	3 7/8	**3M548**	36.00	**27.45**	3.8
	F	1550	CCW	115	2.90	B	3	—	5/16 x 1 3/4	3	**4M301**	44.00	**33.75**	3.8
TWO SPEED														
1/30	A	1550/2-Spd	CW	115	1.4	A	2	SE	5/16 x 2	3	**3M549†**	36.50	**28.05**	3.2

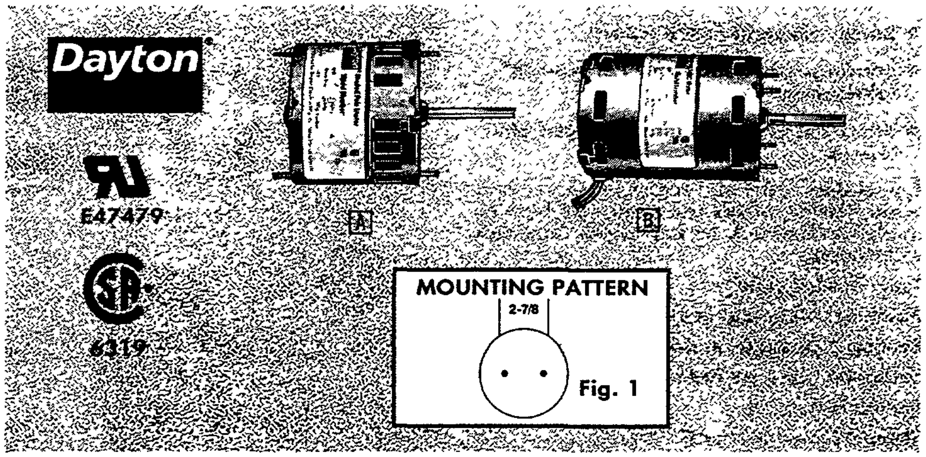
(*) Double shaft motor. Rotation viewed facing lead end. (†) Use with No. 2W333, 16/3# 10-ft. SJ cord with SPDT feed-thru switch (‡) Has 5.0 cubic-inch junction box.
(#) SE = Shaft End; OSE = Opposite Shaft End; BE = Both Ends. (††) Has short cord set. (**) 60/50 Hz

3.3" DIAMETER FAN AND BLOWER MOTORS AND KITCHEN EXHAUST FAN MOTORS

SHADED POLE AND PSC, OPEN FAN-COOLED OR OPEN AIR-OVER, SINGLE SPEED

- **Open fan-cooled motors have internal fan for mechanical duty applications**
- **Sturdy all-steel construction**

Typical Uses: OEM and replacement use in a wide variety of fan and blower applications. Internal fan in open fan-cooled motors makes them suitable for mechanical duty applications such as pumps, diaphragm compressors, laboratory equipment and business machines.
Bearings: All-angle, self-aligning sleeve
Mounting: Studs on one or both endshields
Service Factor: 1.0
Thermal Protection: Auto
Ambient: 40°C
Duty: Continuous
Finish: Gray enamel
Brand: Dayton



HP	Key	Nameplate RPM	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Insulation Class	Mounting Pattern	Mounting Location‡	Shaft Dimens. Dia. x L	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
SHADED POLE, OPEN FAN-COOLED														
1/100	A	1550	CW	115	0.68	A	1	BE	1/4 x 2"	3¼"	**3M558**	$28.00	**$21.47**	2.1
1/70	A	3000	CW	115*	0.74	B	1	SE	1/4 x 1⅛	3 7/16	**4M299** #	41.00	**30.85**	2.5
1/70	A	1550	CW	115	0.75	A	1	BE	1/4 x 2	3⅝	**3M560**	32.00	**24.55**	2.9
1/70	A	1550	CCW	115	0.75	A	1	BE	1/4 x 2	3⅝	**3M561**	32.00	**24.55**	2.6
1/40	A	1550	CW	115	1.0	A	1	BE	5/16 x 2	3 15/16	**3M562**	36.00	**27.65**	3.3
1/40	A	1550	CCW	115	1.0	A	1	BE	5/16 x 2	3 15/16	**3M563**	36.00	**27.65**	3.3
PERMANENT SPLIT CAPACITOR, OPEN AIR-OVER														
1/150	B	1625	CW	115*	1.0	B	2	SE	5/16 x 2	4⅞	**3M499** †	59.00	**45.30**	5.3

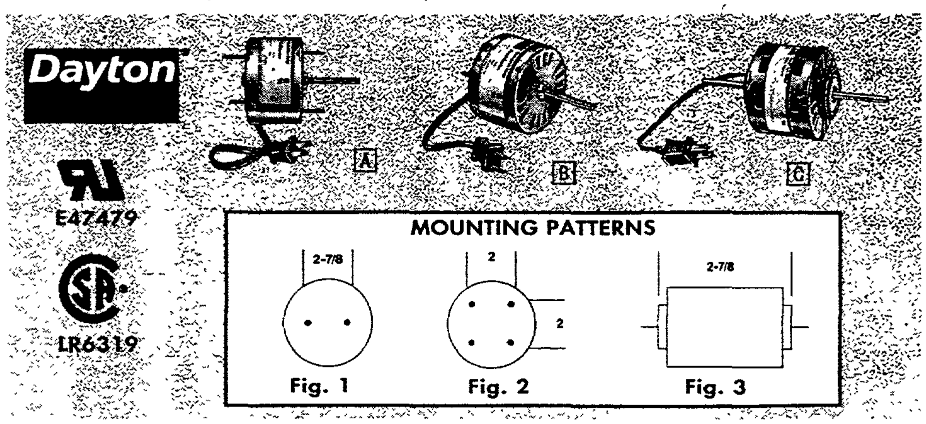
(*) Also operable on 50 Hz at 5/6 of 60 Hz speed and HP. (†) Stock No. 6X652 capacitor is required. (‡) BE = Both Ends; SE = Shaft End. (#) Has conduit box.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

SHADED POLE, TEAO OR OPEN, SINGLE SPEED, VENTILATION/KITCHEN EXHAUST FAN MOTORS

- **Cordset and plug included**

Typical Uses: Residential and commercial vent fans manufactured by Broan, Nutone, Penn Ventilator, Miami-Carey, Martin, Patton, Lakewood, Fasco, Bemis, and others. TEAO models are for use in dirty, dusty, **noncombustible** environments.
Bearings: All-angle, self-aligning sleeve
Mounting: Stud (except No. 4M195 is resilient ring and has double shaft)
Service Factor: 1.0
Thermal Protection: Auto
Body Diameter: 3.3"
Ambient: 40°C
Finish: Gray enamel
Brand: Dayton



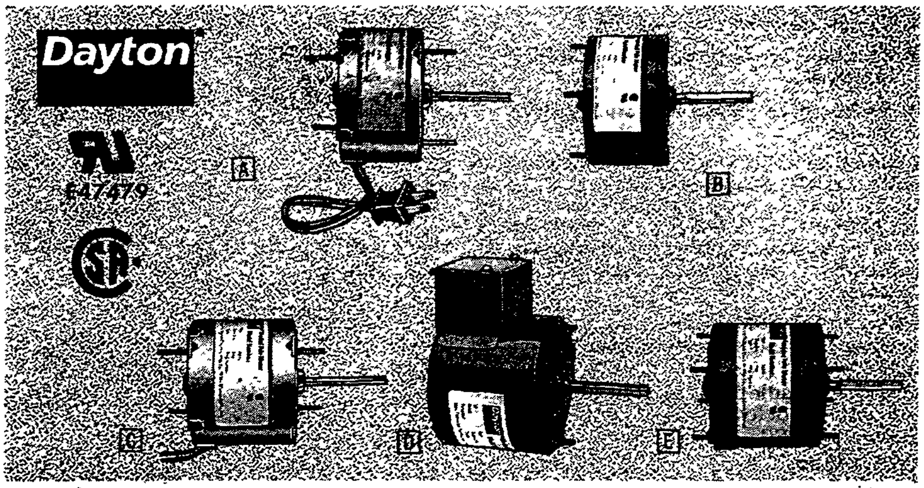
HP	Key	Nameplate RPM	Rotation Facing Shaft	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Ins. Class	Mounting Pattern	Mounting Location†	Shaft Dimens. Dia. x L	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
1/100	A	1550	CW	TEAO	115	0.73	A	1	BE	1/4 x 2"	2⅜"	**3M552**	$28.00	**$21.47**	2.0
1/100	A	1550	CCW	TEAO	115	0.73	A	1	BE	1/4 x 2	2⅜	**3M660**	28.00	**21.47**	2.0
1/100	B	1550	CCW	Open	115	0.48	B	2	OSE	1/4 x 2	2⅜	**4M192**	30.00	**23.01**	2.0
1/50	B	1550	CCW	Open	115	0.85	B	2	OSE	1/4 x 2	2⅜	**4M193**	31.00	**23.77**	2.0
1/25	A	1550	CW	TEAO	115	1.35	B	2	OSE	1/4 x 2	3	**4M194**	37.00	**28.45**	3.3
1/25	C	1550	CW*	Open	115	1.60	B	3	BE	1/4 x 2 ea	2¼	**4M195**	38.00	**29.20**	2.7

(*) CW lead end. (†) BE = Both Ends; OSE = Opposite Shaft End.

3.3" DIAMETER FAN AND BLOWER MOTORS

- **Designed to operate in dirty, dusty, noncombustible environments**

Typical Uses: OEM and replacement use in a wide variety of fan and blower applications.
Type: Shaded pole
Bearings: All-angle, self-aligning sleeve
Mounting: Studs on one or both endshields
Enclosure: TEAO
Service Factor: 1.0
Thermal Protection: Auto
Ambient: 40°C
Duty: Continuous air-over
Finish: Gray enamel
Brand: Dayton



CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

MOUNTING PATTERNS

Fig. 1, Stud   Fig. 2, Stud

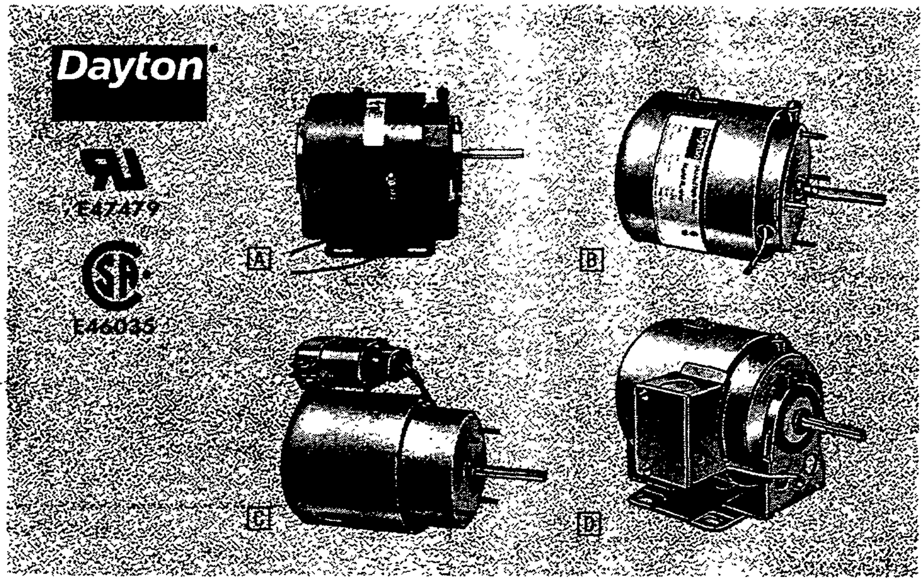
HP	Key	Nameplate RPM	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Insulation Class	Mounting Pattern	Mounting Location‡	Shaft Dimensions Dia. x Length	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
SHADED POLE, SINGLE SPEED														
1/100	A	3000	CW	115	0.65	B	1	BE	1/4 x 2"	3 1/8"	**4M198***	$30.00	**$22.53**	2.5
	A	1550	CW	115	0.73	A	1	BE	1/4 x 2"	2 3/8	**3M552***	28.00	**21.47**	2.0
	A	1550	CCW	115	0.73	A	1	BE	1/4 x 2"	2 3/8	**3M660***	28.00	**21.47**	2.0
	C	1550	CCW	115	0.65	A	2	OSE	5/16 x 2	2 3/8	**3M723**	30.00	**23.01**	2.0
1/70	B	3000	CW	115	0.70	B	1	BE	1/4 x 2 1/4	3 1/8	**4M091**	33.00	**24.44**	2.8
	B	3000	CCW	115	0.70	B	1	BE	1/4 x 2 1/4	3 1/8	**4M092**	33.00	**24.44**	2.8
	B	1550	CW	115	0.70	A	1	BE	1/4 x 2	2 3/4	**3M554**	30.00	**23.01**	2.8
	B	1550	CCW	115	0.70	A	1	BE	1/4 x 2	2 3/4	**3M661**	30.00	**23.01**	2.6
1/40	B	3000	CCW	115	0.95	B	1	BE	1/4 x 2 1/4	3 1/4	**4M093**	34.00	**25.75**	2.9
	B	1550	CW	115	1.1	A	1	BE	5/16 x 2	3	**3M555**	33.00	**25.35**	3.3
	B	1550	CCW	115	1.1	A	1	BE	5/16 x 2	3	**3M662**	33.00	**25.35**	3.3
	D	1550	CW	115	1.1	A	1	SE	5/16 x 2	3	**3M556**†	37.00	**28.45**	3.4
1/30	B	3000	CW	115	1.2	B	1	BE	1/4 x 2 1/4	3 1/2	**4M094**	36.00	**27.20**	3.0
	B	1550	CCW	115	1.1	B	1	BE	5/16 x 2 1/4	3 1/4	**4M199**	37.00	**28.45**	3.8
	E	1550	CW	115	1.1	A	2	BE	5/16 x 2	3 1/4	**3M557**	36.00	**27.65**	3.7
SHADED POLE, TWO SPEED														
1/70	B	3000/2-Spd	CW	115	0.77	B	1	BE	1/4 x 2 1/4	3	**4M200**	37.00	**27.70**	2.5
1/70	B	1550/2-Spd	CW	115	0.65	B	1	BE	1/4 x 2 1/4	2 3/8	**4M201**	39.00	**29.95**	2.2
1/50	B	3000/2-Spd	CW	115	0.85	B	1	BE	1/4 x 2 1/4	3 1/4	**4M095**	39.00	**29.20**	2.8

(*) Includes cordset and plug. (†) Has 5.0 cubic-inch junction box. (‡) BE = Both Ends; OSE = Opposite Shaft End; SE = Shaft End.

3.3″ DIAMETER FAN AND BLOWER MOTORS

- **Sturdy all-steel construction**
- **Bearings surrounded by Permawick® lubrication**
- **Stators press-fitted into sturdy steel sleeve**

Typical Uses: OEM and replacement use in a wide variety of fan and blower applications. Internal fan makes these motors suitable for mechanical duty applications such as pumps, diaphragm compressors, laboratory equipment, and business machines.
Type: Shaded pole or PSC
Bearings: All-angle, self-aligning sleeve or ball
Mounting: Cradle base or stud (see mounting patterns below)
Enclosure: TEFC
Service Factor: 1.0
Thermal Protection: None (except No. 4M202 is auto-thermal protection)
Body Diameter: 4" including fan shroud
Shaft Dimensions: 5/16 x 2"
Ambient: 40°C
Duty: Continuous
Finish: Gray enamel
Brand: Dayton



CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

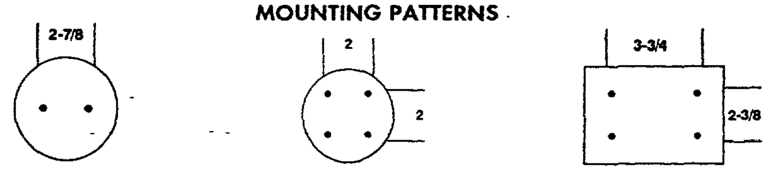


Fig. 1, Stud
Fig. 2, Stud
Fig. 3, Base

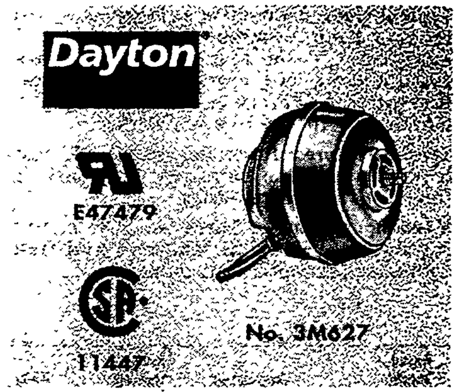
HP	Key	Nameplate RPM	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearings	Insulation Class	Mounting Pattern	Mounting Location‡	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
SHADED POLE, CRADLE BASE														
1/20	A	1550	CW	115	2.0	Sleeve	A	3	—	5 5/16"	**5K002**	$63.00	**$48.35**	5.6
	D	1550	CW	115	2.0	Sleeve	A	3	—	5 5/16	**5K006**	68.00	**52.20**	5.8
1/15	D	1550	CW	115	2.3	Sleeve	A	3	—	5 5/16	**3M364**	69.00	**52.95**	6.7
SHADED POLE, STUD MOUNT														
1/25	B	3000	CW	115	1.6	Sleeve	B	2	SE	4 5/8	**4M202** #	50.00	**37.70**	4.5
	B	1550	CW	115	1.5	Sleeve	B	2	SE	4 1/2	**4M203**	52.00	**39.95**	4.3
1/20	B	3000	CW	115	1.6	Sleeve	A	2	SE	4 1/2	**3M069**	51.00	**38.55**	4.4
	B	1550	CW	115	2.0	Sleeve	A	2	SE	4 1/2	**5K001**	55.00	**42.25**	4.6
	B	1550	CW	115	2.0	Ball	A	2	SE	4 1/2	**5K004**	70.00	**53.75**	4.7
	B	1550	CCW	115	1.8	Ball	A	2	SE	4 1/2	**3M290**	70.00	**53.75**	4.6
	B	1550	CW	230	1.0	Sleeve	A	2	SE	4 1/2	**5K003**	57.00	**43.75**	4.5
	B	1550	CW	230	0.9	Ball	A	2	SE	4 1/2	**3M001**	73.00	**56.05**	3.9
1/15	B	3000	CW	115	1.8	Sleeve	B	2	SE	5 1/4	**4M204**	56.00	**42.20**	5.5
	B	1550	CCW	115	2.3	Sleeve	A	1	SE	5 1/16	**3M291**	56.00	**43.00**	5.6
	B	1550	CW	115	2.3	Sleeve	A	2	SE	5	**3M363**	57.00	**43.75**	4.9
PSC, STUD MOUNT														
1/8	C	3000	CW/CCW	115	1.8	Sleeve	A	2	SE	5 3/8	**3M292** †	75.00	**65.50**	6.0
	C	3000	CW/CCW	230*	0.9	Sleeve	B	2	SE	5 3/4	**4M090** †	83.00	**68.20**	6.0

(*) Also operable on 50 Hz at 5/6 of 60 Hz rated speed and HP. (†) Capacitor included. (‡) SE = Shaft End. (#) Auto-thermal protection.

UNIT BEARING MOTORS

FAN/BLOWER MOTORS

DAYTON BRAND, SHADED POLE



- **Aluminum housing**

Typical Uses: Refrigerator and freezer fans, commercial refrigeration equipment, room and hood ventilators, room heaters, evaporative coolers, humidifiers, dehumidifiers, and other equipment having 6 to 10" hubless fan blades.

Special Features: Precision machined die-cast aluminum housing. Pre-oiled using large capacity felt wicking system. Kit included in carton contains vibration dampener, speed nut, and four No. 8-36 mounting screws, except No. 3M627 which requires only three screws (included).

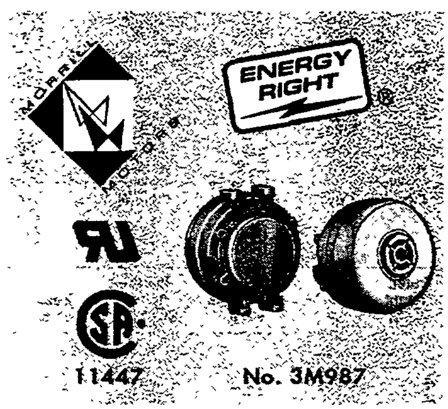
Mounting: All-angle. Four tapped No. 8-36 mounting holes 2¹³⁄₁₆" OC at lead end and rigid foot base (except 2 watt model).
Enclosure: TEAO
Service Factor: 1.0
Insulation Class: A
Body Diameter: 3½"
Shaft Dimensions: 1/4 x 7/16" threaded
Ambient: 40°C
Duty: Continuous air-over
Finish: Gray
Brand: Dayton
CSA Certified: 9 thru 16 watt models only

Rated Output Watts	HP	Nameplate RPM	Rotation Facing Shaft End	Thermal Protection	Volts 60 Hz*	Full-Load Amps at Nameplate Volts	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
2	1/370	1550	CCW	Impedance	115	0.3	3¹⁄₁₆"	**3M627**	$21.00	**$13.54**	1.9
4	1/185	1550	CCW	Impedance	115	0.5	3¹⁄₁₆	**3M628**	24.00	**15.46**	1.9
	1/185	1550	CW	Impedance	115	0.5	3¹⁄₁₆	**3M629**	24.00	**15.46**	1.9
5	1/150	1550	CCW	Impedance	115	0.5	3¹⁄₁₆	**3M890**	25.00	**16.11**	2.0
	1/150	1550	CW	Impedance	115	0.5	3¹⁄₁₆	**3M889**	25.00	**16.11**	2.0
6	1/125	1550	CCW	Impedance	115	0.6	3½	**3M630**	26.00	**16.76**	2.5
	1/125	1550	CW	Impedance	115	0.6	3½	**3M631**	26.00	**16.76**	2.5
9	1/83	1550	CCW	Auto	115	0.8	3½	**3M632**	27.00	**17.40**	2.5
	1/83	1550	CW	Auto	115	0.8	3½	**3M633**	27.00	**17.40**	2.5
	1/83	1550	CCW	Auto	230	0.4	3½	**3M634**	29.00	**18.69**	2.5
	1/83	1550	CW	Auto	230	0.4	3½	**3M635**	29.00	**18.69**	2.5
16	1/47	1550	CCW	Auto	115	1.1	3¹³⁄₁₆	**3M636**	35.00	**22.55**	3.2
	1/47	1550	CW	Auto	115	1.1	3¹³⁄₁₆	**3M637**	35.00	**22.55**	3.2
	1/47	1550	CCW	Auto	230	0.6	3¹³⁄₁₆	**3M638**	38.00	**24.50**	3.2
	1/47	1550	CW	Auto	230	0.6	3¹³⁄₁₆	**3M639**	38.00	**24.50**	3.2

(*) Models with 2 through 6 rated output watts also operable on 50 Hz.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

MORRILL MOTORS BRAND, HIGH EFFICIENCY, SHADED POLE



- **Aluminum housing**

Typical Uses: Domestic refrigerator and freezer fans, commercial refrigeration equipment, room and hood ventilators, room heaters, evaporative coolers, humidifiers, dehumidifiers, and on other equipment having 6 to 10" fan blades.

Special Features: High efficiency design. Precision machined die-cast aluminum housing. Positive flow lubrication system with large pre-oiled felt wick reservoir and hardened motor shaft for long life without re-oiling. Kit included in carton contains speed nut and four No. 8-36 thread-mounting mounting screws.

Mounting: Horizontal or vertical shaft-up. Five mounting holes, 2½" OC at lead end and two rigid foot bases, top and bottom, with four mounting holes.
Enclosure: TEAO
Thermal Protection: 2 thru 6 watt models, impedance; 9 watt models, auto
Insulation Class: B
Body Diameter: 3½"
Ambient: 40°C
Duty: Continuous air-over
Finish: Unpainted aluminum
Brand: Morrill
UL Recognized: E81645 or E81653

Rated Output Watts	HP	Nameplate RPM	Rotation Facing Shaft End*	Volts 50/60 Hz	Full-Load Amps at Nameplate Volts	Threaded Shaft Dimens.	Length Less Shaft	Morrill Model	Stock No.	List	Each	Shpg. Wt.
2	1/370	1550	CCW	115	0.16	1/4 x 3/8"	3"	SPBB2H1775A	**3M987**†	$21.00	**$14.93**	1.6
5	1/150	1550	CW	115	0.34	1/4 x 3/8	3	SP-B5HUEMR1	**3M331**	27.00	**19.21**	1.9
	1/150	1550	CCW	115	0.34	1/4 x 3/8	3	SP-B5HUEM1	**3M332**	27.00	**18.46**	1.6
6	1/125	1550	CW	115	0.36	1/4 x 3/8	3	SP-B6HUEMR1	**3M333**	29.00	**20.61**	2.3
	1/125	1550	CCW	115	0.36	1/4 x 3/8	3	SP-B6HUEM1	**3M334**	29.00	**20.61**	2.2
9	1/83	1550	CW	115	0.53	1/4 x 3/8	3½	SP-B9HUEMR1	**3M335**	30.00	**21.29**	2.2
	1/83	1550	CCW	115	0.53	1/4 x 3/8	3½	SP-B9HUEM1	**3M336**	30.00	**21.29**	2.2
	1/83	1550	CW	230	0.27	1/4 x 3/8	3½	SP-B9HUEMR2	**3M337**	31.00	**22.03**	1.9
	1/83	1550	CCW	230	0.27	1/4 x 3/8	3½	SP-B9HUEM2	**3M338**	31.00	**22.03**	2.2

(*) Morrill motors are nameplated rotation facing lead end. (†) Has no rigid foot base and three No. 8-36 mounting holes at lead end on face.

FAN/BLOWER MOTORS

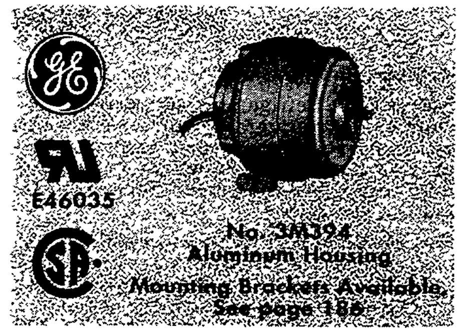
UNIT BEARING MOTORS

Typical Uses: Domestic refrigerator and freezer fans, commercial refrigeration equipment, room and hood ventilators, room heaters, evaporative coolers, humidifiers, dehumidifiers and other equipment having 7 to 10" hubless fan blades.

Special Features: Precision machined, cast-iron or aluminum housings. Pre-oiled for long use without re-oiling.

Mounting: All-angle. Three No. 8-36 mounting holes 2½" OC at lead end and rigid foot base (except 2 watt models)

Type: Shaded pole or PSC
Enclosure: TEAO
Service Factor: 1.0
Thermal Protection: 2 thru 9 watt and 4M530, impedance; 16 watt models, auto
Body Diameter: 3½" (GE 51 frame)
Shaft Dimensions: 1/4-20 x 1/2" threaded shafts
Ambient: 50°C
Duty: Continuous air-over
Finish: Black enamel (Nos. 4M235, 3M394 are natural finish)
Brand: GE



Rated Output Watts	HP	Nameplate RPM	Rotation Facing Shaft End†	Volts 60/50 Hz	Full-Load Amps at Nameplate Volts	Insulation Class	Shaft Type	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
SHADED POLE, ALUMINUM HOUSING													
2	1/370	1550	CCW	115	0.14	A	Threaded	2⅞"	5108	**4M235***	$26.00	**$16.59**	2.0
	1/370	1550	CCW	115	0.25	A	Threaded	2⅞	5109	**3M394**	20.00	**13.40**	1.8
2.5	1/300	1000‡	CCW	115	0.30	A	Threaded	2⅞	5113	**4M501**	27.00	**17.23**	1.9
4	1/185	1550	CCW	115	0.27	A	Threaded	2⅞	5213	**4M502**	24.00	**15.33**	1.9
	1/185	1550	CW	115	0.27	A	Threaded	2⅞	5214	**4M503**	24.00	**15.33**	1.9
	1/185	1550	CCW	230	0.16	A	Threaded	2⅞	5223	**4M504**	26.00	**16.59**	1.9
	1/185	1550	CW	230	0.16	A	Threaded	2⅞	5224	**4M505**	26.00	**16.59**	2.1
6	1/125	1550	CCW	115	0.40	B	Threaded	3⅜	5313	**4M506**	26.00	**16.59**	2.3
	1/125	1550	CW	115	0.40	B	Threaded	3⅜	5314	**4M507**	26.00	**16.59**	2.3
9	1/83	1550	CCW	115	0.55	B	Threaded	3⅜	5413	**4M508**	27.00	**17.23**	2.3
	1/83	1550	CW	115	0.55	B	Threaded	3⅜	5414	**4M509**	27.00	**17.23**	2.3
	1/83	1550	CCW	230	0.25	B	Threaded	3⅜	5423	**4M510**	29.00	**18.51**	2.3
	1/83	1550	CW	230	0.25	B	Threaded	3⅜	5424	**4M511**	29.00	**18.51**	2.3
16	1/47	1550	CCW	115	1.0	A	Threaded	3⅝	5813	**4M512**	35.00	**22.36**	3.0
	1/47	1550	CW	115	1.0	A	Threaded	3⅝	5814	**4M513**	35.00	**22.36**	3.0
	1/47	1550	CCW	230	0.50	A	Threaded	3⅝	5823	**4M514**	37.00	**23.60**	3.1
	1/47	1550	CW	230	0.50	A	Threaded	3⅝	5824	**4M515**	37.00	**23.60**	3.0
SHADED POLE, CAST-IRON HOUSING													
2.5	1/300	1000‡	CCW	115	0.30	A	Threaded	2⅞	5111	**3M472**	29.00	**18.51**	2.5
4	1/185	1550	CCW	115	0.27	A	Threaded	2⅞	5211	**3M274**	27.00	**17.23**	2.5
	1/185	1550	CW	115	0.27	A	Threaded	2⅞	5212	**3M275**	27.00	**17.23**	2.5
	1/185	1550	CCW	230	0.16	A	Threaded	2⅞	5221	**4M521**	29.00	**18.44**	29.0
	1/185	1550	CW	230	0.16	A	Threaded	2⅞	5222	**4M522**	29.00	**18.51**	2.8
6	1/125	1550	CCW	115	0.40	B	Threaded	3⅜	5311	**3M270**	29.00	**18.51**	3.3
	1/125	1550	CW	115	0.40	B	Threaded	3⅜	5312	**3M269**	29.00	**18.51**	3.3
9	1/83	1550	CCW	115	0.55	B	Threaded	3⅜	5411	**3M285**	30.00	**19.15**	3.3
	1/83	1550	CW	115	0.55	B	Threaded	3⅜	5412	**3M284**	30.00	**19.15**	3.3
	1/83	1550	CCW	230	0.25	B	Threaded	3⅜	5421	**3M286**	32.00	**20.44**	3.3
	1/83	1550	CW	230	0.25	B	Threaded	3⅜	5422	**3M283**	32.00	**20.44**	3.3
16	1/47	1550	CCW	115	1.0	A	Threaded	3½	5811	**3M473**	40.00	**25.55**	4.0
	1/47	1550	CW	115	1.0	A	Threaded	3½	5812	**3M475**	40.00	**25.55**	4.0
	1/47	1550	CCW	230	0.50	A	Threaded	3½	5821	**3M474**	42.00	**26.85**	4.0
	1/47	1550	CW	230	0.50	A	Threaded	3½	5822	**3M476**	42.00	**26.85**	4.0

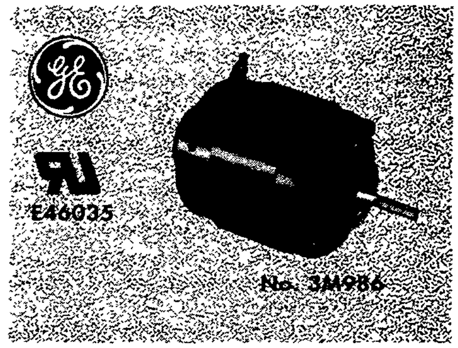
Rated Output Watts	HP	Nameplate RPM	Rotation Facing Shaft End†	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Ins. Class	Shaft Type	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
PSC, CAST-IRON HOUSING															
4	1/185	1550	CW/CCW	115	0.16	A	Threaded	3⅝"	5114	**4M528**	$58.00	**$37.10**	3.6	6X650	$4.49
6	1/125	1550	CW/CCW	115	0.22	B	Threaded	3⅝	5116	**4M529**	65.00	**41.55**	3.6	6X650	4.49
9	1/83	1550	CW/CCW	115	0.30	B	Threaded	3⅝	5117	**4M530**	66.00	**42.20**	3.6	6X651	4.49
16	1/47	1550	CW/CCW	115	0.60	A	Threaded	3⅝	5118	**4M531**	75.00	**47.90**	3.4	6X654	5.00

(*) Includes special grounding provision and is an OEM replacement of 3-pin leadless unit bearing motors found in GE and Hotpoint brand refrigerators.
(†) GE motors are nameplated rotation viewing lead end. (‡) RPM at rated load, no load RPM is approximately 1550.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

UNIT BEARING MOTORS

GE BRAND, SHADED POLE



Typical Uses: Room air conditioners, fans, air coolers, unit heaters, condenser units, and other air-over motor applications.

Mounting: All-angle, resilient ring and four No. 8-32 holes 2⅞" bolt circle for shaft end mounting. Nos. 3M179, 3M183, 3M186, 3M187, and 3M189 are hole mount only. Bases and accessories available on pages 185 and 187.

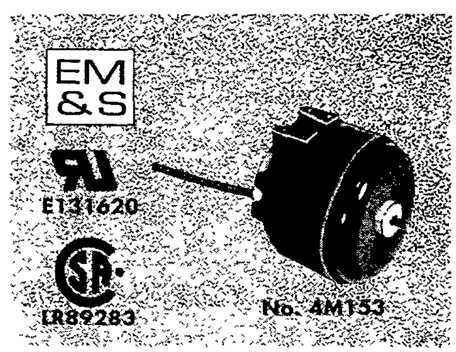
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: A
Body Diameter: 4" (GE 11 frame)
Ambient: 50°C
Duty: Continuous air-over
Finish: Black enamel
UL Recognized: Thermal protection (E27885); insulation system (E37513); and construction (E46035)

Watts	HP	Mil. HP	Nameplate RPM	Rotation Facing Shaft End*	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	1¾" Dia. Resil. Rings OC	Shaft Dimens.	Length Less Shaft	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
18	1/40	25	1550	CCW	Open	115	1.3	4½"	5/16 x 1¼"	4 13/16"	1531	**3M170**	$119.00	**$73.75**	4.0
			1550	CW	Open	115	1.3	4½	5/16 x 1¼	4 13/16	1541	**3M171**	119.00	**73.75**	4.2
			1550	CW	TEAO	115	1.3	4½	5/16 x 1¼	4 13/16	1009	**3M172**	157.00	**97.25**	4.0
			1550	CCW	Open	208-230	0.6	4½	5/16 x 1¼	4 13/16	1532	**3M175**	121.00	**74.95**	4.2
			1550	CW	Open	208-230	0.6	4½	5/16 x 1¼	4 13/16	1542	**3M176**	121.00	**75.00**	4.0
			1550	CW	TEFC	115/208-230	1.3/0.6	5½	5/16 x 1¼	5⅞	1012	**3M173**	186.00	**115.25**	4.5
			1550	CCW	TEAO	115/208-230	1.3/0.6	4½	5/16 x 1¼	4 13/16	1011	**3M174**	176.00	**109.05**	4.2
25	1/30	35	1550	CW	Open	115	1.6	4½	5/16 x 1¼	4 13/16	1007	**3M177**	158.00	**97.90**	4.0
			1550	CCW	Open	115	1.7	4⅝	5/16 x 1¼	5 1/16	1431	**3M114**	129.00	**79.95**	4.3
			1550	CW	Open	115	1.7	4⅝	5/16 x 1¼	5 1/16	1441	**3M116**	129.00	**79.95**	4.8
			1550	CW	TEFC	115	1.7	—	5/16 x 1¼	5 11/16	1013	**3M179**	161.00	**99.75**	4.5
			1550	CCW	Open	208-230	0.9	4⅝	5/16 x 1¼	5 1/16	1432	**3M115**	132.00	**81.80**	4.5
			1550	CW	Open	208-230	0.9	4⅝	5/16 x 1¼	5 1/16	1442	**3M117**	132.00	**81.80**	4.5
			1550	CCW	Open	208-230	0.8	—	5/16 x 1¼	3 15/16	1006	**3M183**	165.00	**102.25**	4.1
			1550	CCW	TEFC	115/208-230	1.7/0.9	5 13/16	5/16 x 1¼	6⅛	1020	**3M180**	197.00	**122.05**	5.1
			1550	CW	TEFC	115/208-230	1.7/0.9	5 13/16	5/16 x 1¼	6⅛	1021	**3M181**	197.00	**122.05**	5.0
35	1/20	35	1550	CCW	Open	115	2.2	4¾	5/16 x 2	5 1/16	1331	**3M184**	147.00	**91.05**	4.5
			1550	CW	Open	115	2.2	4¾	5/16 x 2	5 1/16	1341	**3M185**	147.00	**91.05**	5.0
			1550	CW	Open	115	2.2	—	5/16 x 1¼	4 13/16	1017	**3M186**	150.00	**92.90**	4.5
			1550	CCW	Open	208-230	1.1	4⅝	5/16 x 2	5 1/16	1332	**3M952**	150.00	**92.90**	4.5
			1550	CW	Open	208-230	1.1	4⅝	5/16 x 2	5 1/16	1342	**3M188**	150.00	**92.90**	4.5
			1550	CCW	Open	208-230	1.1	—	5/16 x 1¼	4 13/16	1016	**3M189**	171.00	**105.95**	4.5
			1550	CW	TEFC	115/208-230	2.2/1.1	—	5/16 x 1¼	5 15/16	1019	**3M187**	193.00	**119.60**	5.0
50	1/15	35	1550	CCW	Open	208-230†	1.2	5	5/16 x 1½	5⅜	1232	**3M986**	157.00	**97.25**	5.3

(*) GE motors are nameplated rotation viewing lead end. (†) 60/50 Hz.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

EMS BRAND, SHADED POLE



Typical Uses: Commercial refrigeration fans, refrigerated vending machines, ice makers, drink dispensers, condensing units, room heaters, environmental cabinets, and other equipment having 7 to 12" fan blades.

Special Features: Precision machined cast-iron housing. Pre-oiled felt wick for extended use without re-oiling. Nos. 4M159 and 4M160 have flat shafts; all others have threaded.

Mounting: Horizontal; rigid foot base
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: A
Body Diameter: 3⅞"
Ambient: 40°C
Duty: Continuous air-over
Finish: Black enamel
UL Recognized: Thermal protection (E128044) and construction (E131620)

Rated Output Watts	HP	Nameplate RPM	Rotation Facing Shaft End	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Shaft Dimensions Dia. x Length	Length Less Shaft	EMS Model	Stock No.	List	Each	Shpg. Wt.
16	1/47	1500	CCW	TEAO	115	0.8	1/4 x 1/2"	3½"	ESP-L16EM1	**4M153**	$58.00	**$41.80**	4.5
	1/47	1500	CCW	TEAO	230	0.4	1/4 x 1/2	3½	ESP-L16EM2	**4M154**	64.00	**46.10**	4.5
25	1/30	1500	CCW	TEAO	115	1.1	1/4 x 1/2	3½	ESP-L25EM1	**4M155**	72.00	**51.85**	4.5
	1/30	1500	CCW	TEAO	230	0.6	1/4 x 1/2	3½	ESP-L25EM2	**4M156**	74.00	**53.30**	4.5
35	1/22	1500	CCW	TEAO	115	1.4	1/4 x 1/2	3½	ESP-L35EM1	**4M157**	76.00	**54.75**	4.5
	1/22	1500	CCW	TEAO	230	0.7	1/4 x 1/2	3½	ESP-L35EM2	**4M158**	77.00	**55.45**	4.5
50	1/15	1500	CCW	Op AO	115	1.7	3/8 x 1½	3¾	OL50EM1	**4M159**	80.00	**57.60**	5.8
	1/15	1500	CCW	Op AO	230	0.9	3/8 x 1½	3¾	OL50EM2	**4M160**	83.00	**59.80**	5.8

C-FRAME MOTORS

SHADED POLE, C-FRAME (3" HIGH), OPEN AIR-OVER, SINGLE AND TWO SPEED

Typical Uses: Small fans and blowers found in bathroom ventilators, rangehoods, electric heaters, hair dryers, slide projectors, air cleaners, humidifiers and refrigeration equipment. Ball bearing models are designed for extended life in temperature-sensitive applications such as business machine cooling systems, audio visual equipment, and wood burning stoves.

Special Features: Coils are bobbin-wound for uniformity and are wrapped with flame retardant material.

Bearings: Sleeve type are sintered bronze with large felt wick oil reservoir; ball bearings are permanently lubricated and double-shielded. All have zinc die-cast bearing brackets.

Mounting: Studs from shaft end, two 9/64" dia. mounting holes on each side of stator 1⅞" OC. All-angle.

Service Factor: 1.0

Ambient: 40°C

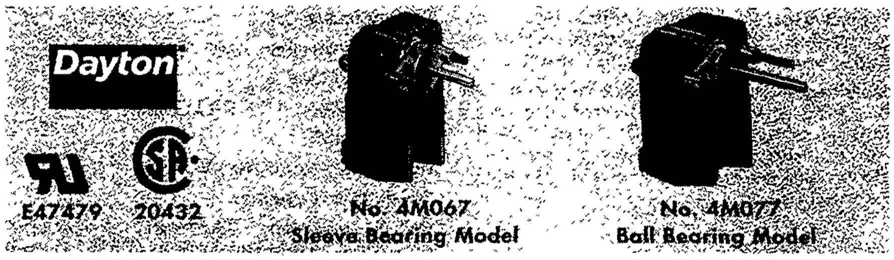
Duty: Continuous air-over

Rotation: CW facing shaft

Brand: Dayton

UL Recognized: (E47479) for construction; (E40077) for impedance protection; (E37403) for thermal protection

> **CAUTION:**
> **Not for fans in unattended areas.**
> Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



HP	Nameplate RPM	Thermal Protection	Volts 60 Hz	Full-Load Amps	Stack Size	Shaft Dimensions Dia. x Length	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
SLEEVE BEARING, CLASS B INSULATION											
1/500	3000	Impedance	115	0.26	3/8"	3/16 x 1"	1¼"	**4M067**	$10.50	**$9.37**	0.8
1/250	3000	Impedance	115	0.32	1/2	3/16 x 1	1 7/16	**4M068**	11.00	**9.63**	1.0
	3000	Impedance	230	0.15	1/2	3/16 x 1	1 7/16	**4M069**	11.30	**9.88**	0.9
1/150	3000	Impedance	115	0.43	5/8	3/16 x 1	1 9/16	**4M070**	11.70	**10.30**	1.2
	3000	Impedance	230	0.21	5/8	3/16 x 1	1 9/16	**4M071**	12.00	**10.51**	1.2
1/100	3000	Impedance	115	0.47	7/8	3/16 x 1	1 13/16	**4M072**	15.00	**12.44**	1.6
1/70	3000	Auto	115	0.88	7/8	3/16 x 1	1 13/16	**4M073**	16.30	**14.45**	1.6
	3000	Auto	230	0.44	7/8	3/16 x 1	1 13/16	**4M074**	16.60	**14.67**	1.5
	3000/2-Spd	Auto	115	0.76	7/8	3/16 x 1	1 13/16	**4M075**	16.70	**14.73**	1.5
1/40	3000	Auto	115	1.10	1½	1/4 x 1	2 7/16	**4M076**	20.30	**17.90**	2.5
1/20	3000	Auto	115	2.9	2	1/4 x 1	3	**5M064**	28.00	**24.00**	3.5
BALL BEARING, CLASS B INSULATION											
1/250	3000	Impedance	115	0.42	1/2	3/16 x 2	1 7/16	**4M077**	20.40	**18.17**	1.0
1/150	3000	Impedance	115	0.51	5/8	3/16 x 2	1 9/16	**4M078**	21.80	**19.26**	1.3
1/70	3000	Auto	115	0.88	7/8	3/16 x 2	1 13/16	**4M079**	25.90	**22.86**	1.7
1/40	3000	Auto	115	1.10	1½	1/4 x 2	2 7/16	**4M080**	30.70	**27.05**	2.7

SHADED POLE, C-FRAME (3" HIGH), OPEN AIR-OVER, OEM REPLACEMENT

Typical Uses: OEM replacement motors in popular kitchen and bath vent fans manufactured by Broan, Nutone, Aubrey, and Fasco.

Special Features: Short cordset with two prong male plug. Bobbin-wound coil is wrapped with flame retardant material.

Bearings: Bronze sleeve with large felt wick oil reservoir.

Mounting: All-angle

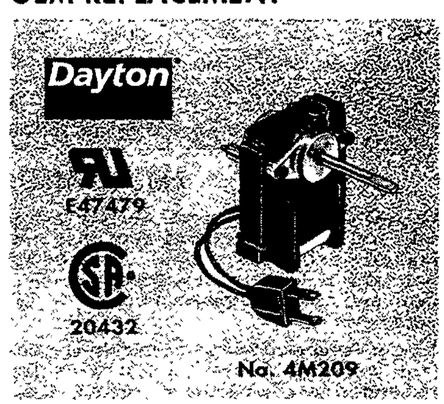
Thermal Protection: Impedance (except Nos. 4M180 and 4M209 have auto)

Insulation Class: B

Ambient: 40°C

Duty: Continuous air-over

Brand: Dayton



OEM Mfr.	OEM Part No.	HP	Name-plate RPM	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps	Stack Size	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
Nutone	C65878	1/150	2800	CCW	115	0.78	1/2"	7/32 x 1¼"	**4M209**	$17.70	**$15.64**	1.0
Fasco	0648-0027	1/125	2750	CW	115	0.74	1/2	3/16 x 1⅛	**4M212**	14.70	**13.01**	1.0
Nutone, Air-King	Various	1/150	2750	CW	115	0.47	5/8	7/32 x 2¼	**4M180**	16.00	**14.16**	1.3
Broan	99080207	1/150	2800	CCW	115	0.66	5/8	3/16 x 1 9/16	**4M210**	15.30	**13.12**	1.2
Aubrey	2200-02	1/150	2850	CW	115	0.68	5/8	3/16 x 1 1/16	**4M211**	15.00	**13.22**	1.1

SHADED POLE, C-FRAME (3" HIGH), OPEN AIR-OVER

Typical Uses: Direct replacement for Carrier high efficiency combustion furnaces.

Special Features: Plug provides exact interchange ability with the OEM motor. Double shaft extension.

Bearings: Ball

Mounting: Hole

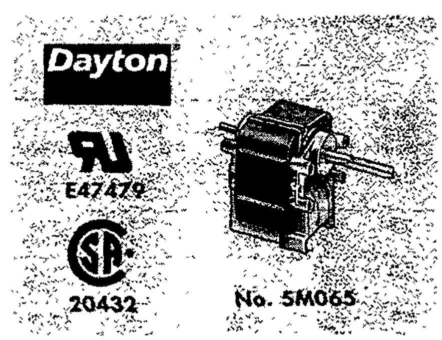
Service Factor: 1.0

Ambient: 40°C

Rotation: CW view facing lead end

Brand: Dayton

UL Recognized: (E47479) for construction; (E37403) for thermal protection



HP	Name-plate RPM	Thermal Protection	Volts 60 Hz	Full-Load Amps	Stack Size	Shaft Dimensions Dia. x Length	Length Less Shaft	Stock No.	List	Each	Shpg. Wt.
1/40	3200	Auto	120	2.5	1½"	7/32 x 3/4, 5/16 x 2"	2½"	**5M065**	$44.00	**$32.80**	3.1
1/40	3200	Auto	230	1.4	1½	7/32 x 3/4, 5/16 x 2	2½	**5M066**	45.00	**33.95**	3.0

UNIT BEARING MOTORS AND VENTILATION/REFRIGERATION MOTORS

UNIT BEARING AGITATOR MOTORS

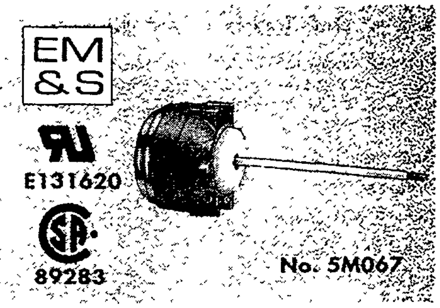
Typical Uses: Direct replacements on ice bank beverage dispensers.

Special Features: Cast-iron unit bearing construction with machined stainless steel shaft. Original equipment on Cornelius, Lancer, Alco, Wilshire, Booth, K-Way, and Multiplex. Eleven #8-36 mounting screws included.

Mounting: Rigid foot base, vertical shaft down

Enclosure: Totally enclosed

Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: A
Body Diameter: 3⅞"
Ambient: 40°C
Duty: Continuous
Rotation: CCW view facing shaft end
Finish: Black enamel
Brand: Electric Motors and Specialties
UL Recognized: E131620 for construction; E128044 for thermal protection



Watts	Nameplate RPM	Volts 60/50 Hz	Full-Load Amps at Nameplate Volts	Shaft Dimensions Dia. x Length	EMS Model	Stock No.	List	Each	Shpg. Wt.
15	1550	115	0.6	5/16 x 7" w/1/4-20 thread	ESPL15EM-JR1B1	**5M067**	$95.00	**$68.40**	5.0
15	1550	115	0.6	5/16 x 5" w/1" flat	ESPL15EM-JR1B2	**5M068**	92.00	**66.25**	4.9

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

VENTILATION/REFRIGERATION MOTORS

UNIVERSAL EVAPORATIVE FAN MOTOR KIT

Typical Uses: Replaces hundreds of various OEM motors as well as GEM EM-240 Series, MARS #90999, SUPCO #SM-999, and Acme-Miami AM-4240 Series C-frame with 3" overall height.

Special Features: Contains all necessary hardware, adapters, brackets, and complete installation instructions. 2" break-off shaft.

Type: Shaded pole
Bearings: Sleeve
Enclosure: Open air-over
Duty: Continuous

UNIVERSAL REFRIGERATION FAN MOTOR KIT

Typical Uses: Replaces hundreds of standard C-frame motors as well as 3.3, 3.5, and 4" diameter motors.

Special Features: Contains 4 and 5½" fan blades, hub adapter, screws, H-brackets, washers, and wire nuts for a wide variety of mountings.

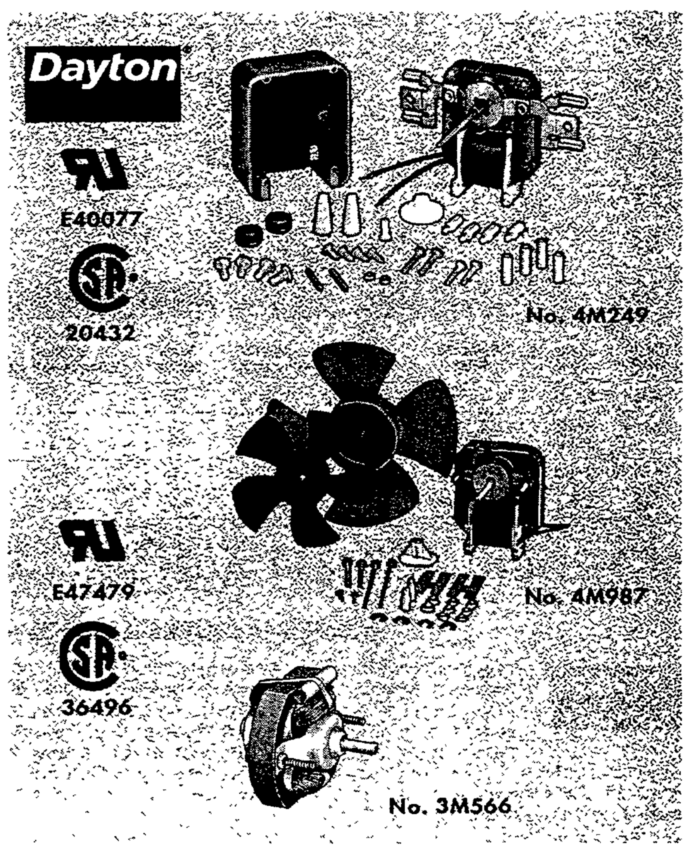
Type: Shaded pole
Bearings: Bronze sleeve
Enclosure: Open air-over
Duty: Continuous air-over

UNCASED SMALL FAN MOTOR

Typical Uses: Driving small fans and blowers found in bathroom ventilators, rangehoods, electric heaters, hair dryers, slide projectors, air cleaners, humidifiers, and refrigeration equipment.

Special Features: Two coil construction.

Bearings: All-angle, self-aligning sleeve
Mounting: Stud on shaft end, 2⅞" OC
Overall Length: 2⅛"
Ambient: 40°C
Duty: Continuous air-over

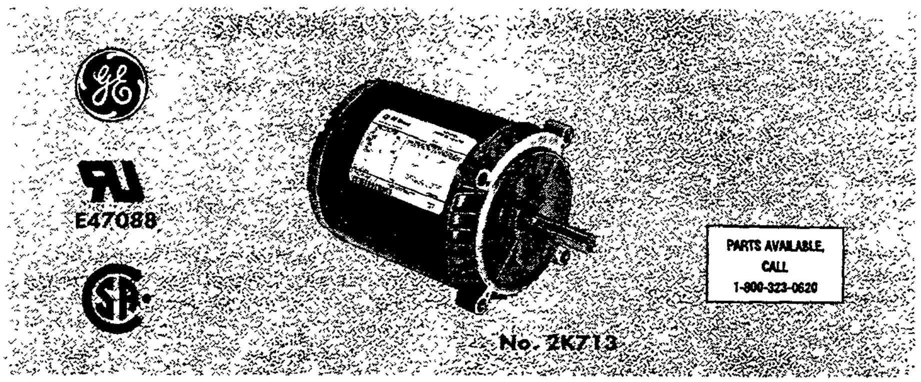


HP	Nameplate RPM	Rotation Facing Shaft End	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Ins. Class	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
					UNIVERSAL EVAPORATOR FAN MOTOR KIT							
1/250	3000	Mechanically Reversible	Impedance	115	0.32	1.0	A	—	**4M249**	$25.40	**$22.33**	1.5
					UNIVERSAL REFRIGERATION FAN MOTOR KIT							
1/150	3000	Mechanically Reversible	Impedance	115	0.35	1.0	B	3/16 x 1¼"	**4M987**	23.50	**19.84**	1.5
					UNCASED SMALL FAN MOTOR							
1/70	3000	CW	Auto	115	1.0	1.0	A	1/4 x 2"	**3M566**	26.00	**19.46**	1.7

SPLIT-PHASE C-FACE MOTORS

- **2¼" shaft length x 5/8" diameter**

Typical Uses: Commercial fans, blowers, and other air-moving applications that can be directly mounted to a C-face end-mounted motor.
Bearings: Ball
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
OPEN DRIPPROOF, SINGLE SPEED, NO BASE												
1/12	1140	56CZ	None	115	2.4	1.40	B	H204	**2K713**	$155.00	**$94.85**	14.0
	850	56CZ	None	115	3.2	1.40	B	H205	**2K714**	247.00	**151.25**	19.0
1/8	1140	56CZ	None	115	3.8	1.40	B	H206	**2K715**	170.00	**104.05**	16.0
	850	56CZ	None	115	4.6	1.40	B	H207	**2K716**	303.00	**185.75**	21.0
1/6	1725	56CZ	None	115	4.2	1.35	B	H208	**2K717**	130.00	**79.55**	12.0
	1140	56CZ	None	115	4.0	1.35	B	H209	**2K718**	190.00	**116.25**	19.0
	850	56CZ	None	115	6.1	1.35	B	H211	**2K719**	340.00	**208.50**	31.0
1/4	1725	56CZ	None	115	5.6	1.35	B	H212	**2K720**	140.00	**85.70**	13.0
	1140	56CZ	None	115	5.6	1.35	B	H214	**2K721**	247.00	**151.25**	23.0
1/3	1725	56CZ	None	115	6.6	1.35	B	H217	**2K723**	159.00	**97.30**	15.0
	1140	56CZ	None	115	7.0	1.35	A	H219	**2K724**	286.00	**175.25**	31.0
1/2	1725	56CZ	None	115	8.7	1.25	B	H290	**2K726**	215.00	**131.55**	17.0
	1140	56CZ	None	115	9.0	1.25	B	H221	**2K727**	368.00	**225.50**	37.0

OPEN DRIPPROOF, TWO SPEED, NO BASE

HP at High RPM	HP at Low RPM	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/6	**1/15**	1140/850	56CZ	None	115	4.2/2.9	1.35	B	H222	**2K728**	$296.00	**$181.50**	27.0
1/4	**1/12**	1725/1140	56CZ	None	115	4.2/2.7	1.35	B	H223	**2K729**	190.00	**116.25**	19.0
	1/10	1140/850	56CZ	None	115	5.8/3.6	1.35	B	H224	**2K730**	360.00	**220.75**	31.0
1/3	**1/10**	1725/1140	56CZ	None	115	5.7/3.2	1.35	B	H225	**2K731**	238.00	**145.65**	25.0
1/2	**1/6**	1725/1140	56CZ	None	115	8.0/4.2	1.25	A	H226	**2K732**	298.00	**182.75**	27.0

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GRAINGER STOCKS A BROAD LINE OF DAYTON AND GE MOTORS

Top Performance. Dayton motors are built to exceed industry standards such as NEMA (National Electrical Manufacturers Association). Used as a replacement motor in a wide variety of applications, each Dayton motor must outperform the best motor it may be called upon to replace, hence "best of the best" performance. You can be confident that the Dayton motor will work as well as, or better than, the motor you are replacing.

Top Quality Verified by Engineers. Grainger's Engineering Dept., with its "state-of-the-art" test lab, confirms that Dayton motors consistently meet or exceed top performance standards. Engineering also confirms the motors have applicable agency approvals such as UL and CSA.

Clearly Identified. Dayton motors are clearly identified by full fact carton labels and nameplates with wiring diagrams. Maintenance and installation instructions appear in every motor carton.

Broad Line Offering. Dayton offers one of the broadest lines of motors in the industry. One brand can be used for nearly all your motor replacement needs.

Time Proven Performance. Established in 1937, Dayton has grown to be one of the most dependable names in the motor industry.

Broad Line Offering. Grainger now offers over 2400 stock GE brand motors including AC and DC motors from 1/370 HP to 450 HP in Energy $aver™ and standard efficiency designs including severe duty, explosion proof, farm duty, HVAC, and many others.

National Recognition. GE is considered the leading national brand motor with the largest installed customer base. The GE brand is widely known for quality and reliability.

Clearly Identified. GE motors are clearly identified by full fact carton labels and nameplates. Easy-to-read wiring diagrams are included.

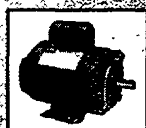
Premium Efficiency Leader. GE has long been recognized as an industry leader in premium efficiency motors with a wide variety of ratings and types to suit many applications.

Heritage of Excellence. General Electric is one of the pioneers in the electrical industry with a proud 100 year history dating back to the time of founder Thomas Edison.

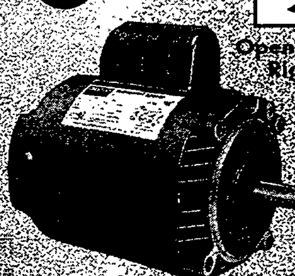
CAPACITOR-START C-FACE MOTORS

Dayton®

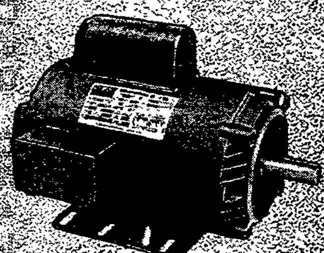
E47479



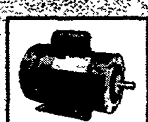
Open/Dripproof Rigid Base



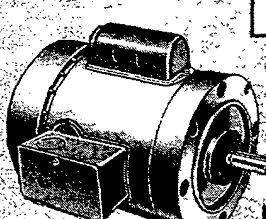
No. 5K340 Open/Dripproof NEMA 56C Face



No. 4K812 Open/Dripproof with Removable Rigid Base



TEFC Rigid Base



No. 6K975 TEFC NEMA 56C Face

50 Hz Models Available, See Index

PARTS AVAILABLE, CALL 1-800-323-0620

- **Copper windings**
- **Removable base on 145TC and larger frame sizes**
- **Service factors up to 1.35**

Typical Uses: For powering industrial and commercial pumps, speed reducers, blowers, machine tools, and other equipment that can be directly connected to an end-mounted motor.

Type: Capacitor-start
Bearings: Double-shielded ball
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Ins. Class	Stock No.	List	Each	Shpg. Wt.
OPEN DRIPPROOF, NO BASE											
1/4	1725	56C	None	115/230	5.2/2.6	1.35	A	6K974	$143.00	$109.35	17.0
1/3	1725	56C	None	115/230	6.8/3.4	1.35	A	5K339	170.00	130.00	18.0
	1725	56C	Auto	115/230	6.8/3.4	1.35	A	6K005	177.00	135.35	19.0
1/2	1725	56C	None	115/230	9.0/4.5	1.25	A	5K340	193.00	147.55	21.0
3/4	1725	56C	None	115/230	11.2/5.6	1.25	A	5K435	233.00	178.25	25.0
1	1725	56C	None	115/230	13.6/6.8	1.15	A	5K673	260.00	199.00	30.0
1½	1725	56C	None	115/230	20.4/10.2	1.15	B	1K073	299.00	228.75	37.0
2	1725	56C	None	115/230	21.4/10.7	1.15	B	1K074	367.00	281.00	40.0
OPEN DRIPPROOF, RIGID WELDED BASE											
1/3	1725	56C	None	115/230	6.8/3.4	1.35	A	5K109	186.00	142.20	20.0
1/2	1725	56C	None	115/230	9.0/4.5	1.25	A	5K110	212.00	162.25	22.0
3/4	1725	56C	None	115/230	11.2/5.6	1.25	A	1K084	243.00	186.25	28.0
OPEN DRIPPROOF, REMOVABLE BASE											
1	1740	145TC†	None	115/230	14.4/7.2	1.15	B	4K811	228.00	214.25	40.0
1½	1740	145TC†	None	115/230	20.8/10.4	1.15	B	4K812	283.00	266.25	43.0
2	1740	182TC†	None	115/230	25.6/12.8	1.15	B	4K813	320.00	290.00	64.0
3	3500	182TC†	None	115/230	32.0/16.0	1.15	B	4K814	451.00	409.00	72.0
	1740	184TC†	None	115/230	33.0/16.5	1.15	B	4K815	433.00	392.75	86.0
TEFC, NO BASE											
1/8	1725	42CZ#	None	115/230	4.0/2.0	1.0	B	1K056	154.00	117.70	18.0
1/6	1725	42CZ#	None	115/230	4.2/2.1	1.0	B	1K057	158.00	120.85	18.0
1/4	1725	42CZ#	None	115/230	5.2/2.6	1.0	B	1K058	166.00	126.90	22.0
	1725	56C	None	115/230	5.2/2.6	1.0	A	6K975	166.00	126.95	18.0
1/3	3450	56C	Auto	115/230	6.4/3.2	1.0	A	6K181	150.00	111.70	19.0
	1725	42CZ#	None	115/230	7.0/3.5	1.0	B	1K059	182.00	139.15	23.0
	1725	56C	None	115/230	6.8/3.4	1.0	A	5K341	182.00	139.15	20.0
1/2	3450	56C	Auto	115/230	8.0/4.0	1.0	A	6K182	168.00	125.15	21.0
	1725	56C	None	115/230	9.0/4.5	1.0	B	6K342	213.00	163.00	22.0
3/4	3450	56C	Auto	115/230	9.8/4.9	1.0	A	6K831	194.00	144.50	26.0
	1725	56C	None	115/230	11.2/5.6	1.0	B	6K436	252.00	193.00	28.0
1	3450	56C	Auto	115/230	12.0/6.0	1.0	A	6K197	239.00	178.50	27.0
	1725	56C	None	115/230	13.6/6.8	1.0	B	6K674	288.00	220.50	32.0
1½	3450	56C	Auto	115/230	15.6/7.8	1.0	A	6K832	289.00	215.50	38.0
	1725	56C	None	115/230	17.6/8.8	1.0	B	6K702*	326.00	249.25	40.0
2	1725	56C	None	115/230	19.0/9.5	1.0	B	1K075*	491.00	375.75	40.0
TEFC, RIGID WELDED BASE											
1/3	3450	56C	Auto	115/230	6.4/3.2	1.0	A	1K076	154.00	117.70	20.0
	1725	56C	None	115/230	6.8/3.4	1.0	A	1K077	185.00	141.45	21.0
1/2	3450	56C	Auto	115/230	8.0/4.0	1.0	A	1K078	177.00	135.35	22.0
	1725	56C	None	115/230	9.0/4.5	1.0	B	1K079	223.00	170.75	23.0
3/4	3450	56C	Auto	115/230	9.8/4.9	1.0	A	1K080	198.00	151.50	28.0
	1725	56C	None	115/230	11.2/5.6	1.0	B	1K081	267.00	204.25	29.0
1	3450	56C	None	115/230	12.0/6.0	1.0	B	3K348	219.00	167.75	29.0
	1725	56HC	None	115/230	13.6/6.8	1.0	B	6K045	303.00	232.00	33.0
1½	1725	56HC	None	115/230	17.6/8.8	1.0	B	1K082	359.00	274.75	41.0
2	1725	56HC	None	115/230	19.0/9.5	1.0	B	1K083	494.00	378.00	43.0

(*) Capacitor-start, capacitor-run. (†) Removable base.
(#) 42CZ frame motors have 1/2 x 1⅛" shaft with key.
NOTE: All TEFC and T-frame models supplied with conduit box.

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

C-FACE MOTORS

CAPACITOR-START C-FACE MOTORS

Typical Uses: For powering industrial and commercial pumps, speed reducers, machine tools, and other equipment that can be directly connected to a NEMA 56C face end-mounted motor.

Type: Capacitor-start

Bearings: Ball

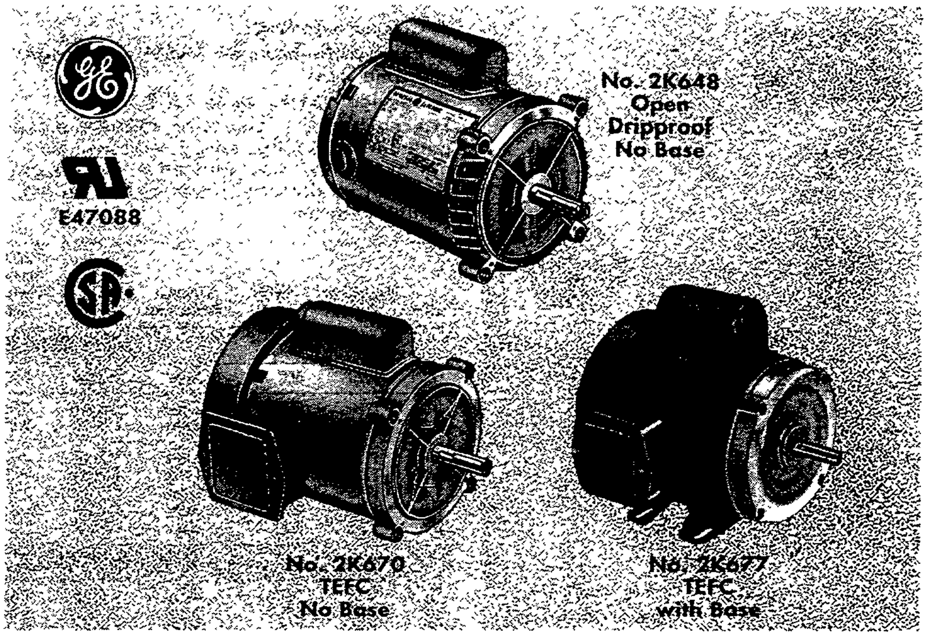
Ambient: 40°C

Duty: Continuous

Finish: Gray

Brand: GE

PARTS AVAILABLE, CALL 1-800-323-0620



CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

HP	Nameplate RPM	NEMA Frame	Rotation Facing Lead End	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
OPEN DRIPPROOF, NO BASE													
1/4	1725	56C	CW/CCW	None	115/208-230	5.2/2.7-2.6	1.35	B	C1296	**3K070**	$166.00	**$100.60**	15.0
	1725	56C	CW/CCW	Auto	115/230	5.2/2.6	1.35	B	C354	**2K648**	173.00	**104.85**	16.0
1/3	1725	56C	CW/CCW	None	115/208-230	6.6/3.4-3.3	1.35	B	C355	**3K071**	201.00	**121.80**	16.0
	1725	56C	CW/CCW	Auto	115/230	6.6/3.3	1.35	B	C356	**2K649**	209.00	**126.65**	19.0
	1725	56J‡	CCW	Auto	115/230	6.6/3.3	1.35	B	C683	**2K650**	219.00	**132.70**	17.0
1/2	1725	56C	CW/CCW	None	115/28-230	8.8/4.2-4.4	1.25	B	C358	**3K072**	228.00	**138.10**	19.0
	1725	56C	CW/CCW	Auto	115/230	8.8/4.4	1.25	B	C359	**2K651**	237.00	**136.25**	21.0
	1140	56C	CW/CCW	None	115/230	9.4/4.7	1.25	A	C1422	**2K646**	416.00	**252.25**	40.0
3/4	1725	56C	CW/CCW	None	115/208-230	13.2/6.2-6.6	1.25	B	C361	**3K073**	275.00	**166.75**	25.0
	1725	56C	CW/CCW	Auto	115/230	13.2/6.6	1.25	B	C362	**2K653**	283.00	**171.75**	23.0
	1725	56J‡	CCW	Auto	115/230	13.2/6.6	1.25	B	C685	**2K654**	309.00	**187.50**	23.0
	1140	56C	CW/CCW	None	115/230	12.6/6.3	1.15	B	C1412	**2K645**	452.00	**274.00**	39.0
1	1725	56C	CW/CCW	None	115/208-230	13.8/7.2-6.9	1.15	B	C1297	**3K074**	319.00	**193.50**	32.0
	1725	56C	CW/CCW	Auto	115/230	13.6/6.8	1.15	B	C363	**2K655**	323.00	**196.00**	29.0
TEFC, NO BASE													
1/6	1725	56C	CW/CCW	None	115	4.0	1.0	B	H244	**2K668** †	186.00	**112.70**	14.0
1/4	1725	56C	CW/CCW	None	115/230	5.4/2.7	1.0	B	C366	**2K670**	196.00	**118.75**	19.0
	1140	56C	CW/CCW	None	115/230	6.2/3.1	1.0	A	C1423	**2K667**	288.00	**174.75**	27.0
1/3	3450	56C	CW/CCW	None	115/230	5.6/2.8	1.15	B	C1419	**2K663**	175.00	**106.05**	17.0
	1725	56C	CW/CCW	None	115/230	6.0/3.0	1.0	B	C367	**3K015**	214.00	**129.65**	18.0
1/2	1725	56C	CW/CCW	None	115/230	8.6/4.3	1.15	B	C368	**3K016**	251.00	**152.00**	23.0
	1140	56C	CW/CCW	None	115/230	9.4/4.7	1.0	A	C1404	**2K666**	444.00	**269.00**	38.0
3/4	1725	56C	CW/CCW	None	115/230	11.0/5.5	1.0	B	C369	**3K017**	297.00	**180.00**	32.0
1	1725	56C	CW/CCW	None	115/230	13.2/6.6	1.0	B	C370	**3K018**	340.00	**206.00**	39.0
1½	3450	56C	CW/CCW	None	115/230	16.4/8.2	1.0	B	C1424	**2K665**	347.00	**210.50**	35.0
	1725	56C	CW/CCW	None	115/230	14.8/7.4	1.0	B	C371	**3K020** *	430.00	**261.00**	46.0
2	3450	56C	CW/CCW	None	115/230	17.8/8.9	1.15	B	C1407	**2K661**	435.00	**263.75**	40.0
TEFC, RIGID WELDED BASE													
1/3	1725	56C	CW/CCW	None	115/230	6.0/3.0	1.0	B	C1405	**2K674**	227.00	**137.45**	19.0
1/2	1725	56C	CW/CCW	None	115/230	8.6/4.3	1.0	B	C375	**2K677**	264.00	**160.25**	21.0
	3450	56C	CW/CCW	None	115/230	7.4/3.7	1.25	B	C1420	**2K664**	197.00	**119.35**	19.0
3/4	3450	56C	CW/CCW	None	115/230	9.8/4.9	1.0	B	C1411	**2K671**	240.00	**145.40**	22.0
	1725	56C	CW/CCW	None	115/230	11.6/5.8	1.0	B	C1425	**2K676**	327.00	**198.50**	33.0
1	3450	56C	CW/CCW	None	115/230	13.4/6.7	1.0	B	C1426	**2K673**	268.00	**162.75**	29.0
	1725	56C	CW/CCW	None	115/230	13.2/6.6	1.0	B	C376	**2K678**	358.00	**217.00**	39.0

(*) Capacitor-start, capacitor-run. (†) Split-phase. (‡) 56J frame motors have threaded shaft.

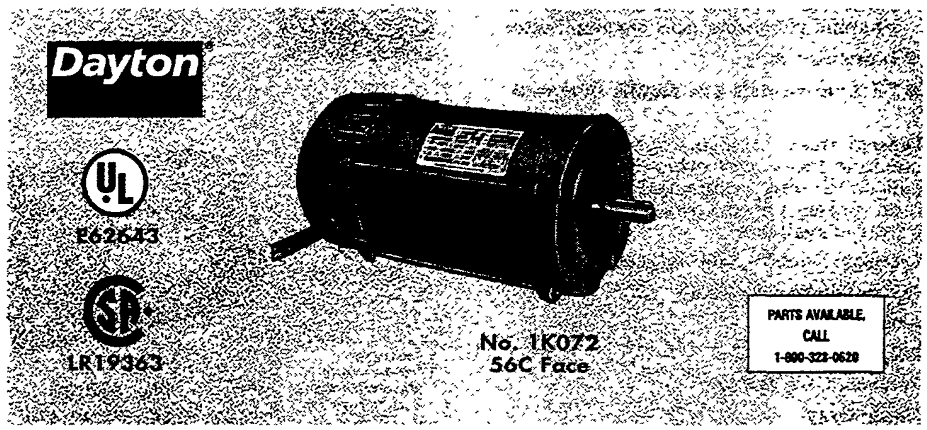
CAPACITOR-START C-FACE MOTORS

DAYTON BRAND, HAZARDOUS LOCATION C-FACE MOTORS

- **Copper windings**

Typical Uses: Listed by UL for use in Class I, Group D and Class II, Groups E, F, and G hazardous locations in dry cleaning and dyeing plants, paint and varnish factories, flour and feed mills, grain elevators, coal and coke plants, and other locations that require a motor to meet the National Electric Code for hazardous locations.

Type: Capacitor-start
Bearings: Double-shielded ball
Enclosure: Hazardous location
Thermal Protection: Auto
Ambient: 40°C
Duty: Continuous
Finish: Gray
Brand: Dayton



HP	Nameplat RPM	NEM Frame	Rotation	Enclosure	Volt 60 Hz	Full-Load Amps a Nameplate Volts	Service Factor	Ins Class	Stoc No.	List	Each	Shpg. Wt.
1/3	3450	56C	CW/CCW	Haz-TEFC	115/230	7.6/3.8	1.0	B	**1K068**	$291.00	**$222.75**	25.0
	1725	56C	CW/CCW	Haz-TEFC	115/230	6.8/3.4	1.0	B	**6K330**	335.00	**256.25**	27.0
1/2	3450	56C	CW/CCW	Haz-TEFC	115/230	8.0/4.0	1.0	B	**1K069**	323.00	**247.25**	27.0
	1725	56C	CW/CCW	Haz-TEFC	115/230	9.0/4.5	1.0	B	**6K333**	371.00	**284.00**	30.0
3/4	3450	56C	CW/CCW	Haz-TEFC	115/230	9.8/4.9	1.0	B	**1K070**	344.00	**263.25**	32.0
	1725	56C	CW/CCW	Haz-TEFC	115/230	11.4/5.7	1.0	B	**6K728**	413.00	**316.25**	36.0
1	3450	56C	CW/CCW	Haz-TEFC	115/230	12.0/6.0	1.0	B	**1K071**	371.00	**283.75**	41.0
	1725	56C	CW/CCW	Haz-TEFC	115/230	13.6/6.8	1.0	B	**1K072**	468.00	**358.00**	41.0

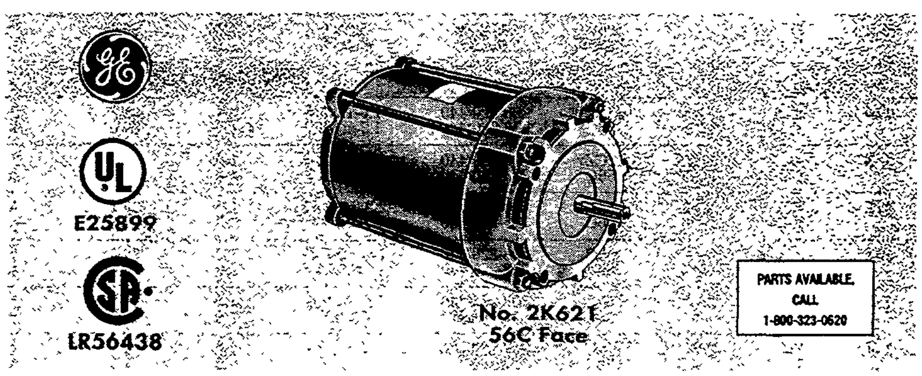
CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND, HAZARDOUS LOCATION C-FACE MOTORS

Typical Uses: Listed by UL for use in Class I, Group D and Class II, Groups E, F, and G hazardous locations. For use in dry cleaning and dying plants, paint and varnish factories, feed mills, grain elevators, coal plants, and other locations that require a motor to meet the National Electric Code for hazardous locations.

Type: Capacitor-start
Bearings: Ball
Enclosure: Hazardous location
Thermal Protection: Auto
Ambient: 40°C
Duty: Continuous
Finish: Gray
Brand: GE



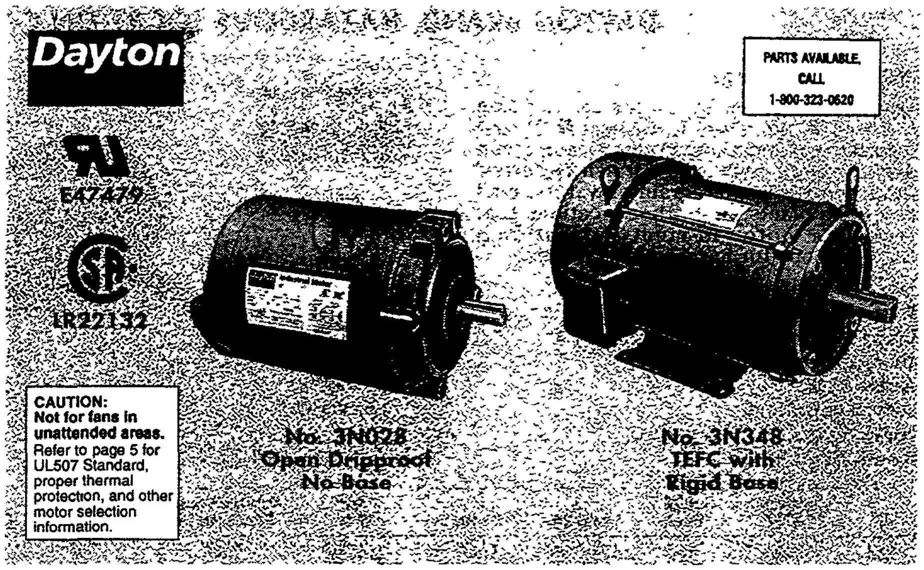
HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/4	1725	56C	CW/CCW	Haz-TENV	115/230	4.2/2.1	1.0	A	C377	**2K620**	$381.00	**$226.50**	23.0
1/3	1725	56C	CW/CCW	Haz-TEFC	115/230	6.2/3.1	1.0	A	C378	**2K621**	407.00	**242.00**	31.0
1/2	3450	56C	CW/CCW	Haz-TEFC	115/230	8.4/4.2	1.0	A	C1003	**2K622**	392.00	**233.00**	29.0
	3450	56C	CW/CCW	Haz-TEFC	115/230	8.4/4.2	1.0	A	C1037	**2K623**	430.00	**255.75**	29.0
	1725	56C	CW/CCW	Haz-TEFC	115/230	7.8/3.9	1.0	A	C379	**2K624**	452.00	**268.50**	35.0
3/4	1725	56C	CW/CCW	Haz-TEFC	115/230	10.8/5.4	1.0	A	C380	**2K625**	502.00	**298.25**	38.0

3-PHASE C-FACE MOTORS

- **Available in 60 Hz models and models which are operable on 60/50 Hz at same HP rating and service factor**
- **Industrial duty**
- **T-frame models are NEMA design B**

Typical Uses: Pumps, speed reducers, machine tools, and other equipment that can be directly connected to a NEMA C-face end-mounted motor where 3-phase power is available.

Bearings: Double-shielded ball
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM at 60 Hz	Nameplate RPM at 50 Hz	NEMA Frame	Volts 60/50 Hz*	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Insulation Class	Stock No.	List	Each	Shpg. Wt.
OPEN DRIPPROOF, NO BASE												
1/4	1725	1425	56C	208-220/440	1.2-1.4/0.7	1.35	66.0	B	**3N874**	$155.00	**$118.50**	17.0
1/3	1725	1425	56C	208-220/440	1.4-1.4/0.7	1.35	66.0	A	**2N913**	162.00	**123.95**	18.0
1/2	1725	1425	56C	208-220/440	2.0-2.0/1.0	1.25	72.0	A	**2N914**	185.00	**141.45**	20.0
3/4	1725	1425	56C	208-220/440	2.8-2.7/1.35	1.25	75.5	A	**2N923**	205.00	**157.00**	22.0
1	1725	1425	56C	208-220/440	3.6-3.6/1.8	1.15	78.5	A	**3N028**	204.00	**156.25**	26.0
	1740	—	143TC	230/460#	3.6/1.8	1.15	77.0	B	**3N869**	227.00	**173.75**	25.0
1½	1725	1425	56C	208-220/440	4.6-4.6/2.3	1.15	81.5	B	**3N875**	255.00	**195.25**	30.0
	1740	—	145TC	230/460#	5.0/2.5	1.15	80.0	B	**3N870**	240.00	**183.75**	30.0
2	1725	—	56C	230/460#	6.0/3.0	1.15	80.0	B	**3N871**	255.00	**195.25**	34.0
	1740	—	145TC	230/460#	6.4/3.2	1.15	78.5	B	**3N872**	258.00	**197.50**	34.0
TEFC, NO BASE												
1/4	1725	1425	42CZ†	208-220/440	1.0-1.0/0.5	1.0	66.0	B	**3N841**	162.00	**123.95**	17.0
	1725	1425	56C	208-220/440	1.2-1.4/0.7	1.0	66.0	B	**3N876**	162.00	**123.95**	18.0
1/3	1725	1425	42CZ†	208-220/440	1.3-1.3/0.65	1.0	70.0	B	**3N842**	170.00	**130.00**	20.0
	1725	1425	56C	208-220/440	1.4-1.4/0.7	1.0	66.0	A	**2N915**	187.00	**143.00**	18.0
1/2	3450	2850	56C	208-220/440	2.2-2.3/1.15	1.0	66.0	A	**3N471**	162.00	**120.65**	20.0
	1725	1425	56C	208-220/440	2.0-2.0/1.0	1.0	72.0	A	**2N916**	217.00	**166.25**	22.0
3/4	3450	2850	56C	208-220/440	2.8-2.9/1.45	1.0	70.0	A	**3N472**	178.00	**132.60**	22.0
	1725	1425	56C	208-220/440	2.8-2.7/1.35	1.0	75.5	A	**2N924**	230.00	**176.25**	25.0
1	3450	2850	56C	208-220/440	3.4-3.2/1.6	1.0	70.0	A	**3N237**	210.00	**156.50**	23.0
	1725	—	56C	230/460#	3.0/1.5	1.0	80.0	B	**3N087**	228.00	**174.50**	29.0
1½	3450	2850	56C	208-220/440	4.4-4.2/2.1	1.0	78.5	A	**3N473**	223.00	**166.50**	30.0
	1725	—	56C	230/460#	4.6/2.3	1.0	81.5	A	**3N265**	235.00	**180.25**	33.0
2	3450	2850	56C	208-220/440	5.6-5.4/2.7	1.0	81.5	B	**3N238**	258.00	**192.50**	32.0
	1725	—	56C	230/460#	6.0/3.0	1.0	80.0	B	**3N266**	251.00	**192.00**	34.0
3	3450	—	56C	230/460#	8.0/4.0	1.0	81.5	B	**3N649**	326.00	**243.00**	37.0
	1725	—	56C	230/460#	9.4/4.7	1.0	82.5	F	**3N650**	325.00	**248.75**	42.0
TEFC, WITH RIGID WELDED BASE												
3/4	1725	—	56C	230/460#	2.6/1.3	1.0	75.5	B	**3N873**	224.00	**171.50**	26.0
1	1725	—	56HC	230/460#	3.0/1.5	1.0	80.0	B	**3N446**	239.00	**183.00**	28.0
	1740	—	143TC	230/460#	3.6/1.8	1.0	77.0	B	**3N342**	249.00	**190.75**	35.0
1½	1740	—	145TC	230/460#	4.8/2.4	1.0	80.0	B	**3N343**	265.00	**202.75**	37.0
2	3450	2850	56HC	208-220/440	5.6-5.4/2.7	1.0	81.5	B	**3N447**	292.00	**223.50**	35.0
	1740	—	145TC	230/460#	6.0/3.0	1.0	80.0	B	**3N344**	278.00	**213.00**	41.0
3	1740	—	182TC	230/460#	9.0/4.5	1.0	82.5	B	**3N345**	355.00	**266.50**	55.0
5	1740	—	184TC	230/460#	13.4/6.7	1.0	86.5	B	**3N346**	399.00	**299.50**	75.0
7½	1755	—	213TC	230/460#	19.8/9.9	1.0	87.5	B	**3N347**	519.00	**389.50**	95.0
10	1755	—	215TC	230/460#	25.2/12.6	1.0	90.2	B	**3N348**	608.00	**456.00**	110.0

(*) 50 Hz operation at rated voltage and 190/380V. (#) Operable at 50 Hz, 190/380V, at 5/6 of 60 Hz HP and speed (1.0 service factor).
(†) 42CZ frame motors have 1/2 x 1½" shaft with key.

3-PHASE OPEN DRIPPROOF C-FACE MOTORS

Typical Uses: Pumps, speed reducers, machine tools, and other equipment that can be directly connected to a NEMA C-face end-mounted motor where 3-phase power is available.

Bearings: Ball

Thermal Protection: None

Ambient: 40°C

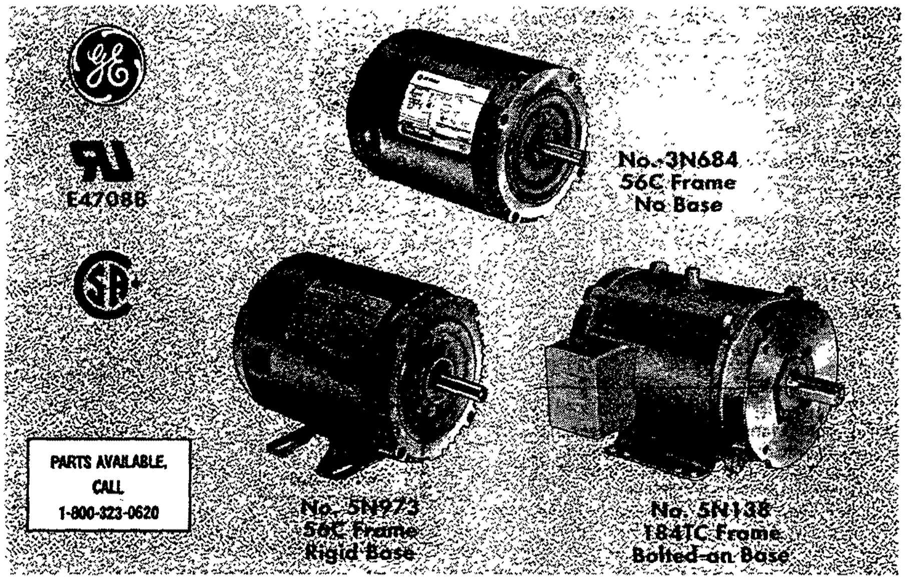
Duty: Continuous

Rotation: CW/CCW

Finish: Gray

Brand: GE

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
						NO BASE						
1/4	1725	56C	208-230/460	1.3-1.4/0.7	1.35	62.7	B	K247	**5N112**	$163.00	**$98.80**	15.0
1/3	1725	56C	208-230/460	1.5-1.6/0.8	1.35	66.5	B	K248	**5N113**	178.00	**107.85**	15.0
1/2	1725	56C	208-230/460	2.1-2.2/1.1	1.25	69.0	B	K249	**3N683**	205.00	**124.20**	18.0
	1140	56C	208-230/460	2.2-2.2/1.1	1.25	73.4	B	K1299	**5N965**	289.00	**175.50**	27.0
3/4	1725	56C	208-230/460	2.8-2.8/1.4	1.25	74.0	B	K250	**3N684**	229.00	**138.75**	20.0
	1140	56C	208-230/460	2.85-2.8/1.4	1.15	76.1	B	K1300	**5N966**	312.00	**189.25**	31.0
	1140	143TC	208-230/460	2.85-2.8/1.4	1.15	76.1	B	K1301	**5N967**	320.00	**194.00**	31.0
1	1725	56C	208-230/460	3.4-3.2/1.6	1.15	78.0	B	K251	**3N685**	248.00	**150.25**	21.0
	1140	145TC	208-230/460	3.9-3.8/1.9	1.15	74.2	B	K1302	**5N968**	336.00	**203.75**	31.0
1 1/2	3450	143TC	208-230/460	5.0-4.8/2.4	1.15	79.2	B	K1303	**5N969**	270.00	**163.75**	25.0
	1725	56C	208-230/460	5.8-5.6/2.8	1.15	75.2	B	K521	**5N131**	274.00	**166.25**	30.0
2	3450	145TC	208-230/460	6.6-6.0/3.0	1.15	80.5	B	K1304	**5N970**	309.00	**187.50**	29.0
3	3450	145TC	208-230/460	8.9-8.2/4.1	1.15	82.3	B	K1313	**5N971**	340.00	**206.00**	38.0
						RIGID BASE						
1/3	1725	56C	208-230/460	2.0-1.8/0.9	1.35	66.3	B	K1305	**5N972**	191.00	**115.70**	17.0
1/2	3450	56C	208-230/460	2.2-2.5/1.3	1.0	65.5	B	K1306	**5N973**	177.00	**107.15**	20.0
	1725	56C	208-230/460	2.65-2.4/1.2	1.15	69.9	B	K1307	**5N974**	216.00	**130.85**	22.0
3/4	1725	56C	208-230/460	3.3-3.0/1.5	1.15	74.4	B	K1308	**5N975**	243.00	**147.20**	24.0
1	1725	143TC	208-230/460	3.6-3.8/1.9	1.15	78.1	B	K1309	**6N043**	267.00	**162.00**	27.0
1 1/2	1725	145TC	208-230/460	5.8-5.6/2.8	1.15	79.8	B	K1310	**6N044**	283.00	**171.75**	31.0
2	3450	56C	208-230/460	6.6-6.0/3.0	1.15	80.5	B	K1311	**6N045**	345.00	**209.50**	28.0
	1725	145TC	208-230/460	6.2-6.0/3.0	1.15	81.9	B	K1312	**6N046**	304.00	**184.50**	38.0
						BOLTED-ON BASE						
3	1745	182TC	230/460*	8.6/4.3	1.15	84.0	B	N670	**5N135**	323.00	**207.50**	76.0
5	3500	182TC	230/460*	14.2/7.1	1.15	84.0	B	N671	**5N136**	417.00	**268.00**	76.0
	1730	184TC	230/460*	14.2/7.1	1.15	84.0	B	N672	**5N137**	417.00	**268.00**	80.0
7 1/2	3480	184TC	230/460*	21.4/10.7	1.15	84.0	B	N673	**5N138**	480.00	**308.50**	81.0
	1745	213TC	230/460*	22.8/11.4	1.15	85.5	B	N674	**5N139**	542.00	**348.00**	122.0
10	3475	213TC	230/460*	25.2/12.6	1.15	87.5	B	N675	**5N140**	639.00	**410.00**	140.0
	1740	215TC	230/460*	28.6/14.3	1.15	86.5	B	N676	**5N141**	650.00	**417.25**	136.0
15	3515	215TC	230/460*	37.8/18.9	1.15	88.5	B	N677	**5N142**	801.00	**514.50**	154.0
	1765	254TC	230/460*	41.2/20.6	1.15	87.5	B	N678	**5N143**	870.00	**558.00**	215.0
20	3535	254TC	230/460*	49.0/24.5	1.15	88.5	B	N679	**5N144**	998.00	**640.50**	245.0
	1755	256TC	230/460*	53.4/26.7	1.15	88.5	B	N680	**5N145**	1035.00	**664.50**	228.0
25	3530	256TC	230/460*	60.4/30.2	1.15	89.5	B	N681	**5N146**	1137.00	**730.00**	245.0
	1765	284TC	230/460*	62.4/31.2	1.15	89.5	B	N682	**5N147**	1292.00	**828.50**	338.0
30	3560	284TSC	230/460*	69.2/34.6	1.15	90.2	B	N683	**5N148**	1411.00	**905.00**	346.0
	1760	286TC	230/460*	73.6/36.8	1.15	89.5	B	N684	**5N149**	1452.00	**931.50**	356.0
40	3555	284TSC	230/460*	90.8/45.4	1.15	91.0	B	N685	**5N150**	1798.00	**1154.00**	376.0

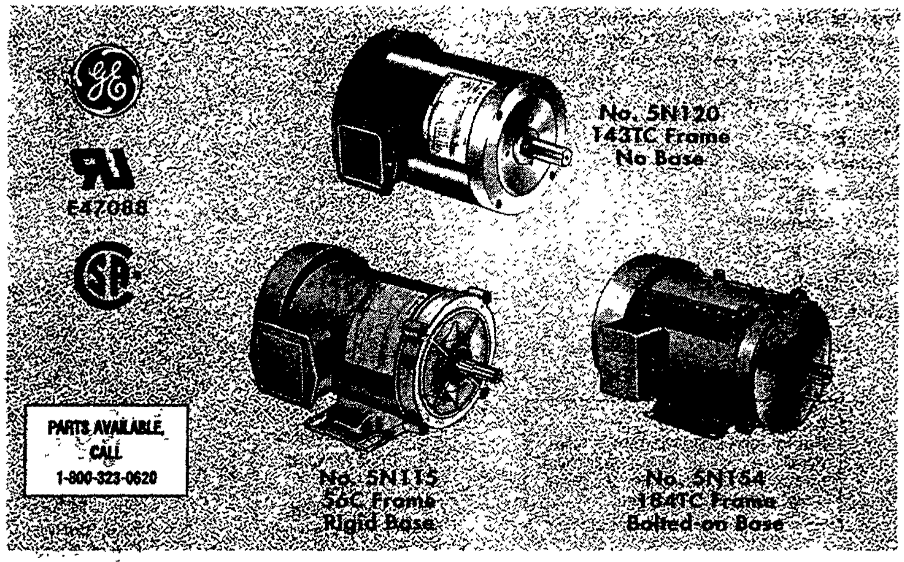
(*) Usable on 200V at 1.0 service factor.

3-PHASE TEFC C-FACE MOTORS

Typical Uses: Pumps, speed reducers, machine tools, and other equipment that can be directly connected to a NEMA C-face end-mounted motor where 3-phase power is available.

Bearings: Ball
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
						NO BASE						
1/4	1725	56C	208-230/460	1.3-1.4/0.7	1.0	62.7*	B	K252	**5N114**	$191.00	**$115.70**	19.0
	1140	56C	208-230/460	1.5-1.4/0.7	1.35	66.5*	B	K1314	**6N047**	294.00	**178.25**	21.0
1/3	1725	56C	208-230/460	1.5-1.6/0.8	1.0	66.0*	B	K253	**3N686**	201.00	**121.75**	18.0
	1725	56C	575	0.6	1.0	66.8*	A	K522	**5N132**	201.00	**121.75**	19.0
	1140	56C	208-230/460	2.4-2.2/1.1	1.35	64.0*	B	K1315	**6N048**	297.00	**180.00**	22.0
1/2	1725	56C	208-230/460	2.1-2.2/1.1	1.0	69.0*	B	K254	**3N687**	237.00	**143.55**	19.0
	1725	56C	575	0.9	1.0	69.8*	B	K469	**5N123**	237.00	**143.55**	18.0
	1140	56C	208-230/460	2.2-2.2/1.1	1.25	73.4*	B	K1316	**6N049**	321.00	**195.00**	27.0
3/4	1725	56C	208-230/460	2.8-2.8/1.4	1.0	74.0*	B	K255	**3N688**	251.00	**152.00**	21.0
	1725	56C	575	1.3	1.0	73.4*	B	K523	**5N133**	251.00	**152.00**	21.0
	1140	56C	208-230/460	2.85-2.8/1.4	1.15	76.1*	B	K1317	**6N050**	335.00	**203.00**	31.0
	1140	143TC	208-230/460	2.85-2.8/1.4	1.15	76.1	B	K1318	**6N051**	338.00	**204.75**	31.0
1	1725	56C	208-230/460	3.6-3.8/1.9	1.0	76.3*	B	K256	**3N689**	269.00	**163.25**	28.0
	1725	56C	575	1.7	1.0	73.1*	B	K524	**5N134**	269.00	**163.25**	23.0
	1725	143TC	208-230/460	3.6-3.8/1.9	1.15	75.8	B	K328	**5N120**	305.00	**185.00**	28.0
	1140	145TC	208-230/460	3.9-3.8/1.9	1.15	74.1	B	K1319	**6N052**	343.00	**208.25**	31.0
1½	3450	143TC	208-230/460	5.0-4.8/2.4	1.15	79.2	B	K1320	**6N053**	280.00	**170.00**	25.0
	1725	56C	208-230/460	4.9-4.8/2.4	1.0	82.0*	B	K257	**3N690**	277.00	**168.00**	33.0
	1725	145TC	208-230/460	4.7-4.4/2.2	1.15	78.4	B	K329	**5N121**	293.00	**177.75**	39.0
2	3450	145TC	208-230/460	6.6-6.0/3.0	1.15	80.5	B	K1321	**6N054**	321.00	**195.00**	29.0
	1725	145TC	208-230/460	6.2-5.8/2.9	1.15	77.9	B	K330	**5N122**	333.00	**202.00**	47.0
						RIGID BASE						
1/3	1725	56C	208-230/460	2.0-1.8/0.9	1.35	66.3*	B	K1322	**6N055**	214.00	**129.65**	20.0
1/2	3450	56C	208-230/460	2.2-2.5/1.3	1.0	65.5*	B	K1323	**6N056**	205.00	**124.20**	20.0
	1725	56C	208-230/460	2.65-2.4/1.2	1.25	69.9*	B	K1324	**6N057**	249.00	**151.00**	23.0
	1140	56C	208-230/460	2.2-2.2/1.1	1.25	73.4*	B	K1325	**6N058**	324.00	**196.75**	25.0
3/4	3450	56C	208-230/460	2.6-2.6/1.3	1.25	73.6*	B	K499	**5N126**	222.00	**134.50**	17.0
	1725	56C	208-230/460	2.8-2.8/1.4	1.25	76.7*	B	K258	**5N115**	265.00	**161.00**	19.0
	1140	56C	208-230/460	2.85-2.8/1.4	1.15	76.1*	B	K1326	**6N059**	343.00	**208.25**	29.0
1	3450	56C	208-230/460	3.2-3.0/1.5	1.25	78.7*	B	K500	**5N127**	264.00	**160.25**	24.0
	1725	56C	208-230/460	3.6-3.8/1.9	1.25	75.8*	B	K259	**5N116**	282.00	**171.00**	29.0
	1725	143TC	208-230/460	3.6-3.8/1.9	1.25	75.8	B	K502	**5N129**	316.00	**191.75**	30.0
	1140	145TC	208-230/460	3.9-3.8/1.9	1.15	74.2	B	K1327	**6N060**	352.00	**213.50**	31.0
1½	3450	56C	208-230/460	5.0-4.8/2.4	1.15	79.2*	B	K1328	**6N061**	296.00	**179.50**	24.0
	3450	143TC	208-230/460	5.0-4.8/2.4	1.15	79.2	B	K1329	**6N062**	303.00	**184.00**	28.0
	1725	56C	208-230/460	4.9-4.8/2.4	1.0	76.9*	B	K260	**5N117**	289.00	**175.50**	35.0
	1725	145TC	208-230/460	4.7-4.4/2.2	1.25	78.4	B	K505	**5N130**	303.00	**184.00**	40.0
2	3450	56C	230/460	5.2/2.6	1.0	81.7*	B	K501	**5N128**	315.00	**191.25**	30.0
	3450	145TC	208-230/460	6.6-6.0/3.0	1.15	80.5	B	K1332	**6N063**	326.00	**197.75**	29.0
	1725	145TC	208-230/460	6.2-5.8/2.9	1.15	77.9	B	K261	**5N118**	343.00	**208.00**	49.0

(*) Average efficiency, not NEMA nominal efficiency.

CONTINUED ON NEXT PAGE

3-PHASE TEFC C-FACE MOTORS

GE 3-PHASE TEFC C-FACE MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
BOLTED-ON BASE												
3	3410	182TC	230/460†	8.0/4.0	1.15	78.5	F	T688	**5N151**	$380.00	**$244.00**	86.0
	1750	182TC	230/460†	8.4/4.2	1.15	84.0	F	T689	**5N152**	371.00	**238.25**	76.0
5	3460	184TC	230/460†	12.2/6.1	1.15	82.5	F	T690	**5N153**	450.00	**289.00**	84.0
	1735	184TC	230/460†	12.7/6.4	1.15	85.5	F	T691	**5N154**	418.00	**268.25**	92.0
7½	3475	213TC	230/460†	18.7/9.4	1.15	84.0	F	T692	**5N155**	607.00	**389.50**	144.0
	1745	213TC	230/460†	18.1/9.1	1.15	86.5	F	T693	**5N156**	607.00	**389.25**	146.0
10	3465	215TC	230/460†	24.2/12.1	1.15	85.5	F	T694	**5N157**	701.00	**450.00**	154.0
	1745	215TC	230/460†	23.6/11.8	1.15	87.5	F	T695	**5N158**	722.00	**463.25**	176.0
15	3510	254TC	230/460†	35.5/17.8	1.15	86.5	F	T696	**5N159**	959.00	**615.00**	238.0
	1750	254TC	230/460†	35.1/17.6	1.15	88.5	F	T697	**5N160**	970.00	**622.00**	256.0
20	3515	256TC	230/460†	46.3/23.2	1.15	88.5	F	T698	**5N161**	1228.00	**788.00**	286.0
	1750	256TC	230/460†	45.9/23.0	1.15	90.2	F	T699	**5N162**	1176.00	**754.00**	328.0
25	3505	284TSC	230/460†	58.1/29.1	1.15	88.5	F	T700	**5N163**	1558.00	**999.50**	356.0
	1750	284TC	230/460†	58.6/29.3	1.15	90.2	F	T701	**5N164**	1469.00	**942.00**	390.0
30	3520	286TSC	230/460†	69.8/34.9	1.15	88.5	F	T702	**5N165**	1683.00	**1080.00**	410.0
	1755	286TC	230/460†	69.2/34.6	1.15	90.2	F	T703	**5N166**	1855.00	**1191.00**	424.0

(†) Usable on 200V at 1.0 service factor.

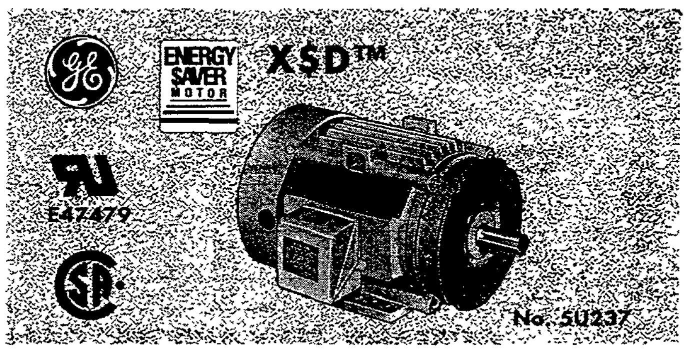
CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND, 3-PHASE TEFC C-FACE PREMIUM EFFICIENCY SEVERE DUTY MOTORS

- **Designed for high humidity, acidic, alkali, or dirty (nonexplosive) conditions**
- **Efficiencies meet most utility rebate program requirements**
- **NEMA design B**
- **Includes grease fittings**
- **Cast-iron construction**
- **Three-year warranty**

Typical Uses: Pumps, conveyors, speed reducers, blowers, machine tools, and other equipment that can be directly connected to a NEMA C-face end-mounted motor.

Bearings: Ball
Mounting: NEMA C-face with rigid base
Enclosure: TEFC, except No. 5U241 is TENV
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Beige
Brand: GE



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1½	1170	182TC	460	2.3	1.15	87.5	F	E9946	**5U242**	$644.00	**$413.25**	135.0
2	1165	184TC	460	2.9	1.15	87.5	F	E9948	**5U244**	710.00	**455.50**	145.0
3	3515	182TC	460	3.7	1.15	88.5	F	E9945	**5U241**	660.00	**423.50**	135.0
	1765	182TC	460	4.0	1.15	89.5	F	9889E	**4N890**	626.00	**401.50**	135.0
	1175	213TC	460	4.2	1.15	89.5	F	E9950	**5U246**	848.00	**543.50**	230.0
5	3515	184TC	460	6.0	1.15	89.5	F	E9947	**5U243**	798.00	**512.00**	145.0
	1755	184TC	460	6.3	1.15	90.2	F	9890E	**4N891**	717.00	**460.00**	145.0
	1170	215TC	460	6.9	1.15	89.5	F	E9952	**5U248**	1159.00	**743.50**	230.0
7½	3535	213TC	460	8.7	1.15	91.7	F	E9949	**5U245**	947.00	**607.50**	220.0
	1765	213TC	460	9.4	1.15	91.7	F	9891E	**4N892**	942.00	**604.00**	220.0
	1180	254TC	460	10.7	1.15	91.7	F	E9954	**5U250**	1538.00	**986.50**	350.0
10	3530	215TC	460	11.6	1.15	91.7	F	E9951	**5U247**	1093.00	**701.00**	230.0
	1765	215TC	460	12.7	1.15	91.7	F	E9892	**4N885**	1117.00	**717.00**	230.0
	1175	256TC	460	14.3	1.15	91.7	F	E9956	**5U252**	1855.00	**1190.00**	410.0
15	3545	254TC	460	17.3	1.15	91.7	F	E9953	**5U249**	1495.00	**958.50**	350.0
	1770	254TC	460	18.7	1.15	92.4	F	9893E	**4N886**	1471.00	**943.00**	391.0
	1180	284TC	460	18.2	1.15	91.7	F	E9901	**5U237**	2470.00	**1585.00**	460.0
20	3540	256TC	460	22.5	1.15	92.4	F	E9955	**5U251**	1825.00	**1171.00**	410.0
	1770	256TC	460	24.6	1.15	93.0	F	E9894	**4N887**	1805.00	**1158.00**	415.0
	1175	286TC	460	24.1	1.15	91.7	F	E9902	**5U238**	2977.00	**1910.00**	510.0
25	3555	284TSC	460	27.9	1.15	92.4	F	E9903	**5U239**	2269.00	**1456.00**	460.0
	1770	284TC	460	30.0	1.15	93.6	F	E9895	**4N888**	2174.00	**1394.00**	560.0
30	3545	286TSC	460	33.2	1.15	92.4	F	E9904	**5U240**	2624.00	**1683.00**	510.0
	1770	286TC	460	36.2	1.15	93.6	F	E9896	**4N889**	2503.00	**1605.00**	585.0

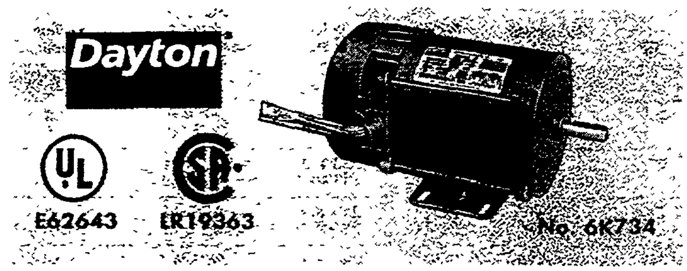
HAZARDOUS LOCATION MOTORS

SPLIT-PHASE HAZARDOUS LOCATION MOTORS

DAYTON BRAND, TENV AND TEFC HAZARDOUS LOCATION MOTORS

Typical Uses: Listed by UL for use in Class I, Group D and Class II, Groups E, F, and G hazardous locations such as dry cleaning and dyeing plants, paint and varnish factories, flour and feed mills, grain elevators, coal and coke plants, and other locations that require a motor to meet the National Electrical Code for hazardous locations.

Bearings: Double-shielded ball for heavy radial and thrust loads
Service Factor: 1.0
Thermal Protection: Auto
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Brand: Dayton

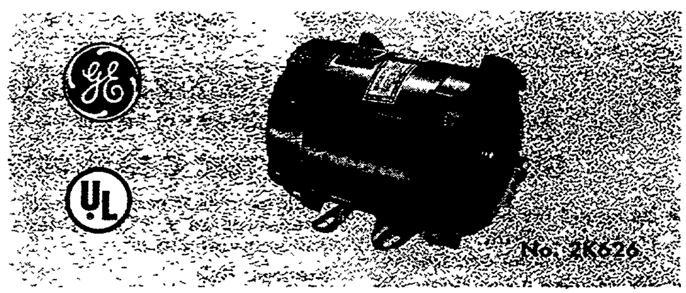


HP	Nameplate RPM	NEMA Frame	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearings	Insulation Class	Mounting	Stock No.	List	Each	Shpg. Wt.
1/4	1725	56	TENV	115	4.5	Ball	B	Rigid	**6K734**	$270.00	**$194.75**	27.0
1/3	1725	56	TEFC	115	6.4	Ball	B	Rigid	**6K738**	300.00	**216.25**	25.0

GE BRAND, TENV HAZARDOUS LOCATION MOTORS

Typical Uses: Listed by UL for use in Class I, Group D and Class II, Groups E, F, and G hazardous locations such as dry cleaning and dyeing plants, paint and varnish factories, flour and feed mills, grain elevators, coal and coke plants, and other locations that require a motor to meet the National Electrical Code for hazardous locations.

Bearings: Double-shielded, prelubricated ball for heavy radial and thrust loads
Service Factor: 1.0
Thermal Protection: Auto
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE



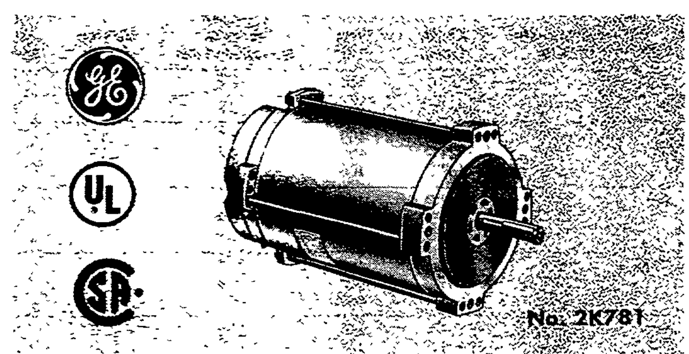
HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearings	Insulation Class	Mounting	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/12	1725	48	115	1.9	Ball	A	Rigid	H125	**2K626**	$312.00	**$174.00**	16.0
1/8	1140	48	115	3.0	Ball	A	Rigid	H126	**2K627**	353.00	**197.00**	22.0
1/6	1725	48	115	3.3	Ball	A	Rigid	H127	**3K797**	312.00	**187.25**	19.0
	1140	56	115	4.0	Ball	A	Rigid	H128	**2K628**	413.00	**230.50**	38.0
1/4	1725	48	115	4.4	Ball	A	Rigid	H129	**3K799**	320.00	**192.00**	22.0

GE BRAND, TENV AND TEFC C-FACE HAZARDOUS LOCATION MOTORS

- **2¼" shaft length x 5/8" diameter**

Typical Uses: Listed by UL for use in Class I, Group D and Class II, Groups E, F, and G hazardous locations such as dry cleaning and dyeing plants, paint and varnish factories, flour and feed mills, grain elevators, coal and coke plants, and in commercial fans, blowers, and other air-moving applications that can be directly mounted to a C-face end-mounted motor.

Bearings: Ball
Service Factor: 1.0
Thermal Protection: Auto
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE



HP	Nameplate RPM	NEMA Frame	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Insulation Class	Mounting	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/8	1140	56CZ	TENV	115	3.0	A	C-Face	H301	**2K780**	$365.00	**$219.25**	21.0
1/6	1140	56CZ	TENV	115	4.0	A	C-Face	H302	**2K781**	425.00	**255.25**	25.0
1/4	1140	56CZ	TEFC	115	5.6	A	C-Face	H303	**2K782**	461.00	**276.75**	34.0
1/2	1140	56CZ	TEFC	115	9.0	A	C-Face	H304	**2K783**	587.00	**352.25**	45.0

CAUTION: Not for fans in unattended areas.

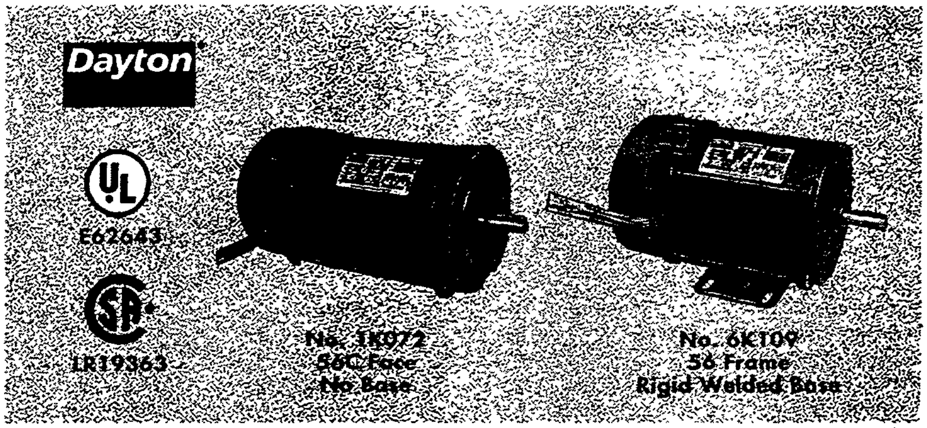
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

CAPACITOR-START HAZARDOUS LOCATION MOTORS

- **Rigid welded base or C-face**
- **Double-shielded ball bearings**
- **Copper windings**

Typical Uses: Listed by UL for use in Class I, Group D and Class II, Groups E, F, and G hazardous locations in dry cleaning and dyeing plants, paint and varnish factories, flour and feed mills, grain elevators, coal and coke plants and other locations that require a motor to meet the National Electric Code for hazardous locations.

Type: Capacitor-start
Bearings: Double-shielded ball
Enclosure: Hazardous location
Service Factor: 1.0
Thermal Protection: Auto
Ambient: 40°C
Duty: Continuous
Rotation: CW/CWW
Finish: Gray
Brand: Dayton



CONDUIT BOX

For use with Dayton brand hazardous location motors. Has hole for self-tapping grounding screw. UL Listed. Gray finish.

No. 4X788. Shpg. wt. 1.6 lbs. List $33.00. Each **$29.30**

HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	Stock No.	List	Each	Shpg. Wt.
C-FACE, NO BASE												
1/3	3450	56C	CW/CCW	Haz-TEFC	115/230	7.6/3.8	1.0	B	**1K068**	$291.00	**$222.75**	25.0
	1725	56C	CW/CCW	Haz-TEFC	115/230	6.8/3.4	1.0	B	**6K330**	335.00	**256.25**	27.0
1/2	3450	56C	CW/CCW	Haz-TEFC	115/230	8.0/4.0	1.0	B	**1K069**	323.00	**247.25**	27.0
	1725	56C	CW/CCW	Haz-TEFC	115/230	9.0/4.5	1.0	B	**6K333**	371.00	**284.00**	30.0
3/4	3450	56C	CW/CCW	Haz-TEFC	115/230	9.8/4.9	1.0	B	**1K070**	344.00	**263.25**	32.0
	1725	56C	CW/CCW	Haz-TEFC	115/230	11.4/5.7	1.0	B	**6K728**	413.00	**316.25**	36.0
1	3450	56C	CW/CCW	Haz-TEFC	115/230	12.0/6.0	1.0	B	**1K071**	371.00	**283.75**	41.0
	1725	56C	CW/CCW	Haz-TEFC	115/230	13.6/6.8	1.0	B	**1K072**	468.00	**358.00**	41.0
RIGID WELDED BASE												
1/4	1725	56	CW/CCW	Haz-TENV	115/230	4.5/2.3	1.0	B	**6K034**	247.00	**189.00**	28.0
1/3	3450	56	CW/CCW	Haz-TEFC	115/230	7.6/3.8	1.0	B	**6K109**	217.00	**166.25**	27.0
	1725	56	CW/CCW	Haz-TEFC	115/230	6.8/3.4	1.0	B	**6K036**	304.00	**232.75**	27.0
1/2	3450	56	CW/CCW	Haz-TEFC	115/230	8.0/4.0	1.0	B	**6K110**	288.00	**220.50**	30.0
	1725	56	CW/CCW	Haz-TEFC	115/230	9.0/4.5	1.0	B	**6K039**	335.00	**256.25**	30.0
3/4	3450	56	CW/CCW	Haz-TEFC	115/230	9.8/4.9	1.0	B	**6K111**	326.00	**249.25**	36.0
	1725	56	CW/CCW	Haz-TEFC	115/230	11.4/5.7	1.0	B	**6K040**	394.00	**301.50**	36.0
1	3450	56	CW/CCW	Haz-TEFC	115/230	12.0/6.0	1.0	B	**6K112**	352.00	**269.25**	41.0
	1725	56H	CW/CCW	Haz-TEFC	115/230	13.6/6.8	1.0	B	**6K041**	449.00	**343.50**	41.0

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

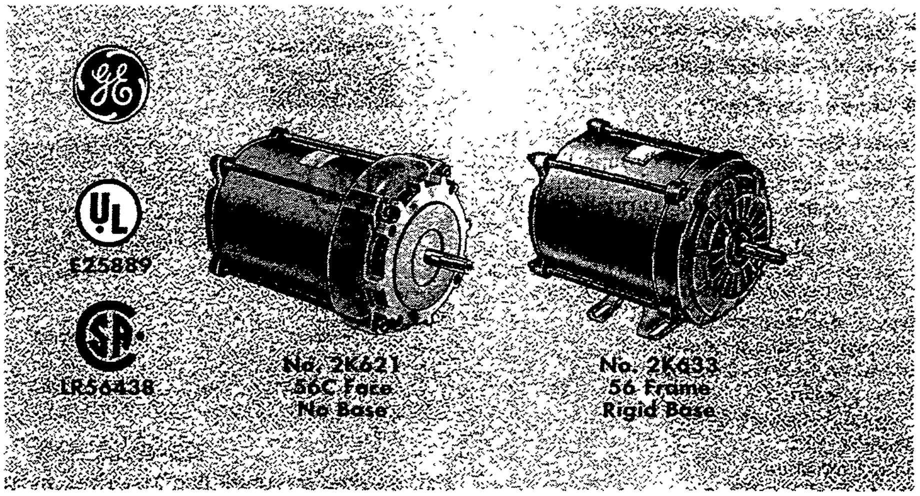
HAZARDOUS LOCATION MOTORS

CAPACITOR-START HAZARDOUS LOCATION MOTORS

- **Rigid welded base or C-face**
- **Ball bearings**

Typical Uses: Listed by UL for use in Class I, Group D and Class II, Groups E, F, and G hazardous locations in dry cleaning and dyeing plants, paint and varnish factories, flour and feed mills, grain elevators, coal and coke plants and other locations that require a motor to meet the National Electric Code for hazardous locations.

Type: Capacitor-start
Bearings: Ball
Enclosure: Hazardous location
Service Factor: 1.0
Thermal Protection: Auto
Ambient: 40°C
Duty: Continuous
Finish: Gray
Brand: GE



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft End	Volts 60 Hz	Enclosure	Full-Load Amps at Nameplate Volts	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
C-FACE, NO BASE												
1/4	1725	56C	CW/CCW	115/230	Haz-TENV	4.2/2.1	A	C377	**2K620**	$381.00	**$226.50**	23.0
1/3	1725	56C	CW/CCW	115/230	Haz-TEFC	6.2/3.1	A	C378	**2K621**	407.00	**242.00**	31.0
1/2	3450	56C	CW/CCW	115/230	Haz-TEFC	8.4/4.2	A	C1003	**2K622**	392.00	**233.00**	29.0
	3450	56J	CW/CCW	115/230	Haz-TEFC	8.4/4.2	A	C1037	**2K623**	430.00	**255.75**	29.0
	1725	56C	CW/CCW	115/230	Haz-TEFC	7.8/3.9	A	C379	**2K624**	452.00	**268.50**	35.0
3/4	1725	56C	CW/CCW	115/230	Haz-TEFC	10.8/5.4	A	C380	**2K625**	502.00	**298.25**	38.0
RIGID WELDED BASE												
1/4	1725	48	CW/CCW	115/230	Haz-TENV	4.2/2.1	A	C303	**3K793**	301.00	**179.00**	24.0
	1140	56	CW/CCW	115	Haz-TEFC	5.8	A	C304	**2K629**	494.00	**293.50**	34.0
	1140	56	CW/CCW	115/230	Haz-TEFC	6.2/3.1	A	C506	**2K630**	503.00	**299.00**	30.0
1/3	1725	56	CW/CCW	115/230	Haz-TEFC	6.2/3.1	A	C305	**3K794**	370.00	**219.75**	26.0
	1140	56	CW/CCW	115/230	Haz-TEFC	8.6/4.3	A	C306	**2K632**	525.00	**312.00**	35.0
1/2	3450	56	CW/CCW	115/230	Haz-TEFC	8.4/4.2	A	C307	**2K633**	350.00	**208.00**	24.0
	1725	56	CW/CCW	115/230	Haz-TEFC	7.8/3.9	A	C308	**3K795**	407.00	**242.00**	30.0
	1140	56	CW/CCW	115/230	Haz-TEFC	9.4/4.7	A	C309	**2K635**	605.00	**359.50**	42.0
3/4	1725	56	CW/CCW	115/230	Haz-TEFC	10.8/5.4	A	C311	**3K796**	479.00	**284.50**	35.0
1	1725	56	CW/CCW	115/230	Haz-TEFC	13.2/6.6	A	C312	**2K636**	546.00	**324.50**	42.0

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GRAINGER STOCKS A BROAD LINE OF DAYTON AND GE MOTORS

Dayton®

Top Performance. Dayton motors are built to exceed industry standards such as NEMA (National Electrical Manufacturers Association). Used as a replacement motor in a wide variety of applications, each Dayton motor must outperform the best motor it may be called upon to replace, hence "best of the best" performance. You can be confident that the Dayton motor will work as well as, or better than, the motor you are replacing.

Top Quality Verified by Engineers. Grainger's Engineering Dept., with its "state-of-the-art" test lab, confirms that Dayton motors consistently meet or exceed top performance standards. Engineering also confirms the motors have applicable agency approvals such as UL and CSA.

Clearly Identified. Dayton motors are clearly identified by full fact carton labels and nameplates with wiring diagrams. Maintenance and installation instructions appear in every motor carton.

Broad Line Offering. Dayton offers one of the broadest lines of motors in the industry. One brand can be used for nearly all your motor replacement needs.

Time Proven Performance. Established in 1937, Dayton has grown to be one of the most dependable names in the motor industry.

Broad Line Offering. Grainger now offers over 2400 stock GE brand motors including AC and DC motors from 1/370 HP to 450 HP in Energy $aver™ and standard efficiency designs including severe duty, explosion proof, farm duty, HVAC, and many others.

National Recognition. GE is considered the leading national brand motor with the largest installed customer base. The GE brand is widely known for quality and reliability.

Clearly Identified. GE motors are clearly identified by full fact carton labels and nameplates. Easy-to-read wiring diagrams are included.

Premium Efficiency Leader. GE has long been recognized as an industry leader in premium efficiency motors with a wide variety of ratings and types to suit many applications.

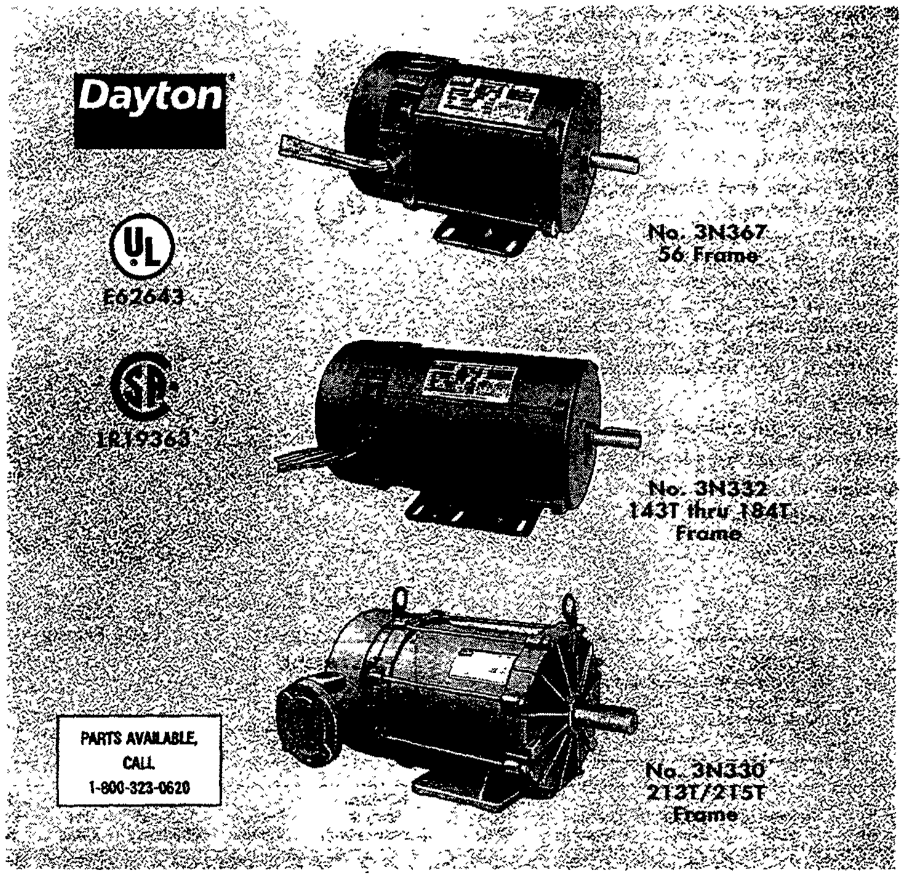
Heritage of Excellence. General Electric is one of the pioneers in the electrical industry with a proud 100 year history dating back to the time of founder Thomas Edison.

3-PHASE HAZARDOUS LOCATION INDUSTRIAL DUTY MOTORS

- **UL Listed (E62643) for use in designated hazardous locations**
- **T-frame models have built-in temperature-sensing switch with leads brought out. When properly wired to the external control circuit, maximum frame temperature is limited as required by UL and the NEC**
- **Hazardous location conduit box is supplied with all T-frame models; box is sold separately for NEMA 56 and 56H frame models**
- **NEMA design B**

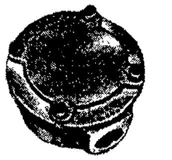
Typical Uses: To power fans, blowers, pumps, and air compressors in locations such as dry cleaning plants, paint and varnish factories, flour and feed mills, coal or coke plants, grain elevators, and other locations that require a motor to meet the National Electrical Code for hazardous locations.

Bearings: Ball
Enclosure: Hazardous location, TEFC
Service Factor: 1.0
Thermal Protection: Auto on NEMA 56 and 56H frames
Windings: Copper
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	NEMA Nominal Efficiency	Stock No.	List	Each	Shpg. Wt.
				ROLLED STEEL CONSTRUCTION, RIGID WELDED BASE CLASS I, GROUP D AND CLASS II, GROUPS E, F, AND G					
1/3	1725	56	230/460*	1.5/0.75	66.0	**3N367**	$368.00	**$281.50**	24.0
1/2	1725	56	230/460*	2.0/1.0	74.0	**3N368**	390.00	**298.50**	27.0
3/4	1725	56	230/460*	2.4/1.2	81.0	**3N369**	398.00	**304.75**	31.0
1	1740	143T	230/460	3.6/1.8	78.5	**3N332**	396.00	**303.25**	38.0
	1725	56H	230/460	3.6/1.8	78.5	**3N370**	414.00	**317.00**	33.0
1½	3450	145T	230/460	4.4/2.2	78.5	**3N567**	388.00	**297.00**	40.0
	1740	145T	230/460	4.8/2.4	80.0	**3N333**	409.00	**313.00**	44.0
	1725	56H	230/460	4.8/2.4	80.0	**3N371**	449.00	**343.50**	36.0
2	3450	145T	230/460	6.0/3.0	79.5	**3N568**	406.00	**310.75**	47.0
	1740	145T	230/460	6.0/3.0	81.5	**3N334**	448.00	**342.75**	49.0
3	1740	182T	230/460	8.4/4.2	82.5	**3N291**	489.00	**367.00**	87.0
5	1750	184T	230/460	12.8/6.4	88.5	**3N329**	593.00	**444.75**	108.0
7½	1740	213T	230/460	20.2/10.1	87.5	**3N330**	748.00	**561.00**	161.0
10	1740	215T	230/460	26.0/13.0	90.2	**3N331**	823.00	**617.50**	178.0

(*) Operable on 50 Hz 230/460V at 5/6 rated HP and speed at 1.0 service factor.



CONDUIT BOX FOR HAZARDOUS LOCATION MOTORS

For use on Dayton brand 56 frame hazardous location motors. Has hole for self-tapping grounding screw. Easily installed. UL Listed. Gray finish.

No. 4X788. Shpg. wt. 1.6 lbs. List $33.00.
Each **$29.30**

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

3-PHASE HAZARDOUS LOCATION MOTORS

- **Thermostat (T-St) models have built-in temperature-sensing switch with leads brought out. When properly wired to the external control circuit, maximum frame temperature is limited as required by UL and the NEC**
- **NEMA design B**
- **180 frame and above supplied with grease fittings**

Typical Uses: To power fans, blowers, pumps, and air compressors in dry cleaning plants, paint and varnish factories, flour and feed mills, coal or coke plants, grain elevators, and other locations that require a motor to meet the National Electrical Code for hazardous locations.

Bearings: Ball

Mounting: Rigid welded base

Enclosure: Hazardous location, TEFC

Ambient: 40°C.

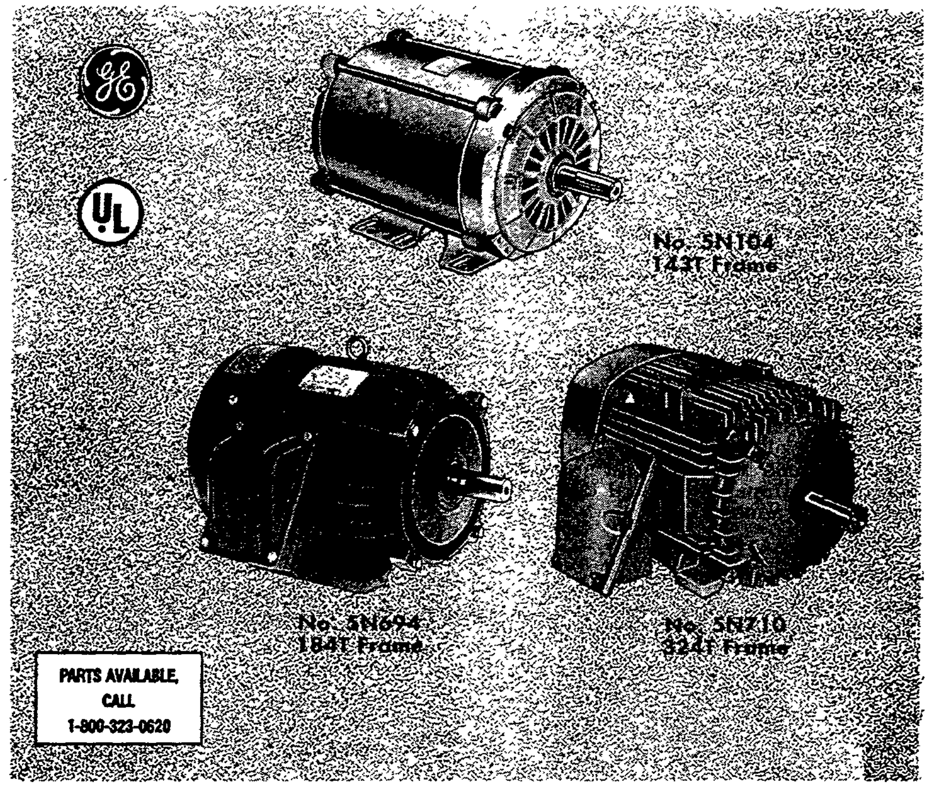
Duty: Continuous

Rotation: CW/CCW

Finish: Gray

Brand: GE

CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.



PARTS AVAILABLE, CALL 1-800-323-0620

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
BASE MOUNTED—CLASS I, GROUP D; CLASS II, GROUPS E, F, AND G, ROLLED STEEL CONSTRUCTION													
1/4	1725	48	Auto	230/460	1.2/0.6	1.0	68.9	A	K199	**5N092†**	$310.00	**$184.25**	19.0
1/3	1725	56	Auto	230/460	1.2/0.6	1.0	74.9	A	K200	**5N093†**	448.00	**266.25**	23.0
	1140	56	Auto	230/460	2.2/1.1	1.0	63.8	A	K201	**5N094**	541.00	**321.25**	25.0
1/2	1725	56	Auto	230/460	2.4/1.2	1.0	67.6	A	K203	**5N095**	474.00	**281.75**	25.0
	1725	56	Auto	200	2.7	1.0	68.4	A	K533	**5N096**	474.00	**281.75**	24.0
	1140	56	Auto	230/460	2.6/1.3	1.0	69.9	A	K204	**5N097**	571.00	**339.50**	34.0
3/4	1725	56	Auto	230/460	3.0/1.5	1.0	72.9	A	K206	**5N098**	484.00	**287.50**	27.0
	1725	56	Auto	200	3.5	1.0	73.0	A	K534	**5N099**	484.00	**287.50**	27.0
	1140	56	Auto	230/460	3.4/1.7	1.0	72.2	A	K207	**5N100**	607.00	**360.75**	36.0
	1140	143T	Auto	230/460	3.4/1.7	1.0	72.2	A	K580	**5N101**	607.00	**360.75**	37.0
1	3450	56	Auto	230/460	3.4/1.7	1.0	78.3	A	K208	**5N102**	483.00	**287.00**	27.0
	1725	56	Auto	230/460	3.6/1.8	1.0	75.4	A	K209	**5N103**	503.00	**299.00**	33.0
	1725	143T	Auto	230/460	3.6/1.8	1.0	75.4	A	K579	**5N104**	503.00	**299.00**	35.0
	1140	56H	Auto	230/460	3.6/1.8	1.0	78.3	B	K535	**5N106**	616.00	**366.00**	40.0
	1140	145T	T-St	230/460	3.6/1.8	1.0	78.3	B	K298	**5N105**	616.00	**366.00**	40.0
1½	3450	143T	T-St	230/460	4.2/2.1	1.0	81.3	A	K299	**5N107**	485.00	**288.25**	35.0
	1725	56H	Auto	230/460	5.0/2.5	1.0	75.2	B	K536	**5N109**	546.00	**324.50**	33.0
	1725	145T	T-St	230/460	5.0/2.5	1.0	75.2	B	K211	**5N108**	546.00	**324.50**	34.0
2	3450	145T	T-St	230/460	5.2/2.6	1.0	81.7	B	K301	**5N110***	767.00	**455.50**	39.0
	1725	145T	T-St	230/460	6.2/3.1	1.0	77.9	B	K212	**5N111***	560.00	**332.75**	42.0
BASE MOUNTED—CLASS I, GROUP D; CLASS II, GROUPS F AND G, CAST-IRON CONSTRUCTION													
1½	1165	182T	T-St	230/460	5.0/2.5	1.15	81.5	F	K581	**5N688**	613.00	**415.50**	95.0
2	1155	184T	T-St	230/460	6.2/3.1	1.15	82.5	F	K582	**5N689**	686.00	**467.50**	120.0
3	3520	182T	T-St	230/460	9.0/4.5	1.15	81.5	F	K303	**5N690**	652.00	**442.25**	101.0
	1760	182T	T-St	230/460	9.4/4.7	1.15	82.5	F	K213	**5N691**	661.00	**447.25**	95.0
	1170	213T	T-St	230/460	9.8/4.9	1.15	84.0	F	S3231	**5N692**	884.00	**604.00**	170.0
5	3520	184T	T-St	230/460	13.6/6.8	1.15	85.5	F	K304	**5N693**	794.00	**537.00**	112.0
	1745	184T	T-St	230/460	13.8/6.9	1.15	85.5	F	K214	**5N694**	764.00	**517.50**	115.0
	1160	215T	T-St	230/460	16.2/8.1	1.15	84.0	F	S3239	**5N695**	1171.00	**794.00**	180.0
7½	3525	213T	T-St	230/460	18.8/9.4	1.15	87.5	F	S531	**5N696**	1029.00	**699.50**	170.0
	1745	213T	T-St	230/460	19.8/9.9	1.15	86.5	F	S501	**5N697**	1094.00	**742.50**	170.0
	1170	254T	T-St	230/460	21.2/10.6	1.15	86.5	F	S3246	**5N698**	1484.00	**1015.00**	283.0

(*) Class I, Group D; Class II, Groups E and F only. (†) TENV.

3-PHASE HAZARDOUS LOCATION MOTORS

GE 3-PHASE HAZARDOUS LOCATION MOTORS (Cont.)

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
BASE MOUNTED—CLASS I, GROUP D; CLASS II, GROUPS F AND G CAST-IRON CONSTRUCTION													
10	3520	215T	T-St	230/460	23.6/11.8	1.15	88.5	F	S533	**5N699**	$1150.00	**$780.00**	180.0
	1740	215T	T-St	230/460	26.4/13.2	1.15	85.5	F	S502	**5N700**	1270.00	**859.00**	180.0
	1170	256T	T-St	230/460	27.2/13.6	1.15	87.5	F	S534	**5N701**	1823.00	**1240.00**	308.0
15	3550	254T	T-St	230/460	35.6/17.8	1.15	89.5	F	S535	**5N702**	1463.00	**1001.00**	283.0
	1765	254T	T-St	230/460	39.4/19.7	1.15	87.5	F	S503	**5N703**	1724.00	**1172.00**	283.0
	1175	284T	T-St	230/460	40.0/20.0	1.15	89.5	F	S536	**5N704**	2484.00	**1685.00**	404.0
20	3545	256T	T-St	230/460	47.4/23.7	1.15	89.5	F	S537	**5N705**	1943.00	**1319.00**	308.0
	1760	256T	T-St	230/460	52.6/26.3	1.15	87.5	F	S504	**5N706**	2012.00	**1364.00**	308.0
	1175	286T	T-St	230/460	49.0/24.5	1.15	89.5	F	S538	**5N707**	2947.00	**2098.00**	437.0
25	3545	284TS	T-St	230/460	56.6/28.3	1.15	90.2	F	S539	**5N708**	2419.00	**1644.00**	404.0
	1770	284T	T-St	230/460	61.2/30.6	1.15	89.5	F	S505	**5N709**	2527.00	**1715.00**	404.0
	1175	324T	T-St	230/460	64.6/32.3	1.0	89.5	B	S540	**5N710**	3386.00	**2175.00**	603.0
30	3545	284TS	T-St	230/460	67.6/33.8	1.15	90.2	F	S541	**5N711**	2853.00	**1934.00**	437.0
	1770	286T	T-St	230/460	72.8/36.4	1.15	90.2	F	S506	**5N712**	2947.00	**1996.00**	437.0
	1175	326T	T-St	230/460	75.4/37.7	1.0	90.2	B	S542	**5N713**	4444.00	**2856.00**	663.0
40	3560	324TS	T-St	230/460	97.8/48.9	1.0	89.5	B	S543	**5N714**	3588.00	**2304.00**	685.0
	1775	324T	T-St	230/460	103.2/51.6	1.0	90.2	B	S507	**5N715**	3597.00	**2309.00**	685.0
	1180	364T	T-St	460	53.5	1.0	90.2	B	S544	**5N086**	5757.00	**3698.00**	975.0
50	3560	326TS	T-St	230/460	121.4/60.7	1.0	91.0	B	S545	**5N716**	4306.00	**2767.00**	710.0
	1775	326T	T-St	230/460	119.4/59.7	1.0	91.7	B	S508	**5N717**	3992.00	**2564.00**	710.0
	1185	365T	T-St	460	60.2	1.0	91.0	B	S546	**5N718**	6274.00	**4030.00**	1025.0
60	3565	364TS	T-St	460	68.1	1.0	89.5	B	S547	**5N073**	6558.00	**4212.00**	1074.0
	1780	364T	T-St	460	72.6	1.0	91.0	B	S548	**5N077**	5761.00	**3698.00**	1146.0
	1185	404T	T-St	460	75.7	1.0	91.7	B	S549	**5N082**	7686.00	**4937.00**	1266.0
75	3565	365TS	T-St	460	87.3	1.0	91.0	B	S580	**5N074**	8649.00	**5560.00**	1120.0
	1780	365T	T-St	460	92.0	1.0	93.0	B	S581	**5N078**	6728.00	**4325.00**	843.0
	1185	405T	T-St	460	90.3	1.0	91.7	B	S582	**5N083**	8942.00	**5746.00**	1356.0
100	3570	405TS	T-St	460	111.0	1.0	91.7	B	S583	**5N075**	10409.00	**6691.00**	1363.0
	1780	405T	T-St	460	119.0	1.0	93.0	B	S584	**5N079**	9830.00	**6317.00**	1438.0
	1190	444T	T-St	460	114.0	1.0	93.0	B	S585	**5N084**	13541.00	**8703.00**	1889.0
125	1785	444T	T-St	460	140.0	1.0	92.4	B	S587	**5N080**	13416.00	**8622.00**	1817.0
	1190	445T	T-St	460	151.0	1.0	93.0	B	S588	**5N085**	13614.00	**8749.00**	1896.0
150	3575	445TS	T-St	460	161.0	1.0	91.0	B	S589	**5N076**	16721.00	**10751.00**	1944.0
	1785	445T	T-St	460	165.0	1.0	93.0	B	S590	**5N081**	14333.00	**9215.00**	1748.0
NEMA C-FACE MOUNTED—CLASS I, GROUP D; CLASS II, GROUPS E, F, AND G, ROLLED STEEL CONSTRUCTION													
1/3	1725	56C	Auto	230/460	1.2/0.6	1.0	74.9	A	K325	**5N087**†	484.00	**287.50**	23.0
1/2	1725	56C	Auto	230/460	2.4/1.2	1.0	67.6	A	K326	**5N088**	511.00	**303.50**	29.0
3/4	1725	56C	Auto	230/460	3.0/1.5	1.0	72.9	B	K484	**5N089**	520.00	**309.00**	34.0
1	1725	56C	Auto	230/460	3.6/1.8	1.0	75.4	B	K485	**5N090**	554.00	**329.25**	38.0
1½	1725	56C	Auto	230/460	5.0/2.5	1.0	75.2	B	K486	**5N091**	596.00	**354.00**	37.0

(†) TENV.

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

NATIONAL ELECTRICAL CODE EXPLOSIVE ATMOSPHERE CLASSIFICATIONS

Certain locations are hazardous because the atmosphere does or may contain gas, vapor or dust in explosive quantities. The National Electrical Code (NEC) divides these locations into classes and Groups according to the type of explosive agent which may be present. Listed are some of the agents in each classification. For complete list, see NFPA (National Fire Protection Association) publication 497M.

Underwriters' Laboratories tests motors and other devices for safety in explosive atmospheres, and publishes a list of those meeting its standards for each class and Group.

Use of UL Listed devices does not necessarily make an installation conform to the NEC or local codes. Consult Chapter 5 of the NEC, local building codes, OSHA requirements and insurance inspectors for detailed data as to proper procedures. This catalog does not contain any motors designed for Class I, Groups A, B, and C atmospheres.

CLASS I

Group A: Acetylene

Group B: Butadiene, ethylene oxide, hydrogen, propylene oxide, manufactured gases containing more than 30% hydrogen by volume.

Group C: Acetaldehyde, cyclopropane, diethyl ether, ethylene.

Group D: Acetone, acrylonitrile, ammonia, benzene, butane, ethanol, ethylene dichloride, gasoline, hexane, isoprene, methane (natural gas), methanol, naphtha, propane, propylene, styrene, toluene, vinyl chloride, xylene.

CLASS II

Group E: Aluminum, magnesium and other metal dusts with similar characteristics

Group F: Carbon black, coke or coal dust

Group G: Flour, starch or grain dust

CLASS III

Easily ignitable fibers, such as rayon, cotton sisal, hemp, cocoa fiber, oakum, excelsior and other materials of similar nature.

LET US SUPPLY YOUR MOTORS AND RELATED PRODUCTS

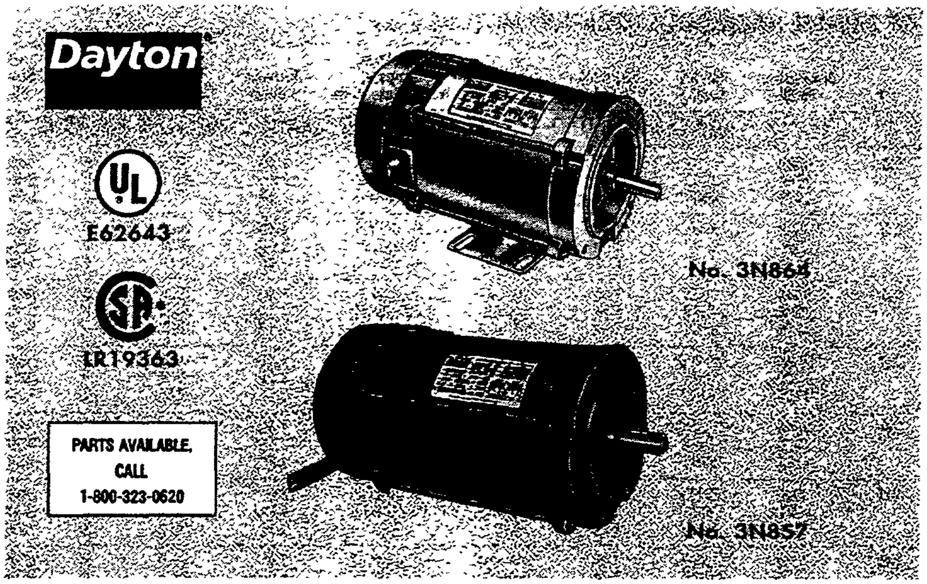
3-PHASE C-FACE HAZARDOUS LOCATION MOTORS

Typical Uses: To power fans, blowers, pumps, and air compressors in locations such as dry cleaning plants, paint and varnish factories, flour and feed mills, coal or coke plants, grain elevators, and other locations that require a motor to meet the National Electrical Code for hazardous locations.

Special Features: Listed by UL (E62643) for use in Class I, Group D and Class II, Groups E, F and G hazardous locations.

Hazardous location conduit box No. 4X788 with NEMA design B is sold separately; see below for ordering information. NEMA design B.

Bearings: Double-shielded ball
Enclosure: Hazardous location, TEFC
Service Factor: 1.0
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	NEMA Nominal Efficiency	Stock No.	List	Each	Shpg. Wt.
RIGID WELDED BASE										
1/3	1725	56C	Auto	230/460†	1.5/0.75	66.0	**3N863**	$401.00	**$306.75**	25.0
1/2	1725	56C	Auto	230/460†	2.0/1.0	72.0	**3N864**	422.00	**323.00**	28.0
3/4	1725	56C	Auto	230/460†	2.4/1.2	80.0	**3N865**	430.00	**329.00**	32.0
1	1725	56C	Auto	230/460	3.6/1.8	77.0	**3N866**	456.00	**349.00**	34.0
1½	1725	56HC	Auto	230/460	4.8/2.4	80.0	**3N867**	491.00	**375.75**	37.0
2	1725	56HC	None*	230/460	6.0/3.0	82.5	**3N868**	522.00	**399.50**	42.0
NO BASE										
1/3	1725	56C	Auto	230/460†	1.5/0.75	66.0	**3N857**	398.00	**304.75**	24.0
1/2	1725	56C	Auto	230/460†	2.0/1.0	72.0	**3N858**	420.00	**321.50**	27.0
3/4	1725	56C	Auto	230/460†	2.4/1.2	80.0	**3N859**	428.00	**327.50**	31.0
1	1725	56C	Auto	230/460	3.6/1.8	77.0	**3N860**	456.00	**349.00**	33.0
1½	1725	56C	Auto	230/460	4.8/2.4	80.0	**3N861**	491.00	**375.75**	36.0
2	1725	56C	None*	230/460	6.0/3.0	82.5	**3N862**	522.00	**399.50**	41.0

(*) Feature-sensing switch, which when properly wired to external control circuit, limits maximum frame temperature to UL and NEC requirements.
(†) Operable on 50 Hz, 230/460V at 5/6 rated speed.

CONDUIT BOX FOR HAZARDOUS LOCATION MOTORS

For use on Dayton brand 56 frame hazardous location motors. Has hole for self-tapping grounding screw. Easily installed. UL Listed. Gray finish.

No. 4X788. Shpg. wt. 1.6 lbs. List $33.00. Each..$29.30

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

MANY BRANDS OF POWER TRANSMISSION COMPONENTS AVAILABLE

For Sprockets See Pages 280 - 286
For Roller Chain See Pages 287 - 289
For Gears See Pages 309 - 311
For Sheaves See Pages 303 - 307
For V-Belts See Pages 294 - 298

3-PHASE HAZARDOUS LOCATION PREMIUM EFFICIENCY MOTORS

GE BRAND, SEVERE DUTY

- **Listed by UL (E125132) for use in Class I, Group D and Class II, Groups F and G hazardous locations**
- **Motors have built-in temperature-sensing switch with leads brought out. When properly wired to the external control circuit, maximum frame temperature is limited as required by UL and the NEC**
- **Premium efficiency motors meet most utility rebate program requirements**
- **NEMA design B**
- **Cast-iron construction**
- **Supplied with grease fittings**
- **Three-year warranty**

Typical Uses: To power fans, blowers pumps and air compressors in dry cleaning plants, paint and varnish factories, grain elevators, and other locations that require a motor to meet the National Electrical Code for hazardous locations.

Bearings: Ball

Enclosure: Hazardous location, TEFC

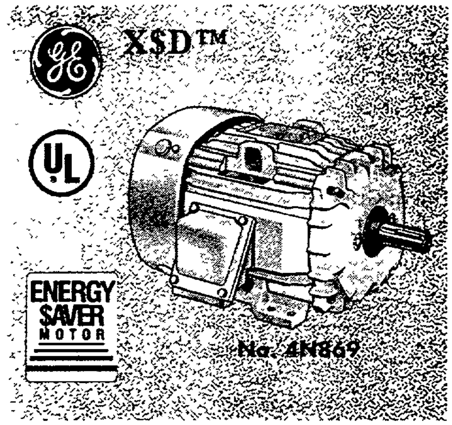
Ambient: 40°C

Duty: Continuous

Rotation: CW/CCW

Finish: Beige

Brand: GE



BASE MOUNTED—CLASS I, GROUP D; CLASS II, GROUPS F AND G

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1½	1170	182T	230/460	4.6/2.3	1.15	86.5	F	E9601	5N719	$1032.00	**$663.00**	90.0
	1175	182T	575	2.0	1.15	87.5	F	E9602	5N720	1032.00	**663.00**	90.0
2	1170	184T	230/460	6.6/3.3	1.15	86.5	F	E9603	5N721	1324.00	**850.50**	130.0
	1170	184T	575	2.6	1.15	86.5	F	E9604	5N722	1324.00	**850.50**	130.0
3	3540	182T	230/460	8.0/4.0	1.15	86.5	F	E9605	5N723	1354.00	**870.00**	100.0
	3450	182T	575	3.2	1.15	86.5	F	E9606	5N724	1354.00	**870.00**	100.0
	1765	182T	230/460	8.2/4.1	1.15	89.5	F	E9607	5N725	1202.00	**772.50**	95.0
	1765	182T	575	3.3	1.15	89.5	F	E9608	5N726	1202.00	**772.50**	95.0
	1175	213T	230/460	8.6/4.3	1.15	90.2	F	E9678	4N880	1566.00	**1006.00**	165.0
	1180	213T	575	3.5	1.15	90.2	F	E9610	5N727	1566.00	**1006.00**	200.0
5	3525	184T	230/460	14.0/7.0	1.15	87.5	F	E9611	5N728	1409.00	**905.00**	130.0
	3525	184T	575	5.6	1.15	87.5	F	E9612	5N729	1409.00	**905.00**	130.0
	1745	184T	230/460	13.2/6.6	1.15	87.5	F	E9613	5N730	1326.00	**852.00**	130.0
	1745	184T	575	5.3	1.15	87.5	F	E9614	5N731	1326.00	**852.00**	130.0
	1170	215T	230/460	14.0/7.0	1.15	90.2	F	E9679	4N881	1746.00	**1121.00**	210.0
	1170	215T	575	5.7	1.15	90.2	F	E9616	5N732	1746.00	**1121.00**	220.0
7½	3535	213T	230/460	17.4/8.7	1.15	90.2	F	E9661	4N882	1630.00	**1047.00**	175.0
	3535	213T	575	7.0	1.15	90.2	F	E9617	5N733	1630.00	**1047.00**	200.0
	1755	213T	230/460	17.8/8.9	1.15	91.0	F	E9669	4N883	1735.00	**1114.00**	205.0
	1755	213T	575	7.1	1.15	91.0	F	E9618	5N734	1735.00	**1114.00**	200.0
	1175	254T	230/460	19.6/9.8	1.15	91.0	F	E9680	4N884	2304.00	**1480.00**	328.0
	1175	254T	575	7.9	1.15	91.0	F	E9619	5N735	2304.00	**1480.00**	315.0
10	3525	215T	230/460	22.8/11.4	1.15	91.0	F	E9662	4N865	1730.00	**1111.00**	220.0
	3530	215T	575	9.2	1.15	91.0	F	E9620	5N736	1730.00	**1111.00**	220.0
	1750	215T	230/460	23.8/11.9	1.15	91.0	F	E9671	4N869	1795.00	**1153.00**	165.0
	1750	215TS	575	9.5	1.15	91.0	F	E9621	5N737	1795.00	**1153.00**	220.0
	1175	256T	230/460	25.6/12.8	1.15	91.7	F	E9686	4N877	2700.00	**1734.00**	360.0
	1170	256T	575	10.1	1.15	91.7	F	E9622	5N738	2700.00	**1734.00**	350.0
15	3555	254T	230/460	34.4/17.2	1.15	91.0	F	E9663	4N866	2250.00	**1444.00**	357.0
	3555	254T	575	13.8	1.15	91.0	F	E9623	5N739	2250.00	**1444.00**	315.0
	1770	254T	230/460	36.4/18.2	1.15	92.4	F	E9672	4N868	2220.00	**1425.00**	353.0
	1770	254T	575	14.5	1.15	92.4	F	E9624	5N740	2220.00	**1425.00**	315.0
	1180	284T	230/460	36.4/18.2	1.15	91.7	F	E9682	4N875	3867.00	**2482.00**	477.0
	1180	284T	575	14.5	1.15	91.7	F	E9625	5N741	3867.00	**2483.00**	460.0
20	3550	256T	230/460	45.2/22.6	1.15	91.7	F	E9664	4N867	2663.00	**1709.00**	374.0
	3555	256T	575	18.1	1.15	91.7	F	E9626	5N742	2663.00	**1710.00**	350.0
	1770	256T	230/460	47.2/23.6	1.15	93.0	F	E9673	4N870	2639.00	**1695.00**	382.0
	1770	256T	575	18.9	1.15	93.0	F	E9627	5N743	2639.00	**1695.00**	350.0
	1175	286T	230/460	48.2/24.1	1.15	91.7	F	E9683	4N876	4232.00	**2716.00**	528.0
	1175	286T	575	19.3	1.15	91.7	F	E9628	5N744	4232.00	**2716.00**	510.0
25	3555	284TS	230/460	55.8/27.9	1.15	92.4	F	E9665	5N746	3348.00	**2149.00**	350.0
	3555	284TS	575	22.3	1.15	92.4	F	E9629	5N745	3348.00	**2149.00**	430.0
	1775	284T	230/460	57.6/28.8	1.15	93.6	F	E9674	4N872	3743.00	**2402.00**	517.0
	1775	284T	575	23.0	1.15	93.6	F	E9630	5N747	3743.00	**2403.00**	460.0
30	3545	286TS	230/460	66.4/33.2	1.15	92.4	F	E9666	5N748	3791.00	**2434.00**	480.0
	3550	286TS	575	26.7	1.15	92.4	F	E9631	5N749	3791.00	**2434.00**	480.0
	1775	286T	230/460	69.0/34.5	1.15	93.6	F	E9675	4N873	3784.00	**2429.00**	523.0
	1775	286T	575	27.6	1.15	93.6	F	E9632	5N750	3784.00	**2429.00**	510.0
	1180	326T	230/460	72.4/36.2	1.15	93.0	F	E9685	4N879	8044.00	**5165.00**	701.0
40	1780	324T	230/460	91.0/45.5	1.15	94.1	F	E9676	4N874	4183.00	**2683.00**	740.0
50	1775	326T	230/460	115.0/57.5	1.15	94.1	F	E9677	4N871	4964.00	**3185.00**	752.0

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

CAPACITOR-START AND SPLIT-PHASE 50 Hz MOTORS

GE BRAND, CAPACITOR-START AND SPLIT-PHASE

Typical Uses: Fans, blowers, pumps, and commercial machinery.

Ambient: 40°C

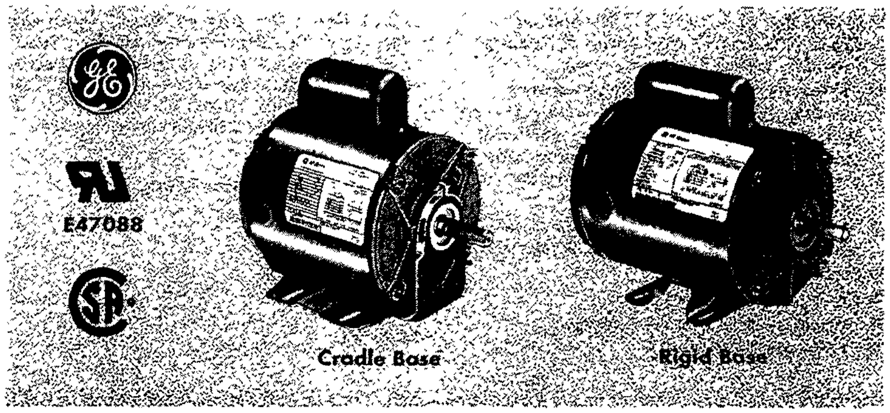
Duty: Continuous

Rotation: CW/CCW

Finish: Gray

Brand: GE

PARTS AVAILABLE, CALL 1-800-323-0620



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 50 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Ins. Class	Mounting	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
					CAPACITOR-START, OPEN DRIPPROOF									
1/4	1425	48	None	110/220	5.6/2.8	1.35	Ball	B	Rigid	C431	**1D072**	$174.00	**$104.75**	17.0
	1425	48	Auto	110/220	5.6/2.8	1.35	Ball	B	Cradle	C460	**1D077**	177.00	**106.50**	18.0
1/3	1425	56	Auto	110/220	7.4/3.7	1.35	Ball	B	Cradle	C457	**1D075**	216.00	**129.95**	20.0
1/2	2850	48	None	110/220	7.8/3.9	1.25	Ball	B	Rigid	C459	**1D076**	189.00	**113.75**	20.0
	1425	56	Auto	110/220	9.2/4.6	1.25	Ball	B	Cradle	C439	**1D073**	280.00	**168.75**	24.0
3/4	1425	56	Auto	110/220	12.2/6.1	1.25	Ball	B	Cradle	C1187	**3K879**	339.00	**207.50**	35.0
					SPLIT-PHASE, OPEN DRIPPROOF									
1/4	1425	48	Auto	110/220	5.2/2.6	1.0	Ball	A	Rigid	H689	**1D085**	144.00	**86.70**	15.0
	1425	48	None	220	3.4	1.0	Sleeve	B	Cradle/Stud	H645	**3K101**	149.00	**70.25**	16.0
1/3	1425	48	Auto	110/220	7.0/3.5	1.0	Ball	B	Rigid	H691	**1D086**	155.00	**93.30**	16.0
	1425	56Z*	Auto	110/220	7.0/3.5	1.0	Ball	A	Cradle	H692	**3K004**	159.00	**97.30**	17.0
1/2	1425	56	Auto	110/220	9.2/4.6	1.0	Ball	B	Cradle	H693	**1D087**	178.00	**107.15**	20.0

(*) NEMA 56Z frame motors have nonstandard 1/2" diameter shaft with flat.

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

A.O. SMITH BRAND, SPLIT-PHASE CRADLE BASE

Typical Uses: Fans and blowers, air circulators, farm and home workshop tools such as jig saws, grinders, and small drill presses. Also, other moderate torque applications where HP load will not exceed nameplate rating.

Bearings: All-angle sleeve

Enclosure: Open dripproof

Service Factor: 1.0

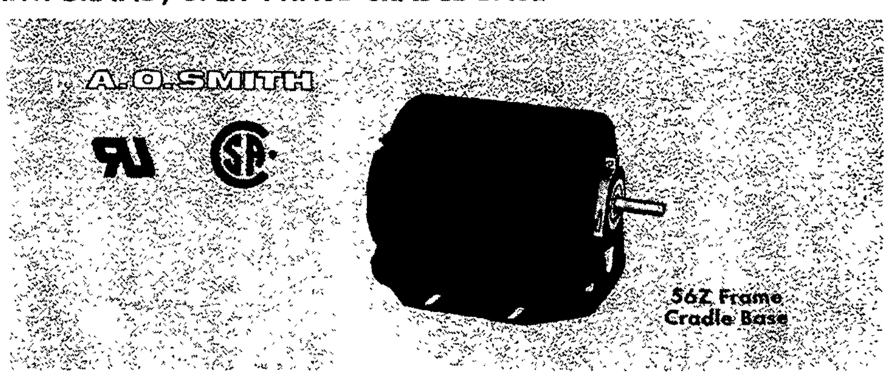
Ambient: 40°C

Duty: Continuous

Rotation: CW/CCW

Finish: Black epoxy

Brand: A.O. Smith



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 50 Hz	Full-Load Amps at Nameplate Volts	Bearings	Ins. Class	A.O. Smith Model	Stock No.	List	Each	Shpg. Wt.
1/3	1425	56Z*	None	220	3.2	Sleeve	B	317P163	**5K169**	$144.00	**$111.30**	16.0

(*) NEMA 56Z frame motors have nonstandard 1/2" diameter shaft with flat; supplied with 5/8" diameter shaft bushing

COMPLETE INDEX AT BACK OF CATALOG WILL HELP YOU QUICKLY LOCATE YOUR NEEDS

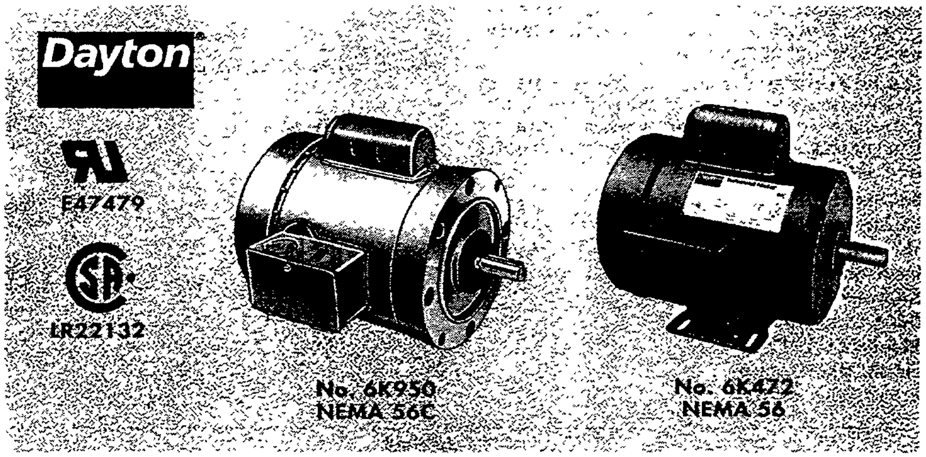
CAPACITOR-START 50 Hz MOTORS

DAYTON BRAND, 50 Hz MOTORS

- **Copper windings**
- **50 Hz operation**

Typical Uses: Machinery, air compressors, conveyors, fans, blowers, machine tools, pumps, and other moderate to hard-starting equipment in **noncombustible** dusty, dirty environments. 56 C-face end-mounted models are for use on commercial pumps, speed reducers, and other equipment designed for direct connection.

Type: Capacitor-start
Bearings: Double-shielded ball
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 50 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	Stock No.	List	Each	Shpg. Wt.
					TEFC, C-FACE, NO BASE						
1/3	1425	56C	None	110/220	8.0/4.0	1.0	B	**6K950**	$229.00	**$175.50**	22.0
1/2	1425	56C	None	110/220	8.6/4.3	1.0	B	**6K952**	251.00	**192.25**	26.0
3/4	1425	56C	None	110/220	11.6/5.8	1.0	B	**6K959**	288.00	**220.50**	36.0
					TEFC, RIGID WELDED BASE						
1/3	1425	56	None	110/220	7.4/3.7	1.0	B	**6K472**	220.00	**168.50**	23.0
1/2	1425	56	None	110/220	8.4/4.2	1.0	B	**6K408**	244.00	**187.00**	28.0
3/4	1425	56	None	110/220	12.2/6.1	1.0	B	**6K473**	297.00	**227.50**	32.0
1	1425	56H	None	110/220	14.0/7.0	1.0	B	**6K409**	336.00	**257.00**	40.0

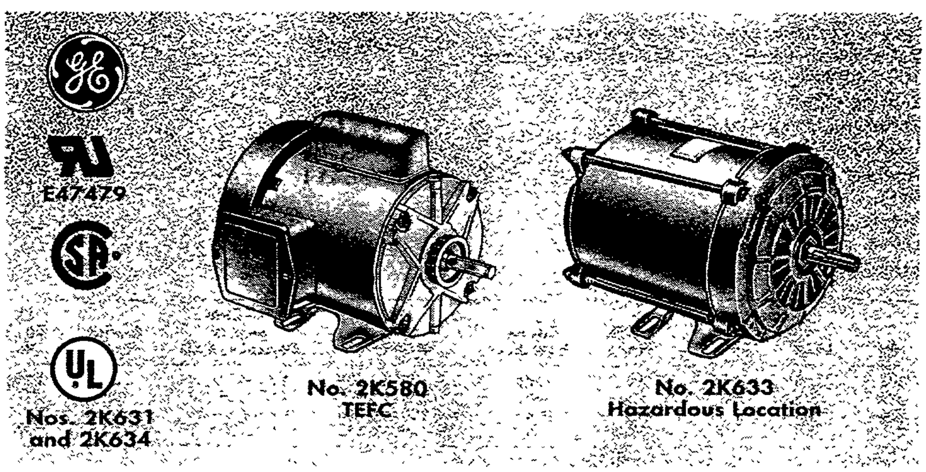
CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND, 50 Hz MOTORS

Typical Uses: Machinery, air compressors, conveyors, fans and blowers, and other heavy-duty, hard-starting equipment.

Type: Capacitor-start
Bearings: Ball
Mounting: Rigid welded base
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Enclosure	Volts 50 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
						TEFC							
1/4	1425	48	None	TEFC	110/220	5.4/2.7	1.0	B	C462	**2K580**	$203.00	**$123.00**	18.0
						HAZARDOUS LOCATION, UL CLASS I, GROUP D; CLASS II, GROUPS E, F AND G							
1/3	1425	56	Auto	TEFC	110/220	6.2/3.1	1.0	A	C470	**2K631**	390.00	**231.75**	27.0
1/2	1425	56	Auto	TEFC	110/220	8.4/4.2	1.0	A	C471	**2K634**	428.00	**254.50**	33.0

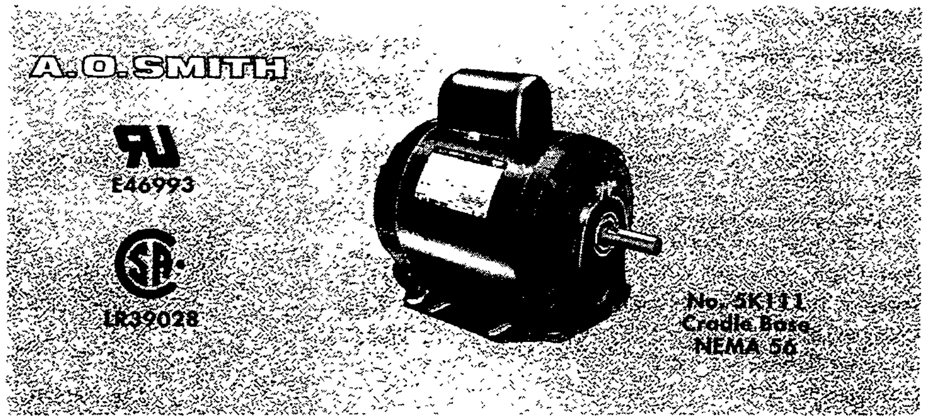
CAPACITOR-START OPEN DRIPPROOF MOTORS

A.O. SMITH BRAND, CAPACITOR-START, 50 Hz, CRADLE BASE

Typical Uses: Machinery, air compressors, pumps, blowers, and other heavy-duty, hard-starting equipment.

Special Features: NEMA service factors up to 1.35 provide a reserve margin for applications where intermittent overloading or fluctuating (high/low) voltage conditions may occur.

Bearings: All-angle sleeve
Enclosure: Open dripproof
Thermal Protection: None
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Black epoxy
Brand: A.O. Smith



HP	Nameplate RPM	NEMA Frame	Volts 50 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	A.O. Smith Style No.	Stock No.	List	Each	Shpg. Wt.
1/3	1425	56	110/220	7.2/3.6	1.35	Sleeve	312P658	5K111	$208.00	$160.50	23.0
1/2	1425	56	110/220	8.6/4.3	1.25	Sleeve	312P659	5K112	244.00	188.50	27.0
3/4	1425	56	110/220	11.4/5.7	1.25	Sleeve	312P660	5K834	298.00	230.00	32.0

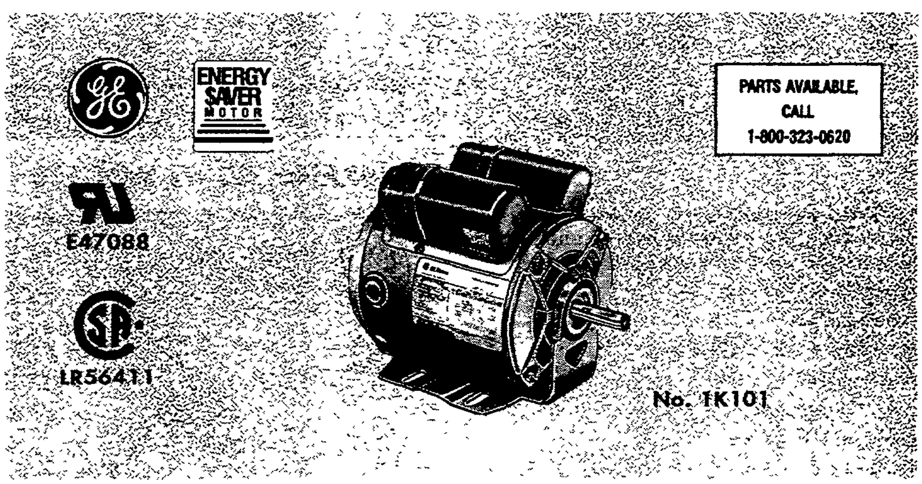
CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND, CAPACITOR-START, 60/50 Hz, CRADLE BASE

Typical Uses: High efficiency performance on pumps, blowers, air compressors, machinery, and other heavy-duty, hard-starting equipment.

Special Features: NEMA service factors provide a reserve margin for applications where intermittent overloading or fluctuating (high/low) voltage conditions may occur. Dual capacitors.

Type: Capacitor-start, capacitor-run
Volts: 60/50 Hz Energy $aver™ models are 100-120/200-240 volts
Bearings: Ball
Enclosure: Open dripproof
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE



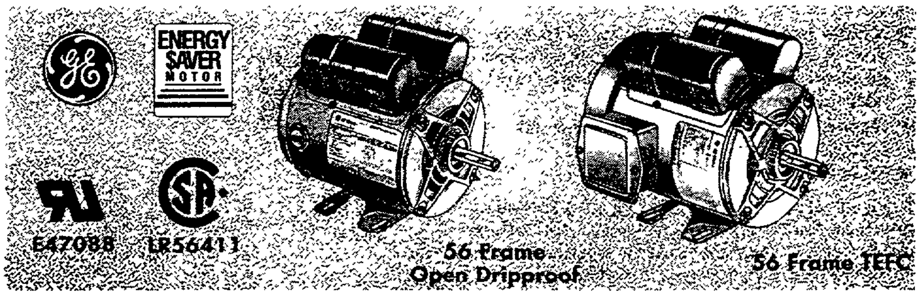
HP	Nameplate RPM at 60 Hz	Nameplate RPM at 50 Hz	NEMA Frame	Thermal Protection	Volts 60/50 Hz*	Full-Load Amps at Nameplate Volts	Service Factor	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/3	1725	1425	56	Auto	100-120/200-240	4.0-3.8/2.0-1.9	1.35	E254	1K101	$211.00	$129.10	24.0
1/2	1725	1425	56	Auto	100-120/200-240	5.8-5.6/2.9-2.8	1.25	E263	1K103	252.00	154.25	27.0
3/4	1725	1425	56	Auto	100-120/200-240	9.0-8.8/4.5-4.4	1.25	E272	1K105	324.00	198.50	31.0
1	1725	1425	56H	Auto	100-120/200-240	11.8-11.4/5.9-5.7	1.15	E281	1K107	364.00	223.00	40.0

(*) Suitable for 50 Hz operation at nameplate HP and service factor.

PREMIUM EFFICIENCY CAPACITOR-START MOTORS

CAPACITOR-START, CAPACITOR-RUN, RIGID WELDED BASE, 60/50 Hz MOTORS

Typical Uses: Air compressors, conveyors, fans, blowers, machine tools, pumps, and other heavy-duty, hard-starting equipment.
Bearings: Ball
Volts: 100-120/200-240 at 60 Hz and 50 Hz
Thermal Protection: None
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE Energy $aver™

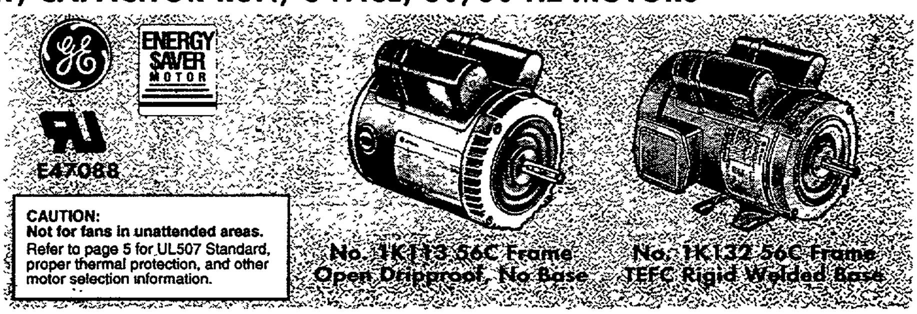


HP	Nameplate RPM at 60 Hz	Nameplate RPM at 50 Hz	NEMA Frame	Thermal Protection	Volts 60/50 Hz*	Full-Load Amps at Nameplate Volts 60 Hz	Service Factor	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
						OPEN DRIPPROOF						
1/3	1725	1425	56	None	100-120/200-240	4.0-3.8/2.0-1.9	1.35	E253	**1K100**	$205.00	**$124.15**	23.0
1/2	1725	1425	56	None	100-120/200-240	5.8-5.6/2.9-2.8	1.25	E262	**1K102**	240.00	**145.35**	26.0
3/4	1725	1425	56	None	100-120/200-240	9.0-8.8/4.5-4.4	1.25	E271	**1K104**	312.00	**189.25**	30.0
1	1725	1425	56	None	100-120/200-240	11.8-11.4/5.9-5.7	1.15	E280	**1K106**	353.00	**214.25**	39.0
						TEFC						
1/3	1725	1425	56	None	100-120/200-240	4.0-3.8/2.0-1.9	1.35	E258	**1K108**	246.00	**149.05**	23.0
1/2	1725	1425	56	None	100-120/200-240	5.8-5.6/2.9-2.8	1.25	E267	**1K109**	289.00	**175.50**	27.0
3/4	1725	1425	56	None	100-120/200-240	9.0-8.8/4.5-4.4	1.25	E276	**1K110**	344.00	**208.75**	31.0
1	1725	1425	56	None	100-120/200-240	11.8-11.4/5.9-5.7	1.25	E285	**1K111**	395.00	**239.50**	40.0

(*)Suitable for 50 Hz operation at nameplate HP and service factor.

CAPACITOR-START, CAPACITOR-RUN, C-FACE, 60/50 Hz MOTORS

Typical Uses: Industrial and commercial pumps, speed reducers, blowers, machine tools, and other equipment that can be directly connected to an end-mounted motor.
Bearings: Ball
Volts: 100-120/200-240 at 60 Hz and 50 Hz
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE Energy $aver™



CAUTION:
Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

HP	Nameplate RPM at 60 Hz	Nameplate RPM at 50 Hz	NEMA Frame	Thermal Protection	Volts 60/50 Hz*	Full-Load Amps at Nameplate Volts 60 Hz	Service Factor	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
						OPEN DRIPPROOF, NO BASE						
1/3	1725	1425	56C	None	100-120/200-240	4.0-3.8/2.0-1.9	1.35	E251	**1K113**	$243.00	**$147.20**	23.0
1/2	1725	1425	56C	None	100-120/200-240	5.8-5.6/2.9-2.8	1.25	E260	**1K116**	277.00	**168.00**	27.0
3/4	1725	1425	56C	None	100-120/200-240	9.0-8.8/4.5-4.4	1.25	E269	**1K119**	333.00	**202.00**	29.0
1	1725	1425	56C	None	100-120/200-240	11.8-11.4/5.9-5.7	1.15	E278	**1K122**	384.00	**233.00**	37.0
						OPEN DRIPPROOF, RIGID WELDED BASE						
1/3	1725	1425	56C	Manual	100-120/200-240	4.0-3.8/2.0-1.9	1.35	E250	**1K112**	257.00	**156.25**	24.0
1/3	1725	1425	56C	Auto	100-120/200-240	4.0-3.8/2.0-1.9	1.35	E252	**1K114**	254.00	**154.00**	23.0
1/2	1725	1425	56C	Manual	100-120/200-240	5.8-5.6/2.9-2.8	1.25	E259	**1K115**	292.00	**177.25**	27.0
1/2	1725	1425	56C	Auto	100-120/200-240	5.8-5.6/2.9-2.8	1.25	E261	**1K117**	289.00	**175.50**	27.0
3/4	1725	1425	56C	Manual	100-120/200-240	9.0-8.8/4.5-4.4	1.25	E268	**1K118**	347.00	**210.50**	30.0
3/4	1725	1425	56C	Auto	100-120/200-240	9.0-8.8/4.5-4.4	1.25	E270	**1K120**	344.00	**208.75**	30.0
1	1725	1425	56C	Manual	100-120/200-240	11.8-11.4/5.9-5.7	1.15	E277	**1K121**	398.00	**241.25**	40.0
1	1725	1425	56C	Auto	100-120/200-240	11.8-11.4/5.9-5.7	1.15	E279	**1K123**	395.00	**239.50**	39.0
						TEFC, NO BASE						
1/3	1725	1425	56C	None	100-120/200-240	4.0-3.8/2.0-1.9	1.35	E256	**1K125**	260.00	**158.00**	23.0
1/2	1725	1425	56C	None	100-120/200-240	5.8-5.6/2.9-2.8	1.25	E265	**1K128**	303.00	**184.00**	27.0
3/4	1725	1425	56C	None	100-120/200-240	9.0-8.8/4.5-4.4	1.25	E274	**1K131**	358.00	**217.00**	31.0
1	1725	1425	56C	None	100-120/200-240	11.8-11.4/5.9-5.7	1.15	E283	**1K134**	410.00	**248.75**	40.0
						TEFC, RIGID WELDED BASE						
1/3	1725	1425	56C	Manual	100-120/200-240	4.0-3.8/2.0-1.9	1.35	E255	**1K124**	274.00	**166.25**	23.0
1/3	1725	1425	56C	Auto	100-120/200-240	4.0-3.8/2.0-1.9	1.35	E257	**1K126**	272.00	**165.00**	23.0
1/2	1725	1425	56C	Manual	100-120/200-240	5.8-5.6/2.9-2.8	1.25	E264	**1K127**	317.00	**192.25**	27.0
1/2	1725	1425	56C	Auto	100-120/200-240	5.8-5.6/2.9-2.8	1.25	E266	**1K129**	314.00	**190.50**	27.0
3/4	1725	1425	56C	Manual	100-120/200-240	9.0-8.8/4.5-4.4	1.25	E273	**1K130**	373.00	**226.25**	31.0
3/4	1725	1425	56C	Auto	100-120/200-240	9.0-8.8/4.5-4.4	1.25	E275	**1K132**	370.00	**224.25**	31.0
1	1725	1425	56C	Manual	100-120/200-240	11.8-11.4/5.9-5.7	1.15	E282	**1K133**	425.00	**257.50**	40.0
1	1725	1425	56C	Auto	100-120/200-240	11.8-11.4/5.9-5.7	1.15	E284	**1K135**	422.00	**255.75**	40.0

(*) Suitable for 50 Hz operation at nameplate HP and service factor.

50 Hz MOTORS

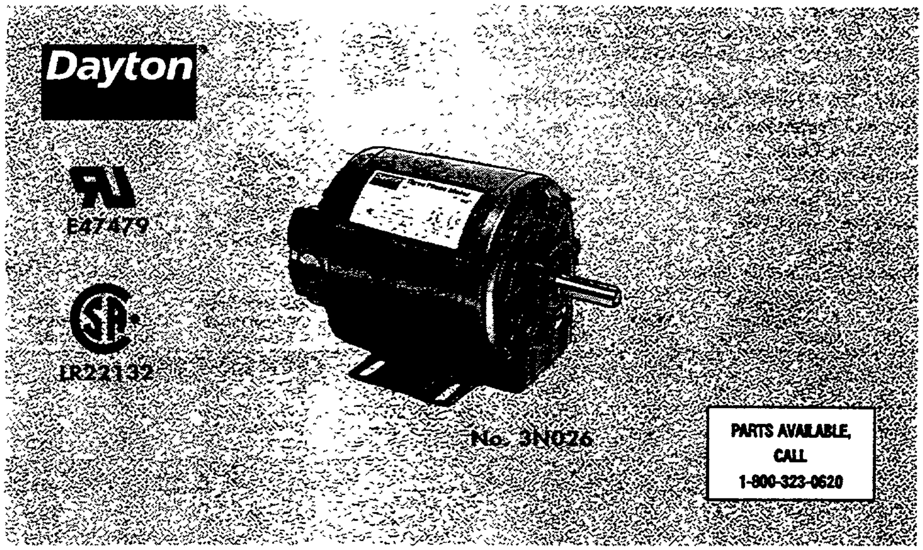
3-PHASE 60/50 Hz MOTORS

DAYTON BRAND, 60/50 Hz MOTORS

- **NEMA service factors up to 1.35 provide a reserve margin for intermittent overloading or fluctuating (high/low) voltage conditions**
- **Operable on 60/50 Hz at same HP rating and service factor**
- **NEMA design B**

Typical Uses: Pumps, fans, blowers, machine tools, air compressors, and other moderate to hard-starting applications where 3-phase power is available.

Bearings: Double-shielded ball
Mounting: Cradle base
Enclosure: Open dripproof
Windings: Copper
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM at: 60 Hz	50 Hz	NEMA Frame	Thermal Protection	Volts 60/50 Hz*	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Ins. Class	Stock No.	List	Each	Shpg. Wt.
1/3	1725	1425	56	None	208-220/440	1.4-1.4/0.7	1.35	66.0	A	**3N026**	$168.00	**$128.45**	18.0
1/2	3450	2850	56	Auto	208-220/440	2.2-2.4/1.2	1.25	66.0	A	**3N634**	166.00	**126.85**	20.0
1/2	1725	1425	56	None	208-220/440	2.0-2.0/1.0	1.25	72.0	A	**3N027**	193.00	**147.55**	22.0
3/4	3450	2850	56	Auto	208-220/440	2.8-3.0/1.5	1.25	70.0	A	**3N635**	193.00	**147.50**	21.0
3/4	1725	1425	56	None	208-220/440	2.8-2.7/1.4	1.25	77.0	A	**3N487**	203.00	**155.25**	23.0
1	3450	2850	56	Auto	208-220/440	3.5-3.6/1.8	1.25	77.0	A	**3N636**	221.00	**169.00**	23.0
1	1725	1425	56	None	208-220/440	3.4-3.4/1.7	1.25	78.5	A	**3N488**	231.00	**176.75**	26.0
1 1/2	3450	2850	56	Auto	208-220/440	4.4-4.2/2.1	1.15	78.5	A	**3N637**	263.00	**201.25**	28.0
1 1/2	1725	1425	56	None	208-220/440	4.9-4.8/2.4	1.20	81.5	A	**3N489**	273.00	**208.75**	33.0
2	3450	2850	56	Auto	208-220/440	5.8-5.6/2.8	1.15	81.5	B	**3N638**	304.00	**232.50**	31.0

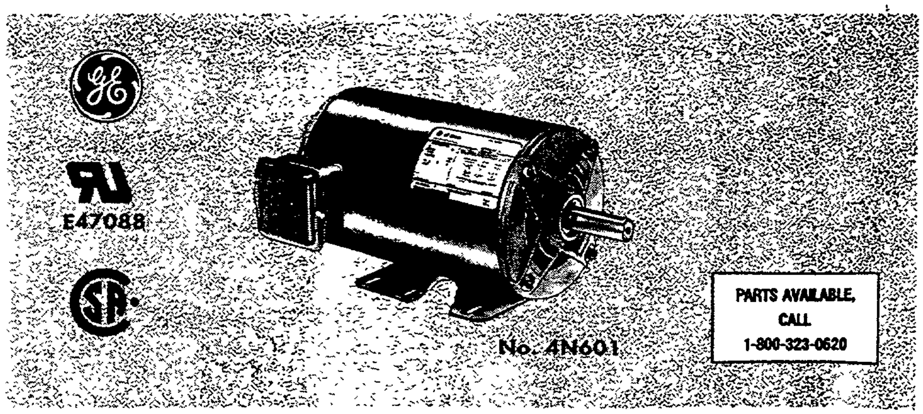
(*) Operable on 50 Hz, 190/380V, at 50 Hz RPM.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND, 50 Hz MOTORS

Typical Uses: Pumps, fans, blowers, air compressors, conveyors, machinery, and other industrial equipment.

Bearings: Ball
Mounting: Rigid
Enclosure: Open dripproof
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE



OPEN DRIPPROOF

HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 50 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/2	1425	56	None	220/380	2.3/1.3	1.25	B	K318	**4N590**	$264.00	**$160.25**	19.0
1	1425	143T	None	220/380	3.5/2.0	1.15	B	K404	**4N601**	305.00	**185.00**	31.0
1 1/2	1425	145T	None	220/380	4.9/2.8	1.15	B	K408	**4N605**	324.00	**196.75**	36.0
2	1425	145T	None	220/380	6.4/3.7	1.15	B	K319	**4N609**	363.00	**220.00**	39.0

CAPACITOR-START OPEN DRIPPROOF MOTORS

DAYTON BRAND, INSTANT REVERSE

- **Reversing device is built into motor, no relay required**
- **Maximum cycling rate 5 times per minute**

Typical Uses: Mechanical doors, gates, hospital beds, hoists, and other equipment that require remote control instant reversibility.

NOTE: No. 2X469 DPDT toggle switch with On/Off/On action is recommended for controlling these motors. Order No. 2X469 separately from page 517.

Bearings: Prelubricated, double-shielded ball

Mounting: Rigid welded base

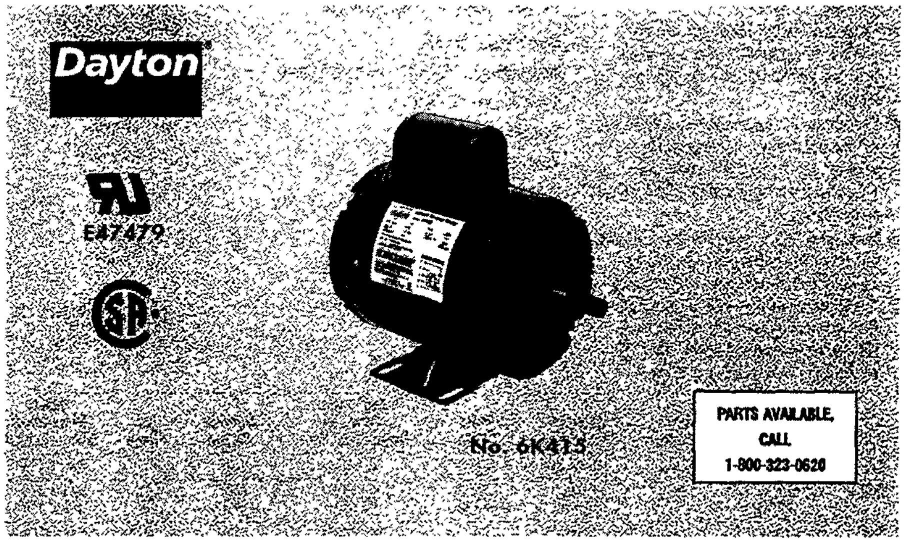
Ambient: 40°C

Duty: Continuous

Rotation: Instant reverse

Finish: Gray

Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full Load Amps at Nameplate Volts	Service Factor	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1/3	1725	56	Manual	115	6.4	1.25	B	**6K415**	$234.00	**$161.50**	18.0
1/2	1725	56	Manual	115	8.0	1.25	B	**6K388**	270.00	**186.50**	23.0
3/4	1725	56	Manual	115	12.0	1.15	B	**6K880**	314.00	**216.75**	27.0

CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND, INSTANT REVERSE

- **Solid state switch**
- **Extended thru bolts**

Typical Uses: Designed for door operators, machine tools, cranes, hoists, gates, and any other equipment requiring remote control instant reversibility.

Bearings: Ball

Mounting: Rigid welded base with studs

Insulation Class: B

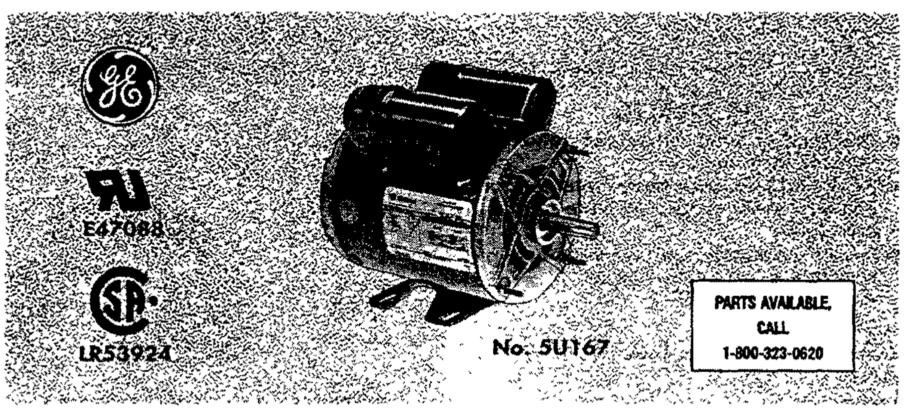
Ambient: 40°C

Duty: Continuous

Rotation: Instant reverse

Finish: Gray

Brand: GE



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/4	1725	48	None	115	5.2	1.35	C382	**5U178**	$188.00	**$115.05**	14.0
1/3	1725	56	None	115	6.3	1.35	C383	**5U179**	227.00	**138.95**	15.0
1/3	1725	56	Manual	115	6.3	1.35	C384	**5U180**	231.00	**141.35**	15.0
1/2	1725	56	None	115/230	8.6/4.3	1.25	C1458	**5U166**	245.00	**149.90**	21.0
1/2	1725	56	Manual	115/230	8.6/4.3	1.25	C1459	**5U167**	258.00	**158.25**	21.0
3/4	1725	56	None	115/230	13.2/6.6	1.25	C1460	**5U168**	295.00	**180.50**	25.0
3/4	1725	56	Manual	115/230	13.2/6.6	1.25	C1461	**5U169**	307.00	**188.00**	25.0
1	1725	56	None	115/230	13.6/6.8	1.15	C1469	**5U177**	381.00	**233.50**	31.0

NEED STORAGE EQUIPMENT?

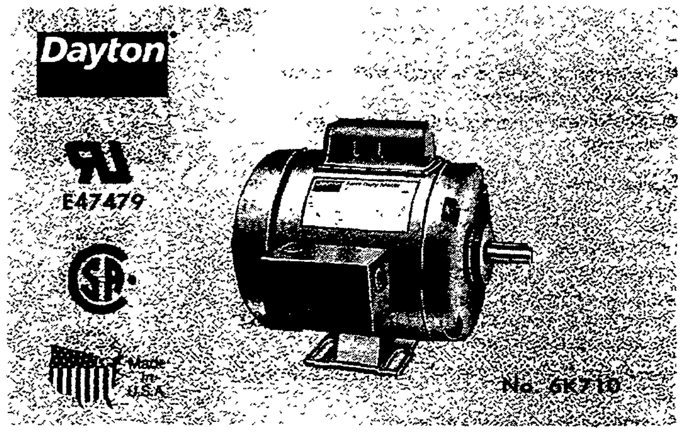
We have pallet racks, bulk storage racks, cantilever racks, shelving, cabinets, bins, parts storage containers, lockers, workbenches, and shop furniture. Refer to Index at back of catalog for page listings.

HIGH TORQUE CAPACITOR-START TEFC MOTORS

DAYTON BRAND

- Made in USA
- Heavy-duty design provides dependable service for severe farm applications
- Gasketed capacitor covers, conduit box, and shaft slingers provide added protection against dirt and moisture
- Sealed ball bearings on 56 and 140 frames; double-shielded ball on 180 and 210 frames with moisture-resistant grease effective at temperatures to -40°F help provide long life
- All copper windings

Bearings: Ball
Mounting: Rigid welded base
Enclosure: TEFC
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Green
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Ins. Class	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
1/3	1725	56	Manual	115/230	6.8/3.4	1.15	B	5/8 x 1 7/8"	**6K710**	$208.00	**$113.65**	21.0
1/2	1725	56	Auto	115/230	9.0/4.5	1.15	B	5/8 x 1 7/8	**6K592**	218.00	**126.30**	23.0
	1725	56	Manual	115/230	9.0/4.5	1.15	B	5/8 x 1 7/8	**6K714**	224.00	**118.30**	23.0
3/4	1725	56	Auto	115/230	11.2/5.6	1.15	B	5/8 x 1 7/8	**6K619**	260.00	**150.75**	28.0
	1725	56	Manual	115/230	11.2/5.6	1.15	B	5/8 x 1 7/8	**6K719**	266.00	**144.65**	28.0
1	1725	56	Auto	115/230	13.6/6.8	1.15	B	5/8 x 1 7/8	**6K622**	280.00	**162.25**	31.0
	1725	56H	Manual	115/230	13.6/6.8	1.15	B	5/8 x 1 7/8	**6K727**	286.00	**161.25**	32.0
1 1/2	1740	145T	Manual	115/230	17.6/8.8	1.0	B	7/8 x 2 1/4	**6K311***	376.00	**192.25**	41.0
	1725	56H	Manual	115/230	17.6/8.8	1.0	B	5/8 x 1 7/8	**6K740***	367.00	**192.25**	41.0
2	1740	182T	Manual	115/230	23.6/11.8	1.0	B	1 1/8 x 2 3/4	**6K313**	490.00	**283.25**	59.0
	1725	56HZ	Manual	115/230	19.0/9.5	1.0	B	7/8 x 2 1/4	**4K090***	422.00	**244.50**	40.0
3	1740	184T	Manual	230	14.5	1.0	B	1 1/8 x 2 3/4	**6K610***	600.00	**324.50**	75.0
5	1740	184T	Manual	230	22.0	1.0	F	1 1/8 x 2 3/4	**6K847***	772.00	**397.75**	87.0
	1730	213T	Manual	230	23.0	1.0	B	1 3/8 x 3 3/8	**6K130***	835.00	**484.50**	107.0
7 1/2	1740	215T	Manual	230	30.0	1.0	F	1 3/8 x 3 3/8	**6K969***	1095.00	**526.00**	136.0
10	1730	215T	230	230	38.0	1.0	F	1 3/8 x 3 3/8	**6K970***	1357.00	**738.00**	162.0

(*) Capacitor-start, capacitor-run.

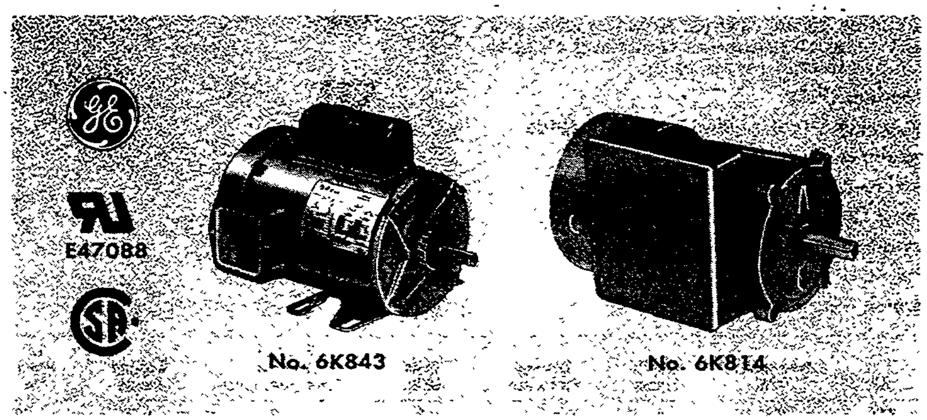
CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND

- Designed to meet the severe conditions of farm use
- Gasketed capacitor cover and conduit box and shaft slinger provide added protection
- Sealed ball bearings and moisture-resistant grease effective at temperatures to -40°F

Bearings: Ball
Mounting: Rigid welded base
Enclosure: TEFC
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray enamel
Brand: GE



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Shaft Dimensions Dia. x L	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/3	1725	56	Manual	115/230	7.8/3.9	1.0	5/8 x 1 7/8"	B	F13E1	**6K840**	$160.00	**$124.15**	20.0
1/2	1725	56	Manual	115/230	9.0/4.5	1.0	5/8 x 1 7/8	B	F12E1	**6K841**	175.00	**133.60**	24.0
3/4	1725	56	Manual	115/230	11.0/5.5	1.0	5/8 x 1 7/8	B	F34E1	**6K842**	209.00	**158.75**	34.0
1	1725	56	Manual	115/230	13.2/6.6	1.0	5/8 x 1 7/8	B	F10E1	**6K843**	228.00	**171.00**	41.0
1 1/2	1725	145T	Manual	115/230	14.8/7.4	1.0	7/8 x 2 1/4	B	F15E1	**6K812***	301.00	**224.75**	47.0
	1725	56H	Manual	115/230	14.8/7.4	1.0	5/8 x 1 7/8	B	F100	**6K851***	287.00	**219.25**	50.0
2	1730	182TZ†	Manual	230	11.4	1.0	7/8 x 2 1/4	F	N787	**6K813**	439.00	**323.25**	90.0
3	1720	184TZ†	Manual	230	15.6	1.0	1 3/8 x 3 3/8	F	N789	**6K814**	551.00	**397.00**	100.0
5	1730	184TZ†	Manual	230	22.0	1.0	1 1/8 x 3 1/4	F	N792	**6K815***	624.00	**474.50**	115.0

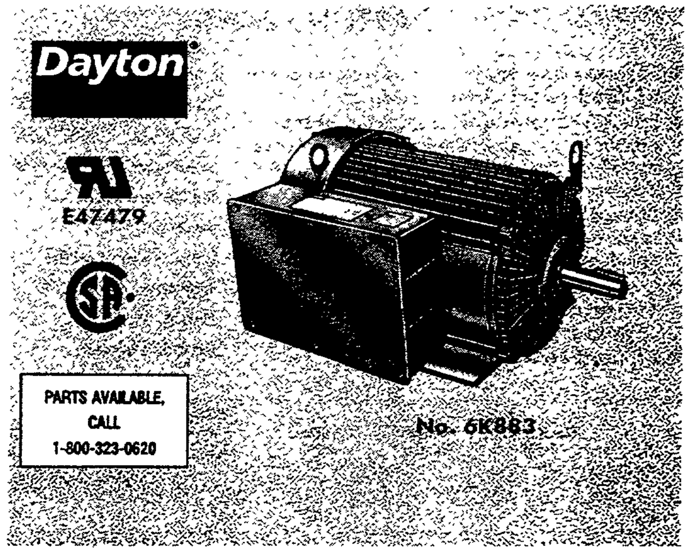
(*) Capacitor-start, capacitor-run. (†) Bolt-on base.

EXTRA HIGH TORQUE CAPACITOR-START TEFC MOTORS

DAYTON BRAND

- Made in USA
- Extra high torque motors have typical starting torque 300-400% of full-load torque
- Breakdown torque rating 285% of full-load torque
- Gasketed capacitor cover and conduit box and shaft slinger provide added protection
- Sealed ball bearings on 140 frames; double-shielded ball on 180 and 210 frames with moisture-resistant grease effective at temperature to -40°F provide long life
- Regreasable shaft bearings on 182 frame and above

Typical Uses: Designed for severe farm applications which require motors to start under fully loaded conditions. Used in conveyors, silo unloaders, barn cleaners, compressors, and manure pumps.
Bearings: Ball
Mounting: Rigid welded base
Enclosure: TEFC
Insulation Class: F
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Green
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
1	1725	143T	Manual	115/230	15.0/7.5	1.15	7/8 x 2 1/4"	**6K994**	$340.00	**$196.50**	48.0
1 1/2	1725	143T	Manual	115/230	19.2/9.6	1.15	7/8 x 2 1/4	**6K886***	455.81	**263.50**	50.0
2	1740	182TZ	Manual	115/230	25.6/12.8	1.15	7/8 x 2 3/4	**6K887**	588.00	**321.50**	80.0
3	1760	184T	Manual	230	17.0	1.15	1 1/8 x 2 3/4	**6K881***	654.00	**367.75**	85.0
5	1740	184T	Manual	230	24.0	1.15	1 1/8 x 2 3/4	**6K882***	819.00	**477.25**	93.0
	1725	215TZ	Manual	230	29.0	1.15	1 1/8 x 3 3/8	**6K883**	905.00	**511.50**	122.0
7 1/2	1710	215TZ	Manual	230	36.0	1.15	1 1/8 x 3 3/8	**6K884***	1215.00	**670.50**	150.0
10	1725	215T	Manual	230	43.0	1.15	1 3/8 x 3 3/8	**6K885***	1494.00	**832.00**	155.0

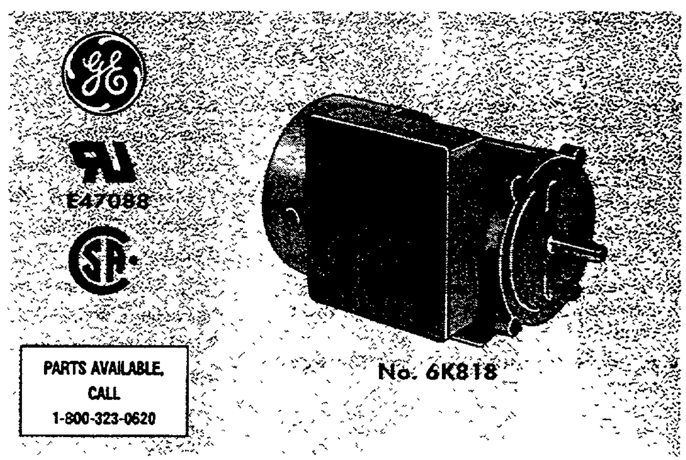
(*) Capacitor-start, capacitor-run. All others capacitor-start, induction-run.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND

- Extra high torque motors have typical starting torque 300-400% of full-load torque
- Breakdown torque rating 285% of full-load torque
- Gasketed capacitor cover and conduit box and shaft slinger provide added protection
- Regreasable bearings on NEMA 184 and 215 frame models

Typical Uses: Designed for severe farm applications which require motors to start under fully loaded conditions.
Type: Capacitor-start, capacitor-run
Bearings: Ball
Mounting: Rigid base
Enclosure: TEFC
Insulation Class: F
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray enamel
Brand: GE



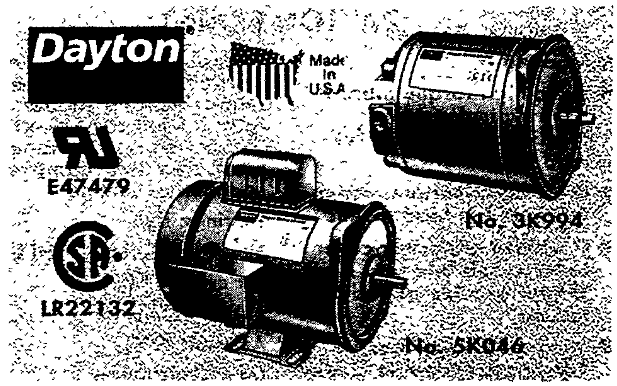
HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Shaft Dimensions Dia. x Length	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
2	1735	182TZ	Manual	230	11.4	1.15	7/8 x 2 3/4"	N786	**2K343**	$455.00	**$339.50**	92.0
3	1750	184TZ	Manual	230	18.1	1.15	1 1/8 x 3	N788	**2K344**	571.00	**411.50**	104.0
5	1740	184TZ	Manual	230	21.8	1.15	1 1/8 x 3 1/4	N790	**2K345**	657.00	**499.25**	113.0
	1750	215TZ	Manual	230	22.6	1.0	1 1/8 x 3 1/4	N791	**6K816**	701.00	**539.50**	191.0
7 1/2	1735	215TZ	Manual	230	29.7	1.0	1 1/8 x 3 1/4	N793	**6K817**	935.00	**707.50**	184.0
	1735	215TZ	Manual	230	29.7	1.0	1 3/8 x 3 3/8	N798	**2K347**	935.00	**708.00**	182.0
10	1730	215TZ	Manual	230	38.0	1.0	1 1/8 x 3 1/4	N794	**2K346**	999.00	**877.00**	210.0
	1730	215TZ	Manual	230	38.0	1.0	1 3/8 x 3 3/8	N795	**6K818**	999.00	**877.50**	185.0

POULTRY FEED AUGER DRIVE MOTORS

DAYTON BRAND

- For new and replacement use on poultry feed auger-drive systems
- Special mounting flange assembles easily to auger systems manufactured by GSI, Cumberland, Chore-Time, and others
- Special guard on rotary switch protects against high-speed back-drive condition
- Capacitor-start models have shaft extensions out fan guard for hand cranking
- All copper windings

Bearings: Ball
Mounting: Flange and base
Enclosure: TEFC and TENV
Thermal Protection: Manual
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts 60 Hz	Full-Load Amps at Nameplate Volts 50 Hz	Service Factor	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
SPLIT-PHASE, TENV, NO BASE											
1/3	1725	56YZ	115/230	5.4/2.7	6.0/3.0	1.0	1/2 x 1 1/2"	**3K994†**	$202.00	**$131.20**	27.0
SPLIT-PHASE, TENV, RIGID BASE											
1/8	1725	56YZ	115/230	3.0/1.5	—	1.0	1/2 x 1 1/2	**5K041**	180.00	**117.00**	23.0
1/4	1725	56YZ	115/230	4.6/2.3	—	1.0	1/2 x 1 1/2	**5K042**	188.00	**122.20**	24.0
1/3	1725	56YZ	115/230	5.4/2.7	6.0/3.0	1.0	1/2 x 1 1/2	**5K043†**	206.00	**134.30**	27.0
CAPACITOR-START, TEFC, NO BASE											
1/2	1725	56YZ	115/230	9.0/4.5	9.6/4.8	1.0	1/2 x 1 1/2	**3K995†**	291.00	**189.75**	30.0
3/4	1725	56YZ	115/230	11.4/5.7	11.8/5.9	1.0	1/2 x 1 1/2	**3K996†**	321.00	**208.75**	32.0
CAPACITOR-START, TEFC, RIGID BASE											
1/2	1725	56YZ	115/230	9.0/4.5	9.6/4.8	1.0	1/2 x 1 1/2	**5K044†**	295.00	**192.00**	26.0
3/4	1725	56YZ	115/230	11.4/5.7	11.8/5.9	1.0	1/2 x 1 1/2	**5K046†**	325.00	**211.75**	32.0
1	1725	56Y	115/230	13.6/6.8	—	1.15	1/2 x 1 7/8	**4K997**	360.00	**233.75**	36.0
1 1/2	1725	56Y	115/230	14.0/7.0	—	1.15	1/2 x 1 7/8	**4K998***	404.00	**263.00**	45.0

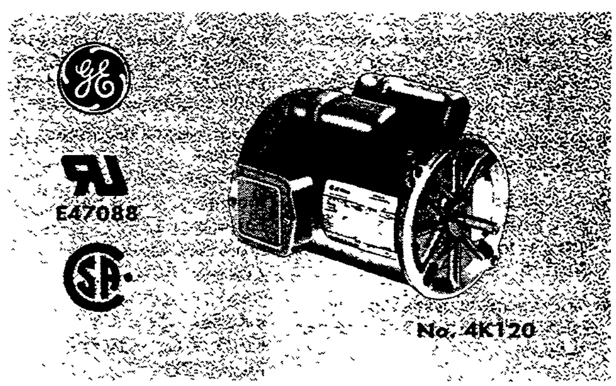
(*) Capacitor-start, capacitor-run. (†) Operable at 50 Hz.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND

- For new and replacement use on poultry feed auger drive systems
- Special guard on rotary switch protects against high-speed back-drive condition
- Special mounting flange assembles directly to gearbox
- Capacitor-start models have shaft extensions out fan guard for hand cranking
- Suitable replacement for OEM equipment

Bearings: Ball
Mounting: Flange
Enclosure: TEFC and TENV
Thermal Protection: Manual
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray enamel
Brand: GE



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Shaft Dimensions Dia. x L	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
SPLIT-PHASE, TENV, NO BASE											
1/3	1725	48NZ	115/230	5.30/2.70	1.0	1/2 x 1 27/32"	H646	**4K118**	$160.00	**$133.55**	22.0
CAPACITOR-START, TEFC, NO BASE											
1/3	1725	56NY	115/208-230	5.8/2.9	1.0	1/2 x 1 1/2	C1291	**2K350***	190.00	**130.95**	21.0
1/2	1725	56NY	115/208-230	8.4/4.0-4.2	1.0	1/2 x 1 13/16	C1292	**4K119***	216.00	**189.00**	27.0
3/4	1725	56NY	115/208-230	8.4/4.5-4.2	1.0	1/2 x 1 11/16	C1293	**4K120***	248.00	**217.50**	35.0
1	1725	56NY	115/208-230	10.8/6.0-5.4	1.0	1/2 x 1 7/8	C1294	**4K121***	304.00	**234.00**	41.0
1 1/2	1725	56NY	115/230	14.8/7.4	1.0	1/2 x 1 7/8	C1295	**2K351**	433.00	**270.25**	42.0

(*) 50/60 Hz.

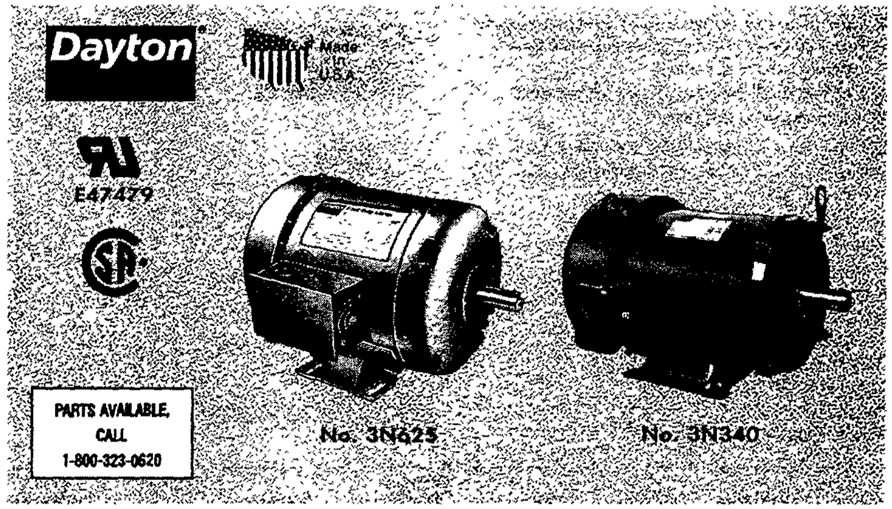
3-PHASE AUGER MOTORS AND CENTER PIVOT IRRIGATION MOTORS

DAYTON BRAND, 3-PHASE MOTORS

- **T frame models are NEMA design B**
- **Gasketed conduit box and shaft slinger provide added protection**
- **Double-shielded ball bearings with low temperature grease**
- **All copper windings**

Typical Uses: For driving air compressors, conveyors, augers, pumps and other farm equipment where 3-phase power is available.

Bearings: Ball
Mounting: Rigid base
Enclosure: TEFC
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Green
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Stock No.	List	Each	Shpg. Wt.
1/3	1725	56	Manual	230/460	1.6/0.8	1.15	71.0*	**3N625**	$200.00	**$127.10**	18.0
1/2	1725	56	Manual	230/460	1.8/0.9	1.15	77.0*	**3N626**	218.00	**138.70**	21.0
3/4	1725	56	Manual	230/460	2.6/1.3	1.15	77.0*	**3N627**	251.00	**159.75**	23.0
1	1740	143T	None	230/460	3.6/1.8	1.0	78.5	**3N335**	255.00	**162.25**	27.0
	1725	56	Manual	230/460	3.6/1.8	1.15	77.0*	**3N628**	261.00	**166.25**	25.0
1½	1740	145T	None	230/460	4.8/2.4	1.0	80.0	**3N336**	287.00	**183.00**	32.0
	1725	56H	Manual	230/460	4.8/2.4	1.15	80.0*	**3N629**	293.00	**186.50**	30.0
2	1740	145T	None	230/460	6.0/3.0	1.0	78.5	**3N337**	311.00	**198.00**	36.0
3	1740	182T	None	230/460	9.0/4.5	1.0	82.5	**3N338**	418.00	**250.00**	57.0
5	1740	184T	None	230/460	13.4/6.7	1.0	86.5	**3N339**	476.00	**284.25**	74.0
7½	1755	213T	None	230/460	19.8/9.9	1.0	87.5	**3N340**	625.00	**373.00**	117.0
10	1755	215T	None	230/460	25.2/12.6	1.0	90.2	**3N341**	747.00	**446.50**	127.0

(*) Average efficiency, not NEMA nominal efficiency.

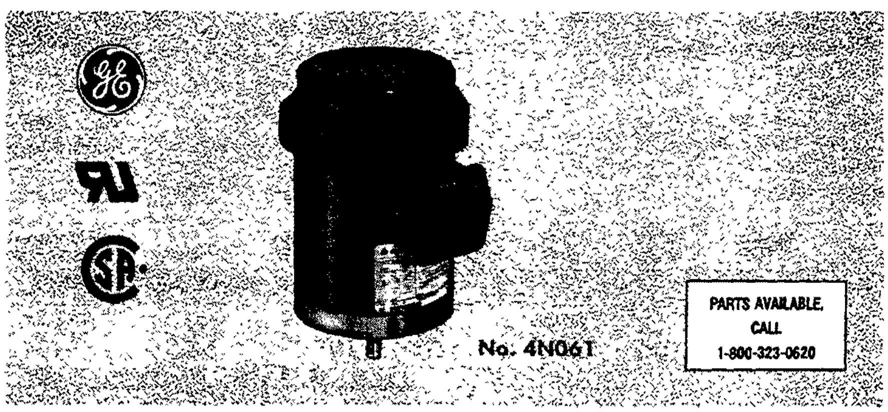
CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND, 3-PHASE CENTER PIVOT IRRIGATION MOTORS

- **NEMA 56 C-face assembles directly to geardrive**
- **Drain holes in shaft endshield**
- **Rainshield helps resist corrosion from the high moisture and chemical environment of irrigation systems**

ypical Uses: Designed specifically for powering center pivot irrigation systems.

earings: Ball
Mounting: C-face
nclosure: TEFC
nsulation Class: B
mbient: 40°C
uty: Continuous
otation: CW/CCW
inish: Gray enamel
rand: GE



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60/50 Hz	Full-Load Amps at Nameplate Volts	Service Factor	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1	1725/1425	56CZ*	Auto	460/380	1.8/1.9	1.0	K1476	**4N061**	$241.00	**$167.25**	33.0
1½	1725/1425	56CZ*	Auto	460/380	2.6/3.0	1.0	K1438	**4N060**	273.00	**189.75**	35.0

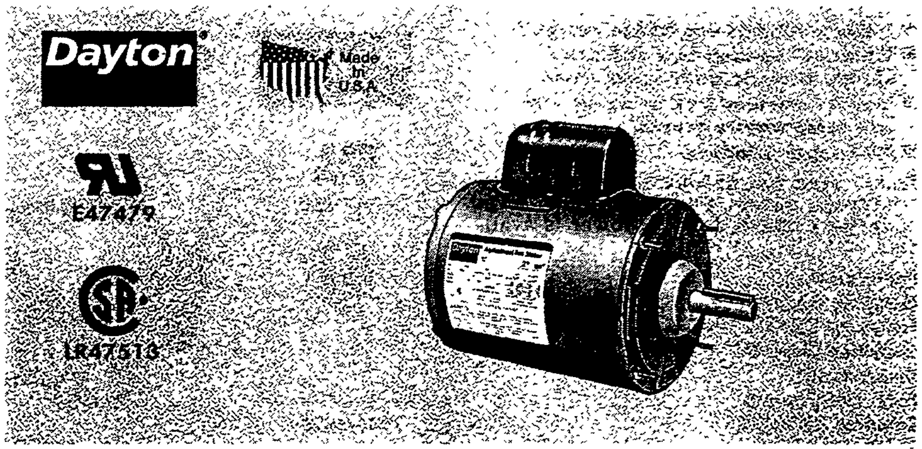
) 5/8" diameter x 1⅞" shaft.

DIRECT-DRIVE AND ADJUSTABLE SPEED PSC MOTORS

DAYTON BRAND, PSC DIRECT-DRIVE MOTOR

- **Cup shaped slinger and gasket capacitor cover provide added protection against dust and dirt**
- **Sealed ball bearings on shaft end**
- **All copper windings**

Typical Uses: Direct-drive exhaust and ventilation fans operating in poultry and livestock houses.
Bearings: Ball
Mounting: Stud
Enclosure: TEAO
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW facing shaft
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Mounting	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
1/2	825	48YZ	115/230	6.0/3.0	1.25	Stud	5/8 x 2⅝"	**4M250**	$200.00	**$132.00**	22.0

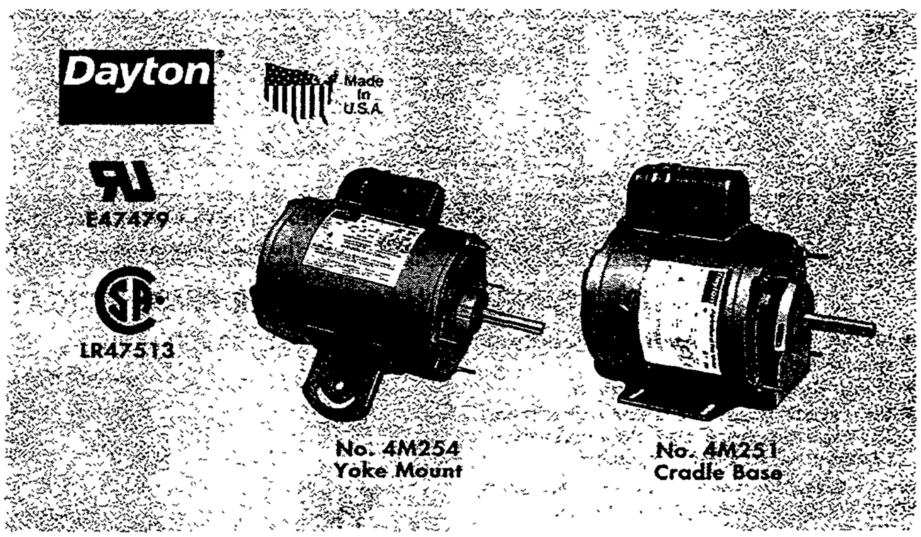
CAUTION: Not for fans in unattended areas.

Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

DAYTON BRAND, PSC ADJUSTABLE SPEED MOTORS

- **Shaft slinger and gasketed conduit box and capacitor cover provide added protection against moisture and dirt**
- **Designed for adjustable speed operation with optional solid state Triac-type controller No. 4C929 at 115V or No. 4C931 at 230V**
- **All copper windings**

Typical Uses: Exhaust fans operating in livestock confinements, or other dusty, dirty noncombustible environments. **Not intended for mechanical applications.**
Bearings: Ball
Enclosure: TEAO
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



No. 4M254 Yoke Mount
No. 4M251 Cradle Base

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Mounting	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
					YOKE MOUNT WITH EXTENDED STUDS						
1/4	1700	48YZ	115/230	3.4/1.7	1.0	Yoke	1/2 x 2½"	**4M254**	$190.00	**$108.65**	17.0
1/3	1700	48YZ	115/230	3.8/1.9	1.0	Yoke	1/2 x 2½	**4M255**	211.00	**120.60**	20.0
1/2	1700	48YZ	115/230	5.0/2.5	1.0	Yoke	1/2 x 2½	**4M256**	228.00	**130.45**	24.0
					CRADLE BASE WITH EXTENDED STUDS						
1/4	1700	48YZ	115/230	3.4/1.7	1.0	Cradle	1/2 x 2½	**4M251**	192.00	**109.80**	17.0
1/3	1700	48YZ	115/230	3.8/1.9	1.0	Cradle	1/2 x 2½	**4M252**	213.00	**121.70**	20.0
1/2	1700	48YZ	115/230	5.0/2.5	1.0	Cradle	1/2 x 2½	**4M253**	230.00	**131.75**	25.0

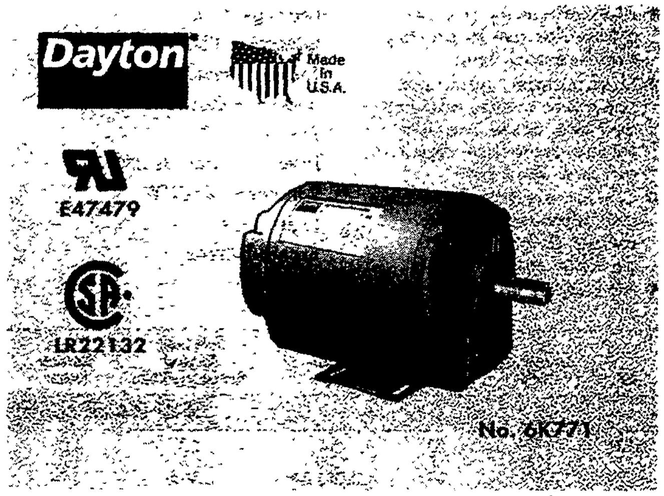
LET US SUPPLY YOUR FANS, VENTILATORS, AND RELATED PRODUCTS.

SEE INDEX UNDER APPROPRIATE HEADING

AGRICULTURAL FAN MOTORS

DAYTON BRAND, SPLIT-PHASE

- Gasketed conduit boxes and shaft slinger help protect against water and dirt
- Dual voltage ratings and reversible rotation provide added interchangeability in a variety of fan applications
- All copper windings
- No. 6K791 has extended fan bolts for fan guard mounting



No. 6K771

Typical Uses: Exhaust fans operating in poultry and livestock houses. Also used for other fan and blower applications in locations with a dusty, dirty, noncombustible environment.

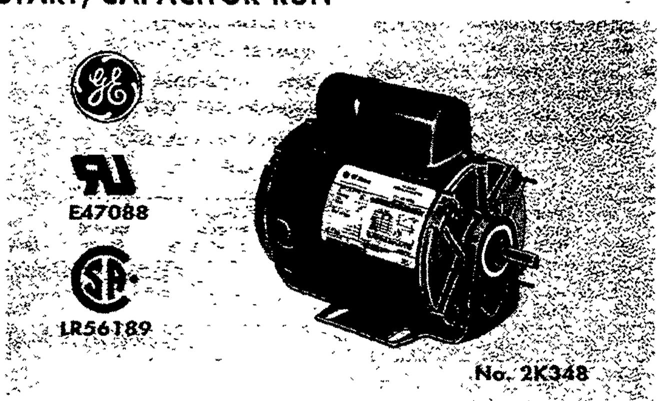
Bearings: Ball
Enclosure: TEAO
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW/CCW
Finish: Gray
Brand: Dayton

HP	Nameplate RPM	NEMA Frame	Volts, 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Mounting	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
1/3	1725	56	115/230	5.0/2.5	1.25	Rigid	5/8 x 1-7/8*	**4K087**	$174.00	**$111.35**	23.0
1/2	1725	56	115/230	7.0/3.5	1.25	Rigid	5/8 x 1-7/8	**6K770**	198.00	**126.65**	24.0
	1725	56	115/230	7.0/3.5	1.25	Cradle	5/8 x 1-7/8	**6K771**	196.00	**125.40**	25.0
	1725	56	115/230	7.6/3.8	1.25	Cradle	5/8 x 1-7/8	**6K791**	196.00	**122.15**	28.0
3/4	1725	56	115/230	9.8/4.9	1.25	Rigid	5/8 x 1[illegible]	**4K088**	248.00	**158.75**	28.0
1	1725	56	115/230	12.6/6.3	1.25	Rigid	5/8 x 1[illegible]	**4K089**	265.00	**169.50**	32.0

CAUTION: Not for fans in unattended areas.
Refer to page 8 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND, SPLIT-PHASE START, CAPACITOR-RUN

- Designed to run efficiently in agricultural environments
- Dual voltage ratings and reversible rotation provide added interchangeability in a variety of fan applications



No. 2K348

Typical Uses: Exhaust fans operating in poultry and livestock houses. Also used for other fan and blower applications in locations with a dusty, dirty, noncombustible environment.

Bearings: Ball
Enclosure: TEAO
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW/CCW
Finish: Gray enamel
Brand: GE

HP	Name-plate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Mounting	Shaft Dimensions Dia. x L	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/4	1725	48	115/208-230	3.0/1.6-1.5	1.0	Cradle*	1/2 x 1-1/2"	H649	**2K349**	$205.00	**$125.65**	18.0
1/3	1725	48	115/208-230	4.1/2.0	1.0	Cradle*	1/2 x 1-1/2	H648	**2K348**	234.00	**143.65**	20.0

(*) With extended clamp screws.

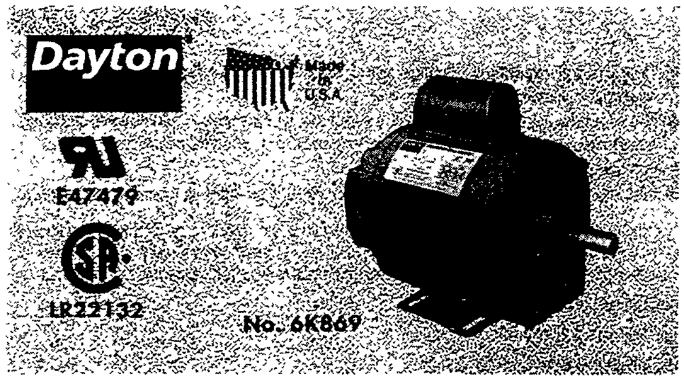
FARM DUTY MOTORS

HIGH EFFICIENCY AGRICULTURAL FAN MOTORS

DAYTON BRAND

- High efficiency performance for use in poultry and livestock fans
- Shaft slinger, gasketed capacitor cover, and conduit box cover provide added protection against dirt and moisture
- Can be used to drive fans and blowers in other dusty/ dirty noncombustible environments
- All copper windings

Bearings: Ball
Enclosure: TEAO
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



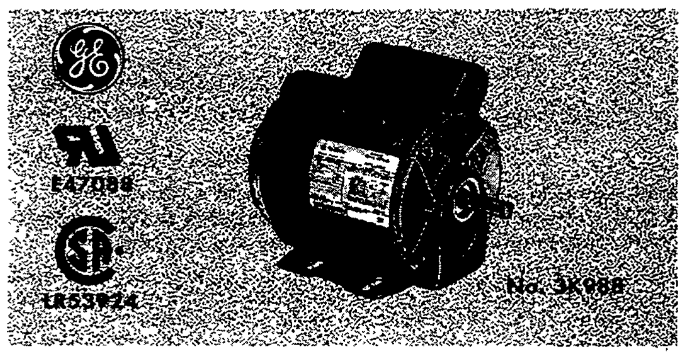
HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Mounting	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
SPLIT-PHASE START AND CAPACITOR-RUN											
1/2	1725	56	230	2.3	1.25	Rigid	5/8 x 1⅞"	**3K663**	$228.00	**$133.30**	27.0
	1725	56	230	2.3	1.25	Cradle	5/8 x 1⅞	**6K869**	233.00	**136.35**	32.0
	1725	56	115/208-230	5.0/2.5	1.25	Cradle	5/8 x 1⅞	**4K123**	207.00	**109.50**	27.0
CAPACITOR-START, CAPACITOR-RUN											
1	1725	56	115/230	10.4/5.2	1.15	Rigid	5/8 x 1⅞	**3K993**	300.00	**155.75**	27.0
	1725	56	115/230	10.4/5.2	1.15	Cradle	5/8 x 1⅞	**4K124**	302.00	**161.00**	25.0

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

GE BRAND

- High efficiency performance for use in poultry and livestock fans
- Gasketed capacitor cover and conduit box provide added protection against dirt and moisture
- Can be used to drive fans and blowers in other dusty/ dirty noncombustible environments

Bearings: Ball
Enclosure: TEAO, except No. 3K051 is TENV
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW/CCW
Finish: Gray enamel
Brand: GE



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Mounting	Shaft Dimensions Dia. x L	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
SPLIT-PHASE START AND CAPACITOR-RUN												
1/2	1725	56	115/208-230	5.2/2.7-2.6	1.3	Cradle	5/8 x 1⅞"	H647	**3K051**	$241.00	**$149.25**	21.0
CAPACITOR-START, CAPACITOR-RUN												
3/4	1725	56	115/208-230	8.2/4.1	1.0	Cradle	5/8 x 1⅞	C1303	**3K988**	248.00	**155.75**	27.0
1	1725	56	115/208-230*	11.4/5.7	1.0	Cradle	5/8 x 1⅞	C1302	**3K989**	260.00	**161.00**	27.0

(*) 60/50 Hz.

MOTOR PROTECTION

Motors that start automatically (eg. thermostat controlled), that are located remotely or unattended, or that are out-of-sight of the operator, must be protected against dangerous overheating due to failure-to-start or overloading. This protection may be a separate overcurrent device (eg. motor starter) complying with Article 430 of the National Electrical Code (NEC), a thermally protected motor (integral motor protection), or an impedance protected motor.

Motors with automatic reset thermal protection MUST NOT be used where automatic or otherwise unexpected starting of the motor could be hazardous. Where such a hazard exists, always use a Manual-Reset thermally protected motor. Applications where automatic restarting could be hazardous include compressors, conveyors, power tools, farm equipment, and some fans and blowers.

OPERATE FANS AUTOMATICALLY

Fan thermostats and a variety of time switches are available; see Index under Fan Controls.

AERATION AND HATCHERY FAN MOTORS

FARM DUTY MOTORS

DAYTON BRAND, AERATION FAN MOTORS

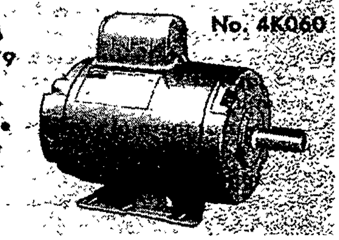
- 1/2 to 3 HP
- Key shaft drilled on center 1" deep and tapped 1/4"-UNC for fan mounting
- Nos. 4K055 and 4K057 have shafts with flats
- Double-sealed ball bearings
- All copper windings

Typical Uses: Replacement in tube axial fan grain aeration systems made by Dynavent, Farm Fan, Aero-Vent, and other manufacturers.

Type: Capacitor-start
Bearings: Ball
Mounting: Rigid welded base
Enclosure: TEAO
Thermal Protection: Auto
Ambient: 50°C
Duty: Continuous air-over
Rotation: CW/CCW
Finish: Gray
Brand: Dayton

Dayton Made in U.S.A.

E47479



No. 4K060

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	Shaft Dimensions	Stock No.	List	Each	Shpg. Wt.
1/2	3450	48	115/230	7.4/3.7	1.0	B	1/2 x 1½*	**4K055**	$188.00	**$124.75**	16.0
	3450	56Z	115/230	9.0/4.5	1.0	B	5/8 x 2¼	**4K056**	192.00	**128.10**	20.0
3/4	3450	48	115/230	9.8/4.9	1.0	B	1/2 x 1½	**4K057**	198.00	**132.25**	21.0
	3450	56Z	115/230	10.4/5.2	1.0	B	5/8 x 2¼	**4K058**	202.00	**135.15**	25.0
1	3450	56Z	115/230	11.4/5.7	1.0	B	5/8 x 2¼	**4K059**	236.00	**150.25**	29.0
1½	3500	143T	115/230	16.4/8.2	1.0	F	7/8 x 2¼	**4K060**	270.00	**179.25**	33.0
2	3500	143T	115/230	20.8/10.4	1.0	F	7/8 x 2¼	**4K061**	310.00	**204.25**	42.0
3	3500	145T	230	14.5	1.0	F	7/8 x 2¼	**4K062***	345.00	**219.75**	42.0

(*) Capacitor-start, capacitor-run.

GE BRAND, AERATION FAN MOTORS

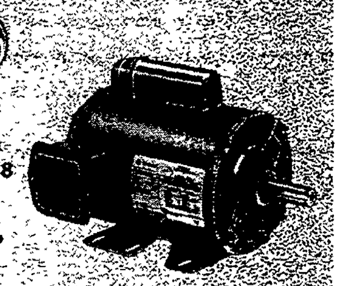
- 3/4 to 3 HP
- TEAO design protects against dust, dirt, and other contaminants

Typical Uses: Replacement in tube axial fan grain aeration systems made by Dynavent, Farm Fan, Aero-Vent, and other manufacturers.

> **CAUTION:**
> **Not for fans in unattended areas.**
> Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

Type: Capacitor-start
Bearings: Ball
Mounting: Rigid welded base
Enclosure: TEAO
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW/CCW
Finish: Gray enamel
Brand: GE

E47088



No. 2K352

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Shaft Dimensions	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
3/4	3450	56	115/230	9.8/4.9	1.0	5/8 x 1⅞"	C1467	**5U175**	$199.00	**$135.15**	18.0
1	3450	56	115/230	13.4/6.7	1.0	5/8 x 1⅞	C1468	**5U176**	235.00	**150.25**	29.0
1½	3450	143T	115/230	16.4/8.2	1.0	7/8 x 2¼	C1273	**2K352**	253.00	**179.25**	35.0
2	3450	145T	115/230	17.8/8.9	1.0	7/8 x 2¼	C1274	**2K353***	271.00	**204.25**	40.0
3	3450	145T	230	13.2	1.0	7/8 x 2¼	C1275	**2K354***	312.00	**219.75**	50.0

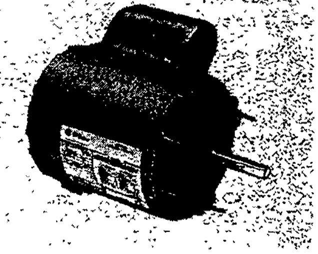
(*) Capacitor-start, capacitor-run.

GE BRAND, HATCHERY/INCUBATOR FAN MOTOR

- 1" Extended clamp screws for fan shroud mounting
- Shaft diameter 1/2 x 2½" long with full length flat
- Capacitor mounted on the motor
- Centrifugal switch for tripping alarm circuit if motor stops
- Shaft slinger to prevent dirt and moisture entering bearing system

Typical Uses: Designed for use in Jamesway and Chickmaster hatchers.
Type: Permanent split capacitor
Bearings: Double sealed ball
Enclosure: TEAO
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW facing shaft
Finish: Gray
Brand: GE

E47088



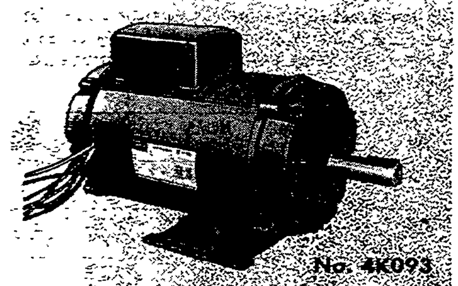
HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/3	1725	48Z	115/230	4.0/2.0	1.0	P239	**5U266**	$220.00	**$156.75**	14.0

CROP DRYER AND DUST-TIGHT MOTORS

DAYTON BRAND, CROP DRYER MOTORS

Dayton Made in U.S.A.

E47479 LR13758



No. 4K093

- **Special service factor design provides reserve margin that allows individual models to replace motors in a range of HP ratings**
- **Keyed shaft drilled on center 1" deep and tapped 1/4-20 UNC for fan mounting**
- **Thermostat thermal protection**
- **Extra long 40" leads**
- **All copper windings**
- **No. 4K094 has capacitor mounted separately**

Typical Uses: Replacement in air-over fan crop dryers where axial fan is mounted directly to the motor shaft.

Type: Capacitor-start, capacitor-run
Bearings: Ball
Mounting: Rigid welded base
Enclosure: Open dripproof
Service Factor: 1.0
Thermal Protection: Thermostat
Insulation Class: F
Ambient: 40°C
Duty: Continuous air-over
Rotation: CW/CCW
Finish: Green
Brand: Dayton

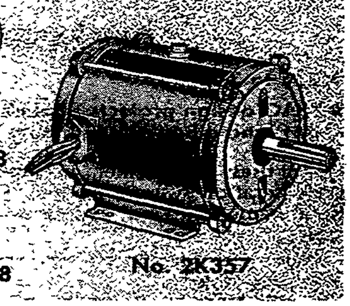
CAUTION: **Not for fans in unattended areas.** Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information

HP Range	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
5-7	3480	184TZ	230	21.0-30.0	1 1/8 x 3 1/4"	**4K092**	$634.00	**$363.25**	92.0
7 1/2-9	3490	184TZ	230	30.0-36.0	1 1/8 x 3 1/4	**4K093**	747.00	**427.75**	102.0
10-12	3480	215TZ	230	40.0-47.0	1 1/8 x 3 1/8	**4K094**	1138.00	**652.50**	139.0

GE BRAND, CROP DRYER MOTORS

E47088

LR67588



No. 2K357

- **Solid state switch eliminates switch failure due to off-season windmilling**
- **Thermostat thermal protection**
- **Extra long 42" leads provide easy connection to control box**

Typical Uses: Replacement in air-over fan crop dryers where axial fan is mounted directly to the motor shaft.

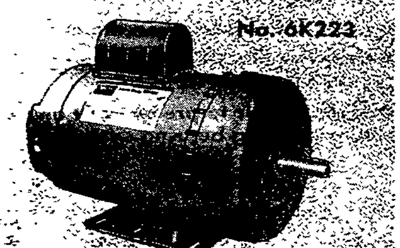
Type: Capacitor-start
Bearings: Ball
Mounting: Bolt-on base
Enclosure: TEAO
Thermal Protection: Thermostat
Insulation Class: F
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray enamel
Brand: GE

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Shaft Dimensions Dia. x Length	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
3	3535	184TZ	230	13.4	1.27	1 1/8 x 3 3/4"	N3357	**2K355**	$432.00	**$343.25**	77.0
5	3530	184TZ	230	20.2	1.27	1 1/8 x 3 3/4	N3358	**2K356**	501.00	**374.75**	90.0
7 1/2	3510	184TZ	230	30.6	1.27	1 1/8 x 3 3/4	N3359	**2K357**	588.00	**421.00**	99.0
7 1/2	3535	215TZ	230	31.0	1.5	1 1/8 x 4 3/4	N3397	**2K358**	692.00	**482.75**	135.0
10	3535	215TZ	230	38.6	1.5	1 1/8 x 4 3/4	N3361	**2K360**	889.00	**616.00**	170.0

DAYTON BRAND, DUST-TIGHT MOTORS

Dayton Made in U.S.A.

E47479 LR22132



No. 6K223

- **External die-cast aluminum fan on shaft end helps keep dirt from obstructing operation**
- **Double-sealed bearing on shaft end double-shielded bearing opposite shaft end**
- **All copper windings**

Typical Uses: Designed for use on farms to power conveyors, tools, pumps, blowers, and other equipment in dusty, dirty areas. Not for use where explosion-proof motors are required.

Type: Capacitor-start
Bearings: Ball
Mounting: Rigid welded base
Enclosure: TEFC
Thermal Protection: Manual
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Ins. Class	Stock No.	List	Each	Shpg. Wt.
1/2	1725	56H	115/230	9.0/4.5	1.0	A	**6K327**	$262.00	**$198.50**	25.0
3/4	1725	56H	115/230	11.4/5.7	1.0	A	**6K377**	312.00	**236.75**	30.0
1	1725	56H	115/230	13.6/6.8	1.0	A	**6K223**	340.00	**237.75**	33.0
1 1/2	1725	56H	115/230	17.6/8.8	1.0	B	**6K981***	424.00	**321.50**	42.0

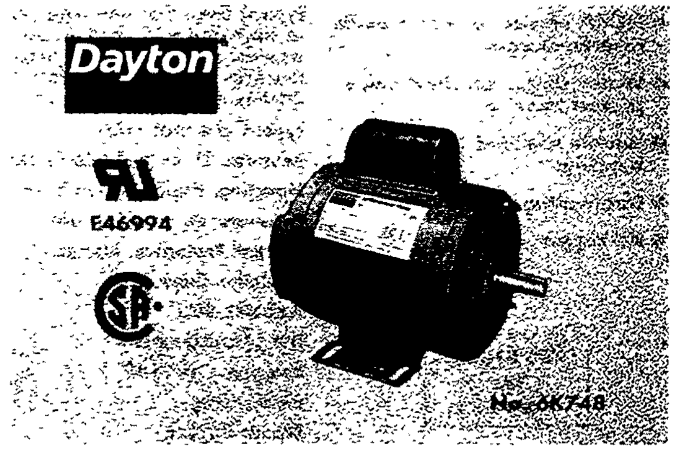
(*) Capacitor-start, capacitor-run.

AIR COMPRESSOR MOTORS

DAYTON BRAND

- **Electrical characteristics are designed to provide high breakdown torque to ensure dependable service**
- **Mechanical features are designed to provide long life in high tension, belt-type loads which typically shorten motor life**
- **All copper windings**

Typical Uses: For new and replacement use in industrial air compressor applications including Dayton, Campbell-Hausfeld, Sanborn, and Ingersoll-Rand.
Type: Capacitor-start
Bearings: Ball
Mounting: Rigid welded base
Enclosure: Open dripproof
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Black
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	Shaft Dimens. Dia. x Length	Stock No.	List	Each	Shpg. Wt.
1/2	3450	56	Manual	115/230	9.8/4.9	1.25	B	5/8 x 1 7/8	**6K745**	$146.00	**$107.35**	18.0
3/4	3450	56	Manual	115/230	10.6/5.3	1.25	B	5/8 x 1 7/8	**6K748**	171.00	**125.65**	20.0
1	3450	56	Manual	115/230	17.8/8.9	1.15	B	5/8 x 1 7/8	**6K754**	186.00	**136.75**	24.0
1 1/2	3450	56	Manual	115/230	18.2/9.1	1.15	B	5/8 x 1 7/8	**6K765**	211.00	**155.25**	29.0
2	3450	56	Manual	115/230	22.0/11.0	1.15	B	5/8 x 1 7/8	**6K773**	220.00	**162.00**	30.0
3	3450	56	Manual	230	16.0	1.0	B	5/8 x 1 7/8	**6K779**	251.00	**184.50**	37.0
	1740	184T	None	230	17.0	1.15	F	1 1/8 x 2 3/4	**6K756**	395.00	**290.00**	65.0
5	3450	143T	Manual	230	21.0	1.0	B	7/8 x 2 1/4	**6K794***	319.00	**234.75**	43.0
	1740	184T	None	230	23.5	1.15	F	1 1/8 x 2 3/4	**6K757***	463.00	**340.25**	75.0

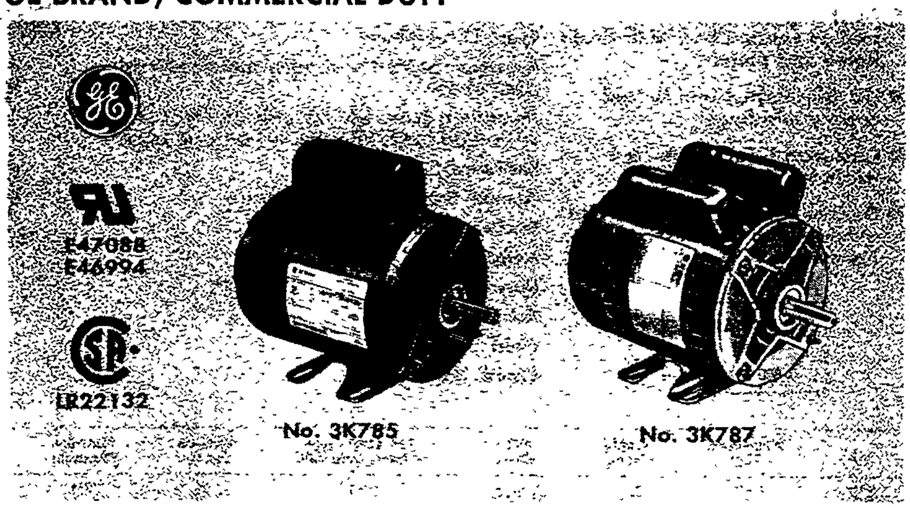
(*) Capacitor-start, capacitor-run.

CAUTION: Refer to page 5 proper thermal protection and other motor selection information.

GE BRAND, COMMERCIAL DUTY

- **For commercial air compressor applications**
- **Bearing systems designed to provide long life**

Typical Uses: Direct replacement on selected air compressor applications including Dayton, Campbell-Hausfeld, Sanborn, and others. Use on other applications voids warranty.
Type: Capacitor-start
Mounting: Rigid welded base
Enclosure: Open
Thermal Protection: Manual or auto
Insulation Class: B
Ambient: 40°C
Duty: Compressor
Rotation: CCW facing shaft end
Finish: Black
Brand: GE



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/2	3450	56	Manual	115	11.5	1.0	Ball & Sleeve	9031	**3K781**	$135.00	**$92.00**	23.0
	1725	56	Auto	115	8.8	1.0	Ball & Sleeve	9029	**3K782**	137.00	**93.30**	23.0
3/4	3450	56	Manual	115	12.5	1.0	Ball & Sleeve	9032	**3K783**	146.00	**99.45**	23.0
	1725	56	Auto	115	10.5	1.0	Ball & Sleeve	9030	**3K784**	148.00	**100.85**	23.0
1	3450	56	Manual	115/230	16.0/8.0	1.0	Ball & Sleeve	9033	**3K785**	167.00	**113.75**	26.0
1 1/2	3450	56	Manual	115/230	19.0/9.5	1.0	Ball & Sleeve	9034	**3K786**	187.00	**127.35**	26.0
2	3450	56	Manual	115/230	15.0/7.5	1.0	Ball & Sleeve	9035	**3K787***	199.00	**135.55**	29.0
3	3450	56	Manual	230	13.1	1.0	Ball	9036	**3K788***	219.00	**149.25**	29.0
5	3450	56	Manual	230	21.0	1.0	Ball	9038	**3K790***	318.00	**216.75**	35.0

(*) Capacitor-start, capacitor-run.

PUMP MOTORS

PRESSURE WASHER PUMP AND WET ENVIRONMENT/CAR WASH MOTORS

PRESSURE WASHER PUMP MOTORS

- NEMA service factors provide reserve margin
- Water slinger on shaft helps protect bearing
- Double shielded 203 ball bearings
- Dual voltage
- All copper windings

PARTS AVAILABLE, CALL 1-800-323-0620

Typical Uses: For new and replacement use in both hot and cold water high pressure washer applications. Corrosion-resistant features to protect against the harsh conditions of this application.

Type: Capacitor-start

Bearings: Double-shielded ball

Mounting: Rigid welded base

Enclosure: Open dripproof

Thermal Protection: Manual

Insulation Class: B

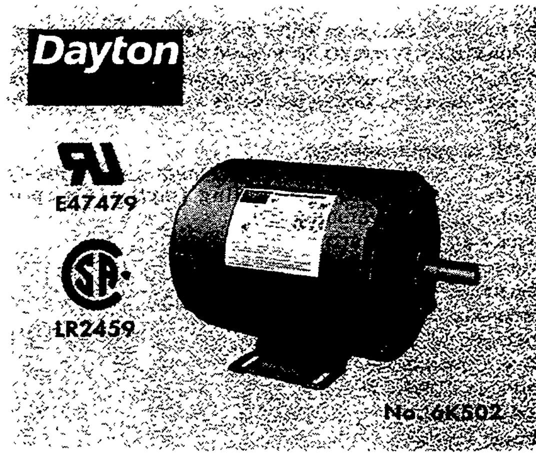
Ambient: 40°C

Duty: Continuous

Rotation: CW/CCW

Finish: Gray

Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Stock No.	List	Each	Shpg. Wt.
3/4	1725	56	115/230	11.8/5.9	1.25	6K502	$273.00	**$188.75**	24.0
1	1725	56	115/230	15.0/7.5	1.25	6K503	299.00	**207.00**	28.0
1 1/2	1725	56	115/230	14.8/7.4	1.20	6K504*	339.00	**234.75**	32.0

(*) Capacitor-start, capacitor-run with run capacitor mounted externally.

CAUTION: Refer to page 5 for proper thermal protection, and other motor selection information.

WET ENVIRONMENT/CAR WASH MOTORS

- No. 416 stainless steel shaft with lip seals at both ends
- Double gasketed cast aluminum conduit box with drain holes and plugs
- Double-dipped and baked copper windings
- Cast iron C-face with four drain holes and plugs
- Durable gray epoxy finish on outside with stainless steel hardware

PARTS AVAILABLE, CALL 1-800-323-0620

Typical Uses: For extended life in car washes or other wet environments where the motor is constantly exposed to water, chemicals, and harsh detergent.

Type: Three-phase

Bearings: Sealed ball with moisture-resistant grease

Mounting: Nos. 3N785 and 3N786 C-face with rigid base, all others C-face no base

Enclosure: TEFC

Thermal Protection: Thermostat

Insulation Class: F

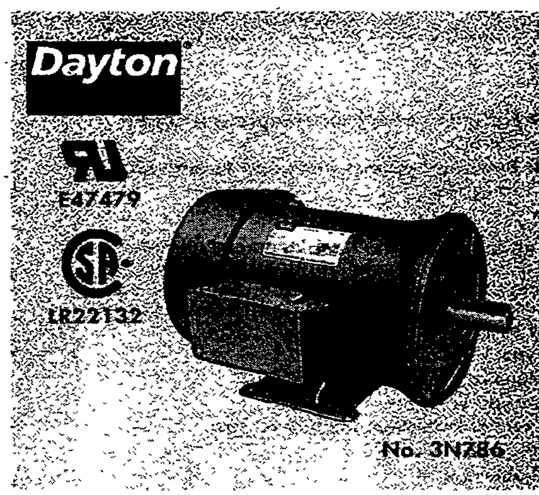
Ambient: 40°C

Duty: Continuous

Rotation: CW/CCW

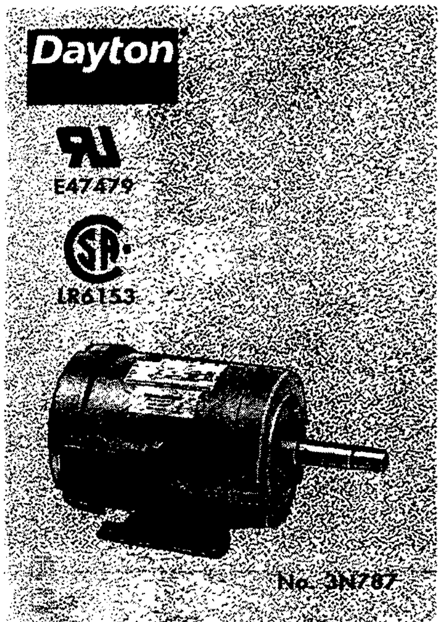
Finish: Gray

Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Nominal Efficiency	Stock No.	List	Each	Shpg. Wt.
1/2	1725	56C	230/460	2.0/1.0	1.15	77.0	3N780	$270.00	**$197.50**	26.0
3/4	1725	56C	230/460	2.6/1.3	1.15	77.0	3N781	297.00	**217.25**	34.0
1	1725	56C	230/460	3.6/1.8	1.15	78.5	3N782	304.00	**222.25**	37.0
1 1/2	1725	56C	230/460	4.8/2.4	1.15	80.0	3N783	331.00	**242.00**	39.0
2	1725	56C	230/460	6.0/3.0	1.0	78.5	3N784	360.00	**263.25**	43.0
3	1740	182TC	230/460	9.0/4.5	1.0	82.5	3N785	467.00	**334.50**	68.0
5	1740	184TC	230/460	13.4/6.7	1.0	86.5	3N786	536.00	**384.00**	84.0

CLOSE-COUPLED PUMP MOTORS



- NEMA special service factor 1.25 provides reserve margin for intermittent overloading
- Oversized ball bearings with locked end shaft construction
- All models listed usable on 50 Hz, 190/380V, 1.0 service factor
- 140 frame, rigid welded base; 182 thru 215 frame, bolted base
- All copper windings

Typical Uses: Centrifugal close-coupled pumps where the pump impeller is mounted directly to the motor shaft using a JM or JP shaft.
Type: Three-phase
Bearings: Ball
Mounting: Face with base
Enclosure: TEFC
Service Factor: 1.25
Thermal Protection: None
Insulation Class: F
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray enamel
Brand: Dayton

PARTS AVAILABLE, CALL 1-800-323-0620

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Nom. Eff'cy	Stock No.	List	Each	Shpg. Wt.
JM SHAFT									
1	1750	143JM	208-230/460	3.6-3.6/1.8	80.0	**3N787**	$194.00	**$188.75**	30.0
1½	3450	143JM	208-230/460	4.5-4.2/2.1	78.5	**3N788**	228.00	**221.75**	30.0
	1730	145JM	208-230/460	5.1-5.0/2.5	80.0	**3N789**	212.00	**206.25**	35.0
2	3465	145JM	208-230/460	6.0-5.4/2.7	80.0	**3N790**	246.00	**239.25**	35.0
	1725	145JM	208-230/460	6.5-6.2/3.1	82.5	**3N791**	222.00	**216.00**	35.0
3	3460	145JM	208-230/460	8.5-7.6/3.8	84.0	**3N792***	253.00	**246.25**	40.0
	1750	182JM	208-230/460	9.3-9.0/4.5	84.0	**3N793**	258.00	**250.75**	50.0
5	3485	184JM	208-230/460	14.4-12.8/6.4	85.5	**3N794**	336.00	**326.75**	50.0
	1740	184JM	208-230/460	15.0-13.6/6.8	85.5	**3N795**	336.00	**326.50**	75.0
7½	3465	184JM	208-230/460	22.0-19.2/9.6	85.5	**3N796***	370.00	**359.50**	75.0
	1750	213JM	208-230/460	22.4-20.6/10.3	86.5	**3N797**	478.00	**464.50**	100.0
10	3495	215JM	208-230/460	27.6-24.4/12.2	88.5	**3N798**	512.00	**497.50**	110.0
	1755	215JM	208-230/460	28.9-27.2/13.6	88.5	**3N799**	572.00	**556.00**	115.0
JP SHAFT									
1	1750	143JP	208-230/460	3.6-3.6/1.8	80.0	**3N800**	194.00	**188.75**	30.0
1½	3450	143JP	208-230/460	4.5-4.2/2.1	78.5	**3N801**	228.00	**221.75**	30.0
	1730	145JP	208-230/460	5.1-5.0/2.5	80.0	**3N802**	212.00	**206.25**	35.0
2	3465	145JP	208-230/460	6.0-5.4/2.7	80.0	**3N803**	246.00	**239.25**	35.0
	1725	145JP	208-230/460	6.5-6.2/3.1	82.5	**3N804**	222.00	**216.00**	35.0
3	3460	145JP	208-230/460	8.5-7.6/3.8	84.0	**3N805***	253.00	**246.25**	40.0
	1750	182JP	208-230/460	9.3-9.0/4.5	84.0	**3N806**	258.00	**250.75**	50.0
5	3485	184JP	208-230/460	14.4-12.8/6.4	85.5	**3N807**	336.00	**326.75**	50.0
	1740	184JP	208-230/460	15.0-13.6/6.8	85.5	**3N808**	336.00	**326.50**	75.0
7½	3465	184JP	208-230/460	22.0-19.2/9.6	85.5	**3N809***	370.00	**359.50**	75.0
	1750	213JP	208-230/460	22.4-20.6/10.3	86.5	**3N810**	478.00	**464.50**	100.0
10	3495	215JP	208-230/460	27.6-24.4/12.2	88.5	**3N811**	512.00	**497.50**	110.0
	1755	215JP	208-230/460	28.9-27.2/13.6	88.5	**3N812**	572.00	**556.00**	115.0

(*) 1.15 service factor, 1.0 at 208 volts.

CLOSE-COUPLED PUMP MOTOR INTERCHANGE

Shaft Configuration	HP	RPM	USEM Model Open	USEM Model TEFC	Century Cat. No. TEFC	Marathon Cat. No. TEFC	Baldor TEFC	Stock No.
JM	1	1800	C511	F111	N149	M401	JMM3546T	3N787
	1½	3600	C512	F112	N148	M415	JMM3550T	3N788
		1800	C513	F113	N161	M402	JMM3554T	3N789
	2	3600	C514	F114	N153	M403	JMM3555T	3N790
		1800	C515	F115	N163	M404	JMM3558T	3N791
	3	3600	C516	5530	N157	—	JMM3559T	3N792
		1800	C535	B071	N232	M406	JMM3611T	3N793
	5	3600	C536	B073	N245	—	—	3N794
		1800	C537	B075	N246	M408	JMM3615T	3N795
	7½	3600	C538	5720	—	—	JMM3616T	3N796
		1800	C548	B079	N344	M410	JMM3710T	3N797
	10	3600	C549	B081	N343	—	—	3N798
		1800	E682	B083	N345	M412	JMM3714T	3N799
JP	1	1800	C529	F129	—	M201	—	3N800
	1½	3600	C530	F130	—	—	—	3N801
		1800	C531	F131	—	M202	JPM3554T	3N802
	2	3600	C532	F132	—	M203	JPM3555T	3N803
		1800	C533	F133	—	M204	JPM3558T	3N804
	3	3600	C534	5529	—	—	JPM3559T	3N805
		1800	C517	B028	N252	M206	JPM3611T	3N806
	5	3600	C518	B030	—	—	—	3N807
		1800	C519	B032	N219	M208	JPM3615T	3N808
	7½	3600	C520	5718	—	—	JPM3616T	3N809
		1800	C521	B036	N329	M210	JPM3710T	3N810
	10	3600	C522	B038	N346	—	—	3N811
		1800	C523	B040	N347	M212	JPM3714T	3N812

See Cross Reference Information on page opposite inside back cover.

CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

WASHDOWN MOTORS

- Double-gasketed aluminum conduit box with drain holes protect against moisture
- Double-dipped and baked copper windings
- No. 303 stainless steel shaft with V-ring rotating seal
- USDA approved corrosion-resistant white epoxy primer and paint
- Cast-iron C-face with drain holes at 3, 6, 9 and 12 o'clock positions
- Complies with BISSC, 2A Dairy Standard and NEMA definition MG1-1.26.5 standard for waterproof motors
- Built-in temperature-sensing thermostat with leads for separate control wiring

Typical Uses: For extended life on equipment in food, beverage, or chemical processing plants where motor is constantly exposed to high pressure washdowns or other high humidity or wet environments.

Bearings: Double-sealed ball with moisture-resistant grease

Enclosure: TEFC

Thermal Protection: Thermostat

Insulation Class: F

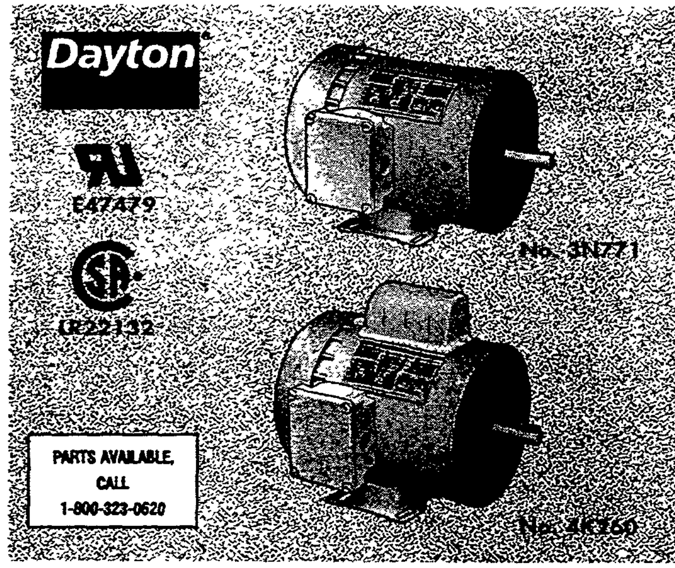
Ambient: 40°C

Duty: Continuous

Rotation: CW/CCW

Finish: White epoxy

Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Stock No.	List	Each	Shpg. Wt.
CAPACITOR-START, TEFC, RIGID BASE									
1/2	1725	56C	115/230	9.0/4.5	1.15	**4K260**	$270.00	**$196.50**	26.0
3/4	1725	56C	115/230	11.2/5.6	1.15	**4K261**	305.00	**221.75**	34.0
1	3450	56C	115/230	12.0/6.0	1.15	**4K999**	344.00	**250.00**	31.0
	1725	56HC	115/230	13.6/6.8	1.15	**4K262**	360.00	**261.75**	37.0
1½	3450	56HC	115/230	15.6/7.8	1.15	**4KC00**	450.00	**326.75**	42.0
	1725	56HC	115/230	14.0/7.0	1.15	**4K263***	448.00	**325.50**	39.0
2	1740	56HC	115/230	19.0/9.5	1.0	**4K264***	590.00	**428.50**	48.0

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz†	Full-Load Amps at Nameplate Volts	Service Factor	Nominal Efficiency	Stock No.	List	Each	Shpg. Wt.
3-PHASE, TEFC, NO BASE										
1/2	1725	56C	230/460	2.0/1.0	1.15	77.0	**3N827**	$274.00	**$199.25**	26.0
3/4	1725	56C	230/460	2.6/1.3	1.15	77.0	**3N828**	303.00	**220.50**	34.0
1	1725	56C	230/460	3.6/1.8	1.15	78.5	**3N829**	310.00	**225.25**	37.0
	1725	143TC	230/460	3.6/1.8	1.15	78.5	**3N830**	318.00	**231.25**	37.0
1½	1725	56C	230/460	4.8/2.4	1.15	80.0	**3N831**	337.00	**245.00**	39.0
	1725	145TC	230/460	4.8/2.4	1.15	80.0	**3N832**	345.00	**251.00**	39.0
2	1725	56C	230/460	6.0/3.0	1.0	78.5	**3N833**	364.00	**264.50**	43.0
	1725	145TC	230/460	6.0/3.0	1.0	78.5	**3N834**	372.00	**270.25**	43.0
3-PHASE, TEFC, RIGID BASE										
1/2	3450	56C	230/460	2.0/1.0	1.15	72.0	**3N835**	248.00	**180.50**	18.0
	1725	56C	230/460	2.0/1.0	1.15	77.0	**3N771**	280.00	**203.50**	26.0
3/4	3450	56C	230/460	2.6/1.3	1.15	74.0	**3N836**	255.00	**185.50**	22.0
	1725	56C	230/460	2.6/1.3	1.15	77.0	**3N772**	307.00	**223.00**	34.0
1	3450	56C	230/460	3.2/1.6	1.15	77.8	**3N837**	298.00	**216.50**	28.0
	1725	56C	230/460	3.6/1.8	1.15	78.5	**3N773**	314.00	**228.50**	37.0
1½	1725	56HC	230/460	4.8/2.4	1.15	80.0	**3N774**	341.00	**247.75**	39.0
2	3450	56HC	230/460	5.2/2.6	1.0	81.5	**3N838**	371.00	**269.75**	37.0
	1725	56HC	230/460	6.0/3.0	1.0	78.5	**3N775**	370.00	**269.00**	43.0
3	3450	145TC	230/460	7.5/3.8	1.0	85.5	**3N839**	439.00	**319.00**	46.0
	1740	182TC	230/460	9.0/4.5	1.0	82.5	**3N776**	477.00	**337.00**	68.0
5	3500	184TC	230/460	13.0/6.5	1.15	85.5	**3N840**	612.00	**432.00**	86.0
	1740	184TC	230/460	13.4/6.7	1.0	86.5	**3N777**	546.00	**385.50**	91.0
7½	1755	213TC	230/460	19.8/9.9	1.0	87.5	**3N778**	664.00	**468.75**	122.0
10	1755	215TC	230/460	25.2/12.6	1.0	90.2	**3N779**	796.00	**562.00**	136.0

(*) Capacitor-start; capacitor-run. NOTE: 3-phase, 1.15 service factor motors are operable at 1425 RPM, 190/380V, 50 Hz, 1.0 service factor.

CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

WASHDOWN MOTORS

- Double-gasketed aluminum conduit box with drain holes protect against moisture
- Double-dipped and baked copper windings
- No. 303 stainless steel shaft with V-ring rotating seal
- USDA approved corrosion-resistant white epoxy primer and paint
- Cast-iron C-face with drain holes at 3, 6, 9 and 12 o'clock positions
- Complies with BISSC, 2A Dairy Standard and NEMA definition MG1-1.26.5 standard for waterproof motors
- Built-in temperature-sensing thermostat with leads for separate control wiring

Typical Uses: For extended life on equipment in food, beverage, or chemical processing plants where motor is constantly exposed to high pressure washdowns or other high humidity or wet environments.

Bearings: Double-sealed ball with moisture-resistant grease

Mounting: Face, base, or yoke

Enclosure: TENV or TEAO

Thermal Protection: Thermostat on 3-phase; auto on PSC motors

Ambient: 40°C

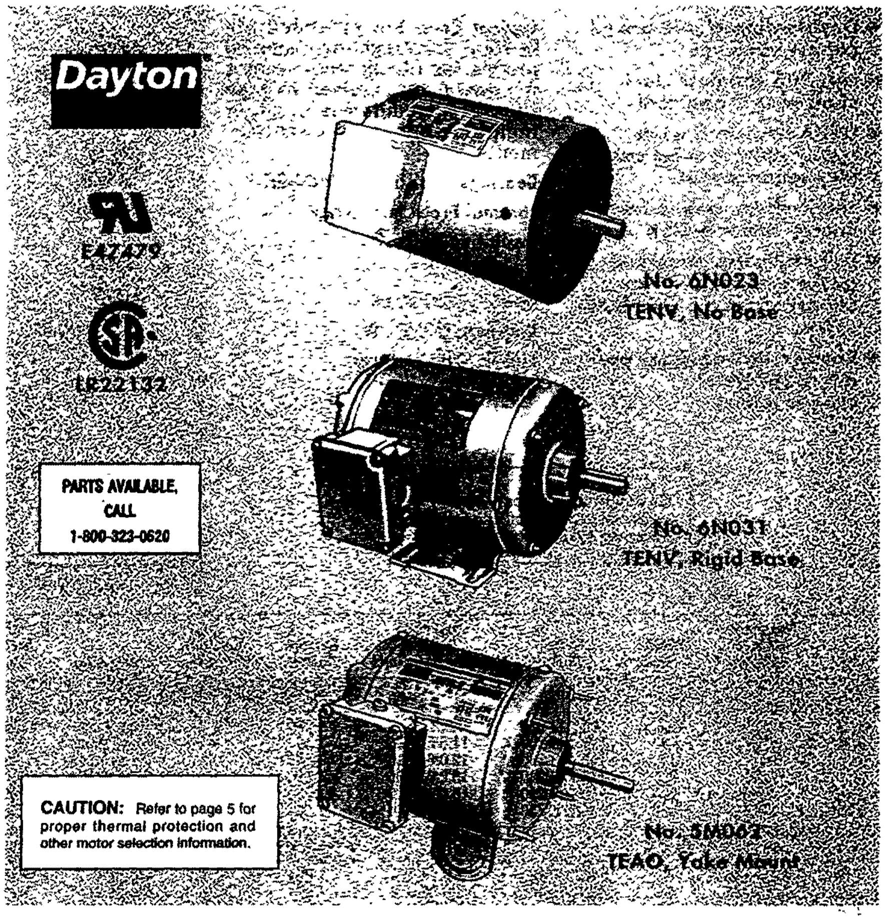
Insulation Class: F

Duty: Continuous

Rotation: CW/CCW

Finish: White epoxy

Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Volts	Full-Load Amps at Nameplate Volts	Service Factor	Nominal Efficiency	Stock No.	List	Each	Shpg. Wt.
				3-PHASE, TENV, NO BASE						
1/2	1725	56C	230/460	1.6/0.8	1.15	77.7	**6N023**	$312.00	**$226.75**	29.0
	1725	145TC	230/460	1.6/0.8	1.15	77.7	**6N027**	320.00	**232.50**	29.0
3/4	1725	56C	230/460	2.4/1.2	1.15	81.1	**6N022**	341.00	**247.75**	33.0
	1725	145TC	230/460	2.4/1.2	1.15	81.1	**6N026**	349.00	**253.75**	33.0
1	1725	56C	230/460	3.1/1.6	1.15	81.9	**6N020**	348.00	**253.25**	35.0
	1725	145TC	230/460	3.1/1.6	1.15	81.9	**6N024**	356.00	**259.00**	35.0
1½	1725	56C	230/460	4.2/2.1	1.0	84.2	**6N021**	375.00	**272.25**	45.0
	1725	145TC	230/460	4.2/2.1	1.0	84.2	**6N025**	383.00	**278.50**	45.0
				3-PHASE, TENV, RIGID BASE						
1/2	1725	56	230/460	1.6/0.8	1.15	[illegible]	**6N031**	310.00	**225.25**	29.0
3/4	1725	56	230/460	2.4/1.2	1.15	81.1	**6N030**	339.00	**246.50**	33.0
1	1725	56	230/460	3.1/1.6	1.15	81.9	**6N029**	346.00	**251.50**	35.0
1½	1725	56	230/460	4.2/2.1	1.0	84.9	**6N028**	373.00	**271.00**	45.0

HP	Nameplate RPM	NEMA Frame	Volts	Full-Load Amps at Nameplate Volts	Service Factor	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
				PSC, TEAO, YOKE MOUNT						
1/4	1700	56YZ	115/230	3.2/1.6	1.0	1/2 x 2[illegible]	**5M063**	$222.00	**$161.25**	20.0
1/3	1700	56YZ	115/230	4.4/2.2	1.0	1/2 x 2[illegible]	**5M062**	233.00	**169.50**	16.0
1/2	1700	56YZ	115/230	5.6/2.8	1.0	5/8 x 2[illegible]	**5M061**	250.00	**181.75**	18.0

A WIDE VARIETY OF WASHDOWN ACCESSORIES IS AVAILABLE, SEE PAGES 278 AND 279

WASHDOWN MOTORS

- **Double-dipped and baked copper windings**
- **No. 303 stainless steel shaft with V-ring seal**
- **USDA approved white epoxy paint to meet sanitary requirements**
- **Three-phase motors feature Energy $aver design**
- **Full protective neoprene gaskets on conduit box, capacitor covers, and lead entry**
- **Easily removed plugs permit drainage of condensation**

Typical Uses: For extended life in food, beverage, or chemical processing plants where motor is constantly exposed to high pressure washdowns or other high humidity or wet environments.

Bearings: Double-sealed ball

Thermal Protection: None

Insulation Class: F

Ambient: 40°C

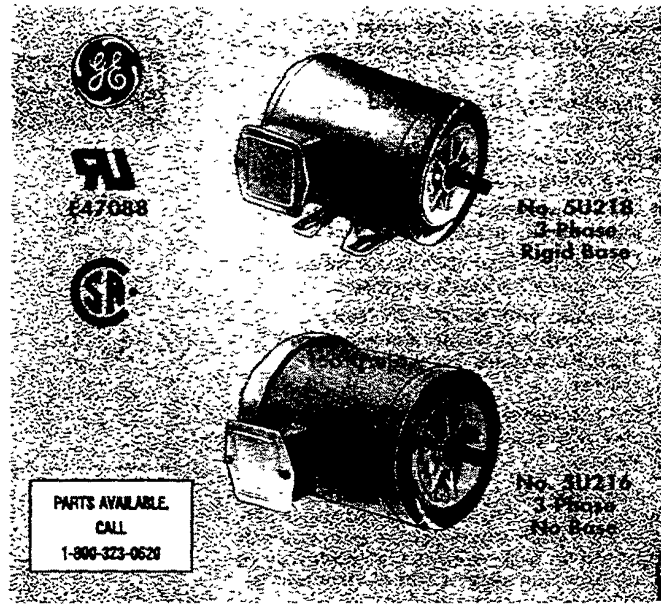
Duty: Continuous

Rotation: CW/CCW

Finish: White epoxy

Brand: GE

CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.



HP	Nameplate RPM at 60/50 Hz	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Nominal Efficiency	Mounting	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
						CAPACITOR-START, TEFC						
1/2	1725	56C	115/208-230	7.8/3.9-3.9	1.25	—	Face/Base	C1285	**5U129**	$295.00	**$193.00**	27.0
3/4	1725	56C	115/208-230	11.6/5.8-5.8	1.25	—	Face/Base	C1286	**5U130**	332.00	**217.00**	33.0
1	3450	56C	115/208-230	12.0/6.0-6.0	1.25	—	Face/Base	C1287	**5U131**	376.00	**246.00**	29.0
1	1725	56C	115/208-230	13.2/6.6-6.6	1.15	—	Face/Base	C1288	**5U132**	393.00	**256.75**	40.0
1½	3450	56C	115/208-230	16.0/8.0-8.0	1.15	—	Face/Base	C1289	**5U133**	492.00	**321.50**	35.0
1½	1725	56C	115/208-230	14.8/7.4-7.4	1.15	—	Face/Base	C1290	**5U134***	490.00	**320.25**	49.0
						3-PHASE, TENV						
1/3	1725/1425	56	208-230/460	1.6-1.6/0.8	1.35	75.5	Rigid	E286	**5U202**	285.00	**186.50**	20.0
1/2	1725/1425	56	208-230/460	2.0-2.0/1.0	1.25	77.0	Rigid	E287	**5U203**	300.00	**196.50**	22.0
3/4	1725/1425	56	208-230/460	2.4-2.4/1.2	1.25	80.0	Rigid	E288	**5U204**	329.00	**215.25**	31.0
1	1725/1425	143T	208-230/460	2.8-2.8/1.4	1.15	82.5	Rigid	E290	**5U206**	349.00	**228.25**	44.0
1/2	1725/1425	56C	208-230/460	2.0-2.0/1.0	1.25	77.0	C-Face	E294	**5U210**	299.00	**195.75**	22.0
3/4	1725/1425	56C	208-230/460	2.4-2.4/1.2	1.25	80.0	C-Face	E295	**5U211**	330.00	**215.75**	31.0
1	1725/1425	56C	208-230/460	2.8-2.8/1.4	1.15	82.5	C-Face	E296	**5U212**	339.00	**221.50**	44.0
1	1725/1425	145TC	208-230/460	2.8-2.8/1.4	1.15	82.5	C-Face	E297	**5U213**	348.00	**227.75**	44.0
1/2	3450/2850	56C	208-230/460	1.8-1.8/0.9	1.25	75.5	Face/Base	E302	**5U218**	250.00	**163.50**	24.0
1/2	1725/1425	56C	208-230/460	2.0-2.0/1.0	1.25	77.0	Face/Base	E303	**5U219**	305.00	**199.50**	22.0
1/2	1725	56C	575	0.8	1.25	77.0	Face/Base	E304	**5U220**	305.00	**199.50**	22.0
3/4	3450/2850	56C	208-230/460	2.2-2.2/1.1	1.25	78.5	Face/Base	E305	**5U221**	278.00	**181.75**	31.0
3/4	1725/1425	56C	208-230/460	2.4-2.4/1.2	1.25	80.0	Face/Base	E306	**5U222**	336.00	**219.75**	31.0
3/4	1725	56C	575	1.0	1.25	80.0	Face/Base	E307	**5U223**	336.00	**219.75**	31.0
1	3450/2850	56C	208-230/460	3.2-3.2/1.6	1.25	80.0	Face/Base	E308	**5U224**	325.00	**212.75**	40.0
1	1725/1425	56C	208-230/460	2.8-2.8/1.4	1.15	82.5	Face/Base	E309	**5U225**	344.00	**225.25**	44.0
1	1725/1425	145TC	208-230/460	2.8-2.8/1.4	1.15	82.5	Face/Base	E310	**5U226**	354.00	**231.50**	44.0
1	1725	56C	575	1.2	1.15	82.5	Face/Base	E311	**5U227**	344.00	**225.25**	44.0
						3-PHASE, TEFC						
3/4	1140	143T	208-230/460	2.8-2.8/1.4	1.15	80.0	Rigid	E289	**5U205**	453.00	**296.25**	40.0
1	1140	145T	208-230/460	3.6-3.6/1.8	1.15	81.5	Rigid	E291	**5U207**	568.00	**371.25**	49.0
1½	1725/1425	145T	208-230/460	4.4-4.4/2.2	1.15	82.5	Rigid	E292	**5U208**	378.00	**247.25**	54.0
2	1725/1425	145T	208-230/460	6.2-5.8/2.9	1.15	84.0	Rigid	E293	**5U209**	407.00	**266.25**	49.0
1½	1725/1425	56C	208-230/460	4.4-4.4/2.2	1.15	82.5	C-Face	E298	**5U214**	368.00	**240.50**	54.0
1½	1725/1425	145TC	208-230/460	4.4-4.4/2.2	1.15	82.5	C-Face	E299	**5U215**	377.00	**246.50**	54.0
2	1725/1425	56C	208-230/460	6.2-5.8/2.9	1.15	84.0	C-Face	E300	**5U216**	397.00	**259.75**	49.0
2	1725/1425	145TC	208-230/460	6.2-5.8/2.9	1.15	84.0	C-Face	E301	**5U217**	406.00	**265.50**	49.0
1½	3450/2850	56C	208-230/460	4.2-4.2/2.1	1.15	81.5	Face/Base	E312	**5U228**	375.00	**245.50**	31.0
1½	1725/1425	56C	208-230/460	4.4-4.4/2.2	1.15	82.5	Face/Base	E313	**5U229**	373.00	**244.00**	54.0
1½	1725/1425	145TC	208-230/460	4.4-4.4/2.2	1.15	82.5	Face/Base	E314	**5U230**	383.00	**250.50**	54.0
1½	1725	145TC	575	1.8	1.15	82.5	Face/Base	E315	**5U231**	383.00	**250.50**	54.0
2	3450/2850	145TC	208-230/460	5.4-5.4/2.7	1.15	84.0	Face/Base	E316	**5U232**	413.00	**270.00**	44.0
2	1725/1425	56C	208-230/460	6.2-5.8/2.9	1.15	84.0	Face/Base	E317	**5U233**	402.00	**263.00**	49.0
2	1725/1425	145TC	208-230/460	6.2-5.8/2.9	1.15	84.0	Face/Base	E318	**5U234**	413.00	**270.00**	49.0
2	1725	145TC	575	2.3	1.15	84.0	Face/Base	E319	**5U235**	413.00	**270.00**	49.0
3	3450/2850	145TC	208-230/460	8.8-8.0/4.0	1.15	84.0	Face/Base	E320	**5U236**	479.00	**313.25**	54.0

(*) Capacitor-start, capacitor-run.

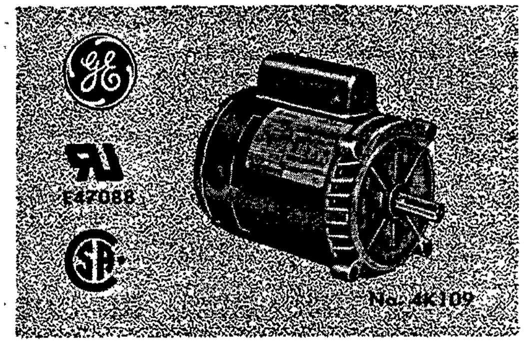
CAPACITOR-START 56C AND 56J FACE INDUSTRIAL PUMP MOTORS

GE BRAND, OPEN DRIPPROOF, NO BASE

- **Shaft slinger and gasketed conduit box protect against moisture and contaminants**
- **56C frame steel keyed shaft**
- **56J frame stainless steel shaft 7/16"-20 UNF-2A threaded 11/16" from end**

Typical Uses: Industrial and commercial pumps and centrifugal and hydraulic industrial compressors requiring NEMA 56C or 56J face mounting.

Type: Capacitor-start
Bearings: Double-shielded ball
Mounting: Face
Enclosure: Open dripproof
Thermal Protection: Auto
Ambient: 40°C
Duty: Continuous
Finish: Gray enamel
Brand: GE



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/3	3450	56C	CW/CCW	115/208-230	6.4/3.2	1.75	B	C328	**4K108**	$146.00	**$89.95**	14.0
	3450	56J	CCW	115/208-230	6.4/3.2	1.75	B	C329	**2K366**	149.00	**91.85**	16.0
1/2	3450	56C	CW/CCW	115/230	7.6/3.8	1.6	B	C330	**4K109**	158.00	**97.40**	15.0
	3450	56J	CCW	115/230	7.6/3.8	1.6	B	C331	**2K367**	162.00	**99.80**	17.0
3/4	3450	56C	CW/CCW	115/230	11.2/5.6	1.5	B	C332	**4K110**	187.00	**115.25**	19.0
	3450	56J	CCW	115/230	11.2/5.6	1.5	B	C333	**2K368**	190.00	**117.05**	19.0
	2850	56C	CW/CCW	110/220†	9.8/4.9	1.5	B	C732	**2K386**	213.00	**131.20**	24.0
1	3450	56C	CW/CCW	115/230	13.2/6.6	1.4	B	C334	**4K111**	208.00	**128.20**	23.0
	3450	56J	CCW	115/230	13.2/6.6	1.4	B	C335	**2K369**	212.00	**130.60**	22.0
1½	3450	56C	CW/CCW	115/230	18.4/9.2	1.3	B	C336	**4K112**	287.00	**177.25**	30.0
	3450	56J	CCW	115/230	18.4/9.2	1.3	B	C337	**2K370**	292.00	**180.00**	30.0
2	3450	56C	CW/CCW	115/230	21.2/11.6	1.2	B	C338	**4K113**	356.00	**219.50**	37.0
	3450	56J	CCW	115/230	21.2/11.6	1.2	B	C339	**2K371**	369.00	**227.75**	38.0
3	3450	56C	CW/CCW	115/230	28.8/14.4	1.15	B	C340	**4K114***	388.00	**239.25**	50.0
	3450	56J	CCW	115/230	28.8/14.4	1.15	B	C341	**2K372***	398.00	**245.50**	49.0

(*) Capacitor-start, capacitor-run; includes 16 cubic inch oversized conduit box. (†) Motor is rated 50 Hz.

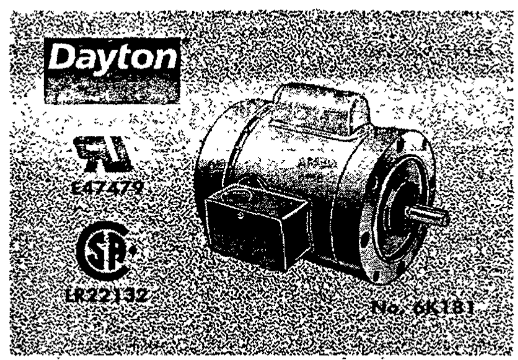
CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

DAYTON BRAND, TEFC, NO BASE

- **Externally located capacitor**
- **Shaft slinger, gasketed cover, and conduit box protect against dirt and moisture**
- **56C frame steel keyed shaft; 56J frame stainless steel shaft 7/16"-20 UNF-2A RH threaded 11/16" from end**
- **All copper windings**

Typical Uses: Jet pumps, industrial/centrifugal pumps, and other equipment that requires NEMA 56C or 56J mounting.

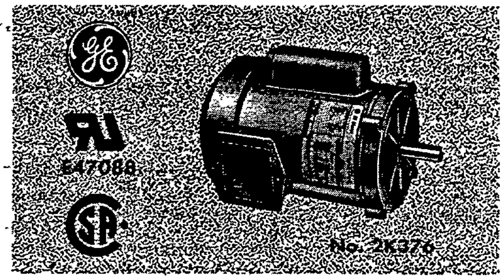
Type: Capacitor-start
Bearings: Double-shielded ball
Mounting: Face
Enclosure: TEFC
Thermal Protection: Auto
Ambient: 40°C
Duty: Continuous
Finish: Gray enamel
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1/3	3450	56C	CW/CCW	115/230	6.4/3.2	1.0	A	**6K181**	$150.00	**$111.70**	19.0
	3450	56J	CCW	115/230	6.4/3.2	1.0	A	**6K596**	162.00	**120.65**	19.0
1/2	3450	56C	CW/CCW	115/230	8.0/4.0	1.0	A	**6K182**	168.00	**125.15**	21.0
	3450	56J	CCW	115/230	8.0/4.0	1.0	A	**6K597**	180.00	**134.10**	21.0
3/4	3450	56C	CW/CCW	115/230	9.8/4.9	1.0	A	**6K831**	194.00	**144.50**	26.0
	3450	56J	CCW	115/230	9.8/4.9	1.0	A	**6K598**	206.00	**153.50**	26.0
1	3450	56C	CW/CCW	115/230	12.0/6.0	1.0	A	**6K197**	239.00	**178.50**	27.0
	3450	56J	CCW	115/230	12.0/6.0	1.0	A	**6K599**	251.00	**187.25**	27.0
1½	3450	56C	CW/CCW	115/230	15.6/7.8	1.0	A	**6K832**	289.00	**215.50**	38.0
	3450	56J	CCW	115/230	15.6/7.8	1.0	A	**6K600**	301.00	**224.25**	38.0

CAPACITOR-START AND 3-PHASE, 56C AND 56J FACE INDUSTRIAL PUMP MOTORS

GE BRAND, TEFC, CAPACITOR-START



- 56C frame steel keyed shaft; 56J frame with stainless steel shaft with 7/16"-20 UNF-2A threaded 11/16" from end
- Shaft slinger and gasketed conduit box protects against moisture and contaminants.

Typical Uses: Industrial and commercial pumps, and centrifugal and hydraulic industrial compressors requiring NEMA 56C or 56J face mounting.

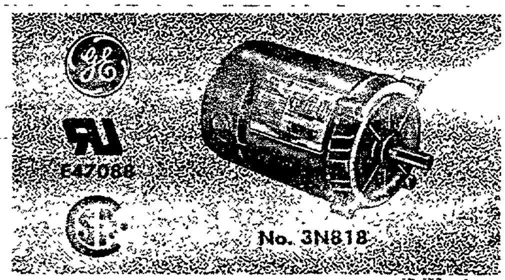
Type: Capacitor-start
Bearings: Double-shielded ball
Mounting: Face
Enclosure: TEFC
Thermal Protection: Auto
Ambient: 40°C
Duty: Continuous
Finish: Gray enamel
Brand: GE

HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
NO BASE												
1/2	3450	56C	CCW/CCW	115/230	7.4/3.7	1.15	B	C349	**2K376**	$199.00	**$122.65**	19.0
1/2	3450	56J	CCW	115/230	7.4/3.7	1.15	B	C465	**2K382**	219.00	**135.00**	19.0
1/2	1725	56C	CCW/CCW	115/230	8.2/4.1	1.0	B	C446	**2K381**	251.00	**154.75**	24.0
3/4	3450	56C	CCW/CCW	115/230	9.8/4.9	1.0	B	C847	**2K388**	233.00	**143.55**	24.0
1	3450	56C	CCW/CCW	115/230	13.4/6.7	1.15	B	C351	**2K377**	257.00	**158.75**	29.0
1	3450	56J	CCW	115/230	13.4/6.7	1.15	B	C352	**2K378**	250.00	**154.00**	29.0
1½	3450	56C	CCW/CCW	115/230	16.4/8.2	1.0	B	C855	**2K389**	312.00	**192.50**	37.0
2	3450	56C	CCW/CCW	115/230	17.8/8.9	1.15	B	C466	**2K383***	382.00	**235.75**	42.0
2	3450	56J	CCW	115/230	17.8/8.9	1.0	B	C878	**2K390***	376.00	**231.75**	41.0
WITH BASE												
1/2	3450	56C	CCW/CCW	115/230	7.4/3.7	1.25	B	C444	**2K379**	195.00	**120.15**	20.0
1	3450	56C	CCW/CCW	115/230	13.4/6.7	1.0	B	C445	**2K380**	262.00	**161.75**	30.0

(*) Capacitor-start, capacitor-run.

CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

GE BRAND, OPEN DRIPPROOF, 3-PHASE



- 56C frame steel keyed shaft; 56J frame with stainless steel shaft with 7/16"-20 UNF-2A threaded 11/16" from end
- Shaft slinger and gasketed conduit box protects against moisture and contamination

Typical Uses: Industrial and commercial pumps, and centrifugal and hydraulic industrial compressors requiring NEMA 56C or 56J face mounting.

Type: Three-phase
Bearings: Double-shielded ball
Mounting: Face
Enclosure: Open dripproof
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Finish: Gray enamel
Brand: GE

HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
NO BASE												
1/3	3450	56C	CW/CCW	208-230/460	1.5-1.8/0.9	1.75	B	K215	**3N817**	$157.00	**$96.75**	13.0
1/3	3450	56J	CW/CCW	208-230/460	1.5-1.8/0.9	1.75	B	K748	**4N087***	162.00	**99.80**	13.0
1/2	3450	56C	CW/CCW	208-230/460	2.0-2.0/1.0	1.60	B	K216	**3N818**	166.00	**102.30**	15.0
1/2	3450	56J	CW/CCW	208-230/460	2.0-2.0/1.0	1.60	B	K217	**4N062***	184.00	**113.35**	15.0
1/2	1725	56J	CW/CCW	208-230/460	2.1-2.2/1.1	1.25	B	K553	**4N085***	247.00	**152.25**	18.0
3/4	3450	56C	CW/CCW	208-230/460	2.6-2.6/1.3	1.50	B	K218	**3N819**	199.00	**122.65**	17.0
3/4	3450	56J	CW/CCW	208-230/460	2.6-2.6/1.3	1.50	B	K219	**4N063***	201.00	**123.80**	17.0
3/4	1725	56J	CW/CCW	208-230/460	2.8-2.8/1.4	1.25	B	K555	**4N086***	291.00	**179.50**	19.0
1	3450	56C	CW/CCW	208-230/460	3.3-3.2/1.6	1.40	B	K220	**3N820**	225.00	**138.65**	20.0
1	3450	56J	CW/CCW	208-230/460	3.3-3.2/1.6	1.40	B	K221	**4N064***	232.00	**142.95**	20.0
1	1725	56J	CW/CCW	208-230/460	3.4-3.2/1.6	1.15	B	K750	**4N089***	301.00	**185.75**	21.0
1½	3450	56C	CW/CCW	208-230/460	5.0-4.8/2.4	1.30	B	K222	**3N821**	250.00	**154.00**	25.0
1½	3450	56J	CW/CCW	208-230/460	5.0-4.8/2.4	1.30	B	K223	**4N065***	292.00	**180.00**	26.0
1½	1725	56J	CW/CCW	208-230/460	5.8-5.6/2.8	1.15	B	K751	**4N090***	332.00	**204.75**	28.0
2	3450	56C	CW/CCW	208-230/460	6.6-6.0/3.0	1.20	B	K224	**3N822**	303.00	**187.00**	30.0
2	3450	56J	CW/CCW	208-230/460	6.6-6.0/3.0	1.20	B	K225	**4N066***	347.00	**214.00**	30.0
3	3450	56C	CW/CCW	208-230/460	8.9-8.2/4.1	1.15	B	K226	**3N823**	329.00	**203.00**	36.0
3	3450	56J	CW/CCW	208-230/460	8.9-8.2/4.1	1.15	B	K227	**4N067***	411.00	**253.50**	37.0
WITH BASE												
3/4	3450	56J	CW/CCW	208-230/460	2.6-2.6/1.3	1.50	B	K1483	**5U264***	205.00	**134.00**	17.0
1½	3450	56J	CW/CCW	208-230/460	4.8-4.8/2.4	1.30	B	K1484	**5U265***	296.00	**193.75**	25.0

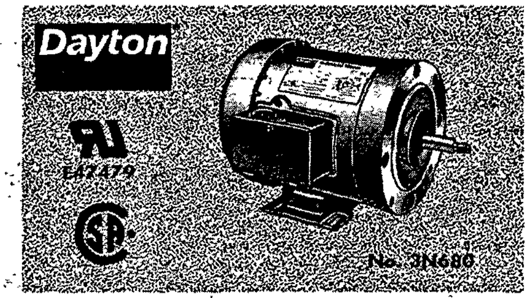
(*) Motors should be connected for CCW rotation facing shaft.

3-PHASE 56C AND 56J FACE INDUSTRIAL PUMP MOTORS

DAYTON BRAND, 3-PHASE, TEFC

- **Shaft slinger and gasketed conduit box protect against dirt and moisture**
- **56C frame steel keyed shaft; 56J frame stainless steel shaft 7/16"-20 UNF-2A RH threaded 11/16" from end**
- **Operable on 50 Hz**
- **All copper windings**

Typical Uses: Jet pumps, industrial/ centrifugal pumps, and other equipment that requires NEMA 56C or 56J mounting.
Bearings: Double-shielded ball
Mounting: Face/base
Enclosure: TEFC
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Ins. Class	Stock No.	List	Each	Shpg. Wt.
NO BASE											
1/2	3450/2850	56C	CW/CCW	208-220/440	2.2-2.3/1.15	1.0	A	3N471*	$162.00	$120.65	20.0
	3450/2850	56J	CCW	208-220/440	2.2-2.3/1.15	1.0	A	3N723*	174.00	129.60	20.0
3/4	3450/2850	56C	CW/CCW	208-220/440	2.8-2.9/1.45	1.0	A	3N472*	178.00	132.60	22.0
	3450/2850	56J	CCW	208-220/440	2.8-2.9/1.45	1.0	A	3N724*	190.00	141.50	22.0
1	3450/2850	56C	CW/CCW	208-220/440	3.4-3.2/1.6	1.0	A	3N237*	210.00	156.50	23.0
	3450/2850	56J	CCW	208-220/440	3.4-3.2/1.6	1.0	A	3N725*	222.00	165.75	23.0
1½	3450/2850	56C	CW/CCW	208-220/440	4.4-4.2/2.1	1.0	A	3N473*	223.00	166.50	30.0
	3450/2850	56J	CCW	208-220/440	4.4-4.2/2.1	1.0	A	3N726*	235.00	175.50	30.0
2	3450/2850	56C	CW/CCW	208-220/440	5.6-5.4/2.7	1.0	B	3N238*	258.00	192.50	32.0
	3450/2850	56J	CCW	208-220/440	5.6-5.4/2.7	1.0	B	3N727*	270.00	201.50	32.0
3	3450	56C	CW/CCW	230/460†	8.0/4.0	1.0	B	3N649†	326.00	243.00	37.0
	3450	56J	CCW	230/460†	8.0/4.0	1.0	B	3N728†	338.00	252.00	37.0
WITH BASE											
1/2	3450/2850	56J	CCW	208-220/440	2.2-2.3/1.1	1.0	A	3N680*	178.00	132.60	21.0
3/4	3450/2850	56J	CCW	208-220/440	2.8-2.9/1.45	1.0	A	3N234*	194.00	144.50	21.0
1	3450/2850	56J	CCW	208-220/440	3.4-3.2/1.6	1.0	A	3N235*	226.00	168.50	23.0
1½	3450/2850	56J	CCW	208-220/440	4.4-4.2/2.1	1.0	A	3N236*	239.00	178.25	29.0
2	3450/2850	56J	CCW	208-220/440	5.6-5.4/2.7	1.0	B	3N681*	274.00	204.25	33.0
3	3450	56J	CCW	230/460†	8.0/4.0	1.0	B	3N682†	342.00	255.00	41.0

(*) Operable on 50 Hz. 220/440V. (†) Operable on 50 Hz, 190/380V at 5/6 of 60 Hz HP and speed.

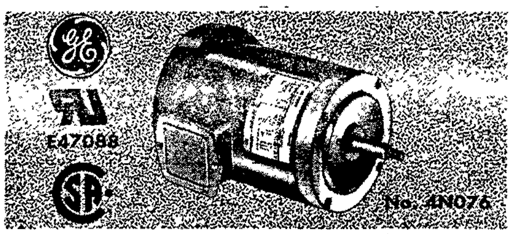
CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

GE BRAND, 3-PHASE, TEFC

- **56C frame steel keyed shaft; 56J frame stainless steel shaft 7/16"-20 UNF-2A RH threaded 11/16" from end**

Typical Uses: Industrial and commercial pumps, and centrifugal and hydraulic industrial compressors requiring NEMA 56C or 56J face mounting.

Bearings: Double-shielded ball
Mounting: Face
Enclosure: TEFC
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Finish: Gray enamel
Brand: GE



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Ins. Class	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
NO BASE												
1/3	3450	56C	CW/CCW	208-230/460	1.5-1.8/.9	1.0	B	K228	4N068	$177.00	$109.05	16.0
1/2	3450	56C	CW/CCW	208-230/460	2.0-2.0/1.0	1.0	B	K229	4N069	191.00	117.65	19.0
	3450	56J	CW/CCW	208-230/460	2.0-2.0/1.0	1.0	B	K230	4N070*	208.00	128.20	17.0
	1725	56J	CW/CCW	208-230/460	2.1-2.2/1.1	1.0	B	K550	4N084*	250.00	154.00	20.0
3/4	3450	56C	CW/CCW	208-230/460	2.6-2.6/1.3	1.0	B	K231	4N071	210.00	129.35	19.0
	3450	56J	CW/CCW	208-230/460	2.6-2.6/1.3	1.0	B	K232	4N072*	228.00	140.50	20.0
1	3450	56C	CW/CCW	208-230/460	3.2-3.0/1.5	1.0	B	K233	4N073	250.00	154.00	24.0
	3450	56J	CW/CCW	208-230/460	3.2-3.0/1.5	1.0	B	K234	4N074*	262.00	161.75	25.0
1½	3450	56C	CW/CCW	208-230/460	5.0-4.8/2.4	1.0	B	K235	4N075	273.00	168.50	26.0
	3450	56J	CW/CCW	208-230/460	5.0-4.8/2.4	1.0	B	K236	4N076*	282.00	174.25	26.0
2	3450	56C	CW/CCW	230/460	5.2/2.6	1.0	B	K237	4N077	311.00	192.00	36.0
	3450	56J	CW/CCW	230/460	5.2/2.6	1.0	B	K238	4N078*	319.00	197.00	36.0
3	3450	56C	CW/CCW	230/460	8.0/4.0	1.0	B	K239	4N079	357.00	220.00	48.0
	3450	56J	CW/CCW	230/460	8.0/4.0	1.0	B	K240	4N080*	387.00	238.75	49.0
WITH BASE												
1	3450	56J	CW/CCW	208-230/460	3.2-3.0/1.5	1.0	B	K245	4N082*	267.00	164.75	25.0
1½	3450	56J	CW/CCW	208-230/460	5.0-4.8/2.4	1.0	B	K246	4N083*	282.00	174.25	27.0

(*) Motors should be connected for CCW rotation facing shaft.

JET PUMP MOTORS

- **Rainshield included for vertical mounting**
- **NEMA service factors up to 1.85 provide reserve margin for intermittent overloading**
- **NEMA 56C frame carbon steel shaft with key**
- **NEMA 56J frame stainless steel shaft 7/16"-20 UNF-2A RH threaded 11/16" from end**
- **Locked shaft end ball bearing provides maximum thrust capacity**

Typical Uses: Jet pump water systems, centrifugal pumps, and other applications requiring NEMA 56C or 56J mounting face.

Type: Capacitor-start

Mounting: Horizontal or vertical, shaft down.

Enclosure: Open dripproof

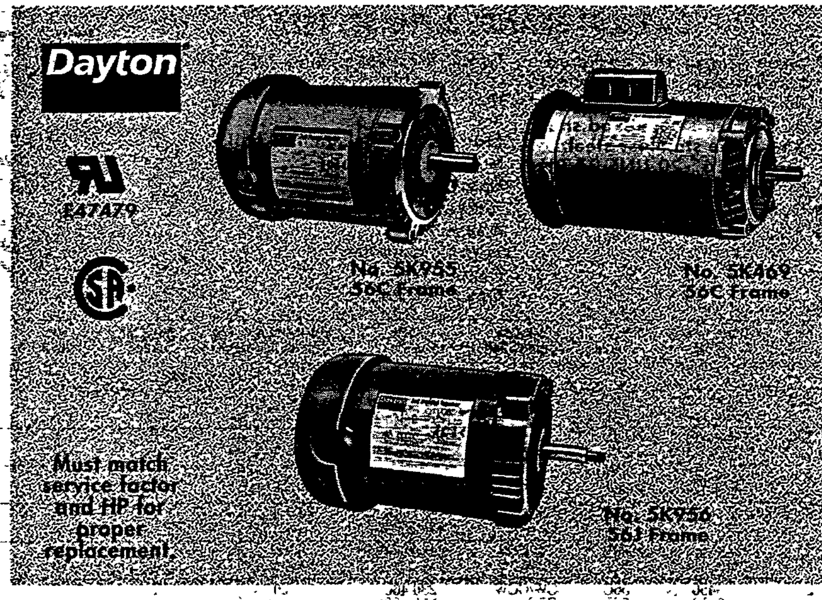
Thermal Protection: Auto

Ambient: 40°C

Duty: Continuous

Finish: Gray

Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Ins. Class	Stock No.	List	Each	Shpg. Wt.
NEMA 56C FRAME												
1/3	3450	56C	CW/CCW	115/230	6.0/3.0	1.85	Ball/Sleeve	A	**6K571***	$105.00	**$85.75**	16.0
	3450	56C	CW/CCW	115/230	6.0/3.0	1.85	Ball	A	**5K955**	113.00	**92.00**	16.0
1/2	3450	56C	CW/CCW	115/230	8.0/4.0	1.6	Ball/Sleeve	B	**6K575***	120.00	**94.05**	20.0
	3450	56C	CW/CCW	115/230	8.0/4.0	1.6	Ball	B	**6K573***	128.00	**100.30**	20.0
	3450	56C	CW/CCW	115/230	8.0/4.0	1.65	Ball	A	**5K657**	128.00	**100.35**	17.[illegible]
3/4	3450	56C	CW/CCW	115/230	9.6/4.8	1.5	Ball/Sleeve	B	**6K635***	142.00	**112.25**	21.0
	3450	56C	CW/CCW	115/230	9.6/4.8	1.5	Ball	A	**5K658**	150.00	**118.20**	21.0
1	3450	56C	CW/CCW	115/230	12.0/6.0	1.4	Ball/Sleeve	B	**6K690***	159.00	**125.80**	24.0
	3450	56C	CW/CCW	115/230	12.0/6.0	1.4	Ball	A	**5K659**	167.00	**132.00**	24.0
1½	3450	56C	CW/CCW	115/230	15.8/7.9	1.3	Ball	B	**5K469**	228.00	**165.25**	28.0
2	3450	56C	CW/CCW	115/230	21.0/10.5	1.3	Ball	B	**5K470***	303.00	**220.75**	34.0
NEMA 56J FRAME												
1/3	3450	56J	CCW	115/230	6.0/3.0	1.85	Ball/Sleeve	A	**6K695***	108.00	**87.55**	16.0
	3450	56J	CCW	115/230	6.0/3.0	1.85	Ball	A	**5K956**	116.00	**93.95**	18.0
1/2	3450	56J	CCW	115/230	8.0/4.0	1.6	Ball/Sleeve	B	**6K704***	122.00	**96.15**	20.0
	3450	56J	CCW	115/230	8.0/4.0	1.65	Ball	A	**5K660**	130.00	**102.30**	18.0
3/4	3450	56J	CCW	115/230	9.6/4.8	1.5	Ball/Sleeve	B	**6K706**	145.00	**114.00**	21.0
	3450	56J	CCW	115/230	9.6/4.8	1.5	Ball	A	**5K661**	153.00	**120.30**	21.0
1	3450	56J	CCW	115/230	12.6/6.0	1.4	Ball/Sleeve	B	**6K709***	162.00	**127.85**	23.0
	3450	56J	CCW	115/230	12.0/6.0	1.4	Ball	A	**5K662**	170.00	**134.10**	24.0
1½	3450	56J	CCW	115/230	15.8/7.8	1.3	Ball	B	**5K475**	230.00	**167.50**	28.0
2	3450	56J	CCW	115/230	21.0/10.5	1.25	Ball	B	**5K476***	315.00	**229.25**	34.0

(*) Capacitor mounted externally; other models have capacitor located inside shell.

CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

KNOW THE STOCK NUMBER, BUT STILL CAN'T FIND WHAT PAGE IT'S ON?

Use the "Stock Number/Page Number Cross Reference Guide" at the back of the Catalog. Stock numbers are listed alphabetically with the current page numbers.

JET PUMP MOTORS

- NEMA service factors up to 1.75 provide reserve margin for intermittent overloading
- NEMA 56C frame carbon steel shaft with key
- NEMA 56J frame stainless steel shaft 7/16"-20 UNF-2A RH threaded 11/16" from end
- Locked shaft end ball bearing provides maximum thrust capacity

Typical Uses: Jet pump water systems, centrifugal pumps, and other applications requiring NEMA 56C or 56J mounting face.

Type: Capacitor-start

Mounting: Horizontal or vertical, shaft down. Dripproof when mounted horizontally only.

Enclosure: Open dripproof

Thermal Protection: Auto

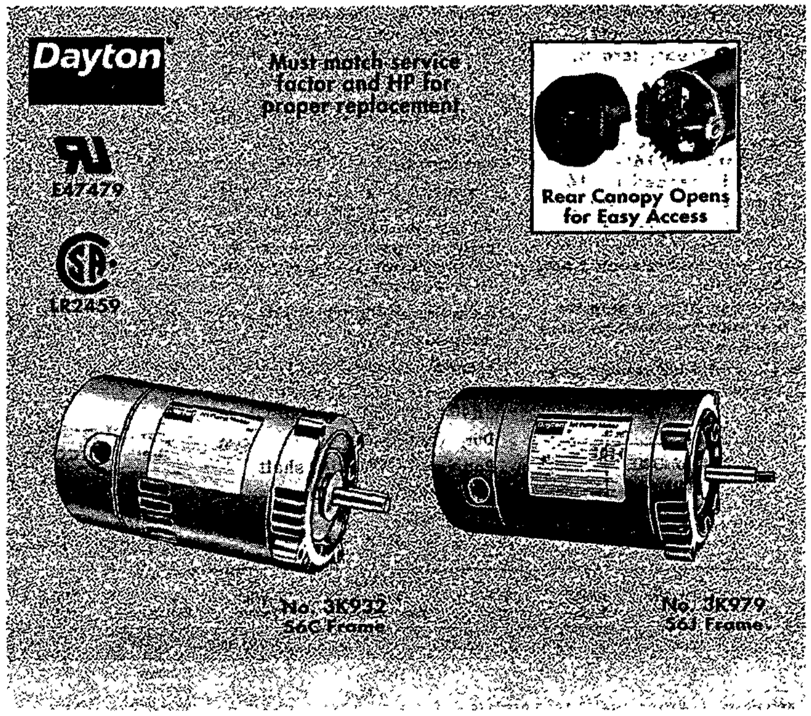
Ambient: 40°C

Duty: Continuous

Finish: Gray

Brand: Dayton

CAUTION: Refer to page 5 for proper thermal protection and other motor selection information



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Bearings	Ins. Class	Stock No.	List	Each	Shpg. Wt.
					NEMA 56C FRAME							
1/3	3450	56C	CW/CCW	115/230	6.4/3.2	1.75	Ball/Sleeve	B	3K801	$105.00	$85.75	15.0
	3450	56C	CW/CCW	115/230*	6.4/3.2	1.75	Ball	B	3K932	113.00	92.00	16.0
1/2	3450	56C	CW/CCW	115/230	8.6/4.3	1.6	Ball/Sleeve	B	3K803	120.00	94.05	17.0
	3450	56C	CW/CCW	115/230*	8.6/4.3	1.6	Ball	B	3K954	128.00	100.30	18.0
3/4	3450	56C	CW/CCW	115/230	11.0/5.5	1.5	Ball/Sleeve	B	3K805	142.00	112.25	19.0
	3450	56C	CW/CCW	115/230*	11.0/5.5	1.5	Ball	B	3K964	150.00	118.20	21.0
1	3450	56C	CW/CCW	115/230	13.4/6.7	1.4	Ball/Sleeve	B	3K807	159.00	125.75	22.0
	3450	56C	CW/CCW	115/230	13.4/6.7	1.4	Ball	B	3K976	167.00	132.00	23.0
1½	3450	56C	CW/CCW	115/230	17.0/8.5	1.3	Ball/Sleeve	B	3K809	220.00	160.25	26.0
	3450	56C	CW/CCW	115/230	17.0/8.5	1.3	Ball	B	3K978	228.00	166.25	27.0
					NEMA 56J FRAME							
1/3	3450	56J	CCW	115/230	6.4/3.2	1.75	Ball/Sleeve	B	3K802	108.00	87.55	15.0
	3450	56J	CCW	115/230*	6.4/3.2	1.75	Ball	B	3K979	116.00	93.95	16.0
1/2	3450	56J	CCW	115/230	8.6/4.3	1.6	Ball/Sleeve	B	3K804	122.00	96.15	16.0
	3450	56J	CCW	115/230*	8.6/4.3	1.6	Ball	B	3K980	130.00	102.30	18.0
3/4	3450	56J	CCW	115/230	11.0/5.5	1.5	Ball/Sleeve	B	3K806	145.00	114.00	19.0
	3450	56J	CCW	115/230*	11.0/5.5	1.5	Ball	B	3K983	153.00	120.30	21.0
1	3450	56J	CCW	115/230	13.4/6.7	1.4	Ball/Sleeve	B	3K808	162.00	127.85	22.0
	3450	56J	CCW	115/230	13.4/6.7	1.4	Ball	B	3K985	170.00	134.10	23.0
1½	3450	56J	CCW	115/230	17.0/8.5	1.3	Ball/Sleeve	B	3K810	230.00	167.50	26.0
	3450	56J	CCW	115/230	17.0/8.5	1.3	Ball	B	3K986	238.00	182.00	27.0

*) Operable at 50 Hz at rated HP and service factor, 110/220V, 2850 RPM.

JET PUMP MOTORS

- Two-compartment design protects components
- Enlarged/easy terminal lead
- 56C frames have 416 stainless steel shaft
- 56J frame have stainless steel shaft 7/16"-20 UNF-2A RH threaded 11/16" from end; square flange are 1/2"-20 UNF-2A RH threaded 1/2" from end
- Locked double-sealed ball bearings
- Voltage change plug for mistake-free voltage connection
- 1½ and 2 HP motors are capacitor-start, capacitor-run

PARTS AVAILABLE,
CALL
1-800-323-0620

Typical Uses: Jet pump water systems, centrifugal pumps, and other applications requiring NEMA 56C or 56J mounting faces.

Type: Capacitor-start and split-phase

Bearings: Ball

Mounting: Horizontal or vertical, shaft down. Dripproof when mounted horizontally only. Rainshield needed for vertical dripproof applications (not included).

Enclosure: Open dripproof

Insulation Class: B

Thermal Protection: Auto

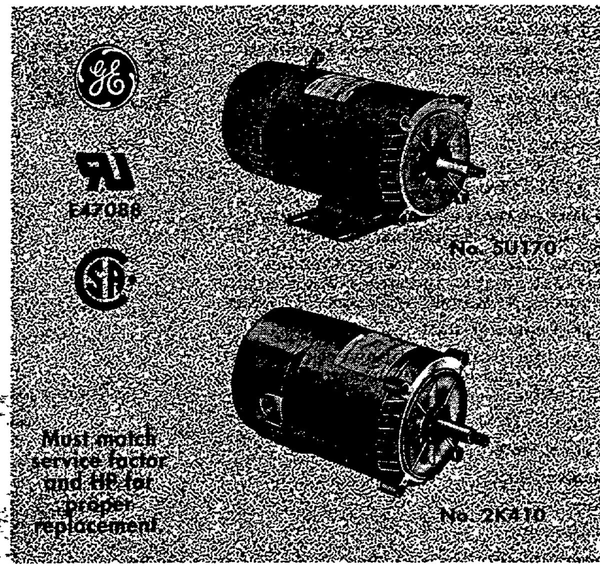
Ambient: 50°C (except Nos. 2K403 and 2K404 are 40°C)

Duty: Continuous

Rotation: CCW facing shaft

Finish: Black

Brand: GE



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Efficiency	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
NEMA 56C FRAME											
1/3	3450	56C	115	6.2	1.75	Standard	H439	**2K409***	$124.00	**$80.85**	13.0
1/3	3450	56C	115/230	6.2/3.1	1.75	Standard	C1081	**2K391**	137.00	**89.30**	13.0
1/2	3450	56C	115/230	8.2/4.1	1.60	Standard	C1082	**2K392**	143.00	**93.20**	15.0
3/4	3450	56C	115/230	12.2/6.1	1.50	Standard	C1083	**2K393**	160.00	**104.30**	18.0
1	3450	56C	115/230	14.2/7.1	1.40	Standard	C1084	**2K394**	183.00	**119.25**	21.0
1½	3450	56C	115/230	15.8/7.9	1.30	High	C1085	**2K395**	243.00	**158.75**	27.0
2	3450	56C	115/230	19.2/9.6	1.20	High	C1086	**2K396**	296.00	**193.00**	29.0
NEMA 56J FRAME											
1/3	3450	56J	115	6.2	1.75	Standard	H440	**2K410***	127.00	**82.85**	13.0
1/3	3450	56J	115/230	6.2/3.1	1.75	Standard	C1087	**2K397**	141.00	**91.90**	13.0
1/2	3450	56J	115/230	8.2/4.1	1.60	Standard	C1088	**2K398**	147.00	**95.85**	15.0
3/4	3450	56J	115/230	12.2/6.1	1.50	Standard	C1089	**2K399**	164.00	**106.90**	18.0
1	3450	56J	115/230	14.2/7.1	1.40	Standard	C1090	**2K400**	187.00	**121.85**	21.0
1½	3450	56J	115/230	15.8/7.9	1.30	High	C1091	**2K401**	247.00	**161.25**	26.0
2	3450	56J	115/230	19.2/9.6	1.20	High	C1092	**2K402**	300.00	**195.75**	29.0
NEMA 56J FRAME WITH BASE											
1/3	3450	56J	115	6.2	1.75	Standard	H685	**5U259***	131.00	**84.20**	13.0
1/2	3450	56J	115/230	8.2/4.1	1.60	Standard	C1462	**5U170**	151.00	**98.40**	15.0
3/4	3450	56J	115/230	12.2/6.1	1.50	Standard	C1463	**5U171**	169.00	**110.15**	17.0
1	3450	56J	115/230	14.2/7.1	1.40	Standard	C1464	**5U172**	191.00	**124.50**	19.0
1½	3450	56J	115/230	15.8/7.9	1.30	High	C1465	**5U173**	251.00	**163.75**	21.0
2	3450	56J	115/230	19.2/9.6	1.20	High	C1466	**5U174**	304.00	**198.50**	23.0
SQUARE FLANGE											
1/3	3450	56Z	115/230	6.4/3.2	1.95	Standard	C1168	**2K403**	141.00	**91.90**	16.0
1/2	3450	56Z	115/230	10.8/5.4	1.90	Standard	C1169	**2K404**	142.00	**92.55**	17.0
3/4	3450	56Z	115/230	12.6/6.3	1.65	Standard	C1170	**2K405**	148.00	**96.45**	22.0
1	3450	56Z	115/230	16.4/8.2	1.65	Standard	C1171	**2K406**	169.00	**110.10**	27.0
1½	3450	56Z	230	7.6	1.50	High	C1172	**2K407**	193.00	**125.80**	30.0
2	3450	56Z	230	8.7	1.30	High	C1173	**2K408**	256.00	**167.00**	29.0

(*) Split-phase.

CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

JET PUMP MOTORS

A.O. SMITH BRAND, REAR ACCESS

- **NEMA service factors up to 1.80 provide reserve margin for intermittent overloading**
- **56C frame carbon steel shaft (key not included)**
- **56J frame 416 stainless steel shaft 7/16"-20 UNF-2A RH threaded 11/16" from end**
- **Ball bearings at both ends with shaft end bearing locked to provide maximum thrust capacity on 3/4, 1, and 1½ HP motors**
- **Meets UL 778**

Typical Uses: Domestic water systems that use jet or centrifugal pumps and other applications requiring NEMA 56C or 56J mounting faces.

Type: Capacitor-start
Bearings: Ball
Mounting: Horizontal or vertical, shaft down. Dripproof when mounted horizontally as supplied. Rainshield required for vertical dripproof applications (not included).
Enclosure: Open dripproof
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Finish: Black
Brand: A.O. Smith

HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Maximum Amps at Nameplate Volts	Service Factor	A.O. Smith Model	Stock No.	List	Each	Shpg. Wt.
					NEMA 56C FRAME						
1/3	3450	56C	CW/CCW	115/230	8.6/4.3	1.8	K1032	**1K030**	$113.00	**$91.60**	15.0
1/2	3450	56C	CW/CCW	115/230	10.8/5.4	1.6	K1052	**1K031**	128.00	**99.90**	16.0
3/4	3450	56C	CW/CCW	115/230	14.8/7.4	1.5	K1072	**1K032**	150.00	**117.70**	19.0
1	3450	56C	CW/CCW	115/230	16.2/8.1	1.4	K1102	**1K033**	167.00	**131.45**	22.0
1½	3450	56C	CW/CCW	115/230	22.0/11.0	1.3	K1152	**1K034**	228.00	**165.50**	28.0
					NEMA 56J FRAME						
1/3	3450	56J	CCW	115/230	8.6/4.3	1.8	T1032	**1K035**	116.00	**93.60**	15.0
1/2	3450	56J	CCW	115/230	10.8/5.4	1.6	T1052	**1K036**	130.00	**101.85**	16.0
3/4	3450	56J	CCW	115/230	14.8/7.4	1.5	T1072	**1K037**	153.00	**119.75**	19.0
1	3450	56J	CCW	115/230	16.2/8.1	1.4	T1102	**1K038**	170.00	**133.55**	22.0
1½	3450	56J	CCW	115/230	22.0/11.0	1.3	T1152	**1K039**	238.00	**176.50**	27.0

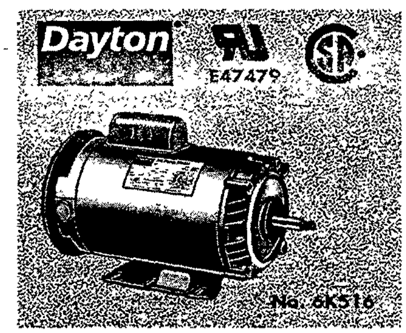
CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

DAYTON BRAND, BASE MOUNTED

- **NEMA service factors up to 1.75 provide reserve margin for intermittent overloading**
- **56J frame with steel shaft 7/16"-20 UNF-2A RH threaded 11/16" from end**
- **Locked shaft end bearings provide maximum thrust capability**
- **All copper windings**

Typical Uses: Jet pump water systems, centrifugal pumps and other applications that require a NEMA 56J mounting face plus the added support of a rigid mounting base.

Bearings: Ball
Mounting: Face/Base
Enclosure: Open dripproof
Thermal Protection: Auto (except three-phase motors are none)
Ambient: 40°C
Duty: Continuous
Rotation: CCW facing shaft
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insulation Class	Stock No.	List	Each	Shpg. Wt.
				SPLIT-PHASE						
1/3	3450	56J	115	7.0	1.75	B	**6K578**	$132.00	**$91.25**	17.0
				CAPACITOR-START						
1/2	3450	56J	115/230	8.0/4.0	1.6	B	**6K580**	152.00	**105.10**	20.0
3/4	3450	56J	115/230	9.6/4.8	1.5	B	**6K581**	178.00	**123.10**	21.0
1	3450	56J	115/230	12.0/6.0	1.4	B	**6K582**	198.00	**136.90**	23.0
1½	3450	56J	115/230	15.8/7.9	1.3	A	**6K516**	266.00	**184.00**	29.0
2	3450	56J	115/230	21.0/10.5	1.25	B	**4K122**	325.00	**225.00**	34.0
				THREE-PHASE						
3/4	3450/2850	56J	208-220/440	2.6-2.5/1.3	1.5	A	**3N088***	188.00	**130.00**	22.0
1½	3450/2850	56J	208-220/440	4.4-4.2/2.1	1.3	A	**3N090***	290.00	**200.75**	30.0

(*) Operable on 50 Hz, 220/440V at 5/6 of 60 Hz and speed.

SQUARE FLANGE SWIMMING POOL PUMP MOTORS

- All copper windings
- Unique reverse air flow design minimizes corrosive elements on the shaft end
- Easy access two-compartment design
- Convenient 12 and 3 o'clock conduit fittings
- Single speed ratings are air switch adaptable for positive shutoff
- Rust resistant stainless steel left hand threaded shaft; special sealer on rotor inhibits rust in off-season
- Large body diameter to improve heat dissipation
- Dichromate-plated bearing lock tabs allow easier bearing removal, eliminate need for plate alignment and reduce corrosion
- 1081 Approvable

Typical Uses: In-ground swimming pool pumps. Square flange is designed for direct replacement of many popular pumps.

Type: Capacitor-start

Bearings: Ball

Mounting: Flange

Enclosure: Open dripproof

Thermal Protection: Auto

Insulation Class: B

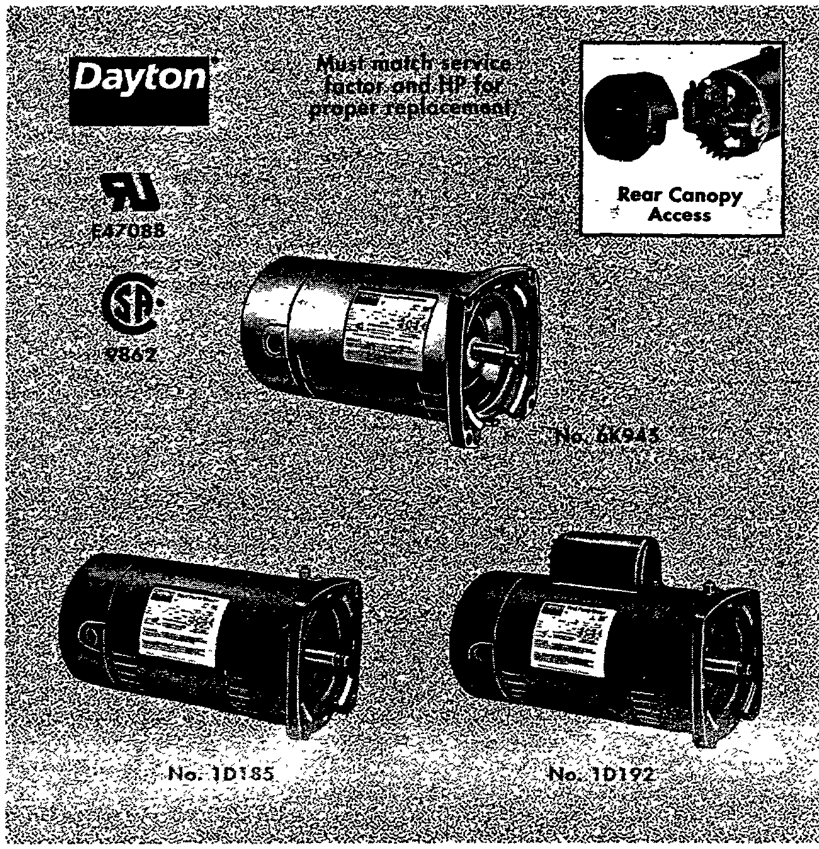
Ambient: 50°C

Duty: Continuous

Rotation: CCW facing shaft, nonreversible

Finish: Black

Brand: Dayton



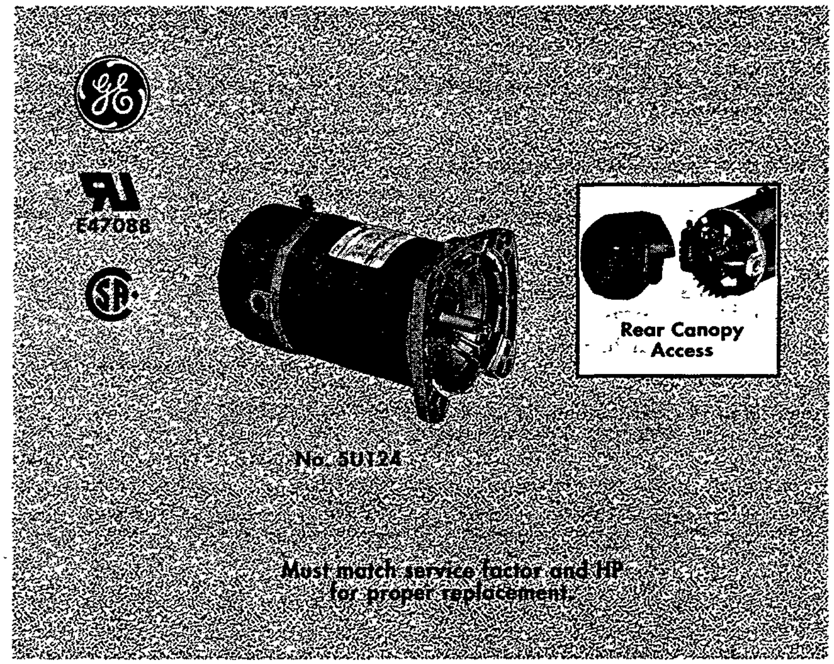
HP at 3450 RPM	HP at 1725 RPM	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Efficiency	Body Diameter	Stock No.	List	Each	Shpg. Wt.
1/3	—	3450	48YZ	115/230	6.4/3.2	1.95	Standard	5⅝"	**6K945**	$149.00	**$103.00**	16.0
1/2	—	3450	48YZ	115/230	8.6/4.3	1.9	Standard	5⅝	**6K946**	160.00	**108.45**	19.0
3/4	1/10	3450/1725	56YZ	115	9.8/4.1	1.65	Standard	6⅜	**1D186**	278.00	**182.25**	28.0
	1/10	3450/1725	56YZ	230	5.5/2.0	1.65	Standard	6⅜	**1D187**	272.00	**178.25**	32.0
	—	3450	48YZ	115/230	11.2/5.6	1.65	Standard	5⅝	**6K398**	184.00	**124.20**	21.0
	—	3450	56YZ	115/230	10.6/5.3	1.27	Standard	6⅜	**1D188**	158.00	**104.95**	26.0
1	1/8	3450/1725	56YZ	230	6.6/2.5	1.65	Standard	6⅜	**1D184**	301.00	**200.25**	37.0
	—	3450	48YZ	115/230	14.0/7.0	1.65	Standard	5⅝	**6K421**	215.00	**142.70**	28.0
	—	3450	56YZ	115/230	12.5/6.3	1.25	Standard	6⅜	**1D189**	181.00	**120.25**	28.0
1½	1/5	3450/1725	56YZ	230	6.8/3.3	1.5	Standard	6⅜	**1D182**	334.00	**219.00**	35.0
	—	3450	56YZ	115/230	17.0/8.5	1.5	Standard	6⅜	**6K494**	296.00	**204.75**	34.0
	—	3450	56YZ	115/230	16.5/8.3	1.1	Standard	6⅜	**1D185**	208.00	**139.20**	28.0
2	1/4	3450/1725	56YZ	230	8.0/3.1	1.3	Standard	6⅜	**1D183**	382.00	**250.25**	40.0
	—	3450	56YZ	115/230	21.0/10.5	1.3	Standard	6⅜	**6K495**	350.00	**242.25**	35.0
	—	3450	56YZ	115/230	18.7/8.8	1.1	Standard	6⅜	**1D191**	254.00	**166.50**	36.0
2½	—	3450	56YZ	230	10.0	1.04	Standard	6⅜	**1D192**	315.00	**206.50**	39.0
3	—	3450	56YZ	208-230	12.9/11.7	1.15	High	6⅜	**1D190**	366.00	**239.75**	40.0

CAUTION: For proper thermal protection and other motor selection information refer to page 5.

SQUARE FLANGE SWIMMING POOL PUMP MOTORS

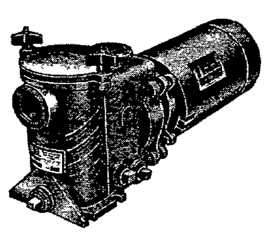
- Two-compartment design protects components
- Enlarged terminal lead routing area
- NEMA 56YZ frame with special 303 stainless threaded shaft 1/2"-20 UNF-2A RH threaded 1/2" from end
- Encapsulated voltage change plug design for mistake-free voltage connection
- Locked double-sealed ball bearings
- 1081 approvable

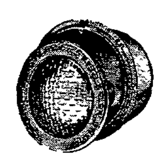
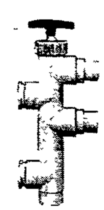
Typical Uses: Swimming pool pump applications only. Square flange NEMA 56YZ frame mounting with 48 frame motor diameter allows motors to be used as direct replacement on selected pumps.
Type: Capacitor-start
Bearings: Ball
Mounting: Flange, horizontal or vertical shaft down
Enclosure: Open dripproof
Thermal Protection: Auto
Insulation Class: B
NEMA Frame: 56YZ
Ambient: 50°C
Duty: Continuous
Rotation: CCW facing shaft, nonreversible
Finish: Black
Brand: GE



HP at 3450 RPM	HP at 1725 RPM	Nameplate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Efficiency	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/2	—	3450	115/230	6.0/3.0	1.90	High	C1146	5U158	$177.00	$121.45	27.0
	—	3450	115/230	9.8/4.9	1.90	Standard	C1304	2K442	158.00	108.45	18.0
	—	3450	115/230	7.6/3.8	1.30	Standard	C1243	3K030	152.00	104.30	19.0
3/4	1/10	3450/1725	115	9.0/2.5	1.65	High	C1450	5U162	302.00	207.25	31.0
	1/10	3450/1725	230	5.6/1.3	1.65	Standard	C1310	5U137	295.00	202.75	31.0
	—	3450	115/230	8.4/4.2	1.65	High	C1447	5U159	203.00	139.25	31.0
	—	3450	115/230	10.4/5.2	1.65	Standard	C1305	2K443	181.00	124.20	24.0
	—	3450	115/230	10.4/5.2	1.27	Standard	C1244	5U124	158.00	108.40	25.0
1	1/8	3450/1725	230	7.0/1.6	1.65	Standard	C1311	5U138	301.00	206.75	31.0
	—	3450	115/230	10.2/5.1	1.65	High	C1448	5U160	233.00	160.00	35.0
	—	3450	115/230	16.2/8.1	1.65	Standard	C1306	2K444	208.00	142.70	29.0
	—	3450	115/230	12.2/6.1	1.25	Standard	C1245	3K032	181.00	124.20	24.0
1½	1/5	3450/1725	230	7.0/2.2	1.50	High	C1312	5U139	363.00	249.25	36.0
	—	3450	230	7.4	1.50	High	C1307	5U135	276.00	189.50	40.0
	—	3450	115/230	17.5/8.8	1.10	Standard	C1246	5U125	208.00	142.70	31.0
2	1/4	3450/1725	230	8.7/2.9	1.30	High	C1313	5U140	416.00	271.25	40.0
	—	3450	230	8.8	1.30	High	C1308	5U136	343.00	223.75	40.0
	—	3450	230	9.4	1.10	High	C1247	5U126	276.00	180.00	40.0
2½	—	3450	230	10.8	1.04	High	C1284	5U128	343.00	235.50	40.0
3	—	3450	230	13.0	1.15	High	C1449	5U161	398.00	273.25	49.0
	—	3450	230	13.0	1.0	High	C1445	5U157	398.00	273.25	49.0

CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

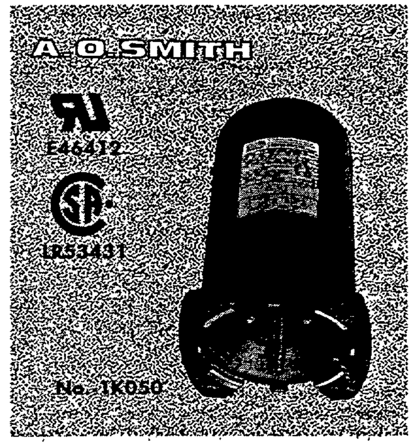


A WIDE SELECTION OF POOL AND SPA PUMPS AND ACCESSORIES IS AVAILABLE, SEE PAGES 2847 - 2851

SWIMMING POOL AND POOL/SPA PUMP MOTORS

SQUARE FLANGE SWIMMING POOL PUMP MOTORS



- Special service factors up to 1.95 provide reserve margin for intermittent overloading
- Easy access rear canopy and 1/2"-14 NPS threaded conduit connection aid installation
- NEMA 48Y frame with No. 303 stainless steel threaded shaft (1/2"-20 UNF-2A RH threaded 1/2" from end)
- Shaft also has anti-backlash impeller spin-off locking screw
- Double-sealed ball bearings
- 1081 approvable

Typical Uses: In-ground and above ground swimming pool pumps, jet and centrifugal pumps requiring square flange face motors. Exact replacement for motors mounted on Teel jet pumps and pumps manufactured by and for Sta-Rite, Sears, Red Jacket, and Hayward.

Type: Capacitor-start
Bearings: Ball
Mounting: Flange, horizontal or vertical shaft down
Enclosure: Open dripproof
Thermal Protection: Auto
Insulation Class: B
Ambient: 50°C
Duty: Continuous
Rotation: CCW, nonreversible facing shaft
Finish: Black
Brand: A.O. Smith

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Maximum Amps at Nameplate Volts	Service Factor	A.O. Smith Model	Stock No.	List	Each	Shpg. Wt.
1/3	3450	48Y	115/230	8.2/4.1	1.95	SQ1032	**1K050**	$149.00	**$102.50**	16.0
1/2	3450	48Y	115/230	11.8/5.9	1.9	SQ1052	**1K051**	160.00	**110.10**	19.0
3/4	3450	48Y	115/230	14.8/7.4	1.65	SQ1072	**1K052**	184.00	**126.70**	21.0
1	3450	48Y	115/230	19.2/9.6	1.65	SQ1102	**1K053**	215.00	**148.05**	26.0
1½	3450	48Y	230	10.4	1.47	SQ1152	**1K054***	278.00	**204.00**	30.0
2	3450	48Y	230	11.2	1.3	SQ1202	**1K055***	366.00	**291.25**	32.0

(*) Capacitor-start, capacitor-run.

CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

ABOVE GROUND POOL/SPA PUMP MOTORS

- Easy access rear canopy and 1/2"-14 NPS threaded conduit connection aid installation
- NEMA 56C frame carbon steel shaft (key not included); 56J 303 stainless steel threaded shaft (7/16"-20 UNF-2A RH threaded 11/16" from end)
- Double-sealed ball bearing at both ends with shaft end bearing locked
- 1081 approvable

Typical Uses: In-ground and above ground swimming pool and hot tub pumps. Also used on jet or centrifugal pumps and similar applications requiring a NEMA 56C or 56J face mounting.

Type: Capacitor-start
Bearings: Double-sealed ball
Mounting: Horizontal or vertical, shaft down. Dripproof when mounted horizontally as supplied. Rainshield (not included) required for vertical dripproof applications.
Enclosure: Open dripproof
Thermal Protection: Auto
Insulation Class: B
Ambient: 50°C
Duty: Continuous
Rotation: CCW, nonreversible facing shaft
Finish: Black
Brand: A.O. Smith

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Maximum Amps at Nameplate Volts	Service Factor	A.O. Smith Model	Stock No.	List	Each	Shpg. Wt.
NEMA 56C FRAME										
1/2	3450	56C	115/230	10.6/5.3	1.6	SK1052	**1K040**	$155.00	**$109.40**	20.0
3/4	3450	56C	115/230	14.6/7.3	1.5	SK1072	**1K041**	174.00	**126.00**	23.0
1	3450	56C	115/230	17.0/8.5	1.5	SK1102	**1K042**	201.00	**140.80**	28.0
1½	3450	56C	115/230	21.6/10.8	1.3	SK1152	**1K043***	259.00	**182.00**	33.0
2	3450	56C	230	11.2	1.3	SK1202	**1K044***	323.00	**222.50**	34.0
NEMA 56J FRAME										
1/2	3450	56J	115/230	10.6/5.3	1.6	ST1052	**1K045**	160.00	**111.55**	20.0
3/4	3450	56J	115/230	14.6/7.3	1.5	ST1072	**1K046**	174.00	**127.75**	23.0
1	3450	56J	115/230	17.0/8.5	1.5	ST1102	**1K047**	201.00	**143.15**	28.0
1½	3450	56J	115/230	21.6/10.8	1.3	ST1152	**1K048***	259.00	**183.75**	33.0
2	3450	56J	230	11.2	1.3	ST1202	**1K049***	326.00	**224.75**	34.0

(*) Capacitor-start, capacitor-run.

SWIMMING POOL PUMP MOTORS

- Two-compartment design protects components
- Encapsulated voltage change plug design for mistake-free voltage connection
- 56C frame 303 stainless steel shaft; 56J frame 303 stainless steel shaft 7/16"-20 UNF-2A RH threaded 11/16" from end
- Enlarged/easy terminal lead routing
- Locked double-sealed ball bearings
- Easy access to shaft to hold impeller
- 1081 approvable

Typical Uses: In-ground and above ground swimming pool and hot tub pumps. Also used on jet and centrifugal pumps and similar applications requiring a NEMA 56C or 56J face mounting.

Type: Capacitor-start

Bearings: Ball

Mounting: Face, horizontal or vertical, shaft down

Enclosure: Open dripproof

Thermal Protection: Auto

Insulation Class: B

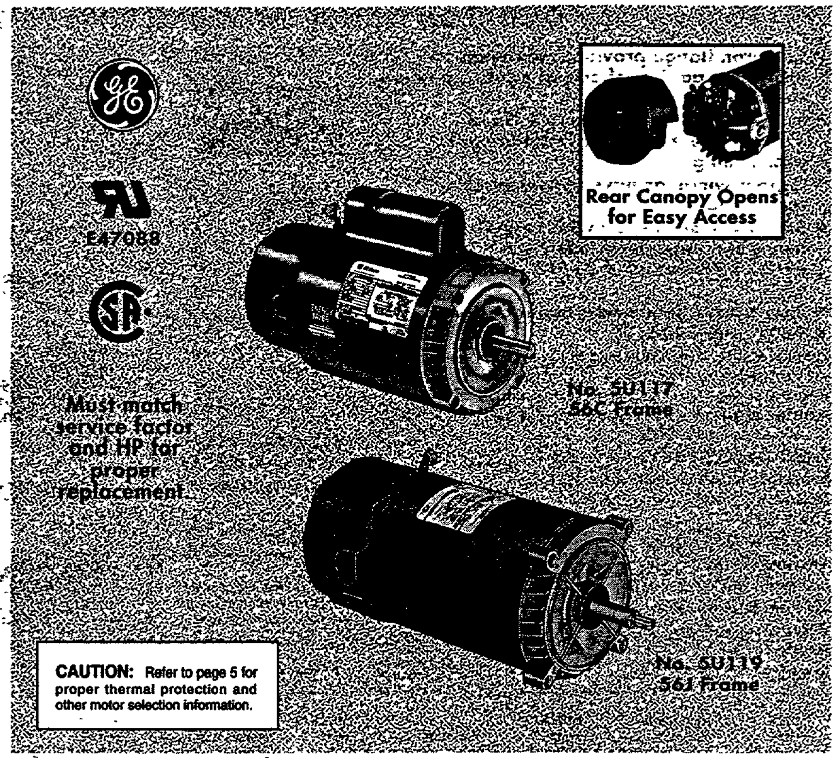
Ambient: 50°C

Duty: Continuous

Rotation: CCW, nonreversible facing shaft

Finish: Black

Brand: GE



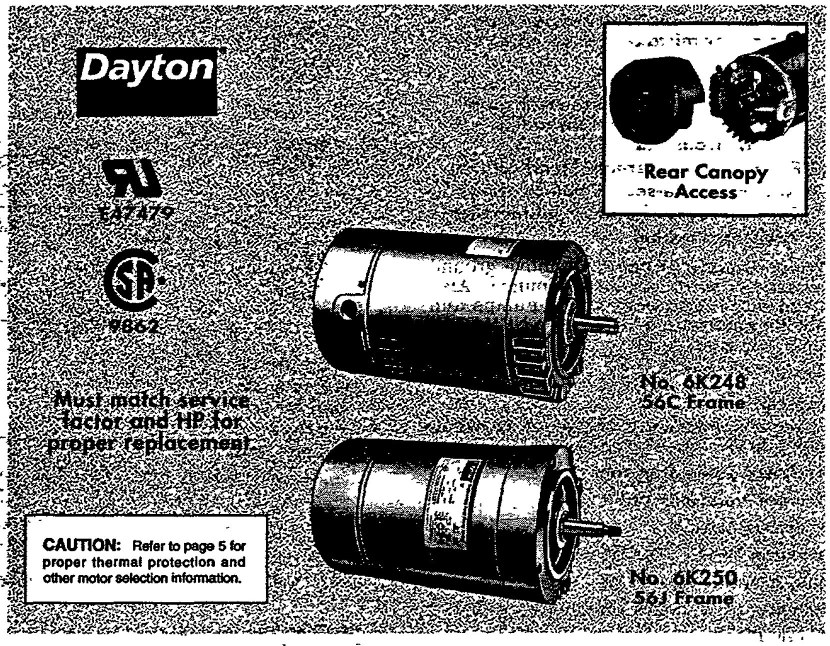
HP at 3450 RPM	HP at 1750 RPM	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Efficiency	GE Stock No.	Stock No.	List	Each	Shp. Wt.
NEMA 56C FRAME												
1/2	**1/16**	3450/1725	56C	115	7.4/2.4	1.65	Standard	C1103	**2K422**	$272.00	**$195.75**	21.0
	—	3450	56C	115/230	7.4/2.7	1.60	Standard	C1093	**2K411**	152.00	**109.35**	18.0
3/4	**1/10**	3450/1725	56C	115	10.0/3.4	1.50	Standard	C1104	**2K423**	278.00	**200.50**	20.0
	1/10	3450/1725	56C	230	4.7/1.7	1.50	Standard	C1105	**2K424**	280.00	**201.75**	20.0
	—	3450	56C	115/230	7.6/3.8	1.65	High	C1436	**5U151**	189.00	**123.70**	19.0
	—	3450	56C	115/230	9.8/4.9	1.50	Standard	C1094	**2K412**	172.00	**123.75**	20.0
1	**1/8**	3450/1725	56C	230	6.0/1.8	1.40	Standard	C1106	**2K425**	286.00	**206.00**	28.0
	—	3450	56C	115/230	10.2/5.1	1.65	Standard	C1095	**5U116**	196.00	**134.40**	35.0
1½	**1/5**	3450/1725	56C	230	7.0/2.2	1.50	High	C1107	**5U122**	335.00	**230.25**	35.0
	—	3450	56C	115/230	14.8/7.4	1.50	High	C1096	**5U117**	261.00	**179.75**	40.0
2	**1/4**	3450/1725	56C	230	8.7/2.9	1.30	High	C1442	**5U155**	471.00	**307.00**	40.0
	—	3450	56C	230	8.8	1.30	High	C1097	**5U118**	319.00	**208.00**	40.0
3	—	3450	56C	230	13.0	1.15	High	C1439	**5U153**	388.00	**266.25**	49.0
NEMA 56J FRAME												
1/2	**1/16**	3450/1725	56J	115	7.4/2.4	1.65	Standard	C1108	**2K427**	277.00	**199.50**	21.0
	—	3450	56J	115/230	7.4/2.7	1.60	Standard	C1098	**2K417**	157.00	**112.95**	18.0
3/4	**1/10**	3450/1725	56J	115	10.0/3.4	1.50	Standard	C1109	**2K428**	283.00	**204.00**	24.0
	1/10	3450/1725	56J	230	4.7/1.7	1.50	Standard	C1110	**2K429**	285.00	**205.25**	24.0
	—	3450	56J	115/230	7.5/3.8	1.65	High	C1437	**5U152**	19.00	**133.15**	19.0
	—	3450	56J	115/230	9.9/4.9	1.50	Standard	C1099	**2K418**	20.00	**127.35**	20.0
	—	3450	56J	115/230	9.8/4.9	1.00	Standard	C1321	**5U144**	15.00	**107.75**	15.0
1	**1/8**	3450/1725	56J	230	6.0/1.8	1.40	Standard	C1111	**2K430**	291.00	**209.50**	28.0
	—	3450	56J	115/230	10.6/5.3	1.65	Standard	C1100	**5U119**	201.00	**137.80**	35.0
	—	3450	56J	115/230	12.7/6.3	1.00	Standard	C1318	**5U141**	177.00	**121.50**	19.0
1½	**1/5**	3450/1725	56J	230	7.0/2.2	1.50	Standard	C1112	**5U123**	340.00	**233.75**	35.0
	—	3450	56J	115/230	14.8/7.4	1.50	High	C1101	**5U120**	266.00	**182.50**	40.0
	—	3450	56J	115/230	15.8/7.9	1.00	Standard	C1319	**5U142**	202.00	**138.65**	21.0
2	—	3450	56J	230	8.8	1.30	High	C1102	**5U121**	325.00	**212.00**	40.0
	—	3450	56J	115/230	19.2/9.6	1.00	Standard	C1320	**5U143**	267.00	**174.25**	23.0
3	—	3450	56J	230	13.0	1.15	High	C1440	**5U154**	393.00	**269.75**	49.0

SWIMMING POOL PUMP MOTORS

CAST-IRON FLANGE SWIMMING POOL PUMP MOTORS

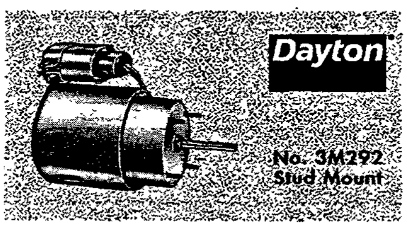
- **Cast-iron flange provides maximum protection against effects of pool chemicals**
- **NEMA service factors up to 1.6 provide reserve margin for intermittent overloading**
- **Copper windings have moisture-resistant insulation**
- **56C frame steel shaft with key; 56J frame stainless steel shaft 7/16"-20 UNF-2A RH threaded 11/16" from end**
- **Easy access two-compartment design**
- **1081 approvable**

Typical Uses: In-ground and above ground swimming pool and hot tub pumps. Also used on jet and centrifugal pumps and similar applications requiring a NEMA 56C or 56J face mounting.
Type: Capacitor-start
Bearings: Double-sealed ball
Mounting: Face, horizontal or vertical, shaft down
Enclosure: Open dripproof
Ambient: 40°C
Insulation Class: B
Thermal Protection: Auto
Duty: Continuous
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Rotation	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Stock No.	List	Each	Shpg. Wt.
				NEMA 56C FRAME WITH KEYED SHAFT						
1/2	3450	56C	CW/CCW	115/230	8.0/4.0	1.6	**6K247**	$166.00	**$114.75**	21.0
3/4	3450	56C	CW/CCW	115/230	11.0/5.5	1.5	**6K248**	192.00	**132.70**	25.0
1	3450	56C	CW/CCW	115/230	13.4/6.7	1.4	**6K249**	212.00	**146.55**	28.0
1½	3450	56C	CW/CCW	115/230	15.8/7.9	1.3	**6K266**	286.00	**197.75**	36.0
2	3450	56C	CW/CCW	115/230	21.0/10.5	1.3	**6K336**	350.00	**242.00**	44.0
				NEMA 56J FRAME WITH THREADED SHAFT						
1/2	3450	56J	CCW	115/230	8.0/4.0	1.6	**6K250**	172.00	**118.90**	21.0
3/4	3450	56J	CCW	115/230	11.0/5.5	1.5	**6K255**	198.00	**136.90**	25.0
1	3450	56J	CCW	115/230	13.4/6.7	1.4	**6K256**	218.00	**150.75**	28.0
1½	3450	56J	CCW	115/230	15.8/7.9	1.3	**6K267**	298.00	**206.25**	36.0
2	3450	56J	CCW	115/230	21.0/10.5	1.3	**6K337**	362.00	**250.25**	44.0

GENERAL APPLICATION PUMP MOTORS



Typical Uses: Circulator/coolant, aquarium, chemical, magnetic, and evaporative cooler pumps, beverage dispensers, and applications where a totally enclosed motor for operating in **noncombustible**, dusty, dirty areas is required.
Special Features: Internal cooling fan. Stud mounted models have four 2" dia. OC x 1/2" long studs out shaft endshield.
Windings: Copper
Body Diameter: 4"
Shaft Dimensions: 5/16 x 2"

For Complete Specifications and Additional Pump Motors, See Page 112.

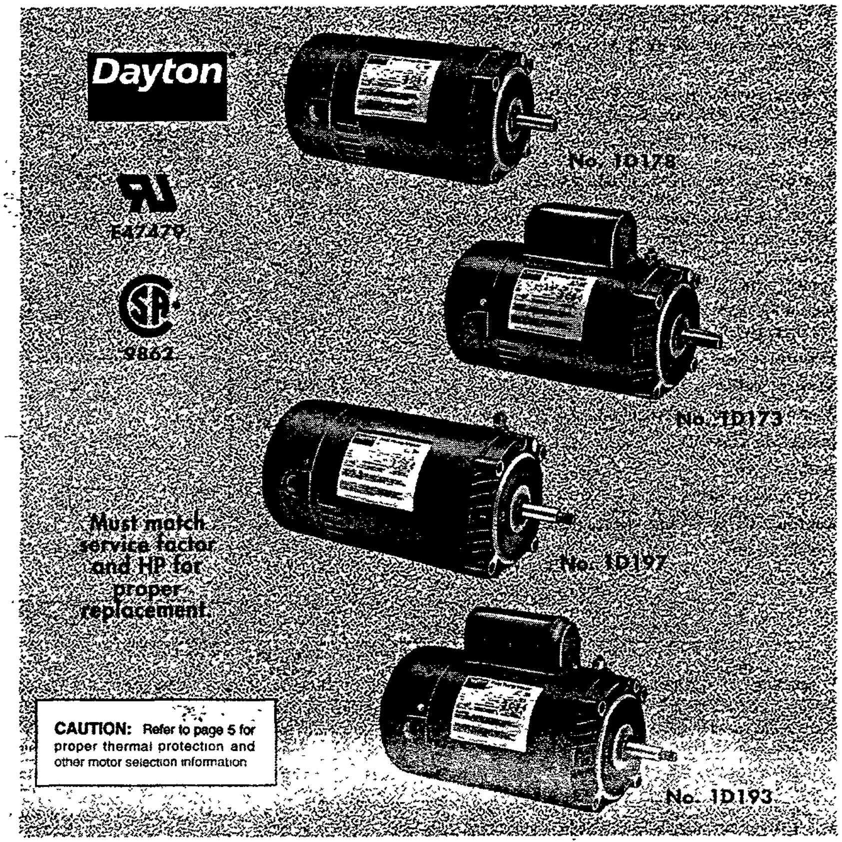
HP	Nameplate RPM	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearings	Overall Length	Stock No.	List	Each	Shpg. Wt.
				PERMANENT SPLIT CAPACITOR, TEFC, STUD MOUNT						
1/8	3000	Rev. #	115	1.8	Sleeve	6⅝"	**3M292***	$75.00	**$65.50**	6.0
	3000	Rev. #	230‡	0.9	Sleeve	7¼	**4M090***	83.00	**68.20**	6.0
				SHADED POLE, TEFC, STUD MOUNT						
1/20	3000	CW	115	1.5	Sleeve	5 15/16	**3M069**	51.00	**38.55**	4.4
	1550	CW	115	2.0	Sleeve	5 15/16	**5K001**	55.00	**42.25**	4.6
	1550	CW	115	2.0	Ball	5 15/16	**5K004**	70.00	**53.75**	4.7
	1550	CCW	115	2.0	Ball	5 15/16	**3M290**	70.00	**53.75**	4.6
				SHADED POLE, TEFC, CRADLE BASE						
1/20	1550	CW	115	2.0	Sleeve	6⅞	**5K002**	63.00	**48.35**	5.6
1/15	1550	CW	115	2.3	Sleeve	7 5/16	**3M364†**	69.00	**52.95**	6.7

(*) Foot mounted capacitor and mounting bracket included. (†) Equipped with 5.0 cubic-inch junction box.
(‡) Also operable on 50 Hz at 5/6 of 60 Hz rated speed and HP. (#) Wired for CW rotation.

ALUMINUM FLANGE SWIMMING POOL PUMP MOTORS

- Unique reverse air flow design minimizes corrosive elements on the shaft end
- Easy access two-compartment design is contractor friendly
- Dichromate-plated bearing lock tabs allow easier bearing removal, eliminate need for plate alignment and reduce corrosion
- Rust resistant 416 stainless steel shaft; special sealer on rotor inhibits rust in off-season
- Large 6⅝" barrel diameter to improve heat dissipation
- All copper windings
- 1081 approvable

Typical Uses: In-ground swimming pool and hot tub pumps. Designed for ease of direct replacement of many popular pumps.
Type: Capacitor-start
Bearings: Double-sealed ball
Mounting: Face, horizontal or vertical shaft down
Enclosure: Open dripproof
Thermal Protection: Auto
Insulation Class: B
Ambient: 50°C
Duty: Continuous
Rotation: CCW facing shaft, nonreversible
Finish: Black
Brand: Dayton



HP at 3450 RPM	HP at 1725 RPM	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Efficiency	Stock No.	List	Each	Shpg. Wt.
NEMA 56C FRAME WITH KEYED SHAFT											
3/4	1/10	3450/1725	56C	230	5.2/2.1	1.5	Standard	1D178	$280.00	$195.25	28.0
3/4	—	3450	56C	115/208-230	7.8/4.4-3.9	1.5	High	1D177	174.00	126.50	27.0
1	1/8	3450/1725	56C	230	6.1/2.1	1.4	Standard	1D179	286.00	199.50	30.0
1	—	3450	56C	115/208-230	10.4/5.6-5.1	1.4	High	1D176	201.00	141.35	28.0
1½	1/5	3450/1725	56C	230	7.0/3.4	1.3	Standard	1D174	308.00	210.00	33.0
1½	—	3450	56C	115/208-230	14.3/8.0-7.5	1.3	High	1D173	259.00	182.75	30.0
2	1/4	3450/1725	56C	230	8.1/3.2	1.3	Standard	1D175	471.00	313.00	41.0
2	—	3450	56C	208-230	9.6-9.0	1.3	High	1D181	323.00	223.25	34.0
3	—	3450	56C	208-230	12.9/11.7	1.15	High	1D180	388.00	258.00	39.0
NEMA 56J FRAME WITH THREADED SHAFT											
3/4	1/10	3450/1725	56J	230	5.2/2.1	1.5	Standard	1D196	285.00	198.75	27.0
3/4	—	3450	56J	115/208-230	7.8/4.4-3.9	1.5	High	1D198	194.00	132.50	27.0
3/4	—	3450	56J	115/230	10.4/5.2	1.0	Standard	1D204	174.00	128.25	23.0
1	1/8	3450/1725	56J	208-230	6.1/2.1	1.4	Standard	1D197	291.00	202.75	30.0
1	—	3450	56J	115/208-230	10.4/5.6-5.1	1.4	High	1D195	201.00	143.75	28.0
1	—	3450	56J	115/230	13.8/6.9	1.0	Standard	1D200	177.00	117.60	24.0
1½	1/5	3450/1725	56J	230	7.0/3.4	1.3	Standard	1D199	319.00	217.25	34.0
1½	—	3450	56J	115/208-230	14.3/8.0-7.5	1.3	High	1D193	246.00	168.00	30.0
1½	—	3450	56J	115/230	16.2/8.1	1.0	Standard	1D201	231.00	157.50	26.0
2	1/4	3450/1725	56J	230	8.0/3.1	1.3	Standard	1D194	460.00	314.00	41.0
2	—	3450	56J	208-230	9.6/9.0	1.3	High	1D206	325.00	216.00	34.0
2	—	3450	56J	115/230	19.8/9.9	1.0	Standard	1D202	326.00	225.50	32.0
2½	—	3450	56J	230	10.5	1.0	Standard	1D203	325.00	221.50	33.0
3	—	3450	56J	208-230	12.9/11.7	1.15	High	1D205	393.00	268.25	39.0

SPA AND WHIRLPOOL PUMP MOTORS

DAYTON BRAND, SPA AND WHIRLPOOL BATH AND ABOVE GROUND POOL MOTORS

- **Easy access two-compartment design**
- **Convenient 12 or 3 o'clock conduit fittings**
- **Rust-resistant shaft 1/2" dia. 3/8"-16 UNC-2A RH threaded 9/16" from end**
- **1081 and 1795 approvable**

Typical Uses: On pumps for spas, whirlpools, hot and jetted tubs. Sturdy 14 gauge slotted base on three inch centers. Replaces many popular spa and tub pump motors.

Type: Capacitor-start or split-phase

Mounting: Rigid base with four 8-32 extended thru-bolts

Enclosure: Open dripproof

Service Factor: 1.0

Thermal Protection: Auto

Insulation Class: B

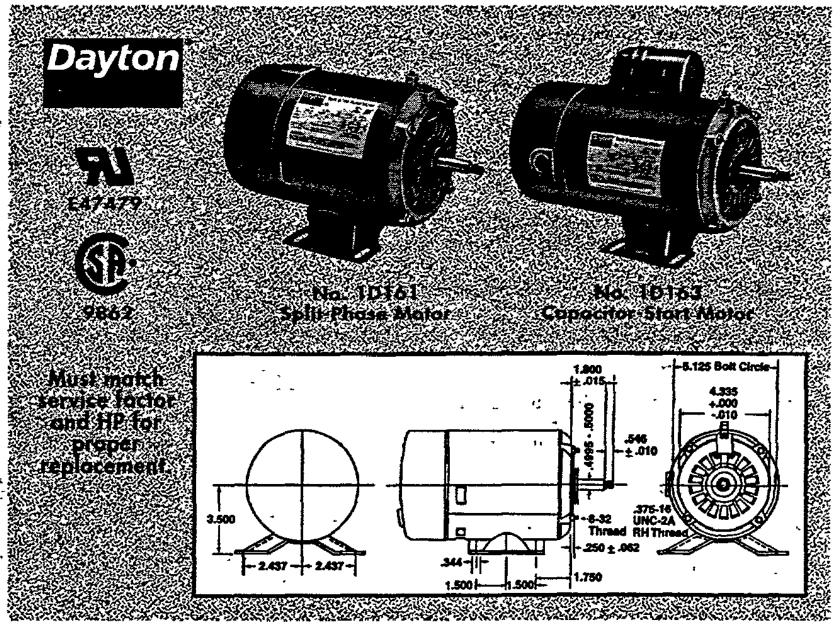
Ambient: 40°C

Duty: Continuous

Rotation: CCW facing shaft, nonreversible

Finish: Black

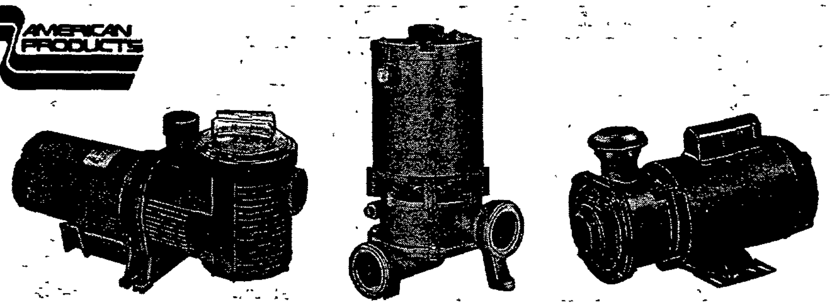
Brand: Dayton



HP at: 3450 RPM	HP at: 1725 RPM	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Comments*	Bearing	Stock No.	List	Each	Shpg. Wt.
					SINGLE SPEED						
1/2	—	3450	48Y	115	6.6	1,4	Ball/Sleeve	**1D160**	$160.00	**$104.80**	14.0
3/4	—	3450	48Y	115	9.6	4	Ball/Sleeve	**1D158**	135.00	**88.40**	17.0
3/4	—	3450	48Y	115	9.6	1,4	Ball/Sleeve	**1D161**	185.00	**121.15**	17.0
1	—	3450	48Y	115	12.0	4	Ball/Sleeve	**1D157**	149.00	**97.60**	19.0
1	—	3450	48Y	115	12.0	1,4	Ball/Sleeve	**1D162**	210.00	**137.50**	20.0
1 1/2	—	3450	48Y	115/230	15.4/7.7	1,5	Ball/Ball	**1D154**	250.00	**163.75**	24.0
					TWO SPEED						
3/4	1/10	3450/1725	48Y	115	8.9/2.9	4	Ball/Sleeve	**1D159**	175.00	**114.[illegible]**	[illegible]
1	1/8	3450/1725	48Y	115	10.3/2.9	3, 5	Ball/Ball	**1D155**	255.00	**167.25**	[illegible]
1	1/8	3450/1725	48Y	115	10.3/3.8	2, 3, 5	Ball/Ball	**1D156**	268.00	**175.75**	22.0
1 1/2	1/8	3450/1725	48Y	115	13.6/3.6	2, 5	Ball/Ball	**1D165**	300.00	**196.50**	30.0
1 1/2	1/8	3450/1725	48Y	115	15.6/4.1	5	Ball/Ball	**1D163**	275.00	**180.25**	29.0
1 1/2	1/8	3450/1725	48Y	230	7.5/2.2	5	Ball/Ball	**1D164**	297.00	**194.75**	26.0
2	1/4	3450/1725	48Y	230	8.6/2.5	2, 5	Ball/Ball	**1D166**	320.00	**209.75**	30.0

(*) Comments: 1) Conduit at 12:00. 2) Low starting amp design. 3) Internal capacitor. 4) Split-phase. 5) Capacitor-start.

CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

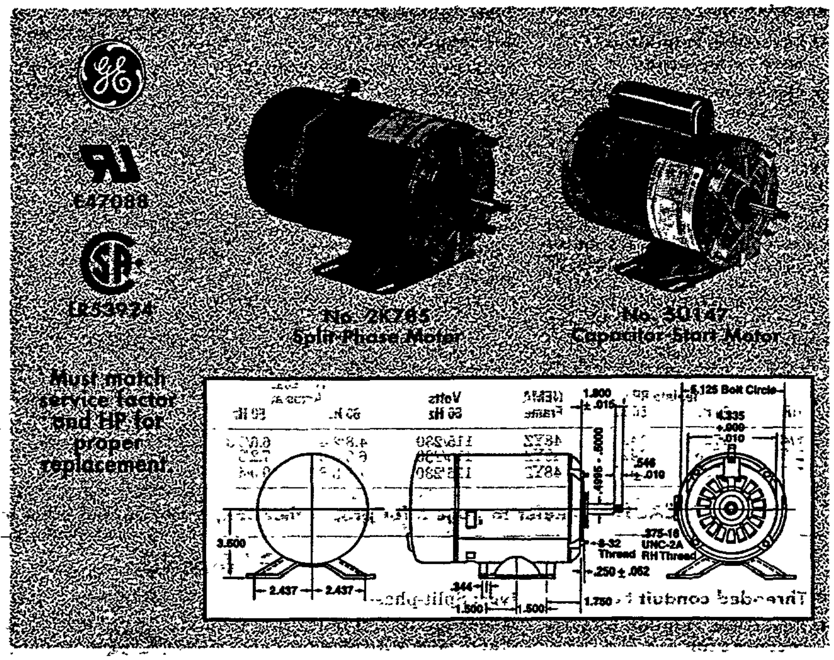


A WIDE SELECTION OF SWIMMING POOL, JETTED TUB, AND SPA PUMPS IS AVAILABLE, **SEE PAGES 2847 - 2849**

GE BRAND, ABOVE GROUND POOL/SPA PUMP MOTORS

- **Two-compartment design protects components**
- **Slinger on shaft**
- **416 stainless steel shaft 1/2" dia. 3/8"-16 UNC-2A RH threaded 9/16" from end**
- **Locked double-sealed ball bearings**
- **1081 approvable**

Typical Uses: Used on pumps for spas, hot tubs, above ground pools, and jetted bathtubs.
Type: Split-phase or capacitor-start
Bearings: Ball
Mounting: Rigid base with four 8-32 extended thru-bolts
Enclosure: Open dripproof
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: B
Ambient: 55°C
Duty: Continuous
Rotation: CCW facing shaft, nonreversible
Finish: Flat black
Brand: GE



No. 2K785 Split-Phase Motor

No. 5U147 Capacitor-Start Motor

SPLIT-PHASE

HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Efficiency	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
3/4	3450	56Y	115	9.9	Standard	H666	**2K785***	$124.00	**$84.75**	17.0
1	3450	56Y	115	12.0	Standard	H667	**2K786***	137.00	**96.40**	23.0

CAPACITOR-START

HP at 3450 RPM	HP at 1725 RPM	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Efficiency	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
3/4	**1/10**	3450/1725	56Y	115	8.8/2.6	Standard	C1322	**5U145**	$180.00	**$164.50**	18.0
	1/10	3450/1725	56Y	230	4.4/1.3	Standard	C1457	**5U165**	183.00	**166.25**	18.0
1	**1/8**	3450/1725	56Y	115	11.9/3.3	Standard	C1323	**5U146**	202.00	**169.75**	20.0
	1/8	3450/1725	56Y	230	5.8/1.9	Standard	C1324	**5U147**	205.00	**171.75**	20.0
1½	**1/5**	3450/1725	56Y	230	7.0/2.6	High	C1326	**5U149**	232.00	**194.50**	21.0
	—	3450	56Y	115/230	14.4/7.2	High	C1455	**5U163**	184.00	**119.95**	21.0
2	**1/4**	3450/1725	56Y	230	8.8/2.6	High	C1327	**5U150**	248.00	**197.75**	23.0
	—	3450	56Y	230	8.5	High	C1456	**5U164**	204.00	**133.00**	23.0

(*) Not a two-compartment design. Conduit hole at 3 o'clock for above ground applications; all others at 12 o'clock.

CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

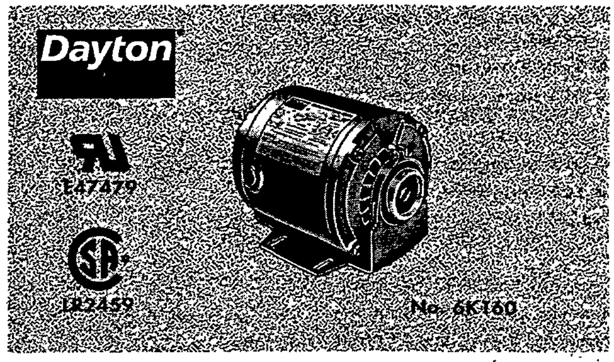
CARBONATOR PUMP MOTORS

DAYTON BRAND

- **60/50 Hz**
- **Reversible rotation by easy reconnection**
- **Sleeve bearings suitable for all-angle operation**
- **Threaded conduit hole**

Typical Uses: Specially designed endshield has extended hub and short, slotted 5/8" diameter shaft for close coupling the carbonator pump to the motor. Also used for liquid transfer pumps, vending machine pumps, and other close-coupled pump applications.

Type: Split-phase
Bearings: Sleeve
Mounting: Extended hub and cradle base
Enclosure: Open dripproof
Thermal Protection: Auto
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM 60 Hz	Nameplate RPM 50 Hz	NEMA Frame	Volts 60 Hz	Full Load Amps at 60 Hz	Full Load Amps at 50 Hz	Service Factor	Insulation Class	Stock No.	List	Each	Shpg. Wt.
1/4	1725	1425	48YZ	115/230	4.8/2.4	6.6/3.3	1.0	A	**6K160**	$94.00	**$68.25**	14.0
1/3	1725	1425	48YZ	115/230	6.0/3.0	7.2/3.6	1.0	A	**5K887**	98.00	**71.15**	15.0
1/2	1725	1425	48YZ	115/230	7.6/3.8	9.0/4.5	1.0	B	**3K090**	133.00	**110.20**	18.0

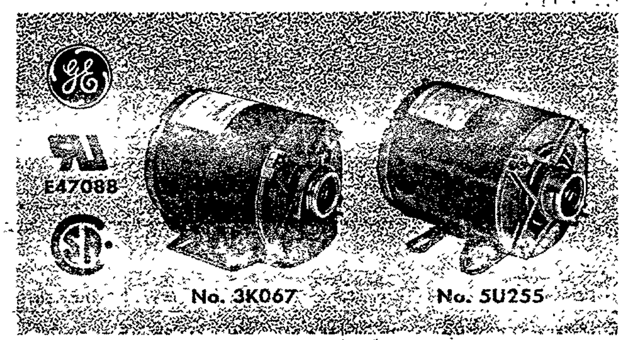
CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

GE BRAND

- **Threaded conduit hole**
- **Reversible rotation by easy reconnection**

Typical Uses: Specially designed endshield has extended hub and short, slotted 1/2" diameter shaft for close coupling the carbonator pump to the motor. Also used for liquid transfer pumps, vending machine pumps, and other close-coupled pump applications.

Type: Split-phase
Mounting: Extended hub and cradle base with studs
Enclosure: Open dripproof
Service Factor: 1.0
Thermal Protection: Auto
NEMA Frame: 48Y
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE



HP	Nameplate RPM 60 Hz	Nameplate RPM 50 Hz	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearing	Mounting	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/4	1725	—	115	5.0	Sleeve	Cradle/Studs	4725	**3K067**	$96.00	**$58.00**	13.0
	1725	—	115	5.0	Sleeve	Rigid/Studs	H679	**5U253**	92.00	**57.00**	13.0
	1725	1425	230-240*	2.3/2.4	Sleeve	Cradle/Studs	H451	**2K458**	109.00	**68.25**	14.0
1/3	1725	1425	100-120/200-240*	5.6/2.8	Ball	Cradle/Studs	H683	**5U257**	132.00	**71.15**	14.0
	1725	1425	100-120/200-240*	5.6/2.8	Sleeve	Rigid/Studs	H681	**5U255**	120.00	**72.00**	14.0
	1725	—	115	5.6	Ball	Cradle/Studs	H682	**5U256**	109.00	**63.00**	14.0
	1725	—	115	5.6	Sleeve	Rigid/Studs	H680	**5U254**	96.00	**60.00**	14.0
	1725	—	115	5.6	Sleeve	Cradle/Studs	4406	**3K068**	100.00	**61.00**	14.0
	1725	—	220-240	2.7	Sleeve	Cradle/Studs	H450	**2K457**	114.00	**72.00**	11.0
	1725	1425	100-120/200-240*	5.6/2.8	Sleeve	Cradle/Studs	4805	**3K987**	124.00	**78.00**	15.0
1/2	1725	1425	100-120/200-240*	7.2/3.6	Ball	Cradle/Studs	H684	**5U258**	148.00	**110.20**	17.0

(*) Motor designed for 50 or 60 Hz operation.

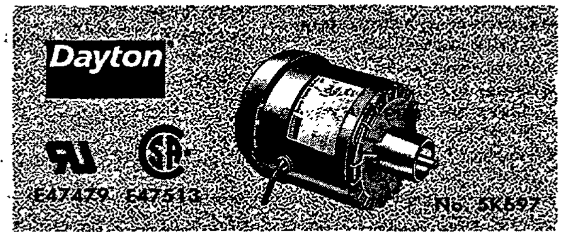
SUMP PUMP & GLASS WASHER MOTORS

DAYTON BRAND, SUMP PUMP MOTOR

Typical Uses: Direct replacements for OEM supplied motor on sump pumps. Shaft endshield has extended hub for mounting directly on 1½ or 1¾" OD pump support columns.

Use on other applications, such as glass washers, voids warranty.

Type: Split-phase
Mounting: Hub
Service Factor: 1.0
Ambient: 40°C
Duty: Continuous
Finish: Black
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Thermal Protection	Enclosure	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearings	Ins. Class	Hub Dimension	Stock No.	List	Each	Shpg. Wt.
1/3	1725	48Y	CW/CCW	Auto	Op Dpf	115	5.7	Sleeve	B	1½"	**6K287***	$96.00	**$73.50**	12.0
	1725	56YZ	CW/CCW	Auto	Op Dpf	115	5.9	Sleeve	A	1½	**5K343**	96.00	**70.05**	13.0
	1725	56YZ	CCW	Auto	TEFC	115	6.8	Ball	B	1¾	**5K697**	184.00	**134.35**	17.0

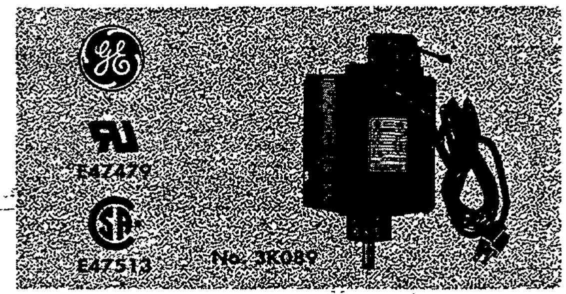
(*) Includes float-type switch and 8 ft. 3-conductor cord.

GE BRAND, SUMP PUMP MOTOR

Typical Uses: Direct replacements for OEM supplied motor on sump pumps. Shaft endshield has extended hub for mounting directly on 1½" OD pump support columns.

Use on other applications, such as glass washers, voids warranty.

Type: Split-phase
Bearings: Sleeve
Mounting: Hub
Enclosure: Open
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Finish: Black
Brand: GE



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Hub Dimension	GE Stock No.	Stock No.	List	Each	Shpg Wt
1/3	1725	48K	CW	115	5.7	1½"	H642	**3K089***	$12.00	**$71.10**	12.0

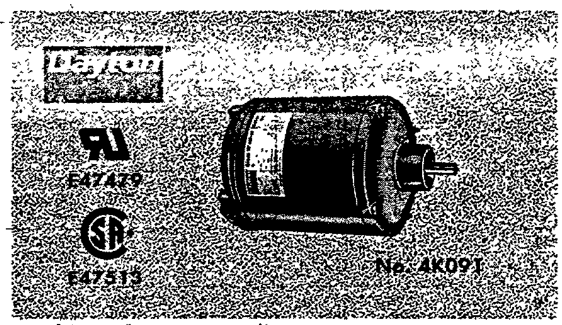
(*) Includes float-type switch and 8 ft. 3-conductor cord.

DAYTON BRAND, GLASS WASHER MOTOR

- **Gasketed conduit box**
- **Drain hole in shaft end endshield**
- **Double-sealed ball bearings with moisture-resistant grease**
- **Note: recommended for use with GFCI switch motor control No. 5Z974**

Typical Uses: Replacement on most OEM glass washers.

Type: Split-phase
Bearings: Ball
Mounting: Vertical shaft down on metal standpipe
Enclosure: TENV
Service Factor: 1.0
Thermal Protection: None
Insulation Class: A
Ambient: 40°C
Duty: Continuous
Finish: Black
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Rotation Facing Shaft	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Stock No.	List	Each	Shpg. Wt.
1/3	1725	56YZ	CW/CCW	115	4.8	**4K091**	$173.00	**$107.35**	25.0*

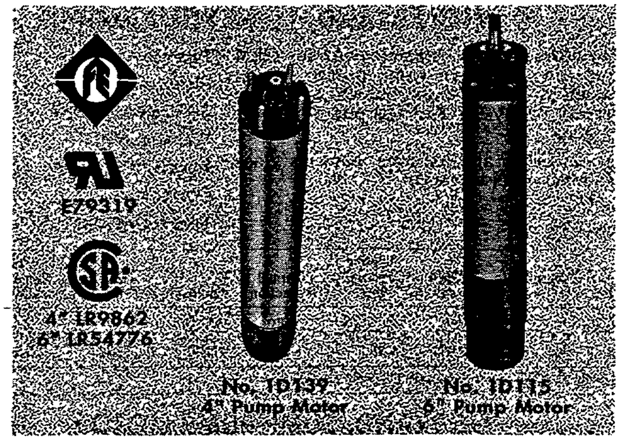
CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

3-PHASE SUBMERSIBLE PUMP MOTORS

- Corrosion-resistant stainless steel shell
- Hermetically sealed stator
- Water lubricated carbon sleeve and kingsbury-type thrust bearings
- Lubricant replenishing filtered check valve
- Pressure equalizing diaphragm
- Replaceable motor lead wire assembly
- Splined, stainless steel shaft
- UL 778 recognized

Typical Uses: Motors manufactured for dependable operation in wells with 4" or 6" inside diameter or larger.

Type: 3-wire, 3-phase
Mounting: NEMA mounting dimensions
Enclosure: TENV sealed water-tight
Duty: Continuous in 86°F (30°C) water at 1/4 ft./sec. for 4" motors; 1/2 ft./sec. for 6" motors
Rotation: Must run CCW facing shaft when combined with pump for maximum pump pressure and capacity
Lead Wire Assembly: 1½ - 2 HP motors include 48" assembly; 3 thru 7½ HP 4" motors include 100" assembly; all 6" motors include 150" assembly. All lead wire assemblies include a ground wire.
Brand: Franklin



3-PHASE SUBMERSIBLE PUMP MOTORS

HP	Name-plate RPM	Volts 60 Hz	Rated Amps	Service Factor	Max S.F. Amps	Thrust Rating Lbs.	Franklin Model	Stock No.	List	Each	Shpg. Wt.	Required MAGNETIC STARTER Stock No.	Each	Required OVERLOAD RELAY Set*	Max.*	Stock No.	Each
4" SUBMERSIBLE PUMP MOTORS																	
1½	3450	200	5.8	1.30	6.8	650	234 50492	1D135	$336.00	$242.00	24.0	4B891	$72.70	6.81	7.4	4B858	$48.20
	3450	230	5.0	1.30	5.9	650	234 51492	1D136	336.00	242.00	23.0	4B891	72.70	5.89	6.4	4B858	48.20
	3450	460	2.5	1.30	3.0	650	234 52494	1D137	336.00	242.00	23.0	4B891	72.70	2.94	3.2	4B860	46.50
2	3450	200	7.7	1.25	9.3	650	234 30592	1D138	389.00	280.50	28.0	4B889	92.15	8.46	9.2	4B857	48.20
	3450	230	6.7	1.25	8.1	650	234 31592	3N877	389.00	280.50	28.0	4B891	72.70	7.36	8.0	4B857	48.20
	3450	460	3.4	1.25	4.1	650	234 32594	3N878	389.00	280.50	28.0	4B891	72.70	3.68	4.0	4B860	46.50
3	3450	200	10.9	1.15	12.5	1500	234 30683	1D139	696.00	501.50	44.0	4B889	92.15	11.2	12.2	4B856	48.20
	3450	230	9.5	1.15	10.9	1500	234 31683	3N879	696.00	501.50	43.0	4B889	92.15	9.75	10.6	4B856	48.20
	3450	460	4.8	1.15	5.5	1500	234 32683	3N880	696.00	501.50	43.0	4B891	72.70	4.88	5.3	4B859	46.50
5	3450	200	18.3	1.15	20.5	1500	234 30783	1D140	873.00	629.00	55.0	4B884	116.65	18.4	20.0	4B854	48.20
	3450	230	15.9	1.15	17.8	1500	234 31783	3N881	873.00	629.00	53.0	4B884	116.65	16.0	17.4	4B855	48.20
	3450	460	8.0	1.15	8.9	1500	234 32783	3N882	873.00	629.00	53.0	4B891	72.70	8.0	8.7	4B857	48.20
7½	3450	200	26.5	1.15	30.5	1500	234 30883	1D141	1078.00	777.00	70.0	4B882	132.70	27.0	29.3	4B853	56.65
	3450	230	23.0	1.15	26.4	1500	234 31883	1D142	1078.00	777.00	70.0	4B882	132.70	23.5	25.5	4B853	56.65
	3450	460	11.5	1.15	13.2	1500	234 32883	1D143	1078.00	777.00	70.0	4B887	104.80	11.8	12.8	4B856	48.20
6" SUBMERSIBLE PUMP MOTORS																	
5	3450	200	17.5	1.15	19.1	1500	236 65090	1D115	1174.00	845.50	90.0	4B884	116.65	18.4	20.0	4B854	48.20
	3450	230	15.0	1.15	16.6	1500	236 60090	1D116	1174.00	845.50	90.0	4B887	104.80	16.0	17.4	4B855	48.20
	3450	460	7.5	1.15	8.3	1500	236 61090	1D117	1174.00	845.50	90.0	4B891	72.70	8.0	8.7	4B857	48.20
7½	3450	200	25.1	1.15	28.3	1500	236 65190	1D110	1371.00	987.50	95.0	4B882	132.70	27.0	29.3	4B853	56.65
	3450	230	21.8	1.15	24.6	1500	236 60190	1D096	1371.00	987.50	95.0	4B884	116.65	23.5	25.5	4B853	56.65
	3450	460	10.9	1.15	12.3	1500	236 61190	1D103	1371.00	987.50	95.0	4B889	92.15	11.8	12.8	4B856	48.20
10	3450	200	32.7	1.15	37.0	3500	236 65290	1D111	1537.00	1108.00	105.0	4B880	169.00	34.0	37.0	4B851	82.85
	3450	230	28.4	1.15	32.2	3500	236 60290	1D098	1537.00	1108.00	105.0	4B880	169.00	29.6	32.2	4B851	82.85
	3450	460	14.2	1.15	16.1	3500	236 61290	1D102	1537.00	1108.00	105.0	4B887	104.80	14.8	16.1	4B855	48.20
15	3450	200	47.8	1.15	54.5	3500	236 65390	1D112	1772.00	1276.00	120.0	4B879	181.00	50.1	54.5	4B849	82.85
	3450	230	41.6	1.15	47.4	3500	236 60390	1D099	1772.00	1276.00	120.0	4B879	181.00	43.6	47.4	4B850	82.85
	3450	460	20.8	1.15	23.7	3500	236 61390	1D104	1772.00	1276.00	120.0	4B884	116.65	21.8	23.7	4B854	48.20
20	3450	200	61.9	1.15	69.7	3500	236 65490	1D113	2179.00	1570.00	135.0	4B875	281.50	64.1	69.7	4B848	98.90
	3450	230	53.8	1.15	60.6	3500	236 60490	1D100	2179.00	1570.00	135.0	4B875	281.50	55.8	60.6	4B849	82.85
	3450	460	26.9	1.15	30.3	3500	236 61490	1D105	2179.00	1570.00	135.0	4B880	169.00	27.9	30.3	4B853	56.65
25	3450	200	77.1	1.15	86.3	3500	236 65590	1D114	2535.00	1826.00	148.0	—	—	79.4	86.3	—	98.90
	3450	230	67.0	1.15	75.0	3500	236 60590	1D101	2535.00	1826.00	148.0	4B875	281.50	69.0	75.0	4B847	98.90
	3450	460	33.5	1.15	37.5	3500	236 61590	1D106	2535.00	1826.00	148.0	4B880	169.00	34.5	37.5	4B851	82.85
30	3450	230	79.0	1.15	90.4	3500	236 60690	1D107	2939.00	2117.00	162.0	—	—	83.2	90.4	—	98.90
	3450	460	39.5	1.15	45.2	3500	236 61690	1D108	2939.00	2117.00	162.0	4B878	181.00	41.6	45.2	4B850	82.85
40	3450	460	53.5	1.15	62.0	3500	236 61760	1D109	3536.00	2547.00	195.0	4B889	92.15	57.0	62.0	4B849	82.85
50	3450	460	67.7	1.15	77.0	3500	236 61860	1D118	4505.00	3245.00	310.0	4B875	281.50	70.8	77.0	4B847	98.90
60	3450	460	80.5	1.15	91.0	3500	236 61960	1D144	5364.00	3863.00	340.0	—	—	83.7	91.0	—	—

(*) Adjustable overload relay amp settings apply to approved types listed. Relay adjustment should be set at the specified SET amps, and only if tripping occurs with amps in all line measured to within nameplate maximum amps should the setting be increased, not to exceed the MAX. value shown.

CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

SINGLE-PHASE SUBMERSIBLE PUMP MOTORS

PUMP MOTORS

- **Corrosion-resistant stainless steel shell**
- **Hermetically sealed stator**
- **Water lubricated carbon sleeve and kingsbury-type thrust bearings**
- **Built-in lightning protection on 4" motors**
- **Lubricant replenishing filtered check valve**
- **Pressure equalizing diaphragm**
- **Replaceable motor lead wire assembly**
- **Splined, stainless steel shaft**
- **UL 778 recognized**

CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

Typical Uses: Motors manufactured for dependable operation in wells with 4" or 6" inside diameter or larger.

Type: 2-wire split-phase; 3-wire capacitor-start

Mounting: NEMA mounting dimensions

Enclosure: TENV sealed watertight

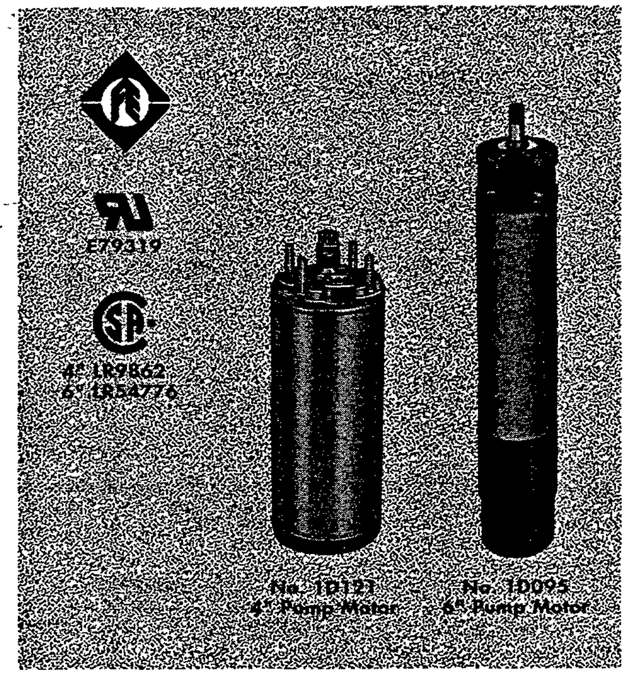
Duty: Continuous in 86°F (30°C) water at 1/4 ft./sec. for 4" motors, 1/2 ft./sec. for 6" motors.

Rotation: CCW facing shaft end

Lead Wire Assembly: 1/3 thru 2 HP motors include 48" assembly; 3 thru 5 HP 4" motors include 100" assembly; all 6" motors include 150" assembly. All lead wire assemblies include a ground wire.

Control Boxes: Use either a CSIR or CSCR control box. CSCR control boxes feature extra capacitor, more efficiency, a cut down on maximum service factor amps, and less noise.

Brand: Franklin



SINGLE-PHASE SUBMERSIBLE PUMP MOTORS

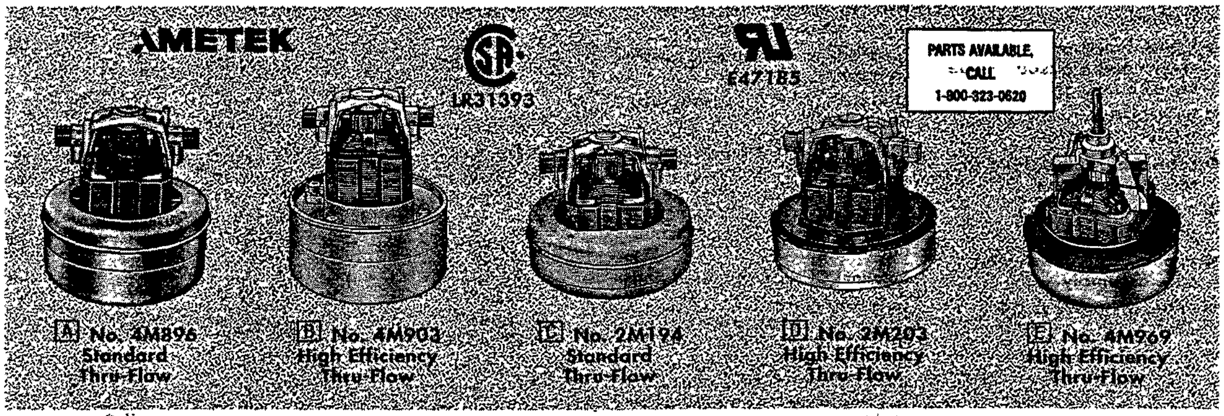
HP	Wire	Name-plate RPM	Volts 60 Hz	Rated Amps	Service Factor	Max S.F. Amps	Thrust Rating Lbs.	Thermal Protection	Franklin Model	Stock No.	List	Each	Shpg. Wt.	Required CONTROL BOX: Control Box Type	Stock No.	Each
4" SUBMERSIBLE PUMP MOTORS																
1/3	3	3450	115	8.0	1.75	9.2	300	Auto†	214 50290	**1D128**	$246.00	**$177.50**	16.0	CSIR	**4P840**	**$42.40**
	3	3450	230	4.0	1.75	4.6	300	Auto†	214 50390	**1D129**	246.00	**177.50**	16.0	CSIR	**4P841**	**42.40**
	2	3450	115	8.0	1.75	9.2	300	Auto†	244 50290	**1D121**	287.00	**207.00**	16.0	—	—	—
	2	3450	230	4.0	1.75	4.6	300	Auto†	244 50390	**1D122**	237.00	**207.00**	16.0	—	—	—
1/2	3	3450	115	10.0	1.60	12.0	300	Auto†	214 50490	**1D130**	234.00	**168.75**	18.0	CSIR	**4P842**	**43.70**
	3	3450	230	5.0	1.60	6.0	300	Auto†	214 50590	**1D131**	234.00	**168.75**	18.0	CSIR	**1D146**	**43.00**
	3	3450	230	5.0	1.60	4.2	300	Auto†	214 50590	**1D131**	234.00	**168.75**	18.0	CSCR	**4P843**	**63.60**
	2	3450	115	10.0	1.60	12.0	300	Auto†	244 50490	**1D123**	276.00	**199.00**	18.0	—	—	—
	2	3450	230	5.0	1.60	6.0	300	Auto†	244 50590	**1D124**	276.00	**199.00**	18.0	—	—	—
3/4	3	3450	230	6.8	1.50	8.0	300	Auto†	214 50790	**1D132**	280.00	**201.75**	21.0	CSIR	**1D147**	**45.50**
	3	3450	230	6.8	1.50	5.7	300	Auto†	214 50790	**1D132**	280.00	**201.75**	21.0	CSIR	**4P844**	**68.80**
	2	3450	230	6.8	1.50	8.0	300	Auto†	244 50790	**1D125**	333.00	**240.00**	21.0	—	—	—
1	3	3450	230	8.2	1.40	9.8	650	Auto†	214 50890	**1D133**	292.00	**210.50**	24.0	CSIR	**1D145**	**46.90**
	3	3450	230	8.2	1.40	7.0	650	Auto†	214 50890	**1D133**	292.00	**210.50**	24.0	CSCR	**4P845**	**70.10**
	2	3450	230	8.2	1.40	9.8	650	Auto†	244 50890	**1D126**	357.00	**257.50**	23.0	—	—	—
1½	3	3450	230	10.0	1.30	11.5	650	Manual‡	224 30092	**1D134**	374.00	**269.50**	27.0	CSCR	**4P846**	**79.90**
	2	3450	230	10.6	1.30	13.1	650	Auto†	244 30990	**1D127**	466.00	**335.75**	30.0	—	—	—
2	3	3450	230	10.0	1.25	13.2	650	Manual‡	224 30192	**3K990**	448.00	**323.00**	30.0	CSCR	**2PC15**	**110.00**
	3	3450	230	10.0	1.25	13.2	650	Manual‡	224 30192	**3K990**	448.00	**323.00**	30.0	Deluxe CSCR*	**1D152**	**152.00**
3	3	3450	230	14.0	1.15	17.0	1500	Manual‡	224 30283	**3K991**	785.00	**565.50**	52.0	CSCR	**2PC16**	**135.50**
	3	3450	230	14.0	1.15	17.0	1500	Manual‡	224 30283	**3K991**	785.00	**565.50**	52.0	Deluxe CSCR*	**1D151**	**167.75**
5	3	3450	230	23.0	1.15	27.5	1500	Manual‡	224 30383	**3K992**	965.00	**696.00**	61.0	CSCR	**1D153**	**205.00**
	3	3450	230	23.0	1.15	27.5	1500	Manual‡	224 30383	**3K992**	965.00	**696.00**	61.0	Deluxe CSCR*	**2PC17**	**224.25**
6" SUBMERSIBLE PUMP MOTORS																
5	3	3450	230	23.0	1.15	27.5	1500	Manual‡	226 11090	**1D095**	1236.00	**890.00**	105.0	CSCR	**1D153**	**205.00**
	3	3450	230	23.0	1.15	27.5	1500	Manual‡	226 11090	**1D095**	1236.00	**890.00**	105.0	Deluxe CSCR*	**2PC17**	**224.25**
7½	3	3450	230	36.5	1.15	42.1	1500	Manual‡	226 11190	**1D097**	1455.00	**1048.00**	120.0	Deluxe CSCR*	**1D148**	**305.00**
10	3	3450	230	44.0	1.15	51.0	3500	Manual‡	226 11290	**1D119**	1634.00	**1178.00**	135.0	Deluxe CSCR*	**1D149**	**449.00**
15	3	3450	230	62.0	1.15	75.0	3500	Manual‡	226 11390	**1D120**	2123.00	**1529.00**	146.0	Deluxe CSCR*	**1D150**	**707.50**

(*) Deluxe box includes magnetic contactor. Recommended for water systems that utilize a pressure switch.
(†) Automatic thermal protection in motor. (‡) Manual reset thermal protection in control box.

SEE WARRANTY INFORMATION ON PAGE OPPOSITE INSIDE BACK COVER

AC/DC VACUUM MOTORS

5.7 INCH DIAMETER THRU-FLOW VACUUM MOTORS/BLOWERS



[A] No. 4M896 Standard Thru-Flow [B] No. 4M903 High Efficiency Thru-Flow [C] No. 2M194 Standard Thru-Flow [D] No. 2M203 High Efficiency Thru-Flow [E] No. 4M969 High Efficiency Thru-Flow

Applications: For replacing motors in canister vacuums, utility vacuums, spas, sprayer/foggers, air samplers, and commercial vacuums. For dry, clean air installations only.

Features: Permanently lubricated bearings. Copper windings.
Mounting: All position
Enclosure: Open
Insulation Class: A

Ambient: 40°C
Duty: Intermittent
Average Life: 500 hours
Brand: Ametek

Style	Dia.	Blower Stages	Volts 50/60 Hz	Max. Amps	Thermal Protection	Bearings	Overall Ht.	Vacuum (In. H_2O Sealed)	CFM (2" Orifice)	Max. Air Watts	Special Features*	Ametek Model	Stock No.	List	Each	Shpg. Wt.
A	5.7	2	120	10.6	None	Ball/Ball	$5\frac{15}{16}$"	114.4	101.3	365	1	116432-00	**2M422**	$83.00	**$69.00**	5.1
A	5.7	2	120	9.0	Auto	Ball/Slv	6	100.0	104.0	323	1	116671-50	**4M898**	84.00	**69.85**	6.1
A	5.7	2	120	8.8	None	Ball/Ball	$5\frac{15}{16}$	106.9	107.0	316	1, 3	116227-00	**2M199**	93.00	**77.30**	5.5
A	5.7	2	120	8.0	Auto	Ball/Slv	$5\frac{13}{16}$	92.0	99.0	257	1	115744	**2M198**	85.00	**70.70**	5.0
A	5.7	2	120	8.0	None	Ball/Ball	$5\frac{9}{16}$	92.0	99.0	257	1	115750	**2M262**	81.00	**67.35**	4.9
A	5.7	2	120	7.7	Auto	Ball/Ball	$5\frac{9}{16}$	90.2	94.0	241	1	116457-00	**2M420**	72.00	**59.85**	4.2
A	5.7	2	120	8.0	None	Ball/Slv	$5\frac{9}{16}$	92.0	99.0	260	1	115737	**2M263**	74.00	**61.50**	4.9
A	5.7	2	120	8.2	None	Ball/Ball	$5\frac{9}{16}$	91.2	95.0	245	1	116311-01	**2M192**	66.00	**54.90**	4.9
A	5.7	2	120	7.7	Auto	Ball/Slv	$5\frac{9}{16}$	90.2	94.0	241	1	116669-50	**2M421**	66.00	**54.90**	4.2
A	5.7	2	120	7.7	None	Ball/Slv	$5\frac{9}{16}$	90.2	94.0	241	1	116311-00	**4M896**	59.00	**49.05**	5.2
A	5.7	2	120	7.7	None	Ball/Slv	$5\frac{7}{16}$	90.2	94.0	241	2	116883-50	**2M193**	56.00	**46.60**	4.9
A	5.7	2	240	5.1	Auto	Ball/Ball	$6\frac{1}{2}$	98.9	119.0	345	1	116604-00	**4M900**	93.00	**77.30**	5.8
A	5.7	2	220	5.8	None	Ball/Ball	$6\frac{1}{2}$	93.7	113.0	291	1	116111-00	**4M901**	93.00	**77.30**	5.7
A	5.7	2	240	4.0	None	Ball/Slv	$5\frac{13}{16}$	87.8	102.0	248	1	116312-00	**2M423**	69.00	**57.35**	4.2
A	5.7	2	240	4.0	Auto	Ball/Slv	$5\frac{9}{16}$	87.8	102.0	248	1	116670-50	**2M424**	75.00	**62.35**	4.1
A	5.7	2	240	4.7	None	Ball/Ball	$6\frac{1}{16}$	98.3	112.3	346	1	116343-00	**4M902**	85.00	**70.70**	7.0
A	5.7	2	220	3.5	None	Ball/Slv	$5\frac{9}{16}$	78.0	89.0	196	1	115756	**2M182**	84.00	**69.85**	4.9
A	5.7	2	100	12.2	None	Ball/Ball	$6\frac{1}{16}$	96.3	112.0	361	1	116831-00	**4M906**	76.00	**63.20**	8.0
A	5.7	2	24†	15.7	None	Ball/Ball	$5\frac{9}{16}$	47.9	65.4	90	1	116846-00	**4M899**	158.00	**131.30**	5.4
B	5.7	2	120	10.8	None	Ball/Ball	$6\frac{3}{16}$	100.4	122.0	447	1	115923	**4M903**	93.00	**77.30**	5.4
B	5.7	2	120	9.5	None	Ball/Slv	$5\frac{13}{16}$	96.4	115.0	356	1	115982	**4M982**	77.00	**64.00**	5.4
B	5.7	2	120	9.5	None	Ball/Ball	$5\frac{13}{16}$	96.4	115.0	356	1	116146-00	**2M186**	90.00	**74.85**	5.0
B	5.7	2	120	9.5	Auto	Ball/Ball	$5\frac{13}{16}$	96.4	115.0	356	1	116884-49	**4M905**	87.00	**72.30**	5.4
C	5.7	1	120	6.8	Auto	Ball/Slv	$4\frac{1}{2}$	63.0	112.0	190	1	116455-50	**2M425**	53.00	**44.05**	3.0
C	5.7	1	120	6.8	None	Ball/Slv	$4\frac{1}{2}$	63.0	112.0	190	1	116309-00	**2M194**	45.00	**37.45**	4.4
C	5.7	1	120	6.8	None	Ball/Slv	$4\frac{1}{2}$	63.0	112.0	189	2	116881-50	**4M911**	47.00	**39.10**	4.0
C	5.7	1	120	6.4	None	Ball/Slv	$4\frac{1}{2}$	57.4	107.0	177	1	115717	**2M264**	59.00	**49.05**	4.4
C	5.7	1	240	3.8	Auto	Ball/Slv	$4\frac{13}{16}$	61.7	113.0	197	1	116668-50	**2M427**	62.00	**51.60**	3.1
C	5.7	1	220	3.8	None	Ball/Slv	$4\frac{1}{2}$	61.7	113.0	198	1	116310-00	**2M426**	54.00	**44.90**	3.1
C	5.7	1	240	4.2	None	Ball/Slv	$4\frac{13}{16}$	69.2	120.0	235	2	116882-50	**4M909**	54.00	**44.90**	6.0
C	5.7	1	100	11.3	None	Ball/Slv	$5\frac{1}{4}$	75.6	122.0	343	1	116851-70	**4M912**	68.00	**56.55**	5.4
D	5.7	1	120	6.9	None	Ball/Slv	$4\frac{1}{2}$	60.6	123.0	227	2	116297-00	**2M203**	56.00	**46.60**	3.5
E	5.1	1	120	7.2	None	Ball	$5\frac{13}{16}$	73.3	116.0	282	2, 4, 3	116983-00	**4M970**	78.00	**64.85**	5.0
E	5.1	1	120	7.2	None	Ball	$5\frac{13}{16}$	66.5	114.8	268	2, 4	116982-00	**4M969**	67.00	**55.70**	4.0
E	5.1	1	120	6.4	None	Ball	$5\frac{13}{16}$	64.9	113.3	259	2, 4	116981-00	**4M971**	66.00	**54.90**	6.0
E	5.1	1	120	6.4	None	Ball	$6\frac{3}{16}$	64.9	113.3	259	2, 4	116988-00	**4M972**	70.00	**58.20**	4.0
E	5.1	1	120	6.0	None	Ball	$6\frac{3}{16}$	64.8	108.8	234	2, 4	117135-00	**4M973**	64.00	**53.20**	5.0
A	4.8	2	120	6.0	None	Ball/Slv	$5\frac{1}{16}$	76.3	85.8	171	1	116148-00	**4M974**	95.00	**79.00**	3.5
A	4.3	2	120	7.5	None	Ball/Ball	$6\frac{13}{16}$	70.8	92.5	177	1	116378-00	**4M975**	89.00	**74.00**	5.0
C	4.3	1	120	5.3	None	Ball/Slv	$7\frac{1}{16}$	43.9	79.2	86	1	116377-00	**4M976**	51.00	**42.40**	3.5

(*) Special Features: (1) Metal mounting brackets; (2) Thermoset brackets; (3) Two speed; (4) Shaft extension. (†) *DC Volts*

CAUTION: Not for fans in unattended areas.

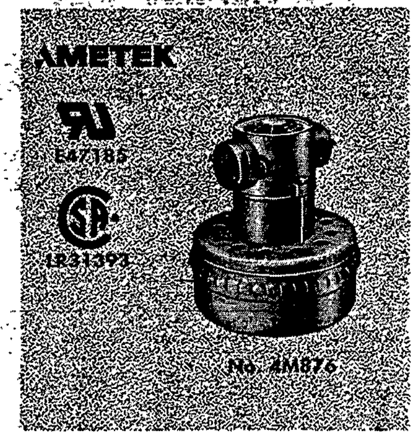
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

7.5 INCH DIAMETER INDUSTRIAL/COMMERCIAL VACUUM MOTORS/BLOWERS

Applications: Commercial vacuums, dental evacuators, hopper loaders, and material handling and transfer systems.

Features: Permanently lubricated ball bearings, peripheral discharge, long life design, and copper windings.

Bearings: Ball
Mounting: All position
Enclosure: Open
Thermal Protection: None
Insulation Class: A (except Nos. 4M880 and 4M878 are Class B)
Ambient: 40°C
Duty: Intermittent
Average Life: 1000 hours
Brand: Ametek



Blower Stages	Volts 50/60 Hz	Max. Amps	Over-all Ht.	Vacuum (In. H_2O Sealed)	CFM (2" Orifice)	Max. Air Watts	Spec. Feat.*	Ametek Model	Stock No.	List	Each	Shpg. Wt.
3	120	11.6	9 7/16"	88.2	126.0	360	—	114787	**2M179**	$405.00	**$336.75**	12.0
3	220	5.2	9 7/16	84.2	122.0	354	—	114789	**4M877**	497.00	**413.00**	13.0
3	42‡	30.0	9 7/16	87.9	126.0	360	—	115419	**4M876**	589.00	**489.75**	13.0
2	120	10.6	8 5/16	73.4	131.0	329	—	114786	**4M881**	401.00	**333.50**	11.0
2	220	4.8	8 5/16	70.2	146.0	329	—	114788	**4M879**	475.00	**395.00**	12.0
2	115	10.0	10 1/2	69.6	132.0	315	1	114586	**4M880**	1455.00	**1211.00**	16.0
2	230	5.0	10 1/2	61.2	123.0	299	1	114589	**4M878**	1537.00	**1278.00**	11.0

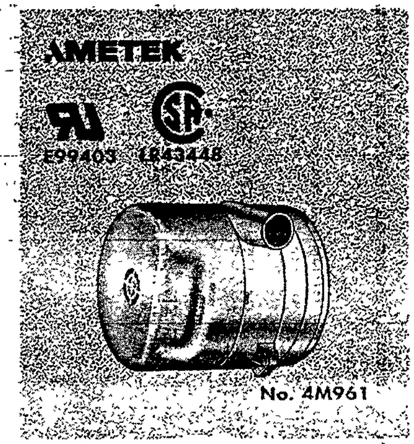
(*) Special Features: (1) Hazardous duty Class I Group D; Class II Groups E, F, and G. (‡) DC Volts.

5.7 INCH DIAMETER BRUSHLESS BLOWERS

Applications: Air beds, office equipment, material handling, and packaging equipment.

Features: 50/60 Hz, continuous long life operation, low noise to power ratio, adjustable air performance, compact size, and air intake and exhaust tube.

Bearings: Ball
Mounting: All position
Enclosure: Open
Thermal Protection: Auto
Insulation Class: A
Ambient: 40°C
Brand: Ametek



Blower Stages	Volts 60 Hz	Max. Amps	Over-all Ht.	Vacuum (In. H_2O Sealed)	CFM (2" Orifice)	Spec. Feat.*	Ametek Model	Stock No.	List	Each	Shpg. Wt.
3	120	5.2	7 5/8"	75.0	50.0	2	116632-06	**4M961**	$769.00	**$626.00**	6.5
2	120	4.8	7 1/8	49.0	90.0	2	116636-03	**4M963**	763.00	**621.50**	7.0
1	120	4.6	5 7/8	34.0	72.0	2	116634-01	**4M965**	728.00	**592.50**	6.0
1	120	4.8	6 1/8	28.0	120.0	2	116637-03	**4M966**	739.00	**601.50**	5.5
3	120	5.2	7 5/8	75.0	50.0	1	116638-08	**4M962**	774.00	**630.00**	6.0
2	120	4.8	7 1/8	49.0	90.0	1	116642-01	**4M964**	768.00	**625.50**	5.3
1	120	4.8	6 1/8	28.0	120.0	1	116643-01	**4M967**	745.00	**606.50**	4.9
1	120	4.7	5 7/8	34.0	72.0	1	116640-01	**4M968**	733.00	**597.00**	5.0

(*) Special Features: (1) Electronic control, analog voltage control, 0-10 Volt DC (not provided), (2) Mechanical control, adjustable 4-turn potentiometer

POWER NOZZLE MOTORS

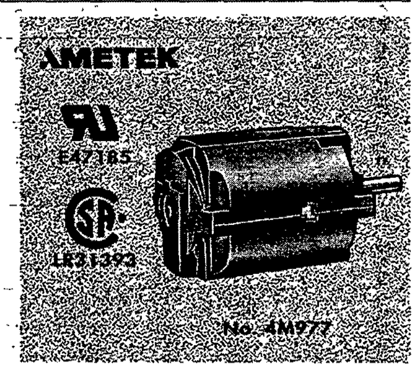
Applications: Suitable for motorized brush drive power head replacements

Features: Thermoset plastic housing, threaded mounting inverts, and thermal cutoff protector

Bearings: Ball/Sleeve

Mounting: 2.25" OC tapped #8-32; No. 4M978 10-32

Enclosure: Open
Thermal Protecton: One time non-reset
Insulation Class: A
Ambient: 40°C
Duty: Intermittent
Rotation: CCW facing shaft
Average Life: 200 hours
Brand: Ametek



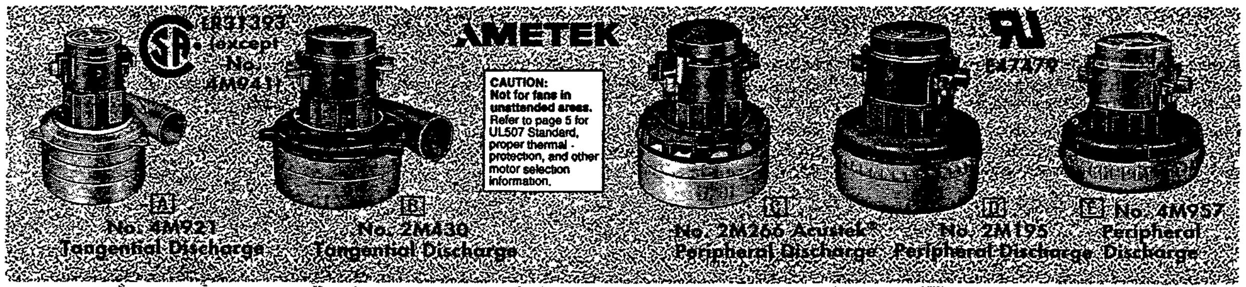
HP	RPM	Volts 60 Hz	Input Watts	Shaft Dimens.	Overall Length	Ametek Model	Stock No.	List	Each	Shpg. Wt.
0.15	19,500	120	480	.315 x 1.18"	4.68"	118154-54	**4M979**	$40.00	**$25.90**	1.6
0.16	20,000	120	240	.315 x 0.88	4.38	118155-54	**4M977**	40.00	**25.90**	1.6
0.12	15,000	120	300	.315 x 0.88	4.38	118157-54	**4M978**	40.00	**25.90**	1.6
0.09	12,000	120	240	.315 x 1.09	4.59	118158-54	**4M980***	60.00	**41.95**	3.0

(*) 4M980 geared shaft, includes bracket for Electrolux mounting.

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

WIDE RANGE OF CLEANING SUPPLIES AND EQUIPMENT AVAILABLE, SEE INDEX AT BACK OF CATALOG FOR COMPLETE LISTINGS

5.7 INCH DIAMETER BYPASS AC/DC VACUUM MOTORS/BLOWERS



Applications: Central, carwash, and utility vacuums; steam carpet cleaners; commercial/industrial vac systems; wet/dry uses.

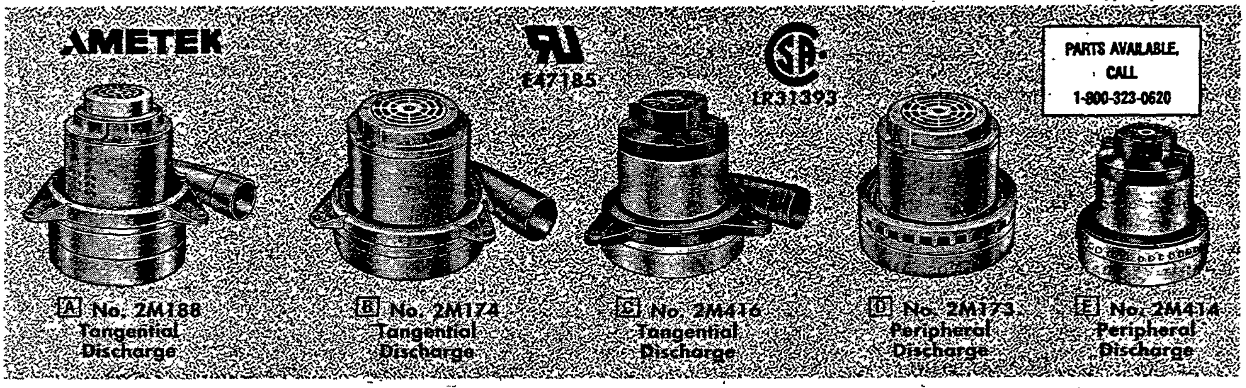
Features: Permanently lubricated bearings. Acustek® models up to 10 dB quieter. Copper windings. All position mounting. Open enclosure. Class A insulation. No thermal protection. 40°C Ambient. Intermittent duty. 500 hours average life.

Style	Blower Stages	Volts 50/60 Hz	Max. Amps	Bearings	Overall Ht.	Vacuum (In. H2O Sealed)	CFM (2" Orifice)	Max. Air Watts	Special Features*	Ametek Model	Stock No.	List	Each	Shpg. Wt.
A	3	120	13.5	Ball	8 1/16"	137.1	101.2	485	1, 3	116765-13	**4M921**	$153.00	**$127.20**	7.6
A	3	120	13.5	Ball	8 1/16	137.1	101.2	485	1	116765-00	**4M922**	147.00	**122.20**	7.6
B	3	120	10.7	Ball	7 13/16	117.4	99.0	368	2, 3	116565-13	**4M923**	143.00	**118.85**	7.0
B	3	120	10.7	Ball	7 13/16	117.4	99.0	368	2	116565-00	**4M925**	134.00	**111.35**	6.8
B	3	240	5.2	Ball	7 13/16	115.5	93.0	345	2	116859-00	**4M944**	139.00	**115.50**	3.9
B	3	120	10.7	Ball	7 13/16	117.4	99.0	386	2, 3, 5	116565-29	**4M924**	149.00	**123.80**	7.1
B	3	24†	21.5	Ball	7 13/16	67.6	69.0	142	2, 3	116515-13	**4M919**	160.00	**132.95**	6.7
B	3	36†	17.9	Ball	7 13/16	74.0	76.0	185	2, 3	116513-13	**4M918**	167.00	**130.50**	6.6
B	3	36†	17.9	Ball	7 13/16	74.0	76.0	185	2, 3, 4	116513-32	**4M920**	159.00	**132.15**	7.4
B	2	120	11.7	Ball	7	106.7	112.0	404	2, 3	116472-13	**4M937**	122.00	**101.40**	6.4
B	2	120	11.7	Ball	7	106.7	112.0	404	2	116472-00	**2M432**	110.00	**91.40**	5.0
B	2	120	9.9	Ball	7	92.5	97.4	301	2, 3, 7	116474-37	**4M983**	109.00	**90.60**	6.4
B	2	120	9.9	Ball	7	92.5	97.4	301	2, 7	116474-00	**4M938**	104.00	**86.45**	9.0
B	2	120	9.8	Ball	6 1/2	92.5	101.0	298	2, 3	116114-00	**4M939**	118.00	**98.10**	6.7
B	2	120	9.0	Ball	6 1/2	91.3	104.0	300	2	116207-00	**2M201**	110.00	**91.40**	5.0
B	2	120	8.0	Ball	6 1/16	88.1	96.0	289	1	115894	**4M926**	106.00	**88.10**	5.6
B	2	120	8.0	Ball	6 1/16	88.1	96.0	289	2	116210-50	**4M927**	105.00	**87.30**	5.6
B	2	120	8.2	Ball	6 1/2	88.2	105.5	285	2, 4	116210-85	**4M928**	111.00	**92.25**	5.6
B	2	120	8.6	Ball	6 1/2	81.8	97.0	248	2, 3	116392-00	**2M430**	88.00	**73.15**	4.6
B	2	120	8.6	Ball	6 1/2	81.8	97.0	250	2	116392-01	**4M929**	86.00	**71.45**	5.3
B	2	240	4.6	Ball	6 15/16	86.8	96.0	269	2	116213-00	**4M935**	126.00	**104.70**	5.9
B	2	230	6.7	Ball	7	100.5	126.3	413	2	116353-00	**4M936**	124.00	**103.10**	5.9
B	2	240	4.4	Ball	6 15/16	87.5	108.0	317	2, 3	116420-13	**4M934**	102.00	**84.80**	6.0
B	2	100	12.5	Ball	7	96.9	108.1	358	2	117160-13	**4M940**	114.00	**94.75**	[illegible]
B	2	24†	14.4	Ball	6 5/16	43.6	66.4	98	2, 3	116157-00	**4M933**	180.00	**149.60**	5.5
B	2	36†	15.1	Ball	6 15/16	82.8	77.0	161	2, 3	116409-13	**4M931**	145.00	**120.50**	7.0
B	2	36†	10.8	Ball	6 1/2	47.3	71.0	113	2, 3	116158-01	**4M932**	173.00	**143.75**	5.8
B	2	36†	10.8	Ball	6 1/2	47.3	71.0	113	2, 3, 4	116158-00	**4M930**	188.00	**156.25**	5.2
B	1	120	5.7	Ball/Sleeve	4 7/16	47.8	93.0	157	1	116520-50	**4M941**	64.00	**53.20**	4.2
C	3	120	11.1	Ball	7 13/16	119.6	100.0	382	2, 3	116764-13	**4M914**	142.00	**118.05**	7.1
C	3	240	5.2	Ball	7 13/16	112.2	96.0	346	2, 3	116945-13	**4M913**	147.00	**122.20**	7.1
C	2	120	11.3	Ball	6 15/16	107.1	110.0	367	2, 3	116763-13	**2M433**	120.00	**99.70**	5.3
C	2	120	9.2	Ball	6 1/2	91.5	103.0	293	2, 3	116758-13	**2M267**	90.00	**74.85**	4.9
C	2	120	9.2	Ball	6 1/2	91.5	102.0	293	2, 3, 6	116025-13	**4M916**	90.00	**74.85**	5.8
C	2	120	7.9	Ball	6 1/2	84.9	97.0	255	2, 3	116757-13	**2M266**	81.00	**67.35**	4.9
C	2	120	7.9	Ball	6 1/2	84.9	97.0	255	2, 3, 6	116024-13	**4M917**	82.00	**68.15**	5.7
C	2	240	4.9	Ball	7	95.2	111.0	362	2, 3	116296-13	**4M915**	103.00	**85.60**	5.6
D	3	120	10.7	Ball	7 13/16	117.4	99.0	368	2, 7	116566-13	**4M945**	138.00	**114.70**	6.9
D	3	24†	21.0	Ball	7 13/16	67.2	69.0	142	2, 3, 7	116514-13	**4M943**	156.00	**129.65**	6.7
D	3	36†	17.9	Ball	7 13/16	74.0	76.0	185	2, 3, 7	116512-13	**4M942**	153.00	**127.20**	6.8
D	2	120	11.7	Ball	7	106.7	112.0	404	2, 3	116471-13	**4M953**	117.00	**97.25**	6.1
D	2	120	11.7	Ball	7	106.7	112.0	404	2	116471-00	**2M431**	106.00	**88.10**	4.9
D	2	120	9.1	Ball	5 15/16	91.3	104.0	300	2	116212-00	**4M954**	109.00	**90.60**	5.5
D	2	120	9.1	Ball	6 15/16	93.2	101.0	332	2	116448-00	**4M955**	95.00	**79.00**	6.0
D	2	120	9.0	Ball/Sleeve	6 5/16	90.3	100.0	313	2	116493-50	**4M949**	79.00	**65.70**	5.2
D	2	120	8.0	Ball/Sleeve	6 5/16	88.1	96.0	292	2	115757-P	**2M265**	88.00	**73.15**	4.9
D	2	120	8.0	Ball	6 5/16	84.3	94.0	274	2	116336-01	**2M429**	72.00	**59.85**	4.2
D	2	120	8.0	Ball/Sleeve	6 5/16	84.3	94.0	274	2	116336-00	**2M195**	72.00	**59.85**	4.9
D	2	240	5.7	Ball	7	97.8	107.0	389	2	116354-00	**4M951**	113.00	**93.95**	5.8
D	2	240	4.9	Ball	7	95.4	112.0	360	2, 3, 6	116036-13	**4M952**	101.00	**83.95**	6.2
D	2	240	3.3	Ball/Sleeve	6 5/16	67.6	82.0	185	2	116125-00	**4M946**	83.00	**69.00**	5.2
D	2	220	3.2	Ball/Sleeve	6 5/16	69.0	82.0	211	2	115752	**4M948**	97.00	**80.60**	5.4
D	2	100	12.5	Ball	6 15/16	96.9	108.1	358	2, 3	116658-13	**4M956**	116.00	**96.40**	8.0
D	2	24†	14.4	Ball	6 1/2	43.6	66.4	98	2, 3	116155-00	**2M189**	163.00	**135.45**	5.4
D	2	36†	15.1	Ball	7 9/16	62.0	77.0	163	2, 3	116406-13	**4M950**	140.00	**116.35**	6.1
D	2	36†	10.8	Ball	6 1/2	47.3	70.7	113	2, 3	116156-00	**2M190**	156.00	**129.65**	5.0
E	1	120	7.0	Ball/Sleeve	5 3/16	49.5	133.0	291	2	116196-00	**4M960**	71.00	**59.05**	4.4
E	1	120	5.7	Ball/Sleeve	5 1/16	50.1	95.0	188	2	116325-00	**2M428**	56.00	**46.60**	2.8
E	1	220	3.3	Ball/Sleeve	6 9/16	50.8	99.0	201	2	116271-00	**4M957**	68.00	**56.55**	4.3
E	1	240	3.8	Ball/Sleeve	5 3/16	46.9	137.0	264	2	116340-00	**4M958**	73.00	**60.70**	6.0
E	1	220	3.8	Ball/Sleeve	5 3/16	45.9	129.0	255	2	115977	**4M959**	79.00	**65.70**	4.5

(*) Special Features: (1) Metal mounting brackets; (2) Thermoset brackets; (3) Air sealed bearing protection; (4) 7/8" inlet tube; (5) 1 1/2" inlet tube; (6) Double insulated; (7) Special non-clogging fans. (†) DC Volts.

INDUSTRIAL/COMMERCIAL VACUUM MOTORS

7.2 INCH DIAMETER BYPASS VACUUM MOTORS/BLOWERS



Applications:
- Central vacuums
- Steam carpet cleaners
- Carwash vacuums
- Commercial/industrial vacuum systems
- Wet/dry applications

Features:
- Tangential or peripheral air discharge
- Copper windings

Bearings: Ball
Mounting: All position
Enclosure: Open

Thermal Protection: None
Insulation Class: A
Ambient: 40°C
Duty: Intermittent
Average Life: 700 hours
Brand: Ametek

Style	Blower Stages	Volts 50/60 Hz	Max. Amps	Overall Ht.	Vacuum (in H_2O Sealed)	CFM (2" Orifice)	Max. Air Watts	Special Features*	Ametek Model	Stock No.	List	Each	Shpg. Wt.
A	3	120	13.8	7 59/64"	134.0	92.0	403	1, 3	116103-00	**2M188**	$256.00	**$213.00**	10.0
A	3	120	13.8	8 59/64	134.0	92.0	403	1, 3, 4	116161-00	**4M884**	269.00	**223.75**	10.0
A	3	120	12.6	7 23/32	134.0	94.0	438	1	116119-00	**2M202**	230.00	**191.25**	11.0
C	3	120	12.7	8 5/8	134.0	94.0	406	2, 3	117507-13	**4M885**	216.00	**179.75**	11.0
C	3	120	12.7	8 5/8	134.0	94.0	406	2	117507-00	**2M419**	196.00	**163.25**	9.0
D	3	120	14.7	7 13/16	131.4	105.0	447	1, 3	116118-00	**4M891**	250.00	**208.00**	10.0
E	3	120	12.0	8 5/8	134.5	92.0	395	2	117511-00	**2M415**	205.00	**170.50**	9.0
C	3	230	6.2	8 5/8	131.0	86.0	392	2	117741-00	**4M882**	212.00	**176.25**	11.0
A	3	220	5.5	8 59/64	106.0	87.0	306	1, 3	116136-00	**4M883**	281.00	**233.75**	10.0
A	2	120	12.7	6 13/16	110.1	105.4	392	1, 3	115937	**2M178**	235.00	**195.50**	9.5
A	2	220	5.5	6 13/16	95.0	98.9	308	1, 3	115950	**4M888**	261.00	**217.25**	9.6
B	2	120	13.0	6 1/16	110.0	102.7	384	1	115334	**2M174**	202.00	**168.00**	8.9
B	2	240	5.9	6 1/16	109.6	101.2	356	1	115684	**4M887**	242.00	**201.25**	9.3
C	2	120	12.8	7 11/16	123.0	110.0	455	2, 3	117467-13	**4M889**	204.00	**169.75**	10.0
C	2	120	12.8	7 11/16	123.0	110.0	455	2	117467-00	**2M418**	185.00	**153.75**	8.3
C	2	120	12.8	7 11/16	123.0	110.0	437	2, 3	117465-13	**2M417**	207.00	**172.25**	7.7
C	2	120	12.8	7 11/16	123.0	110.0	437	2	117465-00	**2M416**	186.00	**154.75**	7.5
C	2	240	6.1	7 11/16	114.8	108.1	440	2, 3	117157-13	**4M886**	202.00	**168.00**	10.0
C	2	100	14.3	7 5/16	114.9	104.1	415	2, 3	117917-13	**4M890**	206.00	**171.25**	9.3
D	2	240	5.5	6 3/16	91.9	106.8	312	1	115619	**4M892**	234.00	**194.75**	9.3
D	2	220	5.5	6 13/16	88.7	104.8	301	1, 3	115963	**4M893**	252.00	**209.50**	9.3
D	2	120	13.0	6 13/16	106.1	116.4	401	1, 3	115962	**2M187**	230.00	**191.25**	8.5
D	2	120	13.0	6 3/16	110.0	102.7	384	1	115330	**2M173**	195.00	**162.25**	8.5
E	2	120	12.9	7 5/16	113.3	104.0	407	2	117508-00	**2M414**	166.00	**137.95**	8.5
E	2	120	10.9	7 3/4	109.1	97.8	386	2	117560-01	**4M894**	228.00	**189.75**	9.2

(*) Special Features: (1) Metal mounting brackets; (2) Thermoset brackets; (3) Air sealed bearing protection; (4) 2-inch inlet tube.

NOTE: Thru flow vacuum motors are to be used in dry applications only. Bypass motors should not come in contact with foam, liquids, or moisture laden air. Applications should be designed to protect the motor's fan system, housing, and electric components.

REPLACEMENT BRUSH MECHANISM

For Nos. 2M182, 2M192 thru 2M195, 2M198, 2M199, 2M201, 2M203, 2M265, 2M266, 2M267, and 2M420 thru 2M433.
No. 1R236. Shpg. wt. 0.1 lb. List $6.30. Per pair....................**$5.66**

For Nos. 2M414 thru 2M419.
No. 1R454. Shpg. wt. 0.1 lb. List $25.65. Per pair **$15.18**

For Nos. 2M173, 2M174, 2M178, 2M187, 2M188, and 2M202.
No. 1R420. Shpg. wt. 0.1 lb. List $8.00. Per pair...................**$7.69**

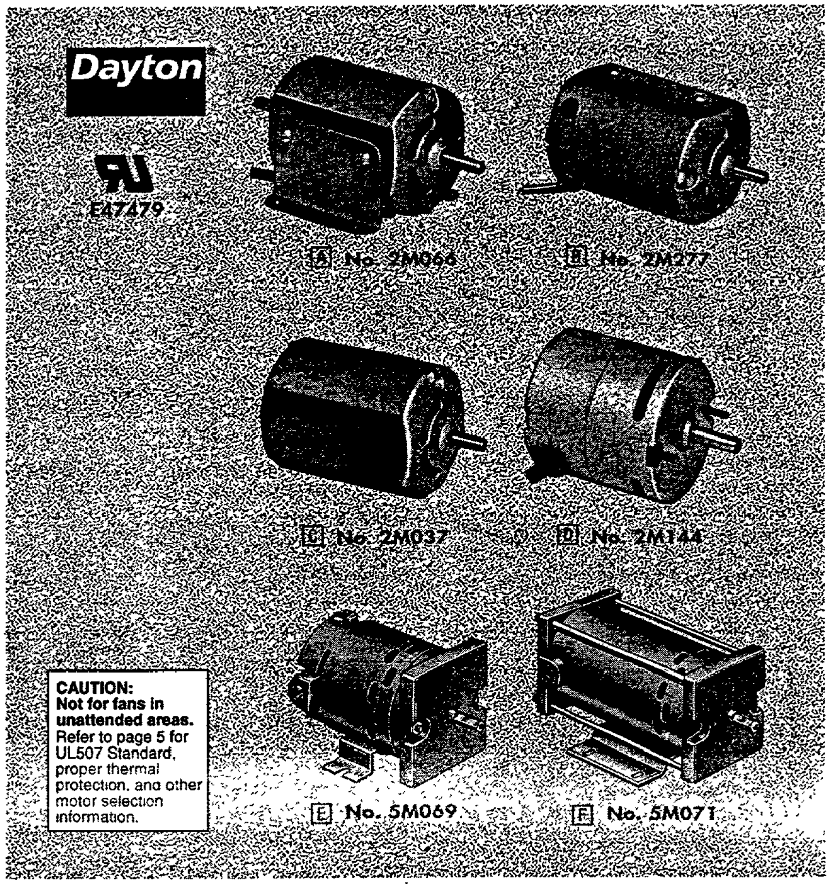
For No. 2M179.
No. 1R450. Shpg. wt. 0.1 lb. List $12.00. Per pair **$11.64**

CAUTION: Not for fans in unattended areas.
Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

UNIVERSAL TYPE AC/DC MOTORS

Typical Uses: Appliances, power tools, outdoor equipment, food processing equipment, gearmotors, blowers, pumps, and other applications where high horsepower output and small size are required. Series wound. Full-load speeds shown are adjustable with proper speed control. Average brush life approximately 300 hours, depending on application.

Enclosure: Open
Service Factor: 1.0
Thermal Protection: None
Windings: Copper
Ambient: 40°C
Finish: Gray enamel (except Nos. 5M069, 5M070, and 5M071 are black)
Brand: Dayton



CAUTION: Not for fans in unattended areas. Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

A 2¾" DIA., DOUBLE SHAFT

Mounting: Base with 2³⁄₁₆ x 2⁷⁄₁₆" OC

B & C 2¾" DIA., SINGLE SHAFT

Mounting: Side mounted motors have two tapped #10-32 holes, 2³⁄₁₆" OC on one or both sides
Special Features: No. 2M277 has externally replaceable brushes for extended motor life

D 3" DIA., SINGLE SHAFT

Mounting: Stud, two threaded studs extended out shaft endshield, 2⁷⁄₁₆" OC
CSA Certified: 83496

E 3" DIA., SINGLE SHAFT

Mounting: Base for 1/10 and 1/5 HP, two 1/4" slots on 2¹⁵⁄₁₆" centers

F 3" DIA., SINGLE SHAFT

Mounting: Base for 1/2 HP, four #10-32 holes on 2 x 2¹³⁄₁₆" OC and four 1/4" slots on 3¼ x 2¹³⁄₁₆" OC

HP	Key	Nameplate RPM	Rotation Facing Shaft End	Volts 60 Hz	Full-Load Amps	Bearings	Ins. Class	Body Dia.	Overall Length	Shaft Dimensions Dia. x L	Stock No.	List	Each	Shpg. Wt.
1/15	A	5000	CCW	115	1.2	Sleeve	A	2¾"	6⁷⁄₁₆"	1/4 x 1" ea	**2M066**	$42.50	**$37.90**	2.2
1/15	B	5000	CCW	115	1.2	Sleeve	A	2¾	5³⁄₁₆	1/4 x 3/4	**2M033**	35.00	**31.60**	2.0
1/15	B	5000	CCW	115	1.2	Sleeve	A	2¾	5³⁄₁₆	1/4 x 3/4	**2M277**	39.00	**35.20**	2.0
1/15	B	5000	CW	115	1.2	Sleeve	A	2¾	5³⁄₁₆	1/4 x 3/4	**2M034**	35.00	**31.60**	2.0
1/15	B	5000	CCW	115	1.2	Ball	A	2¾	5¼	5/16 x 7/8	**2M057**	54.00	**48.15**	2.0
1/10	C	8000	CCW	115	1.5	Ball	A	2¾	4⁹⁄₁₆	1/4 x 7/8	**2M037**	63.00	**56.15**	2.3
1/7	D	10,000	CCW	115	2.0	Sleeve	F	3	4⁹⁄₁₆	5/16 x 1	**2M144**	78.50	**75.05**	2.2
1/10	E	10,000	CCW	115	1.5	Ball	F	3	6	5/16 x 1	**5M069**	108.00	**88.60**	4.1
1/5	E	10,000	CCW	115	3.1	Ball	F	3	6⅜	5/16 x 1	**5M070**	119.00	**97.60**	4.5
1/2	F	10,000	CCW	115	7.3	Ball	F	3	8	3/8 x 1¼	**5M071**	167.00	**136.95**	7.2

DAYTON CARBON BRUSH AND COPPER COIL SPRING REPLACEMENTS

	CARBON BRUSH REPLACEMENTS				COPPER COIL SPRING REPLACEMENTS			
Replacements for:	**Stock No.**	**Qty./Pkg.**	**List**	**Each/Pkg.**	**Stock No.**	**Qty./Pkg.**	**List**	**Each/Pkg.**
2M033, 2M034, 2M037, 2M057, 2M066, and 2M276, Original Motors	**1R205**	12	$8.40	**$5.36**	**1R206**	12	$6.80	**$4.32**
2M033A, 2M034A, 2M037A, 2M057B, and 2M066A New Motors	**1R389**	12	10.60	**6.80**	**1R390**	12	7.75	**4.95**
2M144 Motor	**1R394**	2	11.90	**7.62**	—	—	—	—
2M277 Motor	**1R410**	6	24.00	**18.45**	—	—	—	—
5M069, 5M070, and 5M071 Motors	**5M072**	2	12.00	**8.50**	—	—	—	—

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UNIVERSAL TYPE AC/DC MOTORS

Typical Uses: Appliances, power tools, outdoor equipment, food processing equipment, gearmotor, blowers, pumps, and other applications where high horsepower output and small size are required. Series wound. Full-load speeds shown are adjustable with proper speed control. Average brush life approximately 300 hours, depending on application.

Enclosure: Open

Service Factor: 1.0

Thermal Protection: None

Windings: Copper

Insulation Class: A (except No. 2M139 is F)

Ambient: 40°C

Finish: Gray enamel

Brand: Dayton

[A] 3⅝" DIA., SINGLE SHAFT

Mounting: Stud with two threaded studs extending out shaft endshield, 2 7/16"

CSA Certified: 83496

[B] 3½ x 3¾" RECTANGULAR, SINGLE SHAFT

Mounting: Bottom with four tapped #10-32 holes, 2 x 2 13/16" OC

[C] 3⅝" DIA., FLEXIBLE SHAFT

OEM replacement for flexible shaft tools sold under many leading brand names. 13/16-24 left hand threaded endshield for attaching flexible shaft. Includes rocker-type On/Off switch on motor shell. Six ft. 18/3 power cord. External brushes.

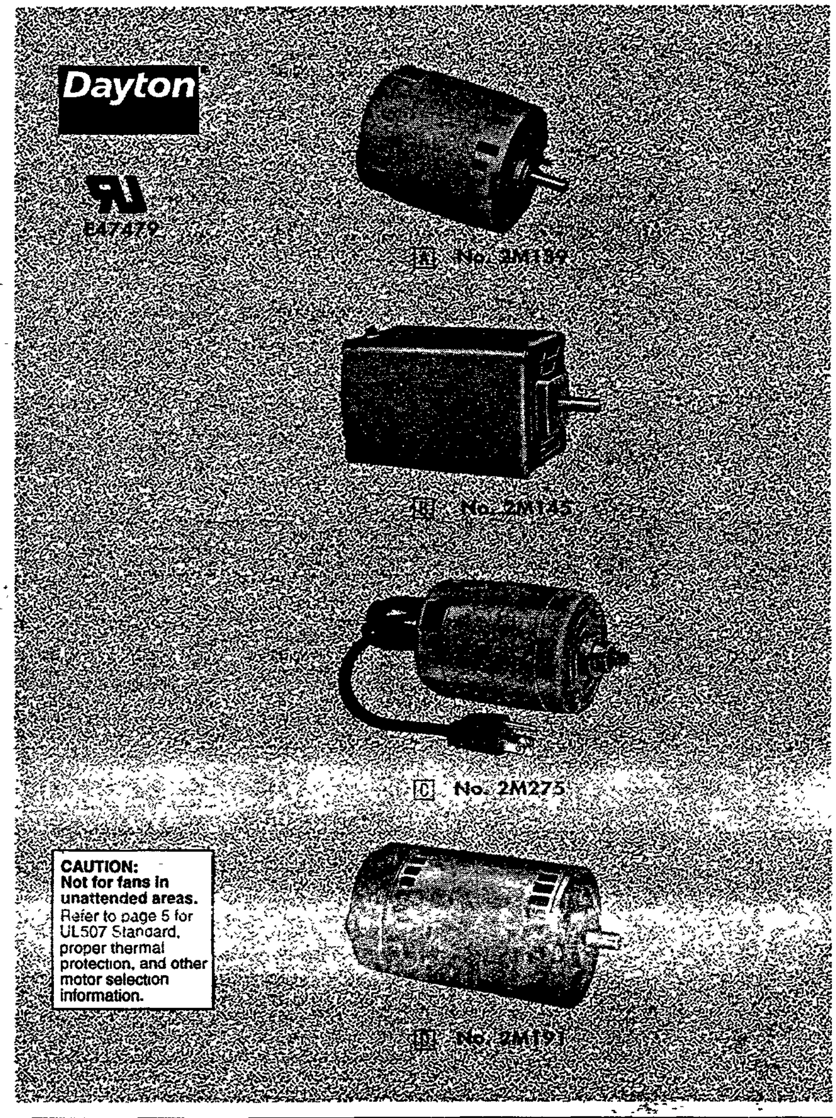
Mounting: Two #10-32 threaded holes in motor shell.

[D] 3⅞" DIA., SINGLE SHAFT

External brushes for long motor life in industrial applications.

Mounting: Face with four tapped #10-32, 3¼" OC 90° apart

CSA Certified: 87989



CAUTION: Not for fans in unattended areas. Refer to page 5 for UL507 Standard, proper thermal protection, and other motor selection information.

HP	Key	Nameplate RPM	Rotation Facing Shaft End	Volts 60 Hz	Full-Load Amps	Bearings	Ins. Class	Body Dia.	Overall Length	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
1/5	A	10,000	CCW	115	2.9	Sleeve	F	3⅜"	5½"	5/16 x 1"	**2M139**	$65.50	**$57.85**	2.8
1/2	B	10,000	CCW	115	6.3	Ball	A	3½ x 3¾	7/16	3/8 x 1¼	**2M145**	138.00	**122.95**	7.5
1/10	C	10,000	CCW	115	1.5	Sleeve	A	3⅜	5⅞	5/16 x ½	**2M275***	128.65	**112.70**	4.6
1	D	10,000	CCW	115	12.1	Ball	A	3⅞	9 1/32	7/16 x 1¼	**2M191**	200.50	**177.75**	10.0

(*) Limited availability—Contact local branch.

Dayton®

CARBON BRUSH AND COPPER COIL SPRING REPLACEMENTS

Replacements For:	Stock No.	Qty./Pkg.	List	Each/Pkg.
	CARBON BRUSHES			
2M145 Motor	**1R393**	2	$12.00	**$7.66**
2M139 Motor	**1R394**	2	11.90	**7.62**
	CARBON BRUSHES & COPPER COIL SPRINGS			
2M191 Motor	**1R473**	2	$11.60	**$7.41**
2M275 Motor	**1R474**	2	10.00	**7.12**

AUTOMATIC WASHER AND DISHWASHER REPLACEMENT MOTORS

AUTOMATIC WASHER MOTORS

CAUTION: Refer to page 5 for proper thermal protection and other motor selection information

Typical Uses: For replacing factory-installed motors in specific brands of home laundry appliances. Use on other applications voids warranty.

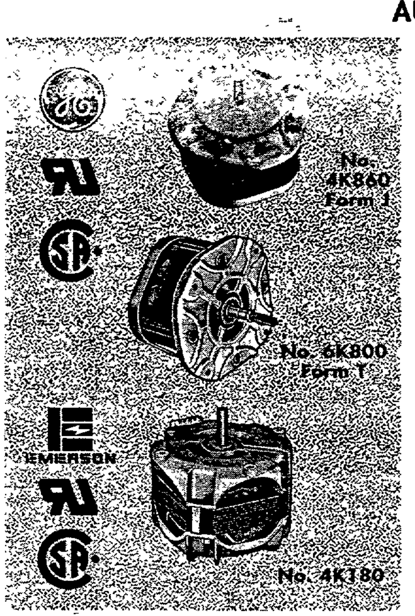
Special Features: Shaft and mounting dimensions are comparable to the original motor for easy replacement. Terminal switch is connected to motor in location convenient for installation. Wiring instructions included in carton; installation kit also included where required.

Type: Split-phase and capacitor-start
Volts: 115
Bearings: Sleeve
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: B (except Nos. 6K839 and 3K364 are F)
Ambient: 40°C
Duty: Continuous
Brand: Emerson and GE

Replaces Original Motor In:	Industry No.	HP	Name-plate RPM	Rotation Facing Shaft End	Full-Load Amps	Overall Dimensions Dia.	x Length	Stock No.	List	Each	Shpg. Wt.
GE BRAND, SINGLE AND TWO SPEED											
General Electric	4109	1/2	1725	Rev	8.5	5 29/32"	6 41/64"	**6K629**	$99.00	**$54.45**	13.0
	4110	1/2	1725	Rev	8.5	5 29/32	6 41/64	**6K669†**	110.00	**60.50**	13.0
(Mfr's. DB75S)	4216	1/3	1725	Rev	6.8	5 29/32	6 41/64	**3K019**	120.00	**66.00**	13.0
Norge, Signature	4007	3/4	1725/1140	Rev	11.0/9.0	5 29/32	7 7/8	**6K839**	132.00	**72.60**	16.0
	4212	3/4	1725/1140	Rev	11.0/9.0	5 29/32	7 21/64	**3K069**	129.00	**70.95**	17.0
Speed Queen	4121	1/2	1725/1140	Rev	8.7/8.0	5 29/32	10 1/4	**6K549**	115.00	**63.25**	15.0
	4010	1/2	1725/1140	Rev	9.4/7.0	5 29/32	9 32/64	**3K079**	128.00	**70.40**	16.0
Whirlpool, Kenmore	4091	1/2	1725/1140	CW	8.4/7.0	5 29/32	8 43/64	**6K089**	90.00	**49.50**	16.0
White-Westinghouse "CPA"	9019	1/2	1725/1140	Rev	9.1/7.8	5 29/32	10 3/4	**3K364***	150.00	**82.50**	17.0
EMERSON BRAND, TWO SPEED											
Speed Queen	4121	1/2	1725/1140	Rev	9.2/8.5	6 1/8	10 1/2	**4K166**	115.00	**79.35**	16.0
Admiral, Easy, Franklin, Gibson Hamilton and Kelvinator	9007	1/2	1725/1140	Rev	9.0/8.2	6 1/8	8 3/4	**4K190***	144.00	**86.35**	17.0
Whirlpool, Kenmore	4091	1/2	1725/1140	CW	9.8/8.7	6 1/8	9 1/2	**4K161**	91.00	**62.75**	18.0
Maytag	9018-4061	1/2	1725/1140	Rev	8.5/8.2	6 1/8	9 1/8	**2K174**	145.00	**72.35**	18.0
Speed Queen	—	1/2	1725/1140	Rev	9.8/8.2	6 1/8	9 7/8	**2K184**	142.00	**71.00**	18.0
Frigidaire	—	1/2	1725/1140	Rev	9.3/8.0	6 1/8	8 1/2	**2K175**	149.00	**74.50**	19.0
Norge	—	3/4	1725/1140	Rev	10.8/8.9	6 1/8	7 1/2	**2K185**	140.00	**70.05**	17.0
EMERSON BRAND, SINGLE SPEED											
Whirlpool, Kenmore	4061	1/2	1725	CW	8.8	6 1/8	8 1/2	**2K177**	145.00	**72.35**	17.0

(*) Capacitor start. (†) Includes relay.

AUTOMATIC DISHWASHER MOTORS



Typical Uses: For replacing factory-installed motors in specific brands of home dishwasher appliances. Use on other applications voids warranty.

Special Features: Shaft and mounting dimensions are comparable to the original motor for easy replacement. Terminal switch is connected to motor in location convenient for installation. Wiring instructions included in carton; installation kit also included where required.

Type: Split-phase
Volts: 115
Bearings: Sleeve
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Windings: Copper
Brand: Emerson and GE

Replaces Original Motor In	Industry No.	HP	Name-plate RPM	Rotation Facing Shaft End	Full-Load Amps	Overall Dimensions Dia.	x Length	Stock No.	List	Each	Shpg. Wt.
GE BRAND, SINGLE SPEED											
D & M†	4093‡	1/3	3450	Rev	5.0	6 1/2"	5 5/16"	**4K860***	$74.00	**$40.70**	9.0
Whirlpool	4123	1/3	3450	Rev	5.3	6 1/2	6 5/32	**6K800**	103.00	**56.65**	11.0
EMERSON BRAND, SINGLE SPEED											
D & M†	4093‡	1/3	3450	Rev	6.5	6 19/64	5 9/16	**4K180***	65.00	**44.85**	9.2
Frigidaire	—	1/3	3450	Rev	5.3	6 5/16	5 7/8	**2K124**	120.00	**59.85**	9.0

(†) Includes Admiral, Caloric, Chambers, Frigidaire, Gaffers & Sattler, Gibson, Kelvinator, Kenmore, Magic Chef, Modern Maid, Norge, Philco, Preway, Roper and Westinghouse.
(‡) Used on dishwashers built after 1966. (*) Includes relay.

Pump Seal Kit for Nos. 4K180 and 4K860: 3-pc. assembly requires no lubrication or sealant during installation other than water. Five 3-pc. assemblies per package.

No. 1A683. Pump Seal Kit. Shpg. wt. lbs. 0.2 List $40.00. Each **$26.90**

HOME AND COMMERCIAL REPLACEMENT APPLIANCE MOTORS

DRYER REPLACEMENT MOTORS

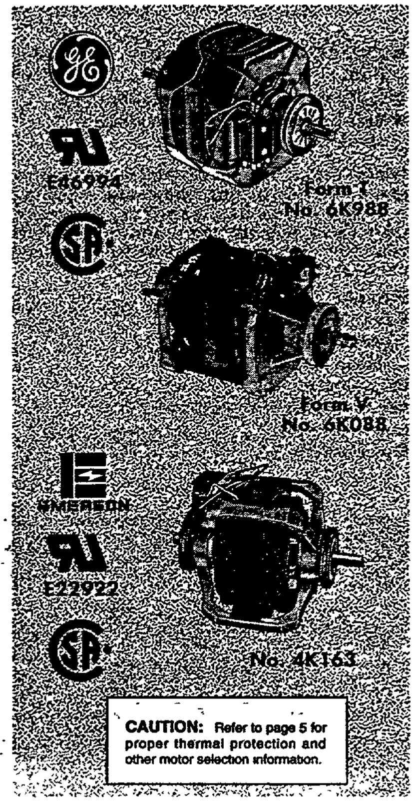
Typical Uses: For replacing factory-installed motors in specific brands of home laundry appliances. Use on other applications voids warranty.

Special Features: Shaft and mounting dimensions are comparable to the original motor for easy replacement. Terminal switch is connected to motor in location convenient for installation. Wiring instructions included in carton; installation kit also included where required.

Bearings: Sleeve
Volts: 115
Service Factor: 1.0
Thermal Protection: Auto
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Brand: Emerson and GE
UL File Nos.: GE E46994 and Emerson E22922

Replaces Original Motor In:	Industry No.	HP	Name-plate RPM	Rotation Facing Lead End	Full-Load Amps	Overall Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
GE BRAND, SPLIT-PHASE, DOUBLE SHAFT										
General Electric	4056	1/3	1725	CW	6.4	5 29/32 x 10 9/16"	6K988	$117.00	$64.35	12.0
Norge, Signature	4215	1/2	1725	CW	7.2	5 29/32 x 9 1/64	3K048	110.00	60.50	15.0
Speed Queen (Mfr's. 52697)	4105	1/4	1725	CW	5.4	5 1/32 x 8 3/4	6K548	109.00	59.95	9.5
Whirlpool, Kenmore	4096	1/3	1650	CCW	5.6	5 5/16 x 9 63/64	6K088	85.00	46.75	9.5
White-Westinghouse	9006	1/4	1725	CCW	4.8	5 29/32 x 10 5/32	6K568	108.00	59.40	8.0
GE BRAND, CAPACITOR-START, DOUBLE SHAFT										
Norge, Signature	4015	1/2	1725	CW	7.4	5 29/32 x 8 15/16	6K758	108.00	59.40	15.0
EMERSON BRAND, SPLIT-PHASE, DOUBLE SHAFT										
Maytag	4067	1/4	1725	CW	6.0	5 1/4 x 9 1/2	2K120*	138.00	68.85	12.0
Maytag	—	1/4	1725	CW	5.4	5 1/4 x 9 1/2	2K149	138.00	68.85	12.0
Speed Queen	4213	1/4	1725	CW	5.4	5 1/4 x 9 5/16	4K163	101.00	60.50	12.0
Frigidaire	4214	1/4	1725	CW	6.0	5 1/4 x 10 7/8	2K123	139.00	69.55	11.0
Gibson, Admiral, Kelvinator	4094	1/4	1725	CCW	5.2	5 1/4 x 10	2K125	153.00	76.70	12.0
White-Westinghouse	—	1/4	1725	CCW	4.2	5 1/4 x 10 1/2	2K159	121.00	60.65	9.5
Admiral, Gibson, Frigidaire, Easy, Kelvinator	—	1/3	1725	CCW	6.4	5 1/4 x 9 1/3	4K183	154.00	92.40	11.0
Kenmore, Whirlpool	4096	1/3	1725	CCW	5.9	5 1/4 x 9 13/16	4K070	72.00	49.70	10.0
Norge	4017-4098	1/2	1725	Rev.	8.2	5 3/4 x 9 3/4	2K015	109.00	54.60	15.0

(*) Single shaft design.



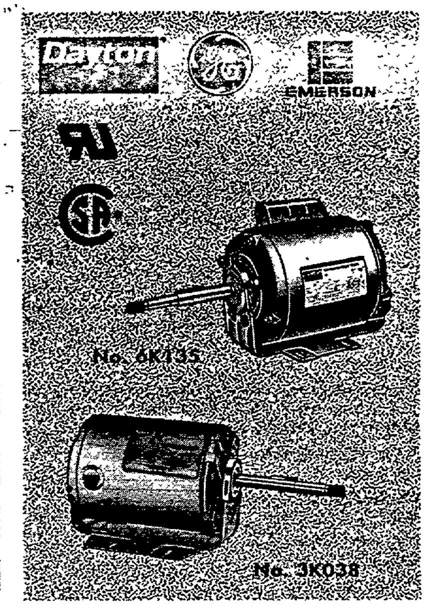
CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

COMMERCIAL WASHER AND DRYER REPLACEMENT MOTORS

Typical Uses: Built specifically for replacement use on commercial dryers manufactured by Cissel, Huebsch, and washers by Speed Queen.

Special Features: Dual voltage on capacitor models. 3/4" dia. shaft bushing included with No. 3K038.

Bearings: Prelubricated ball
Mounting: Cradle
Enclosure: Open dripproof
Thermal Protection: Auto (except No. 3K038 has none)
Windings: Copper
Insulation Class: B (except Dayton models have A)
NEMA Frame: 56Z
Ambient: 40°C
Duty: Continuous
Rotation: CW facing shaft (except No. 2K145 is reversible)
Finish: Gray enamel
Brand: Dayton, GE, and Emerson
UL File Nos.: Dayton E47479; GE E47088; and Emerson E22922



HP	Name-plate RPM	Volts 60 Hz	Full-Load Amps at 115V	Full-Load Amps at 230V	Service Factor	Shaft Dimensions Dia. x Length	Industry No.	Stock No.	List	Each	Shpg. Wt.
DAYTON BRAND, CAPACITOR-START, DRYER, HUEBSCH											
1/3	1725	115/230	7.0	3.5	1.35	5/8 x 5 9/16"	4048	4K136	$193.00	$120.65	21.0
1/2	1725	115/230	9.2	4.6	1.25	3/4 x 5 1/2	4014	6K135	269.00	127.30	26.0
GE BRAND, SPLIT-PHASE, DRYER, HUEBSCH											
1/3	1725	115	5.5	—	1.35	5/8 x 5 9/16	4050	3K038	171.00	94.75	19.0
EMERSON BRAND, SPLIT-PHASE, AUTOMATIC WASHER, SPEED QUEEN											
1/2	1725/1140	115	9.2	—	1.0	1/2 x 3 3/4	—	2K181	182.00	91.00	12.0
EMERSON BRAND, SPLIT-PHASE, DRYER, REVERSIBLE, CISSEL											
1/3	1725	115	5.9	—	1.0	5/8 x 1 7/8	—	2K145	151.00	75.50	12.0

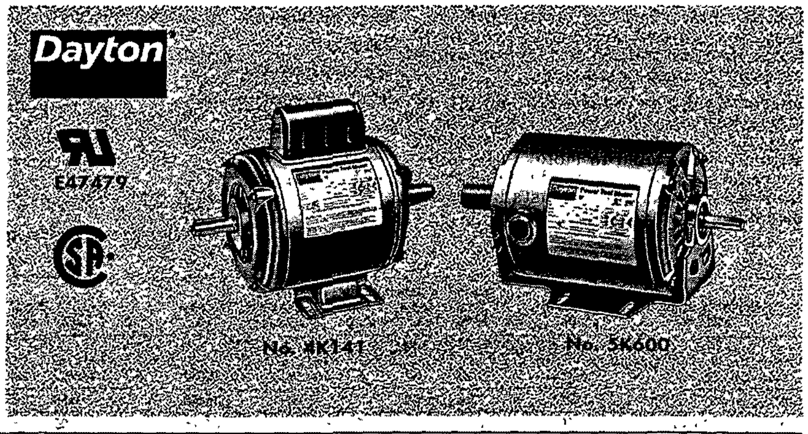
POWER TOOL AND VIBRATOR MOTORS

DAYTON BRAND, POWER TOOL MOTORS

- CW/CCW rotation by easy reconnection
- Suitable for all position mounting
- Ball bearing designs are double-shielded

Typical Uses: High speed moderate starting torque woodworking and metal-working tools; wood lathes, sanders, grinders, table saws, planers and other applications where maximum HP load will not exceed nameplate rating.

Enclosure: Open dripproof.
Service Factor: 1.0
Insulation Class: A
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM	NEMA Frame	Thermal Protection	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Bearings	Shaft Dimensions Dia. x Length	Stock No.	List	Each	Shpg. Wt.
CAPACITOR-START, DOUBLE SHAFT, RIGID WELDED BASE											
1/2	3450	56	Manual	115/230	8.0/4.0	Ball	5/8 x 1⅞" ea.	**4K141**	$202.00	**$141.90**	19.0
	3450	56	None	115/230	8.0/4.0	Ball	5/8 x 1⅞ ea.	**5K285**	188.00	**132.00**	19.0
	1725	56	Manual	115/230	9.0/4.5	Ball	5/8 x 1⅞ ea.	**4K142**	226.00	**159.00**	19.0
	1725	56	None	115/230	9.0/4.5	Ball	5/8 x 1⅞ ea.	**4K781**	212.00	**148.85**	22.0
3/4	3450	56	Manual	115/230	9.8/4.9	Ball	5/8 x 1⅞ ea.	**4K143**	232.00	**163.00**	25.0
	3450	56	None	115/230	9.8/4.9	Ball	5/8 x 1⅞ ea.	**5K286**	218.00	**153.25**	25.0
	1725	56	Manual	115/230	11.4/5.7	Ball	5/8 x 1⅞ ea.	**4K144**	262.00	**184.00**	27.0
	1725	56	None	115/230	11.4/5.7	Ball	5/8 x 1⅞ ea.	**4K783**	248.00	**174.25**	26.0
1	3450	56	Manual	115/230	14.4/7.2	Ball	5/8 x 1⅞ ea.	**4K145**	248.00	**174.25**	24.0
	1725	56	Manual	115/230	13.6/6.8	Ball	5/8 x 1⅞ ea.	**4K146**	289.00	**203.00**	30.0
CAPACITOR-START, DOUBLE SHAFT, RIGID CRADLE BASE											
1	3450	56	Manual	115/230	14.0/7.0	Ball	1/2 x 1$\frac{9}{16}$ & 5/8 x 1⅞	**6K720***	300.00	**219.00**	27.0
CAPACITOR-START, SINGLE SHAFT, RIGID WELDED BASE											
1½	3450	66	Manual	115/230	16.4/8.2	Ball	3/4 x 2¼	**5K242**	325.00	**248.75**	35.0
SPLIT-PHASE, DOUBLE SHAFT, RIGID CRADLE BASE											
1/3	3450	48	None	115	6.6	Sleeve	1/2 x 1½ x 1/2	**5K600**	110.00	**80.05**	14.0
1/2	3450	48	None	115	8.6	Sleeve	1/2 x 1½ x 1/2	**6K866**	139.50	**101.80**	15.0
SPLIT-PHASE, SINGLE SHAFT, RIGID CRADLE BASE											
1/3	3450	48	None	115	6.6	Sleeve	1/2 x 1½	**5K586**	104.00	**75.50**	14.0
1/2	3450	48	None	115	8.6	Sleeve	1/2 x 1½	**6K844**	134.00	**97.40**	16.0

(*) Equipped with On/Off switch on shell and 6 ft. 3-conductor cord set.

CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

VIBRATOR MOTORS

Typical Uses: For use with optional No. 2C703 strap-type mounting base in a wide range of furniture, industrial, and lab applications where ventilation is not impeded.

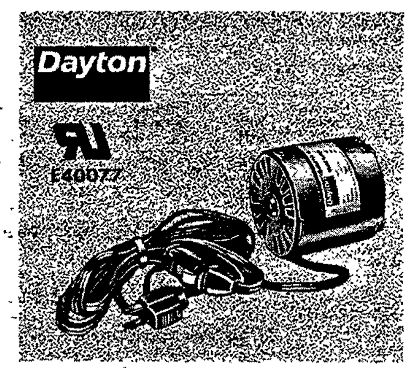
Special Features: No exposed moving parts. Equipped with 10 ft. 3-conductor cord set and in-line On/Off switch.

Type: Shaded pole
HP: 1/200
Nameplate RPM: 1550
Volts: 115, 60 Hz
Full-Load Amps: 0.5
Bearings: Sleeve
Mounting: Base

Enclosure: Open
Service Factor: 1.0
Thermal Protection: Impedance
Windings: Copper
Insulation Class: A
Dimensions: 3½" long x 3$\frac{5}{16}$" dia.
Ambient: 40°C.
Finish: Black enamel
Brand: Dayton

No. 3M564. Shpg. wt. 2.7 lbs. List...$42.00.
Each...**$31.80**

No. 2C703. Strap Type Base with bolt mounting holes 7/8 x 3" OC.
Shpg. wt. 0.4 lbs. List...........................$7.83.
Each $4.69; Lots 4 ....**$4.46**



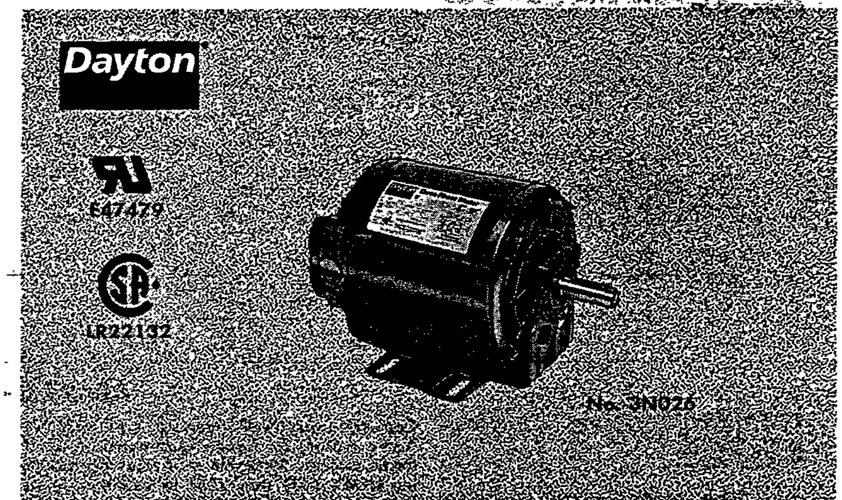
SEWING MACHINE MOTORS

DAYTON BRAND, 3-PHASE

- NEMA service factors provide a reserve margin for intermittent overloading or fluctuating (high/low) voltage conditions
- NEMA design B

Typical Uses: Designed for operating industrial-type sewing machine clutches. Also used for other belt-driven applications where 3-phase power is supplied.

Bearings: Double-shielded ball
Mounting: Cradle base
Enclosure: Open dripproof
Windings: Copper
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: Dayton



HP	Nameplate RPM at: 60 Hz	Nameplate RPM at: 50 Hz	NEMA Frame	Thermal Protection	Volts 60/50 Hz*	Full-Load Amps at Nameplate Volts	Service Factor	NEMA Nominal Efficiency	Ins. Class	Stock No.	List	Each	Shpg. Wt.
1/3	1725	1425	56	None	208-220/440	1.4-1.4/0.7	1.35	66.0	A	3N026	$168.00	$128.45	18.0

(*) Operable on 50 Hz, 190/380V, at 50 Hz RPM.

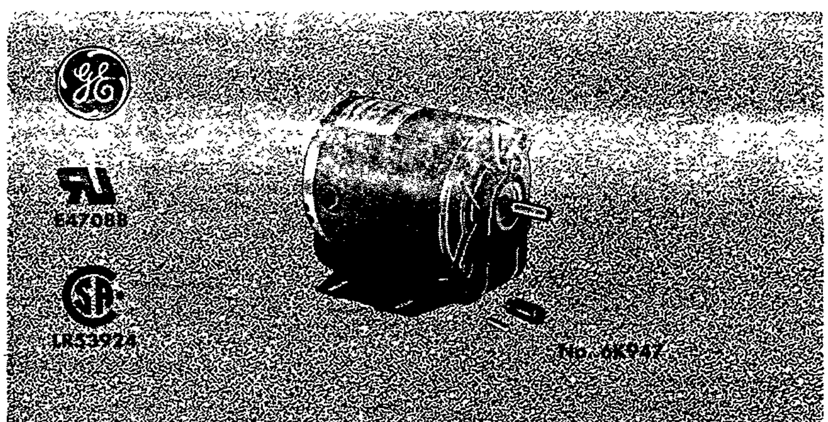
CAUTION: Refer to page 5 for proper thermal protection and other motor selection information.

GE BRAND, SPLIT-PHASE

- All-angle sleeve bearings

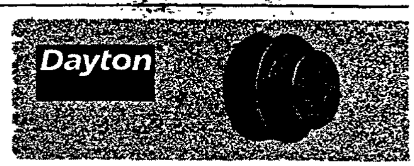
Typical Uses: Designed for operating industrial-type sewing machine clutches. Also used for other belt-driven applications where maximum HP load will not exceed nameplate rating.

Type: Split-phase
Bearings: Sleeve
Mounting: Cradle base
Enclosure: Open dripproof
Thermal Protection: None
Insulation Class: B
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray enamel
Brand: GE



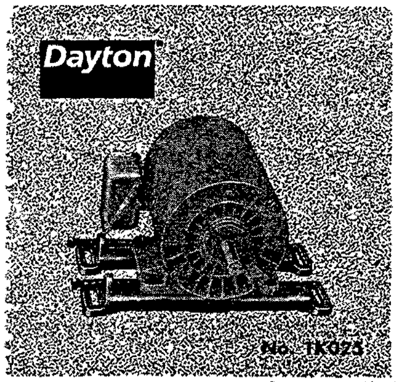
HP	Nameplate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Shaft Dimensions Dia. x Length	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1/3	1725	56Z	115	6.2	1.0	1/2 x 1½"	4377	6K947	$124.00	$69.55	14.0

MOTOR PULLEY REPLACEMENT FOR DOMESTIC SEWING MACHINES



Description	Stock No.	List	Each	Shpg. Wt.
Motor Pulley, 7/8" Dia., 1/4" Bore	1X459	$3.61	$2.80	0.1

MOUNTING BASES AND RAILS

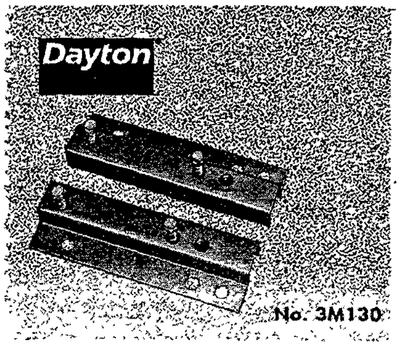


CAST-IRON MOTOR MOUNTING RAILS

For floor-mounting NEMA 56 frame and all larger size motors.

Slotted ends on all models. Adjusting screw, hardware included. Black finish. Dayton brand.

For NEMA Frames	Overall Dimensions H	W	L	Stock No.	List	Each Pair	Shpg. Wt.
56, 66 143T, 145T	3/4" 3/4	2¼" 2¼	10⅞" 10⅞	1K025	$33.00	$24.64	4.2
182T-215T 182-215	7/8 7/8	3⅛ 3⅛	15½ 15½	3K343	40.00	27.20	7.4
254T-286T 254U-286U	1 1	4¼ 4¼	18½ 18½	1K027	51.00	39.40	12.0
324T, 326T 324U, 326U	1⅛ 1⅛	4½ 4½	24⅛ 24⅛	1K028	67.00	50.95	21.0
364T 364U	1⅛ 1⅛	4½ 4½	30¾ 30¾	1K029	100.00	74.95	29.0

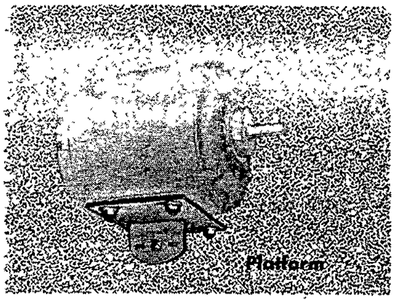


ADAPT-O-MOUNTS

Convert mounting dimensions of NEMA T frame motors to mounting dimensions of U frame motors. Available in 4 sizes for adapting NEMA 143T thru 256T to 182 thru 286U frame mounting dimensions.

Adapt-O-Mounts compensate for the difference in mounting hole locations and shaft height; they do not alter the motor axial center lines or end of shaft extension. Corrosion-resistant gray primer finish. Zinc-plated bolts included. Motor mounting holes have nuts welded on base for easy installation. Not for ceiling or side-wall installations. Gray finish. Dayton brand.

CONVERTS From NEMA T Frames	To NEMA U Frames	Adapt-O-Mount Dimensions Height	Width	Length	Stock No.	List	Each Pair	Shpg. Wt.
143T or 145T	182 or 184	1"	2¼"	7½"	3M130	$22.00	$13.55	2.1
182T or 184T	213 or 215	3/4	1⅞	9½	3M131	31.00	21.10	2.7
213T or 215T	254U or 256U	1	2½	13	3M132	43.00	25.35	4.7
254T or 256T	284U or 286U	3/4	2½	14½	3M367	61.00	34.10	7.2



AIR CIRCULATOR MOTOR MOUNTING BASES

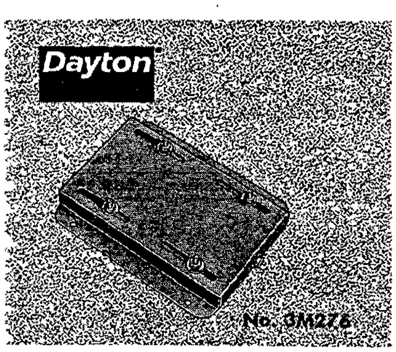
Mounts permit fast, easy assembly of air circulator head to pedestal, wall/ceiling or suspension brackets. Design also allows mounting OSHA-compliance guards to motor thru-bolts without modification to guard. All bases have 3/8" mounting hole in yoke. Constructed of heavy-gauge steel with baked-on gray enamel finish.

Platform mount. For 48 and 56 frame, rigid base motors. 4⅛ x 5⅛" platform. Punched 11/32" slotted motor mounting holes. Motor mounting bolts listed below

Motor mounting bolts. Set of four 5/16"-18 x 5/8" long carriage bolts.

No. 2C294. Shpg. wt. 0.2 lbs. List......$8.39. Each...$5.02

Mount Type	For use with Dayton Motor Type:	Stock No.	List	Each	Lots 4	Shpg. Wt.
Platform	48, 56 Frame, Rigid Base, 4⅛ x 5⅛"	1C386	$7.70	$4.54	$4.09	1.0



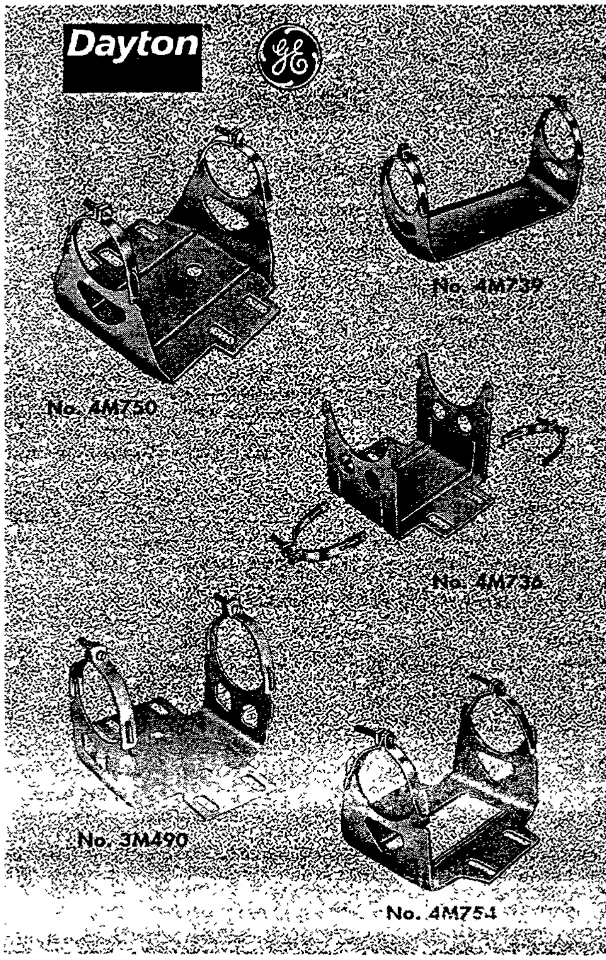
ADJUSTABLE STEEL MOTOR BASES

Simplify floor-mounting and belt tension adjustment on NEMA 56 thru 215T and U frame motors.

One-piece steel mounting bases have single adjusting bolt to position mounted motor for proper belt tension during initial installation and at later maintenance checks. Four motor mounting bolts included. Not for ceiling or sidewall installations. Gray finish. Dayton brand.

For NEMA Frame	Base Dimensions Height	Width	Length	Bolt Size	Stock No.	List	Each	Shpg. Wt.
56	1⅛"	6½"	10⅝"	5/16"	3M276	$28.00	$14.50	3.3
143T	1⅛	7½	10½	5/16	3M277	34.00	17.75	4.7
145T	1⅛	8½	10½	5/16	3M278	34.00	18.10	5.6
182T, 182	1½	9½	12¾	3/8	3M279	44.00	23.00	9.0
184T, 184	1½	10½	12¾	3/8	3M280	45.00	23.55	9.8
213T, 213	1¾	11	15	3/8	3M281	53.00	27.80	14.0
215T, 215	1¾	12½	15	3/8	3M282	56.00	29.60	15.0

MOTOR MOUNTING BASES



Used to mount shaded pole and PSC motors in direct-drive heating and air conditioning motors. Includes set of clamps (except No. 2W345).

FOR 4" DIA. (GE 11 FRAME) MOTORS WITH 1 3/4" RINGS

Mounting Holes OC A	B	Construction	Length	Shaft Height	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
2 3/8"	1 1/8"	Open, TENV	4 1/2"	2 1/4"	A438	4M739	$12.00	$5.14	0.3
2 3/8	1 1/8	TEFC	5 1/2	2 1/4	A440	4M740	12.00	5.14	0.3
2 3/8	1 1/8	Open, TENV	4 3/4	2 1/4	A439	4M741	12.00	5.14	0.3
2 3/8	1 1/8	TEFC	5 3/4	2 1/4	A441	4M742	12.00	5.14	0.3

FOR 5" DIA. (NEMA 42 FRAME) MOTORS WITH 2 1/4" RESILIENT RINGS

Mounting Holes OC A	B	Length	Shaft Height	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
11/16"	3 11/16"	5 1/8"	2 5/8"	A449	4M750	$12.00	$5.14	1.2
11/16	3 11/16	5 3/8	2 5/8	A450	4M645	12.00	5.14	1.2
11/16	3 11/16	5 5/8	2 5/8	A451	4M646	12.00	5.14	1.2
1 11/16	3 3/4	6 1/2	2 5/8	A453	4M733	12.00	5.14	1.2
1 11/16	3 3/4	5 1/4	3 1/2	A455	4M736	10.00	5.14	1.2

FOR EVAPORATIVE COOLER MOTORS (NEMA 56 FRAME) W/ 2 1/2" RINGS

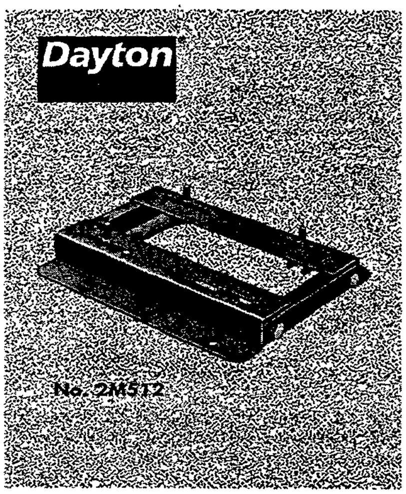
Mounting Holes OC A	B	Length	Shaft Height	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
3"	4 7/8"	7 7/16"	3 1/2"	—	2W345	$11.00	$5.45	1.5

FOR 5 5/8" DIA. (GE 39 FRAME) MOTORS WITH 2 1/4" RINGS

Mounting Holes OC A	B	Length	Shaft Height	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
1 11/16"	4 7/8"	4 1/8"	3 1/2"	A468	4M754	$18.00	$7.93	2.0
1 11/16	4 7/8	4 3/8	3 1/2	A469	4M755	18.00	7.93	2.0
1 11/16	4 7/8	4 5/8	3 1/2	A470	4M756	18.00	7.93	1.5
1 11/16	4 7/8	4 7/8	3 1/2	A471	4M757	18.00	7.94	1.2
1 11/16	4 7/8	5 1/8	3 1/2	A472	4M758	18.00	7.93	1.5
1 13/16	4 7/8	5 3/8	3 1/2	A473	4M759	18.00	7.93	2.0
1 11/16	4 7/8	5 5/8	3 1/2	A474	4M760	18.00	7.93	1.8
1 11/16	4 7/8	6 1/16	3 1/2	A476	4M761	18.00	7.93	1.8
1 11/16	4 7/8	6 5/8	3 1/2	A475	4M762	18.00	7.93	[illegible]

FOR 5 5/8" DIA. (NEMA 48 FRAME) MOTORS WITH 2 1/2" RINGS

Mounting Holes OC A	B	Length	Shaft Height	Stock No.	List	Each	Shpg. Wt.
1 11/16"	4 3/4"	4 1/2"	3"	3M490	$7.65	$6.12	1.1
1 11/16	4 3/4	5 1/4	3	3M491	7.65	6.12	1.0
1 11/16	4 3/4	5 1/2	3	3M492	7.65	6.12	1.0
1 11/16	4 3/4	4 3/4	3	3M493	7.65	6.12	1.0
1 11/16	4 3/4	4 15/16	3	3M494	7.65	6.12	1.0



ADJUSTABLE STEEL MOTOR BASES

Simplify floor-mounting and belt tension adjustment on NEMA 254 thru 449 frame motors.

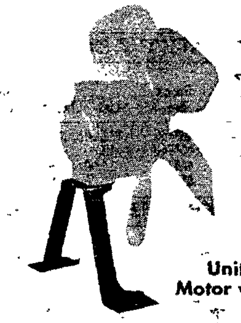
Fabricated steel mounting bases have two adjusting bolts to position mounted motor for proper belt tension during initial installation and at later maintenance checks. Gussets are standard on 404 frames and above. Four motor mounting bolts included. Not for ceiling or sidewall installations. Gray finish. Dayton brand.

For NEMA Frame*	Base Dimensions Height	Width	Length	Bolt Size	Stock No.	List	Each	Shpg. Wt.
254	2"	15 1/8"	17 3/4"	1/2"	2M512	$99.00	$52.30	19.0
256	2	16 7/8	17 3/4	1/2	2M513	99.00	52.30	18.0
284	2	16 7/8	19 3/4	1/2	2M514	109.00	57.55	24.0
286	2	18 3/8	19 3/4	1/2	2M515	109.00	57.55	22.0
324	2 1/2	19 1/4	22 3/4	5/8	2M516	144.00	76.00	30.0
326	2 1/2	20 3/4	22 3/4	5/8	2M517	144.00	76.00	31.0
364	2 1/2	20 1/2	25 1/2	5/8	2M518	187.00	98.25	45.0
365	2 1/2	21 1/2	25 1/2	5/8	2M519	187.00	98.25	46.0
404	3	22 3/8	28 3/4	3/4	2M520	274.00	144.00	55.0
405	3	23 7/8	28 3/4	3/4	2M521	274.00	144.00	56.0
444	3	24 5/8	31 1/4	3/4	2M522	393.00	207.00	74.0
445	3	26 5/8	31 1/4	3/4	2M523	393.00	207.00	75.0
447	3	30 1/8	31 1/4	3/4	2M524	393.00	207.00	89.0
449	3	35 1/8	31 1/4	3/4	2M525	417.00	219.25	95.0

(*) May also be used if the motor frame is succeeded by S, T, TS, U, US or any letter combination as long as the motor complies with NEMA.

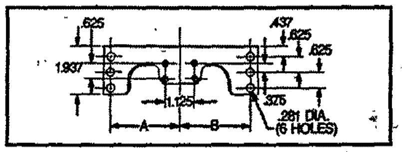
MOUNTING BRACKETS & BASE AND RUBBER MOUNTS

MOUNTING BRACKETS FOR UNIT BEARING MOTORS



Unit Bearing Motor with Bracket

MOUNTING DIMENSIONS (TOP VIEW)

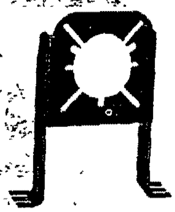


Used to foot-mount all major brands of unit bearing motors with leads at 6, 9, and 12 o'clock positions. Constructed of .058" galvanized steel for strength and stability. Vibration dampening design. Morrill Motors brand.

Motor Shaft Height	Bracket Height	Distance Between Hole Centerlines A	B	Morrill Motors Model	Stock No.	List	Each	Shpg. Wt.
4.125"	2.20	3.0	3.0	B412SBG58	**1C898**	$3.00	**$1.98**	0.2
4.562	2.64	3.0	3.0	B456SBG58	**1C899**	3.00	**1.98**	0.1
5.375	3.45	3.0	3.0	B537SBG58	**1C900**	3.00	**1.98**	0.2
5.375	3.45	2.44	3.56	B537SUG58	**1C901**	3.00	**1.98**	0.2
6.250	4.33	3.0	3.0	B625SBG58	**1C902**	4.00	**2.46**	0.3

MOTOR BASE

Dayton



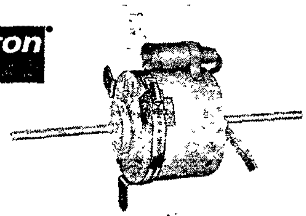
For Dayton 3.3" diameter motors and all unit bearing motors

Stud-mounts up to 1/10 HP, shaded pole motors on slotted plate. For all Dayton 3.3" dia. motors as well as Dayton and GE unit bearing motors. 4³/₈" dia. and 5³/₈" maximum shaft height. Double-slotted feet.

No. 1C897. Shpg. wt. 0.8 lbs. List $6.00.
Each..**$5.00**

FLEXIBLE BAND MOUNTING BRACKET

Dayton

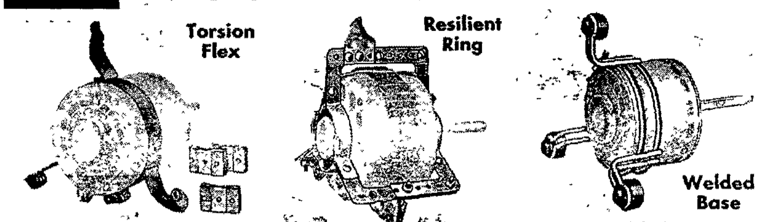


● Lock-on hangers

Stainless steel band adjusts to fit motors 3 to 7" in diameter. Lock-on hangers slide on band for ease of handling. Hangers have 1/4 x 7/8" slots. Knockouts expand slots to 3/4 x 1⁵/₁₆".

No. 3M133. Shpg. wt. 0.5 lbs. List $12.40.
Each..$9.92

Dayton MOTOR MOUNTING BRACKETS FOR 9 TO 12" DIA. BLOWER HOUSINGS



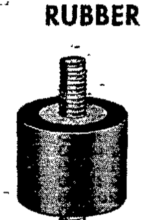
Torsion-flex bracket is designed to effectively isolate and prevent torsional vibrations from reaching the blower housing and causing noise. Fits NEMA 42 and 48 frame motors; metal inserts are supplied for adapting bracket to NEMA 42 frame. No pre-assembly; bracket clamps to motor shell. Instructions included.

Resilient ring-mounted bracket fits NEMA 48 frame motors with 2¹/₂" dia. resilient rings. Adjustable to fit rings 3¹/₂ to 6¹/₈" on center. Hardware included.

Welded 3-ring brackets include adjustable motor bracket with 3 welded rings and rubber grommets for mounting to blower housing.

Fits Blower Wheel	Bracket	Fits NEMA Frame (Motor Size)	Stock No.	List	Each	Shpg. Wt.
9 or 10" Dia.	Torsion Flex	42/48	**5X247**	$13.00	**$10.60**	1.6
12 Dia.	Resilient Ring	48	**4C266**	32.25	**19.31**	2.0
9 Dia.	Welded Rings	42	**3M146**	16.35	**9.80**	1.0
10 Dia.	Welded Rings	48	**3M147**	16.35	**9.80**	3.0

RUBBER MOUNTS FOR MOTOR NOISE REDUCTION



KARMAN RUBBER

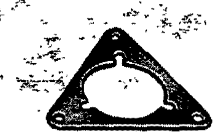
Used on fans, blowers, compressors, pumps, etc., to reduce noise. Not recommended for suspended load applications.

Natural rubber isolators are chemically bonded to steel. Fasten between motor and rails or base.

Pad Size (Dia.)	Screw Size	Karman Rubber Model	Stock No.	List	Each	Lots 10	Shpg. Wt.
3/4 x 1"	1/4-20 x 1/2	K47	**3CC03**	$2.72	**$1.63**	**$1.50**	0.1
3/4 x 2"	3/8-16 x 1¹/₈	K75	**3CC07**	6.74	**4.04**	**3.71**	0.3

ADAPTER BRACKET

GE



For 3.3" diameter motors (GE 51 frame). For resilient or solid mount 2⁹/₁₆" radius.

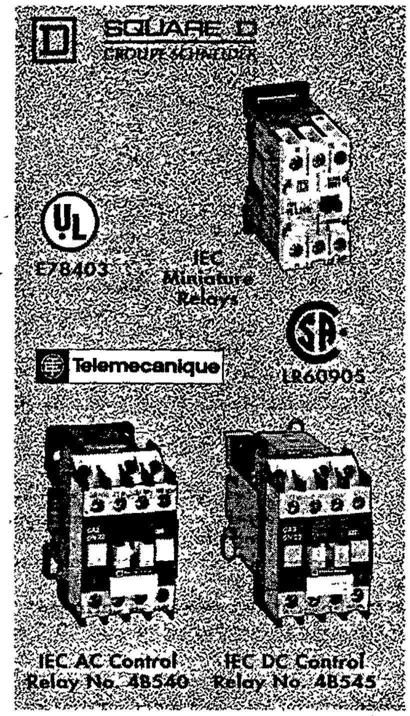
No. 4M738. GE (A418). Shpg. wt. 0.1 lbs. List $5.00. Each **$2.35**

APPENDIX 5

IEC INDUSTRIAL CONTROL RELAYS

MINIATURE IEC CONTROL RELAYS

- 600 volt, 10A rating
- Ideal for OEM and panel builders
- DIN mounting capability saves space and simplifies mounting
- Relays can also be panel mounted
- Built-in cavity for easy insertion of a transient suppressor
- Dimensions: 2.2H x 1.1W x 2.4"D



RELAY ORDERING DATA

10 Amp	No. of Fixed Contacts NO	NC	Coil Voltage @ 60 Hz	Square D Model 8501...	Stock No.	List	Each	Shpg. Wt.
2 Pole	1	1	120	PR1.11EV02	**4B509**	$40.00	**$33.80**	0.3
	2	0	120	PR1.20EV02	**4B510**	40.00	**33.80**	0.3
	2	0	240	PR1.20EV03	**4B511**	40.00	**33.80**	0.3

IEC CONTROL RELAYS

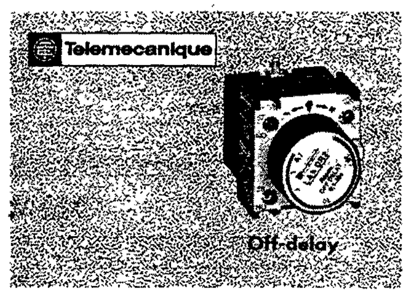
- 600 volt, 10A rating
- Relays have serrated contacts which provide a wiping action to ensure excellent performance with low control voltage (24 volts)
- Basic four-pole relay can be installed with a snap-on adder cartridge in two or four poles in a combination of NO and NC contacts
- Standard instantaneous auxiliary contact blocks available for front snap-on or side snap-on. See listing on page 440
- DIN rail mounting capability in both AC and DC ratings
- Built to a design specification of 30,000,000 mechanical operations

RELAY SPECIFICATIONS AND ORDERING DATA

Control Circuit	No of Contacts	Coil Voltage @ 60 Hz	Contact Configuration NO	NC	Dimensions (In.) H	W	D	Telemecanique Model	Stock No.	List	Each	Shpg. Wt.
AC	4	24VAC	2	2	2.91	1.77	3.15	CA2DN22B6	**4B540**	$57.00	**$48.20**	0.7
		120VAC	2	2	2.91	1.77	3.15	CA2DN22G6	**4B541**	57.00	**48.20**	0.7
		120VAC	3	1	2.91	1.77	3.15	CA2DN31G6	**4B542**	57.00	**48.20**	0.7
		24VAC	4	—	2.91	1.77	3.15	CA2DN40B6	**4B543**	57.00	**48.20**	0.7
		120VAC	4	—	2.91	1.77	3.15	CA2DN40G6	**4B544**	57.00	**48.20**	0.7
DC	4	24VDC	2	2	2.91	1.77	4.72	CA3DN22BD	**4B545**	100.00	**84.50**	1.4
		24VDC	4	—	2.91	1.77	4.72	CA3DN40BD	**4B546**	100.00	**84.50**	1.4

TIME DELAY CONTACT BLOCKS

- Snap-on front mounting
- Use with Telemecanique IEC industrial control relays



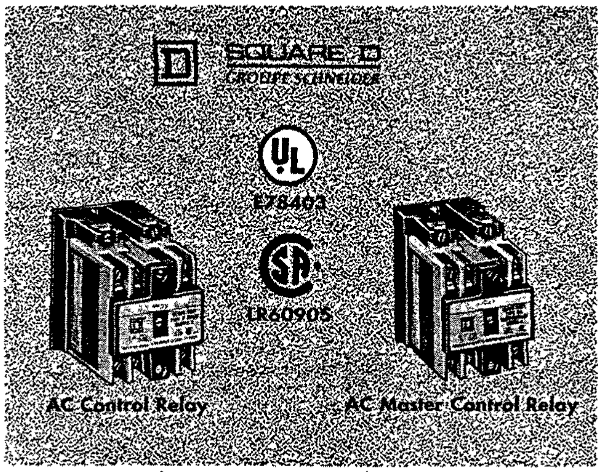
CONTACT BLOCK ORDERING DATA

Type	Contact Configuration NO	NC	Time-Delay Range (seconds)	Telemecanique Model	Stock No.	List	Each	Shpg. Wt.
On-delay	1	1	0.1 to 30	LA2DT2	**4B547**	$120.00	**$101.40**	0.2
			10 to 180	LA2DT4	**4B548**	120.00	**101.40**	0.2
Off-delay	1	1	0.1 to 30	LA3DR2	**4B549**	120.00	**101.40**	0.2
			10 to 180	LA3DR4	**4B550**	120.00	**101.40**	0.2

WHEN DO YOU NEED A RELAY, CONTACTOR OR MOTOR STARTER? SEE INDUSTRIAL CONTROL TERMINOLOGY ON PAGES 480 AND 481

ELECTRICAL CONTROLS

NEMA INDUSTRIAL CONTROL RELAYS



GENERAL FEATURES

- Rugged heavy-duty design for improved performance, reliability and long life
- Field convertible color-coded contact cartridges
- Replaceable coil
- Mechanical tie between all cartridges
- Operating temperature range: -40°C to 71°C (-40°F to +160°F)

AC CONTROL RELAY FEATURES

- 600 volt, 10A continuous rating
- 2 to 12 pole relay
- Straight-through wiring
- Plug-in contact cartridges for easy contact conversion and replacement
- Contact conversion without removing terminal screws or wires
- Self-lifting pressure wire connectors
- Average operating time in milliseconds: 15 pick-up; 16 drop-out

AC MASTER RELAY FEATURES

- 600 volt, 20A contact rating due to use of Master Contact Cartridges
- Provisions for Standard Cartridges to be used in contact cavities not occupied by Master Cartridges in 2-8 pole AC relay
- Average operating time in milliseconds: 15 pick-up; 16 drop-out

DC CONTROL RELAY FEATURES

- 250 volt, 5A rating
- 2 to 8 pole relay
- Offers all the same features as the AC Relay
- All contact poles are usable since no overlapping contacts are needed
- Average operating time in milliseconds: 37 pick-up; 21 drop-out

AC CONTROL RELAY

Contact Configuration	AC Coil Voltage	Dimensions (In.) W	D	H	Square D Model 8501 ...	Stock No.	List	Each	Shpg
2NO	120-60/110-50	3.5	2.23	3.95	X020V02	4B522	$72.00	$71.30	
3NO					X030V02	4B523	84.00	83.20	
4NO	24-60	3.5	2.23	3.95	X040V01	4B524	96.00	95.05	2.1
	120-60/110-50				X040V02	4B525	96.00	95.05	2.2
	240-60/220-50				X040V03	4B526	96.00	95.05	2.1
	480-60/440-50				X040V06	4B527	96.00	95.05	2.2
6NO	120-60/110-50	3.5	2.23	5.16	X060V02	4B528	120.00	118.80	2.4
8NO		3.5	2.23	5.16	X080V02	4B529	144.00	142.60	2.5
12NO		3.5	2.23	[illegible]	X120V02*	4B321	192.00	190.[illegible]	2.9

AC MASTER CONTROL RELAY

Contact Configuration	AC Volts	Dimensions (In.) W	D	H	Square D Model 8501 ...	Stock No.	List	Each	Shpg. Wt.
4NO	120-60/110-50	3.5	2.23	3.95	XM040V02†	4B520	168.00	166.50	2.2

DC CONTROL RELAY

Contact Configuration	DC Volts	Dimensions (In.) W	D	H	Square D Model 8501 ...	Stock No.	List	Each	Shpg. Wt.
4NO	24	3.56	2.23	5.17	XD040V53	4B517	156.00	154.50	3.4

(*) A maximum of 8 NC contacts is allowed on 9-12 pole relays. (†) Attachments not permitted on this relay.

NEMA RELAY APPLICATION DATA

CONTACT RATINGS

Type of Cartridge	AC Ratings Volts	AC Inductive 35% Power Factor NEMA Rating	Make Amperes	Make VA	Break Amperes	Break VA	Continuous Amperes	Resistive 75% Power Factor Make, Break and Continuous Amperes	DC Ratings Volts	DC Inductive NEMA Rating	Make and Break Amperes 138VA Max.	Continuous Amperes	DC Resistive Make and Break Amperes	Continuous Amperes
Standard	120	A600	60	7200	6	720	10	10	125	P600	1.1	5	4	5
	240		30	7200	3	720	10	10	250		0.55	5	0.8	5
Overlapping	480		15	7200	1.5	720	10	10	125	P150	1.1	5	4	5
	600		12	7200	1.2	720	10	10						

ELECTRICAL CONTROLS

CROSS REFERENCE FOR DAYTON RELAYS

Stock No.	Manufacturers' Catalog Numbers						
	Deltrol Control	Magnecraft	Midtex	Omron	P&B	Sigma	Struthers Dunn
1A247					27E046		
1A366		W222ACPFX-11			CRB-48-70010		
1A367		W222ACPFX-13			CRB-48-70060		
1A368		W222ACPFX-15			CRB-48-70180		
1A484		W250CPX-6			KRPA-11DG-12	50R02-12DC-SCO	
1A485		W250CPX-7			KRPA-11DG-240	50R02-24DC-SCO	
1A486	20310-81	W388CPX-6	157-22B200		KUP-11D15-12	68R2-12DC-SCO	A283XBXC-12VDC
1A487	20310-82	W388CPX-7	157-22C200		KUP-11D15-24	68R2-24DC-SCO	A283XBXC-24VDC
1A488	20311-82	W388CPX-11	157-23C200		KUP-14D15-24	68R3-24DC-SCO	A283XCXC-24VDC
1A489	275F101C-120A	W389ACX-4			KUHP-5A51-120	45R1C11-120AC-SCO	
1A490	275F102C-24A	W389ACX-8	187-32Q200		KUHP-11A51-24	45R2C11-24AC-SCO	
1A491	275F102C-120A	W389ACX-9	187-32T200		KUHP-11A51-120	45RC11-120AC-SCO	
2A544					KUHP-5D51-24		
2A545					KUHP-11D51-24		
2A582					27E895		
2A583					27E489		
2A584					27E894		
3X740		W250ACPX-10			KRPA-11AG-240		
3X741		W250ACPX-13			KRPA-14AG-24		
3X742		W250ACPX-14		MK3P5SAC120	KRPA-14AG-120		
3X744	20239-82	W199AX-3	301-11Q-200		PRD-5AG0-24		425XAX-24VAC
3X745	20239-83	W199AX-4	301-11T-200		PRD-5AG0-120		425XAX-120VAC
3X747		W199X-3	301-11C-200		PRD-5DG0-24		425XAX-24VDC
3X748	20245-81	W199X-12	301-11B-100		PRD-11DG0-12		425XBX-12VAC
3X749	20245-82	W199X-13	302-11C-200		PRD-11DG0-24		425XBX-12VDC
4A079					35D013		
4A161					27E121		
5X809		W88UKADX-3			KR-3AH-24		
5X810		W88UKADX-4			KR-3AH-120		
5X811	20392-83	W88UKADX-5			KR-3AH-240		
5X813	20300-82	W388AX-3	157-11Q-200		KU-5A35-24	68F1-24AC-SCO	283XAX-24VAC
5X814	20300-84	W388AX-4	157-11T-200		KU-5A35-120	68F1-120AC-SCO	283XAX-120VAC
5X815	20300-85	W388AX-5	157-11U200		KU-5A35-240	68F1-240AC-SCO	283XAX-240VAC
5X817	20301-82	W388AX-8	157-12Q200		KU-11A35-24	68F2-24AC-SCO	283XBX-24VAC
5X818	20301-84	W388AX-9	157-12T200		KU-11A35-120	68F2-120AC-SCO	283XBX-120VAC
5X819	20301-85	W388AX-10	157-12U200		KU-11A35-240	68F2-40AC-SCO	283XBX-240VAC
5X820	20302-82	W388AX-13	157-13Q200		KU-14A35-24	68F3-24AC-SCO	283XCX-24VAC
5X821	20302-84	W388AX-14	157-13T200		KU-14A35-120	68F3-120AC-SCO	283XCX-120VAC
5X822	20106-81	W250ACPX-2	155-91P200		KRPA-5AG-12	50R01-12AC-SCO	214XAX48P-12VAC
5X823	20107-82	W250ACPX-3	155-91Q200	MK1EPUAAC24	KRPA-5AG-24	50R01-24AC-SCO	214XAX48P-24VAC
5X824	20106-84	W250ACPX-4	155-91T200	MK1EPUAAC120	KRPA-5AG-120	50R01-115AC-SCO	214XAX48P-120VAC
5X825	20108-81	W250ACPX-7	155-92P200	MK2P-S-AC12	KRPA-11AG-12	50R02-12AC-SCO	214XBX48P-12VAC
5X826	20108-82	W250ACPX-8	155-92Q200	MK2P-S-AC24	KRPA-11AG-24	50R02-24AC-SCO	214XBX48P-24VAC
5X827	20108-84	W250ACPX-9	155-92T200	MK2P-S-AC120	KRPA-11AG-120	50R02-11AC-SCO	214XBX48P-120VAC
5X828		W211ACPSOX-5			CHB-38-70001		45-010-120VAC
5X829		W211ACPSOX-7			CHB-38-70003		45-180-120VAC
5X830		W211ACPSOX-8			CHB-38-70004		
5X834	20306-82	W388ACPX-3	157-21Q200	MJ1PUAAC24	KUP-5A15-24	68R1-24AC-SCO	283XAXC-24A
5X835	20306-84	W388ACPX-4	157-21T200	MJ1PUAAC10	KUP-5A15-120	68R1-120AC-SCO	283XAXC-115A
5X836	20306-85	W388ACPX-5	157-21U200		KUP-5A15-240	68R1-240AC-SCO	283XAXC-240A
5X837	20307-82	W388ACPX-8	157-22Q200	MJ2PUAAC24	KUP-11A15-24	68R2024AC-SCO	283XBXC-24A
5X838	20307-84	W388ACPX-9	157-22T200	MJ2PUAAC120	KUP-11A15-120	68R2120AC-SCO	283XBXC-115A
5X839	20307-85	W388ACPX-10	157-22U200		KUP-11A15-240	68R2-240AC-SCO	283XBXC-240A
5X840	20308-82	W388ACPX-13	157-23Q200	MJ3PUAAC24	KUP-14A15-24	68R3-24AC-SCO	283XCXC-24A
5X841	20308-84	W388ACPX-14	157-23T200	MJ3PUAAC120	KUP-14A15-120	68R31204AC-SCO	283XCXC-115A
5X842	20308-85	W388ACPX-15	157-23U200	MJ3PUAAC240	KUP-14A15-240	68R3240AC-SCO	283XCXC-240A
5X846	20241-82	W199AX-13	302-11Q200		PRD-11AG0-24		
5X847	20241-83	W199AX-14	302-11T200		PRD-11AG0-120		
5X848	20241-84	W199AX-15	302-11U200		PRD-11AG0-240		
5X849	20238-82	W199ADX-3	301-14Q200		PRD-3AG0-24		425HXX-24VAC
5X850	20238-83	W199ADX-4	301-14T200		PRD-3AG0-120		425HXX-120VAC
5X851	20238-84	W199ADX-5	301-14U200		PRD-3AG0-240		425HXX-240VAC
5X852					27E891		
5X853					27E893		
5X854					27E067		
6X153		W211ACPSRX-6			CKB-38-78010		42-010-120VAC
6X154		W211ACPSRX-7			CKB-38-78180		42-010-120VAC
6X155		W211ACPSRX-8			CKB-38-78300		
6X156					27E892		
6X601		W211ACPSOX-60			CHB-38-70050		
6X602		W211ACPSRX-60			CHB-38-78050		
6X603		W211ACPVC-5			CHB-38-70021		
6X604		W211ACPVX-7			CHB-38-70023		
6X605		W211ACPVX-8			CHB-38-70024		

See Cross Reference Information on page opposite inside back cover.

Need Assistance with Product Selection? We Appreciate The Opportunity to Help You in Every Possible Way

NEMA INDUSTRIAL CONTROL RELAY ACCESSORIES

MECHANICAL AC LATCH ATTACHMENT

Mounts on any 2 through 8-pole relay. AC latch attachment has a continuous duty 120VAC coil which is replaceable. Square D brand (8501XLV02).

No. 4B518. Shpg. wt. 1.0 lbs. List $84.00. Each..................**$83.20**

PNEUMATIC TIMER ATTACHMENT

Mounts on any 0 through 4-pole AC or DC relay. It provides 1 NO and 1 NC convertible timed contacts, which are the same standard cartridges used on the basic relay (see below for standard cartridges). Timing range is .2-60 seconds.

No. 4B531. Off Delay. Square D brand (8501XTD1). Shpg. wt. 0.8 lbs. List $168.00. Each..................**$166.50**

No. 4B532. On Delay. Square D brand (8501XTE1). Shpg. wt. 0.8 lbs. List $168.00. Each..................**$166.50**

ADDER DECKS

Adder decks are used to increase the number of poles on a relay. Basic 4-pole relay can be easily converted to an 8-pole or 12-pole relay by installing one or two adder decks. The same type adder deck can be used for both the middle and upper decks.

No. 4B512 comes with 2 convertible contact cartridges and will accept 2 additional convertible contact cartridges. Square D brand (8501XB20).

No. 4B512. Shpg. wt. 0.5 lbs. List $24.00. Each..................**$23.76**

No. 4B513 comes with 4 convertible contact cartridges. Square D brand (8501XB40).

No. 4B513. Shpg. wt. 0.5 lbs. List $48.00. Each..................**$47.55**

MOUNTING TRACK

Mounting track has pre-punched mounting holes to simplify mounting the track on control panel. Relay mounting screws are factory installed on track so that relays can be hung prior to tightening the screws. 9" long for 4 relays. Square D brand (8501XM4).

No. 4B519. Shpg. wt. 0.7 lbs. List $9.90. Each..................**$9.80**

TRANSIENT SUPPRESSOR

Consists of an R-C circuit designed to suppress coil generated transients to approximately 200 percent of peak voltage. It is useful when switching NEMA control relays near solid state equipment. Mounts directly on the coil and is designed for use on coil up to 120VAC or 110VDC. Square D brand (8501XS1).

No. 4B520. Shpg. wt. 0.1 lbs. List $24.00. Each..................**$23.76**

NEMA 1 ENCLOSURE

Two conduit knockouts are located in both the top and bottom of enclosure. Enclosure is furnished with self tapping screws for mounting the relay inside the enclosure. Accommodates 4 and 8-pole AC or DC relays, 12-pole AC relay, 4-pole AC latching relay, and 4-pole AC timing relay. Square D brand (9991UE7).

No. 4B533. Shpg. wt. 4.4 lbs. List $42.00. Each..................**$39.30**

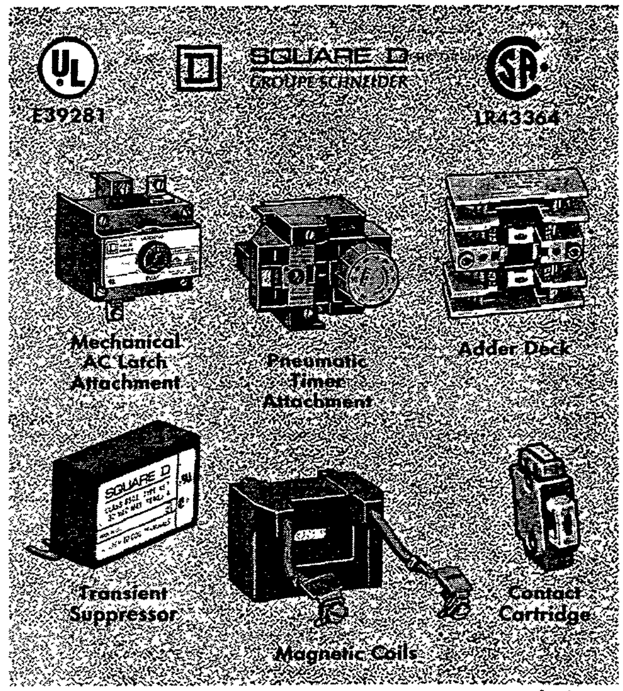
MAGNETIC COILS

AC MAGNET COIL FOR RELAYS, TIMERS, CONTACTORS

Coil Volts @ 60 Hz	Square D Model	Stock No.	List	Each	Shpg. Wt.
24-60 VAC	9998X23	**4B534**	$31.50	**$29.45**	0.3
120-60/110-50	9998X44	**4B535**	31.50	**29.45**	0.3
240-60/220-50	9998X53	**4B536**	31.50	**29.45**	0.3
480-60/440-50	9998X62	**4B537**	31.50	**29.45**	0.3

DC MAGNET COIL FOR MAGNETIC CONTACTORS AND RELAYS

Coil Volts	Square D Model	Stock No.	List	Each	Shpg. Wt.
24 VDC	9998XD37	**4B538**	77.00	**72.00**	1.0



CONTACT CARTRIDGES

Standard Cartridge—Used for most applications. Standard cartridges are non-overlapping; rated NEMA A600 and NEMA P600. Black case. Square D brand (8501XC1).

No. 4B514. Standard Cartridge. Shpg. wt. 0.1 lbs. List..........$12.00. Each..................$11.88

Overlapping Cartridge—Same NEMA A600 AC rating as standard cartridge and a NEMA P150 DC rating. When used in normally open mode it will close early. When used in normally closed mode it will open late. If two or more are used together, normally open contacts will close before normally closed contacts open as the relay picks up. Overlap also occurs during dropout. Red case. Square D brand (8501XC2)

No. 4B515. Overlapping Cartridge. Shpg. wt. 0.1 lbs. List.....$12.00. Each..................**$11.88**

Master Cartridge—Features the same contact ratings as standard cartridge, except it has 20-ampere continuous current rating. It can be used in circuits where a master relay is required. Maximum of 6 master cartridges may be used on any 7 and 8-pole AC relays. Do not use any master cartridges on 9 through 12-pole AC or DC operated devices. Blue case. Square D brand (8501XC4).

No. 4B516. Master Cartridge. Shpg. wt. 0.1 lbs. List..........**$30.00.** Each..................**$29.70**

CONTACT CONVERSION

The contact cartridges of the NEMA relays can be easily converted from normally open to normally closed and vice versa without disturbing relay wiring or removing terminal screws. To convert contacts:

1. Remove relay cover and captive T-bar actuator
2. Remove contact cartridge and rotate 180°
3. Plug contact cartridge back in
4. Replace T-bar actuator and cover

Dayton®

E40944

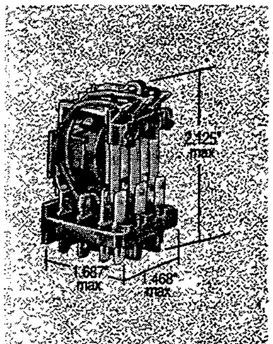
LR15734

FEATURES

- Silver alloy contacts
- Compatible with relay sockets on page 473
- Clear plastic covers on enclosed models for inspection of contacts
- Plug-in termination
- Relays rated at 50/60 Hz

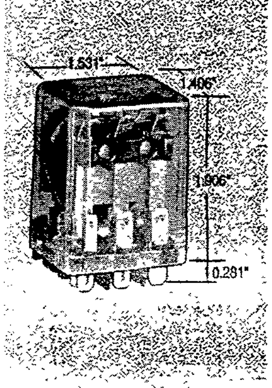
APPLICATIONS

- Starting or switching small motors, vending machines, power supplies, machine tools, elevator systems, control panels, and more



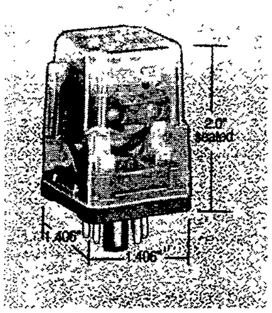
OPEN, SQUARE BASE MODELS

No. of Mounting Pins	Form	Contact Load Ratings @ 120VAC: Operating Current R#	I†#	HP @VAC 120	240	Coil Ratings @ 60 Hz Volts	Coil Current Rating	Use with Socket*	Stock No.	List	Each	Shpg. Wt.
5	SPDT	13A	13A	1/3	1/2	24VAC	84mA	5X853, 5X854, 4A161, 1A247	5X813	$10.30	$8.75	0.2
		13	13	1/3	1/2	120VAC	17.5mA		5X814	10.30	8.75	0.2
		13	13	1/3	1/2	240VAC	8.75mA		5X815	10.30	8.75	0.2
8	DPDT	12	12	1/3	1/2	24VAC	84mA		5X817	12.87	10.95	0.2
		12	12	1/3	1/2	120VAC	17.5mA		5X818	12.87	10.95	0.2
		12	12	1/3	1/2	240VAC	8.75mA		5X819	12.87	10.95	0.2
11	3PDT	11	11	1/3	1/2	24VAC	115mA		5X820	14.42	12.26	0.2
		11	11	1/3	1/2	120VAC	24mA		5X821	14.42	12.26	0.2



ENCLOSED, SQUARE BASE MODELS

No. of Mounting Pins	Form	Contact Load Ratings @ 120VAC: Operating Current R#	I†#	HP @VAC 120	240	Coil Ratings @ 60 Hz Volts	Coil Current Rating	Use with Socket*	Stock No.	List	Each	Shpg. Wt.
5	SPDT	13A	13A	1/3	1/2	24VAC	84mA	5X853, 5X854, 4A161, 1A247	5X834	$11.02	$9.37	0.2
		13	13	1/3	1/2	120VAC	17.5mA		5X835	11.02	9.37	0.2
		13	13	1/3	1/2	240VAC	8.75mA		5X836	11.02	9.37	0.2
8	DPDT	12	12	1/3	1/2	12VDC	100mA		1A486	11.74	9.98	0.2
		12	12	1/3	1/2	24VDC	8.75mA		1A487	11.74	9.98	0.2
		12	12	1/3	1/2	24VAC	84mA		5X837	12.36	10.50	0.2
		12	12	1/3	1/2	120VAC	17.5mA		5X838	12.36	10.50	0.2
		12	12	1/3	1/2	240VAC	8.75mA		5X839	12.36	10.50	[illegible]
11	3PDT	11	11	1/3	1/2	24VDC	51mA		1A488	13.49	11.47	0.2
		11	11	1/3	1/2	24VAC	115mA		5X840	13.80	11.73	0.2
		11	11	1/3	1/2	120VAC	24mA		5X841	13.80	11.73	0.2
		11	11	1/3	1/2	240VAC	12mA		5X842	13.80	11.73	0.2



ENCLOSED, OCTAL BASE MODELS

No. of Mounting Pins	Form	Contact Load Ratings @ 120VAC: Operating Current R#	HP @VAC 120	240	Coil Ratings @ 60 Hz Volts	Coil Current Rating	Use with Socket*	Stock No.	List	Each	Shpg. Wt.
8	SPDT	12A	1/3	1/2	12VAC	100mA	5X852	5X822	$16.27	$13.83	0.2
		12	1/3	1/2	24VAC	84mA		5X823	16.27	13.83	0.2
		12	1/3	1/2	115VAC	17.5mA		5X824	16.31	13.86	0.2
8	DPDT	12	1/3	1/2	12VDC	100mA		1A484	17.15	14.57	0.2
		12	1/3	1/2	24VDC	51mA		1A485	17.15	14.57	0.2
		12	1/3	1/2	12VAC	168mA		5X825	17.15	14.57	0.2
		12	1/3	1/2	24VAC	84mA		5X826	17.15	14.57	0.2
		12	1/3	1/2	120VAC	17.5mA		5X827	17.15	14.57	0.2
		12	1/3	1/2	240VAC	8.75mA		3X740	17.15	14.57	0.2
11	3PDT	10	1/3	1/2	24VAC	115mA	6X156	3X741	19.82	16.85	0.2
		10	1/3	1/2	120VAC	24mA		3X742	19.82	16.85	0.2

(†) at 0.8 power factor. (#) R = Resistive, I = Inductive. (*) Order sockets on page 473.

DAYTON RELAY CROSS REFERENCE ON PAGE 464

UL RECOGNITION and CSA CERTIFICATION

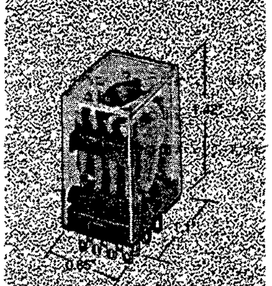
With few exceptions, electric motors listed in this catalog are recognized by UL for construction under the Motor Component Recognition Program and are CSA certified. UL file number and CSA certification are noted in the individual motor listings.

CROSS REFERENCE FOR OMRON RELAYS AND SWITCHES

Grainger Stock No.	Omron	P&B	Magnecraft	IDEC	Guardian	Sigma	Deltrol	Midtex	Aromat	Gordos
	Manufacturers' Catalog Numbers									
2XC21	G7L-1A-BUB-J-CB-AC24	PRD-1AYO	W199ADBX-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2XC22	G7L-1A-BUB-J-CB-AC100/120	PRD-3AGO	W199ADX-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4A710	G7L-1A-TUB-J-CB-AC24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2XC20	G7L-2A-BUB-J-CB-AC100/120	PRD-7AYO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2XC19	G7L-2A-BUB-J-CB-AC24	PRD-7DYO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3A355	G7L-2A-TUB-J-CB-AC100/120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3A354	G7L-2A-TUB-J-CB-AC24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4A711	G7L-1A-TUB-J-CB-AC100/120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2W926	LY1-AC110/120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	HL1-115VAC	N/A
2W925	LY1-AC24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	HL1-24VAC	N/A
2W927	LY1-DC24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	HL1-24VDC	N/A
2W928	LY2-AC110/120	K10P11A15-120	W78ARCSX11	RH2B-U-AC120	1390-2C-120A	76RS-120AC-SCO	20613-80	258-12T200	HL2-115VAC	N/A
6C874	LY2-AC12	K10P11A15-12	N/A	RH2B-U-AC12	1390-2C-12A	N/A	N/A	258-12P200	HL2-H-AC12	N/A
2XC00	LY2-AC200/240	K10P11A15-240	W78ARCSX12	RH2B-U-AC240	1390-2C-240A	N/A	N/A	258-12U200	HL2-H-AC240	N/A
2W929	LY2-AC24	K10P11A15-24	W78ARCSX9	RH2B-U-AC24	1390-2C024A	76R2-24AC-SCO	20612-82	258-12Q200	HL2-24VAC	N/A
6C873	LY2-DC12	K10P11D15-12	W78ARCSX7	RH2B-U-DC12	1391395-12D	N/A	N/A	258-12B200	N/A	N/A
2W930	LY2-DC24	K10P11D15-24	W78ARCSX8	RH2B-U-DC24	1395-2C-24D	76R2-24DC-SCO	20612-80	258-12C200	HL2-24VDC	N/A
2XC02	LY2F-AC110/120	N/A	W78ARCSX-5	RH2B-UT-AC120	1390F-2C-120A	N/A	N/A	258-62T200	HL2-TM-AC120	N/A
2XC01	LY2F-AC24	N/A	W78ARCSX-3	RH2B-UT-AC24	1390F-2C-24A	N/A	N/A	258-62Q200	HL2-TM-AC24	N/A
6C876	LY2N-AC110/120	N/A	N/A	RH2B-UL-AC120	N/A	N/A	N/A	N/A	N/A	N/A
6C877	LY2N-AC220/240	N/A	N/A	RH2B-UL-AC240	N/A	N/A	N/A	N/A	N/A	N/A
6C875	LY2N-AC24	N/A	N/A	RH2B-UL-AC24	N/A	N/A	N/A	N/A	N/A	N/A
2XC04	LY3-AC120	N/A	N/A	RH3B-U-AC120	N/A	N/A	N/A	258-13T200	N/A	N/A
2XC03	LY3-AC24	N/A	N/A	RH3B-U-AC24	N/A	N/A	N/A	258-13Q200	N/A	N/A
2XC05	LY3-AC240	N/A	N/A	RH3B-U-AC240	N/A	N/A	N/A	258-13U200	N/A	N/A
6C878	LY3-DC12	N/A	N/A	RH3B-U-DC12	N/A	N/A	N/A	258-13B200	N/A	N/A
6C879	LY3-DC24	N/A	N/A	RH3B-U-DC24	N/A	N/A	N/A	258-13C200	N/A	N/A
6C882	LY4-AC12	N/A	N/A	RH4B-U-AC12	N/A	76R4-12AC-SCO	N/A	258-14P200	N/A	N/A
2XC07	LY4-AC120	N/A	N/A	RH4B-U-AC120	N/A	76R4-120AC-SCO	N/A	258-14T200	N/A	N/A
2XC06	LY4-AC24	N/A	N/A	RH4B-U-AC24	N/A	76R4-24AC-SCO	N/A	258-14Q200	N/A	N/A
6C880	LY4-DC12	N/A	N/A	RH4B-U-DC12	N/A	76R4-12DC-SCO	N/A	258-14B200	N/A	N/A
6C881	LY4-DC24	N/A	N/A	RH4B-U-DC24	N/A	76R4-24DC-SCO	N/A	258-14C200	N/A	N/A
6C884	LY4N-AC120	N/A	N/A	RH4B-UL-AC120	N/A	N/A	N/A	N/A	N/A	N/A
6C883	LY4N-AC24	N/A	N/A	RH4B-UL-AC24	N/A	N/A	N/A	N/A	N/A	N/A
2A192	MK2PN-S-AC24	KRP11-AN-24	W88ANCPX7	RR2P-UL-AC24	1210N-2C-24A	50R02L2-24AC-SCO	20117-82	N/A	N/A	N/A
2A193	MK2PN-S-AC120	KRP11-AN-120	W88ANCPX2	RR2P-UL-AC120	1210N-2C-120A	50R02L2-120AC-SCO	20117-84	N/A	N/A	N/A
2W923	MK2KP-AC120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2W924	MK2KP-AC24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2W919	MK2P-S-AC12	KRP11-AG-12	W88ACPX6	RR2P-U-AC12	1210-2C-12A	50R02-12AC-SCO	20108-81	158-92P200	N/A	N/A
2W921	MK2P-S-AC120	KRP11-AG-120	W88ACPX8	RR2P-U-AC120	1210-2C-120A	50R02-120AC-SCO	20108-84	158-92T200	N/A	N/A
2W920	MK2P-S-AC24	KRP11-AG-24	W88ACPX7	RR2P-U-AC24	1210-2C-24A	50R02-24AC-SCO	20108-82	158-92Q200	N/A	N/A
6C887	MK2P-S-AC240	KRP11-AG-240	N/A	RR2P-U-AC240	1210-2C-240A	50R02-240AC-SCO	20108-85	158-92U200	N/A	N/A
2W922	MK3P5-S-AC120	KRP14-AG-120	W88ACPX12	RR3PA-U-AC120	1215-3C-120A	50R03-120AC-SCO	20110-84	158-93T200	N/A	N/A
6C888	MK3P5-S-AC24	KRP14-AG-24	W88ACPX11	RR3PA-U-AC24	1215-3C-24A	50R03-24AC-SCO	20110-82	158-92Q200	N/A	N/A
6C889	MK3P5-S-AC240	KRP14-AG-240	N/A	RR3PA-U-AC240	1215-3C-240A	50R03-240AC-SCO	20110-85	158-93U200	N/A	N/A
2W931	MY4-AC110/120	KHU17A11-120	W78ACSX4	RY4S-U-AC120	1310-4C-120A	67R4-120AC	20650-84	156-14T100	HC4-115VAC	N/A
6C886	MY4-AC12	KHU17A11-12	W78ACSX2	RY4S-U-AC12	1310-4C-12A	67R4-12AC	20650-81	156-14P100	HC4-12AC	N/A
2W932	MY4-AC24	KHU17A11-24	W78ACSX3	RY4S-U-AC24	1310-4C-24A	67R4-24AC	20650-82	156-14Q100	HC4-24VAC	N/A
6C885	MY4-DC12	KHU17D11-12	W78CSX2	RY4S-U-DC12	1310-4C-12D	67R4-12DC	20649-81	156-14B100	HC4-12VDC	N/A
2W933	MY4-DC24	KHU17D11-24	W78CSX3	RY4S-U-DC24	1310-4C-24D	67R4-24DC	20649-84	156-14C100	HC4-24VDC	N/A
3A353	MY4N-AC110/120	KHU17A11N-120	N/A	RY4S-UL-AC120	1310N-4C-120A	N/A	N/A	156-14T100LD	HC4-L-120VAC	N/A
3A351	MY4N-AC24	KHU17A11N-24	N/A	RY4S-UL-AC24	1310N-4C-24A	N/A	N/A	156-14Q100LD	HC4-L-24VAC	N/A
3A352	MY4N-DC24	KHU17D11N-24	N/A	RY4S-UL-DC24	1310N-4C-24D	N/A	N/A	156-14C100LD	HC4-L-24VDC	N/A
6C891	G2R-1A-T-AC120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	JR14-TM-120VAC	N/A
6C890	G2R-1A-T-AC24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	JR1A-TM-24VAC	N/A
6C895	G2R-1-S-AC120	N/A	N/A	RH1B-U-AC120	N/A	N/A	N/A	N/A	N/A	N/A
6C894	G2R-1-S-AC24	N/A	N/A	RH1B-U-AC24	N/A	N/A	N/A	N/A	N/A	N/A
6C893	G2R-1-T-AC120	N/A	N/A	RH1B-UT-AC120	N/A	N/A	N/A	N/A	N/A	N/A
6C892	G2R-1-T-AC24	N/A	N/A	RH1B-UT-AC24	N/A	N/A	N/A	N/A	N/A	N/A
6C897	G2R-2-S-AC120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6C896	G2R-2-S-AC24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6C901	G3NA-210B-AC100/120	N/A	W6110ASX-1	N/A	N/A	N/A	N/A	N/A	N/A	G120A10
6C902	G3NA-210B-AC200/240	N/A	W6210ASX-1	N/A	N/A	N/A	N/A	N/A	N/A	G240A10
6C900	G3NA-210B-DC5-24	N/A	W6110DSX-1	N/A	N/A	N/A	N/A	N/A	AQP10A2-24/30VDC	G120D10
6C904	G3NA-225B-AC100/120	SSR-240A25	W6125ASX-1	N/A	N/A	N/A	N/A	N/A	N/A	G120A25
6C905	G3NA-225B-AC200/240	SSR-240A25	W6125ASX-1	N/A	N/A	N/A	N/A	N/A	N/A	G240A25
6C903	G3NA-225B-DC5-24	SSR-240D25	W6125DSX-1	N/A	N/A	N/A	N/A	N/A	N/A	G120A25
6C907	G3NA-240B-AC100/120	N/A	W6140ASX-1	N/A	N/A	N/A	N/A	N/A	N/A	G120A45
6C908	G3NA-240B-AC200/240	N/A	W6140ASX-1	N/A	N/A	N/A	N/A	N/A	N/A	G240A45
6C906	G3NA-240B-DC5-24	N/A	W6140DSX-1	N/A	N/A	N/A	N/A	N/A	AQP40A2-24/30DVC	G120D45
6C910	G3NA-440B-AC100/120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6C909	G3NA-440B-DC5-24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4A709	G4B-112T1-FDC-US-RP-AC120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	JA1C-TM-AC120V-P	N/A
4A708	G4B-112T1-FDC-US-RP-AC24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	JA1C-TM-AC24V-P	N/A
2W934	G4B-112T1-FD-US-RP-AC120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	JA1A-TM-AC120V-P	N/A
2W935	G4B-112T1-FD-US-RP-AC24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	JA1A-TM-AC24V-P	N/A
2W937	G5LE-114P-PS-DC12	N/A	N/A	RCN1V-5B12D	1575-1C-12C	N/A	N/A	296-31B300	HA1E-12DVC	N/A
2W936	G5LE-114P-PS-DC24	N/A	N/A	RCN1V-5B24D	1575-1C-24D	N/A	N/A	296-31C300	HA1E-24DVC	N/A
6C913	G7J-2A2B-B-AC100/120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VC15S-2A2B-AC120V	N/A
6C914	G7J-2A2B-B-AC200/240	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VC20S-2A2B-AC240V	N/A
6C915	G7J-2A2B-B-DC24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VC20S-2A2B-DC24	N/A
6C986	G7J-3A1B-AC200/240	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VC20S-3A1B-AC240V	N/A
6C985	G7J-3A1B-B-AC100/120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VC20S-3A1B-AC120V	N/A
6C987	G7J-3A1B-DC24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VC20S-3A1B-DC24V	N/A
6C988	G7J-4A-B-AC100/120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VC20S-4A-AC120V	N/A
6C989	G7J-4A-B-AC200/240	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VC20S-4A-240V	N/A
6C990	G7J-4A-B-DC24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	VC20SVC20S-4A-DC2	N/A

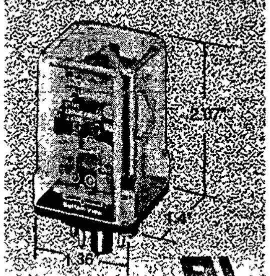
Note: Dimensions may vary. See Cross Reference Information on page opposite inside back cover. For Ordering Data, See Pages 467, 471 , and 478.

omron



MY SERIES

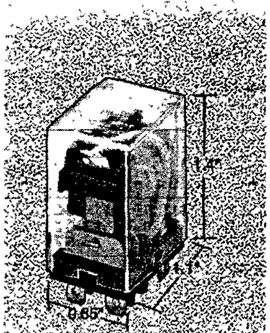
E41515



E41515

MK SERIES

● UL Recognized and CSA Certified, except Nos. 2W923 and 2W924



LY SERIES

E41643

MY SERIES—Square Base

LR31928

- Indicator lamp on Nos. 3A351, 3A352, & 3A353
- Rated for 50/60 Hz
- Termination: Plug-In/Solder
- Mounting: Screw/Socket

Contact Load Ratings @ 240 VAC				Coil Ratings @ 60 Hz							
No. of Mounting Pins	Form	Operating Current† R	I	Volts	Use With Socket**	Coil Current Rating	Omron Model MY4	Stock No.	List	Each	Shpg. Wt.
14	4PDT	3A	0.8A	24VAC	2A584	46mA	AC24	2W932	$7.08	$6.21	0.1
				24VAC		46mA	NAC24	3A351#	9.90	8.68	0.1
				24VDC		36.9mA	DC24	2W933	7.08	6.21	0.1
				24VDC		36.9mA	NDC24	3A352#	9.90	8.68	0.1
				120VAC		9.2mA	AC120	2W931	7.08	6.21	0.1
				120VAC		9.2mA	NAC120	3A353#	9.90	8.68	0.1
				12VDC		75mA	DC12	6C885	7.08	6.21	0.1
				12VAC		91mA	AC12	6C886	7.08	6.21	0.1

MK SERIES—Octal Base

LR35535

- Nos. 2W924 and 2W923 magnetic latching type—resets at 80% of rated voltage
- Indication lamp on Nos. 2A192 & 2A193
- Rated for 50/60 Hz
- Termination: Plug-In
- Mounting: Socket
- Push-to-test button

Contact Load Ratings @ 240 VAC				Coil Ratings @ 60 Hz							
No. of Mounting Pins	Form	Operating Current† R	I	Volts	Use With Socket**	Coil Current Rating	Omron Model MK	Stock No.	List	Each	Shpg. Wt.
8	DPDT	10A	7A	12VAC	5X852	180mA	2PSAC12	2W919	$10.55	$9.25	0.2
8	DPDT			24VAC		88mA	2PSAC24	2W920	10.55	9.25	0.2
8	DPDT			24VAC		88mA	2PN-S-AC24	2A192#	12.73	11.16	0.2
8	DPDT			120VAC		18mA	2PSAC120	2W921	11.48	10.06	0.2
8	DPDT			120VAC		18mA	2PN-S-AC120	2A193#	13.64	11.96	0.2
8	DPDT			240VAC		9.2mA	2PSAC240	6C887	12.53	10.98	0.2
11	DPDT	5	5	24VAC	6X156	88mA	2KPUAAC24	2W924‡	40.14	33.60	0.2
11	DPDT			120VAC		18mA	2KPUAAC120	2W923‡	40.14	33.60	0.2
11	3PDT	10NO/5NC	7	24VAC	6X156	88mA	3P5SAC24	6C888	12.06	10.57	0.2
				240VAC		9.2mA	3P5SAC240	6C889	13.64	11.96	0.2
11	3PDT			120VAC		18mA	3P5SAC120	2W922	12.92	11.32	0.2

LY SERIES—Square Base

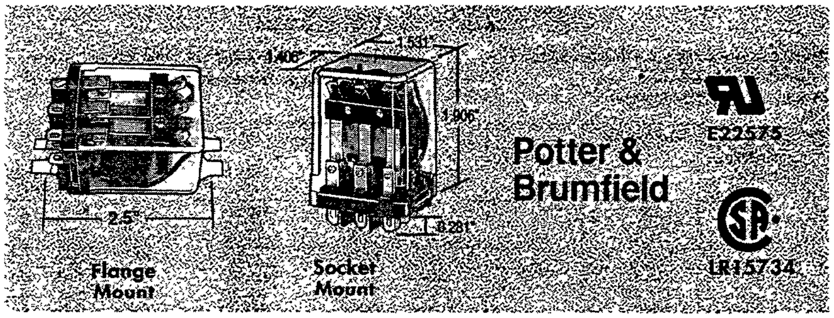
LR31928

- Compact cube style
- Rated for 50/60 Hz
- Termination: Plug-In/Solder
- Mounting: Socket; flange mount on Nos. 2XC01 & 2XC02 (do not require socket)

Contact Load Ratings 240 VAC						Coil Ratings @ 60 Hz							
No. of Mounting Pins	Form	Operating Current R	I	HP @ VAC 120	240	Volts	Use With Socket**	Coil Current Rating	Omron Model LY	Stock No.	List	Each	Shpg. Wt.
8	SPDT	15A	15A	1/2	—	24VAC		46mA	1AC24	2W925	$7.47	$6.54	0.1
						24VDC		36.9mA	1DC24	2W927	7.12	6.24	0.1
						120VAC		9.2mA	1AC120	2W926	7.47	6.54	0.1
8	DPDT	10	10	1/2	—	12VAC	2A582 or 2A583	91mA	2AC12	6C874	8.38	7.56	0.1
						12VDC		75mA	2DC12	6C873	8.38	7.56	0.1
						24VAC		46mA	2AC24	2W929	8.38	7.56	0.1
						24VDC		36.9mA	2DC24	2W930	8.38	7.56	0.1
						120VAC		9.2mA	2AC120	2W928	8.38	7.56	0.1
						240VAC		4.6mA	2AC240	2XC00	8.68	7.83	0.1
		10	10	1/2	—	24VAC	Flange Mount	46mA	2FAC24	2XC01	8.56	7.72	0.1
						120VAC		9.2mA	2FAC120	2XC02	8.56	7.72	0.1
8	DPDT w/LED Indicator	10	10	1/2	—	24VAC	2A582 or 2A583	46mA	2NAC24	6C875	11.25	10.15	0.1
						110/120VAC		9.2mA	2NAC110/120	6C876	11.25	10.15	0.1
						220/240VAC		4.6mA	2NAC220/240	6C877	11.75	10.60	0.1
11	3PDT	10	7.5	—	1/2	12VDC	2XC08	112mA	3DC12	6C878	11.47	10.35	0.1
						24VDC		58.6mA	3DC24	6C879	11.47	10.35	0.1
						24VAC		67mA	3AC24	2XC03	11.47	10.35	0.1
						120VAC		14.8mA	3AC120	2XC04	11.47	10.35	0.1
						240VAC		8mA	3AC240	2XC05	12.05	10.88	0.1
14	4PDT	10	7.5	—	1/2	12VDC	2XC09	120mA	4DC12	6C880	13.37	12.06	0.2
						12VAC		170mA	4AC12	6C882	13.37	12.06	0.2
						24VDC		69mA	4DC24	6C881	13.37	12.06	0.2
						24VAC		80mA	4AC24	2XC06	13.37	12.06	0.2
						120VAC		16.4mA	4AC120	2XC07	13.37	12.06	0.2
14	4PDT w/LED Indicator	10	7.5	—	1/2	24VAC	2XC09	80mA	4NAC24	6C883	18.36	16.58	0.2
						120VAC		16.4mA	4NAC120	6C884	18.36	16.58	0.2

(†) R = Resistive Load; I = Inductive Load (‡) Latching type (#) Indicator lamp included. (**) Order sockets on page 473 and 474.

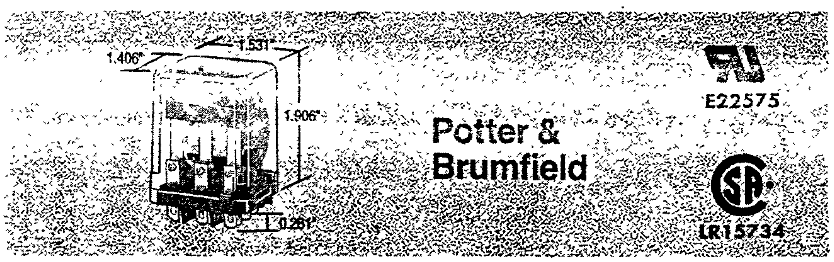
GENERAL PURPOSE RELAYS



KUP SERIES—Square Base

- Load carrying capability up to 10 amps
- Rated for 50 Hz
- No. of Mounting Pins: 5, 8, or 11
- Termination: Plug-In/Solder
- Mounting: Socket/Flange

Type of Mounting	No. of Mounting Pins	Contact Load Ratings Form	Operating Current @ 240VAC & 28VDC	HP 120V	HP 240V	Coil Ratings @ 60 Hz Volts	Coil Current Rating	Use With Socket†	P&B Model	Stock No.	List	Each	Shpg. Wt.
Flange Mount	5	SPDT	10.0A	1/3	1/2	120VAC	17.5mA	5X853	KUP-5A55-120	**2XC49**	$11.29	**$11.17**	0.2
						24VDC	51mA	5X854	KUP-5D55-24	**2XC51**	10.34	**10.24**	0.2
Socket Mount	5	SPDT	10.0	1/3	1/2	12VDC	100mA	4A161 1A247	KUP-5D15-12	**2XC50**	9.87	**9.77**	0.2
Socket Mount	8	DPDT	10.0	1/3	1/2	120VAC	17.5mA	5X853	KUP-11A15-120	**3A985**	12.60	**12.47**	0.3
		DPDT	10.0			240VAC	8.75mA	5X854	KUP-11A15-240	**3A986**	15.33	**15.17**	0.3
		DPDT	10.0			24VDC	51mA	4A161	KUP-11D15-24	**4A366**	11.97	**11.85**	0.3
		DPDT	10.0			110VDC	11mA	1A247	KUP-11D15-110	**2XC42**	16.27	**16.12**	0.2
Flange Mount	8	DPDT	10.0	1/3	1/2	24VAC	168mA	—	KUP-11A55-24	**2XC41**	13.23	**13.09**	0.2
		DPDT	10.0			120VAC	17.5mA		KUP-11A55-120	**4A062**	13.22	**13.08**	2.0
		DPDT	10.0			12VDC	100mA		KUP-11D55-12	**2XC43**	12.39	**12.26**	0.2
		DPDT	10.0			24VDC	51mA		KUP-11D55-24	**3A987**	12.39	**12.26**	0.2
Socket Mount	11	3PDT	10.0	1/3	1/2	120VAC	24mA	5X853	KUP-14A15-120	**3A988**	14.07	**13.93**	0.2
		3PDT	10.0			240VAC	12mA	5X854	KUP-14A15-240	**3A989**	16.69	**16.53**	0.3
		3PDT	10.0			12VDC	100mA	4A161	KUP-14D15-12	**3A990**	13.75	**13.62**	0.3
		3PDT	10.0			24VDC	51mA	1A247	KUP-14D15-24	**3A991**	13.75	**13.62**	0.3
		3PDT	10.0			110VDC	11mA		KUP-14D15-110	**2XC48**	18.06	**17.88**	0.2
Flange Mount	11	3PDT	10.0	1/3	1/2	24VAC	115mA	—	KUP-14A55-24	**2XC46**	14.49	**14.34**	0.2
		3PDT	10.0			120VAC	24mA		KUP-14A55-120	**4A367**	14.49	**14.34**	0.3
		3PDT	10.0			240VAC	12mA		KUP-14A55-240	**2XC47**	17.22	**17.05**	0.2
		3PDT	10.0			24VDC	51mA		KUP-14D55-24	**4A063**	14.23	**14.08**	0.2
Socket w/Neon	11	3PDT	10.0	1/3	1/2	120VAC	24mA	5X853 5X854	KUP-14A35-120	**2XC44**	17.01	**16.84**	0.2
Socket w/Neon & Push-To-Test	11	3PDT	10.0	1/3	1/2	120VAC	24mA	4A161 1A247	KUP-14A45-120	**2XC45**	18.79	**18.60**	0.2



KUMP SERIES—Square Base

- Load carrying capability up to 15 amps
- Rated for 50 Hz
- No. of Mounting Pins: 8 or 11
- Termination: Plug-In
- Mounting: Socket

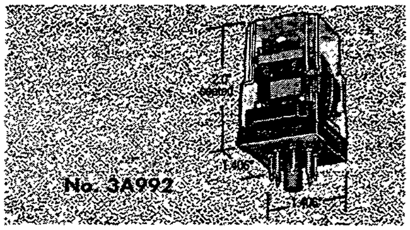
Type of Mounting	No. of Mounting Pins	Contact Load Ratings Form	Operating Current @ 120VAC	HP 120V	HP 240V	Coil Ratings @ 60 Hz Volts	Coil Current Rating	Use With Socket†	P&B Model	Stock No.	List	Each	Shpg. Wt.
Socket Mount	8	DPDT	15.0	1/3	1/2	120VAC	24mA	5X853	KUMP-11A18-120	**2XC37**	$14.17	**$14.04**	0.2
		DPDT	15.0			12VDC	100mA	5X854	KUMP-11D18-12	**2XC38**	13.70	**13.57**	0.2
		DPDT	15.0			24VDC	51mA	4A161	KUMP-11D18-24	**2XC39**	13.70	**13.57**	0.2
Socket Mount	11	3PDT	15.0	1/3	1/2	24VDC	51mA	1A247	KUMP-14D18-24	**2XC40**	15.12	**14.97**	0.2

(†) Order sockets on page 473.

USE AIR MOTORS WHERE ELECTRIC MOTORS ARE IMPRACTICAL

A compact, lightweight source of smooth, vibrationless power, Dayton Speedaire rotary vane air motors can be used in applications where electric or hydraulic motors are impractical. Unlike an electric motor, the air motor runs cool to prevent heat buildup and provides smooth startups. Use air motors in batch mixers, conveyors, and hoists. With no heat buildup or sparks, air motors are ideal for explosion-proof applications. See Index under Air Motors.

GENERAL PURPOSE RELAYS



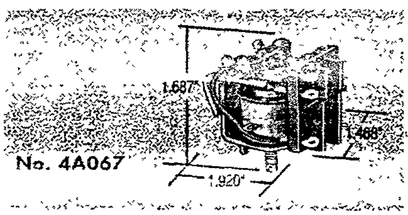
Potter & Brumfield

E22575 LR15734

KRPA SERIES—Octal Base

- Load carrying capability up to 10 amps
- Rated for 50 Hz
- Constructed to provide long operating life and reliability
- No. of Pins: 8 or 11
- Termination: Plug-In
- Mounting: Socket

No. of Mounting Pins	Contact Load Ratings: Form	Operating Current @ 120VAC	HP 120V	HP 240V	Coil Ratings @ 60 Hz Volts	Coil Current Rating	Use With Socket†	P&B Model	Stock No.	List	Each	Shpg. Wt.
8	DPDT	5.0A	1/10	1/6	24VAC	186mA	5X852	KRPA-11AY-24	**2XC30**	$17.01	**$16.84**	0.2
	DPDT	5.0			120VAC	17.5mA		KRPA-11AY-120	**2XC29**	17.01	**16.84**	0.2
	DPDT	5.0			24VDC	51mA		KRPA-11DY-24	**2XC33**	16.80	**16.63**	0.2
8	DPDT	10.0	1/3	1/2	24VAC	84mA	5X852	KRPA-11AG-24	**3A992**	17.48	**17.30**	0.2
	DPDT	10.0			120VAC	17.5mA		KRPA-11AG-120	**3A993**	17.48	**17.30**	0.2
	DPDT	10.0			240VAC	8.75mA		KRPA-11AG-240	**4A064**	18.41	**18.23**	0.2
8	DPDT	10.0	1/3	1/2	12VDC	100mA	5X852	KRPA-11DG-12	**3A994**	17.48	**17.30**	0.2
	DPDT	10.0			24VDC	51mA		KRPA-11DG-24	**3A995**	17.48	**17.30**	0.2
8	DPDT	10.0	1/3	1/2	48VDC	26.6mA	5X852	KRPA-11DG-48	**2XC32**	18.37	**18.20**	0.2
	DPDT	10.0			110VDC	11.5mA		KRPA-11DG-110	**2XC31**	18.94	**18.75**	2.0
11	3PDT	10.0	1/3	1/2	24VAC	8.4mA	6X156	KRPA-14AG-24	**4A065**	21.47	**21.25**	0.3
	3PDT	10.0			120VAC	17.5mA		KRPA-14AG-120	**3A996**	21.47	**21.25**	0.2
	3PDT	10.0			240VAC	8.75mA		KRPA-14AG-240	**4A066**	22.68	**22.45**	0.2
	3PDT	10.0			12VDC	100mA		KRPA-14DG-12	**2XC34**	21.30	**21.09**	2.0
	3PDT	10.0			24VDC	51mA		KRPA-14DG-24	**3A997**	21.31	**21.10**	0.2
8 w/Indicator Lamp	DPDT	10.0	1/3	1/2	24VAC	84mA	5X852	KRPA-11AN-24	**2XC28**	19.90	**19.70**	0.2
	DPDT	10.0			120VAC	17.5mA		KRPA-11AN-120	**3A998**	19.90	**19.70**	0.2
	DPDT	10.0			24VDC	51mA		KRPA-11DN-24	**3A999**	19.79	**19.59**	0.2
11 w/Indicator Lamp	3PDT	10.0	1/3	1/2	120VAC	17.5mA	6X156	KRPA-14AN-120	**4A365**	24.25	**24.01**	0.2
	3PDT	10.0			24VDC	51mA		KRPA-14DN-24	**2XC35**	23.89	**23.65**	0.2



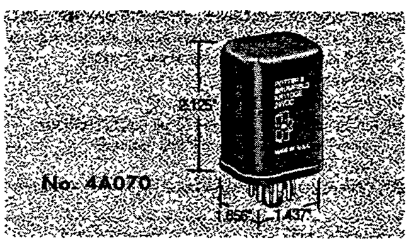
Potter & Brumfield

E22575 LR15734

KA SERIES

- Suitable for multipole switching
- Rated for 50 Hz
- No. of Mounting Pins: 8
- Termination: Solder
- Mounting: #6-32 stud

No. of Mounting Pins	Contact Load Ratings: Form	Operating Current @ 120VAC	Coil Ratings @ 60 Hz Volts	Coil Current Rating	P&B Model	Stock No.	List	Each	Shpg. Wt.
8	DPDT	10.0A	120VAC	17.5mA	KA-11AG-120	**4A067**	$26.07	**$25.80**	0.2
	DPDT	10.0	12VDC	100mA	KA-11DG-12	**4A068**	25.63	**25.40**	0.2
	DPDT	10.0	24VDC	51mA	KA-11DG-24	**4A069**	25.63	**25.40**	0.2



Potter & Brumfield

E81558 LR15734

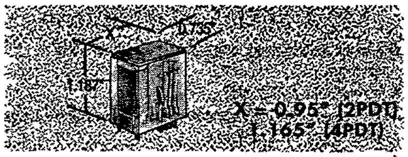
KR SERIES—Octal Base

- Rated for 50 Hz
- Hermetically sealed
- For Class 1, Div. 2, hazardous locations
- No. of Mounting Pins: 8 or 11
- Termination: Plug-In
- Mounting: Socket

No. of Mounting Pins	Contact Load Ratings: Form	Operating Current @ 120VAC	Coil Ratings @ 60 Hz Volts	Coil Current Rating	Use With Socket†	P&B Model	Stock No.	List	Each	Shpg. Wt.
8	DPDT	10.0A	120VAC	17.5mA	5X852	KR-11AGE-120	**4A070**	$80.32	**$79.55**	0.3
	DPDT	10.0	24VDC	51mA		KR-11DGE-24	**4A071**	78.64	**77.90**	0.3
11	3PDT	10.0	120VAC	17.5mA	6X156	KR-14AGE-120	**4A072**	104.89	**103.85**	0.3
	3PDT	10.0	24VDC	51mA		KR-14DGE-24	**4A073**	104.05	**103.05**	0.5

(†) Order sockets on page 473.

GENERAL PURPOSE RELAYS



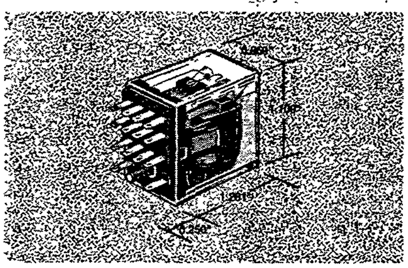
Potter & Brumfield

E29244 LR15734

R10 SERIES—Square Base

- Load carrying capability from 3 to 7.5 amps
- No. of Mounting Pins: 8 or 14
- Termination: Solder
- Mounting: #3-48 stud

No. of Mounting Pins	Contact Load Ratings: Form	Contact Load Ratings: Operating Current @ 120VAC	Coil Ratings @ 60 Hz: Volts	Coil Current Rating	Use With Socket	P&B Model	Stock No.	List	Each	Shpg. Wt.
8	DPDT	3.0A	12VDC	64mA		R10-E1Y2-V185	**4A051**	$11.12	**$11.01**	0.2
8	DPDT	3.0	24VDC	34mA		R10-E1Y2-V700	**4A052**	11.12	**11.01**	0.1
14	4PDT	3.0	12VDC	64mA		R10-E1Y4-V185	**4A053**	13.18	**13.05**	0.2
14	4PDT	3.0	24VDC	34mA		R10-E1Y4-V700	**4A054**	13.18	**13.05**	0.2
8	DPDT	5.0	12VDC	64mA		R10-E1X2-V185	**3A969**	12.15	**12.03**	0.1
8	DPDT	5.0	24VDC	34mA	Solder	R10-E1X2-V700	**3A970**	12.15	**12.03**	0.1
8	DPDT	5.0	48VDC	192mA	Connection	R10-E1X2-V2.5K	**3A971**	12.15	**12.03**	0.1
14	4PDT	5.0	12VDC	64mA		R10-E1X4-V185	**4A055**	15.04	**14.88**	0.1
14	4PDT	5.0	24VDC	34mA		R10-E1X4-V700	**3A972**	15.04	**14.88**	0.1
8	DPDT	7.5	12VDC	64mA		R10-E1W2-V185	**3A973**	13.80	**13.67**	0.1
8	DPDT	7.5	24VDC	34mA		R10-E1W2-V700	**3A974**	13.80	**13.67**	0.1
8	DPDT	5.0	115VAC	13mA		R10-E1X2-115V	**3A975**	23.28	**23.04**	0.1



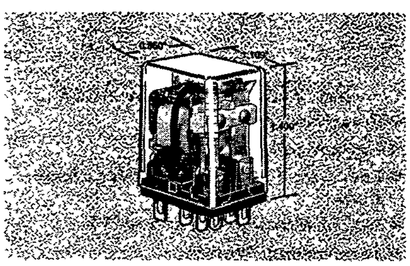
Potter & Brumfield

E22575 LR15734

KHAU SERIES—Square Base

- For data processing, photocopiers, and process control applications
- Rated for 50 Hz
- No. 4A058 has gold diffused silver contacts rated for dry circuit applications
- No. of Mounting Pins: 14
- Termination: Solder/Plug-In
- Mounting: #3-48 stud/socket

No. of Mounting Pins	Contact Load Ratings: Form	Operating Current @ 120VAC & 28VDC	HP 120V	HP 240V	Coil Ratings @ 60 Hz: Volts	Coil Current Rating	Use With Socket†	P&B Model	Stock No.	List	Each	Shpg.
14	4PDT	3.0A	—	—	24VAC	52mA	2A584	KHAU-17A11-24	**3A980**	$7.73	**$7.65**	[illegible]
	4PDT	3.0	—	—	120VAC	11mA		KHAU-17A11-120	**3A981**	8.14	**8.05**	[illegible]
	4PDT	3.0	—	—	12VDC	75mA		KHAU-17D11-12	**3A983**	7.05	**6.98**	0.1
	4PDT	3.0	—	—	24VDC	37mA		KHAU-17D11-24	**3A984**	7.05	**6.98**	0.1
	4PDT	3.0	1/10	1/10	110VDC	10mA		KHAU-17D11-110	**2XC26**	8.50	**8.42**	0.1
	4PDT	5.0	1/10	1/10	120VAC	11mA		KHAU-17A12-120	**4A056**	8.14	**8.05**	0.1
	4PDT	5.0	1/10	1/10	12VDC	75mA		KHAU-17D12-12	**2XC27**	7.05	**6.98**	0.1
	4PDT	5.0	1/10	1/10	24VDC	37mA		KHAU-17D12-24	**4A057**	7.05	**6.98**	0.2
	4PDT	3.0	—	—	120VAC	11mA		KHAU-17A18-120	**4A058**	8.91	**8.82**	0.1
14 with neon lamp	4PDT	3.0	—	—	120VAC	11mA	2A584	KHAU-17A11N-120	**3A982**	11.33	**11.22**	0.1



Potter & Brumfield

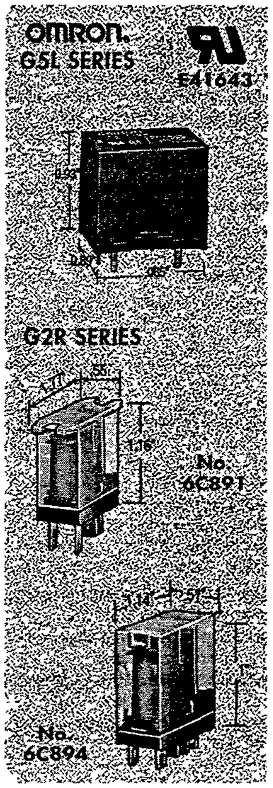
E22575 LR15734

K10 SERIES—Square Base or PC Board

- For alarm systems, control assemblies, and other applications requiring up to 13A switching in limited space
- Rated for 50 Hz
- No. of Mounting Pins: 8
- Termination: Quick Connect/Solder Terminal/Plug-In or PC Board Terminals
- Mounting: Screw/Socket or PC Board

No. of Mounting Pins	Contact Load Ratings: Form	Operating Current @ 120VAC	HP 120V	HP 240V	Coil Ratings @ 60 Hz: Volts	Coil Current Rating	Use With Socket†	P&B Model	Stock No.	List	Each	Shpg. Wt.
8	DPDT	13.0A	1/3	1/2	24VAC	52mA	2A582, 2A583	K10P-11A15-24	**2XC23**	$10.56	**$10.45**	0.1
	DPDT	13.0			120VAC	11mA		K10P-11A15-120	**4A059**	10.56	**10.45**	0.1
	DPDT	13.0			12VDC	75mA		K10P-11D15-12	**4A060**	9.48	**9.38**	0.1
	DPDT	13.0			24VDC	37mA		K10P-11D15-24	**4A061**	9.48	**9.38**	0.1
PC Board: 8	DPDT	13.0	1/3	1/2	12VDC	75mA	—	K10P-11D55-12	**2XC24**	9.79	**9.69**	0.1
					24VDC	37mA		K10P-11D55-24	**2XC25**	9.79	**9.69**	0.1

(†) Order sockets on page 473.



G5L SERIES

LR41408

- Mounts directly to PC board by soldering
- Sealed for resistance to flux wickering
- Termination: PC Board Terminal
- Mounting: PC Board

Contact Load Ratings @ 120 VAC										
No. of Mounting Pins	Form	Operating Current R*	HP @ VAC 120	Coil Ratings Volts	Coil Current Rating	Omron Model G5LE	Stock No.	List	Each	Shpg. Wt.
5	SPDT	10A	1/6	12VDC 24VDC	33.3mA 16.7mA	114P-PS-DC12 114P-PS-DC24	**2W937** **2W936**	$2.40 2.40	**$2.16** **2.16**	0.1 0.1

LR31928

G2R SERIES

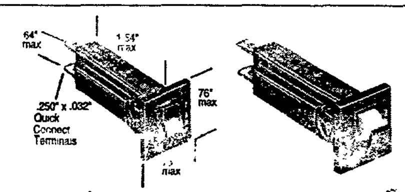
- Terminations: Plug-in/Quick Connect
- Flux-tight and semi sealed

Contact Load Ratings													
		250VAC											
No. of Mounting Pins	Form	Operating Current R*	Operating Current I	HP @ VAC 120	HP @ VAC 250	Coil Ratings @ 60 Hz Volts	Coil Current Rating	Use with Socket†	Omron Model G2R	Stock No.	List	Each	Shpg. Wt.
5	SPDT	10A	7.5A	1/3	1/2	24VAC 120VAC	37.5mA 7.5mA	6C898	1SAC24 1SAC120	**6C894** **6C895**	$7.21 7.91	**$6.15** **6.73**	0.1 0.1
4	SPST-NO	10A	7.5A	1/3	1/2	24VAC 120VAC	37.5mA 7.5mA	Quick Connect with Flange	1ATAC24 1ATAC120	**6C890** **6C891**	6.32 7.00	**5.38** **5.98**	0.1 0.1
5	SPDT	10A	7.5A	1/3	1/2	24VAC 120VAC	37.5mA 7.5mA	Quick Connect with Flange	1TAC24 1TAC120	**6C892** **6C893**	6.69 7.21	**5.71** **6.15**	0.1 0.1
8	DPDT	5A	2A	1/6	1/3	24VAC 120VAC	37.5mA 7.5mA	6C899	2SAC24 2SAC120	**6C896** **6C897**	8.02 8.65	**6.97** **7.51**	0.1 0.1

(*) R = Resistive Load. (†) Order sockets on page 474.

CROSS REFERENCE FOR OMRON RELAYS AND SWITCHES ON PAGE 466

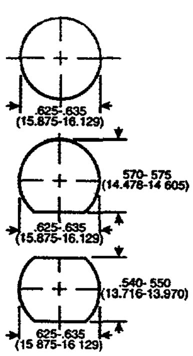
Potter & Brumfield



W28 SERIES

Single pole, thermal type breakers securely snap into standard panel cutouts from the front panel; can be prewired in front of the panel, then snapped into place. Feature a reset button that cannot be pulled out manually to disconnect circuit. When an overload occurs and breaker opens, reset button and white indicator extend for visual trip indication. Dielectric strength is over 1500V rms. Connections are made with 0.250" quick connectors.

Panel cutouts



- Precision breakers to protect instrumentation applications
- Use to replace costly fuses

E69543

LR15734

CIRCUIT BREAKER SPECIFICATIONS AND ORDERING DATA

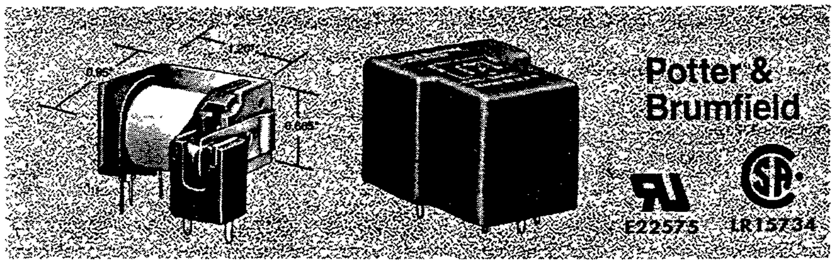
Series	Rating in Amps	Trip Time @ 200% of Rating	Reset Time	Max. Operating Voltage	Interrupt Capacity	P & B Model W28-	Stock No.	List	Each	Shpg. Wt.
W28	0.25 0.5 1.0 2.0	4.5-28 sec.	180 sec. max.	32VDC; 250VAC, @ 50/60 Hz	1000A @ 250VAC, 50/60 Hz & 32VDC	XQ1A-0.25 XQ1A-0.5 XQ1A-1 XQ1A-2	**4A037** **4A038** **4A039** **4A040**	$6.30 6.30 6.30 6.55	**$6.24** **6.24** **6.24** **6.48**	0.5 0.1 0.1 0.1
	3.0 5.0 7.0 8.0 10.0 12.0 15.0	2.2-15 sec.	10-60 sec.			XQ1A-3 XQ1A-5 XQ1A-7 XQ1A-8 XQ1A-10 XQ1A-12 XQ1A-15	**4A041** **4A042** **4A043** **4A044** **4A045** **4A046** **4A047**	3.50 3.50 3.50 3.50 3.50 3.50 3.50	**3.47** **3.47** **3.47** **3.47** **3.47** **3.47** **3.47**	0.1 0.1 0.1 0.1 0.1 0.1 0.5

Counters for Process Control and Time Studies

Redington and Omron counters in this catalog will help control production lines and provide valuable information to make systems more efficient. Included are impulse counters, resettable counters, motion and hand activated counters.

GENERAL PURPOSE AND LATCHING RELAYS

GENERAL PURPOSE RELAYS

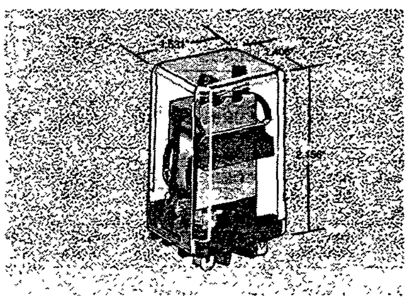


T90 SERIES

- PC board design—applications include heating, ventilating, air conditioning, appliance markets, and others
- Switches resistive loads up to 30A
- Open style No. 4A048; sealed immersion cleanable Nos. 4A049, 4A050
- No. of Mounting Pins: 6
- Termination: PC board terminal
- Mounting: PC board

No. of Mounting Pins	Contact Load Ratings Form	240VAC and 28VDC (Resistive)	HP 120V	HP 240V	Coil Ratings @ 60 Hz Voltage	Coil Current Rating	P&B Model	Stock No.	List	Each	Shpg. Wt.
6	SPDT	20A	NO: 1	2	12VDC	77mA	T90N5D12-12	**4A048**	$3.60	**$3.56**	0.1
		10A	NC: 1/4	1/2	12VDC	77mA	T90S5D12-12	**4A049**	5.05	**5.00**	0.2
					24VDC	36mA	T90S5D12-24	**4A050**	5.06	**5.00**	0.1

LATCHING RELAYS



Potter & Brumfield

E22575 LR15734

KUL SERIES

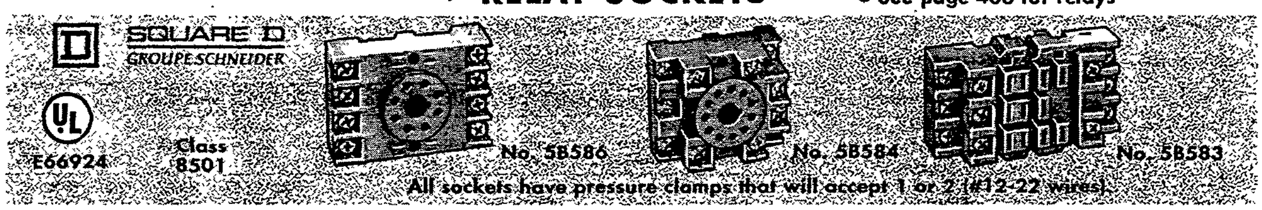
- Small, magnetic latching relay requires half the space needed for mechanical latching relays
- Rated for 50 Hz
- For continuous duty applications that need good memory stability
- Maintain contact position without maintaining coil energization
- Reset by applying power to an alternate set of coil terminals
- Quick connect, solder terminals or socket mount

No. of Mounting Pins	Contact Load Ratings Form	Amps (Resistive)	HP 120V	HP 240V	Coil Ratings @ 60 Hz Voltage	Coil Current Rating	Use With Socket*	P&B Model	Stock No.	List	Each	Shpg. Wt.
11	DPDT	10A @ 28VDC or 240VAC, 50%PF	1/4	1/3	120VAC	32mA	1A247, 4A161, 5X853, 5X854	KUL-11A15S-120	**3A965**	$33.81	**$33.50**	0.3
					12VDC	133mA		KUL-11D15D-12	**2XC36**	40.63	**40.30**	0.2
					24VDC	65mA		KUL-11D15D-24	**3A966**	40.63	**40.30**	0.3

(*) Order sockets on page 473

RELAY SOCKETS

• See page 486 for relays



All sockets have pressure clamps that will accept 1 or 2 (#12-22 wires).

RELAY SOCKET ORDERING DATA

For Use With	Description	Socket Rating	Square D Model 8501...	Stock No.	List	Each	Shpg. Wt.
8501KP12 8501KPD12 8430MPS (240V) 9050JCK1 9050JCK3 9050JCK5	8 Pin Tubular Single Tier Screw Terminal	10 Amp/300 Volts	NR51	**5B586**	$7.50	**$7.43**	0.1
8501KP13 8501KPD13	11 Pin Tubular Single Tier Screw Terminal	10 Amp/300 Volts	NR61	**5B585**	11.30	**11.19**	0.2
9050JCK2 9050JCK4	11 Pin Tubular Double Tier Screw Terminal	10 Amp/300 Volts	NR62	**5B584**	11.30	**11.19**	0.1
8501KL 8501KU 8501KX 8430MPS (480V)	11 Pin Spade Double Tier Screw Terminal	15 Amp/300 Volts	NR82	**5B583**	12.50	**12.38**	0.2

RELAY SOCKETS

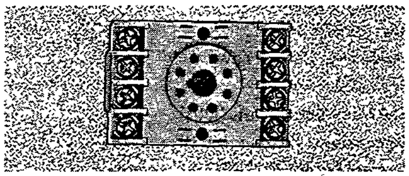
Dayton®

E84694

LR15734

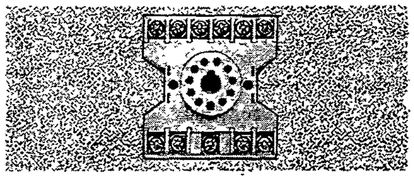
- Brass connectors
- Replaces equivalent Aromat, Custom Connector, Deltrol, Fujitsu, Guardian, IDEC, Magnecraft, Midtex, Omron, Potter Brumfield, Square D, and Struthers Dunn brands; see chart on page 474
- Nos. 5X852, 5X853, 6X156, 2A582, 2A584 and 4A161 feature pressure clamp screws that handle wire sizes from 22 AWG to 12 AWG
- DIN units can be mounted to No. 6X295 (order on page 474) DIN track or surface mounted

NO. 5X852



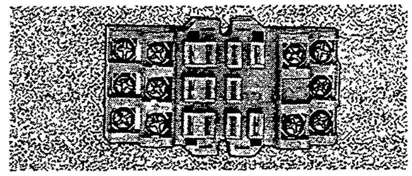
Socket: Octal
No. of Pins: 8
Mounting: DIN/Screw
Terminals: Screw
Electrical Ratings: 300VAC, 10A
Dimensions: 2.362L x 1.575W x 0.866"D
No. 5X852. Shpg. wt. 0.1 lbs. List......$4.43.
Each......$3.77

NO. 6X156



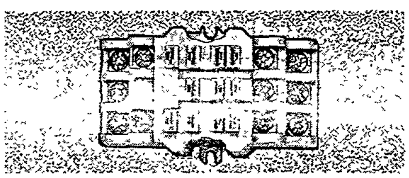
Socket: Octal
No. of Pins: 11
Mounting: DIN/Screw
Terminals: Screw
Electrical Ratings: 300VAC, 10A
Dimensions: 2.362L x 2.323W x 0.866"D
No. 6X156. Shpg. wt. 0.1 lbs. List......$9.37.
Each......$7.97

NO. 5X853



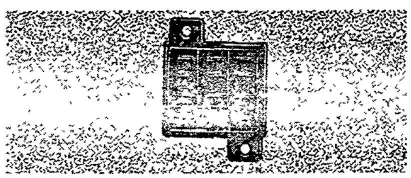
Socket: Square
No. of Pins: 11
Mounting: DIN/Screw
Terminals: Screw
Electrical Ratings: 300VAC, 10A
Dimensions: 3.071L x 1.693W x 0.984"D
No. 5X853. Shpg. wt. 0.2 lbs. List....$10.29.
Each......$8.75

NO. 4A161



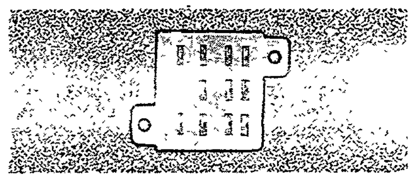
Socket: Square
No. of Pins: 11
Mounting: Screw
Terminals: Screw
Electrical Ratings: 300VAC, 15A
Dimensions: 3.150L x 1.700W x 0.895"D
No. 4A161. Shpg. wt. 0.1 lbs. List......$9.27.
Each......$7.88

NO. 5X854



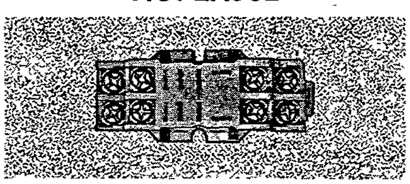
Socket: Square
No. of Pins: 11
Mounting: Screw
Terminals: Quick Connect
Electrical Ratings: 300VAC, 10A
Dimensions: 2.030L x 1.500W x 0.640"D
No. 5X854. Shpg. wt. 0.1 lbs. List......$2.37.
Each......$2.02

NO. 1A247



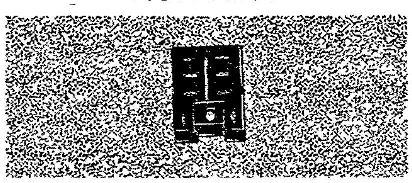
Socket: Square
No. of Pins: 11
Mounting: Screw
Terminals: PC Board
Electrical Ratings: 300VAC, 10A
Dimensions: 2.030L x 1.500W x 0.640"D
No. 1A247. Shpg. wt. 0.1 lbs. List......$2.42.
Each......$2.06

NO. 2A582



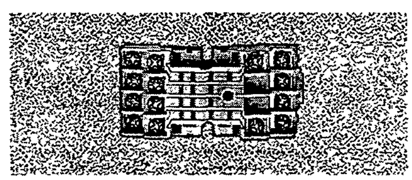
Socket: Square
No. of Pins: 8
Mounting: DIN/Screw
Terminals: Screw
Electrical Ratings: 300VAC, 10A
Dimensions: 2.736L x 1.181W x 0.984"D
No. 2A582. Shpg. wt. 0.1 lbs. List......$8.24.
Each......$7.00

NO. 2A583



Socket: Square
No. of Pins: 8
Mounting: PC Board
Terminals: PC Board
Electrical Ratings: 300VAC, 10A
Dimensions: 1.156L x 0.843W x 0.437"D
No. 2A583. Shpg. wt. 0.1 lbs. List......$2.22.
Each......$1.90

NO. 2A584



Socket: Square
No. of Pins: 14
Mounting: DIN/Screw
Terminals: Screw
Electrical Ratings: 300VAC, 7A
Dimensions: 2.559L x 1.81W x 0.984"D
No. 2A584. Shpg. wt. 0.1 lbs. List....$11.69.
Each......$9.94

OMRON

RELAY SOCKETS

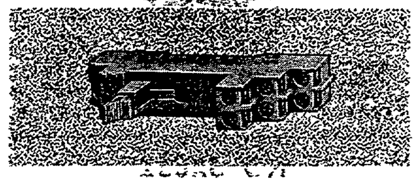
E87929 LR31928

- Nos. 2XC08 and 2XC09 fit LY series relays on page 467
- Nos. 6C898 and 6C899 fit G2R Series relays on page 471
- DIN rail mountable; order separately below

NO. 6C898

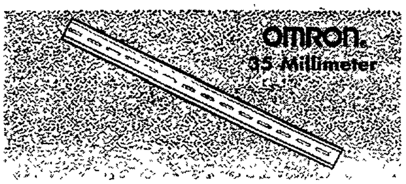
Socket: Square
No. of Pins: 5
Mounting: DIN/Screw
Terminals: Screw
Electrical Rating: 10A, 300V
Dimensions: 3.57L x 0.61W x 2.40"H
Omron Brand: P2RF-05
No. 6C898. Shpg. wt. 0.1 lbs. List......$3.87.
Each......$3.45

NO. 6C899



Socket: Square
No. of Pins: 8
Mounting: DIN/Screw
Terminals: Screw
Electrical Rating: 5A, 300V
Dimensions: 3.61L x 0.63W x 2.48"H
Omron Brand: P2RF-08
No. 6C899. Shpg. wt. 0.2 lbs. List......$6.26.
Each......$5.49

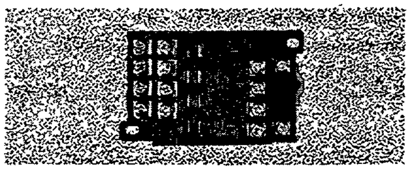
DIN TYPE MOUNTING TRACK



Extruded aluminum mounting track for snap on mounting of IEC type contactors, starters, relays and relay sockets. For use with Telemecanique starters, contactors, relays and Dayton relay sockets. Overall dimensions: 1/3"H x $1\frac{3}{8}$"W x $39\frac{3}{8}$"L. (Omron brand (PFF-100N).

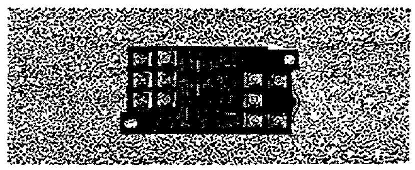
No. 6X295. Shpg. wt. 1.0 lbs. List......$9.21.
Each......$7.42

NO. 2XC09



Socket: Square
No. of Pins: 14
Mounting: DIN/Screw
Terminals: Screw
Electrical Ratings: 240V, 10A
Dimensions: 3.09L x 1.79W x 1.18"D
Omron Brand: PTF14A
No. 2XC09. Shpg. wt. 0.2 lbs. List......$7.16.
Each......$6.27

NO. 2XC08



Socket: Square
No. of Pins: 11
Mounting: DIN/Screw
Terminals: Screw
Electrical Ratings: 240V, 10A
Dimensions: 3.09L x 1.46W x 1.18"D
Omron Brand: PTF11A
No. 2XC08. Shpg. wt. 0.2 lbs. List......$7.16.
Each......$6.27

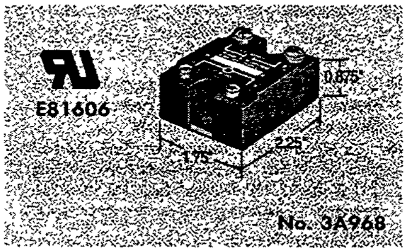
RELAY SOCKET COMPATIBILITY CHART

The chart below identifies national brand relay series that can be used with relay sockets. Fit is determined by the number of relay pins not exceeding the socket pin openings.

Socket Stock No.	Allen Bradley	Aromat	Deltrol	Eagle Signal	Fujitsu	Guardian	IDEC	Magnecraft	Midtex	Omron	P&B	Sigma	Square D	Struthers Dunn
5X852, 6X156	700 HA 700 HT 700 HR	—	105	20Q,22 23,35P	FRL-256	1210 1215 1410 1415	RR2P RR2KP RR3PA	88,211 213,214 250CP	155	MK MKK	KRP, KBP KRPA CG,CH,CK	5,42 38,50	KP	214,A314, 326,327 392
5X853, 5X854, 1A247, 4A161	700 HB 700 HS	HP	165,166, 268	30,31, 33	FRL-253	1510 1515 1390 1395	RR1BA RR2BA RR3B	388, 388CP 388JCP	157	MJ	CL, CU,KU, KUL,KUP	68	KU	285, 286,287, 292,A283
2A584	700 HC	HC	280	10,17P	FRL-263	1390S 1395S 1310, 1315	RY4S RM2S RY42S RY2KS	78CS	156, 158	MY, MYK	KH	67	RS	C281,282
2A582, 2A583, 2XC08, 2XC09	700 HF	HL	290	16Q	FRL-263	1310S 1315S	RH2B	78RCS	258	LY	K-10 K-20	76	—	C281

Helpful Terminology & Technical Data Available

Data is included on many of the product areas in this catalog, including motors, air compressors, air moving equipment, hydraulics, lighting, pumps, and much more. See Index for complete listings.



OPTO-ISOLATED SOLID-STATE RELAY

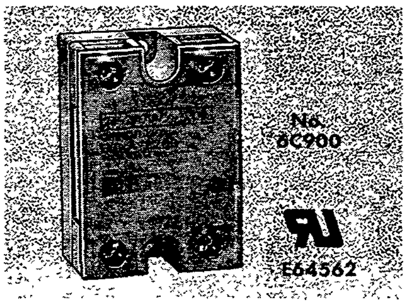
Potter & Brumfield

SSRT SERIES

- SPST-NO solid-state Triac output
- Typical turn-on and turn-off at first zero crossover
- Isolation voltage 4000V rms; insulation resistance 10^{10} ohms
- #6-32 input screw terminals
- #8-32 output screw terminals
- Heatsink thermal resistance rating is 2°C/W: typical flat surface area per unit is 36 square inches. Mount relays to heatsink using thermal joint compound.

RELAY SPECIFICATIONS AND ORDERING DATA

Series	Input Range VDC	Input Typical mA	Output A rms Min.	Output A rms Max.	Output VAC Min.	Output VAC Max.	V peak Blocking	Switching Type	P & B Model	Stock No.	List	Each	Shpg. Wt.
SSR	3-32	1mA/V	0.05	10	24	280	±400	Zero	SSRT-240D10	2XC60	$16.55	$16.38	0.4
			0.05	25	24	280	±600	Zero	SSRT-240D25	3A968	22.05	21.83	0.3



SOLID-STATE RELAY

OMRON

G3NA SERIES

- Built-in varistor effectively absorbs external surges
- LED operation indicator
- Protective cover for greater safety
- Heat sinks must be ordered separately see below

HEAT SINK ORDERING DATA

Description	Use With	Omron Model	Stock No.	List	Each	Shpg. Wt.
Heat Sink	6C900-6C905	Y92B-AN100	6C911	$8.94	$8.42	0.5
Heat Sink	6C906-6C910	Y92B-A150N	6C912	12.50	11.62	0.8

RELAY SPECIFICATIONS AND ORDERING DATA

Input Range	Input Max. mA	Output VAC Min.	Output VAC Max.	Load Current w/Heat Sink	Load Current w/o Heat Sink	Surge Current	Leakage Current	Omron Model	Stock No.	List	Each	Shpg. Wt.
5-24VDC	7mA	24	240	0.1 to 10A	0.1 to 4A	150A	5mA @ 100VAC 10mA @ 200VAC	G3NA-210B-DC5-24	6C900	$15.03	$14.87	0.1
100-120VAC	7	24	240	0.1 to 10	0.1 to 4	150		G3NA-210B-AC100-120	6C901	18.87	18.69	0.2
200-240VAC	7	24	240	0.1 to 10	0.1 to 4	150		G3NA-210B-AC200-240	6C902	18.87	18.67	0.1
5-24VDC	7	24	240	0.1 to 25	0.1 to 4	220		G3NA-225B-DC5-24	6C903	19.54	19.35	0.2
100-120VAC	7	24	240	0.1 to 25	0.1 to 4	220		G3NA-225B-AC100-120	6C904	23.53	23.30	0.2
200-240VAC	7	24	240	0.1 to 25	0.1 to 4	220		G3NA-225B-AC200-240	6C905	23.53	23.30	0.2
5-24VDC	7	24	240	0.1 to 40	0.1 to 6	440		G3NA-240B-DC5-24	6C906	48.17	47.50	0.2
100-120VAC	7	24	240	0.1 to 40	0.1 to 6	440		G3NA-240B-AC100-120	6C907	51.82	51.05	0.2
200-240VAC	7	24	240	0.1 to 40	0.1 to 6	440		G3NA-240B-AC200-240	6C908	51.82	51.05	0.2
5-24VDC	5	200	480	0.2 to 40	0.2 to 6	440	10mA @ 200VAC 20mA @ 400VAC	G3NA-440B-DC5-24	6C909	56.81	56.00	0.2
100-120VAC	5	200	480	0.2 to 40	0.2 to 6	440		G3NA-440B-AC100-120	6C910	59.03	58.20	0.2

POWER RELAYS

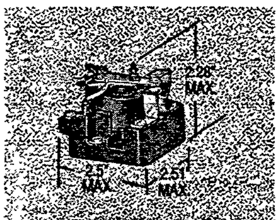
OPEN MODELS

Dayton®

- Use for switching motor loads in applications such as elevators, machine tools, air handling, and HVAC equipment
- Screw head terminals
- Silver cadmium oxide, self-wiping contacts
- Molded thermoset plastic base
- Pull-in at 85% or less of normal AC voltage at 25°C (77°F)

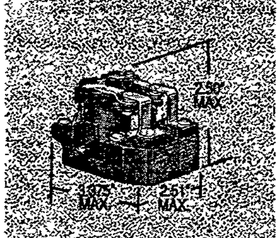
E40944 LR15734

- Dimensionally interchangeable with Potter & Brumfield, Magnecraft, Deltrol, and other brands
- 1½ HP models mount on two 3/16" dia. hole for conventional mounting; 20 amp, 1 HP model has one #6-32 tapped mounting hole and locating tab
- All coils rated for 50/60 Hz



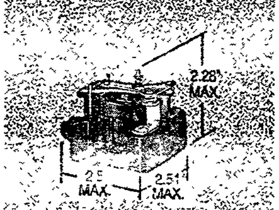
30 AMP, 1½ HP, SPDT MODELS

Contact Form	Contact Load Ratings: Operating Current* Resistive & Inductive @ 300VAC	Contact Load Ratings: @ 120 VAC HP	Coil Ratings @ 60 Hz: Voltage	Coil Current Rating	Stock No.	List	Each	Shpg. Wt.
SPDT	30A	1½	24VAC	410mA	3X744	$18.07	$15.36	0.6
			120VAC	85mA	3X745	18.07	15.36	0.6
			24VDC	84mA	3X747	17.30	14.70	0.6



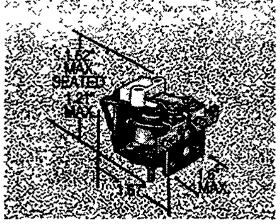
30 AMP, 1½ HP, DPDT MODELS

Contact Form	Contact Load Ratings: Operating Current* Resistive & Inductive @ 300VAC	Contact Load Ratings: @ 120 VAC HP	Coil Ratings @ 60 Hz: Voltage	Coil Current Rating	Stock No.	List	Each	Shpg. Wt.
DPDT	30A	1½	24VAC	410mA	5X846	$24.20	$20.57	0.7
			120VAC	85mA	5X847	24.20	20.57	0.7
			240VAC	43mA	5X848	24.20	20.57	0.7
			12VDC	169mA	3X748	23.68	20.13	0.6
			24VDC	84mA	3X749	23.68	20.13	0.6



30 AMP, 1½ HP, SPST MODELS

Contact Form	Contact Load Ratings: Operating Current* Resistive & Inductive @ 300VAC	Contact Load Ratings: @ 120 VAC HP	Coil Ratings @ 60 Hz: Voltage	Coil Current Rating	Stock No.	List	Each	Shpg. Wt.
SPST, Normally Open, Double Make	30A	1½	24VAC	410mA	5X849	$15.75	$13.40	0.5
			120VAC	85mA	5X850	15.75	13.40	0.5
			240VAC	43mA	5X851	15.75	13.40	0.5

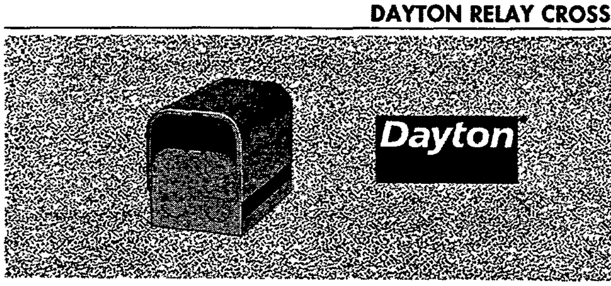


20 AMP, 1 HP, SPST MODELS

Contact Form	Contact Load Ratings: Operating Current* Resistive & Inductive @ 300VAC	Contact Load Ratings: @ 120 VAC HP	Coil Ratings @ 60 Hz: Voltage	Coil Current Rating	Stock No.	List	Each	Shpg. Wt.
SPST, Normally Open, Double Make	20A	1	24VAC	410mA	5X809	$15.76	$13.40	0.2
			120VAC	85mA	5X810	15.76	13.40	0.2
			240VAC	43mA	5X811	15.76	13.40	0.2

(*) Power Factor (P.F.) = 0.8

DAYTON RELAY CROSS REFERENCE ON PAGE 464



Dust Cover for Power Relays

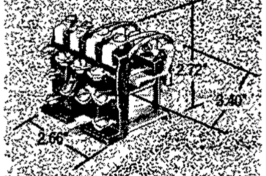
(Use with all base mount power relays, except No. 4A022)

Sheet metal base with knockouts for 0.5" diameter conduit and cover fitted with screws. Mounting: three #10 holes on 1.875 x 4.125" centers; cannot be used with No. 4A022 relay. Dimensions: 5.31L x 3.38W x 3.13"D.

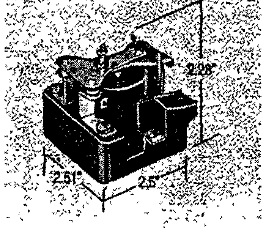
No. 4A079. Shpg. wt. 1.0 lbs. List $16.47. Each **$14.00**

Potter & Brumfield

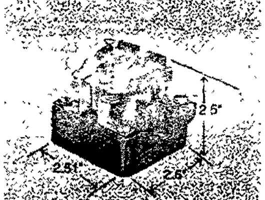
LR15734 E22575



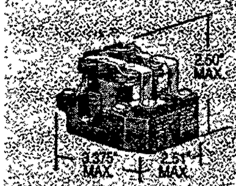
PM Series No. 3A955



PRD-3 Series No. 4A015



PRD-7 Series No. 4A078



PRD-11 Series No. 4A019

PM SERIES

- Silver cadmium oxide contacts
- Screw terminals
- Rated for 50 Hz
- Must-operate voltage @ 85% nom. AC; 75% nom. DC

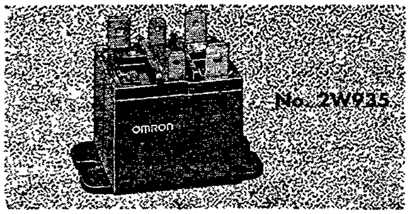
Contact Ratings @ 60 Hz									
Form	Amps, Resistive 277VAC	HP 120/240	Coil Ratings Voltage	Coil Current Rating	P & B Model	Stock No.	List	Each	Shpg. Wt.
4PDT	25	1/1	12VAC	1.07mA	PM-17AY-12	**3A955**	$70.50	**$69.85**	0.9
			24VAC	640mA	PM-17AY-24	**3A956**	70.50	**69.85**	0.9
			120VAC	128mA	PM-17AY-120	**3A957**	70.50	**69.85**	0.9
			12VDC	364mA	PM-17DY-12	**3A958**	64.72	**64.10**	0.9
			24VDC	182mA	PM-17DY-24	**3A959**	64.72	**64.10**	0.9

PRD SERIES

- Screw terminals
- For high inrush applications
- Rated for 50 Hz
- Nos. 4A023, 4A024, and 2XC52 for switching high voltage to DC current loads; equipped with magnetic blowout

Contact Ratings @ 60 Hz													
	Amps, Resistive					HP							
Form	125 VDC	240 VAC	250 VAC	277 VAC	600 VAC	120/240/250	Coil Ratings Voltage	Coil Current Rating	P & B Model	Stock No.	List	Each	Shpg. Wt.
SPST-NO	—	—	—	25	10	1/—/2	24VAC	410mA	PRD-1AYO-24	**2XC54**	$16.06	**$15.90**	0.5
SPST-NO-Double Make	—	—	—	30	10	1/—/2	12VDC	169mA	PRD-3DGO-12	**4A327**	15.33	**15.17**	0.6
	—	—	—	30	10	1/—/2	24VDC	84mA	PRD-3DGO-24	**4A328**	15.33	**15.17**	0.5
	20	—	—	—	—	—	24VDC	84mA	PRD-3DHO-24	**4A023**	18.27	**18.09**	0.6
SPST-NO-Double Make	—	—	40	25	—	1/1/2	12VAC	820mA	PRD-3AYO-12	**4A074**	16.06	**15.90**	0.6
							24VAC	410mA	PRD-3AYO-24	**4A075**	16.06	**15.90**	0.6
							120VAC	85mA	PRD-3AYO-120	**4A015**	16.06	**15.90**	0.5
SPDT	—	—	—	25	10	1/—/2	120VAC	85mA	PRD-5AYO-120	**4A016**	18.43	**18.24**	0.5
	—	—	—	30	10	1.5/—/2	12VDC	169mA	PRD-5DGO-12	**4A076**	17.64	**17.46**	0.6
	—	—	—	25	10	1/—/2	12VDC	169mA	PRD-5DYO-12	**2XC55**	17.85	**17.67**	0.5
	—	—	—	25	10	1/—/2	24VDC	84mA	PRD-5DYO-24	**2XC56**	17.85	[illegible]	[illegible]
DPST-NO	—	30	—	20	10	1/1/2	[illegible]	85mA	PRD-7AGO-120	**4A078**	19.84	[illegible]	
DPST-NO	—	25	—	20	10	1/—/2	24VAC	410mA	PRD-7AYO-24	**2XC57**	19.95	**19.75**	0.3
							120VAC	85mA	PRD-7AYO-120	**3A960**	19.94	**19.74**	1.0
							208VAC	47mA	PRD-7AYO-208	**3A961**	20.37	**20.17**	0.5
							240VAC	43mA	PRD-7AYO-240	**2XC58**	20.37	**20.17**	0.7
	—	25	—	20	10	1/—/2	12VDC	169mA	PRD-7DYO-12	**2XC59**	19.32	**19.13**	0.7
							24VDC	84mA	PRD-7DYO-24	**4A017**	19.32	**19.13**	0.6
DPDT	—	25	—	20	10	1/—/2	24VAC	410mA	PRD-11AYO-24	**4A019**	24.78	**24.52**	0.7
							120VAC	85mA	PRD-11AYO-120	**3A963**	24.77	**24.52**	1.0
							240VAC	43mA	PRD-11AYO-240	**4A020**	25.20	**24.94**	0.7
	—	25	—	20	10	1/—/2	12VDC	169mA	PRD-11DYO-12	**4A021**	24.13	**23.90**	0.7
							24VDC	84mA	PRD-11DYO-24	**3A964**	24.13	**23.90**	1.0
DPDT	—	30	—	20	10	1/1/2	24VAC	410mA	PRD-11AGO-24	**4A018**	24.67	**24.43**	0.7
							120VAC	85mA	PRD-11AGO-120	**3A962**	24.67	**24.42**	1.0
DPDT & SPDT	—	25	—	20	10	1/—/2	120VAC	85mA	PRDA-11AYA-120	**4A022**	37.90	**37.55**	0.7
DPDT	20	—	—	—	—	—	120VAC	85mA	PRD-11AHO-120	**4A024**	27.56	**27.30**	0.7
							24VDC	84mA	PRD-11DHO-24	**2XC52**	26.88	**26.65**	0.7

POWER RELAYS



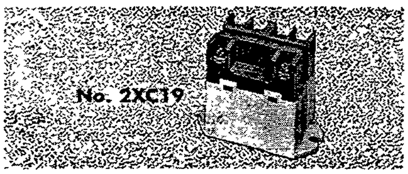
G4B SERIES

omron.

- Top mounted quick-connect .187" spade coil terminals; .250" for load terminal
- Operates at 80 to 110% of rated voltage. Dropout at 30% of rated voltage
- Dielectric strength 2000 VAC, 1 min.
- Flange type mounting bracket
- Dimensions: 1.52L x 1.28W x 2.00"D

E41643 LR31928

Contact Form*	No. and Type of Mounting Terminations	Contact Load Ratings: 240 VAC Oper. Current Amps (Resistive)	HP 120VAC	HP 240VAC	Coil Ratings @ 50/60 Hz Voltage	Coil Current Rating	Omron Model	Stock No.	List	Each	Shpg. Wt.
SPST-NO	4, Spade	25	—	2	24VAC	54mA	G4B112T1FDUSRPAC24	**2W935**	$10.19	**$8.97**	0.1
	4, Spade				120	10.8mA	G4B112T1FDUSRPAC120	**2W934**	10.19	**8.97**	0.1
SPDT	5, Spade	25	—	2	24	54mA	G4B112T1FDCUSRPAC24	**4A708**	10.48	**9.23**	0.1
	5, Spade				120	10.8mA	G4B112T1FDCUSRPAC120	**4A709**	10.48	**9.23**	0.1



G7L AND G7J SERIES

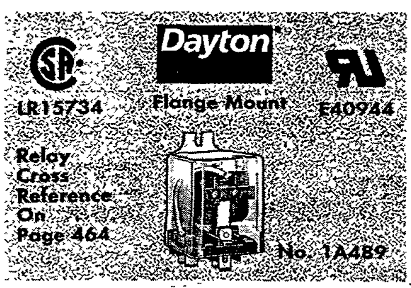
omron.

- Top mounted quick-connect .250" spade or screw terminals available
- Dielectric strength 4000 VAC, 1 min.
- Push-to-test button
- Flange type mounting bracket

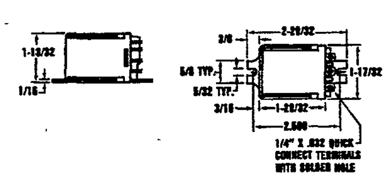
E41643 LR35535

Contact Form*	No. and Type of Mounting Terminations	Contact Load Ratings 240 VAC: Operating Current Amps (Resistive)*	(Inductive)*	FLA	LRA	HP 120VAC	HP 240VAC	Coil Ratings @ 50/60 Hz Voltage	Coil Current Rating	Omron Model	Stock No.	List	Each	Shpg. Wt.
SPST-NO	4, Spade	30A	15A	17A	102A	1½	3	24VAC	71mA	G7L-1A-TUB-J-CB-AC24	**4A710**	$11.91	**$10.44**	0.2
	4, Screw	30	15					24	71mA	G7L-1A-BUB-J-CB-AC24	**2XC21**	14.92	**13.08**	0.3
	4, Spade	30	15					120	20.4mA	G7L-1A-TUB-J-CB-AC120	**4A711**	11.91	**10.44**	0.2
	4, Screw	30	15					120	20.4mA	G7L-1A-BUB-J-CB-AC120	**2XC22**	14.92	**13.09**	
DPST-NO	6, Spade	25	10	17	102	1	2	24VAC	71mA	G7L-2A-TUB-J-CB-AC24	**3A354**	12.34	**10.81**	[illegible]
	6, Screw	25	10					24	71mA	G7L-2A-BUB-J-CB-AC24	**2XC19**	15.65	**13.72**	0.3
	6, Spade	25	10					120	20.4mA	G7L-2A-TUB-J-CB-AC120	**3A355**	12.34	**10.81**	0.2
	6, Screw	25	10					120	20.4mA	G7L-2A-BUB-J-CB-AC120	**2XC20**	15.65	**13.72**	0.3
DPST-NO/ DPST-NC	10, Screw	25 NO/8 NC	25 NO/8 NC	17	102	1½	5	100/120VAC	17/20.4mA	G7J-2A2B-B-AC100/120	**6C913**	33.36	**29.40**	0.5
	10, Screw	25 NO/8 NC	25 NO/8 NC					200/240	8.5/10.2mA	G7J-2A2B-B-AC200/240	**6C914**	34.47	**30.40**	0.5
	10, Screw	25 NO/8 NC	25 NO/8 NC					24VDC	79mA	G7J-2A2B-B-DC24	**6C915**	30.18	**26.60**	0.5
3PST-NO/ SPST-NC	10, Screw	25 NO/8 NC	25 NO/8 NC	17	102	1½	5	100/120VAC	17/20.4mA	G7J-3A1B-B-AC100/120	**6C985**	33.36	**29.40**	0.5
	10, Screw	25 NO/8 NC	25 NO/8 NC					200/240	8.5/10.2mA	G7J-3A1B-B-AC200/240	**6C986**	34.47	**30.40**	0.5
	10, Screw	25 NO/8 NC	25 NO/8 NC					24VDC	79mA	G7J-3A1B-B-DC24	**6C987**	30.18	**26.60**	0.5
4PST-NO	10, Screw	25	25	17	102	1½	5	100/120VAC	17/20.4mA	G7J-4A-B-AC100/120	**6C988**	33.36	**29.40**	0.4
	10, Screw	25	25					200/240	8.5/10.2mA	G7J-4A-B-AC200/240	**6C989**	34.47	**30.40**	0.5
	10, Screw	25	25					24VDC	79mA	G7J-4A-B-DC24	**6C990**	30.18	**26.60**	0.5

(*) NO = Normally Open; NC = Normally Closed.

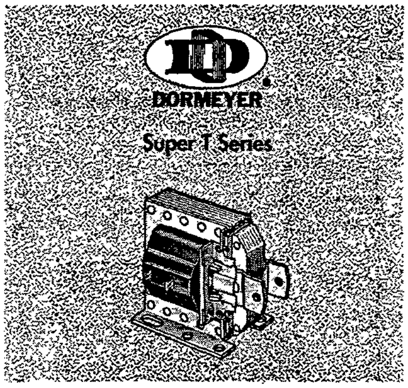


DIMENSIONS



- Suitable for motor loads, HVAC equipment, pumps, and welding equipment
- Enclosed relays designed to switch loads to 20 amps (DPDT); 30 amps (SPDT)
- Pull-in at 85% of nominal voltage for AC coils or 75% for DC coils
- Silver cadmium oxide contacts
- Non-socket mount—use 1/4" quick-connect
- Operating temperature -45° to +50°C (DC); -45° to +45°C (AC)

Contact Form	Contact Load Ratings (Resistive & Inductive)	Coil Ratings @ 50/60 Hz Voltage	Coil Current Rating	Stock No.	List	Each	Shpg. Wt.
SPDT	30A @ 120/240VAC; 1 HP @ 120VAC; 1½ HP @ 240VAC; 25A @ 28VDC	24VDC	51mA	**2A544**	$12.82	**$10.90**	0.2
		120VAC	24mA	**1A489**	13.90	**11.82**	0.2
DPDT	20A @ 120/240VAC; 3/4 HP @ 120VAC; 1½ HP @ 240VAC; 20A @ 28VDC	24VDC	51mA	**2A545**	15.76	**13.40**	0.2
		24VAC	115mA	**1A490**	16.89	**14.36**	0.2
		120VAC	24mA	**1A491**	16.89	**14.36**	0.2



LAMINATED TYPE SOLENOIDS

- Pull type
- Polyester encapsulated coil
- Polyester bobbin
- Laminated steel, zinc dichromate plated frame and plunger
- Steel plunger springs
- Brass plunger guides
- Class A coil insulation
- Solder lug coil terminals
- Continuous duty cycle rated at 40°C
- Nos. 4X240 and 4X894 are UL Listed (E83929)

FORCE VS. DISTANCE SPECIFICATIONS (±10%)‡

Gravity Value*	Lbs. Pull vs. Length of Stroke									Solenoid Series
	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/4"	
0.11 Lbs.	3.0 Lbs.	2.2	1.8	1.6	1.2	0.9				1000
0.27	8.0	6.4	6.2	6.4	6.4	6.0	5.3	4.0	← Maximum Stroke	2000
0.37	11.0	9.0	9.0	9.1	9.1	8.4	7.0	5.8		2500
0.79	16.0	12.0	11.8	12.2	13.5	15.0	15.8	16.0	12.0	3000

Coil Voltage @ 60 Hz	Coil† Resistance (Ω)	Seated Watts†	Seated Amps†	Amps† @ Max. Stroke	Dimensions D	Dimensions W	Dimensions L	Mtg. Holes OC ON L	Mtg. Holes OC ON W	Dormeyer Model	Stock No.	List	Each	Shpg. Wt.
120VAC	88.0	9.5	.24	1.25	1 7/16"	1 3/16"	1 5/8"	1 3/8"	57/64"	1000-M-1	**4X239**	$17.54	**$13.72**	0.5
240	354.0	10.0	.15	0.65	1 7/16	1 3/16	1 5/8	1 3/8	57/64	1001-M-1	**4X893**	20.34	**15.65**	0.5
120	20.5	17.9	.43	4.90	2 1/16	1 13/16	2 1/2	2	1 3/8	2005-M-1	**4X240#**	20.48	**15.69**	1.2
240	82.0	17.5	.22	2.50	2 1/16	1 13/16	2 1/2	2	1 3/8	2006-M-1	**4X894#**	20.95	**16.35**	1.2
120	14.9	19.0	.48	6.50	2 1/16	2 1/16	2 1/2	2	1 5/8	2536-M-1	**4X241**	24.06	**18.21**	1.4
240	60.0	18.0	.24	3.20	2 1/16	2 1/16	2 1/2	2	1 5/8	2537-M-1	**4X895**	24.88	**18.93**	1.4
120	6.5	25.0	.66	12.00	2 15/16	2 3/8	3	2	1 7/8	3000-M-1	**4X242**	32.40	**24.19**	2.8
240	26.0	23.5	.33	6.50	2 15/16	2 3/8	3	2	1 7/8	3001-M-1	**4X896**	33.10	**24.76**	3.0

(*) Subtract Gravity Value from force given in table when solenoid is being operated against gravity or add Gravity Value when solenoid is operated with gravity.
(†) Values are ±10%. (‡) 100% rated voltage at 35°C. (#) UL Recognized (E83929) and CSA (LR85068).

HOW TO ORDER SOLENOID VALVES

The selection of a solenoid valve for a particular control application requires the following information:

- Fluid to be controlled
- Capacity required (GPM or CFM)
- Maximum operating pressure differential (MOPD)
- Minimum operating pressure differential
- Electrical characteristics (power source available)
- Safe working pressure required (maximum system pressure)
- Environmental conditions

DESCRIPTION

Solenoid valve bodies are of packless construction, provide shut-off in systems controlling the flow of water, air, and steam. **Not for use in explosive atmospheres.** Rated in accordance with standards sanctioned by the Fluid Control Institute, Inc. and the National Fluid Power Association (NFPA). Valves are spring loaded and can be mounted in any position. All units have 400 stainless steel plungers with 300 stainless steel enclosing tubes.

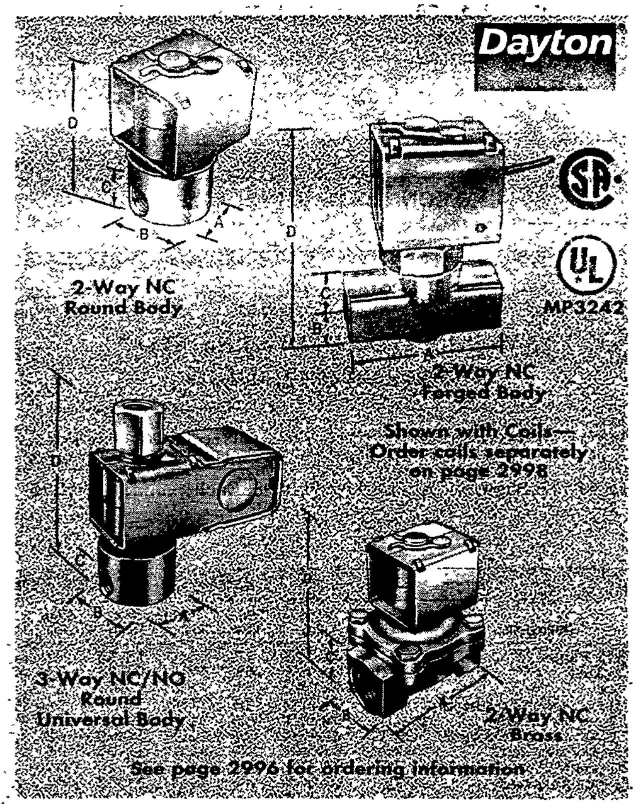
SOLENOID TYPES AVAILABLE

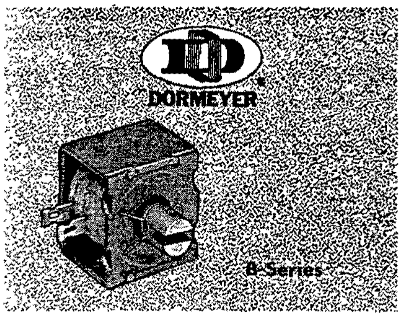
General Purpose Types with Buna N discs and gaskets available in 2 or 3 way types, normally open or closed, with brass or stainless steel bodies.

Low Pressure Steam Types with ethylene propylene discs and gaskets available in 2 way, normally closed brass bodies.

High Pressure Steam Types with Teflon reinforced discs and ethylene propylene gaskets available in 2 way, normally closed brass bodies. Note: some leakage can be expected with both air and water.

400 Stainless Steel Valve Bodies available with or without adjustable metering. Adjustable metering provides for varying flow applications such as carwash detergent dispensing systems.





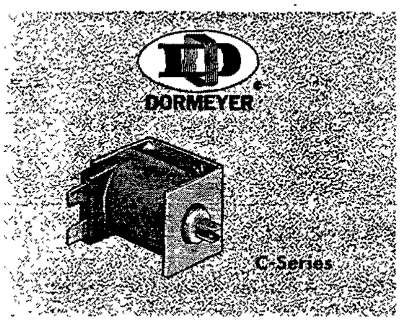
BOX FRAME TYPE SOLENOIDS

- Pull type
- Varnished cotton tape coil insulation
- Phenolic bobbins (2A170 has nylon with brass tube bobbin)
- Steel, zinc dichromate plated, frames and plungers
- Steel spring
- Type 1 solder lug coil terminations
- Continuous duty cycle rated at 40°C
- Individually packaged

FORCE VS. DISTANCE SPECIFICATIONS (±10%)#

Gravity Value*	Oz. Pull vs. Length of Stroke 1/16"	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	Solenoid Series
0.72 oz.	24 oz.	16 oz.	12 oz.	10 oz.	8 oz.	6 oz.	← Maximum Stroke		B-21 (AC only)
0.72	32	18	8	4	2				B-21 (DC only)
1.41	48	32	15	8	6	4	3 oz.	2 oz.	B-24 (DC only)

Volts	Coil Reistance	Coil Insulation	Seated Watts**	Seated Amps**	Amps** @ Max. Stroke	Dimensions (In.) L	W	D	Mtg. Holes, In. from Plunger L	Dormeyer Model	Stock No.	List	Each	Shpg. Wt.
120VAC	234.0Ω	Class A	7.8	0.10	0.44	1⁵/₁₆	1⁵/₁₆	1¹³/₃₄	²⁷/₃₂	B21-1-A-1	**2A167**	$13.65	**$9.69**	0.4
24VAC	9.5		7.3	0.53	2.20					B21-3-A-1	**2A168**	13.65	**9.69**	0.4
24VDC	72.3		8.9	0.37	0.37					B21-253-A-1	**2A169**	14.57	**10.96**	0.4
24VDC	60.0	Class A	10.6	0.44	0.44	1⁵/₁₆	1⁵/₁₆	2	²⁷/₃₂	B24-253-A-1	**2A170**	17.99	**12.94**	0.5



C-FRAME TYPE SOLENOIDS

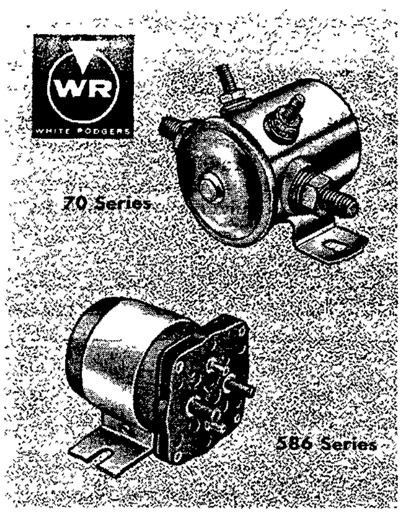
- Pull type
- Cotton tape and varnish coil insulation (Polyester encapsulated coil on No. 2A173)
- Rated 120VAC/60 Hz
- Nylon or polyester bobbins
- Steel, zinc dichromate plated frames and plungers
- Solder lug coil terminations
- Continuous duty cycle rated at 40°C
- Individually packaged

FORCE VS. DISTANCE SPECIFICATIONS (±10%)#

Gravity Value*	Oz. Pull vs. Length of Stroke 1/16"	1/8"	1/4"	3/8"	1/2"	3/4"	1"	Solenoid Series
0.32 oz.	11 oz.	7 oz.	5 oz.	4 oz.	3 oz.	←Maximum Stroke		C8
0.88	30	24	18	16	10			
1.36	—	20	16	18	16	13 oz	6 oz.	

Coil Resistance	Coil Insulation	Seated Watts**	Amps**	Amps** Max. Stroke	Dimensions (In.) L	W	D	Mtg. Holes, In. from Plunger L	Dormeyer Model	Stock No	List	Each	Wt.
620Ω	Class A	5.8	0.07	0.21	1³/₁₆	3/4	1¹/₈	3/4	C8-19-A-14	**2A171**	$9.03	**$6.49**	0.2
172		11.2	0.18	0.58	1¹³/₃₂	1³/₈	1¹/₁₆	1.14†	C9-19-A-14	**2A172**	10.61	**7.52**	0.3
129		13.5	0.20	0.86	—	1⁵/₁₆	1¹¹/₁₆	0.845‡	C34-19-M-33	**2A173**	9.62	**6.86**	0.5

(*) Subtract Gravity Value from force given in table when solenoid is being operated against gravity or add Gravity Value when solenoid is operated with gravity
(†) Values are ± [illegible] (‡) Values are ± 0.0500" (#) 100% rated voltage at [illegible] C. (**) Values are ±10%



DC POWER SOLENOIDS

Control DC Starting Motors on Gasoline-Engine Driven Auxiliaries

70 SERIES

- Applications include remote control of power circuits on battery charging systems, low voltage DC motor generator sets, golf carts, and in-plant lift trucks
- Dust-proof enclosure
- Termination 5/16"-24 UNF-2A thread
- Mounting hardware included

120 SERIES

- Applications include marine engines, garden and lawn tractors, airport service vehicles, and material handling equipment
- Compact, water resistant and able to withstand high temperature and high vibration conditions
- Intermittent duty cycle: 30 seconds ON maximum; 6 minutes OFF minimum

124 SERIES

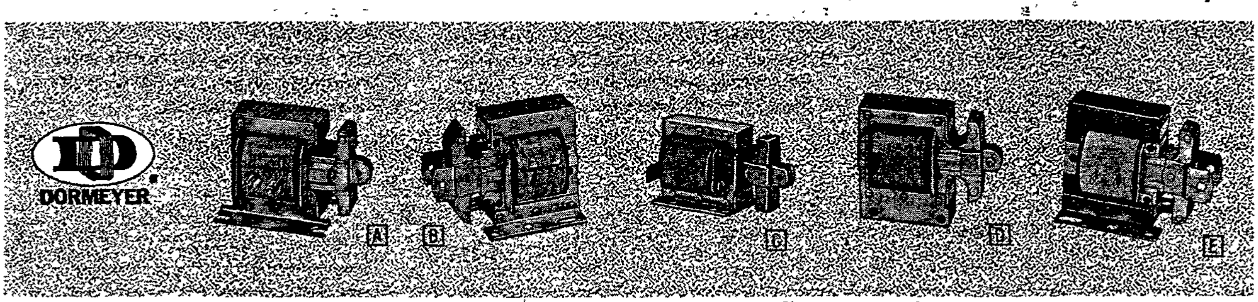
- Applications include battery charging power circuits, low voltage DC motor generator sets, golf carts, reversing circuits in winch applications, and industrial lift trucks
- Dust and splash proof
- Termination 5/16"-24 UNF-2A thread
- Meet UL 583 Industrial Truck Standard

586 SERIES

- Applications include battery charging power circuits, low voltage DC motor generator sets, golf carts, reversing circuits in winch applications, and industrial lift trucks
- Termination 5/16"-24 UNF-2A thread

FOR A COMPLETE LISTING AND ORDERING INFORMATION **SEE PAGE 2360**

LAUNDRY EQUIPMENT SOLENOIDS— For Hotpoint, Maytag, Norge, Speed Queen, Philco-Bendix, and Other Make Washers and Dryers



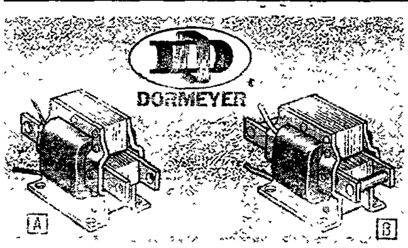
FORCE VS. DISTANCE SPECIFICATIONS

Key	Lbs. Pull vs. Length of Stroke 1/4"	1/2"	3/4"	7/8"	1"	1 1/4"
A	8	7	7	6½	6	—
B	19	19	20	21	20	15
C	2½	2	1½	Max. Stroke		
D	8	7	7	6½	6	—
E	24	23	24	23	23	15

- Pull type
- Intermittent duty for replacement service on home laundry washers and dryers
- Rated 115V, 50/60 Hz
- 3 minute maximum on time
- Flanged base, except No. 2X868 channel U type
- Terminals 1/4" spade for quick installation—for quick-disconnects, see page 698

Key	Coil Resistance	Seated Amps	Watts	Dimensions L	W	D	Mtg. Holes	Dormeyer Model	Stock No.	List	Each	Shpg. Wt.
A	18.20Ω	.55	24	2½"	1 13/16"	2 1/16	2" OC	7014	**2X661**	$19.38	**$14.82**	1.1
B	4.20	1.10	40	2 63/64	2 3/8	2 15/16	2	7258	**2X662**	29.04	**22.01**	2.7
C	60.00	.36	14	1 39/64	1 3/16	1 7/16	1 3/8	7690	**2X867**	15.47	**12.08**	0.5
D	18.20	.55	24	2	7/8	2 15/32	Channel U	7467	**2X868**	18.46	**14.12**	1.2
E	4.50	1.20	48	2 63/64	2 3/8	2 15/16	2"OC	7612	**4X317**	27.52	**20.44**	2.7

PUSH OR PULL TYPE SOLENOIDS

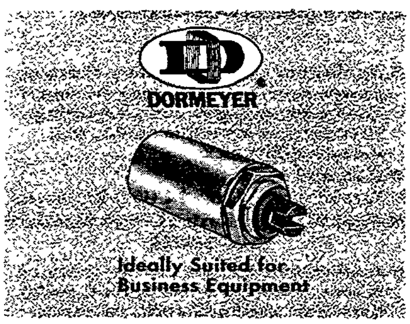


- Applications include machine tools, appliances, vending machines
- Rated 115V, 60 Hz
- Attach plunger to either end depending on whether a push or pull action is required
- Class A coil insulation—for use in temperatures under 230°F (105°C) with maximum temperature rise of 120°F (65°C)
- 12" leads

Key	Lbs. Push or Pull vs. Length of Stroke 1/4"	1/2"	3/4"	1"
A	1.8	1.8	1.8	1.2
B	5.0	6.0	6.0	6.0

Key	Coil Resistance	Seated Watts	Seated Amps	Duty Cycle	Dimensions L	W	D	Stack	Mtg Holes	Dormeyer Model	Stock No.	List	Each	Shpg. Wt.
A	56.0Ω	7.0	0.21	Cont.	2½"	1 25/32"	2 3/32"	3/4"	2"OC	14-1	**4X897**	$33.70	**$25.25**	1.4
B	15.2	23.0	0.85	Int.#	2½	2 3/16	2 3/32	1	2	7110-2A	**4X898**	38.46	**31.50**	1.7

TUBULAR TYPE SOLENOIDS



- Pull type
- Rated 24VDC
- Polyester coil insulation
- Corrosion resistant steel plunger
- Stainless steel plunger cavity
- Corrosion resistant steel plunger stop
- Spring steel, zinc plated, lock washer
- Steel, zinc chromate plated housing
- 6" lead coil termination
- Continous duty cycle rated at 40°C
- P16 series equivalent to obsolete P6 series

FORCE VS. DISTANCE SPECIFICATIONS (±10%)†

Gravity Value*	Oz. Pull vs. Length of Stroke 1/16"	1/8"	1/4"	3/8"	1/2"	5/8"		Solenoid Series
0.60 oz.	18.0 oz.	9.0 oz.	3.5 oz.	1.8 oz.	1.0 oz.	0.75 oz.	← Maximum Stroke	P4
1.50	36.0	20.0	9.0	5.0	4.0	2.00		P16

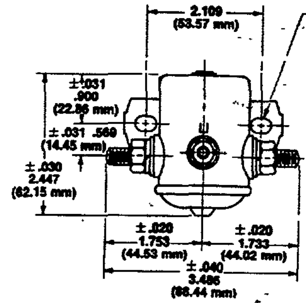
Coil Resistance	Coil Insulation	Seated Watts†	Seated Amps†	Amps‡ @ Max. Stroke	Dia.	Length (to plunger)	Dormeyer Model	Stock No.	List	Each	Shpg. Wt.
99Ω	Class A	6.0	0.27	0.27	3/4"	1 7/8"	P4-2L	**2A174**	$23.22	**$16.63**	0.2
82		7.5	0.33	0.33	1	2 3/8	P16-2L	**2A175**	27.87	**19.97**	0.4

(*) Subtract Gravity Value from force given in table when solenoid is being operated against gravity or add Gravity Value when solenoid is operated with gravity.
(†) Values are ±10%. (‡) 100% rated voltage at 35°C. (#) Intermittent duty cycle. Maximum 25% ON time and 75% OFF time. On time not to exceed more than 3 minutes at 25°C (room temperature) ambient temperature.

DC POWER SOLENOID DIMENSIONS

TYPE 70

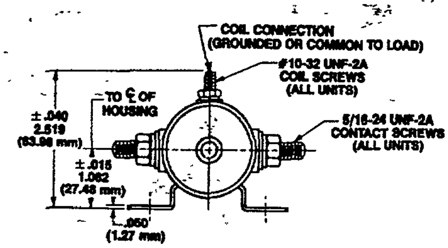
Isolated Type



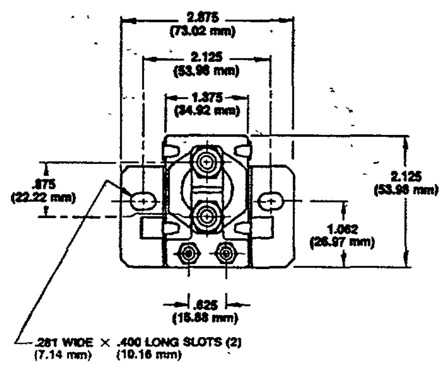
SINGLE POLE NORMALLY OPEN

Mounting Position:
Recommend plunger vertical with cap down

Grounded Type

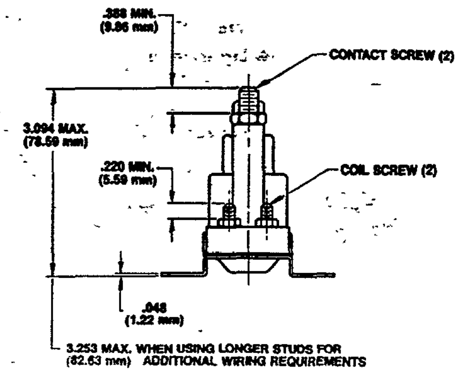


TYPE 120



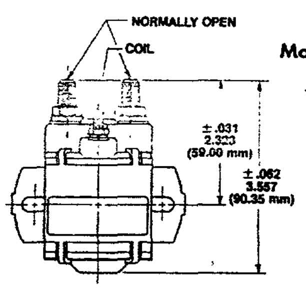
SINGLE POLE NORMALLY OPEN

Mounting Position:
Recommend mounting coil terminals up or horizontal

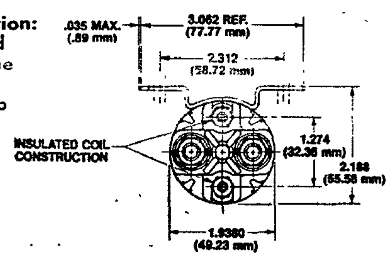


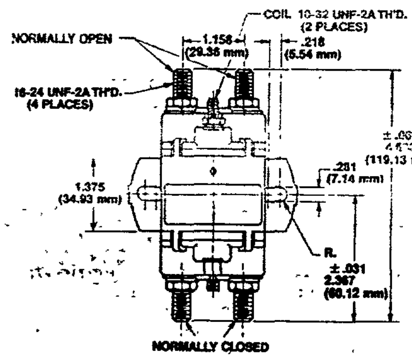
TYPE 124

SINGLE POLE NORMALLY OPEN



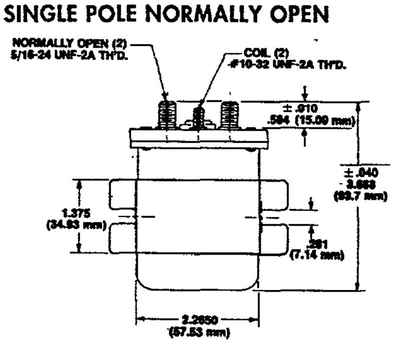
Mounting Position:
Recommend vertical plane with coil terminals up



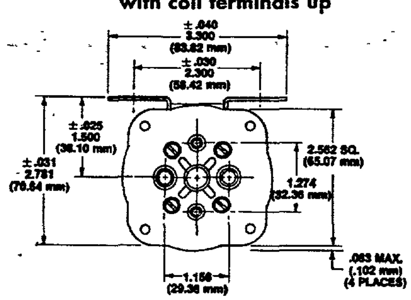


TYPE 586

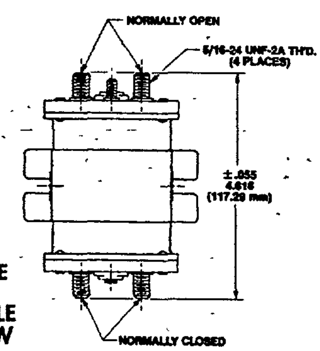
SINGLE POLE NORMALLY OPEN



Mounting Position:
Recommend vertical plane with coil terminals up



SINGLE POLE DOUBLE THROW

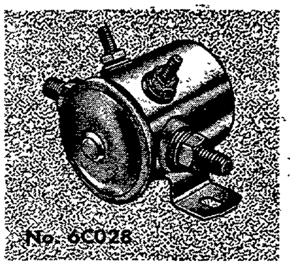


DC POWER SOLENOIDS

Control DC Starting Motors on Gasoline-Engine Driven Auxiliaries

UL AU2138

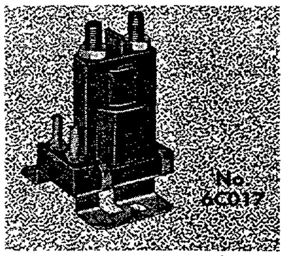
70 SERIES


No. 6C028

- Applications include remote control of power circuits on battery charging systems, low voltage DC motor generator sets, golf carts, and in-plant lift trucks
- Dust-proof enclosure
- Termination 5/16"-24 UNF-2A thread
- Mounting hardware included

Pole Form	Contact Material	Coil Type	Coil VDC	Duty Cycle	Amp Rating	Essex/White Rodgers Model	Stock No.	List	Each	Shpg. Wt.
SPNO	Copper	Isolated	12	Continuous	80	70-111224-5	6C028	$27.95	$19.57	0.9
SPNO	Copper	Grounded	12	Continuous	80	70-111225-5	6C029	25.80	18.07	0.9
SPNO	Copper	Isolated	24	Continuous	50	70-117224-5	6C030	28.29	19.80	0.9
SPNO	Copper	Isolated	36	Continuous	50	70-120224-5	6C031	26.73	18.71	0.9

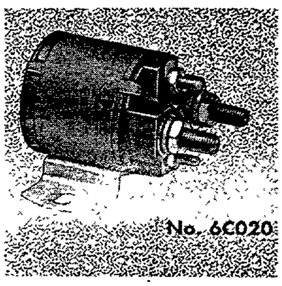
120 SERIES


No. 6C017

- Applications include marine engines, garden and lawn tractors, airport service vehicles, and material handling equipment
- Compact, water resistant and able to withstand high temperature and high vibration conditions
- Intermittent duty cycle: 30 seconds ON maximum; 6 minutes OFF minimum

Pole Form	Contact Material	Coil Type	Termination Mounting	Coil	Contacts	Coil VDC	Duty Cycle	Amp Rating	Essex/White Rodgers Model	Stock No.	List	Each	Shpg. Wt.
SPNO	Silver Alloy	Isolated	Stnd. Bracket	#10-32	5/16-24	12	Cont.	100	120-105711	6C017	$20.33	$14.24	0.5
SPNO	Copper	Isolated	Stnd. Bracket	#10-32	5/16-20	12	Inter.	80	120-106131	6C018	15.40	10.78	0.5
SPNO	Copper	Isolated	L-Bracket	#10-32	5/16-20	12	Inter.	80	120-106132	6C019	16.98	11.88	0.5

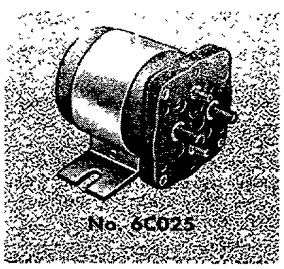
124 SERIES


No. 6C020

- Applications include battery charging power circuits, low voltage DC motor generator sets, golf carts, reversing circuits in winch applications, and industrial lift trucks
- Dust and splash proof
- Termination 5/16"-24 UNF-2A thread
- Meet UL 583 Industrial Truck Standard

Pole Form	Contact Material	Coil Type	Coil VDC	Duty Cycle	Amp Rating	Essex/White Rodgers Model	Stock No.	List	Each	Shpg. Wt.
SPNO	Silver Alloy	Isolated	12	Continuous	100	124-105111	6C020	$41.70	$29.30	[illegible]
SPNO	Silver Alloy	Isolated	24	Continuous	100	124-114111	6C021	48.83	33.95	1.1
SPNO	Silver Alloy	Isolated	36	Continuous	100	124-117111	6C022	48.83	33.95	1.1
SPDT	Silver Alloy	Isolated	12	Continuous	100	124-305111	6C023	73.46	52.65	1.5
SPDT	Silver Alloy	Isolated	24	Continuous	100	124-314111	6C024	73.46	52.65	1.5

586 SERIES


No. 6C025

- Applications include battery charging power circuits, low voltage DC motor generator sets, golf carts, reversing circuits in winch applications, and industrial lift trucks
- Termination 5/16"-24 UNF-2A thread

Pole Form	Contact Material	Coil Type	Coil VDC	Duty Cycle	Amp Rating	Essex/White Rodgers Model	Stock No.	List	Each	Shpg. Wt.
SPNO	Silver Alloy	Isolated	24	Continuous	200	586-114111	6C025	$73.20	$51.35	1.8
SPNO	Silver Alloy	Isolated	36	Continuous	200	586-117111	6C026	73.60	51.60	1.9
SPDT	Silver Alloy	Isolated	36	Continuous	200	586-317111	6C027	104.41	73.20	2.0

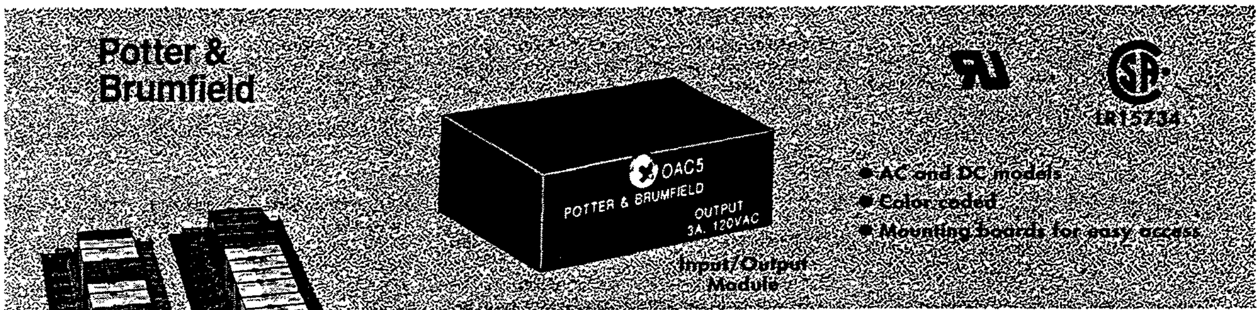
HOW TO ORDER DC POWER SOLENOIDS

See Page 2361 For Dimensions

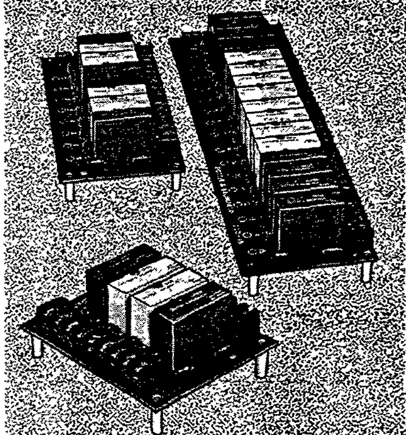
1. Select coil voltage
2. Determine whether isolated or ground coil is required by matching number of terminals to original part. Example: SPNO grounded coils have a total of 3 terminals; SPNO isolated coils have a total of 4 terminals; and SPDT isolated coils have a total of 6 terminals.
3. Determine pole form: Single Pole, Normally Open (SPNO) or Single Pole, Double Throw (SPDT)
4. Determine maximum inrush and carrying current and match to appropriate listing in chart above
5. In starting applications, select intermittent duty coils
6. Closely match mounting dimensions on page 2361 with original part

NOTE: Caution must be used in coil selection for use in 12 volt systems where battery charging may be exposed to continuous, higher-than-rated voltage.

INPUT/OUTPUT RELAY MODULES

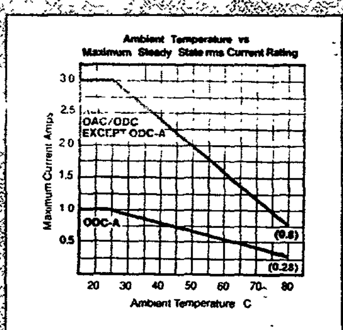


Input/Output Module



Mounting Boards for Input/Output Modules

ELECTRICAL CHARACTERISTICS OAC/ODC MODULES



INPUT/OUTPUT MODULES

IAC/OAC, IDC/ODC SERIES

Opto-isolated solid-state input/output modules provide a means of reliably interfacing between microprocessor or computer based control systems and external input devices and loads.

Series compatible. On modules of the same voltage type, AC or DC, output of the output modules is compatible with the input modules. This makes them ideal for series operation applications. Output modules can be controlled from sinking (NPN) or sourcing (PNP) logic.

Color-coded by function: IAC—AC input (yellow), OAC—AC output (black), IDC—DC input (white) and ODC—DC output (red). All models have standard plug-in enclosure with captive hold down screw for quick interchanging. Continuous duty. Isolation voltage is 4000V rms; isolation resistance 10^9 ohms. High immunity to transient noise, less than $3000V_{p\text{-}p}$**. UL Recognized (E22575) and (E29244).

MOUNTING BOARDS FOR I/O MODULES

Mounting boards accept 4, 8 or 16 input/output modules in any combination. Insert and remove modules quickly and easily, without disturbing field wiring. Once inserted, secure modules to board by threading captive hold-down screws into the nuts attached to board.

LED status indicator, plug-in 5-amp fuse and 3.3K ohm pull-up resistor are provided on the mounting board for each module. Each module position may be color coded for convenience.

Screw terminals in barrier strips are used for logic supply input connections and field input/output connections on all mounting boards. Screw terminals on all mounting boards will accept two #12 AWG wires.

Card edge patterns on mounting boards Nos. 4A035 and 4A036 accept standard 50-pin cable connectors for logic connections. 4A034 uses screw terminals. Eight position mounting board No. 4A035 also accepts a 26-pin cable connector. Each module position on these boards is served by two of the cable's conductors. Odd numbered pins are used for signals while even numbered pins are connected to logic ground. Jumper locations permit logic supply input to be introduced through cable rather than screw terminals. UL Recognized (E61482).

MOUNTING BOARD SPECIFICATIONS

No. of Module Positions	Dimensions (In.) L	W	D*	P&B Model	Stock No.	List	Each	Shpg. Wt.
4†	4.5	3.5	2.2	2104B	**4A034**	$26.26	**$26.00**	2.0
8‡	8.4	3.5	2.2	2108	**4A035**	43.88	**43.50**	0.5
16‡	14.4	3.5	2.2	21016A	**4A036**	77.61	**76.85**	0.9

(*)Height is measured to top of mounted models

(†)Designed to operate with either negative or positive true logic systems and different logic voltages.

(‡)Designed to operate with negative true logic systems and one logic voltage.

(**)Transient noise immunity is the ability to withstand external noise without triggering the load switch or transmitting the noise. These I/O modules typically demonstrate noise immunity of > $8000V_{p\text{-}p}$.

INPUT/OUTPUT RELAY MODULE SPECIFICATIONS AND ORDERING DATA

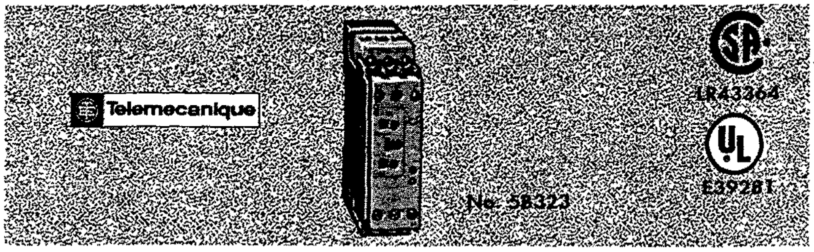
Type (Series)	Case Color	System Voltage	Input Voltage Range	Input Current at Maximum Voltage	Output Load Current Over Load Voltage Range	Output Switching Type	P&B Model	Stock No.	List	Each	Shpg. Wt.
AC Input††	Yellow		90-140VAC	5mA	50mA max. @ 30VDC	Random	IAC-5	**4A030**	$11.23	**$11.11**	0.1
AC Output	Black		3-8VDC	20mA***	0.05-3A @ 24-280VAC	Zero	OAC-5	**4A031**	11.23	**11.11**	0.1
DC Input	White	5VDC	3.3-32VDC	34mA	50mA max. @ 30VDC	Random	IDC-5	**4A032**	11.23	**11.11**	0.1
DC Output	Red		3-8VDC	18A***	0.01-3A @ 3-60VDC	Random	ODC-5	**4A033**	11.23	**11.11**	0.1

(***) LED in series with input. (††) Input will operate on AC or DC voltage.

TIME DELAY RELAYS

ELECTRICAL CONTROLS

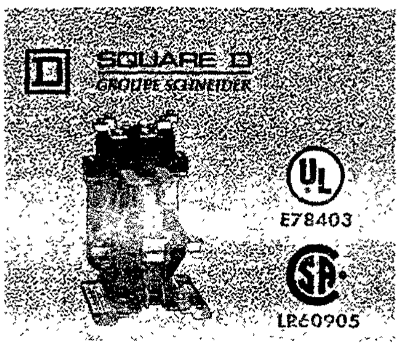
DIN MOUNT RELAYS



- Mount on any DIN 3 or 35mm track
- IEC types
- Remote controllable
- Timing range: 0.05 sec. to 300 hours
- LEDS indicate timing and contact status
- Operates on supply voltages from 24V to 240V AC or DC

Supply Voltage	Contact Configuration	Remote Control of Time Delay Start	Partial Stop	Adjustment	Telemecanique Model RE4...	Stock No.	List	Each	Shpg. Wt.
MULTIFUNCTION									
24VDC/VAC; 42-48VDC/VAC; 110-240VAC	1 NO + 1 NC	With	With	With	ML11BU	**5B323**	$176.00	**$156.00**	0.4
ON DELAY									
24VDC/VAC; 110-240VAC	1 NO + 1 NC	—	—	—	TL11BU	**5B321**	115.00	**101.80**	0.3
OFF DELAY									
24VDC/VAC; 42-48VDC/VAC; 110-240VAC	1 NO + 1 NC	With	With	With	RM11BU	**5B322**	130.00	**115.05**	0.4

PNEUMATIC TIMERS



- 0.1 seconds to 1 minute pneumatic timing with ±10% repeat accuracy
- SPDT contacts
- ON and OFF Delay, convertible
- Sized for small spaces
- ON Delay type can be wired for interval maintained start or repeat cycle sequencing using two devices
- ON delay 29mSec reset time; OFF Delay 27mSec. average
- Operates on 120VAC, +10%-15% of nominal
- 68°F to 104°F operating temperature range

CONTACT RATINGS

Contact Configuration	Voltage	Inductive (30% PF) Make Amps	Break Amps	Resistive (75% PF) Make, Break & Cont. Amps
SPDT Timed or Instantaneous	120V 240	40 20	15 10	15

No. of Contacts Timed	Delay	Coil Ratings Inrush 50 Hz	Inrush 60 Hz	Sealed 50 Hz	Sealed 60 Hz	Square D Model 9050...	Stock No.	List	Each	Shpg. Wt.
ON DELAY RELAY										
1 NO	**1 NC**	68VA	74VA	17VA	17VA	A010EV02	**5B406**	$212.00	**$210.00**	1.8
OFF DELAY RELAY										
1 NO	**1 NC**	68	74	17	17	A010DV02	**5B407**	212.00	**210.00**	1.8

UL LISTING AND CSA CERTIFICATION

When choosing products from this section, look for the UL and CSA symbols. Those approved products meet or exceed rigid standards established for personal safety and maximum product life. UL file number and CSA Certification are indicated in the individual listings.

CROSS REFERENCE FOR OMRON TIMERS

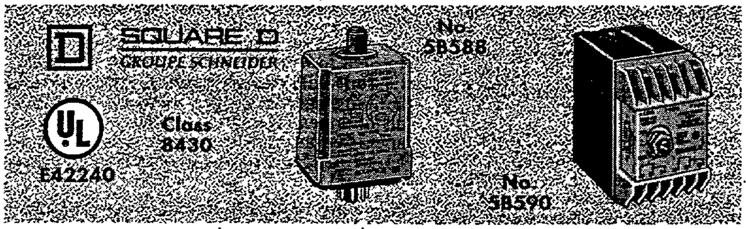
Grainger No.	1A983						2A180	2A179	2A436	6C758	6C759	6C760
Omron No.	H3CA-A						H3BA-8	H3BF-8	H3BH-8M	H3BA-8	H3BH-8	H5CR-8
Timing Functions	ON-Delay	Repeat Cycle	Signal OFF-Delay	Interval	OFF-Delay	Multi	ON-Delay	Repeat Cycle	Power OFF-Delay			
Agastat	SCA-RX01 SCB-RX01 SCD-RA01 SSC-1	SRC-7	SCA-RX02 SCB-RX02 SCC-2	SCB-RX03 RCD-RA03	—	—	SCA-RX01 SCB-RX01 SCD-RA01 SSC-1	SRC-7	SCE-XX-22	SCA-RX-01 SCB-RX-01 SCD-RA-01 SSC-1	SCE-XX-22	—
Aromat	PMH	—	—	—	—	—	PMH	—	—	PM48 PMH	PM48-F	—
ATC	312A-148 319B 319D 353 355 365	—	—	314B-134-3C	314B-134-2C	328	312A-148 319B342 319D	306E		312A-148 319B 319D		—
Crouzet (has front terminal screws, DIN rail mount)	88-226 88-849	—	—	88-226 88-849	—	—	—	—	—	—	—	—
Dayton	5X828 5X829 5X830 6X601 6A854 6A855	1A366 1A367 1A368 6A855	—	6X603 6X604 6X605 6A855	6X153 6X154 6X155 6X602 6A855	—	5X828 5X829 5X830 6X601 6A854 6A855	1A366 1A367 1A368 6A855		—	—	—
Deltrol	105TD 105LTD	—	105TD-R8 105TD-R11	—	—	—	105TD 105LTD	—	—	—	—	—
Diversified	TDC/TUC	TDF/TDL	TDD/TUD	TDB/TUB	—	TDU	TDU	TDC/TUC	TDL			—
Eagle	80 Series CD 300 CE 500 CG 900	85 Series	80 Series	84 Series	—	PG 100	80 Series CG 900	85 Series 86 Series	CG 300	80 Series PC100 CG900 CG400	CG300	SX200 SX400
Electromatic	SA Series	SC105/205 SC140/141 SC145/149	SB185	SB105 SB140/145 SB175		SABC	SA Series	SC105/205 SC125/225 SC180/181	SB125/135	—	—	—
Guardian	BD2 TDO MET-O	—	BD3 MET-R	—	—	PET	BD2 TDO MET-O	ATD-V	—	—	—	—
IDEC	RTE-PN RTP	—	—	RTE-PI RCP	—	—	RTE-PN RTP	RCF	—	RTE-PN RTP	—	—
Macromatic	SS6 SS76 SS78 SS20 SS10	—	SS75 SS77 SS81 SS21	SS765	—	SS11	SS6 SS7[illegible] SS78 SS20	SS23	SS8	—	—	—
Magnecraft	211-0-CPSOX 214-ACPSOX	—	—	211-0-CPVX		—	211-ACPSOX 214-ACPSOX	211-ACPFX 222-ACPFX		211-CPSOX 214	—	—
Midtex	615-21 615-41 616-21 616-41 658-41 658-42	658-43 658-44	615-22 615-42 616-42	615-24 615-44 615-25 615-45	—	—	615-21 615-41 616-21 616-41	615-23 615-43 658-43 658-44	—	615-21/41 616-21/41 658-43,44	—	—
Minarek (Western Pacific)	WP-3 WP-10 WP-20 WP-30 WP-50	WP-12 WP-15 WP-25 WP-35	WP-11 WP-21 WP-31 WP-51	WP-14 WP-24 WP-34 WP-54		—	WP-3 WP-10 WP-20 WP-30 WP-50	WP-12 WP-15 WP-25 WP-35 WP-55	—	—	—	—
NCC (National Controls Corp.)	AIM AI/TI	—	T3	SI	—	TMM	AIM AI/TI	CKK	—	AIM AI/TI	—	—
Potter & Brumfield	CG/CD/CK CH/CL/CB	—	CG/CD/CK/ CH CB	CG/CK/CH CB		CW	CG/CD/CK/CH CL/CB	CR	—	CG/CD/CK/CL CB/CNS		—
Square D	JCK-60 JCK-10	—	JCK-20	JCK-30	—	JCK-70	JCK-60 JCK-10	JCK-50	—	JCK-60	—	—
SSAC	TDM/TRM	TDR	TDB/TRB	TDI	—	—	TDM/TRM	TDR	—	TDM/TRM RPM	—	—
Struthers-Dunn	326 A43/A45	—	A42	—	—	—	326 A45	44		326 A45	—	—
Syrelec	PAR2/OAR2 LAR2 GAR	—	LCR2	LHR2		813 LLR2 OLR	PAR2/OAR2 MAR/OAR	PDR2/ODR	PKR	PAR2/OARZ MAR/OAR ARU	PKR	813
Timemark	330/336	337	331	—	—	—	330/336	338		—	—	—

See Cross Reference information on page opposite inside back cover.

FOR ORDERING INFORMATION, SEE PAGES 491 AND 492

PHASE FAILURE AND VOLTAGE SENSOR RELAYS

PHASE FAILURE RELAYS



CONTACT RATINGS					
		AC Ratings			
		Inductive		Resistive	
Type	Volts	Make VA	Break VA	Make & Break Amperes	Thermal Continuous Current
SPDT	120	1800	180	5	5
	240	1800	180	5	5
DPDT	240	3600	360	5	5
	480	3600	360	2.5	2.5

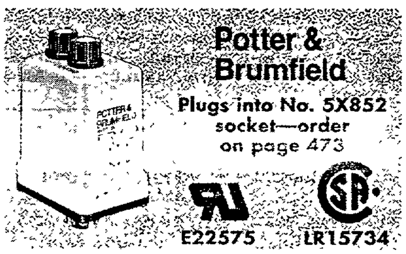
Voltage sensing relays may be connected at any point on the line, but only detect abnormal conditions ahead of the point of the connection. Three-wire control should be used for safe operation of equipment.

- **For 3-phase monitoring applications**
- **Protects against phase loss, phase unbalance, phase reversal, and undervoltage**
- **Adjustable undervoltage settings of 75% to 100% of normal voltage**
- **Auto reset**
- **Nos. 5B589 and 5B590 have an LED that indicates "Relay Energized"**
- **Power consumption: MPS models 5.5 VA, MPD models 7.0 VA**
- **Ambient temperature: -5°C to 50°C**

VOLTAGE SENSOR RELAY ORDERING DATA

Type	Voltage @ 50/60 Hz	Contact Type	Use With Socket	Square D Model 8430...	Stock No.	List	Each	Shpg. Wt.
MPS	240	SPDT	5B586	MPS V24	**5B588**	$138.00	**$136.65**	0.5
MPS	480	SPDT	5B583	MPS V29	**5B587**	138.00	**136.65**	0.5
MPD	240	DPDT	—	MPD V24	**5B590**	308.00	**305.00**	1.1
MPD	480	DPDT	—	MPD V29	**5B589**	308.00	**305.00**	1.2

VOLTAGE SENSOR RELAYS



Designed to energize and de-energize its internal relay at predetermined voltages. Desired levels are knob-adjustable and can be varied over a selected range. **Consist of sensing circuit** that turns On or Off a solid state switch, energizing or de-energizing the internal DPDT relay. Device can be used as an over voltage sensor when load is connected to NO contact. Enclosed in nylon dust cover. Octal terminals fit standard 8-pin socket. Typically 2.5 watt units; they are not constant impedance. DPDT contacts are rated 10 amps @ 28VDC or 120VAC, resistive. Continuous-duty relay has a repeatability of ±1% (max.) and an operating temperature range from -10°C to 55°C; temperature coefficient of 0.2%°C. DC model has reverse polarity protection.

- **For single-phase applications only**

RELAY SPECIFICATIONS AND ORDERING DATA

Series	Pick-Up Range	Drop-Out Range	Type of Voltage	Max. Voltage	P&B Model	Stock No.	List	Each	Shpg. Wt.
CS	92-140V	90-138V	AC(50-60 Hz)	150VAC	CSJ-38-70010	**4A029**	$106.47	**$105.45**	2.5
	20-30	18-28	DC	40VDC	CSL-38-30010	**3A967**	101.43	**100.45**	0.5

GENERAL TERMINOLOGY

Class 10 or 20 Protection: Refers to time needed for an overload relay to trip (disconnect) the motor from the load. Class 10 takes 10 seconds at 6 times the rated trip current. Class 20 takes 20 seconds at 6 times the rated trip current.

Drop-Out Voltage (or Current): The voltage (or current) at which the device will return to its deenergized position.

Inrush VA: The inrush VA is the VA required to operate the device. The inrush VA occurs only for a short time period, 10 to 40 milliseconds. The inrush VA of an electromagnetic device will be different for all devices, depending upon the design of the particular device. The inrush VA can be supplied by the manufacturer and is normally in their catalog under "coil data."

Jogging (inching): The quickly repeated closure (and opening) of the circuit to start a motor from rest for the purpose of accomplishing small movements of the driven machine.

Locked Rotor Current: The steady-state current taken from the line with the rotor locked and with rated voltage (and rated frequency in the case of alternating current motors) applied to the motor.

Pick-Up Voltage (or current): The voltage (or current) at which a device starts to operate.

Pilot Duty: A term used to describe contacts which are used to control electromagnetic devices such as solenoids, relays, contactors or motor starters. A pilot duty rating is expressed in volt amps or VA.

Pilot Duty Rating: The contact rating of a relay designed to switch the coil of electromagnetic devices such as solenoids, relays, contactors or motor starters. The VA rating of the controlling contacts must be equal to or greater than the sealed VA, not the inrush VA of the controlled coil to prevent excessive contact wear or contact welding.

Rating: The limits of the ability of a device to operate safely and satisfactorily within its normal environmental extremes. For example, a time switch rating is its capacity to open and close electric circuits without its contacts overheating, sticking or welding.

Sealed VA: The sealed VA is the VA after the controlled device has been operated or energized. The sealed VA of an electromagnetic device will be different for all devices depending upon the design of the particular device. The sealed VA can be supplied by the manufacturer.

Volt Ampere (VA): A representation of the power in circuit in which the voltage and the current are out of phase.

TYPES OF LOADS

Inductive Load: Motors are inductive loads. The impedance of motors is very low at standstill which causes the inrush current to be 3 to 6 times the running current. The current will gradually decrease to normal running current as the load reaches operating speed. Inductive contact ratings are specified as Amp Inductive, Amp-H, HP or FLA/LRA (full load current/locked rotor current).

Pilot Duty Load: Electromagnetic (electromechanical) devices such as solenoids, relays, contactors or motor starters are pilot duty loads. This type of inductive load causes a high inrush current to flow at contact closing, which may cause contact welding. When this type of load is turned "off", the magnetic field, which develops the operating force for the device, collapses. The stored energy in this magnetic field must be dissipated across the contacts and causes arcing and contact erosion.

Resistive Load: A heater is a resistive load. In a resistive load the initial current is essentially zero and gradually rises to its maximum value in step with the supply voltage. Contact ratings are resistive unless otherwise marked.

Tungsten Load: Incandescent lamps are tungsten loads. The cold resistance of a tungsten load is extremely low. This can result in inrush currents of as much as 15 times the steady state current, causing contact erosion or welding. Tungsten contact ratings are specified as Amp-T or Amp Tungsten.

NEMA VS. IEC COMPARISON

NEMA (National Electrical Manufacturers Association). Founded in 1926. Made up of member manufacturers in the electrical industry.

NEMA publishes standards for a wide variety of motor control equipment to make selection and application simple. They give the user a common basis for product choice and safe interchangeability between different manufacturers.

IEC (International Electrotechnical Commission). Founded in 1906. Made up of over 40 countries. The U.S. is a charter member. The majority of the member nations have brought their own national standards in line with IEC recommendations.

IEC recommendations apply to electrical terms, ratings, test methods, dimensional requirements, etc.

Testing. IEC manufacturers test their own devices for compliance with IEC standards. To successfully sell IEC devices in the U.S., they need to be tested for performance and safety by an independent agency, such as UL (Underwriters Laboratories).

Some European countries have their own test and approval procedures. Denmark, Norway, Sweden and Switzerland require test and approval before devices may be sold there.

Design philosopy for contactors:

NEMA Contactors have a standardized rating system of sizes for motor controllers. This allows easy interchangeability from various manufacturers (a NEMA size 1 for a NEMA size 1). For each NEMA size there are corresponding HP, Voltage, Frequency and Current ratings as defined by the NEMA ICS standards. At each rating, there is built-in reserve capacity for performance over a broad band of applications. There are no specified electrical life requirements, but they have replaceable power contacts and replaceable coils.

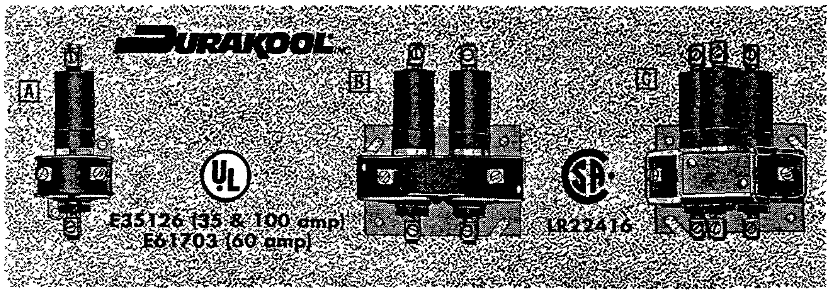
IEC Contactors do not define standard sizes. A contactor is matched to a load expressed in rating and electrical life. The manufacturer evaluates the device based on a number of defined applications, under the title Utilization Categories. A higher level of skill is required to select contactors for an application (motor load, duty cycle, FLC, etc.). Lower HP contactors do not have replaceable contacts. Some do not have replaceable coils. Often called "throw-away" devices.

Design philosophy for overload relays:

NEMA Thermal Overload Relays have eutectic alloy thermal elements for heat sensing. Bimetallic type elements are also available. The elements are indirectly heated and are not part of the current path. Available in trip class 10 (quick trip), 20 (standard), or 30 (slow blow). Have higher short circuit withstand capability than directly heated type overload elements. Interchangeable heaters allow one overload relay block to cover the entire range of a motor controller.

IEC Thermal Overload Relays have directly heated bimetallic elements for current sensing. Trip class 10 means the overload will trip within 10 seconds at 6 times FLC. Adjustable current setting dials marked in Amperes, related to the motor FLC. Maximum FLC setting is between 1.3 and 1.7 times minimum FLC setting. Each overload block will not cover a wide range of FLC's. If a different range is required, or if the unit is damaged, the entire overload relay block must be replaced.

MERCURY DISPLACEMENT RELAYS



- Hermetically-sealed, liquid mercury contacts
- Used for motor loads, compressors, power switching, heating, lighting, automation control, oven/furnace control
- Frictionless plunger eliminates metal-to-metal wear
- Normally open contacts
- Temperature range -35° to +60°C ambient under continuous load
- Designed for vertical mounting only

Contact Load Ratings

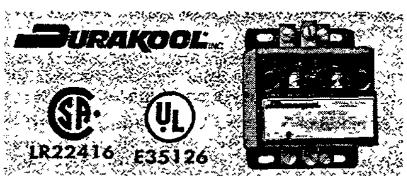
Key	Stock No.	Amps, Resistive @ VDC 48	125†	250†	@ VAC 120	240	480	600	Amps, Tungsten @ VDC 48†	125†	250†	@ VAC 120	240	480	600	Horsepower 120 VAC 1Ø	240 VAC 1Ø	240 VAC 3Ø	480 VAC 3Ø	600† VAC 3Ø
A	6A860 6X597	35	17	10	35	35	35	35	35	—	—	35	35	—	—	2	5	7.5	10	10
A	6A863 6X599	60	30	20	60	60	60	60	60	30	20	60	60	35	28	3	5	10	15	15
A	6A866	100	50	30	100	100	100	100	100	50	30	100	100	25	20	7.5	10	—	—	—
B	6A861 6X598	35	17	10	35	35	35	35	35	—	—	35	35	—	—	2	5	7.5	10	10
B	6A864 6X600	60	30	20	60	60	60	60	60	30	20	60	60	35	28	3	5	10	15	15
C	6A862 3X752	35	17	10	35	35	35	35	35	—	—	35	35	—	—	2	5	7.5	10	10
C	6A865 3X753	60	30	20	60	60	60	60	60	30	20	60	60	35	28	3	5	10	15	15

(†) Not rated by UL or CSA for these values.

RELAY SPECIFICATIONS AND ORDERING DATA

Key	Amps	Contacts	Coil Ratings @ 50/60 Hz Volts	Coil Current Rating	Dimensions (In.) L	W	D	Durakool Model	Stock No. ❷	List	Each	Shpg. Wt.
A	35	SPST	120VAC	57mA	4.62	2.0	2.25	1M35A120AC	**6X597**	$43.35	**$37.50**	1.0
	60		120	55mA	5.12	2.0	2.25	1060APS120AC	**6X599**	69.40	**60.05**	1.0
	100		120	195mA	5.77	2.5	2.62	FC 718	**6A866**	172.17	**149.00**	2.0
A	35	SPST	208/240	25/27mA	4.62	2.0	2.25	1M35A208ACDV	**6A860**	43.35	**37.55**	0.8
	60		208/240	37/43mA	5.12	2.0	2.25	1060APS208ACDV	**6A863**	69.40	**60.05**	1.0
B	35	DPST	120	130mA	4.62	4.0	2.62	2M35A120AC	**6X598**	81.43	**70.45**	1.0
	60		120	133mA	5.12	4.0	2.62	2060APS120AC	**6X600**	128.57	**111.00**	1.7
B	35	DPST	208/240	79/86mA	4.62	4.0	2.62	2M35A208ACDV	**6A861**	81.43	**70.50**	1.8
	60		208/240	80/87mA	5.12	4.0	2.62	2060APS208ACDV	**6A864**	128.57	**111.00**	1.8
C	35	3PST	120	220mA	4.62	4.0	3.75	3M35120AC	**3X752**	123.47	**106.85**	2.7
	60		120	221mA	5.12	4.0	3.75	3060APS120AC	**3X753**	186.67	**161.75**	2.5
C	35	3PST	208/240	108/121mA	4.62	4.0	3.75	3M35A208ACDV	**6A862**	123.47	**106.85**	2.3
	60		208/240	112/112mA	5.12	4.0	3.75	3060APS208ACDV	**6A865**	186.67	**161.75**	2.6

VERTICAL MOUNT MERCURY DISPLACEMENT CONTACTORS



- Hermetically sealed, liquid mercury contacts
- Applications include heating, air conditioning, and processing equipment
- 3-pole, normally open design
- Identical footprint to 30-amp definite purpose contactors
- Provide longer service life than definite purpose electromechanical contactors
- UL Listed for 240V, 3-phase motor applications
- Dimensions: 3.75L x 3.14W x 3.43"D

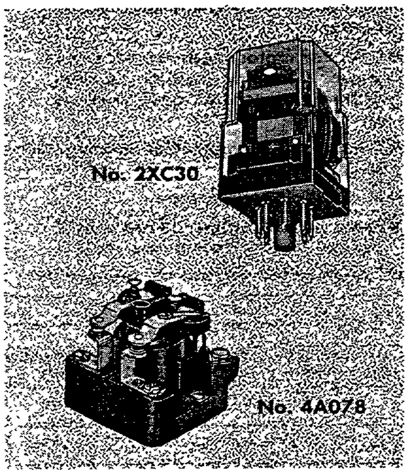
Maximum Contact Load Rating @ 60 Hz VAC 120V	208V	240V	277V	480V	48 VDC	FLA† @ 240 VAC	LRA† @ 240 VAC	Coil Ratings @ 50/60 Hz Volts	Coil Current Rating	Durakool Model 3M30APS...	Stock No. ❷	List	Each	Shpg. Wt.
30/30A* **1.5 HP**	30/30A* 1.5HP	30/30A* 3.0HP	30/20A* 3.0HP	30/20A* 3.0HP	30A	14.8	89.0	24	510mA	24 AC	**6A867**	$63.59	**$55.05**	1.9
								120	100mA	120 AC	**6A868**	63.59	**55.05**	1.9
								208/240	55/62mA	208 ACDV	**6A869**	63.59	**55.05**	1.7

(*) Amps-Resistive/Inductive (.7-.8 PF). (†) FLA (Full Load Amps); LRA (Locked Rotor Amps).

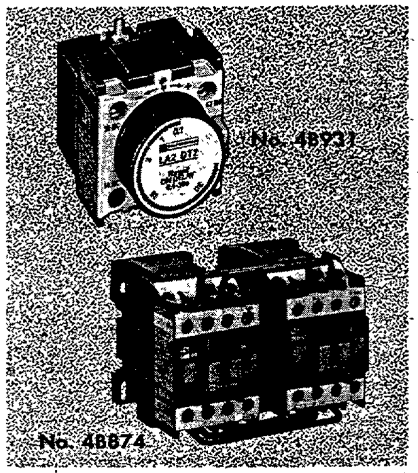
❷ WARNING: These products are covered by California Proposition 65. California purchases or shipments, see first page of Grainger Branch Listing or call any California branch.

INDUSTRIAL CONTROL TERMINOLOGY

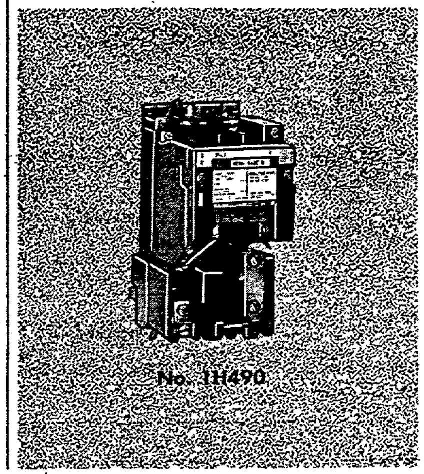
RELAYS



CONTACTORS



MOTOR STARTERS



WHAT IS THE DIFFERENCE?

See Pages 433 and 481 For a More Detailed Description On NEMA and IEC Contactors and Motor Starters.

SPECIAL NOTE: Motor starters, contactors, and relays, like any switching device, have a finite life. Normal failure modes include contact sticking and improper operation. Any installation where property damage and/or personal injury could result, because the switch did not open or close, requires the installation of backup systems.

Relays (Decision Devices). Controls current flow in a circuit based on signals obtained from an information device. A change of information is utilized by relays to make a change in the action portion of the control circuit. In other words, a relay responds to signals from the information segment of the circuit to cause the proper change in the action segment.

General Purpose Relays are usually rated up to 10 amps and they are intended for control circuit applications.

Power Relays are usually rated up to 30 amps. They are intended for use on direct switching of small motors and heating applications that do not have a high cycle rate.

Mercury Displacement Relays are used for high current (power) applications. Usually used on process heating applications where a high cycle rate and quiet operation is required.

Contactors. A contactor does not provide overload protection. Contactors are used to electrically turn on or off high current, nonmotor loads or in motor circuits where overload protection is separately provided.

The contactor operates by applying a control voltage to the contactor coil. When the coil is energized, the movable contacts are closed against the stationary contacts, thus completing the circuit. The contactor is therefore used to supply and interrupt power to an electrical load.

NEMA Contactors. NEMA (National Electrical Manufacturers' Association) establishes product design standards and test specifications for these contactors. These contactors are capable of general jogging and reversing duty. NEMA contactors can be applied with limited application information.

IEC Contactors. IEC (International Electrotechnical Commission) publishes recommendations for certain product design parameters and laboratory test procedures. In general, IEC standards allow the contactor to have a smaller creepage path and a higher temperature rise than NEMA, which results in a smaller physical size. Also, when sizing an IEC contactor, knowing an application's duty cycle and jogging and reversing characteristics becomes important.

Definite Purpose Contactor. Similar in function to a general purpose contactor. However, they are lighter duty and often considered a throw away product when compared to an equivalent NEMA or IEC contactor. Used in HVAC, data and food processing equipment.

Interlock. A device which is actuated by the operation of some other device with which it is directly associated to govern succeeding operations of the same or allied devices. Interlocks may be either electrical or mechanical.

Motor Starters are action devices that start and stop motors and provide overload protection. There are three types:

Motor Starters. Standard starters include overload protection but they do not include a disconnection means or short circuit protection. Overload relays sense excessive current flowing to a motor and protect the motor from overloads. If more current is flowing than the motor is designed to handle, the overload relays causes the motor to shut down.

The National Electric Code (NEC) requires that motor circuit protection must protect the branch circuit conductors, the motor starter, and the motor itself against overcurrent caused by short circuits or grounds.

The NEC also requires that if the motor starter is mounted out of sight of the motor, or more than 50 feet from the motor, some means of disconnecting the motor from the power source must be provided. The code does not specify how this is to be accomplished. One method is to use an individual starter with a separate fusible disconnect switch or a circuit breaker.

A more economical means of satisfying the NEC requirements for disconnecting the motor is to use a combination starter.

Combination Starters. A combination starter is a standard starter and a fused or non-fused switch or circuit breaker contained in the same enclosure. Because the devices are contained in the same enclosure, there are many advantages and cost savings to be realized.

Manual Starters. An on/off switch that is operated by hand.

THREE-PHASE MONITORS, CURRENT SENSORS, AND ALTERNATING RELAYS

ELECTRICAL CONTROLS

THREE-PHASE LINE MONITOR

PROTECTS EQUIPMENT & MOTORS FROM DANGEROUS LINE CONDITIONS:

- Incorrect Phase Sequence
- Loss of a Phase
- Low Voltage Conditions; 88 to 92% of adjusted nominal voltage
- Voltage unbalance between phases

FEATURES

- Easy-to-set line voltage
- Wye or Delta 3-wire hookup
- 8 amp, SPDT isolated relay contacts
- LED indicator signals normal operation
- Automatic reset
- 4% voltage unbalance
- 5 second trip delay
- No. 6C058 uses socket No. 5X852 (order on page 473); No. 6C059 includes socket

Adjustable Nominal Line Voltage @ 50/60 Hz	Maximum Line Voltage	Socket Required	SSAC Model	Stock No.	List	Each	Shpg. Wt.
200 to 400VAC	270VAC	5X852	PLM6405	6C058	$62.79	$62.25	0.5
400 to 480	530	Included	PLM9405	6C059	73.34	72.60	0.8

UNIVERSAL AC CURRENT SENSOR

DESIGNED FOR USE IN:

- Pumping and Irrigation
- Conveyers and Loaders
- Material Handling Equipment
- Fans, Blowers, Ovens, and Heaters

DETECTS:

- Locked Rotor
- Loss of Current
- Open Heater or Lamp Load
- Whether an Operation has Taken Place or Ended

FEATURES

- Switch selectable overcurrent or undercurrent sensing
- Adjustable trip points from 2 to 20 amps
- Adjustable trip delays 0.5 to 50 seconds
- Complete isolation between sensed current and control circuit
- Encapsulated solid-state circuitry
- 8 amp, SPDT isolated output contacts
- Toroidal sensor has 3/8" through hole
- LED fault indicator

Input Operating Voltage @ 50/60 Hz	Maximum Allowable Current	Output Rating @ 240VAC	Mount	SSAC Model	Stock No.	List	Each	Shpg. Wt.
24 VAC	40 amps	8 amps	Surface	ECS21BC	6C054	$65.85	$65.40	0.5
120	40	8	Surface	ECS41BC	6C055	65.85	65.40	0.2
230	40	8	Surface	ECS61BC	6C057	65.85	65.40	0.5

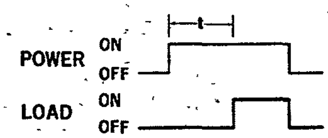
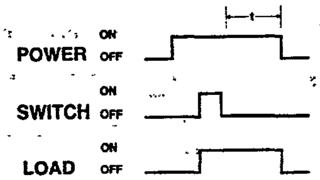
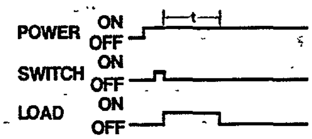
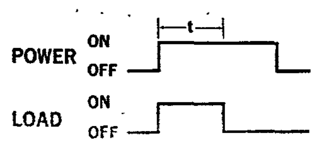
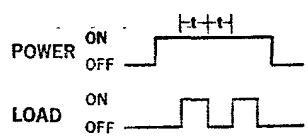
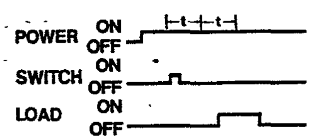
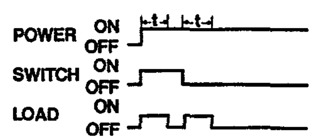
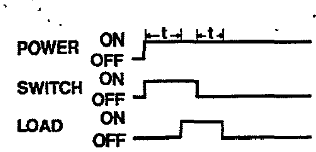
ALTERNATING RELAYS

- Alternates the operation of two loads sharing their run time
- DPDT crosswiring allows simultaneous operation of two motors, solenoids, compressors, pumps, valves, or heaters—provides dual stage load capacity
- Selector switch allows alternating or electrically locked operation
- Returns to load "A" after power outage
- DPDT 10 amp contacts @ 240VAC
- LED status indicators
- Uses socket No. 5X852; order on page 473

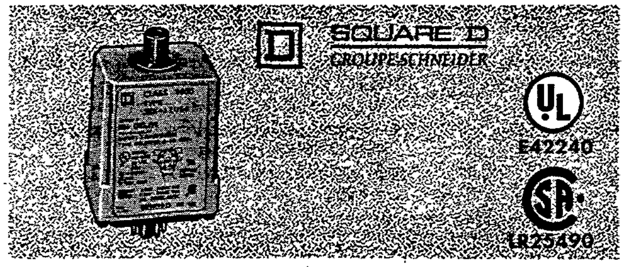
Line Voltage @ 50/60 Hz	Contact Form (Crosswired)	Contact Rating (Resistive) @ 240VAC	Maximum Voltage	SSAC Model	Stock No.	List	Each	Shpg. Wt.
24 VAC	DPDT	10A	250VAC	ARP23S	6C051	$51.90	$51.45	0.5
120	DPDT	10	250	ARP43S	6C052	51.90	51.45	0.5
230	DPDT	10	250	ARP63S	6C053	51.90	51.45	0.5

ELECTRICAL CONTROLS

TIME DELAY RELAY SELECTION GUIDE

Description	Timing Chart (t = time)	Dayton No.	Omron Series	P & B Series
ON DELAY When power is applied to input terminals, the time delay starts. At the end of the preset time delay, the output contacts transfer, either connecting or disconnecting the load. Reset by removing input power.		5X828, 5X829, 5X830, 6X601, 6A854, 6A855	H3CA-A — SYD, H3Y-2, H3Y-4, H5CR-B	CG, CD, CH, CL, CNS, CNT
OFF DELAY I Power is applied at all times. Upon the closure of the normally open switch, the output contacts transfer and remain in this position as long as the switch is kept closed. When the switch opens, timing starts. At the end of the preset time delay, the output contacts transfer back to their original position and the unit is ready for a new cycle. **NOTE:** Do not ground or apply voltage to the start switch.		6X153, 6X154, 6X155, 6X602, 6A855	H3CA-A, H5CR-B	CD, CH, CNS, CNT
OFF DELAY II Power is applied at all times. Upon the closure and reopening of the normally open switch, the output contacts transfer and timing starts. At the end of the preset time delay, the contacts transfer back to their original position.		—	H3CA-A, H5CR-B	CNT
INTERVAL DELAY When power is applied to the input terminals, the contacts transfer and the timing cycle starts. At the end of the preset time delay, the output contacts transfer back, either disconnecting or connecting the load. Reset by removing input power.		6X603, 6X604, 6X605, 6A855	H3CA-A, SYD, H5CR-B	CNS, CNT
REPEAT CYCLE When power is applied to the input terminals, OFF delay is initiated. At the end of the OFF preset time, contacts transfer from OFF to ON position and ON delay starts. At the end of ON preset time, contacts transfer from ON to OFF position and a new cycle begins. The ON and OFF cycles will continue to alternate until power to input terminals is removed.		1A366, 1A367, 1A368, 6A855	H3BF-8, H3CA-A, H5CR-B	CR CNS, CNT
CYCLE ONE-SHOT The start terminals are connected. Timing starts when power is applied. The output relay will be OFF for the set time then ON for the set time. The timer is reset when power is disconnected or a reset input is applied.		—	H3CA-A, H5CR-B	CNT
SIGNAL INTERVAL/OFF DELAY Power is applied at all times. The first timing cycle begins when the input signal is applied. The second timing cycle begins when the input signal is removed. The output relay is energized during both timing cycles.		—	H3CA-A, H5CR-B	CNT
SIGNAL ON DELAY/OFF DELAY Power is applied at all times. The first timing cycle begins when the input signal is applied, the second when it is removed. The output relay is energized when the lapsed time from the first timing cycle equals the setpoint. It will remain energized until the lapsed time of the second timing cycle equals the setpoint.		—	H3CA-A, H5CR-B	CNT

PLUG-IN TIME DELAY RELAYS



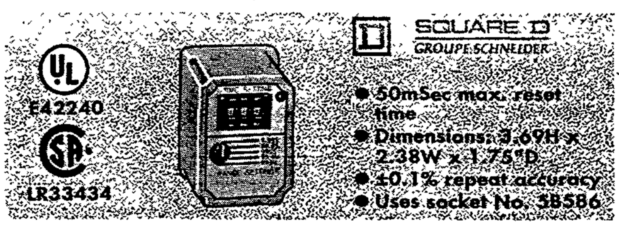
- ±1% repeat accuracy
- 2VA maximum
- DPDT contacts
- 10 amp contact rating @ 120/240VAC; rated 1/3 HP @ 120VAC, 1/2 HP @ 240VAC
- On Delay, Interval, and Repeat Cycle models have 100mSec typical reset time; Off Delay and One Shot 40mSec
- Transient protected (2,000V for 100 microsec.)
- Order sockets on page 472
- Dimensions: 4.03H x 2.34W x 1.72"D

VARIABLE TIME DELAY RELAY SPECIFICATIONS AND ORDERING DATA

Knob Adjustable Timing Range	Input Voltage	Use With Socket No.	No. of Pins	Square D Model 9050...	Stock No.	List	Each	Shpg. Wt.
ON DELAY								
0.1-10 Sec.	24VAC/DC	5B586	8	JCK11V14	**5B405**	$47.50	**$47.05**	0.4
	120VAC/110VDC			JCK11V20	**5B404**	47.50	**47.05**	0.3
0.3-30 Sec.	120VAC/110VDC			JCK12V20	**5B403**	47.50	**47.05**	0.3
0.6-60 Sec.	120VAC/110VDC	5B586	8	JCK13V20	**5B402**	47.50	**47.05**	0.3
1.2-120 Sec.				JCK14V20	**5B401**	47.50	**47.05**	0.3
1.8-180 Sec.	24VAC/DC	5B586	8	JCK15V14	**5B400**	47.50	**47.05**	0.3
	120VAC/110VDC			JCK15V20	**5B399**	47.50	**47.05**	0.3
0.1-10 Min.	120VAC/110VDC	5B586	8	JCK16V20	**5B398**	53.00	**52.50**	0.3
0.3-30 Min.				JCK17V20	**5B397**	53.00	**52.50**	0.3
0.6-60 Min.				JCK18V20	**5B396**	53.00	**52.50**	0.3
OFF DELAY								
0.1-10 Sec.	120VAC/110VDC	5B584 5B585	11	JCK21V20	**5B395**	60.00	**59.40**	0.3
0.3-30 Sec.				JCK22V20	**5B394**	60.00	**59.40**	0.3
0.6-60 Sec.				JCK23V20	**5B393**	60.00	**59.40**	0.3
1.8-180 Sec.				JCK25V20	**5B392**	60.00	**59.40**	0.3
0.1-10 Min.				JCK26V20	**5B391**	65.00	**64.35**	0.3
0.3-30 Min.				JCK27V20	**5B390**	65.00	**64.35**	0.3
INTERVAL								
0.1-10 Sec.	120VAC/110VDC	5B586	8	JCK31V20	**5B389**	47.50	**47.05**	0.3
ONE SHOT								
0.3-30 Sec.	120VAC/110VDC	5B584 5B585	11	JCK42V20	**5B383**	60.00	**59.40**	
REPEAT CYCLE*								
0.3-30 Sec.	120VAC/110VDC	5B586	8	JCK52V20	**5B387**	85.00	**84.15**	0.3

(*) Two dials are provided for independently adjustable repeat cycle timing ranges

PROGRAMMABLE, MULTI-TIME RANGE RELAYS

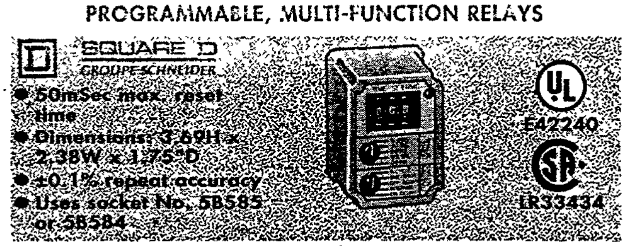


- Five programmable timing ranges
- On Delay timers use five-position rotary switch to select timing range and three pushbutton thumbwheels to select time values

MULTI-TIME RANGE RELAY ORDERING DATA

Timing Mode	Timing Ranges	Input Voltage @ 50/60 Hz	Square D Model 9050...	Stock No.	List	Each	Shpg. Wt.
On Delay	0.05 to 9.99 Sec. 0.1 to 99.9 Sec. 1 to 999 Sec. 0.1 to 99.9 Min. 1 to 999 Min.	24VAC	JCK60V14	**5B386**	$93.00	**$92.10**	0.4
		120	JCK60V20	**5B385**	93.00	**92.10**	0.4
		240	JCK60V24	**5B384**	93.00	**92.10**	0.4

PROGRAMMABLE, MULTI-FUNCTION RELAYS



- Five programmable timing modes and ranges
- Use two, five position rotary switches to select timing range and mode; three position thumbwheels are used to select time value

MULTI-FUNCTION RELAY ORDERING DATA

Timing Mode	Timing Ranges	Input Voltage @ 50/60 Hz	Square D Model 9050...	Stock No.	List	Each	Shpg. Wt.
On Delay **Off Delay** **Interval** **One Shot** **Repeat Cycle***	0.05 to 9.99 Sec. 0.1 to 99.9 Sec. 1 to 999 Sec. 0.1 to 99.9 Min. 1 to 999 Min.	24VAC	JCK70V14	5B383	$105.00	$103.95	0.4
		120	JCK70V20	5B382	105.00	103.95	0.4
		240	JCK70V24	5B381	105.00	103.95	0.4

(*) Repeat Cycle Mode utilizes same On-Time and Off-Time.

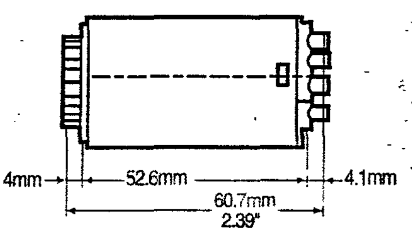
SUBMINIATURE, ON DELAY OPERATION

- Ideal for small spaces
- Repeat accuracy ±2%
- Short reset time—100mSec
- Time setting knob
- LED indicator for Power-On and Time-Up
- 8-pin models include relay socket
- 14-pin models require relay socket No. 2A584 on page 473
- Input voltage 120VAC, 50/60 Hz ±10%

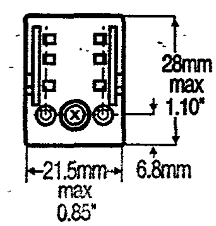
TIME DELAY RELAY SPECIFICATIONS AND ORDERING DATA

Timing Range	Omron Model	Stock No.	List	Each	Shpg. Wt.
DPDT, 5A @ 220VAC, 8-PIN MODELS					
0.5 to 10 Sec.	H3Y-2-10S-AC120	1XC75	$45.96	$42.60	0.1
1 to 30 Sec.	H3Y-2-30S-AC120	1XC76	45.96	42.60	0.1
2 to 60 Sec.	H3Y-2-60S-AC120	1XC77	45.96	42.60	0.1
0.2 to 5 Min.	H3Y-2-5M-AC120	1XC78	45.96	42.60	0.1
4PDT, 3A @ 220VAC, 14-PIN MODELS					
0.5 to 10 Sec.	H3Y-4-10S-AC120	1XC79	42.00	39.30	0.1
1 to 30 Sec.	H3Y-4-30S-AC120	1XC80	42.00	39.30	0.1
2 to 60 Sec.	H3Y-4-60S-AC120	1XC81	42.00	39.30	0.1

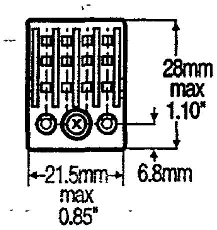
DIMENSIONS FOR OMRON H3Y SERIES



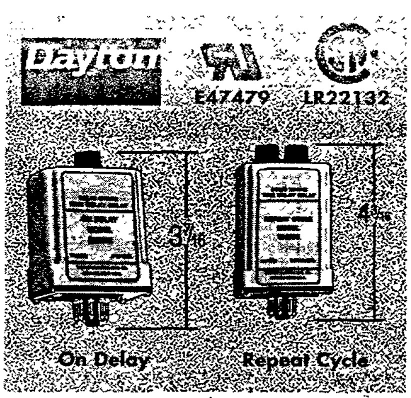
All Models



8-Pin Models



14-Pin Models



- Use in automatic control circuits, machine tool programming, sequence controls, heating and cooling operations, warm-up delays, etc.
- Transient protection on AC coils
- Easy-To-Read, top-mounted timing adjustment knob with graduated scale
- 25mA coil current rating

TIME DELAY RELAY SELECTION GUIDE ON PAGE 484

ON DELAY, OFF DELAY, AND INTERVAL MODELS

- Input voltage 120 VAC, 50/60 Hz ±10%
- Contact ratings: 1/3 HP at 120 VAC; 1/2 HP at 240 VAC; 10 amp at 120 VAC
- 125mSec reset time
- ±2% repeatability
- DPDT relay output
- 2⅜L x 1¾W x 3⁷⁄₁₆"D (less pins)

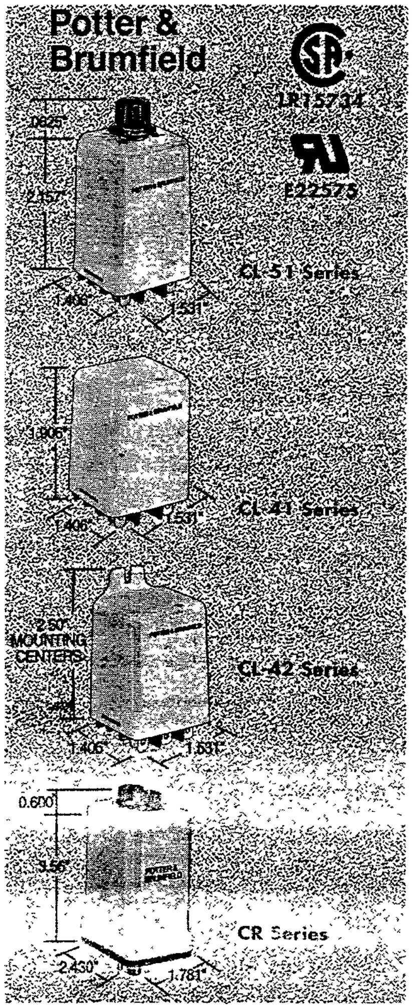
REPEAT CYCLE MODELS

- Two top-mounted adjustment knobs allow setting On time and Off time independently
- Input voltage 120 VAC, 50/60 Hz, ±10%
- Contact ratings: 10 amps resistive at 120 VAC; 1/3 HP at 120/240 VAC
- ±1% repeatability at 25°C; 150 mSec reset time
- DPDT relay output
- 2⅜L x 1¾W x 4⁹⁄₁₆"D (less pins)

All Timers Use Socket No. 5X852; Except OFF DELAY Series Uses No. 6X156—order on page 473

Timing Range	Stock No.	List	Each	Shpg. Wt.
ON DELAY 8-PIN OCTAL BASE SERIES				
0.1-10 Sec.	5X828	$51.49	$43.80	0.3
1.8-180	5X829	51.49	43.80	0.3
3-300	5X830	51.49	43.80	0.3
9-900	6X601	56.64	48.15	0.3
OFF DELAY 11-PIN OCTAL BASE SERIES				
0.1-10 Sec.	6X153	57.88	49.25	0.3
1.8-180	6X154	57.88	49.25	0.3
3-300	6X155	57.88	49.25	0.3
9-900	6X602	57.88	49.25	0.3
INTERVAL DELAY 8-PIN OCTAL BASE SERIES				
0.1-10 Sec.	6X603	58.70	49.90	0.3
1.8-180	6X604	58.70	49.90	0.3
3-300	6X605	58.70	49.90	0.3
REPEAT CYCLE 8-PIN OCTAL BASE SERIES				
0.1-10 Sec.	1A366	72.09	61.30	0.5
0.6-60	1A367	72.09	61.30	0.5
1.8-180	1A368	72.09	61.30	0.5

TIME DELAY RELAYS



CL ON DELAY SERIES

- Knob or resistor adjustable; external resistor (not included) for maximum time, 1/4 watt resistor recommended
- Plug-in, quick-connect terminals
- Coil current rating 25mA

CL RELAY SPECIFICATIONS

Form	Contact Load Rating Amps, Resistive	Repeatability	Recycle Time	Operating Temperature
DPDT	10 @ 28VDC or 240VAC, 80% PF	±3%	100 mSec. Typical 150 mSec. Max.	–10° to 55°C

CL RELAY ORDERING DATA

No. of Pins	Time Delay	Input Voltage	Control	Use With Socket No.*	P&B Model	Stock No.	List	Each	Shpg. Wt.
8	0.1-10 Sec.	120 VAC	Knob	5X854 5X853 4A161 1A247	CLB-51-70010	**3A953**	$74.02	**$73.30**	0.3
	0.3-30		Knob		CLB-51-70030	**4A006**	73.97	**73.25**	0.3
	1.2-120		Knob		CLB-51-70120	**4A007**	73.97	**73.25**	0.3
11	0.1-10	120 VAC	Resistor		CLF-41-70010	**3A954**	66.46	**65.85**	0.3
	1.2-120		Resistor		CLF-41-70120	**4A077**	119.70	**118.55**	0.2
	0.1-10		Resistor		CLF-42-70010	**4A008**	66.46	**65.85**	0.2

(*) Order sockets on page 473.

CR RECYCLE SERIES

- Two independent control knobs for adjusting On and Off delays
- Recycling sequence is initiated by applying power to terminals—when first preset delay is complete, contacts transfer from normally Off to energized On, activating On delay
- Relay returns to Off state (contacts NO) if power is removed
- Knob adjustable time increments
- Coil current rating 25mA

CR RELAY SPECIFICATIONS

Form	Contact Load Rating Amps, Resistive	Repeatability	Recycle Time	Operating Temperature
DPDT	10 @ 240VAC	±2%	60 mSec.	–40° to 55°C

CR RELAY ORDERING DATA

No. of Pins	Time Delay	Input Voltage	Use With Socket No.*	P&B Model	Stock No.	List	Each	Shpg. Wt.
8	0.1-10 Sec.	120VAC	5X852	CRB-48-70010	**4A009**	$155.14	**$153.75**	0.6
	1.8-180			CRB-48-70180	**4A010**	155.13	**153.75**	0.5

(*) Order sockets on page 473.

TIME DELAY RELAY SELECTION GUIDE ON PAGE 484

LIBRARY OF TECHNICAL MANUALS

Helpful reference books for the tradesman, student, and homeowner. Topics cover electricity, electric motors, welding, plumbing, refrigeration, air conditioning, pneumatics, hydraulics, and much more. See Index under Books, Technical.

TIME DELAY RELAYS

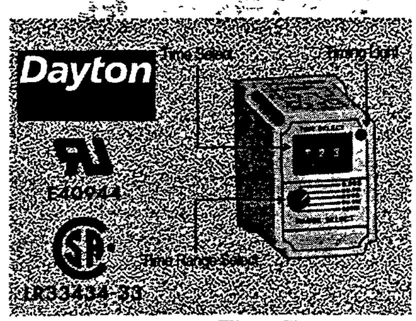
ON-DELAY MULTI-TIME RANGE RELAY

- FCC Approved
- User programmable, multiple time ranges
- ±0.1% Repeatability
- 120VAC ±10% 50/60 Hz input voltage
- DPDT relay output rated 10 amps resistive at 120 VAC
- Coil Current Rating 16mA
- 8-pin design; uses socket No. 5X852—order on page 473
- Timing light indicates when unit is operating
- Digital time set
- Transient voltage protection

No. 6A854. Shpg. wt. 0.4 lbs. List....$55.00.
Each $53.80

TIME RANGES

0.05 to 9.99 Seconds
0.1 to 99.9 Seconds
1 to 999 Seconds
0.1 to 99.9 Minutes
1 to 999 Minutes



MULTI-TIME RANGE/MULTI-FUNCTION RELAY

- FCC Approved
- User programmable, multiple time ranges and functions
- ±0.1% repeatability
- 120 VAC ±10% 50/60 Hz input voltage
- DPDT relay output rated 10 amps resistive at 120 VAC
- Coil Current Rating 16mA
- 11-pin design; use socket No. 6X156—order on page 473
- Timing light indicates unit operation
- Digital time set
- Transient voltage protection

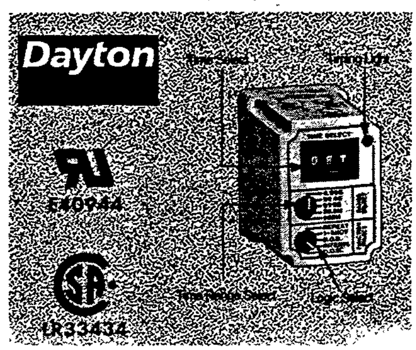
No. 6A855. Shpg. wt. 0.3 lbs. List....$66.00.
Each $59.60

TIME RANGES

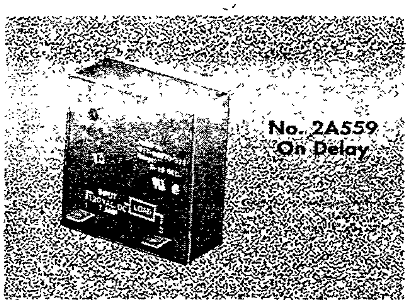
0.05 to 9.99 Seconds
0.1 to 99.9 Seconds
1 to 999 Seconds
0.1 to 99.9 Minutes
1 to 999 Minutes

OPERATING FUNCTION MODES

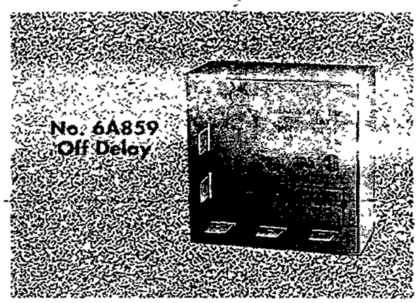
Repeat Cycle (Repeat)—
50% Fixed Duty Cycle
Single Shot (1-Shot)
Off Delay (D.O.B.)
Interval (Intervl)
On Delay (D.O.M.)



SOLID-STATE, CUBE TIME DELAY RELAYS



E49375 LR33434



- Solid-state SPST circuit provides long life and quick response time
- Input voltage of 120V AC/DC ±10%
- Flame retardant and solvent resistant filled polyester thermoplastic housing
- Fast-on terminals for easy installation

ON DELAY

Timing Range	Stock No.	List	Each	Shpg. Wt.
0.05 to 1.00 Sec.	2A559	$22.00	$18.01	0.5
0.25 to 5.00	2A560	22.00	18.01	0.5
0.50 to 10.00	2A561	22.00	18.01	0.5
3.00 to 60.00	2A562	22.00	18.01	0.5

SPECIFICATIONS

Leakage Current: 2mA max.
Voltage Drop: 3.3VAC @ 1A
Surge Current: 20A peak, 1 cycle non-repetitive
Power Consumption: 3W maximum
Control Output: 1A max. AC or DC resistive or inductive: minimum 10mA AC/DC
Dielectric Strength: 3000VAC, 50/60 Hz RMS, terminals to mounting

NOTE: Unfiltered DC power must be full wave rectified to allow proper operation of the digital timing circuit.

- Ambient temperature of -40° to 150°F
- Reset by removing input power (on delay only); off delay models use momentary contact with power applied at all times
- Compact cube size
- Dimensions: 2L x 2W x 7/8"D

OFF DELAY

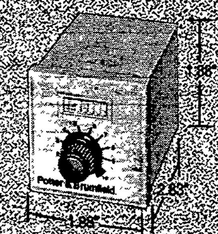
Timing Range	Stock No.	List	Each	Shpg. Wt.
0.50 to 10.00 Sec.	6A857	$25.00	$21.40	0.2
3.00 to 60.00	6A858	25.00	21.40	0.5
15.00 to 300.00	6A859	25.00	21.40	0.5

FOR TIME DELAY RELAY SELECTION DATA, SEE PAGE 484

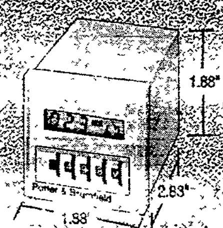
TIME DELAY RELAYS

E22575 Potter & Brumfield

LR15734



CNS Series
No. 2XC62



CNS Series
No. 2XC64

FOR TIME DELAY SELECTION DATA, SEE PAGE 484

CNS MULTIFUNCTION SERIES

- Up to 8 programmable timing functions
- Universal input 24-240V AC or DC
- Rated for 50 or 60 Hz
- Dip switch selection of timing function and range
- Control knob and dial scale set actual delay time
- 1/16 DIN style case
- Coil current rating 42mA

PROGRAMMABLE TIMING FUNCTIONS

8 or 11 Pin Models

- Delay On Operate
- Interval On (input controlled)
- Recycle (initially off)
- Recycle (initially on)

11 Pin Models Only

- Delay On Release
- Inverted Delay On Release
- Interval On (switch controlled)
- Interval Off

CNS RELAY SPECIFICATIONS

Form	Contact Load Rating Amps, Resistive	HP	Repeatability	Recycle Time	Operating Temperature
DPDT	10 @ 277VAC or 30VDC	1/3 @ 120VAC 1/2 @ 250VAC	±2%	45 mSec., Typical; 60mSec., Max.	–10°to 55°C

CNS RELAY ORDERING DATA

No. Of Pins	Time Delay	Input Voltage	Use with Socket No.*	P&B Model	Stock No.	List	Each	Shpg. Wt.
8	0.1 Sec.-100 Min.	24-240 AC or DC	5X852	CNS-35-92	**2XC62**	$57.94	**$57.40**	0.4
11			6X156	CNS-35-96	**2XC63**	63.55	**62.95**	0.4

(*) Order socket on page 473.

CNT MULTIFUNCTION SERIES

- 10 programmable timing functions and 2 counting functions
- LCD digital display
- Rated for 50 or 60 Hz
- Thumbwheel switches for programming
- 1/16 DIN style case

PROGRAMMABLE TIMING FUNCTIONS

- Delay On Operate
- Delay On Release
- Interval On
- Control-Off Interval On
- Recycle
- Single Cycle
- Control On-Off Interval On
- Control On-Off Delay
- Pulse
- Cumulative Delay On Operate

Counting Functions

- Operate @ Preset Count
- Release @ Preset Count

CNT RELAY SPECIFICATIONS

Form	Contact Load Rating Amps, Resistive	HP	Repeatability	Recycle Time	Operating Temperature
DPDT	10 @ 277VAC or 30VDC	1/3 @ 120VAC, 1/2 @ 250VAC	±0.1% ±0.05% Sec	45 mSec., Typical; 60 mSec., Max.	–10° to 55°C

CNT RELAY ORDERING DATA

No. of Pins	Time Delay	Input Voltage	Coil Current Rating	Use with Socket No.*	P&B Model	Stock No.	List	Each	Shpg. Wt.
11	0.1 Sec. to 9990 Hrs.	12VDC	250mA	6X156	CNT-35-26	**2XC64**	$77.25	**$76.50**	0.4
		24-240VAC or DC	42mA	6X156	CNT-35-96	**2XC65**	82.24	**81.45**	0.4

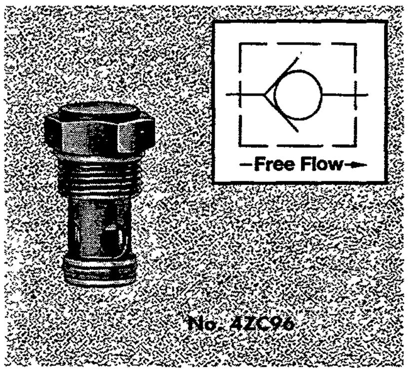
(*) Order socket on page 473.

Appendix 6

THREADED CARTRIDGE VALVES

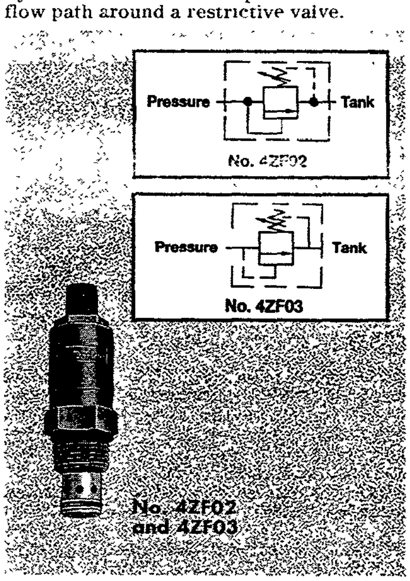
Parker

- Self-contained, portless valves designed for straight thread installation to eliminate leakage
- Reduce weight and space required compared to a conventionally plumbed system
- Reduce cost of fittings and hose, simplifies troubleshooting and reduces downtime
- Quick and easy removal. Simply unscrew, no fittings to disconnect
- Allow hydraulic system controls to be integrated into a single block or individual valve bases
- Cartridge style valves include: check, relief, pressure reducing, sequence, needle, and solenoid valves



[A] CHECK VALVES

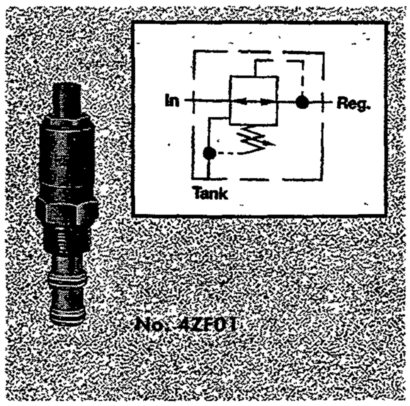
Nos. 4ZC96 and 4ZC97 check valves allow free flow in one direction while preventing flow in the reverse direction. They can be used to isolate portions of a hydraulic circuit or to provide a free flow path around a restrictive valve.



[B] RELIEF VALVES

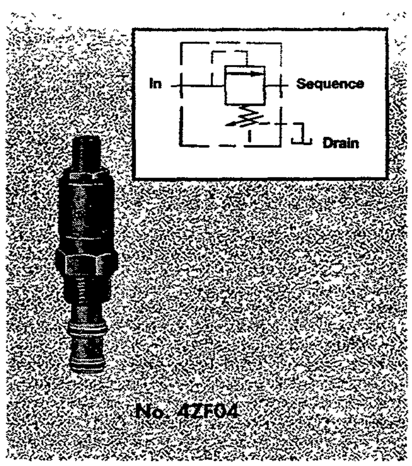
No. 4ZF02 relief valve is suited for continuous duty applications and is primarily used to limit main system pressure.

No. 4ZF03 relief valve is best suited for intermittent duty applications as overload protection and shock protection relief.



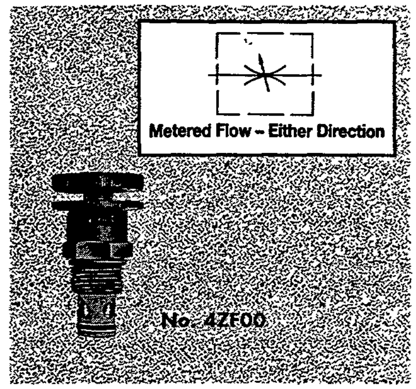
[C] PRESSURE REDUCING/ RELIEF VALVE

No. 4ZF01 pressure reducing/relieving valve can be used in any application where a regulated pressure lower than system pressure is required. The valve also acts as a relief valve, relieving any shocks or surges that occur between its regulated pressure port and the actuator. When the valve is in the relieving mode, the inlet port is blocked. 200-3500 PSI range.



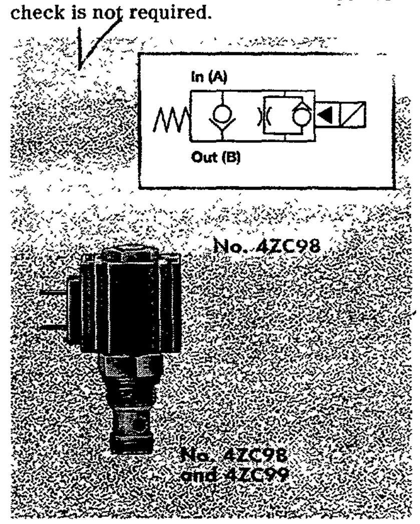
[D] SEQUENCE VALVE

No. 4ZF04 sequence valve is used to control the sequence of operation of two or more hydraulic actuators by assuring priority hydraulic pressure to one actuator before another.



[E] NEEDLE VALVE

No. 4ZF00 needle valve provides speed control and shutoff where a reverse flow check is not required.



[F] SOLENOID VALVES

Nos. 4ZC98 and 4ZC99 solenoid valves are used in circuits requiring On/Off valves and low leakage. Single acting cylinder applications typically utilize valves of this type. Valves can be used for bleed down flow and/or raising and lowering a vertical cylinder. No 4ZC98 (DC) is normally closed and No. 4ZC99 (DC) is normally open.

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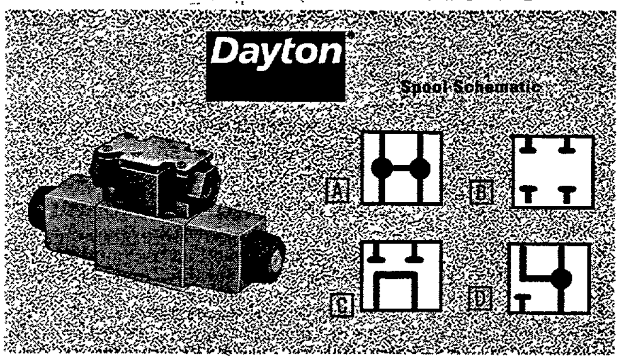
SOLENOID VALVES AND SUBPLATES

AC SOLENOID VALVES



D03 (ISO-03) Size
- 5000 PSI pressure capability
- NFPA fatigue-life tested to 20 million cycles
- Nylon junction box is NEMA 4 rated for resistance to water and commonly used industrial fluids
- Standard viton O-rings provide multi-fluid capability without changing seals

D05 (ISO-05) Size
- 3600 PSI pressure capability
- High solenoid and spring forces provide increased reliability in extreme conditions
- Coil armature design maximizes solenoid force and minimizes electrical energy consumption
- Valve body and spool designed to minimize pressure drop and increase system efficiency

For Valve Stock Nos.	Seals	Phase	Volts	Hertz	Amps Inrush	Amps Holding	Watts Holding	Operating Temp. Range
1A319, 1A320, 2A126, 6Z660	Viton	1	115-120	50-60	2.2	0.41	30.0	0 to 150°F
1A321, 1A322, 2A127, 6Z661	Buna	1	115-120	50-60	3.8	0.69	35.0	0 to 150°F

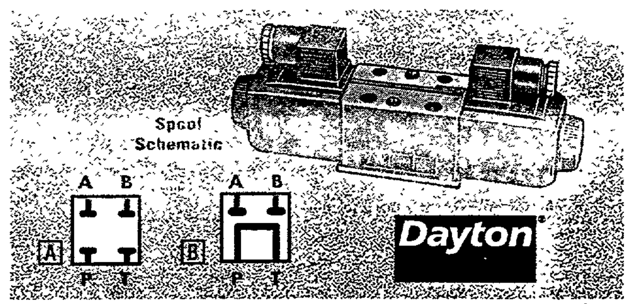
SOLENOID VALVE SPECIFICATIONS AND ORDERING DATA

Key	Type Spool	Valve Size	GPM	Maximum Pressure	Dimensions (In.) Length	Width	Height	Stock No.	List	Each	Shpg. Wt.
A	Open	D03 (ISO-03)	10	5000 PSI	7.8	2.0	3.6	**1A319**	$270.00	**$130.00**	5.3
	Open	D05 (ISO-05)	25	3600	9.5	2.9	3.9	**1A321**	442.00	**204.00**	11.0
B	Closed	D03 (ISO-03)	10	5000	7.8	2.0	3.6	**1A320**	270.00	**130.00**	5.3
	Closed	D05 (ISO-05)	25	3600	9.5	2.9	3.9	**1A322**	442.00	**204.00**	12.0
C	Tandem	D03 (ISO-03)	6	2500	7.8	2.0	3.6	**2A126**	274.00	**134.00**	5.3
	Tandem	D05 (ISO-05)	12	3000	9.5	2.9	3.9	**2A127**	453.00	**210.00**	12.0
D	Float Center	D03 (ISO-03)	10	5000	7.8	2.0	3.6	**6Z660**	270.00	**130.00**	4.8
	Float Center	D05 (ISO-05)	20	3600	9.5	2.5	3.9	**6Z661**	442.00	**204.00**	11.0

DC SOLENOID VALVES

D03 (ISO 03) Size
- 5000 PSI pressure capability
- NFPA fatigue-life tested to 20 million cycles
- No tools required to remove solenoid coils
- Standard viton O-rings provide multi-fluid capability without changing seals

D05 (ISO-05) Size
- 3600 PSI pressure capability
- High solenoid and spring forces provide increased reliability in extreme conditions
- No tools required to remove solenoid coils
- Valve body and spool designed to minimize pressure drop and energy consumption

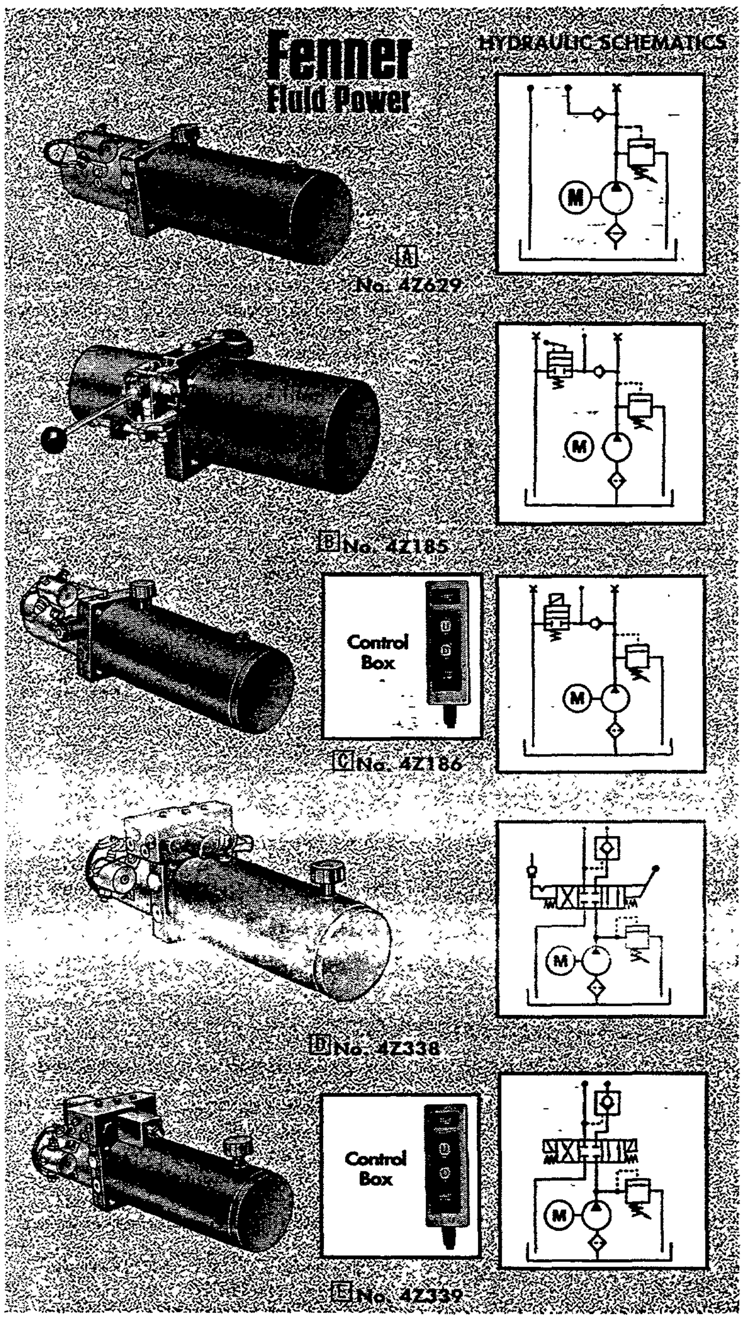


Key	Spool Type	Valve Size	DC Volts	GPM	Max. Pressure	Holding Amps	Holding Watts	Dimensions (In.) Length	Width	Height	Stock No.	List	Each	Shpg. Wt.
A	Closed	D03 (ISO-03)	12	10	5000	2.50	30	8.27	1.9	3.6	**4ZC62**	$298.00	**$184.00**	4.9
	Closed	D03 (ISO-03)	24	10	5000	1.25	30	8.27	1.9	3.6	**4ZC66**	298.00	**184.00**	4.9
	Closed	D05 (ISO-05)	12	25	3600	3.67	44	12.54	2.9	4.6	**4ZC63**	526.00	**282.00**	12.0
	Closed	D05 (ISO-05)	24	25	3600	1.83	44	12.54	2.9	4.6	**4ZC67**	526.00	**282.00**	12.0
B	Tandem	D03 (ISO-03)	12	3	5000	2.50	30	8.27	1.9	3.6	**4ZC64**	298.00	**184.00**	4.9
	Tandem	D03 (ISO-03)	24	3	5000	1.25	30	8.27	1.9	3.6	**4ZC68**	298.00	**184.00**	4.9
	Tandem	D05 (ISO-05)	12	12	2500	3.67	44	12.54	2.9	4.6	**4ZC65**	537.00	**289.00**	12.0
	Tandem	D05 (ISO-05)	24	12	2500	1.83	44	12.54	2.9	4.6	**4ZC69**	537.00	**289.00**	12.0

AC/DC SOLENOID VALVE SUBPLATES

For use with above Dayton solenoid valves as well as any make of valve conforming to NFPA standards listed in chart below. Bolt kit included. Side ported design. No. 1A323 is made of aluminum with working pressure rating of 3000 PSI. No. 1A324 is steel with working pressure of 4500 PSI. Dayton brand.

For Valve Size	Length	Width	Height	Port Size	Stock No.	List	Each	Shpg. Wt.
D03	2.0"	2.0"	1.25"	1/4" NPT	**1A323**	$83.00	**$36.00**	1.2
D05	4.0	4.50	1.72	1/2	**1A324**	277.00	**120.00**	7.6



12VDC POWER UNIT SPECIFICATIONS AND ORDERING DATA

Key	Dimensions (In.) H	W	L	Fenner Model	Stock No.	List	Each	Shpg. Wt.
A	6.3	6.8	20.3	DC-30	**4Z629**	$316.20	**$279.00**	34.0
B	7.1	9.7	16.8	DC-1	**4Z185**	326.40	**286.75**	36.0
C	6.3	7.6	20.3	DC-20	**4Z186**	397.80	**349.00**	36.0
D	7.2	6.8	20.3	DC-50	**4Z338**	467.20	**416.25**	43.0
E	7.2	8.0	20.3	DC-60	**4Z339**	548.80	**488.25**	43.0

12 Volt DC, horizontal mount hydraulic power units offer a range of valving options to suit many mobile applications: truck tail gates, cranes, wheel chair lifts, concrete saws, dump bodies, and aerial lifts.

All power units include a 3 quart (140 cu. in. usable capacity) reservoir. For applications requiring additional oil capacity, 2½ and 4 gallon reservoirs are also available. See page 2625.

PERFORMANCE—ALL MODELS

Maximum Pressure: 3000 PSI

Relief Valve: Adjustable 1500-4000 PSI, preset 2500 PSI

Flow: 2.4 GPM @ 500 PSI, 120A @ 12V; 1.4 GPM @ 2000 PSI, 220A @ 12V

Ports: 3/8" NPT pressure and return ports, 1/4" NPT on 4-way valve units

Maximum Duty Cycle:
1 Minute in 5 maximum running at 500 PSI
1/2 Minute in 5 maximum running at 2000 PSI

[A] BASIC POWER UNIT

- **For use in custom applications using remote mounted directional control valves**
- **Includes relief valve and check valve**

[B] MANUAL CONTROL POWER UNIT

- **For single acting cylinders only for tail gates, dump bodies, and material handling**
- **Includes relief valve, check valve, and manually actuated release valve**

Spring-centered handle controls function; one direction starts motor to raise load, other direction provides fingertip control of lowering speed.

[C] REMOTE CONTROL POWER UNIT

- **For single acting cylinders only, for remotely operated wheel chair/personal lifts, material handling, dump bodies, aerial ladders, and cherry pickers**
- **Includes relief valve, check valve, and solenoid actuated release valve**

Includes weatherproof control box with 10 ft. cord. One button starts motor to raise load, other button releases pressure to lower load.

[D] MANUAL 4-WAY POWER UNIT

- **Used for 4-way manual control of double acting cylinders or reversing fluid motors**
- **Includes relief valve and manually actuated directional control valve**

Spring-centered handle moves in either direction from center to start the motor and direct flow to one of two work ports. At one port, a pilot operated check valve holds system pressure until handle is moved to opposite position.

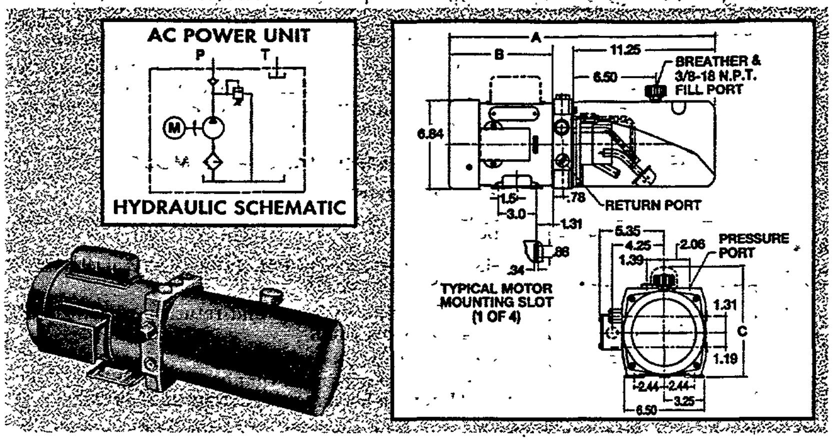
[E] REMOTE 4-WAY POWER UNIT

- **Used for 4-way remote control of double acting cylinders or reversing fluid motors**
- **Includes relief valve and 4-way solenoid-actuated directional control valve**

Has weatherproof control box and 10 ft. cord. One button starts motor and sends flow to one work port with pilot operated check valve. Other button starts motor and sends flow to unchecked work port.

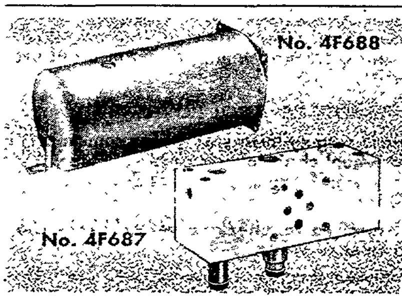
AC POWER UNITS

JSB John S. Barnes Corporation 1/2 TO 2 HP AC POWER UNITS



- For lift tables, hose crimpers, conveyors, dock levelers, car hoists, presses, robotics, packaging machines, machine tools
- Compact, lightweight design
- Comes completely assembled as pump, motor, reservoir with check valve and relief valve preset at maximum operating pressure as noted below
- Pretested
- Standard 1½ gallon oil reservoir; 2½ gallon reservoir available, see below
- Heavy-duty cast iron pump with quiet 11-tooth hardened steel gears. Aluminum center adapter serves as a port manifold and valve housing with load holding check and adjustable relief valve
- 9/16-18 outlet and return ports
- J.S. Barnes brand

Nominal GPM	Maximum Operating PSI	HP	Motor Phase	Volts 60 Hz	RPM	Dimensions (In.) A	B	C	Barnes Model	Stock No.	List	Each	Shpg. Wt.
1/2	1500	1/2	1	115/230	1800	21.01	8.17	8.79	1280546	**4F678**	$553.75	**$453.50**	40.0
1/2	3000	1	1	115/230	1800	23.04	10.20	8.79	1280547	**4F679**	622.05	**509.50**	48.0
1	1500	1	1	115/230	1800	23.04	10.20	8.79	1280548	**4F680**	622.05	**509.50**	48.0
1½	1000	1	1	115/230	1800	23.04	10.20	8.79	1280549	**4F681**	622.05	**509.50**	48.0
2	750	1	1	115/230	1800	23.04	10.20	8.79	1280550	**4F682**	622.05	**509.00**	50.0
1	1500	1	3	230/460	1800	21.23	8.39	N/A	1280551	**4F683**	582.40	**477.50**	43.0
2	750	1	3	230/460	1800	21.23	8.39	N/A	1280552	**4F684**	588.65	**481.25**	43.0
2	1500	2	3	230/460	3600	21.70	8.86	N/A	1280553	**4F685**	598.00	**489.00**	48.0
4	750	2	3	230/460	3600	21.70	8.86	N/A	1280554	**4F686**	598.00	**489.00**	48.0



JSB John S. Barnes Corporation

RESERVOIR AND MANIFOLD ADAPTER KIT

2½ GALLON RESERVOIR

2½ gallon oil reservoir expands capabilities of AC power units listed above. For applications requiring longer run times and more useable oil; or when oil temperature exceeds or will continuously run at 160-165°F. J.S. Barnes brand (2280916).

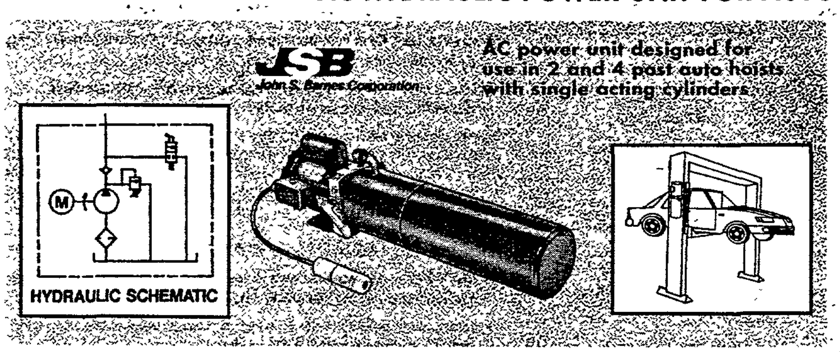
No. 4F688. 2½ Gallon Reservoir. Shpg. wt. 4.5 lbs. List $57.00. Each $46.50

MANIFOLD ADAPTER KIT

Adapts above power units to NFPA D03 (D01) valve. Ports are 9/16-18. **NOTE:** It is recommended an open or tandem centered valve be used with the above units. J.S. Barnes brand (2620290).

No. 4F687. Manifold Adapter Kit. Shpg. wt. 2.3 lbs. List $127.00. Each $104.00

AC HYDRAULIC POWER UNIT FOR AUTO HOISTS



- Supplies power to raise, hold, and lower
- 7000-9000 lb. capacity
- Adjustable poppet type relief valve
- Hardened steel valve parts may be serviced in the field
- 100 mesh pump inlet screen and breather filler reduce contamination risk
- High torque 2 HP motor offers low voltage capability
- 230 volt, single phase, 11.0 Amps
- 9/16-18 ports
- 3 gallon reservoir
- Includes #12 AWG 3 wire 18" long cord
- Interchangeable with most OEM lifts using standard NEMA mountings
- J.S. Barnes brand (1280555)

Cu. In. / Rev.	GPM Displ. @ RPM 3600	Factory Preset PSI	Operating Pressure	Overall Dimensions (In.) L	W	H	Stock No.	List	Each	Shpg. Wt.
0.129	2	2250/2450	1900	34 39/64	6½	9 5/32	**4F676**	$634.40	**$518.50**	55.0

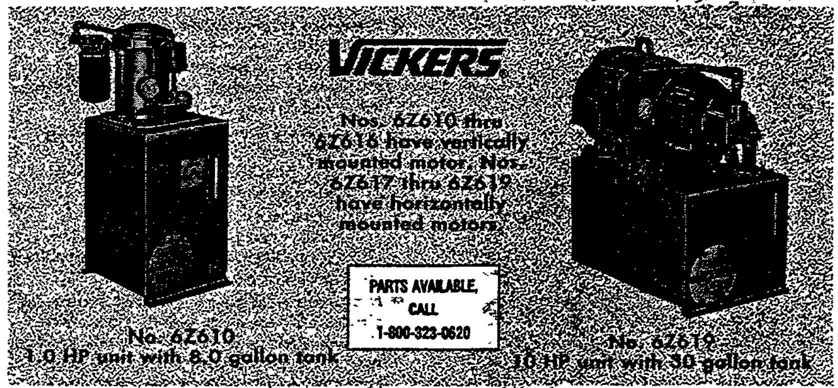
1 TO 10 HP AC POWER UNITS AND DC MATERIAL HANDLING POWER UNITS

1 TO 10 HP AC POWER UNITS

For powering hydraulic equipment in applications such as pressing, clamping, chucking, transferring, actuating, lifting, and indexing.

Comes assembled and includes:

- **Vickers models V10 or V20 vane pump (depending on HP)**
- **Heavy-gauge steel tank**
- **3-phase, 230/460V, 60 Hz, 1800 RPM TEFC motor with C-face mounting**
- **Motor/pump adapter**
- **Adjustable relief valve**
- **Filler/Breather**
- **Pressure gauge** • **Oil level gauge**
- **Return-line spin-on filter**
- **Clean-out port in tank**



HP	GPM	Maximum Pressure PSI	Tank Size Gallons	Dimensions (In.) Length	Width	Height	Vickers Model	Stock No.	Freight Prepaid List	Each	Shpg. Wt.
1.0	1.5	1000	8.0	12	14	30	TK8VP-FV01-†-1012-A3/1HP	**6Z610**	$1754.00	**$1095.00**	105.0
2.0	1.5	2000	8.0	12	14	30	TK8VP-FV01-†-1012-A3/2HP	**6Z611**	1804.00	**1125.00**	150.0
2.0	3.0	1000	10.0	15	19	26	TK10V-FV02-†-1039-A3/2HP	**6Z612**	1856.00	**1150.00**	143.0
3.0	3.0	1500	10.0	15	19	26	TK10V-FV02-†-1039-A3/3HP	**6Z613**	1907.00	**1195.00**	125.0
3.0	4.5	1000	10.0	15	19	26	TK10V-FV03-†-1040-A3/3HP	**6Z614**	1907.00	**1195.00**	125.0
5.0	3.0	2250	10.0	15	19	26	TK10V-FV02-†-1039-A3/5HP	**6Z615**	2078.00	**1295.00**	184.0
5.0	4.5	1650	10.0	15	19	26	TK10V-FV03-†-1040-A3/5HP	**6Z616**	2078.00	**1295.00**	150.0
7.5	7.5	1500	20.0*	18	26	14	TK20P-FV05-†-10A2-213TC/7½HP	**6Z617**	3195.00	**2050.00**	260.0
10.0	7.5	2000	20.0*	18	26	14	TK20P-FV05-†-10A2-215TC/10HP	**6Z618**	3343.00	**2100.00**	289.0
10.0	10.0	1500	30.0*	39	20	35	TK30P-FV07-†-10A2-215TC/10HP	**6Z619**	3491.00	**2250.00**	375.0

(*) Horizontal mounting style. (†) MN-GF30-F1

DC PALLET TRUCK POWER UNITS

- 12 and 24 Volt DC units for powering raise, hold, and lower functions on walk-behind pallet trucks
- **Fitted with relief, check, and solenoid actuated release valves and pressure compensated return flow control**
- For vertical mounting only
- Reservoir provides 76 cu. in. of usable oil capacity
- **Size: 5.73H x 6.93W x 16.3"L**

PERFORMANCE

Maximum Pressure: 3000 PSI
Relief Valve: Adjustable, preset 2500 PSI
Port: 9/16 SAE delivery/return port
9/16 SAE alternate delivery/return port (plugged)
7/16 SAE auxiliary return port
Flow (12V): 2.0 GPM @ 500 PSI; 1.2 GPM @ 2000 PSI
Amps (12V): 100A @ 500 PSI; 200A @ 2000 PSI
Flow (24V): 1.6 GPM @ 500 PSI; 1.1 GPM @ 2000 PSI
Amps (24V): 40A @ 500 PSI; 95A @ 2000 PSI
Intermittent Duty Motors:
10 Seconds in any minute at 500 PSI
5 Seconds in any minute at 2000 PSI

12V DC PALLET TRUCK UNIT

No. 4F690. Shpg. wt. 33.0 lbs. List $376.05.
Each $327.25

24V DC PALLET TRUCK UNIT

No. 4F691. Shpg. wt. 33.0 lbs. List $376.05.
Each $327.25

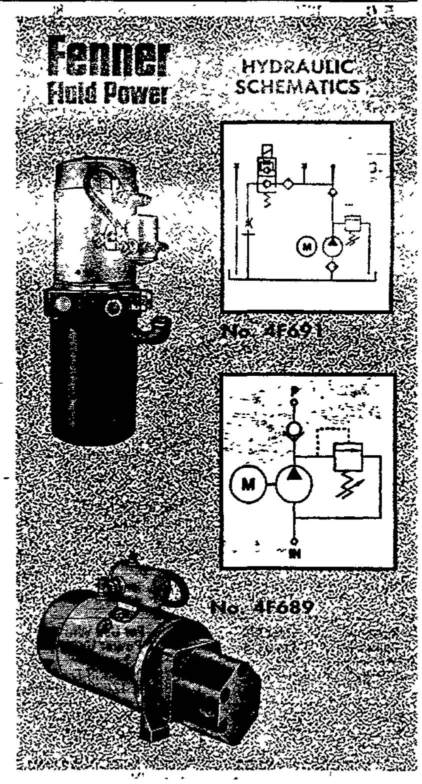
DC AUXILIARY POWER UNIT

- 12 Volt DC unit for mobile auxiliary power applications including back-up **hydraulic power for truck mounted equipment, emergency power steering for off-road vehicles, elevated** work platforms, and material handling auxiliary functions
- Includes check valve and relief valve
- **Requires remotely mounted reservoir, and accepts remotely mounted auxiliary valving**
- **Size: 7.14H x 4.50W x 10.44"L**

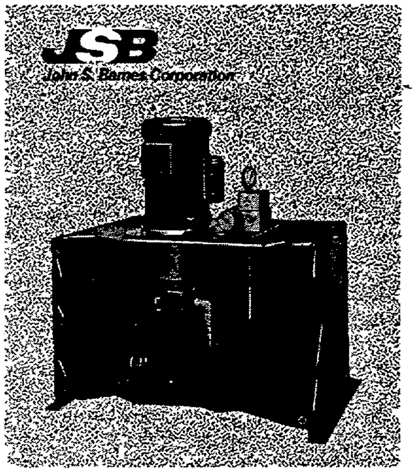
PERFORMANCE

Maximum Pressure: 4000 PSI
Relief Valve: Adjustable, preset 2500 PSI
Flow: 1.8 GPM @ 1000 PSI; 1.3 GPM @ 2000 PSI
Amps: 130A @ 1000 PSI, 190A @ 2000 PSI (12VDC)
Ports: .... 9/16 SAE pressure
.... 3/4 SAE inlet side ports
Intermittent Duty Motors:
1 Minute in 5 maximum running at 500 PSI
1/2 Minute in 5 maximum running at 2000 PSI

No. 4F689. Shpg. wt. 27.0 lbs. List $274.64.
Each $239.50



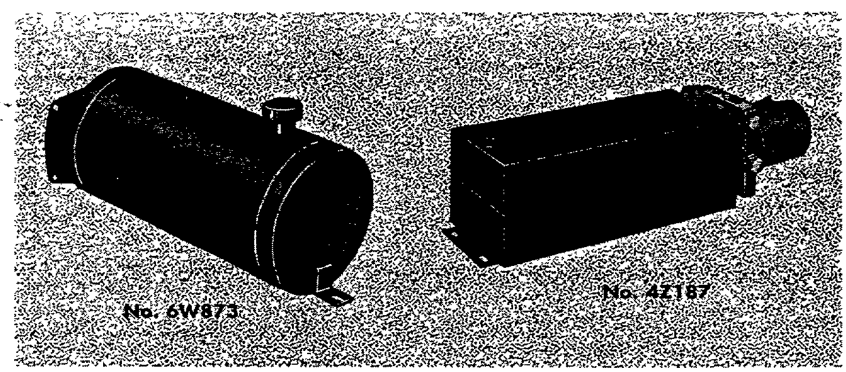
1 TO 5 HP AC POWER UNITS AND HIGH CAPACITY RESERVOIRS



1 TO 5 HP AC POWER UNITS

- Provides dependable source of hydraulic power for industrial machinery in actuating, pressing, stamping, molding, punching, clamping, and lifting applications
- Nos. 6W642 and 6W643 two-stage hi-low pumps are ideal for compactors, presses, log splitters, and clamping circuits
- Flow, pressure, horsepower, valve/reservoir size, and electrical characteristics are selectively matched for optimum performance
- Manifold block included for mounting single D03 or D05 valve. Can also accommodate optional 2- or 3-station manifold (see page 2647). Manifold is removable for direct pressure and tank (P&T) plumbing. Block includes both NPT and SAE ports
- All units include high torque motors so that relief valves can be adjusted up to 50% above factory setting for intermittent applications. 3000 PSI maximum
- Heavy-duty pumps include hardened and ground alloy-steel gears and shafts, with high strength, fine grain cast-iron housings
- All units come completely assembled with: filler/breather, fluid level gauge with thermometer, pressure gauge, and flexible coupling
- Nos. 6W642 and 6W643 two-stage pumps, first stage pump unloads fully at 450 PSI, second stage operates up to high pressure relief setting
- John S. Barnes brand

Pump GPM	Pump PSI	Manifold Block	Motor HP	Motor RPM	Motor Volts	Motor PH	Motor Hz	Dimensions (In.) L	W	H	Barnes Model	Stock No.	List	Each	Shpg. Wt.
SINGLE-STAGE, 5 GALLON POWER UNIT SPECIFICATIONS AND ORDERING DATA															
1.0	1500	DO3	1	1800	115/230	1	60	12	12	24	1400010	**6W644**	$1189.25	**$909.50**	95.0
1.5	2000	DO3	2	1800	115/230	1	60	12	12	26	1400011	**6W645**	1332.15	**986.50**	106.0
2.0	1500	DO3	2	1800	230/460	3	60	12	12	25	1400012	**6W646**	1312.50	**998.50**	102.0
SINGLE-STAGE, 15 GALLON POWER UNIT SPECIFICATIONS AND ORDERING DATA															
2.5	3000	DO3	5	1800	230/460	3	60	25	14	28	1400013	**6W632**	1483.05	**1139.00**	171.0
3.5	2000	DO3	5	1800	230/460	3	60	25	14	28	1400014	**6W633**	1502.80	**1155.00**	171.0
4.5	1500	DO3	5	1800	230/460	3	60	25	14	28	1400015	**6W634**	1516.35	**1164.00**	171.0
5.0	1250	DO3	5	1800	230/460	3	60	25	14	28	1400016	**6W635**	1507.00	**1157.00**	171.0
7.0	600	DO5	3	3600	230/460	3	60	25	14	29	1400017	**6W636**	1443.55	**1106.00**	171.0
7.0	1000	DO5	5	3600	230/460	3	60	25	14	25	1400018	**6W637**	1590.20	**1223.00**	140.0
9.0	500	DO5	3	3600	230/460	3	60	25	14	25	1400019	**6W638**	1462.25	**1115.00**	[illegible]
9.0	750	DO5	5	3600	230/460	3	60	25	14	29	1400020	**6W639**	1609.95	**1231.00**	[illegible]
11.0	100	DO5	3	3600	230/460	3	60	25	14	25	1400021	**6W640**	1463.30	**1114.00**	[illegible]
11.0	600	DO5	5	3600	230/460	3	60	25	14	29	1400022	**6W641**	1611.00	**1236.00**	171.0
TWO-STAGE, 15 GALLON POWER UNIT SPECIFICATIONS AND ORDERING DATA															
11.0 **2.8**	250 1500	DO5	3	3600	230/460	3	60	28	17	36	1400023	**6W642**	1664.65	**1279.00**	145.0
16.0 **3.8**	250 2000	DO5	5	3600	230/460	3	60	28	17	36	1400024	**6W643**	1631.90	**1251.00**	176.0



Fenner
Fluid Power

HIGH CAPACITY RESERVOIRS FOR 12VDC POWER UNITS

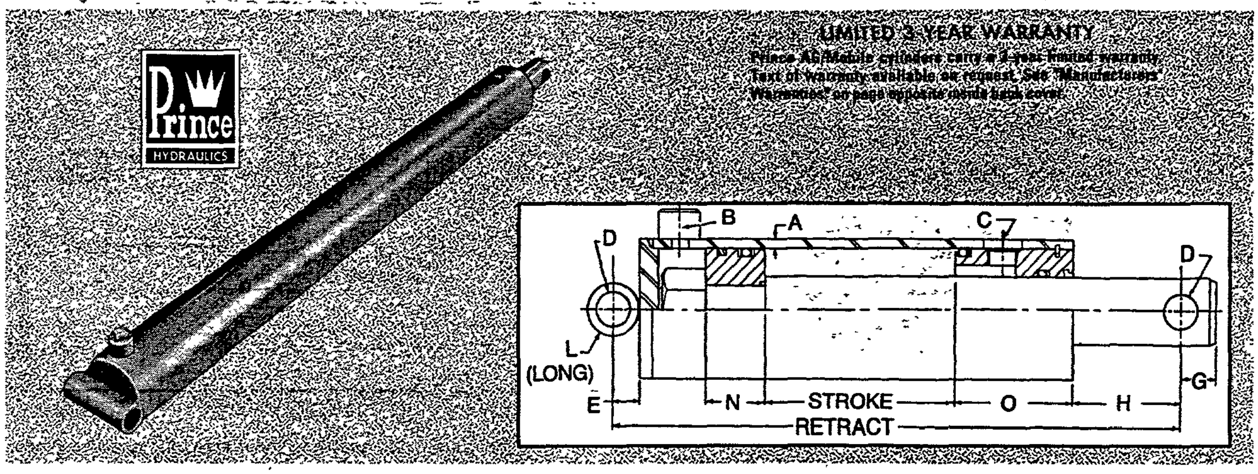
For use with Fenner and Dayton 12VDC power units. Can be interchanged with standard 3-quart reservoir to provide additional fluid capacity. Heavy-duty steel construction. Black finish.

Nominal Capacity	Useable Capacity	For Use With Power Units	Dimensions (In.) L*	W	H	Dia.	Pilot Dia. (In.)	Fenner Model	Stock No.	List	Each	Shpg. Wt.
2½ gal.	420 cu. in.	4Z186D, 4Z338-D	17	–	–	6¾	4¾	R-46	**6W873**	$68.60	**$59.70**	8.5
4	715	4Z339D, 4Z629D, 4Z690D	26	–	–	6¾	4¾	R-44	**6W874**	84.75	**73.80**	12.0
2½	410	4Z185A-D, 4Z186A-C,	12½	8	6¼	–	5½	T-35	**4Z187**	68.60	**59.70**	8.5
4	675	4Z338A-C, 4Z339A-C, 4Z629A-C	19½	8	6¼	–	5½	T-38	**4Z188**	84.75	**73.80**	12.0

(*) Foot mounting tab adds 1" to overall length.

AG/MOBILE WELDED CYLINDERS AND DIRECTIONAL CONTROL VALVES

AG/MOBILE WELDED CYLINDERS



- Universal end mountings allow double acting cylinder to fit a variety of construction, industrial, and agricultural applications
- Maximum working pressure: 2500 PSI
- Available in 2½" to 4" bores and in 16, 20, 24, 30, and 36" strokes

Cylinders feature all steel welded construction with welded cross tube. Heavy wall honed steel tubing. Ground and polished chrome piston rod with pin eye. Cast-iron ring, O-ring, and back-up washer packing on piston. O-rings and back-up washers in gland. Truarc gland retainer. Red finish. Prince brand.

AG/WELDED CYLINDER SPECIFICATIONS AND ORDERING DATA

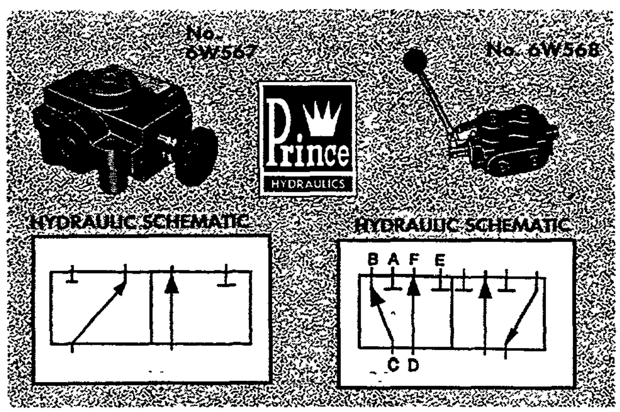
Bore Dia.	Stroke Length	Retract	Rod Dia.	A	B*	C*	D	E	G	H	L	N	O	Prince Model	Stock No.	List	Each	Shpg. Wt.
2½"	16"	24"	1⅜"	3/16	3/8	3/8	0.760	9/16	3/4	2 9/16	3	1¼	2½	PMC-5416	**5Z366**	$180.00	**$155.50**	23.0
2½	24	32	1⅜	3/16	3/8	3/8	0.760	9/16	3/4	2 9/16	3	1¼	2½	PMC-5424	**5Z367**	197.00	**172.00**	30.0
3	20	28	1½	5/32	1/2	1/2	1.015	11/16	1	2 5/16	3½	1¼	2⅝	PMC-8320	**5Z368**	222.00	**193.50**	34.0
3	30	38	1½	5/32	1/2	1/2	1.015	11/16	1	2 5/16	3½	1¼	2⅝	PMC-8330	**5Z369**	261.00	**229.00**	45.0
3½	30	38	1½	3/16	1/2	1/2	1.015	11/16	1	1 11/16	4	1½	2⅝	PMC-5530	**5Z370**	279.00	**244.50**	51.0
3½	36	44	1½	3/16	1/2	1/2	1.015	11/16	1	1 11/16	4	1½	2⅝	PMC-5536	**5Z371**	302.00	**266.25**	58.0
4	30	39	2	5/32	1/2	1/2	1.265	7/8	1¼	2	4½	1 5/16	2⅞	PMC-5630	**5Z372**	321.00	**286.00**	75.0

(*) Ports. NPTF

TWO POSITION SELECTOR VALVES

- Available in single and double models
- Heat treated and hard chrome-plated spools for maximum load handling capacity
- Cast-iron body
- 2500 PSI maximum pressure rating
- No. 6W567 is a 2-position, 3-way valve that enables the operator to direct flow to either of two separate hydraulic circuits
- No. 6W568 is a double selector valve

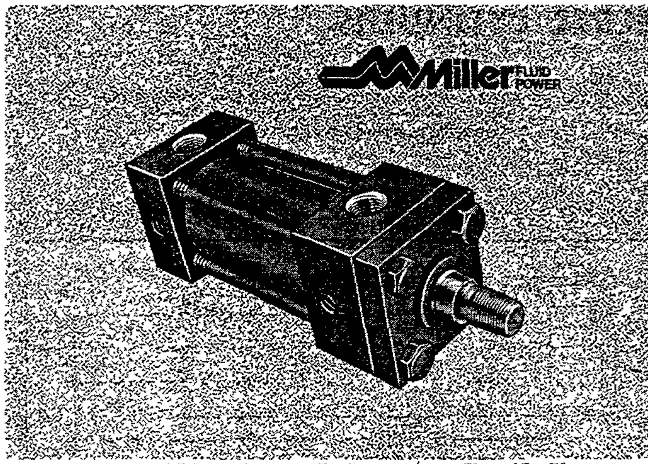
Note: a single selector valve is typically used to operate either of two single acting cylinders or two motors that only run in one direction. A double selector valve is typically used to control two separate double acting cylinders or motors or to control four single acting cylinders or motors.

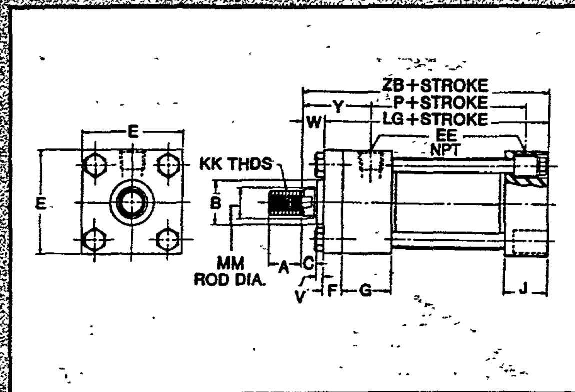


TWO POSITION SELECTOR VALVE SPECIFICATIONS AND ORDERING DATA

Port Size	Capacity GPM	Maximum PSI	Overall Dimensions (In.) Length	Width	Height	Prince Model	Stock No.	List	Each	Shpg. Wt.
1/2" NPT	16	2500	5⅛	3¼	2¼	SS-2A1D	**6W567**	$47.50	**$42.75**	4.2
#12 SAE	40	2500	4¼	3¼	2½	DS-4A1E	**6W568**	86.00	**77.00**	12.0

INDUSTRIAL CYLINDERS





- **Industrial grade hydraulic cylinders**
- **Meet NFPA and JIC standards**
- **Pressures up to 2500 PSI**
- **Temperature range: -20° to 160°F**
- **All steel construction with black finish**
- **Modular mounting design**

Available in 1½" to 4" bores with 1" to 12" strokes. 6, 8, 10, and 12" stroke cylinders have adjustable cushions on both ends with ball checks for faster out-of-cushion starts.

Piloted bushing assures concentricity.

Piston rods case hardened and hard chrome plated to resist mechanical damage.

High strength tie rods protect against shock and fatigue.

Patented Teflon SHEF tube end seals provide positive sealing action even under shock conditions.

Pre-loaded rod seal provides positive seal at high or low pressures.

Single, bidirectional dynamic piston seal protects against high-pressure spikes.

One-piece piloted piston design provides maximum strength and protection against shock loads.

Durable, non-metallic wear band on piston prevents metal-to-metal contact and reduces possibility of scoring of tube.

Urethane piston and rod seals compatible with standard hydraulic fluids.

AREA AND THEORETICAL-FORCE CHARTS FOR HYDRAULIC CYLINDERS

Bore	PUSH FORCES IN LBS. @ PSI 500	1000	2000	2500	Piston Area Sq. In.	PULL FORCES* IN LBS. @ PSI 500	1000	2000	2500	Piston Area Sq. In.
1½"	885	1770	3540	4425	1.77	730	1460	2920	3650	1.46
2	1570	3140	6280	7850	3.14	1180	2360	4720	5900	2.36
2½	2455	4910	9820	12275	4.91	2060	4120	8240	10300	4.12
3¼	4150	8300	16600	20750	8.30	3405	6810	13620	17025	6.81
4	6285	12570	25140	31425	12.57	5080	10160	20320	25400	10.16

(*) Rod size of 5/8" diameter on 1½"; 1" diameter on 2 and 2½"; 1⅜" diameter on 3¼"; and 1¾" diameter on 4" bores are deducted from piston area and force table on return or pull.

HYDRAULIC CYLINDER DIMENSIONS IN INCHES

Bore	A	B	C	E	EE	F	G	J	KK	LG	MM	P	V	W	Y	ZB
1½	3/4	1⅛	3/8	2½	1/2	3/8	1¾	1½	7/16-20	5	5/8	2⅞	1/4	5/8	2	5⅝
2	1⅛	1½	1/2	3	1/2	5/8	1¾	1½	3/4-16	5¼	1	2⅞	1/4	3/4	2⅜	6
2½	1⅛	1½	1/2	3½	1/2	5/8	1¾	1½	3/4-16	5⅜	1	3	1/4	3/4	2⅜	6⅛
3¼	1⅝	2	5/8	4½	3/4	3/4	2	1¾	1-14	6¼	1⅜	3½	1/4	7/8	2¾	7⅛
4	2	2⅜	3/4	5	3/4	7/8	2	1¾	1¼-12	6⅝	1¾	3¾	1/4	1	3	7⅝

HYDRAULIC CYLINDERS ORDERING DATA

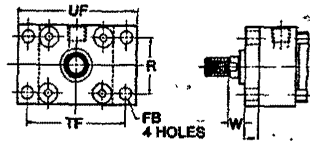
Bore Diameter	Stroke	Stock No.	List	Each	Shpg. Wt.	Bore Diameter	Stroke	Stock No.	List	Each	Shpg. Wt.
1½"	1"	**4Z630**	$233.00	**$210.00**	8.0	**2½"**	6"*	**4Z645**	$429.00	**$386.00**	23.0
1½	2	**4Z631**	235.25	**211.75**	8.5	**2½**	8*	**4Z646**	438.00	**394.00**	24.0
1½	3	**4Z632**	239.00	**215.00**	8.6	**2½**	10*	**4Z647**	446.50	**402.00**	27.0
1½	4	**4Z633**	240.00	**216.00**	9.1	**3¼**	2	**4Z648**	428.00	**385.50**	36.0
1½	6*	**4Z634**	348.00	**313.50**	11.0	**3¼**	4	**4Z649**	419.00	**377.00**	41.0
1½	8*	**4Z635**	352.75	**317.50**	11.0	**3¼**	6*	**4Z650**	537.00	**483.00**	42.0
2	1	**4Z636**	274.00	**246.75**	13.0	**3¼**	8*	**4Z651**	549.50	**494.50**	46.0
2	2	**4Z637**	277.00	**249.50**	13.0	**3¼**	10*	**4Z652**	562.00	**506.00**	51.0
2	4	**4Z638**	285.00	**256.25**	15.0	**3¼**	12*	**4Z653**	575.00	**517.50**	53.0
2	6*	**4Z639**	381.00	**343.00**	17.0	**4**	2	**4Z654**	536.00	**482.25**	46.0
2	8*	**4Z640**	388.00	**349.25**	19.0	**4**	4	**4Z655**	550.00	**495.00**	54.0
2	10*	**4Z641**	395.00	**355.50**	20.0	**4**	6*	**4Z656**	685.50	**617.00**	61.0
2½	1	**4Z642**	309.00	**278.00**	17.0	**4**	8*	**4Z657**	700.50	**630.50**	65.0
2½	2	**4Z643**	313.00	**282.00**	19.0	**4**	10*	**4Z658**	716.00	**644.50**	70.0
2½	4	**4Z644**	322.00	**290.00**	20.0	**4**	12*	**4Z659**	731.00	**658.00**	72.0

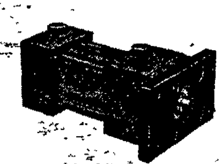
(*) 6, 8, 10, and 12" stroke cylinders have cushion seals on both ends to absorb shocks.

Miller FLUID POWER

STEEL FRONT OR REAR FLANGE

- Mounts to cylinder rear with 4 bolts provided
- Front mounting requires bolt removal of retaining plate
- NFPA "MF1" mounting

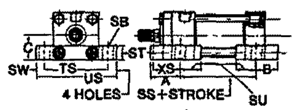


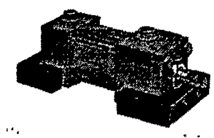


Bore	F	R	TF	UF	W	FB	Stock No.	List	Each	Shpg. Wt.
1½"	3/8"	1.63"	3 7/16"	4¼"	5/8"	7/16"	**1A329**	$22.00	**$20.00**	1.1
2	5/8	2.05	4⅛	5⅛	3/4	9/16	**1A332**	24.50	**22.00**	2.7
2½	5/8	2.55	4⅝	5⅝	3/4	9/16	**1A335**	34.50	**31.00**	3.5
3¼	3/4	3.25	5⅞	7⅛	7/8	11/16	**1A338**	61.00	**55.00**	6.4
4	7/8	3.82	6⅜	7⅜	1	11/16	**1A341**	155.50	**140.00**	8.2

STEEL SIDE LUG MOUNT

- Mounts to cylinder side with 4 bolts provided
- NFPA "MS2" mounting

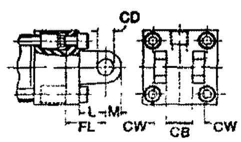


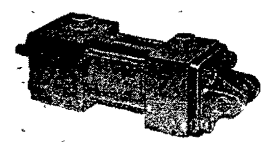


Bore	A	B	C	SB	ST	SU	SW	TS	US	XS	SS	Stock No.	List	Each	Shpg. Wt.
1½"	1 9/16"	1⅛"	1¼"	7/16"	7/8"	15/16"	3/8"	3¼"	4"	1⅜"	3⅞"	**1A330**	$100.00	**$90.00**	2.4
2	2⅛	1½	1½	9/16	1	1¼	1/2	4	5	1⅞	3⅝	**1A333**	122.25	**110.00**	5.0
2½	2 5/16	1 11/16	1¾	13/16	1	1 9/16	11/16	4⅞	6¼	2 1/16	3⅜	**1A336**	133.00	**120.00**	7.0
3¼	2 11/16	1 15/16	2¼	13/16	1¼	1 9/16	11/16	5⅞	7¼	2 5/16	4⅛	**1A339**	167.00	**150.00**	11.0
4	3	2⅛	2½	1 1/16	1¼	2	7/8	6¾	8½	2¾	4	**1A342**	183.25	**165.00**	17.0

STEEL CLEVIS MOUNT

- Includes clevis pin and 4 mounting bolts
- NFPA "MP2" mounting

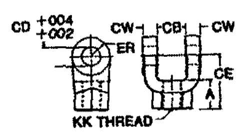


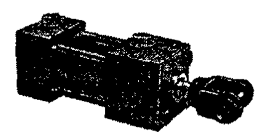


Bore	CB	CD	CW	FL	L	M	Stock No.	List	Each	Shpg. Wt.
1½"	3/4"	1/2"	7/16"	1⅛"	3/4"	1/2"	**1A331**	$70.00	**$63.00**	1.0
2	1¼	3/4	9/16	1¾	1¼	3/4	**1A334**	75.50	**68.00**	3.1
2½	1¼	3/4	9/16	1⅞	1¼	3/4	**1A337**	80.00	**72.00**	4.0
3¼	1½	1	11/16	2¼	1½	1	**1A340**	100.00	**90.00**	7.3
4	2	1⅜	15/16	2⅞	2	1 1/16	**1A343**	122.00	**110.00**	12.0

CAST-IRON ROD CLEVIS MOUNT

- Includes clevis pin

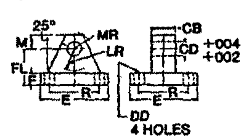


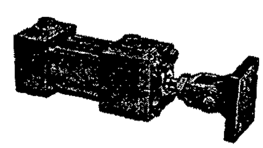


Bore	A	CB	CD	CE	CW	ER	KK	Stock No.	List	Each	Shpg. Wt.
1½"	3/4"	3/4"	1/2"	1½"	1/2"	1/2"	7/16"-20	**1A345**	$27.75	**$25.00**	0.8
2-2½	1⅛	1¼	3/4	2⅛	5/8	3/4	3/4-16	**1A347**	42.00	**38.00**	1.8
3¼	1⅝	1½	1	2 15/16	3/4	1	1-14	**1A349**	61.00	**55.00**	3.3
4	2	2	1⅜	3¾	1	1 5/16	1¼-12	**1A351**	102.00	**92.00**	8.3

STEEL EYE BRACKET

- Provides swivel mounting with rod or clevis mount

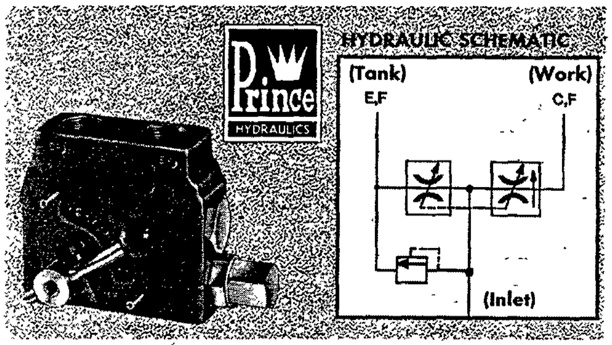




Bore	CB	CD	DD	E	F	FL	LR	M	MR	R	Stock No.	List	Each	Shpg. Wt.
1½"	3/4"	1/2"	13/32"	2½"	3/8"	1⅛"	3/4"	1/2"	9/16"	1.63"	**1A344**	$37.75	**$34.00**	1.0
2-2½	1¼	3/4	17/32	3½	5/8	1⅞	1¼	3/4	7/8	2.55	**1A346**	50.00	**45.00**	3.1
3¼	1½	1	21/32	4½	3/4	2¼	1½	1	1¼	3.25	**1A348**	69.00	**62.00**	6.0
4	2	1⅜	21/32	5	7/8	3	2⅛	1⅜	1⅝	3.82	**1A350**	132.00	**119.00**	12.0

K

RELIEF AND CONTROL VALVES



3/4" ADJUSTABLE FLOW CONTROL VALVE

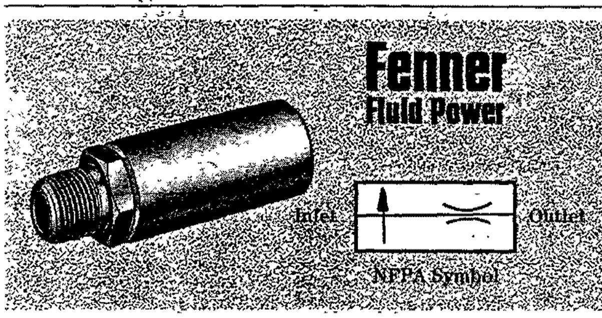
- **Starts and stops hydraulic cylinders or motors**
- **Varies speed smoothly over the full range**
- **Flow range capacity: 0 to 30 GPM**
- **Pressure range: 500 to 3000 PSI**
- **Pressure compensated adjustable flow control**
- **Prince brand (RDRS-175-30)**

Once speed is set with the lever, it remains constant regardless of load variations. Comes with built-in ball and spring relief valve with cast iron seat.

Dimensions: 4.6L x 4.1H x 2.9"D

No. 6X842. Shpg. Wt. 8.0 lbs. List $101.0. Each..................**$78.00**

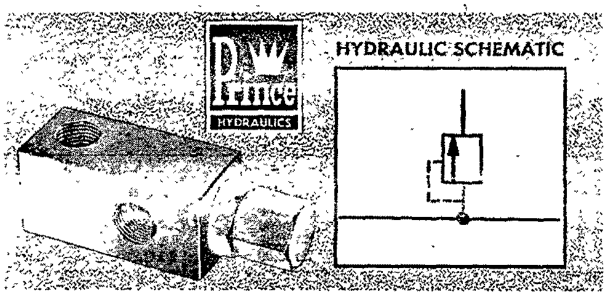
Limited 3-year warranty. Text of warranty available on request. See "Manufacturers' Warranties" on page opposite inside back cover.



FLOW CONTROL VALVES

Current OSHA standards require that the lowering speed of hydraulically supported loads be controlled in event of pump circuit failure. In-line valve regulates lowering of speed by controlling flow rate of hydraulic fluid between cylinder and reservoir in return cycle. Maintains flow rate within 1% for every 100 PSI change in pressure. Only 70 PSI pressure drop across orifice. Can be installed directly into cylinder outlet port. 3/8" (M)NPT inlet and 3/8" (F)NPT outlet. 3⅛"L x 1" dia. Max flow: 16 GPM.

Flow Rate	Fenner Model	Stock No.	List	Each	Shpg. Wt.
1 GPM	A8-2142-00	5X487	$24.30	$23.49	0.4
2	A8-2142-00	5X488	24.30	23.49	0.4



1/2" ADJUSTABLE RELIEF VALVE

- **Compact 1/2" NPT, high pressure relief valve designed for full flow with low pressure drop**
- **Pressure adjustable from 1000 to 2500 PSI**
- **For heavy-duty hydraulic applications**
- **High strength steel bar stock body with replaceable heat treated seat • 16 GPM maximum**
- **Prince brand (RD1850H)**

Dimensions: 4⅝L x 1½W x 1½"D

No. 6X843. Shpg. Wt. 2.2 lbs. List $39.00. Each..................**$26.85**

Limited 3-year warranty. Text of warranty available on request. See "Manufacturers' Warranties" on page opposite inside back cover.

ADJUSTABLE RELIEF VALVES

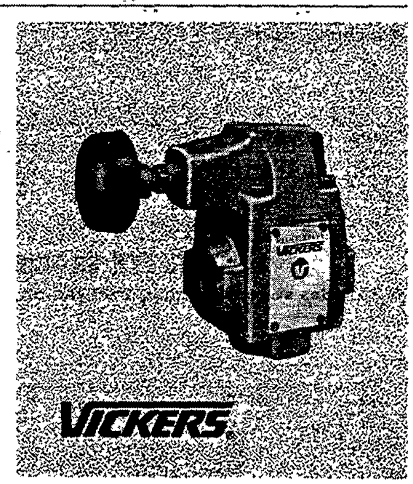
- **Adjustable relief valve controls maximum pressure within a hydraulic circuit**
- **Two stage, balanced piston design provides fast response and minimizes pressure override**
- **Vent connection allows low pressure venting of system to tank**
- **Remote pressure control capability is achieved by directing flow from vent connection to a separate pressure relief valve**
- **Standard "F3" seals provide multi-fluid capability**

Inlet and outlet pressure connections may be used interchangeably when the valve is mounted in the pressure line, or the valve may be teed off the pressure line with one of the inlet pressure connections plugged. 7/8"-14 UNF-2B thread inlet and outlet connections.

Pressure setting selected should be approximately 150 to 200 PSI above the actual system working pressure.

Pressure is adjusted by loosening the jam nut and turning the control knob. Maximum pressure 3000 PSI. Dimensions: 5.6L x 6.6W x 2.1"H. Vickers brand.

Adjustable Pressure Range (PSI)	Maximum Flow	Vickers Model	Stock No.	List	Each	Shpg. Wt.
125-1000	45 GPM	CS-03-B50	6Z628	$253.00	$153.00	9.0
500-2000	45	CS-03-C50	6Z629	253.00	153.00	9.0
1500-3000	45	CS-03-F50	6Z630	253.00	153.00	9.0



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HEAVY-DUTY, HIGH TORQUE, LOW SPEED MOTORS AND FLOW DIVIDERS

HYDRAULIC MOTOR PERFORMANCE DATA

Flow Rate GPM	500 PSI Torque In.-Lb.	500 PSI Speed RPM	1000 PSI Torque In.-Lb.	1000 PSI Speed RPM	1500 PSI Torque In.-Lb.	1500 PSI Speed RPM	2000 PSI Torque In.-Lb.	2000 PSI Speed RPM	2500 PSI* Torque In.-Lb.	2500 PSI* Speed RPM	3000 PSI* Torque In.-Lb.	3000 PSI* Speed RPM
	INCOMING PRESSURE											
No. 4ZC58 12.9 Cu. In./Rev.												
2	905	36	1827	35	2698	34	3527	32	4636	29	5115	25
6	854	107	1786	106	2684	105	3607	103	4503	97	5245	89
10	790	179	1725	177	2648	175	3556	171	4476	164	5416	160
14	710	251	1642	247	2562	244	2465	240	4363*	234	5233	226
20	628	358	1418	355	2294	351	3205	343	4105*	336	—	—
No. 4Z773 16.4 Cu. In./Rev.												
2	1115	28	2323	27	3406	26	4437	24	5462	22	6507	20
6	1088	85	2271	84	3422	83	4573	80	5599*	77	6687	72
10	1005	141	2193	139	3367	138	4489	135	5612*	131	6758	125
14	904	197	2086	195	3269	193	4437	191	5547*	185	—	—
20	783	282	1853	279	3015	276	4155	270	—		—	—

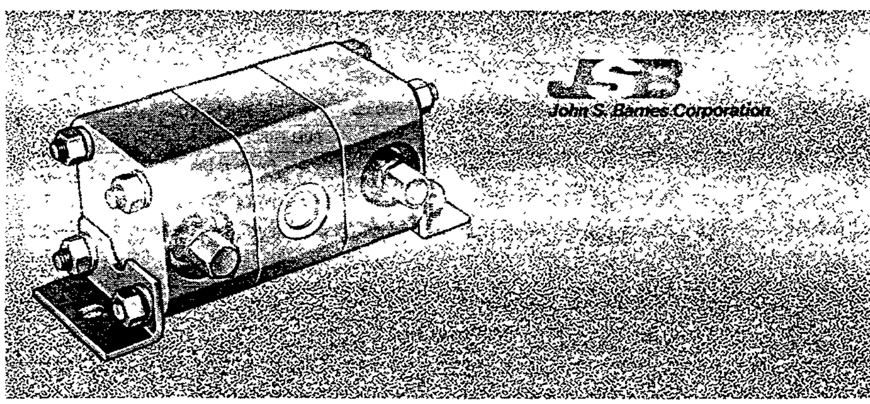
(*) Intermittent operation which is defined as less than 10% each minute.

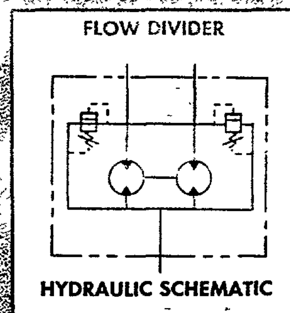
HYDRAULIC MOTOR ORDERING DATA

Displ. Cu. In./Rev.	Dimensions (In.) Length*	Width	Height	Parker Model	Stock No.	List	Each	Shpg. Wt.
3.6	4.41	4.50	4.56	110A-036-AS-0	**4Z770**	$334.00	**$254.75**	14.0
5.4	4.60	4.50	4.56	110A-054-AS-0	**4ZC56**	342.00	**295.50**	14.0
7.1	4.78	4.50	4.56	110A-071-AS-0	**4Z771**	348.00	**300.75**	16.0
8.8	4.98	4.50	4.56	110A-088-AS-0	**4ZC57**	359.00	**310.25**	15.0
10.0	5.17	4.50	4.56	110A-106-AS-0	**4Z772**	372.00	**321.50**	17.0
12.9	5.42	4.50	4.56	110A-129-AS-0	**4ZC58**	383.00	**330.25**	17.0
16.9	5.80	4.50	4.56	110A-164-AS-0	**4Z773**	400.00	**346.25**	18.0

(*) Length of motor, less shaft. For overall length, add 1.75".

FLOW DIVIDERS





- **Up to 3000 PSI inlet pressure**
- **Up to 4500 PSI outer pressure**
- **Maximum speed up to 4500 RPM**
- **11-tooth hardened steel gears**
- **Permanent mold cast-iron bodies machined to close tolerances**
- **Differential pressure relief valves**

Gear Type Rotary Flow Dividers synchronize two parallel motions hydraulically rather than mechanically. Hydraulic flow dividers split the flow from a single pump source to a pair of matched cylinders or fluid motors.

Applications include agricultural equipment—planters, cotton strippers and cultivators, equalizing jacks on cargo containers and semi-trailers, self-propelled manlifts, booms, trim mowers, and car wash machines.

Both drive gears in 2-section dividers are driven by common shaft, allowing flow equalization to occur in a wide speed range. Speeds in the range of 2000 to 4500 RPM will improve overall efficiency.

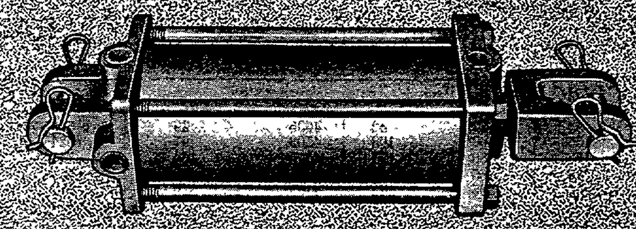
Integral differential relief valves for each circuit limit pressure intensification and permit cylinders to re-phase at the end of each stroke.

Accuracy is 3.4 in. ^{3}/min. per 100 PSI differential in operating pressure.

FLOW DIVIDER SPECIFICATIONS AND ORDERING DATA

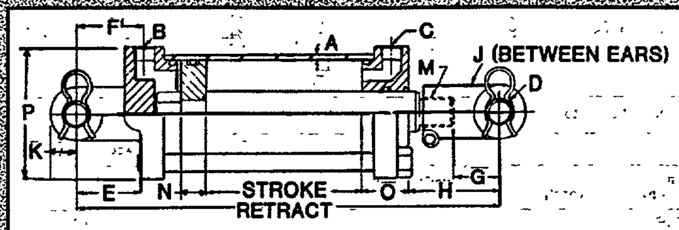
Flow Rate	Cu. In./Rev.	Operating Pressure	SAE Port Sizes Inlet	Outlet	Dimensions (In.) Length	Width	Height	Barnes Model	Stock No.	List	Each	Shpg. Wt.
5 GPM	0.129	3000 PSI	3/4"	3/4"-16	7.55	2.99	3.26	1020075	**4F660**	$226.75	**$209.00**	9.0
10	0.258	2300	7/8"	3/4-16	7.55	2.99	3.26	1020076	**4F661**	226.75	**208.75**	9.0
20	0.581	2750	1 5/16	7/8-14	9.85	4.25	4.00	1100042	**4F662**	383.80	**353.25**	27.0

AG/MOBILE TIE-ROD CYLINDERS



PARTS AVAILABLE, CALL 1-800-323-0620

LIMITED 3-YEAR WARRANTY
Prince AG/Mobile cylinders carry a 3-year limited warranty. Text of warranty available on request. See "Manufacturers' Warranties" on page opposite inside back cover.



- **Double acting tie-rod design allows cylinders to be used in heavy-duty agricultural, transportation, construction, and industrial equipment applications**
- **Maximum working pressure: 2500 PSI. Cylinders will operate at full pressure through 16" stroke**
- **Available in 2½ to 5" bores and in 8, 16, and 24" length strokes**

8" stroke cylinders are built to rigid standards of the American Society of Agricultural Engineers (ASAE). 24" stroke cylinders are suited for use in log splitters.

Precision honed tubes and ground and polished chromed piston rods. Cast iron piston with O-ring seal between piston rod and piston. 70 Durometer O-ring seal and leather back-up washers on piston. 70 Durometer O-ring seal between tube and ductile iron butt and gland casting.

Other features include polyurethane rod wiper, cast malleable rod clevis, automotive type lock nuts to retain piston on piston rod and SAE J514 O-ring ports to eliminate leakage (NPTF adapter fittings included with cylinder. NPTF ports are ½" except No. 4Z193 is ¾"). Supplied with zinc plated pins and clips. Red finish. Prince brand.

AREA AND FORCE CHART FOR 2½ to 5" BORE CYLINDERS

Bore Dia.	PUSH FORCES Effective Area	Forces in Lbs. @ PSI 1000	1500	2000	2500	PULL FORCES Effective Area	Forces in Lbs. @ PSI 1000	1500	2000	2500
2½"	4.91	4910	7365	9820	12,275	3.68	3680	5520	7360	9200
3	7.07	7070	10,605	14,140	17,675	5.84	5840	8765	11,680	14,600
3½	9.62	9670	15,430	19,240	24,050	8.40	8400	12,590	16,800	21,000
4	12.56	12,560	18,840	25,120	31,400	10.16	10,160	15,240	20,320	25,400
5	19.63	19,630	29,445	39,260	49,075	17.23	17,230	25,845	34,460	43,075

HYDRAULIC CYLINDER DIMENSIONS

Bore Dia.	Stroke Length	Stock No.	Retract	Rod Dia.	A	B*	C*	D	E	F	G	H	J	K	M	N	O	P
2½"	8"	4Z189	20¼"	1⅛"	1/8	3/4-16	3/4-16	1.015	2 7/16	2⅜	1 13/16	5¼	1.06	15/16	1⅛-12	1	2⅜	Bore +1"
3	8	4Z190	20¼	1⅛	3/16	3/4-16	3/4-16	1.015	2 7/16	2 7/16	1 13/16	5¾	1.06	15/16	1⅛-12	1	1 15/16	Bore +1"
3	16	4Z194	31½	1⅜	3/16	3/4-16	3/4-16	1.015	2 7/16	2 7/16	1 13/16	9	1.06	15/16	1⅛-12	1	1 15/16	Bore +1"
3½	8	4Z191	20¼	1⅛	3/16	3/4-16	3/4-16	1.015	2⅜	2 7/16	1 13/16	5¾	1.06	15/16	1⅛-12	1	1 13/16	Bore +1"
3½	16	4Z195	31½	1⅜	3/16	3/4-16	3/4-16	1.015	2⅜	2 7/16	1 13/16	9	1.06	15/16	1⅛-12	1	1 13/16	Bore +1"
3½	24	4Z448	34¼	1⅜	3/16	3/4-16	3/4-16	1.015	2⅜	2 7/16	1 13/16	3¾	1.06	15/16	1⅛-12	1	1 13/16	Bore +1"
4	8	4Z192	20¼	1½	3/16	3/4-16	3/4-16	1.015	2 5/16	2 7/16	1⅞	5¼	1.06	1	1½-12	1	1 13/16	Bore +1"
4	16	4Z196	31½	1¾	3/16	3/4-16	3/4-16	1.015	2 5/16	2 7/16	1⅞	8½	1.06	1	1½-12	1	1 13/16	Bore +1"
4	24	4Z449	34¼	1¾	3/16	3/4-16	3/4-16	1.015	2 5/16	2 7/16	1⅞	3¼	1.06	1	1½-12	1	1 13/16	Bore +1"
5	8	4Z193	20¼	1¾	1/4	7/8-14	7/8-14	1.265	2¾	2⅝	2 1/16	4	1.06	1¼	1½-12	1	2½	Bore +1"

(*) SAE O-Ring.

SPECIFICATIONS AND ORDERING DATA

Bore Dia.	Stroke Length	Prince Model	Stock No.	List	Each	Shpg. Wt.
2½"	8"	SAE-7008	**4Z189**	$126.00	**$109.50**	23.0
3	8	SAE-7108	**4Z190**	140.00	**121.70**	26.0
3	16	SAE-9216	**4Z194**	175.00	**148.00**	39.0
3½	8	SAE-7208	**4Z191**	148.00	**128.00**	30.0
3½	16	SAE-9316	**4Z195**	197.00	**171.00**	43.0
3½	24	SAE-9324	**4Z448**	231.00	**201.25**	51.0
4	8	SAE-8608	**4Z192**	198.00	**176.00**	43.0
4	16	SAE-9416	**4Z196**	259.00	**222.00**	64.0
4	24	SAE-9424	**4Z449**	289.00	**255.00**	74.0
5	8	SAE-8208	**4Z193**	280.00	**249.00**	64.0

MEDIUM-DUTY, HIGH TORQUE, LOW SPEED MOTORS

HYDRAULIC MOTOR PERFORMANCE DATA

Flow Rate GPM	400 PSI Torque In.-Lb.	400 PSI Speed RPM	800 PSI Torque In.-Lb.	800 PSI Speed RPM	1200 PSI Torque In.-Lb.	1200 PSI Speed RPM	1600 PSI Torque In.-Lb.	1600 PSI Speed RPM	2000 PSI Torque In.-Lb.	2000 PSI Speed RPM	2400 PSI Torque In.-Lb.	2400 PSI Speed RPM
No. 4ZC53 10.6 Cu. In./Rev.												
2	574	40	1161	37	1761	35	2240	31	2589	27	—	—
5	517	103	1115	98	1683	95	2231	90	2516	83	2833*	78
8	452	162	1039	159	1599	155	2213*	152	2490*	149	2766*	139
10	405	203	931	199	1518	197	2105*	192	2381*	188	1658*	186
15	297	302	729	300	1275	297	1862*	292	—	—	—	—
20	—	—	540*	400	992*	398	1512*	393	—	—	—	—
No. 6Z058 12.9 Cu. In./Rev.												
2	657	32	1314	29	1922	23	—	—	—	—	—	—
5	591	83	1207	81	1877	76	2371	73	2709	70	2962*	65
8	526	134	1199	132	1823	130	2328	127	2581	124	2833*	122
10	443	169	1101	167	1749	165	2230	162	2470*	159	2710*	156
15	271	252	839	251	1429	249	1906*	247	2144*	245	2382*	242
20	—	—	460*	332	1109*	330	1661*	326	—	—	—	—
No. 4ZC54 16.4 Cu. In./Rev.												
2	835	25	1670	23	2443	18	—	—	—	—	—	—
5	752	67	1611	62	2369	60	2966	57	3524*	53	—	—
8	668	105	1524	103	2318	101	2904*	100	3430*	98	—	—
10	564	131	1399	128	2224	127	2767*	125	3289*	124	—	—
15	345	197	1065	196	1817*	194	—	—	—	—	—	—
20	—	—	585*	259	1409*	257	—	—	—	—	—	—
No. 4ZC55 22.0 Cu. In./Rev.												
2	1120	18	2241	17	3277	12	—	—	—	—	—	—
5	1056	49	2210	48	3275	45	4233*	43	—	—	—	—
8	896	78	2045	76	3109	74	4074*	73	—	—	—	—
10	756	97	1877	96	2983	94	3848*	91	—	—	—	—
15	462	144	1429	143	2437*	141	—	—	—	—	—	—
20	—	—	784*	189	1891*	188	—	—	—	—	—	—

INCOMING PRESSURE

(*) Intermittent operation (less than 10% each minute).

HYDRAULIC MOTOR ORDERING DATA

Displ. Cu. In. / Rev.	Length	Width	Height	Parker Model	Stock No.	List	Each	Shpg. Wt.
3.0	3.88"	3.63"	3.92"	040-030-FP	**4ZC51**	$211.00	**$179.00**	10.0
3.6	3.95	3.63	3.92	040-036-FP	**6Z055**	216.00	**182.00**	9.9
5.4	4.14	3.63	3.92	040-054-FP	**6Z056**	223.00	**188.75**	10.0
7.1	4.32	3.63	3.92	040-071-FP	**4ZC52**	228.00	**192.50**	10.0
8.8	4.51	3.63	3.92	040-088-FP	**6Z057**	231.00	**195.00**	12.0
10.6	4.71	3.63	3.92	040-106-FP	**4ZC53**	241.00	**203.25**	13.0
12.9	4.96	3.63	3.92	040-129-FP	**6Z058**	245.00	**207.00**	12.0
16.4	5.34	3.63	3.92	040-164-FP	**4ZC54**	273.00	**230.25**	13.0
22.0	5.95	3.63	3.92	040-220-FP	**4ZC55**	309.00	**260.50**	16.0

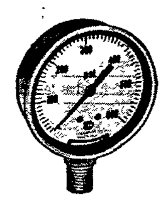
HYDRAULIC MOTOR CROSS REFERENCE CHART

Stock No.	Parker Nichols Model	Char-Lynn Model	White Model	Ross Model
4ZC51	040-030-FP	101-1001	RS030101	MG021310*/MG031310
6Z055	040-036-FP	101-1754	RS040101*	MG041310*
6Z056	040-054-FP	101-1002*/101-1003	RS050101	MG051310/MG061310*
4ZC52	040-071-FP	101-1755	RS060101	MG081310*
6Z057	040-088-FP	101-1756	—	MG081310
4ZC53	040-106-FP	101-1004/101-1005	RS100101	MG101310
6Z058	040-129-FP	101-1006	RS120101	MG121310/MG141310
4ZC54	040-164-FP	101-1007	RS180101	MG161310/MG181310
4ZC55	040-220-FP	101-1008	RS240101	MG201310

(*) Displacement differs by greater than 10% from Grainger Stock No.
See Cross Reference Information on page opposite inside back cover.

Back Connection

LIQUID FILLED PRESSURE GAUGES AVAILABLE SEE INDEX



Bottom Connection

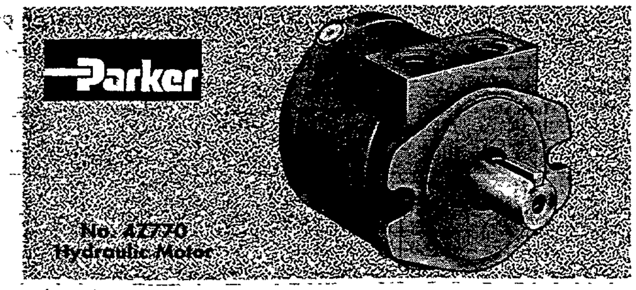
HEAVY-DUTY, HIGH TORQUE, LOW SPEED MOTORS

- Heavy-duty hydraulic motors provide the most compact yet powerful, high torque, low speed package available
- Used in demanding applications including wheel, winch, digger, auger, and conveyor drives
- Cast iron construction
- Maximum oil temperature: 180°F
- Maximum pressure: 3500 PSI
- Direct drive only
- Minimum oil viscosity: 50 SUS (Saybolt Universal Seconds)

Mounting and shaft dimensions are to industry standards, enabling motors to be used as replacements for other major makes of hydraulic motors with similar performance ratings including Char-Lynn 2000, TRW Ross MB, White RE, and Danfoss OMS Series.

Self-sealing, wear compensating IGR power element produces high volumetric efficiencies at all operating pressures throughout the life of the motor. Utilizes the outer rotor as the orbiting member while the inner rotor directly drives the fully supported outer shaft. Typically results in 85% mechanical efficiency at rated pressure and 95% volumetric efficiency at rated flow. Single piece fixed axis shafting and nonorbiting valving provide 20% overall length reduction and fewer moving parts compared to competitive motors.

SAE "A" type two-bolt mounting flange. 7/8" -14 UNF SAE O-ring ports. Keyed shaft 1" dia., 1.5" length. Parker brand.



HYDRAULIC MOTOR CROSS REFERENCE CHART

Stock No.	Parker	Char-Lynn	White	Ross
4Z770	110A-036-AS-0	N/C	N/C	N/C
4ZC56	110A-054-AS-0	104-1001	N/C	MB050102/ MB060102*
4Z771	110A-071-AS-0	104-1002*	RE070806	MB080102
4ZC57	110A-088-AS-0	104-1003	N/C	MB090102
4Z772	110A-106-AS-0	104-1004	RE100806	MB100102
4ZC58	110A-129-AS-0	104-1005	RE120806/ RE140806	MB120102
4Z773	110A-164-AS-0	104-1006/ 104-1007*	RE160806/ RE170806	MB180102

(*) Displacement differs by greater than 10% from Nichols.

See Cross Reference Information on page opposite inside back cover.

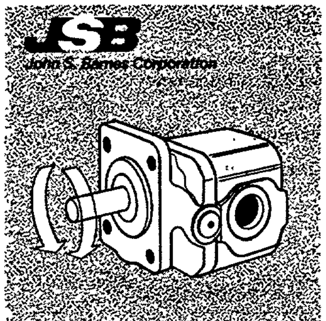
HYDRAULIC MOTOR PERFORMANCE DATA

Flow Rate GPM	INCOMING PRESSURE											
	500 PSI		1000 PSI		1500 PSI		2000 PSI		2500 PSI		3500 PSI*	
	Torque In.-Lb.	Speed RPM	Torque In.-Lb.	Speed RPM	Torque In.-Lb.	Speed RPM	Torque In.-Lb.	Speed RPM	Torque In.-Lb.	Speed RPM	Torque In.-Lb.	Speed RPM
No. 4Z770 3.6 Cu. In./Rev.												
2	244	128	473	124	688	119	882	105	1031	82	—	
6	232	385	470	381	713	377	928	362	1103	331	1344	[illegible]
10	221	642	453	635	688	629	917	622	1132	584	1464	481
14	212	898	433	889	662	880	877	871	1103	835	1664	728
16	201*	1027	415*	1016	640*	1006	854*	996	1074*	955	1584	852
No. 4ZC56 5.4 Cu. In./Rev.												
2	365	86	716	83	1051	80	1368	72	1635	58	—	—
6	361	257	722	253	1160	250	1445	244	1765	226	2273	171
10	340	428	713	424	1057	419	1392	415	1697	396	2196	332
14	318	599	653	593	1019	587	1372	581	1732	566	2543	488
20	264	856	567	849	880	843	1220	830	1581	804	2235	729
No. 4Z771 7.1 Cu. In./Rev.												
2	480	65	949	63	1407	62	1853	56	2260	47	—	—
6	458	195	972	192	1483	189	1966	187	2458	176	3322	133
10	424	325	927	322	1449	319	1944	316	2444	306	3382	260
14	396	455	859	451	1373	447	1876	442	2373	437	3401	374
20	339	651	757	644	1237	638	1763	631	2288	618	3243	543
No. 4ZC57 8.8 Cu. In./Rev.												
2	605	52	1210	51	1774	50	2324	48	2869	41	—	—
6	574	158	1204	156	1833	154	2451	152	3080	142	4141	107
10	532	263	1162	261	1801	259	2423	253	3054	243	4167	219
14	487	367	1092	363	1722	358	2339	353	2958	347	4192	310
20	428	525	973	520	1551	516	2178	507	2832	499	4051	458
No. 4Z772 10.6 Cu. In./Rev.												
2	742	44	1501	43	2227	42	2919	40	3585	37	4871	23
6	700	131	1468	129	2201	128	2969	126	3754	118	5019	102
10	650	218	1417	216	2176	214	2935	207	3711	198	5029	190
14	582	305	1350	301	2100	296	2834	290	3585	284	5009	268
20	529	436	1168	431	1885	427	2674	416	3458	408	—	—

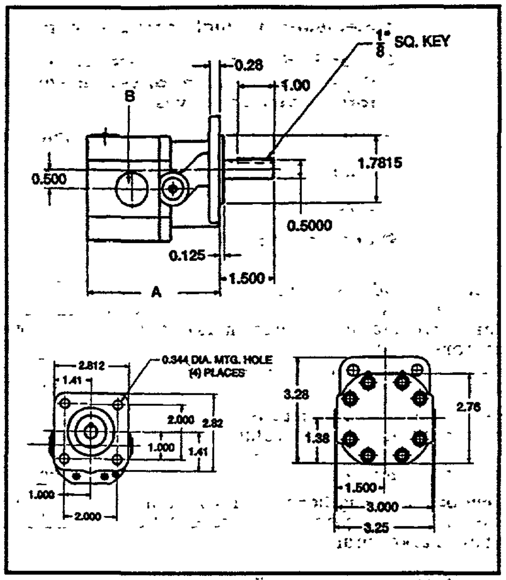
(*) Intermittent operation which is defined as less than 10% each minute.

CONTINUED ON NEXT PAGE

BI-ROTATIONAL FLUID MOTORS



Applications:
- Conveyors
- Reel drives
- Index tables
- Variable speed drives
- Two-directional, forward-reverse drives
- Vacuum blowers
- Fan drives
- Robotics



Features:

Heavy-duty cast-iron contruction. Quiet 11-tooth hardened gears. Suitable for intermittent pressures up to 3500 PSI with output torque up to 180 in.-lbs.; see performance data below. Four-bolt 4F17 mount, 0.500 dia. x 1½" shaft extension and square key drive.

400 PSI Viton lip seal and reversing check valves included to avoid a case drain port. This feature also allows motors to be used as bi-directional pumps, see page 2629.

Side ports with SAE straight threads are standard in sizes shown below.

Maximum shaft speed is 5000 RPM; minimum speed for most applications is 750 RPM.

Maximum input is 12 GPM.

Made in USA.

Note: Motors may be used to replace electric motors or gas engines in hazardous locations.

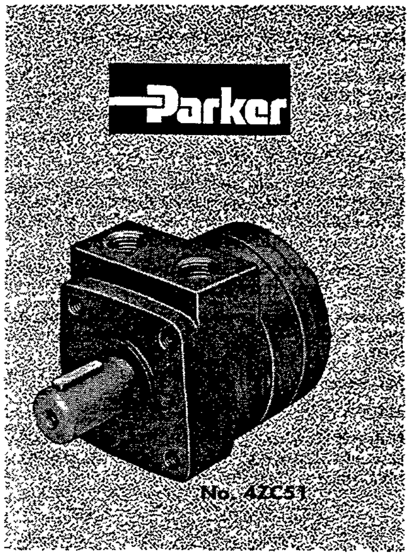
BI-ROTATIONAL FLUID MOTOR PERFORMANCE DATA

Displ. Cu. In./Rev.	Stock No.	Flow Range GPM	INLET PRESSURE 500 PSI Torque In.-Lbs.	500 PSI Speed RPM	1000 PSI Torque In.-Lbs.	1000 PSI Speed RPM	1500 PSI Torque In.-Lbs.	1500 PSI Speed RPM	2000 PSI Torque In.-Lbs.	2000 PSI Speed RPM	2500 PSI Torque In.-Lbs.	2500 PSI Speed RPM	3000 PSI Torque In.-Lbs.	3000 PSI Speed RPM
0.194	4F652	1	12	1102	26	1013	40	925	54	837	68	748	81	660
		2	12	2293	26	2204	40	2116	54	2027	68	1939	81	1850
		3	12	3483	26	3395	40	3306	54	3218	68	3130	81	2041
		4	12	4674	26	4586	40	4497	54	4409	68	4320	81	4230
0.258	4F653	2	16	1702	34	1613	53	1525	72	1437	90	1348	108	[illegible]
		3	16	2597	34	2509	53	2420	72	2332	90	2244	108	[illegible]
		4	16	3493	34	3404	53	[illegible]	[illegible]	3227	90	[illegible]	108	[illegible]
		5	16	[illegible]	34	4299	53	4211	72	4123	90	4031	108	3946
0.323	4F654	2	20	1341	43	1253	66	1165	90	1076	113	988	136	900
		4	20	2772	43	2683	66	2595	90	2507	113	2418	136	2330
		6	20	4202	43	4114	66	4025	90	3937	113	3849	136	3760
		7	20	4917	43	4829	66	4741	90	4652	113	4564	136	4475
0.388	4F655	3	[illegible]	[illegible]	52	1609	80	1520	108	1432	136	1344	163	1255
		[illegible]	24	2880	52	2800	80	2711	108	2623	136	2534	163	2446
		6	24	4079	52	3990	80	3902	108	3813	136	3725	163	2141
		8	24	4674	52	4586	80	4497	108	4409	136	4320	163	4232
0.453	4F656	4	28	1951	60	1862	93	1774	126	1686	159	1597	—	—
		6	28	2971	60	2882	93	2794	126	2706	159	2617	—	—
		8	28	3991	60	3902	93	3814	126	3725	159	3637	—	—
		10	28	5000	60	4922	93	4834	126	4745	159	4657	—	—
0.517	4F657	5	32	2145	69	2057	106	1968	144	1880	181	1792	—	—
		7	32	3039	69	2950	106	2862	144	2774	181	2685	—	—
		9	32	3932	69	3844	106	3756	144	3667	181	3579	—	—
		11	32	4826	69	4738	106	4649	144	4561	181	4472	—	—
0.647	4F658	6	40	2053	86	1965	133	1877	180	1788	—	—	—	—
		9	40	3124	86	3036	133	2948	180	2859	—	—	—	—
		11	40	3838	86	3750	133	3662	180	3573	—	—	—	—
0.711	4F659	7	44	2185	95	2097	146	2009	—	—	—	—	—	—
		10	44	3160	95	3072	146	2983	—	—	—	—	—	—
		12	44	3810	95	3721	146	3633	—	—	—	—	—	—

BI-ROTATIONAL FLUID MOTOR ORDERING DATA

Displacement Cu. In./Rev.	Maximum Pressure Continuous	Maximum Pressure Intermittent	Dimensions A	Dimensions B	Barnes Model	Stock No.	List	Each	Shpg. Wt.
0.194	3000	3500	3.160	3/4-16	1002499	**4F652**	$119.60	**$110.10**	4.8
0.258	3000	3500	3.160	3/4-16	1070054	**4F653**	125.30	**114.90**	5.0
0.323	3000	3500	3.690	7/8-14	1070043	**4F654**	137.30	**131.20**	6.0
0.388	3000	3300	3.690	7/8-14	1070045	**4F655**	141.25	**131.20**	5.6
0.453	2750	3025	3.690	7/8-14	1070047	**4F656**	141.25	**131.20**	6.0
0.517	2750	2750	3.690	7/8-14	1070049	**4F657**	142.00	**131.25**	5.7
0.647	2000	2200	4.200	7/8-14	1070035	**4F658**	150.80	**139.70**	6.9
0.711	1800	2000	4.200	7/8-14	1070033	**4F659**	150.80	**139.60**	6.4

MEDIUM-DUTY, HIGH TORQUE, LOW SPEED MOTORS



- Medium-duty, high torque, low speed hydraulic motors
- Used in demanding applications including car wash brush drives, salt spreader drives, machine tool turntables, and farm implement drives
- Cast-iron construction
- Maximum oil temperature: 180°F
- Minimum oil viscosity: 50 SUS (Saybolt Universal Seconds)
- Direct drive only
- Bi-rotational

Mounting and shaft dimensions are interchangeable with hydraulic motors of similar performance ratings, making these motors highly suitable replacements for other major brands, including the Char-Lynn "H" Series.

Self-sealing, wear compensating IGR power element produces high volumetric efficiencies at all operating pressures throughout the life of the motor.

Four-bolt mounting flange with 3¼" bolt circle. 1/2" NPT ports. 1" straight keyed shaft. Parker brand.

MAXIMUM PRESSURE

Stock No.	Intermittent †	Continuous
4ZC51, 4ZC52, 6Z055, 6Z056	2400 PSI	1800 PSI
6Z057	2300	1700
4ZC53	2150	1600
6Z058	2000	1400
4ZC54	1800	1350
4ZC55	1500	1250

(†) Intermittent operation is assumed to be less than one minute in 10 minutes.

HYDRAULIC MOTOR PERFORMANCE DATA

Flow Rate GPM	INCOMING PRESSURE: 400 PSI Torque In.-Lb.	400 PSI Speed RPM	800 PSI Torque In.-Lb.	800 PSI Speed RPM	1200 PSI Torque In.-Lb.	1200 PSI Speed RPM	1600 PSI Torque In.-Lb.	1600 PSI Speed RPM	2000 PSI Torque In.-Lb.	2000 PSI Speed RPM	2400 PSI Torque In.-Lb.	2400 PSI Speed RPM
No. 4ZC51 3.0 Cu. In./Rev.												
2	162	141	317	139	493	126	657	108	821*	90	—	—
5	145	364	310	361	476	353	646	325	816*	317	—	—
8	128	587	302	583	458	579	631	561	804*	536	974*	511
10	99	733	271	729	447	725	626	708	789*	682	951*	655
15	35*	1098	203*	1094	379*	1090	543*	1090	707*	1085	—	—
20	—	—	—	—	—	—	—	—	—	—	—	—
No. 6Z055 3.6 Cu. In./Rev.												
2	195	120	380	116	591	105	788	90	—	—	—	—
5	173	305	371	302	571	294	775	279	980*	264	1183*	249
8	154	490	362	487	550	483	761	467	967*	447	1169*	426
10	119	615	325	610	536	605	752*	590	944*	571	1141*	545
15	41	909	243	905	447	900	660*	896	856*	890	—	—
20	—	—	188*	1086	419*	1082	642*	1076	814*	1070	—	—
No. 6Z056 5.4 Cu. In./Rev												
2	292	82	578	78	866	73	1169	66	1429	59	—	—
5	256	209	544	204	836	198	1142	191	1416*	183	1753*	177
8	223	336	509	329	804	322	1114	315	1403*	301	1691*	287
10	172	417	474	411	753	406	1059	398	1355*	335	1650*	272
15	65	611	371	609	639	605	908*	597	—	—	—	—
20	—	—	213*	816	526*	810	784*	804	—	—	—	—
No. 4ZC52 7.1 Cu. In./Rev.												
2	384	60	777	56	1180	52	1501	47	1889*	42	—	—
5	343	149	738	144	1126	142	1493	139	1870*	136	2276*	131
8	303	248	696	243	1071	237	1483	232	1833*	221	2224*	214
10	271	309	624	305	1017	308	1410	293	1815*	282	2142*	277
15	199	462	488	458	854	451	1248*	445	—	—	—	—
20	—	—	364*	611	664*	606	1012*	599	—	—	—	—
No. 6Z057 8.8 Cu. In./Rev.												
2	476	48	964	45	1462	42	1860	38	—	—	—	—
5	421	120	917	114	1408	111	1849	106	2329*	98	—	—
8	375	198	863	193	1328	189	1838	186	2302*	179	—	—
10	336	245	773	243	1261	239	1748*	234	—	—	—	—
15	246	369	605	365	1059	361	1546*	355	—	—	—	—
20	—	—	448*	487	824*	483	1255*	478	—	—	—	—

(*) Intermittent ratings.

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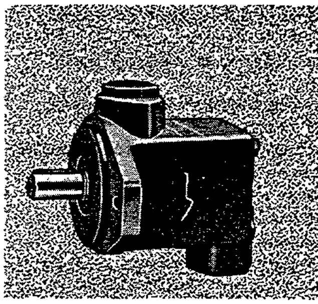
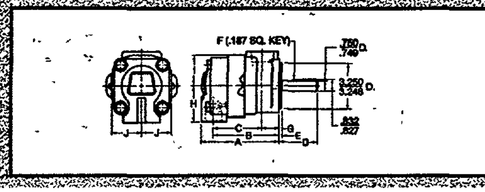
R

VANE PUMPS





- Heavy-duty pumps for high-flow, high performance, continuous duty applications
- Low vane tip/ring loading allows high pressure operation
- Excellent hydraulic balance
- Used in industrial power units and mobile equipment such as trenchers, tractors, and backhoes
- Direct drive only
- Clockwise rotation

Internal inlet and outlet ports are diametrically opposed, for balanced pressure-induced radial loads.

Maximum pressure is 2500 PSI. All units have SAE two-bolt "A" flange mounting.

Vickers Series	Stock No.	A	B	C	D	E	F*	G	H	I	J
V10	6Z620, 6Z621, 6Z622	4.55"	3.62"	2.65"	1.75"	0.250"	1.00"	0.97"	2.47"	2.38"	1.50"
	6Z623, 6Z624	4.80	3.87	2.90	1.75	0.250	1.00	0.97	2.47	2.38	1.50
V20	6Z625	4.93	4.02	2.80	2.66	0.156	1.62	1.22	2.60	2.44	2.19
	6Z626, 6Z627	5.18	4.27	3.05	2.66	0.156	1.62	1.22	2.60	2.44	2.19

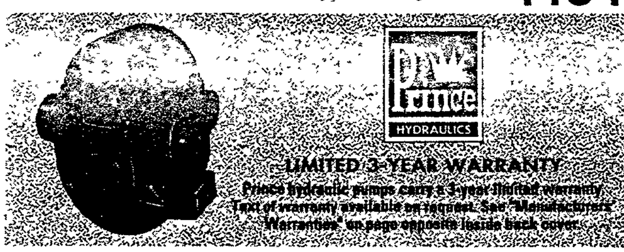
(*) 0.187 square key

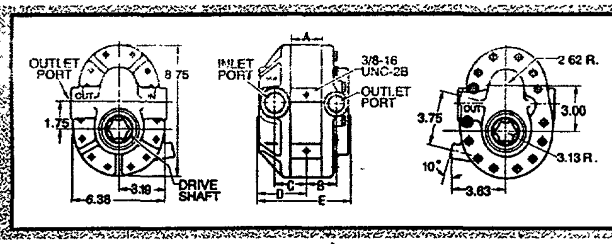
VANE PUMP SPECIFICATIONS AND ORDERING DATA

Nom. GPM	Displ. Cu. In./Rev.	GPM @ RPM 1725	GPM @ RPM 3450	Max. RPM	Ports (NPT) In	Ports (NPT) Out	Vickers Model	Stock No.	List	Each	Shpg. Wt.
1.5	0.20	1.5	3.0	4800	1.00"	0.50"	V10-1P1P1A20	**6Z620**	$373.00	**$237.00**	12.0
3.0	0.40	3.0	6.0	4500	1.00	0.50	V10-1P2P1A20	**6Z621**	373.00	**237.00**	11.0
4.5	0.60	4.5	9.0	4000	1.00	0.50	V10-1P3P1A20	**6Z622**	373.00	**237.00**	11.0
6.0	0.80	6.0	12.0	3400	1.00	0.50	V10-1P4P1A20	**6Z623**	373.00	**237.00**	10.0
7.5	1.00	7.5	*	3200	1.00	0.50	V10-1P5P1A20	**6Z624**	373.00	**237.00**	12.0
9.0	1.19	9.0	18.0	3400	1.25	0.75	V20-1P6P1A11	**6Z625**	459.00	**292.00**	16.0
10.5	1.39	10.5	*	3000	1.25	0.75	V20-1P7P1A11	**6Z626**	459.00	**292.00**	[illegible]
12.0	1.62	12.0	*	2800	1.25	0.75	V20-1P8P1A11	**6Z627**	459.00	**292.00**	

(*) Not recommended at this speed

PTO PUMPS





- **Used as original equipment or additional hydraulic power supply on farm tractors of all sizes**
- **No additional gearing needed**
- **Provides working pressures up to 2500 PSI**

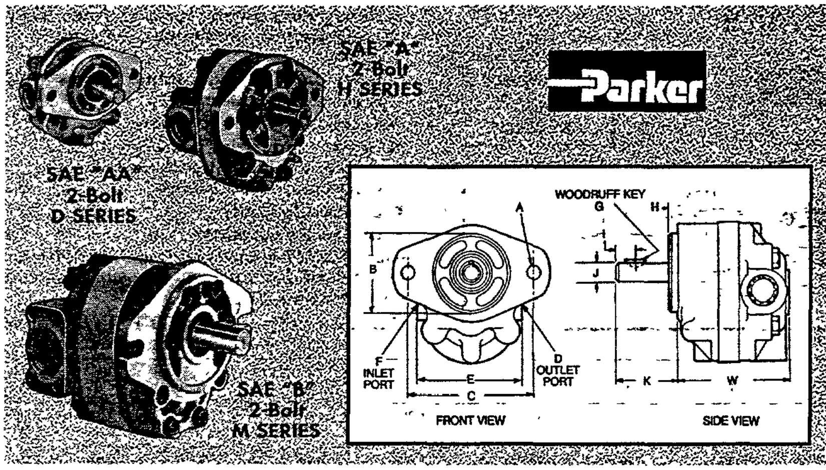
Power take-off (PTO) hydraulic gear pumps have two self-adjusting wear plates to seal off leakage around the two unequal size gears. These plates, activated by internal fluid pressure, offset any wear or expansion that may occur during life of the pump. Each pump is assembled with zero clearance between housing and tips of gear teeth and is test run until teeth establish a proper wear path in the housing.

Pumps have high tensile, cast-iron end-plates, aluminum housing, and an internal splined 6-tooth shaft supported on both sides by roller bearings. Tapped holes are provided for torque arm mounting. No. 4Z171 includes #16 SAE to 1.25" hose barb adapter for inlet port, #12 SAE to 0.75" (F) NPTF adapter for outlet port, #12 SAE plug for unused pressure port. No. 4Z172 includes #16 SAE to 1" hose barb adapter for inlet port, #12 SAE to 0.75" (F) NPTF adapter for outlet port, #12 SAE plug for unused pressure port. CW rotation only. Hydraulic Components Inc., subsidiary of Prince Mfg. Corp.

RPM	Stock No.	A	B	C	D	E	Inlet Port*	Outlet Port*	Shaft
540	4Z171	2.38"	2.09"	2.19"	3.35"	6.35"	1 5/8-12	1 1/16-12	1 3/8" Dia., 6 tooth
540	4Z172	1.63	1.72	1.81	2.97	5.60	1 5/8-12	1 1/16-12	1 3/8" Dia., 6 tooth

(*) O-Ring Boss.

RPM	GPM @ 0 PSI	GPM @ 1500 PSI	GPM @ 2000 PSI	Displacement Cu. In./Rev.	Min. HP	Prince Model	Stock No.	List	Each	Shpg. Wt.
540	24.7	21.3	19.0	9.9	30	PTO-1A	**4Z171**	$503.00	**$381.00**	38.0
540	12.6	11.1	10.7	5.7	20	PTO-2A	**4Z172**	483.00	**369.00**	35.0



GEAR PUMPS

- High tolerance to system contamination
- Reliable under cold weather conditions
- Few moving parts makes a simple, efficient design
- Compact and lightweight for capacity
- Pressures to 2500 PSI
- 185°F max. temperature
- Direct drive only
- Pressure balanced design

Parker hydraulic gear pumps feature die cast aluminum case with extruded center section to enhance overall durability. Lightweight. Case hardened shaft with dual lip Buna seals and bronze bushings for reliability and long pump-life. Clockwise rotation facing shaft end. 80-1000 SSU operating viscosity range. 4000 SSU maximum startup viscosity.

Series	Stock Nos.	A	B	C	D	E	F	G	H	I	J	K
D	4ZC26, 4ZC27, 4ZC28, 4ZC29, 4ZC30, 4ZC31, 4ZC32, 4ZC33	0.39	2.00	3.25	3/4-16 SAE	2.88	7/8-14 SAE	1/8 x 5/8 Dia.	0.25	0.5	0.5	1.56
H	4ZC34, 4ZC35, 4ZC36, 4ZC37, 4ZC38, 4ZC39	0.43	3.25	4.19	7/8-14 SAE	4.0	1 1/16-12 SAE	3/16 x 5/8 Dia.	0.25	0.5	0.75	1.56
M	4ZC40, 4ZC41, 4ZC42	0.56	4.00	5.75	1 1/16-12 SAE	5.45	1 5/8-12 SAE	1/4 x 1 Dia.	0.36	0.75	0.875	2.13

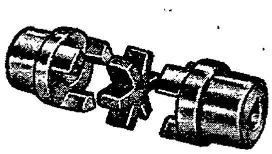
Series	Nominal GPM	Cu. In./Rev.	GPM @ 1000 PSI 1800 RPM	GPM @ 1000 PSI 3600 RPM	Max. Pressure PSI Continuous Duty	Max. Pressure PSI Intermittent Duty*	Width (W)	Parker Model	Stock No.	List	Each	Shpg. Wt.
D	0.9	0.114	0.89	1.78	2500	2800	2.48"	D05AA2A	**4ZC26**	$223.38	**$149.10**	2.3
	1.3	0.168	1.31	2.62	2500	2800	2.57	D07AA2A	**4ZC27**	224.40	**149.50**	2.1
	1.6	0.210	1.64	3.27	2500	2800	2.64	D09AA2A	**4ZC28**	225.42	**149.95**	2.0
	2.0	0.262	2.04	4.08	2500	2800	2.72	D11AA2A	**4ZC29**	229.50	**152.00**	2.1
	2.6	0.329	2.56	5.13	2500	2800	2.83	D14AA2A	**4ZC30**	230.52	**152.25**	2.7
	3.1	0.404	3.15	6.30	2500	2800	2.96	D17AA2A	**4ZC31**	231.54	**152.50**	2.8
	4.1	0.522	4.07	8.14	2500	2800	3.15	D22AA2A	**4ZC32**	236.64	**157.25**	3.0
	5.0	0.641	4.99	9.99	2000	2300	3.34	D27AA2A	**4ZC33**	246.84	**163.25**	[illegible]
H	4.7	0.603	4.70	9.40	2500	2800	3.43	H25AA2A	**4ZC34**	332.52	**179.75**	[illegible]
	5.9	0.754	5.88	11.75	2500	2800	3.54	H31AA2A	**4ZC35**	337.62	**221.75**	6.1
	7.3	0.942	7.34	14.68	2500	2800	3.68	H39AA2A	**4ZC36**	341.70	**226.75**	6.4
	9.2	1.178	9.18	18.36	2500	2800	3.86	H49AA2A	**4ZC37**	357.00	**234.25**	6.7
	11.5	1.473	11.48	22.96	2500	2800	4.08	H62AA2A	**4ZC38**	359.04	**235.75**	7.0
	14.4	1.842	14.35	28.71	2000	2300	4.63	H77AA2A	**4ZC39**	426.56	**247.00**	7.7
M	16.7	2.116	16.72	33.44	2500	2800	4.80	M09AA2A	**4ZC40**	490.62	**286.75**	13.0
	20.9	2.683	20.91	43.81	2250	2500	5.07	M11AA2A	**4ZC41**	496.74	**289.75**	13.0
	26.1	3.353	26.13	52.25	2000	2250	5.40	M14AA2A	**4ZC42**	515.10	**301.25**	15.0

(*) Operation in the intermittent pressure range must not exceed 5 seconds per duty cycle and must make up less than 20% of the overall cycle time.

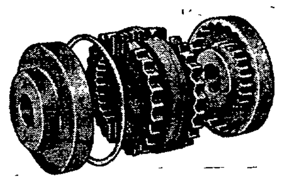
FLEXIBLE SHAFT COUPLINGS AVAILABLE

BOSTON GEAR

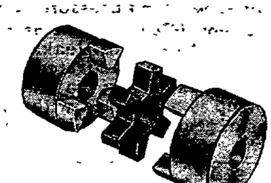
Lovejoy



Shaft Couplings



S-Flex Couplings



Flexible Couplings

See Index.

HIGH PRESSURE GEAR PUMPS

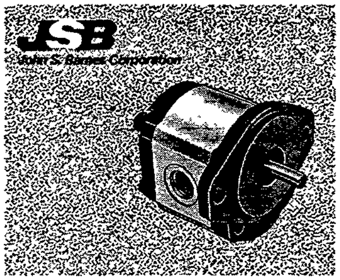
3-9 GPM SAE "A" 2-BOLT MOUNTING PUMPS

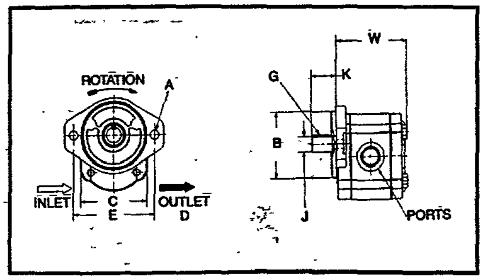
APPLICATIONS

- Material handling
- Construction and paving
- Aerial lifts ● Winches
- Turf care ● Agricultural
- Direct drive only

Continuous pressures to 4000 PSI. Speeds 500 to 4000 RPM. 90% overall efficiency and low noise.

Rough bore bushing type design constructed of high strength aluminum housings and cast-iron end covers.





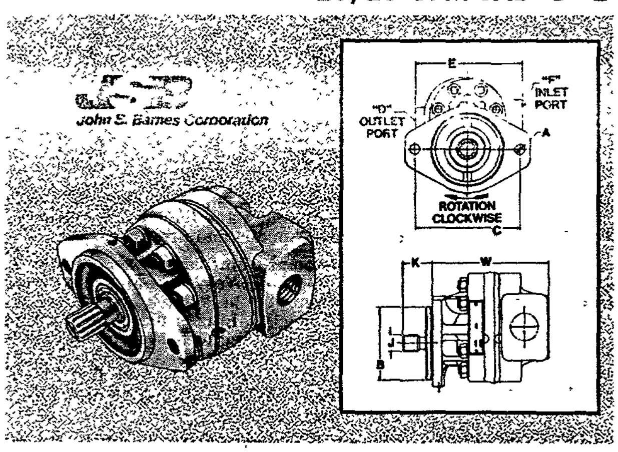
DIMENSIONS (in inches)

Stock No.	A	B	C	Outlet D	E	Inlet	G	J	K	W
4F665	0.45 dia.	3.25	3.44	3/4-16	4.19	7/8-14	.187	0.75	1.25	3.64
4F666				7/8-14		1 1/16-12				3.74
4F667				7/8-14		1 1/16-12				3.91
4F668				7/8-14		1 1/16-12				4.09
4F669				7/8-14		1 1/16-12				4.20
4F671				1 1/16-12		1 5/16-12				4.85

3-9 GPM SPECIFICATIONS AND ORDERING DATA

Nominal GPM	Cu. In. / Rev.	GPM Displ. @ RPM 1800	GPM Displ. @ RPM 3600	Max. Pressure PSI Continuous Duty	Max. Pressure PSI Intermittent Duty	Barnes Model	Stock No.	List	Each	Shpg. Wt.
3	0.37	2.88	5.77	4000	4400	1800288	**4F665**	$168.00	**$155.00**	7.9
4	0.49	3.82	7.64	4000	4400	1800289	**4F666**	173.00	**159.00**	8.1
5	0.67	5.22	10.44	4000	4400	1800290	**4F667**	177.00	**164.00**	8.4
6	0.85	6.65	13.30	4000	4400	1800291	**4F668**	182.00	**168.00**	8.8
7	0.98	7.64	15.27	4000	4400	1800292	**4F669**	192.00	**177.00**	9.0
9	1.16	9.03	18.06	4000	4400	1800293	**4F671**	201.00	**185.00**	9.2

11/14 GPM SAE "A" 2-BOLT MOUNTING PUMPS
20/26 GPM SAE "B" 2-BOLT MOUNTING PUMPS



APPLICATIONS

- Backhoes ● End loaders ● Booms ● Trenchers
- Skid steer vehicles ● Dump trucks ● Mining equipment
- High tolerance to system contamination
- Reliable under cold weather conditions
- Simple, efficient design with few moving parts
- Compact ● Pressures to 4000 PSI
- 205°F max. temperature
- Pressure balanced design

Cast-iron front and rear covers for reliability, strength, and noise reduction. Center section is cast-iron, allowing gear tips to generate their own run-in paths, creating minimum radial gear-tip clearance for high volumetric efficiency.

Gears are AISI 8620 alloy steel for greater shaft strength and stronger gear assembly. Ten-tooth gears minimize pressure ripple. Gear sides and shaft journals are carburized, hardened, and ground to fine finish.

Seals utilize two seal packs and two bronze faced wear plates to minimize leakage across the end faces of the gears and to reduce wear.

Bearings and support structures move in unison with and adjust to shafts that are deflected by high hydraulic loads. Optimum bearing alignment under load minimizes wear, maximizing life of bearings and pump.

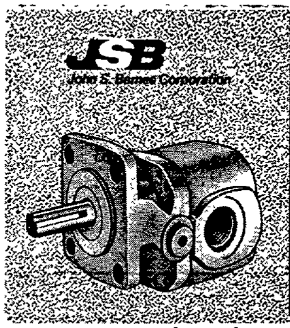
DIMENSIONS (in inches)

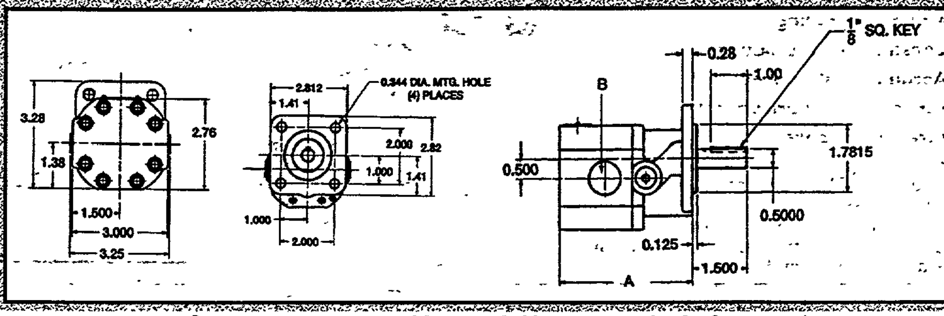
Stock No.	A	B	C	D	E	F	J	K	W
4F672, 4F673	0.450	3.25	4.19	1 5/16-12	5.84	1 5/8-12	9T 16-32DP	1.62	6.27 max.
4F674, 4F675	0.582	4.00	5.75	1 5/16-12	5.84	1 5/8-12	13T 16-32DP	1.62	6.97 max.

11/14, 20/26 GPM SPECIFICATIONS AND ORDERING DATA

Nominal GPM	Cu. In. / Rev.	GPM Displ. @ RPM 1800	GPM Displ. @ RPM 3600	Max. Pressure PSI Continuous Duty	Max. Pressure PSI Intermittent Duty	Barnes Model	Stock No.	List	Each	Shpg. Wt.
11	1.41	10.99	21.99	4000	4400	02-100786	**4F672**	$223.60	**$213.00**	28.0
14	1.79	13.95	28.90	4000	4400	02-100787	**4F673**	243.40	**220.50**	29.0
20	2.60	20.25	40.52	4000	4400	02-100788	**4F674**	252.75	**229.25**	32.0
26	3.33	25.95	51.97	4000	4400	02-100789	**4F675**	262.10	**237.00**	34.0

BI-ROTATIONAL GEAR PUMPS





APPLICATIONS

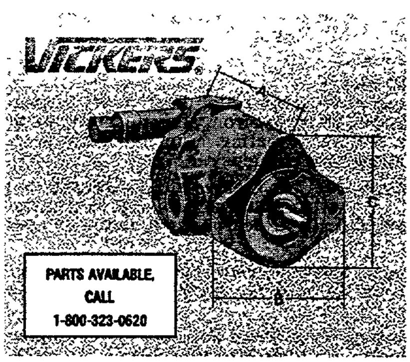
- Machine tools—lubrication, clamping, clutch shifting • Robotics
- Drilling and boring heads
- Metal bending, forming, stamping, and punching
- Material handling
- Platform and elevator lifts
- Agricultural and construction equipment • Lawn care
- Efficient 11-tooth hydraulic gear pump pumps a variety of fluids with lubricating qualities
- Durable cast iron body with hardened steel gears suitable for continuous duty to 3000 PSI and intermittent pressures up to 3500 PSI
- Four-bolt 4F17 mounting with 1½" long shaft extension, key drive, side outlet ports • J.S. Barnes brand

Bi-rotational pumps suit gas engines or electric motors. Proper coupling and C-face adapter are required. Calculate horsepower based on 1/3 HP/1 GPM/500 PSI. Nos. 4F652-4F659 pumps also function as motors, see page 26.

BI-ROTATIONAL GEAR PUMP SPECIFICATIONS AND ORDERING DATA

Nominal GPM	Cu. In./Rev.	Flow (GPM) @ RPM 1800	3600	Pressure Rating Continuous Duty	Intermittent Duty	Dimensions A	B	Barnes Model	Stock No.	List	Each	Shpg. Wt.
0.50	0.065	0.50	1.00	3000	3500	3.16"	9/16–18	1002496	**4F649**	$119.60	**$110.00**	5.5
0.75	0.097	0.75	1.50	3000	3500	3.16	9/16–18	1002497	**4F650**	119.60	**109.90**	5.0
1.00	0.129	1.00	2.00	3000	3500	3.16	3/4–16	1002498	**4F651**	119.60	**109.90**	5.0
1.50	0.194	1.50	3.00	3000	3500	3.16	3/4–16	1002499	**4F652**	119.60	**110.10**	1.8
2.00	0.258	2.00	4.00	3000	3500	3.69	3/4–16	1070054	**4F653**	125.30	**114.90**	
2.50	0.323	2.50	5.00	3000	3500	3.69	7/8–14	1070043	**4F654**	137.30	**131.20**	
3.00	0.388	3.00	6.00	3000	3300	3.69	7/8–14	1070045	**4F655**	141.25	**131.20**	
3.50	0.452	3.50	7.00	2750	3025	3.69	7/8–14	1070047	**4F656**	141.25	**131.20**	6.0
4.00	0.517	4.00	8.00	2750	2750	3.69	7/8–14	1070049	**4F657**	142.00	**131.25**	5.7
5.00	0.647	5.00	—	2000	2200	4.20	7/8–14	1070035	**4F658**	150.80	**139.70**	6.9
5.50	0.711	5.50	—	1800	2000	4.20	7/8–14	1070033	**4F659**	150.80	**139.60**	6.4

PISTON PUMPS



PARTS AVAILABLE, CALL 1-800-323-0620

- SAE "A" 2-bolt mounting
- CW rotation only viewed from shaft end
- Inline variable displacement units provide efficient performance and high operating reliability
- Rugged construction and minimum number of parts for pump reliability and easy servicing without disturbing pump mounting
- Operate on variety of hydraulic fluids including oil, invert emulsions, water glycols, and high water based fluids

Pumps demonstrate approximately 97% volumetric efficiency and 85% overall efficiency at rated speeds and pressures.

Pressure compensator control automatically adjusts pump delivery to maintain volume requirements of the system at a preselected pressure. Minimizes need for cooling equipment and reduces size of reservoir required. Pressure compensator adjustable range: 250-3000 PSI (Nos. 5W565 and 5W567); 250-2000 PSI (Nos. 5W566 and 5W568).

SAE straight threads are standard on all units. Two-bolt flange mounting. 7/8 x 2.31" keyed shaft.

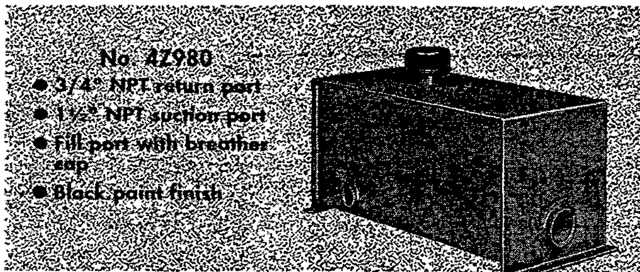
Delivery GPM @ 1800 RPM	Max. Press. PSI*	Sound Level (dbA)†	Overall Dimensions A Length (In.)	B Width (In.)	C Height (In.)	Inlet / Outlet Ports	Vickers Model	Stock No.	List	Each	Shpg. Wt.
5	3000	71	8.72	7.13	5.18	1¹⁄₁₆"-12 UN2B	PVB5-RSY-21-C-11	**5W565**	$1155.00	**$792.00**	16.0
6	2000	69	8.72	7.13	5.18	1¹⁄₁₆ -12 UN2B	PVB6-RSY-21-C-11	**5W566**	1063.00	**727.00**	20.0
10	3000	76	10.50	7.36	5.81	1⅝ -12 UN2B	PVB10-RSY-31-C-11	**5W567**	1386.00	**952.00**	25.0
15	2000	76	10.50	7.36	5.81	1⅝ -12 UN2B	PVB15-RSY-31-C-11	**5W568**	1478.00	**1015.00**	31.0

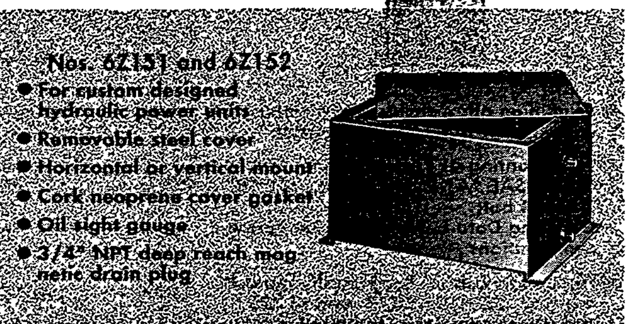
(*) Unit service life is individual to each application. Applications which require continuous operation at maximum pressure will likely result in shortened service life.
(†) Sound levels recorded per NFPA standards at 3 ft. Full flow, 1800 RPM, and maximum pressure.

LET US SUPPLY YOUR PUMPS AND ACCESSORY PRODUCTS

RESERVOIRS AND ACCESSORIES

5 AND 10 GALLON CAPACITY RESERVOIRS



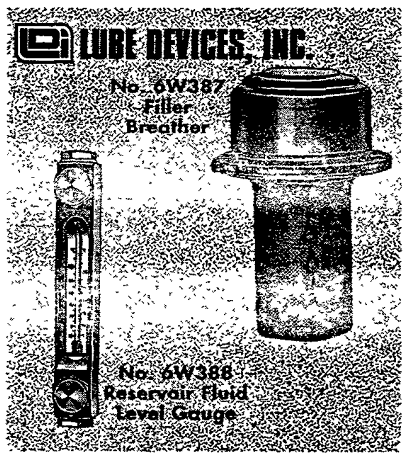


Five and ten gallon capacity, 14-gauge steel, general purpose and power unit reservoirs. Used as primary or auxiliary storage tanks for hydraulic oil. Allow contaminants to settle out of oil and entrained air to be vented before being picked up by the pump.

Applications include log splitters, mobile and industrial hydraulic systems.

RESERVOIR SPECIFICATIONS AND ORDERING DATA

Gallon Capacity	Dimensions (In.) H	W	L	Removable Cover	Stock No.	List	Each	Shpg. Wt.
5	8⁵⁄₁₆	8⅝	20	No	**4Z980**	$55.40	**$52.45**	23.0
5	8½	12	17	Yes	**6Z151**	81.60	**75.05**	24.0
10	10½	14	22	Yes	**6Z152**	104.60	**94.90**	45.0



FILLER BREATHER

3 in. diameter, 40 micron plated steel breather cap handles up to 30 cfm airflow at less than 1" Hg differential pressure. Twist-to-lock cap includes safety chain. 30 mesh, stainless steel strainer basket allows rapid filling and is compatible with most hydraulic fluids. Includes mounting screws and gasket. Lube Devices (FB103).

No. 6W387. Shpg. Wt. 0.5 lbs. List ..$11.05. Each **$9.02**

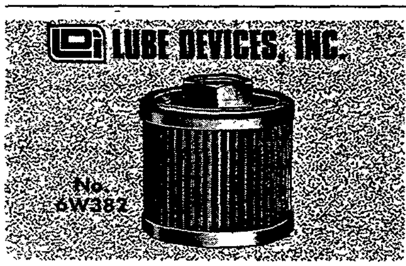
RESERVOIR FLUID LEVEL/TEMPERATURE GAUGES

Fluid level gauges have low profile bodies with wide sight opening for maximum visibility. Machined from extruded aluminum bar stock. Crystal clear borosilicate sights compatible with all hydraulic fluids. Will not discolor with age or temperature. Buna-N seals. 20 PSI maximum working pressure. 250°F maximum temperature. Lube Devices brand.

No. 6W389. 3 in. Mounting Center Level Gauge (G1615-03-A-1). Shpg. wt. 0.4 lbs. List $19.45. Each **$11.87**

No. 6W388. 5 in. Mounting Center Level Gauge (G1615-05-A-1). Shpg. wt. 0.5 lbs. List $19.70. Each **$12.12**

No. 6W390. 10 in. Mounting Center Level Gauge (G1615-10-A-1). Shpg. wt. 0.7 lbs. List $39.90. Each **$23.76**



HYDRAULIC SUCTION STRAINERS

Used to filter oil at end of pick-up tube in oil reservoir. Zinc-plated steel end plates. Rigid, one piece inner frame. Stainless steel. 100 mesh screen can be easily cleaned. Lube Devices brand.

Port Size	Nominal Flow, GPM	Dimensions (In.) Length	Diameter	Lube Devices Model	Stock No.	List	Each	Shpg. Wt.
1/2" NPT	5	3.10	2.63	SS104	**6W382**	$10.20	**$9.20**	0.3
3/4	8	3.50	2.63	SS105	**6W383**	10.40	**9.83**	0.7
1	10	5.40	2.63	SS106	**6W384**	15.25	**12.31**	0.4
1¼	20	6.85	3.39	SS107	**6W385**	21.85	**18.33**	0.4
1½	30	7.90	3.39	SS108	**6W386**	26.25	**21.27**	0.7

HYDRAULIC OIL AND LUBRICANTS AVAILABLE

Mobil®

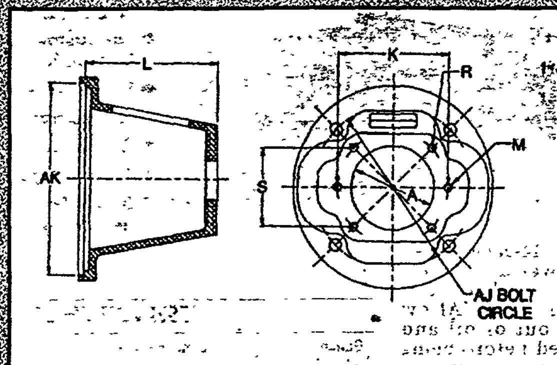
SEE PAGE 2690

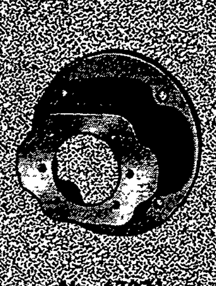
C-FACE PUMP/MOTOR ADAPTERS AND TWO-STAGE "HI-LO" GEAR PUMPS

C-FACE PUMP/MOTOR ADAPTERS

VESCOR®

- Aluminum alloy encloses shaft and coupling for quiet, safe operation
- For mounting 4F17 4 bolt, SAE "AA" 2 bolt, SAE "A" 2 and 4 bolt, SAE "B" 2 and 4 bolt, see Specifications and Ordering Data below for motor frame combinations
- All models can be horizontally mounted; Nos. 6Z069, 6Z070, and 4F322 can also be vertically mounted
- Slotted for easy coupling adjustment
- Maximum coupling diameter: 3½" for Nos. 6Z069 and 6Z070; 4½" for No. 6Z071





No. 6Z071

ADAPTER SPECIFICATIONS AND ORDERING DATA

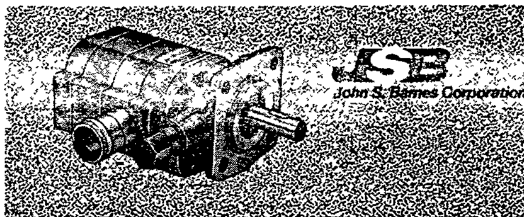
Flange Style	Pump Bolt Configuration	Motor Frame	A	L	K	M Tapped Holes	S	R Tapped Holes	AJ	AK	Stock No.	List	Each	Shpg. Wt.
SAE A	2 & 4	56C-145TC	3.25"	4.25"	2.88"	(2) 3/8-16	4.13"	4C,-16	*	4.501/4.503	6Z069	$31.00	$27.10	2.8
4F17	4	56C-145TC	1.78	4.25	N/A	N/A	2.00	(4) 5/16-18	*	4.501/4.503	6Z070	34.00	28.15	2.8
SAE AA	2	56C-145TC	2.00	4.25	3.25	(2) 3/8-16	N/A	N/A	*	4.501/4.503	4F322	34.00	27.85	2.8
SAE A	2 & 4	182TC-184TC	3.25	5.00	4.18	(2) 3/8-16	4.13	(4) 3/8-16	†	8.501/8.503	6Z071	51.15	44.85	6.8
SAE B	2 & 4	182TC-184TC	4.00	5.81	5.75	(2) 1/2-13	3.54	(4) 1/2-13	†	8.501/8.503	4F320	53.50	43.85	6.8
SAE A	2 & 4	182TC/184TC	3.25	5.81	2.88	(2) 3/8-16	3.00	(4) 3/8-16	†	8.501/8.503	4F321	53.50	43.85	6.8
SAE A	2 & 4	213TC-215TC	3.25	6.81	2.88	(2) 3/8-16	3.00	(4) 3/8-16	†	8.501/8.503	4F318	56.25	46.10	6.8
SAE B	2 & 4	213TC-215TC	4.00	6.81	5.75	(2) 1/2-13	3.54	(4) 1/2-13	†	8.501/8.503	4F319	56.25	46.10	6.8

(*) 4 13/32 ON 5 7/8 B.C (†) 4-17/32 ON 7 1/4 B.C.

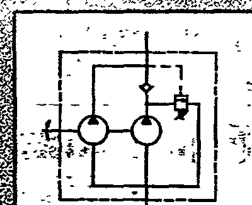
TWO-STAGE "HI-LO" GEAR PUMPS

APPLICATIONS

- Presses
- Log splitters
- Automatic two-speed transmission
- Clamping unit
- Compactors
- Heavy-duty cast-iron pumps with optimum output per unit size
- Hardened steel 11-tooth gears with large bearings and shaft size
- Clockwise rotation for electric motor or gas engine
- 1/2 in. drive shaft with #404 Woodruff drive key
- Direct drive only
- Motor, coupling, and adapter not included
- J.S. Barnes brand



Two stages—first stage pump unloads fully at 450 PSI, second stage operates up to 2500 PSI. Generally 5 HP input is required for No. 4F663 and 8 HP for No. 4F664. **Note:** Circuit requires the addition of a pressure-limiting relief valve. Standard 4F17 four-bolt mounting.



HYDRAULIC SCHEMATIC

TWO-STAGE "HI-LO" GEAR PUMP SPECIFICATIONS AND ORDERING DATA

Nominal GPM	Input RPM	GPM @ Pressure 250	1000	2000	Gear Displ. High Pressure	Low Pressure	Shaft Dia.	Length	Ports Inlet	Outlet	Barnes Model	Stock No.	List	Each	Shpg. Wt.
5.5	1800	5.47	1.4	1.36	0.194 in²	0.517 in³	1/2"	1½"	1" Tube	1/2" NPTF	1002508	4F663	$166.45	$152.00	9.0
11.0	3600	10.94	2.8	2.72											
8.0	1800	7.95	1.9	1.81	0.258	0.776	1/2	1½	1	1/2	1002509	4F664	205.00	192.50	10.0
16.0	3600	15.91	3.8	3.62											

Library of Technical Manuals

Helpful reference books for the worker, student, and homeowner. Topics cover electricity, electric motors, welding, plumbing, refrigeration and air conditioning, hydraulics, and much more. See Index under Books.

APPENDIX 7

A

PNEUMATICS

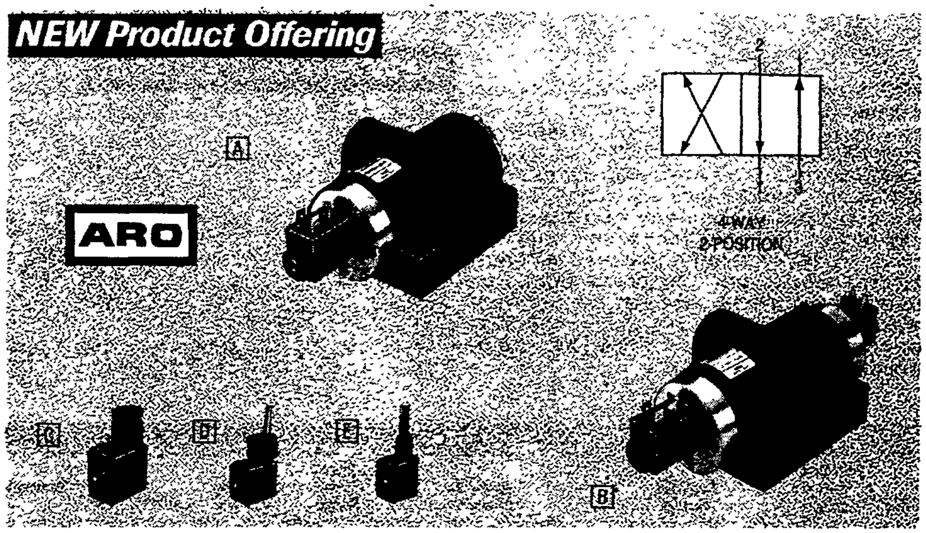
LARGE PORT SOLENOID AND RIGHT ANGLE FLOW CONTROL VALVES

1/2" & 3/4" PORT SOLENOID VALVES

For applications where extra flow is needed. 4-way, 2-position valves feature rugged construction aluminum sand cast bodies. Solenoid override provides easy means of setting up and troubleshooting circuits without power to the solenoids. Operating pressure range: solenoid/spring 50-150 PSI, solenoid/solenoid 20-150 PSI.

Prelubed, can be operated without air line lubrication. Solenoid can be rotated in any direction. Class F, rated for 100% duty cycle applications at 122°F (50°C) ambient. Total coil rating is 311°F which includes heat rise.

One connector required for each coil. Each connector is its own junction box with molded connectors and gaskets to protect electrical connections. Design meets NEMA 4 classifications. See connector options below. ARO brand.



SOLENOID VALVE SPECIFICATIONS AND ORDERING DATA

Key	Port Size NPT Inches	Actuator/ Return	Temp. Range	Maximum Operating Pressure	CFM	Dimensions (Inches) L	W	H	ARO Model	Stock No.	List	Each	Shpg. Wt.
A	1/2	Solenoid/Spring	-10-180°F	150 PSI	90	6 7/8	3 1/2	2 1/2	K214SS-120-A	**2G553**	$181.00	**$172.00**	1.3
A	3/4	Solenoid/Spring	-10-180°	150	270	10 5/8	4 1/2	3 1/2	K216SS-120-A	**2G557**	299.00	**284.00**	1.3
B	1/2	Solenoid/Solenoid	-10-180°	150	90	8 3/4	3 1/2	2 1/2	K214SD-120-A	**2G555**	250.00	**237.50**	1.3
B	3/4	Solenoid/Solenoid	-10-180°	150	270	12 5/8	4 1/2	3 1/2	K216SD-120-A	**2G559**	368.00	**349.75**	1.3

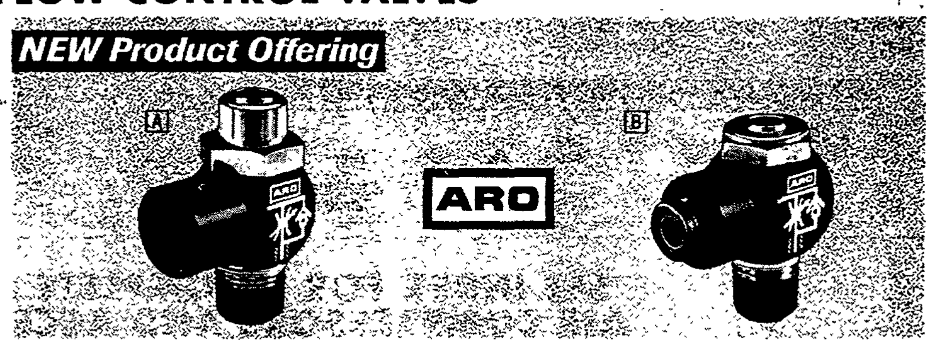
CONNECTORS FOR ARO COILS

Key	Description	Voltage	ARO Model	Stock No.	List	Each	Shpg. Wt.
C	Solenoid Connecor Without Lead Wires	Any Aro Coil	CSN	**2G505**	$5.40	**$5.13**	0.1
D	Solenoid Connector With 18" Lead Wire	Any Aro Coil	CDW	**2G501**	7.10	**6.75**	0.1
E	Solenoid Connector With 36" Molded Wire	Any Aro Coil	CHW	**2G503**	9.20	**8.74**	0.1

FLOW CONTROL VALVES

Right angle flow control valves for mounting directly onto cylinder for precise control of cylinder speed. Adjust with screwdriver to increase or decrease speed. Rugged, all metal design includes nickel-plated brass body, anodized aluminum swivel and stainless steel spring for optimum corrosion resistance. Available in female threads (NPT) and convenient push-to-connect tube fittings.

Features dry thread sealant on male threads to eliminate need for piping tape. Full 360° rotation for tubing alignment. 0 to 150 PSI operating pressure range. 15 to 160°F temperature range. ARO brand.



FLOW CONTROL VALVE SPECIFICATIONS AND ORDERING DATA

Key	Male Port NPT	Female Port	Max. Temp. Range	Maximum Operating Pressure	Cv*	Dimensions L	W	H	ARO Model	Stock No.	List	Each	Shpg. Wt.
A	10-32	10-32 NPT	0-180°F	150 PSI	0.06	25/32"	23/64"	37/64"	119307-103	**2F847**	$9.20	**$8.74**	0.1
A	1/8	1/8 NPT	0-180	150	0.34	1 13/32	5/8	7/8	119307-125	**2F849**	10.75	**10.21**	0.1
A	1/4	1/4 NPT	0-180	150	0.67	1 39/64	25/32	1 19/64	119307-250	**2F851**	14.00	**13.30**	0.1
A	3/8	3/8 NPT	0-180	150	1.87	2 3/16	15/16	1 1/2	119307-375	**2F853**	17.25	**16.39**	0.2
A	1/2	1/2 NPT	0-180	150	2.84	3 21/32	1 7/64	1 13/16	119307-500	**2F855**	25.50	**24.23**	0.4
B	10-32	5/32 Push to Connect	0-180	150	0.06	25/32	23/64	37/64	119309-103	**2F857**	10.25	**9.74**	0.1
B	1/8	1/4 Push to Connect	0-180	150	0.34	1 13/32	5/8	1	119309-125	**2F859**	12.00	**11.40**	0.1
B	1/4	1/4 Push to Connect	0-180	150	0.67	1 39/64	25/32	1 19/64	119309-250	**2F861**	15.25	**14.49**	0.1
B	3/8	3/8 Push to Connect	0-180	150	1.87	2 3/16	15/16	1 1/2	119309-375	**2F863**	19.00	**18.05**	0.3

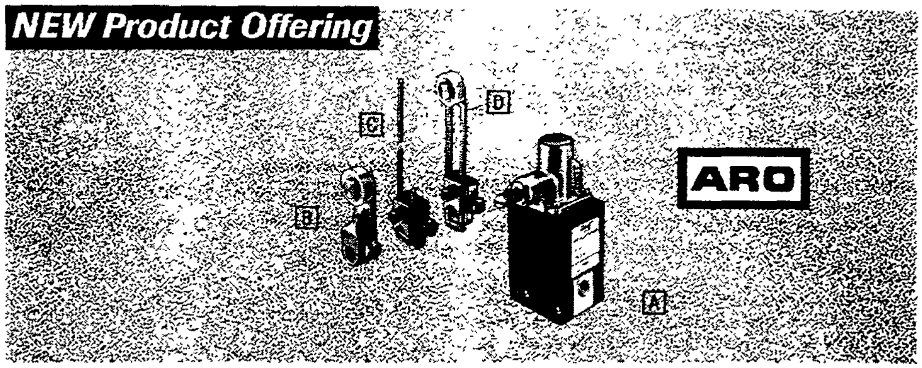
(*) Coefficient of Volume: The amount of water, in GPM, at standard conditions, which will pass through the valve at full open with a 1 PSI pressure drop.

B

HEAVY-DUTY LIMIT AND SHUTTLE VALVES

HEAVY-DUTY LIMIT VALVES

ARO 2-position, 3-way valves for position sensing in demanding applications. Valves can be plumbed as normally passing or normally non-passing, selector, or any 2-way function. Available with clockwise actuation, counterclockwise actuation or both. Operating head can be rotated to any of four positions for various applications. Prelubed, can be operated without air line lubrication. Composite body for tough environments like car washes and washdown applications. 30 to 150 PSI operating pressure. Cv*=0.195. ARO brand.



HEAVY-DUTY LIMIT VALVE SPECIFICATIONS AND ORDERING DATA

Key	Port Size NPT (Inches)	Actuator/ Return	Actuator Direction	Max. Temp. Range	Max. Operating Pressure	CFM**	Cv*	Dimensions (Inches) L	W	H	ARO Model	Stock No.	List	Each	Shpg. Wt.
	1/8	Roller Lever/Spring	Clockwise only	32-160°F	150 PSI	7.5	0.195	1 3/4	2 9/16	3 27/32	400-A	**2F919**	$59.50	**$56.55**	0.8
A	1/8	Rod Lever/Spring	Counterclockwise only	32-160°	150	7.5	0.195	1 3/4	2 9/16	3 27/32	401-A	**2F921**	59.50	**56.55**	0.8
	1/8	Adj. Roller Lever/Spring	Both	32-160°	150	7.5	0.195	1 3/4	2 9/16	3 27/32	402-A	**2F923**	59.50	**56.55**	0.8

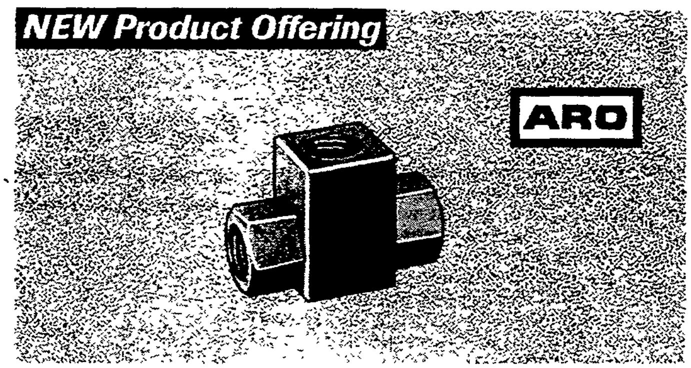
(*) Coefficient of Volume: The amount of water, in GPM, at standard conditions, which will pass through the valve at full open with 1 PSI pressure drop. (**) 90 PSI supply, 15 PSI drop.

VALVE ACTUATOR SPECIFICATIONS AND ORDERING DATA

Key	Description	Actuator Force Req'd. (Lbs.)	Dimensions (Inches) L	W	H	ARO Model	Stock No.	List	Each	Shpg. Wt.
B	Nylon Roller	2.5	1 1/8	1/2	2 3/16	447	**2F925**	$15.50	**$14.73**	0.1
C	Rod Lever	0.7	1 1/8	7/8	5 5/8	449	**2F927**	20.75	**19.71**	0.1
D	Adjustable Roller Lever	1.3	1 1/8	3/4	3 7/8	450	**2F929**	22.50	**21.38**	0.1

SHUTTLE VALVES

ARO shuttle valves act as special check valves, connecting two inputs so only one is "ON" at a time. Valves features two inlet ports and one outlet port. Check ball moves away from inlet port with the greatest pressure and against the port with the least pressure (minimum pressure differential of 10 PSIG necessary to effect shuttle change). ARO brand.



SHUTTLE VALVE SPECIFICATIONS AND ORDERING DATA

Port Size NPT (Inches)	Max. Operating Pressure	Dimensions (Inches) L	W	H	ARO Model	Stock No.	List	Each	Shpg. Wt.
1/8	200 PSI	1 1/4	5/8	31/32	SV10-B	**2G635**	$23.25	**$22.09**	0.1
1/4	200	1 7/8	7/8	1 5/16	SV20-B	**2G637**	31.50	**29.95**	0.3

SEE INDEX FOR A COMPLETE LINE OF AIR COMPRESSORS AND ACCESSORIES

MINIATURE DIRECT-ACTING SOLENOID VALVES

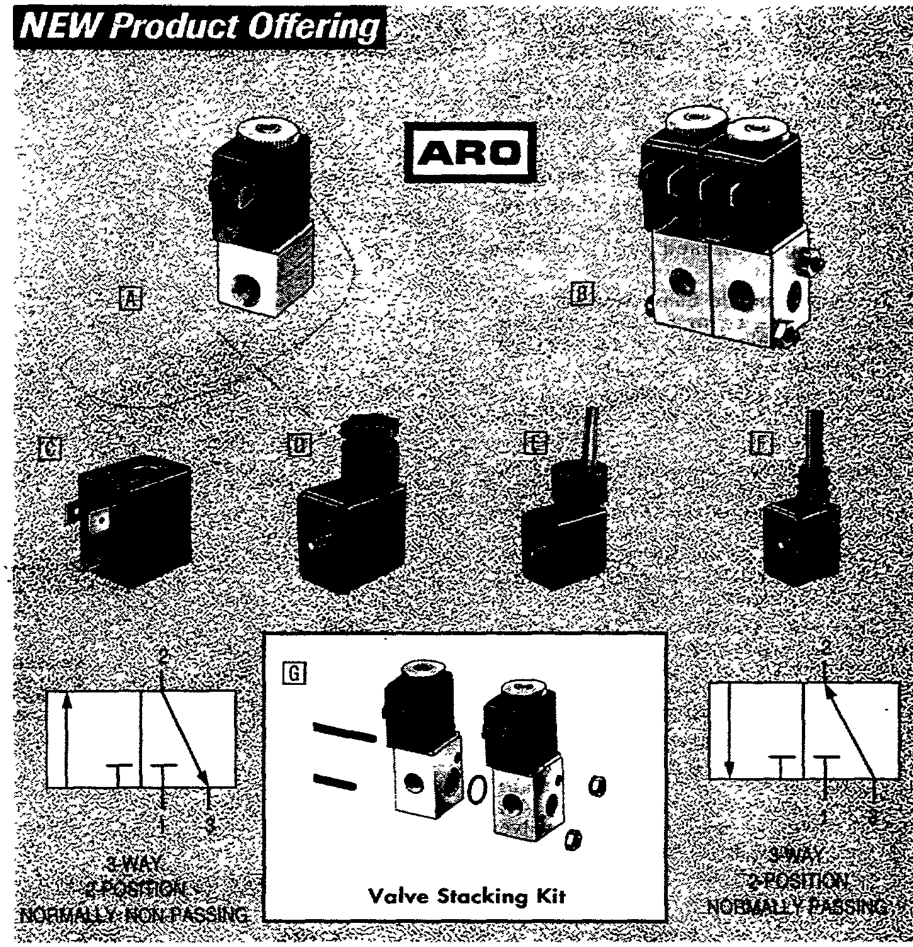
3-Way, 2-Position electric-to-air interface valves are solenoid-actuated with spring return and have sufficient flow for cylinders 1" diameter and below. Compact design allows valves to be pipe nippled directly to cylinder port. Suitable for air or inert gas. Can be assembled in stacks up to 6 valves. Coil can be rotated to meet application requirements. Rated for 100% duty cycle. Quick change design for easy replacement. Durable, lightweight aluminum extrusion body for good corrosion resistance. Cv* for normally non-passing body ported valves is 0.062, for normally passing, body ported valves is 0.056, and for normally non-passing, stackable is 0.046. ARO brand. Can be used with vacuum.

COILS AND CONNECTORS

For pneumatic valves when coil voltage other than 120 VAC or 12 VDC is required (see chart below). All coils are Class F, rated for 100% duty cycle applications at 122°F (50°C) ambient. Total coil rating is 311°F, which includes heat rise. AC or DC coils can be interchanged on same solenoid stem. One connector required for each coil. Each connector is its own junction box with molded connectors and gaskets to protect electrical connections. Design meets NEMA 4 classifications. ARO brand.

STACKING KITS

Kits for miniature solenoid valves contain all necessary tie-rods, nuts, O-rings, plug and instructions for assembling miniature solenoid valves into valve stacks. Specify kit according to number of valves to be stacked. Valves sold separately. ARO brand.



MINIATURE DIRECT-ACTING SOLENOID VALVES

Key	Port Size NPT (Inches)	Valve Type	Coil	Max. Temp. Range	Max. Operating Pressure	CFM**	Cv*	Dimensions (Inches) L	W	H	ARO Model	Stock No.	List	Each	Shpg. Wt.
A	1/8	Normally Non-Passing, Body Ported	120 VAC	0-122°F	150 PSI	2.2	0.062	1 5/8	7/8	2 7/16	CAT33P-120-A	**2G487**	$28.50	**$27.10**	0.3
A	1/8	Normally Non-Passing, Body Ported	12 VDC	0-122°	150	2.2	0.062	1 5/8	7/8	2 7/16	CAT33P-012-D	**2G485**	28.50	**27.10**	0.3
A	1/8	Normally Non-Passing, Body Ported	†	0-122°	150	2.2	0.062	1 5/8	7/8	2 7/16	CAT33P-000-N	**2G483**	18.50	**17.58**	0.2
A	1/8	Normally Passing, Body Ported	120 VAC	0-122°	150	2.0	0.056	1 5/8	7/8	3 1/8	CAT44P-120-A	**2G499**	30.25	**28.75**	0.3
A	1/8	Normally Passing, Body Ported	12 VAC	0-122°	150	2.0	0.056	1 5/8	7/8	3 1/8	CAT44P-012-D	**2G497**	30.25	**28.75**	0.3
A	1/8	Normally Passing, Body Ported	†	0-122°	150	2.0	0.056	1 5/8	7/8	3 1/8	CAT44P-000-N	**2G495**	20.25	**19.24**	0.2
B	1/8	Normally Non-Passing, Stackable	120 VAC	0-122°	150	1.8	0.048	1 5/8	1	2 11/16	CAT33S-120-A	**2G493**	29.75	**28.30**	0.3
B	1/8	Normally Non-Passing, Stackable	12 VDC	0-122°	150	1.8	0.048	1 5/8	1	2 11/16	CAT33S-012-D	**2G491**	29.75	**28.30**	0.3
B	1/8	Normally Non-Passing, Stackable	†	0-122°	150	1.8	0.048	1 5/8	1	2 11/16	CAT33S-000-N	**2G489**	19.75	**18.76**	0.2

(*) Coefficient of Volume: The amount of water, in GPM, at standard conditions, which will pass through the Valve at full open with a 1 PSI pressure drop.
(†) Coils available separately. (**) 90 PSI supply, 15 PSI pressure drop.

Key	Description	Voltage	ARO Model	Stock No.	List	Each	Shpg. Wt.
	COILS FOR ARO VALVES						
C	Coil for Solenoid	240 VAC	116218-35	**2F789**	$10.00	**$9.50**	0.1
C	Coil for Solenoid	5 VDC	116218-37	**2F791**	10.00	**9.50**	0.1
C	Coil for Solenoid	24 VDC	116218-39	**2F793**	10.00	**9.50**	0.1
	CONNECTORS FOR ARO COILS						
D	Solenoid Connector Without Lead Wires	Any ARO coil	CSN	**2G505**	5.40	**5.13**	0.1
E	Solenoid Connector with 18" Lead Wire	Any ARO coil	CDW	**2G501**	7.10	**6.75**	0.1
F	Solenoid Connector with 36" Molded Wire	Any ARO coil	CHW	**2G503**	9.20	**8.74**	0.1
	VALVE STACKING KITS						
	2-Valve Stacking Kit	—	116345-2	**2F795**	6.90	**6.56**	0.1
	3-Valve Stacking Kit	—	116345-3	**2F797**	8.00	**7.60**	0.1
G	4-Valve Stacking Kit	—	116345-4	**2F799**	8.90	**8.46**	0.1
	5-Valve Stacking Kit	—	116345-5	**2F801**	10.50	**9.98**	0.1
	6-Valve Stacking Kit	—	116345-6	**2F803**	11.00	**10.45**	0.1

ACCESSORIES FOR MINIATURE VALVES

PNEUMATICS

ACCESSORIES FOR SIERRA SUBBASE AND MANIFOLD MOUNT VALVES

[A] **Single Station Subbase** for use where convenience of a subbase is desired for fast maintenance on a one valve station.

[B] **Manifold** for use in applications where valve manifolding is needed for 2-8 valves.

[C] **Gasketed Metallic Blanking Plate** caps unused manifold ports. Quick installation. One plate per unused valve station required.

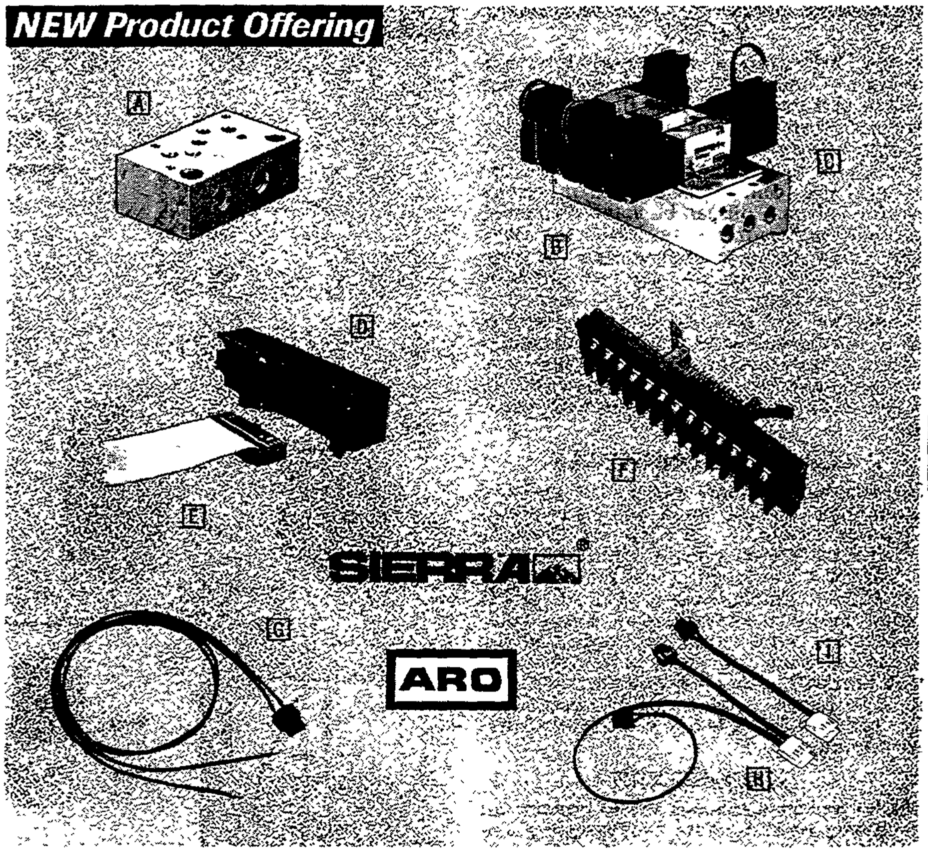
[D] **Raceway Manifold Conversion Kit** turns manifold into 4-, 6-, or 8-station raceway manifold with installation of raceway terminal circuit board.

[E] **39" Raceway Ribbon Connector** facilitates wiring. Can be used for 4-, 6-, or 8-station raceways.

[F] **Raceway Ribbon Connector Break-Out Box** is a 26-station junction box that allows raceway manifold valves to be interfaced with a personal computer or other electronic command device by means of raceway ribbon listed above. Current rating: 3A DC. UL Voltage rating: 30 VDC.

[G] **Plug-In Valve Wire Harness** is an 18" two-wire harness prestripped at one end with a pin-type locking connector at other end. One harness per coil required when used on standard manifold or subbase.

[H], [I] **Plug-In Valve Raceway Wire Harness** has pin-type locking plug connector at one end and raceway plug at the other. Available for single solenoid valves (4½" length harness) or double solenoid valves (4½" and 12" length harnesses).



SPECIFICATIONS AND ORDERING DATA

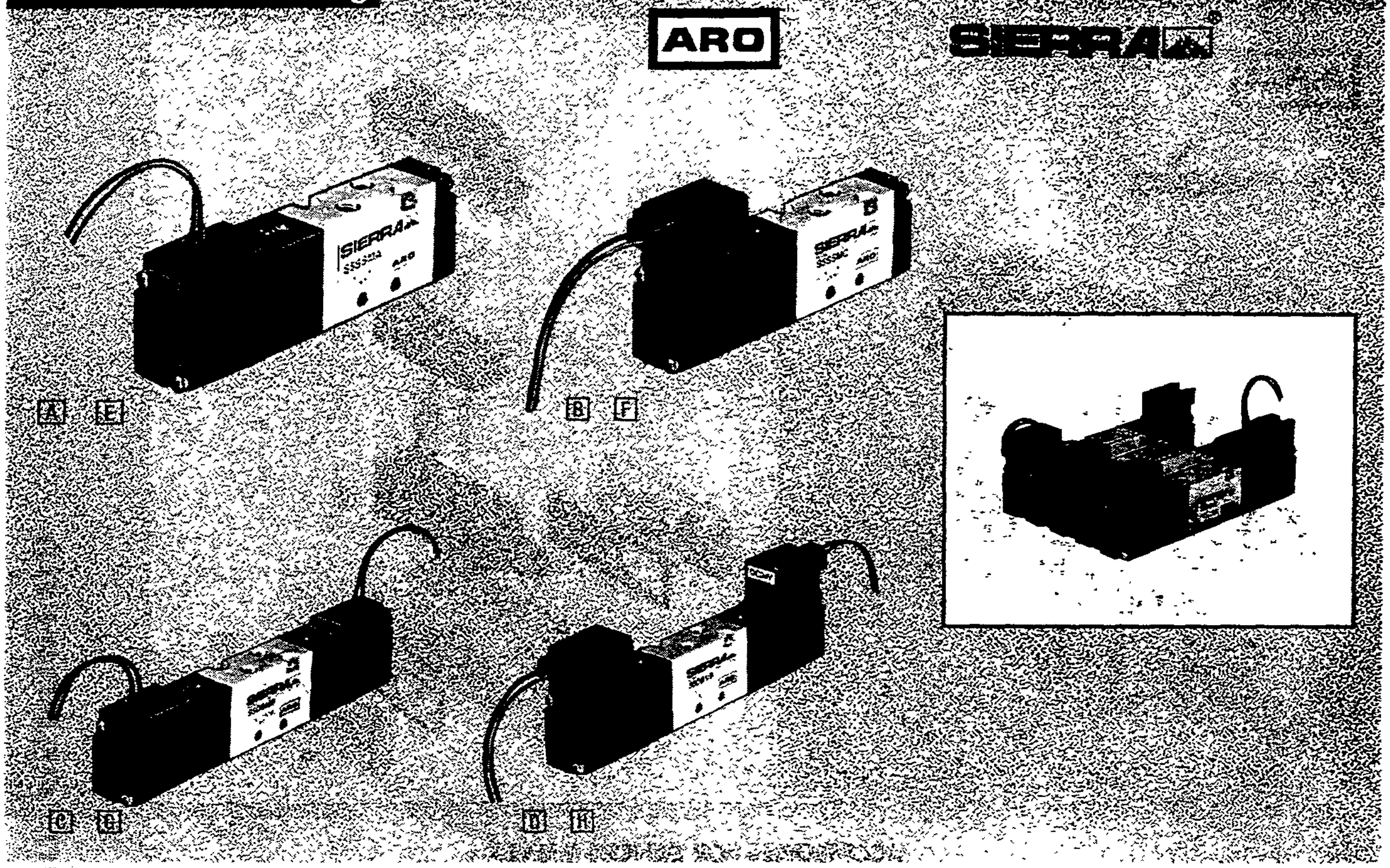
Key	Description	Use With:	ARO Model	Stock No.	List	Each	Shpg. Wt.
A	Single station subbase for 1/8" port valves	1 base-mounted valve	119368	**2F889**	$8.00	**$7.60**	0.2
B	2-station manifold for 1/8" port valves	2 base-mounted valves	119365-2	**2F881**	17.00	**16.15**	0.5
B	4-station manifold for 1/8" port valves	3 or 4 base-mounted valves	119365-4	**2F883**	28.00	**26.60**	0.8
B	6-station manifold for 1/8" port valves	5 or 6 base-mounted valves	119365-6	**2F885**	42.00	**39.90**	1.1
B	8-station manifold for 1/8" port valves	7 or 8 base-mounted valves	119365-8	**2F887**	58.00	**55.10**	1.4
C	Gasketed metallic blanking plate	Valve manifold, as needed	119351	**2F865**	3.50	**3.33**	0.1
D	Raceway manifold conversion kit	4-station manifold	119352-4	**2F867**	30.00	**28.50**	0.1
D	Raceway manifold conversion kit	6-station manifold	119352-6	**2F869**	40.00	**38.00**	0.1
D	Raceway manifold conversion kit	8-station manifold	119352-8	**2F871**	50.00	**47.50**	0.1
E	Raceway ribbon connector	Raceway manifold conversion kit	119353-1	**2F873**	12.50	**11.88**	0.1
F	Raceway ribbon connector break-out box	Raceway manifold and ribbon	119395	**2F891**	47.00	**44.65**	0.1
G	Plug-in valve wire harness	Solenoid	119356	**2F879**	1.60	**1.52**	0.1
H	Plug-in valve raceway wire harness	Single solenoid valve, raceway	119354	**2F875**	2.10	**2.00**	0.1
I	Plug-in valve raceway wire harness	Double solenoid valve, raceway	119355	**2F877**	4.50	**4.28**	0.1

MANY BRANDS OF HYDRAULICS/PNEUMATICS AVAILABLE

SEE WARRANTY INFORMATION ON PAGE OPPOSITE INSIDE BACK COVER

MINIATURE SOLENOID VALVES

NEW Product Offering



Sierra Valves are 15mm wide directional valves for operating small bore pneumatic cylinders. 4-way, 5-ported, 2 position valves are available in single and double solenoid styles. Body ported and manifold mounted valves have 0.25 Cv* flow and fast signal response time of 14 milliseconds. **Features standard one-touch override** which can be operated for non-locking action, or push-and-twist to lock with screwdriver. Lead wire and plug-in styles in 120 VAC or 24 VDC. Plug-in integrated circuitry guards against miswiring damage and provides surge protection. Maximum cycle rate of 120 cycles per minute, 22 PSI shift pressure. Current ratings: 120 VAC=16mA (in-rush), 11mA (holding); 24 VDC=67mA. Power consumption is 2.1/1.8VA 1.6W. ARO brand.

VALVE SPECIFICATIONS AND ORDERING DATA

Key	Port Size NPT (Inches)	Actuator/ Return	Coil	Max. Temp. Range	Max. Operating Pressure	CFM**	Cv*	Dimensions (Inches) L	W	H	ARO Model	Stock No.	List	Each	Shpg. Wt.
BODY PORTED 4-WAY MINIATURE SOLENOID VALVES															
A	10/32	Solenoid/Spring	Lead Wire, 120 VAC	0-122°F	115 PSI	9	0.25	3 25/64	19/32	1 1/32	S5SSMA	**2G627**	$37.00	**$35.15**	0.2
A	10/32	Solenoid/Spring	Lead Wire, 24 VDC	0-122	115	9	0.25	3 25/64	19/32	1 1/32	S5SSMB	**2G629**	37.00	**35.15**	0.2
B	10/32	Solenoid/Spring	Plug-in,120 VAC	0-122	115	9	0.25	3 1/2	19/32	1 1/2	S5SSMC	**2G631**	42.00	**39.90**	0.2
B	10/32	Solenoid/Spring	Plug-in 24 VDC	0-122	115	9	0.25	3 1/2	19/32	1 1/2	S5SSMD	**2G633**	42.00	**39.90**	0.2
C	10/32	Double Solenoid	Lead Wire,120 VAC	0-122	115	9	0.25	4 1/4	19/32	1 1/32	S5DSMA	**2G611**	57.00	**54.15**	0.3
C	10/32	Double Solenoid	Lead Wire, 24 VDC	0-122	115	9	0.25	4 1/4	19/32	1 1/32	S5DSMB	**2G613**	57.00	**54.15**	0.3
D	10/32	Double Solenoid	Plug-in, 120 VAC	0-122	115	9	0.25	4 31/32	19/32	1 1/2	S5DSMC	**2G615**	62.00	**58.90**	0.3
D	10/32	Double Solenoid	Plug-in, 24 VDC	0-122	115	9	0.25	4 31/32	19/32	1 1/2	S5DSMD	**2G617**	62.00	**58.90**	0.3
MANIFOLD MOUNTED 4-WAY MINIATURE SOLENOID VALVES															
E	1/8	Solenoid/Spring	Lead Wire, 120 VAC	0-122	115	9	0.25	3 23/64	19/32	1 1/16	S5SS9A	**2G619**	38.00	**36.10**	0.2
E	1/8	Solenoid/Spring	Lead Wire, 24 VDC	0-122	115	9	0.25	3 23/64	19/32	1 1/16	S5SS9B	**2G621**	38.00	**36.10**	0.2
F	1/8	Solenoid/Spring	Plug-in, 120 VAC†	0-122	115	9	0.25	3 1/2	19/32	1 1/2	S5SS9C	**2G623**	43.00	**40.85**	0.2
F	1/8	Solenoid/Spring	Plug-in, 24 VDC†	0-122	115	9	0.25	3 1/2	19/32	1 1/2	S5SS9D	**2G625**	43.00	**40.85**	0.2
G	1/8	Double Solenoid	Lead Wire, 120 VAC	0-122	115	9	0.25	4 1/4	19/32	1 1/16	S5DS9A	**2G603**	58.00	**55.10**	0.3
G	1/8	Double Solenoid	Lead Wire, 24 VDC	0-122	115	9	0.25	4 1/4	19/32	1 1/16	S5DS9B	**2G605**	58.00	**55.10**	0.3
H	1/8	Double Solenoid	Plug-in, 120 VAC†	0-122	115	9	0.25	4 31/32	19/32	1 1/2	S5DS9C	**2G607**	63.00	**59.85**	0.3
H	1/8	Double Solenoid	Plug-in, 24 VDC†	0-122	115	9	0.25	4 31/32	19/32	1 1/2	S5DS9D	**2G609**	63.00	**59.85**	0.3

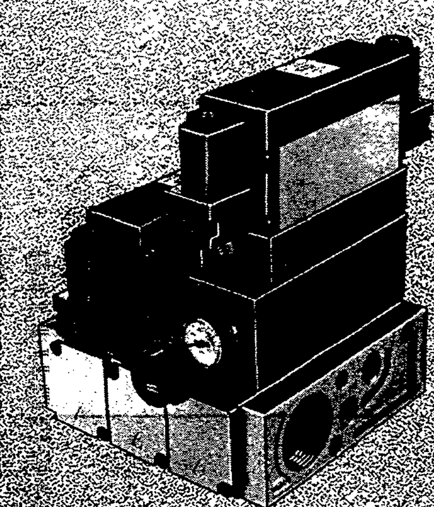
(*) Coefficient of Volume: The amount of water, in GPM, at standard conditions, which will pass through the valve at full open with a 1 PSI pressure drop. (**) 90 PSI supply, 15 PSI pressure drop.
(†) Order raceway ribbon, plug-in valve wire harness or plug-in valve raceway wire harness separately.

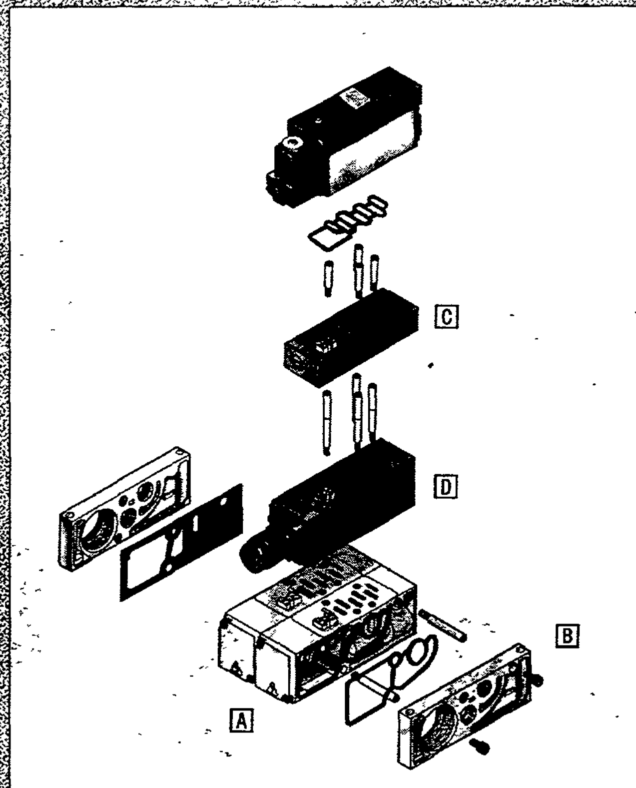
ACCESSORIES FOR "PLUG-IN" VALVES

NEW Product Offering

ARO

Genesis®





ACCESSORIES FOR GENESIS VALVES

[A] Plug-In Style Manifold features a 5-pin plug that eliminates all external solenoid wiring. Body is powder coated for chip and scratch resistance.

[B] End Plate Kit features large raceway wiring channel for easy wiring. One kit required per stack.

[C] Sandwich Speed Control (optional) has low profile and offers quick installation, precise speed control, and a flush non-rising adjustment screw.

[D] 0 to 120 PSI Sandwich Style Regulator (optional) fits on valve and features front and rear gauge ports to match application requirements.

ACCESSORY SPECIFICATIONS AND ORDERING DATA

Key	Port Size NPT (Inches)	CFM**	Cv*	Description	Dimensions* (Inches) L	W	H	ARO Model	Stock No.	List	Each	Shpg. Wt.
MANIFOLDS FOR PLUG-IN STYLE SOLENOID VALVES												
A	1/4	36	1	Manifold	6	1 11/16	2 1/16	GMP121	**2G547**	$28.00	**$26.60**	1.3
A	3/8	38	1	Manifold	6	1 11/16	2 1/16	GMP-131	**2G561**	28.00	**26.60**	1.3
END PLATES, SPEED CONTROL AND REGULATOR												
B	3/8	—	1	End plate kit (set of 2)	6*	1 1/4*	2 1/16*	118803-B	**2F845**	23.00	**21.85**	1.8
C	—	—	1	Speed control	4 11/16	1 11/16	1	118565-P	**2F817**	27.50	**26.15**	0.6
D	—	—	1	Regulator	7 1/8	1 11/16	2	118573-P4	**2F819**	50.00	**47.50**	1.2

(*) Dimensions are for two end plates (one set). (**) 90 PSI supply, 15 PSI pressure drop.

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G

SOLENOID VALVES FOR "PLUG-IN" MANIFOLD

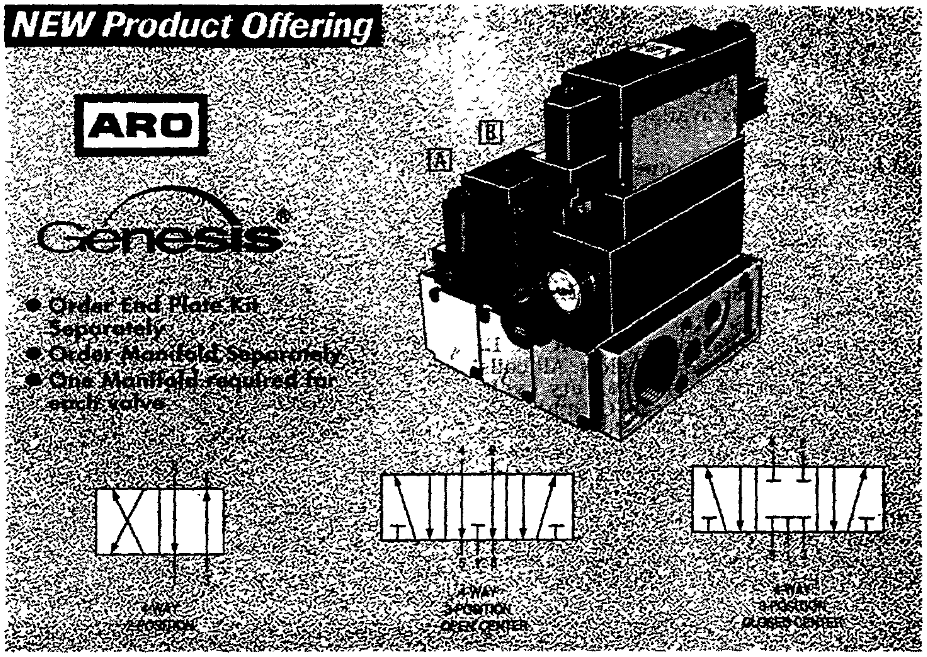
HIGH FLOW SOLENOID VALVES FOR PLUG-IN MANIFOLD

Genesis 1/4" or 3/8" valves feature plug-in electrical connections between valve and manifold to make valve easy to install. Plug-in design keeps all electrical wiring inside of unit and features "make first-break last" grounding contact pin. Complies with ISO 5599-S for replacement of foreign-made valves that meet specification. Large one-piece bonded spool design for energy saving efficient air flow and positive shifting with lower system pressure.

Mechanical valve override makes machine setup and troubleshooting easy. Mounting/assembly hardware features stainless steels stacking pins that eliminate the need for tie rods or separate bolts.

NOTE: Valves must be used with either 1/4" or 3/8" port manifold. Order manifol and accessories below.

Indicators are standard equipment on valves. Valves are prelubed, can be operated without air line lubrication. Cv*=1.0 through side ports and 1.2 through bottom ports. 30 to 150 PSI operating pressure range. ARO brand.



VALVE SPECIFICATIONS AND ORDERING DATA

Key	Actuator/ Return	Coil	Max. Temp. Range	Max. Operating Pressure	Cv*	Dimensions† (Inches) L	W	H	ARO Model	Stock No.	List	Each	Shpg. Wt.
4-WAY, 2 POSITION VALVES													
A	Solenoid/Spring	120 VAC	0-180°F	150 PSI	1.2	6	1 11/16	2 5/16	GP12SS-120-H	**2G585**	$62.00	**$58.90**	2.0
A	Solenoid/Spring	12 VDC	0-180	150	1.2	6	1 11/16	2 5/16	GP12SS-012-J	**2G581**	62.00	**58.90**	2.0
A	Solenoid/Spring	24 VDC	0-180	150	1.2	6	1 11/16	2 5/16	GP12SS-024-J	**2G583**	62.00	**58.90**	2.0
B	Solenoid/Solenoid	120 VAC	0-180	150	1.2	7 1/4	1 11/16	2 5/16	GP12SD-120-H	**2G579**	94.00	**89.30**	2.2
B	Solenoid/Solenoid	12 VDC	0-180	150	1.2	7 1/4	1 11/16	2 5/16	GP12SD-012-J	**2G575**	94.00	**89.30**	2.2
B	Solenoid/Solenoid	24 VDC	0-180	150	1.2	7 1/4	1 11/16	2 5/16	GP12SD-024-J	**2G577**	94.00	**89.30**	2.2
4-WAY, 3 POSITION (Spring Centered, All Ports Blocked in Neutral)													
B	Solenoid/Solenoid	120 VAC	0-180	150	1.2	7 1/4	1 11/16	2 5/16	GP13SD-120-H	**2G591**	117.50	**111.65**	2.2
B	Solenoid/Solenoid	12 VDC	0-180	150	1.2	7 1/4	1 11/16	2 5/16	GP13SD-012-J	**2G587**	117.50	**111.65**	2.2
B	Solenoid/Solenoid	24 VDC	0-180	150	1.2	7 1/4	1 11/16	2 5/16	GP13SD-024-J	**2G589**	117.50	**111.65**	2.2
4-WAY, 3 POSITION (Spring Centered, Inlet Port Blocked, Cylinder Ports Open in Neutral)													
B	Solenoid/Solenoid	120 VAC	0-180	150	1.2	7 1/4	1 11/16	2 5/16	GP17SD-120-H	**2G597**	117.50	**111.65**	2.2
B	Solenoid/Solenoid	12 VDC	0-180	150	1.2	7 1/4	1 11/16	2 5/16	GP17SD-012-J	**2G593**	117.50	**111.65**	2.2
B	Solenoid/Solenoid	24 VDC	0-180	150	1.2	7 1/4	1 11/16	2 5/16	GP17SD-024-J	**2G595**	117.50	**111.65**	2.2

(*) Coefficient of Volume: The amount of water, in GPM, at standard conditions, which will pass through the valve at full open with a 1 PSI pressure drop. Figures shown are for 1/4" port. (†) Dimensions are for a single valve and do not include manifold, end plate, regulator, or speed control.

ACCESSORIES FOR GENESIS VALVES

Plug-In Style Manifold features a 5-pin plug that eliminates all external solenoid wiring. Body is powder coated for chip and scratch resistance.

End Plate Kit features large raceway wiring channel for easy wiring. One kit required per stack.

Sandwich Speed Control (optional) has low profile and offers quick installation, precise speed control, and a flush non-rising adjustment screw.

0 to 120 PSI Sandwich Style Regulator (optional) fits on valve and features front and rear gauge ports to match application requirements.

ACCESSORY SPECIFICATIONS AND ORDERING DATA

Port Size NPT (Inches)	CFM	Cv**	Description	Dimensions* (Inches) L	W	H	ARO Model	Stock No.	List	Each	Shpg. Wt.
MANIFOLDS FOR PLUG-IN STYLE SOLENOID VALVES‡											
1/4	36	1.2	Manifold*	6	1 11/16	2 1/16	GMP121	**2G547**	$28.00	**$26.60**	1.3
3/8	38	1.2	Manifold	6	1 11/16	2 1/16	GMP-131	**2G561**	28.00	**26.60**	1.3
END PLATES, SPEED CONTROL AND REGULATOR‡											
3/8	—	1.2	End plate kit (set of 2)	6*	1 1/4*	2 1/16*	118803-B	**2F845**	23.00	**21.85**	1.8
—	—	1.2	Speed control	4 11/16	1 11/16	1	118565-P	**2F817**	27.50	**26.15**	0.6
—	—	1.2	Regulator	7 1/8	1 11/16	2	118573-P4	**2F819**	50.00	**47.50**	1.2

) Dimensions are for two end plates (one set). (**) 90 PSI supply, 15 PSI pressure drop. (‡) See following page for product photos.

H

ACCESSORIES FOR MANIFOLD STYLE VALVES

PNEUMATICS

ACCESSORIES FOR MANIFOLD STYLE SOLENOID AND PILOT VALVES

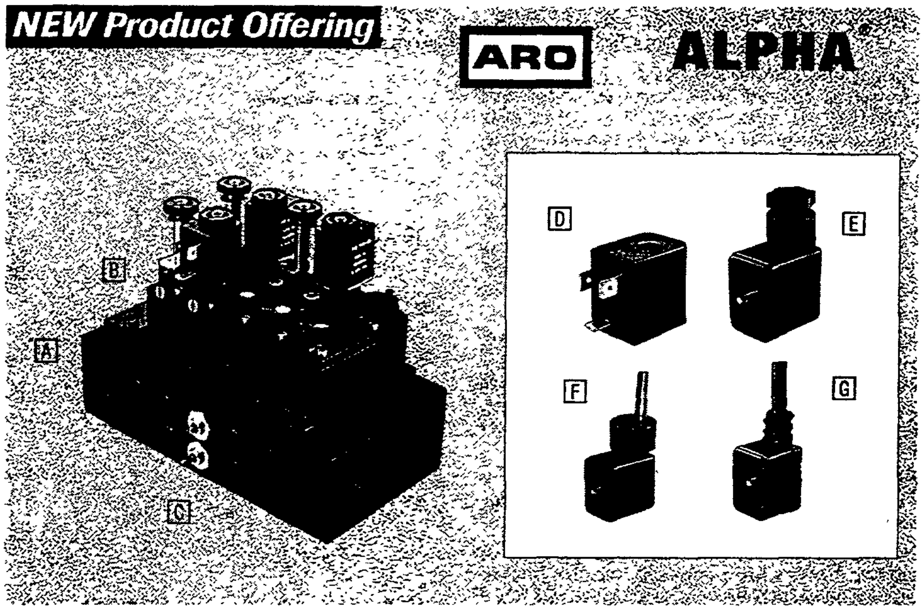
[A] **Valve Manifolds** available in 2, 4, 6, 8 and 10 valves.

[B] **Blanking Kit** blocks one manifold station, permitting odd number of valves to be assembled on manifold.

[C] **Dual Speed Control Kit** includes speed controls for both exhaust ports of a valve.

[D] thru [G] **Coils and Connections for manifold style valves.**

If coil voltage other than 120 VAC or 12 VDC is required, see chart below. All coils are Class F, rated for 100% duty cycle applications at 122°F (50°C) ambient. Total coil rating is 311°F, which includes heat rise. AC or DC coils can be interchanged on the same solenoid stem. One connector is required for each coil. Each connector is its own junction box, with molded connectors and gaskets to protect the electrical connections. Design meets NEMA 4 classifications. ARO brand.



MANIFOLD SPECIFICATIONS AND ORDERING DATA‡

Description	Port Size NPT (Inches)	Cv*	Dimensions (Inches) L	W	H	ARO Model	Stock No.	List	Each	Shpg. Wt.
2-station valve manifold	1/8	1.2	3⅝	4	2	118604-2	**2F823**	$38.00	**$36.10**	2.4
4-station valve manifold	1/8	1.2	5⅝	4	2	118604-4	**2F825**	65.00	**61.75**	3.8
6-station valve manifold	1/8	1.2	7⅝	4	2	118604-6	**2F827**	91.50	**86.95**	5.2
8-station valve manifold	1/8	1.2	9⅝	4	2	118604-8	**2F829**	122.00	**115.90**	6.4
10-station valve manifold	1/8	1.2	11⅝	4	2	118604-10	**2F821**	146.50	**139.20**	7.7
2-station valve manifold	1/4	1.2	3⅝	4	2	118605-2	**2F833**	38.00	**36.10**	2.4
4-station valve manifold	1/4	1.2	5⅝	4	2	118605-4	**2F835**	65.00	**61.75**	3.7
6-station valve manifold	1/4	1.2	7⅝	4	2	118605-6	**2F837**	91.50	**86.95**	5.1
8-station valve manifold	1/4	1.2	9⅝	4	2	118605-8	**2F839**	122.00	**115.90**	6.4
10-station valve manifold	1/4	1.2	11⅝	4	2	118605-10	**2F831**	151.50	**143.95**	7.6
Station blanking kit	—	1.2	—	—	—	118612	**2F841**	11.00	**10.45**	0.1
Dual speed control kit	—	1.2	—	—	—	118618	**2F843**	17.75	**16.86**	0.1

(*) Coefficient of Volume: The amount of water, in GPM, at standard conditions, which will pass through the valve at full open with a 1 PSI pressure drop. Figures shown are for 1/4" port. (‡) See following page for product photos and descriptions.

COILS FOR ARO VALVES

Key	Description	Voltage	ARO Model	Stock No.	List	Each	Shpg. Wt.
D	Coil for Solenoid	240 VAC	116218-35	**2F789**	$10.00	**$9.50**	0.1
D	Coil for Solenoid	5 VDC	116218-37	**2F791**	10.00	**9.50**	0.1
D	Coil for Solenoid	24 VDC	116218-39	**2F793**	10.00	**9.50**	0.1

CONNECTORS FOR ARO COILS

Key	Description	Voltage	ARO Model	Stock No.	List	Each	Shpg. Wt.
E	Solenoid Connector Without Lead Wires	Any ARO Coil	CSN	**2G505**	5.40	**5.13**	0.1
F	Solenoid Connector With 18" Lead Wire	Any ARO Coil	CDW	**2G501**	7.10	**6.75**	0.1
G	Solenoid Connector With 36" Molded Wire	Any ARO Coil	CHW	**2G503**	9.20	**8.74**	0.1

KNOW THE STOCK NUMBER, BUT STILL CAN'T FIND WHAT PAGE IT'S ON?

Use the "Stock Number/Page Number Cross Reference Guide" at the back of the Catalog. Stock numbers are listed alphabetically with the current page numbers.

ACCESSORIES FOR ARO VALVES

ACCESSORIES FOR STACKING AND PILOT VALVES

[A] **End Plate Kit** includes two end plates, two cap screws and one gasket. Kit adds 1½" to length of valve stack. One end plate kit required per stack. ARO brand.

[B] **Isolator Plate** allows valve or section of valves within a stack to be isolated and operate on different pressure than the rest of stack. Gasket included. ARO brand.

[C] **"L" Mounting Bracket.** Tall "L" mounting bracket raises valve stack 7" above base. Short "L" mounting bracket raises valve stack 3¾" above base. Each mounting bracket kit includes all hardware to mount valve stack to bracket. ARO brand.

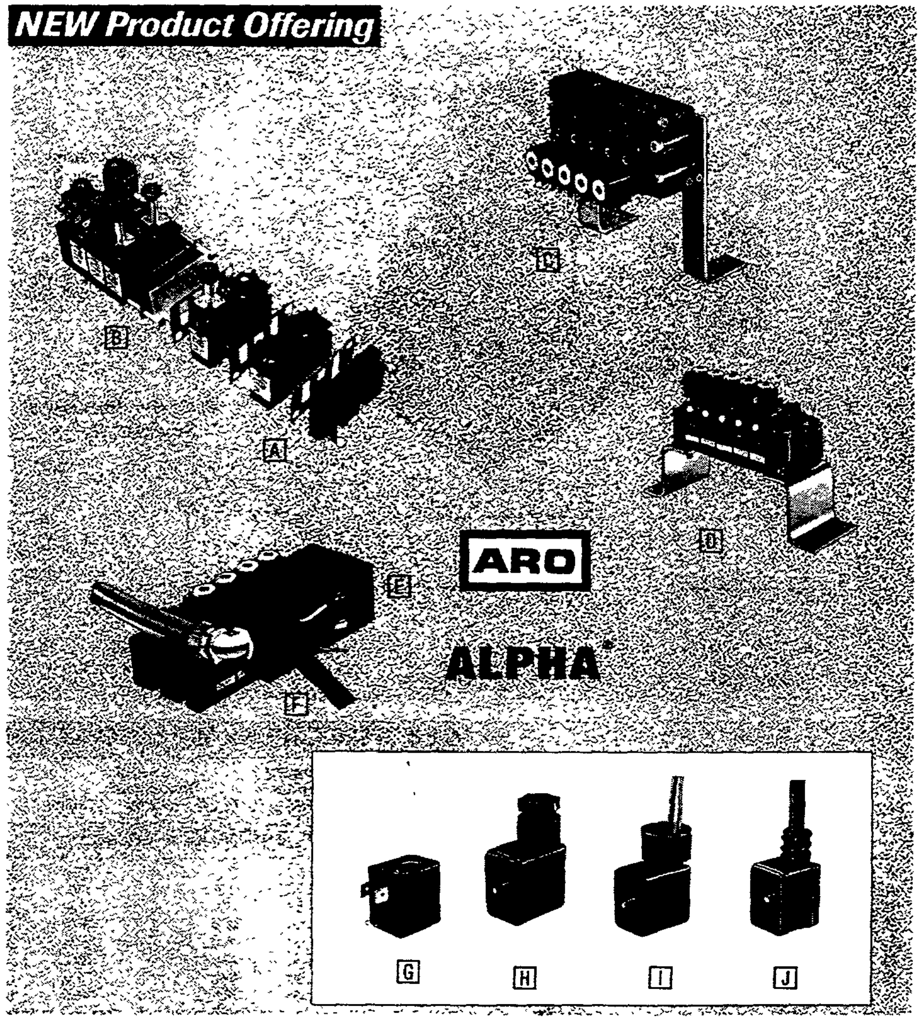
[D] **"Z" Mounting Bracket.** Tall "Z" mounting bracket raises valve stack 6" above base. Short "Z" mounting bracket raises valve stack 3" above base. Each mounting bracket kit contains all hardware to mount valve stack to bracket. ARO brand.

[E] **Junction Box** required for each coil in stack when solenoid connectors are not used. Includes box, jumper wires, gasket, screw and roll pin. ARO brand.

[F] **Blank Junction Box** provides entrance for conduit fitting for a row of coils. Includes box, dust plug and roll pin. ARO brand.

COILS AND CONNECTORS FOR ALPHA VALVES

[G] thru [J] For use when coil voltage other than 120 VAC or 12 VDC is required (see chart below). All coils are Class F, rated for 100% duty cycle applications at 122°F (50°C) ambient. Total coil rating is 311°F, including heat rise. AC or DC coils can be interchanged on same solenoid stem. One connector required for each coil. Each connector is its own junction box, with molded connectors and gaskets to protect electrical connections. Design meets NEMA 4 classifications. ARO brand.



ACCESSORIES FOR COMPACT STACKING POWER VALVES

Key	Description	ARO Model	Stock No.	List	Each	Shpg. Wt.
A	Stacking End Plate Kit	MKP	**2G599**	$23.25	**$22.09**	0.5
B	Isolator Plate	PTN	**2G601**	2.90	**2.76**	0.1
C	Tall "L" Mounting Bracket	116807	**2F805**	16.00	**15.20**	0.7
C	Short "L" Mounting Bracket	116808	**2F807**	14.75	**14.01**	0.6
D	Tall "Z" Mounting Bracket	116809	**2F809**	22.25	**21.14**	0.7
D	Short "Z" Mounting Bracket	117987	**2F815**	18.25	**17.34**	0.9
E	Junction Box	117541	**2F811**	18.50	**17.58**	0.2
F	Blank Junction Box	117607	**2F813**	11.75	**11.16**	0.1

COILS FOR ARO VALVES

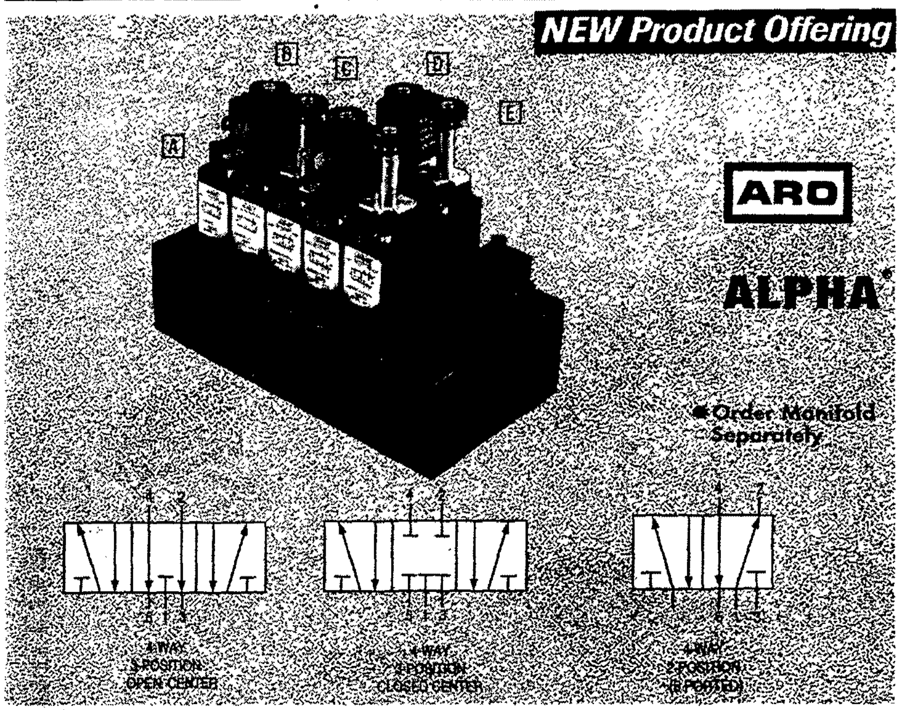
Key	Description	Voltage	ARO Model	Stock No.	List	Each	Shpg. Wt.
G	Coil for Solenoid	240 VAC	116218-35	**2F789**	$10.00	**$9.50**	0.1
G	Coil for Solenoid	5 VDC	116218-3[illegible]	**2F791**	10.00	**9.50**	0.1
G	Coil for Solenoid	24 VDC	116218-39	**2F793**	10.00	**9.50**	0.1

CONNECTORS FOR ARO COILS

Key	Description	Voltage	ARO Model	Stock No.	List	Each	Shpg. Wt.
H	Solenoid Connector Without Lead Wires	Any ARO Coil	CSN	**2G505**	5.40	**5.13**	0.1
I	Solenoid Connector With 18" Lead Wire	Any ARO Coil	CDW	**2G501**	7.10	**6.75**	0.1
J	Solenoid Connector With 36" Molded Wire	Any ARO Coil	CHW	**2G503**	9.20	**8.74**	0.1

FOR REPLACEMENT PARTS—SEE PAGE A2 IN FRONT OF CATALOG

MANIFOLD STYLE SOLENOID AND PILOT VALVES



MANIFOLD STYLE SOLENOID AND PILOT VALVES

ALPHA Thin manifold valves are compact 4-way, 2- and 3-position valves for applications where the convenience of a manifold is desired. Manifold valves offer easy valve clustering and valve removal for replacement. Valves allow for controlling multiple machine functions with individual valves from one location. High flow capacity for packaging machines, indexing tables and industrial machines with air cylinders, motors, pumps and spray heads. Can be used with vacuum with external pilot supply.

One piece balanced spool offers quick response of 600 cycles per minute and high flow. Bonded and precision ground urethane-to-aluminum spool for excellent wear resistance. Optional speed controls are easily installed and offer improved machine precision. Manifold base is speed control ready for fast on-site installation.

Valves are prelubed, can be operated without air line lubrication. For use with air or inert gas. Solenoid may be rotated in any direction. Coil connectors available, order separately. ARO brand.

VALVE SPECIFICATIONS AND ORDERING DATA

Key	Port Size NPT Inches	Actuator/ Return	Coil	Max. Temp. Range	Operating Pressure PSI	Overall Dimensions* Length	Width	Height	ARO Model	Stock No.	List	Each	Shpg. Wt.
4-WAY, 2-POSITION VALVES													
A	1/8" or 1/4" manifold	Pilot/Spring	N/A	0-180°F	150	3 7/8"	1"	1 7/8"	A249PS	**2G433**	$33.75	**$32.10**	0.6
A	1/8" or 1/4" manifold	Pilot/Pilot	N/A	0-180	150	3 7/8	1	1 7/8	A249PD	**2G431**	32.25	**30.65**	0.8
B	1/8" or 1/4" manifold	Solenoid/Spring	120 VAC	0-180	150	3 7/8	1	3 9/16	A249SS-120-A	**2G445**	48.25	**45.85**	0.9
B	1/8" or 1/4" manifold	Solenoid/Spring	12 VDC	0-180	150	3 7/8	1	3 9/16	A249SS-012-D	**2G443**	48.25	**45.85**	1.0
C	1/8" or 1/4" manifold	Solenoid/Spring	†	0-180	150	3 7/8	1	3 9/16	A249SS-000-N	**2G441**	38.25	**36.35**	0.7
D	1/8" or 1/4" manifold	Solenoid/Solenoid	120 VAC	0-180	150	3 7/8	1	3 9/16	A249SD-120-A	**2G439**	76.00	**72.20**	0.9
D	1/8" or 1/4" manifold	Solenoid/Solenoid	12 VDC	0-180	150	3 7/8	1	3 9/16	A249SD-012-D	**2G437**	76.00	**72.20**	1.0
E	1/8" or 1/4" manifold	Solenoid/Solenoid	†	0-180	150	3 7/8	1	3 9/16	A249SD-000-N	**2G435**	56.00	**53.20**	0.7
4-WAY, 3 POSITION VALVES (Spring Centered, All Ports Blocked in Neutral)													
D	1/8" or 1/4" manifold	Solenoid/Solenoid	120 VAC	0-180	150	4	1	3 9/16	A349SD-120-A	**2G463**	93.00	**88.35**	0.9
D	1/8" or 1/4" manifold	Solenoid/Solenoid	12 VDC	0-180	150	4	1	3 9/16	A349SD-012-D	**2G461**	93.00	**88.35**	1.0
E	1/8" or 1/4" manifold	Solenoid/Solenoid	†	0-180	150	3 7/8	1	3 9/16	A349SD-000-N	**2G459**	73.00	**69.35**	0.8
4-WAY, 3 POSITION VALVES (Spring Centered, Inlet Port Blocked, Cylinder Ports Open in Neutral)													
D	1/8" or 1/4" manifold	Solenoid/Solenoid	120 VAC	0-180	150	4	1	3 9/16	A749SD-120-A	**2G481**	93.00	**88.35**	0.9
D	1/8" or 1/4" manifold	Solenoid/Solenoid	12 VDC	0-180	150	4	1	3 9/16	A749SD-012-D	**2G479**	93.00	**88.35**	1.0
E	1/8" or 1/4" manifold	Solenoid/Solenoid	†	0-180	150	3 7/8	1	3 9/16	A749SD-000-N	**2G477**	73.00	**69.35**	0.6

(*) Dimensions are for a single valve and do not include manifold. (†) Coils available separately. See following page.

MANIFOLD SPECIFICATIONS AND ORDERING DATA*

Description	Port Size NPT (Inches)	Cv*	Dimensions (Inches) L	W	H	ARO Model	Stock No.	List	Each	Shpg. Wt.
2-station valve manifold	1/8	1.2	3 5/8	4	2	118604-2	**2F823**	$38.00	**$36.10**	2.4
4-station valve manifold	1/8	1.2	5 5/8	4	2	118604-4	**2F825**	65.00	**61.75**	3.8
6-station valve manifold	1/8	1.2	7 5/8	4	2	118604-6	**2F827**	91.50	**86.95**	5.2
8-station valve manifold	1/8	1.2	9 5/8	4	2	118604-8	**2F829**	122.00	**115.90**	6.4
10-station valve manifold	1/8	1.2	11 5/8	4	2	118604-10	**2F821**	146.50	**139.20**	7.7
2-station valve manifold	1/4	1.2	3 5/8	4	2	118605-2	**2F833**	38.00	**36.10**	2.4
4-station valve manifold	1/4	1.2	5 5/8	4	2	118605-4	**2F835**	65.00	**61.75**	3.7
6-station valve manifold	1/4	1.2	7 5/8	4	2	118605-6	**2F837**	91.50	**86.95**	5.1
8-station valve manifold	1/4	1.2	9 5/8	4	2	118605-8	**2F839**	122.00	**115.90**	6.4
10-station valve manifold	1/4	1.2	11 5/8	4	2	118605-10	**2F831**	151.50	**143.95**	7.6
Station blanking kit	—	1.2	—	—	—	118612	**2F841**	11.00	**10.45**	0.1
Dual speed control kit	—	1.2	—	—	—	118618	**2F843**	17.75	**16.86**	0.1

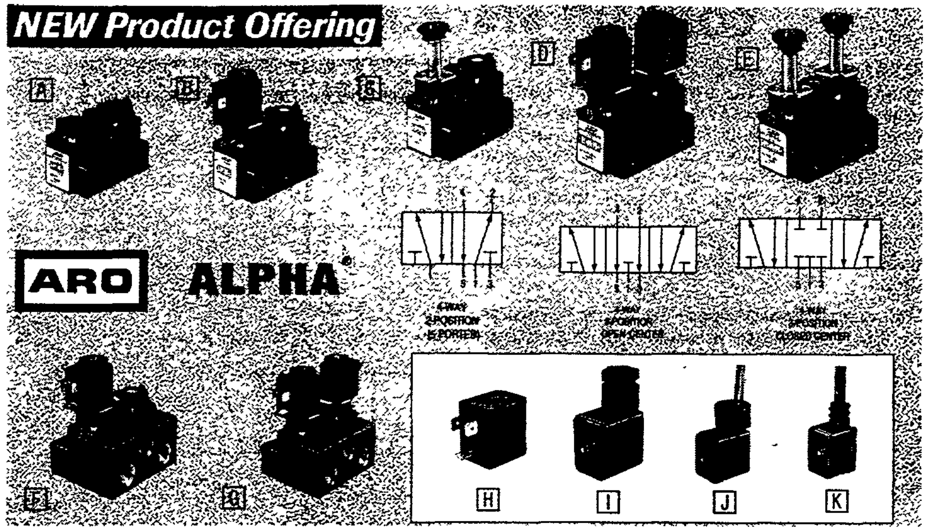
(*) Coefficient of Volume: The amount of water, in GPM, at standard conditions, which will pass through the valve at full open with a 1 PSI pressure drop. Figures shown are for 1/4" port. (‡) See following page for product photos and descriptions.

COMPACT BODY-PORTED SOLENOID AND PILOT VALVES

COMPACT BODY-PORTED SOLENOID AND PILOT VALVES

Body-Ported Alpha Valves are compact 4-way, 2- and 3-position valves for applications where only one valve is required. High flow capacity for use in packaging machines, indexing tables and industrial machines with power cylinders, motors, pumps and spray heads. For use with air or inert gas and vacuum with external pilot supply.

One piece balanced spool provides quick response of 600 cycles per minute and high flow. Bonded and precision ground urethane-to-aluminum spool for excellent wear resistance. 5-ported, 4-way valve enables use of speed controls at valve exhaust ports. Valves are prelubed, can be operated without air line lubrication. 50 TO 150 PSI operating pressure range. Solenoid may be rotated in any direction. Coil connectors available, order separately below. ARO brand.



VALVE SPECIFICATIONS AND ORDERING DATA

Key	Port Size NPT (Inches)	Actuator/ Return	Coil	Max. Temp. Range	Max. Operating Pressure	CFM**	Cv*	Dimensions (Inches) L	W	H	ARO Model	Stock No.	List	Each	Shpg. Wt.
4-WAY, 2-POSITION VALVES															
A	1/8	Pilot/Spring	N/A	0-180°F	150 PSI	32	0.9	2 15/16	1 15/16	1 13/16	A211PS	**2F957**	$33.25	**$31.60**	0.6
A	1/8	Pilot/Pilot	N/A	0-180°	150	32	0.9	2 15/16	1 15/16	1 13/16	A211PD	**2F955**	31.75	**30.20**	0.6
A	1/4	Pilot/Spring	N/A	0-180°	150	54	1.5	2 15/16	1 15/16	1 13/16	A212PS	**2F973**	33.25	**31.60**	0.6
A	1/4	Pilot/Pilot	N/A	0-180°	150	54	1.5	2 15/16	1 15/16	1 13/16	A212PD	**2F971**	31.75	**30.20**	0.6
B	1/8	Solenoid/Spring	120 VAC	0-180°	150	32	0.9	3 1/2	1 15/16	3 1/4	A211SS-120-A	**2F969**	47.75	**45.40**	0.8
B	1/8	Solenoid/Spring	12 VDC	0-180°	150	32	0.9	3 1/2	1 15/16	3 1/4	A211SS-012-D	**2F967**	47.75	**45.40**	0.8
B	1/4	Solenoid/Spring	120 VAC	0-180°	150	54	1.5	3 1/2	1 15/16	3 1/4	A212SS-120-A	**2F985**	47.75	**45.40**	0.8
B	1/4	Solenoid/Spring	12 VDC	0-180°	150	54	1.5	3 1/2	1 15/16	3 1/4	A212SS-012-D	**2F983**	47.75	**45.40**	0.8
C	1/8	Solenoid/Spring	†	0-180°	150	32	0.9	2 15/16	1 15/16	3 1/4	A211SS-000-N	**2F965**	37.75	**35.90**	0.7
C	1/4	Solenoid/Spring	†	0-180°	150	54	1.5	2 15/16	1 15/16	3 1/4	A212SS-000-N	**2F981**	37.75	**35.90**	0.7
D	1/8	Solenoid/Solenoid	120 VAC	0-180°	150	32	0.9	3 31/32	1 15/16	3 1/4	A211SD-120-A	**2F963**	75.50	**71.75**	1.0
D	1/8	Solenoid/Solenoid	12 VDC	0-180°	150	32	0.9	3 31/32	1 15/16	3 1/4	A211SD-012-D	**2F961**	75.50	**71.75**	1.0
D	1/4	Solenoid/Solenoid	120 VAC	0-180°	150	54	1.5	3 31/32	1 15/16	3 1/4	A212SD-120-A	**2F979**	75.50	**71.75**	1.0
D	1/4	Solenoid/Solenoid	12 VDC	0-180°	150	54	1.5	3 31/32	1 15/16	3 1/4	A212SD-012-D	**2F977**	75.50	**71.75**	1.0
E	1/8	Solenoid/Solenoid	†	0-180°	150	32	0.9	2 15/16	1 15/16	3 1/4	A211SD-000-N	**2F959**	55.50	**52.75**	0.7
E	1/4	Solenoid/Solenoid	†	0-180°	150	54	1.5	2 15/16	1 15/16	3 1/4	A212SD-000-N	**2F975**	55.50	**52.75**	0.7
F	3/8	Solenoid/Spring	120 VAC	0-180°	150	63	1.7	3 1/2	2 1/2	3 5/8	A213SS-120-A	**2G549**	67.00	**63.65**	1.3
G	3/8	Solenoid/Solenoid	120 VAC	0-180°	150	63	1.7	4	2 1/2	3 5/8	A213SD-120-A	**2G551**	94.00	**89.30**	1.3
4-WAY, 3-POSITION VALVES (Spring Centered, All Ports Blocked in Neutral)															
D	1/4	Solenoid/Solenoid	120 VAC	0-180°	150	50	1.4	3 31/32	1 15/16	3 1/4	A312SD-120-A	**2G451**	92.50	**87.90**	0.8
D	1/4	Solenoid/Solenoid	12 VDC	0-180°	150	50	1.4	3 31/32	1 15/16	3 1/4	A312SD-012-D	**2G449**	92.50	**87.90**	0.8
E	1/4	Solenoid/Solenoid	†	0-180°	150	50	1.4	2 15/16	1 15/16	3 1/4	A312SD-000-N	**2G447**	72.50	**68.90**	0.7
4-WAY, 3-POSITION VALVES (Spring Centered, Inlet Port Blocked, Cylinder Ports Open in Neutral)															
D	1/4	Solenoid/Solenoid	120 VAC	0-180°	150	50	1.4	3 31/32	1 15/16	3 1/4	A712SD-120-A	**2G469**	92.50	**87.90**	1.0
D	1/4	Solenoid/Solenoid	12 VDC	0-180°	150	50	1.4	3 31/32	1 15/16	3 1/4	A712SD-012-D	**2G467**	92.50	**87.90**	1.0
E	1/4	Solenoid/Solenoid	†	0-180°	150	50	1.4	2 15/16	1 15/16	3 1/4	A712SD-000-N	**2G465**	72.50	**68.90**	0.7

(*) Coefficient of Volume: The amount of water, in GPM, at standard conditions, which will pass through the valve at full open with a 1 PSI pressure drop.
(**) 90 PSI supply, 15 PSI pressure drop. (†) Coils available separately. See below.

COILS AND CONNECTORS FOR ALPHA VALVES

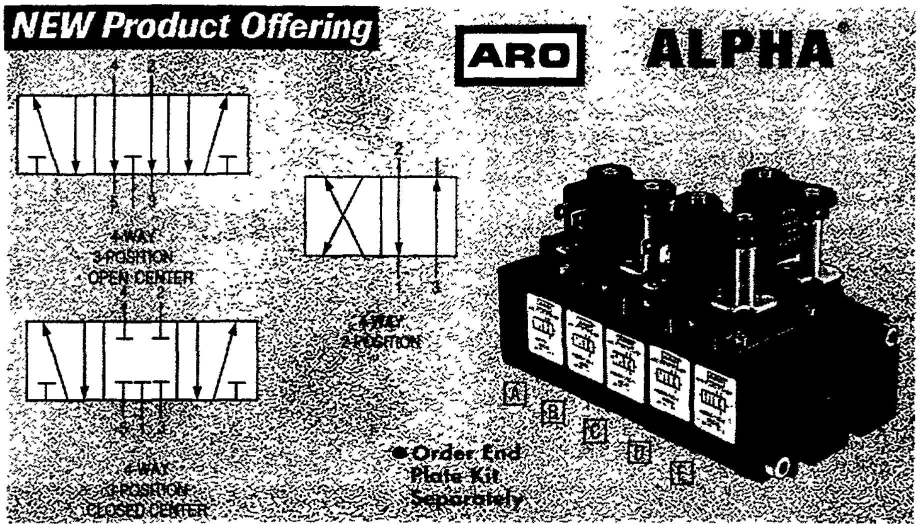
For use when coil voltage other than 120 VAC or 12 VDC is required (see chart below). All coils are Class F, rated for 100% duty cycle applications at 122°F (50°C) ambient. Total coil rating is 311°F, including heat rise. AC or DC coils can be interchanged on same solenoid stem. One connector required for each coil. Each connector is its own junction box, with molded connectors and gaskets to protect electrical connections. Design meets NEMA 4 classifications. ARO brand.

Key	Description	Voltage	ARO Model	Stock No.	List	Each	Shpg. Wt.
COILS FOR ARO VALVES							
H	Coil for Solenoid	240 VAC	116218-35	**2F789**	$10.00	**$9.50**	0.1
H	Coil for Solenoid	5 VDC	116218-37	**2F791**	10.00	**9.50**	0.1
H	Coil for Solenoid	24 VDC	116218-39	**2F793**	10.00	**9.50**	0.1
CONNECTORS FOR ARO COILS							
I	Solenoid Connector Without Lead Wires	Any ARO coil	CSN	**2G505**	5.40	**5.13**	0.1
J	Solenoid Connector with 18" Lead Wire	Any ARO coil	CDW	**2G501**	7.10	**6.75**	0.1
K	Solenoid Connector with 36" Molded Wire	Any ARO coil	CHW	**2G503**	9.20	**8.74**	0.1

COMPACT STACKING SOLENOID AND PILOT VALVES

ALPHA stacking valves are 4-way, 2- and 3-position valves for applications requiring multiple valve banks without additional height of valve manifold. Control machine functions with individual valves from one location. High flow capacity for use with packaging machines, indexing tables and industrial machines with air cylinders, motors, pumps and spray heads can be used with vacuum with external pilot supply.

One piece balanced spool for quick response of 600 cycles per minute and high flow. Bonded and precision ground urethane-to-aluminum spool for wear resistance. Valves are prelubed, can be operated without air line lubrication. For use with air or inert gas. Solenoid can be rotated in any direction. Coil connectors available, order separately below. ARO brand.



VALVE SPECIFICATIONS AND ORDERING DATA

Key	Port Size NPT (Inches)	Actuator/ Return	Coil	Max. Temp. Range	Max. Operating Pressure	CFM**	Cv*	L	W	H	ARO Model	Stock No.	List	Each	Shpg. Wt.
4-WAY, 2-POSITION VALVES															
A	1/4	Pilot/Spring	N/A	0-180°F	150 PSI	68	1.9	$3^1/_4$	1	$2^7/_{16}$	A222PS	**2F989**	$33.75	**$32.10**	0.6
A	1/4	Pilot/Pilot	N/A	0-180°	150	68	1.9	$3^1/_4$	1	$2^7/_{16}$	A222PD	**2F987**	32.25	**30.65**	0.6
B	1/4	Solenoid/Spring	120 VAC	0-180°	150	68	1.9	$3^{15}/_{32}$	1	$3^7/_8$	A222SS-120-A	**2G429**	48.25	**45.85**	0.8
B	1/4	Solenoid/Spring	12 VDC	0-180°	150	68	1.9	$3^{15}/_{32}$	1	$3^7/_8$	A222SS-012-D	**2F999**	48.25	**45.85**	0.8
C	1/4	Solenoid/Spring	†	0-180°	150	68	1.9	$3^1/_4$	1	$3^7/_8$	A222SS-000-N	**2F997**	38.25	**36.35**	0.7
D	1/4	Solenoid/Solenoid	120 VAC	0-180°	150	68	1.9	$3^{31}/_{32}$	1	$3^7/_8$	A222SD-120-A	**2F995**	76.00	**72.20**	1.0
D	1/4	Solenoid/Solenoid	12 VDC	0-180°	150	68	1.9	$3^{31}/_{32}$	1	$3^7/_8$	A222SD-012-D	**2F993**	76.00	**72.20**	1.0
E	1/4	Solenoid/Solenoid	†	0-180°	150	68	1.9	$3^1/_4$	1	$3^7/_8$	A222SD-000-N	**2F991**	56.00	**53.20**	0.7
4-WAY, 3-POSITION (Spring Centered, All Ports Blocked in Neutral)															
D	1/4	Solenoid/Solenoid	120 VAC	0-180°	150	61	1.7	$3^{31}/_{32}$	1	$3^7/_8$	A322SD-120-A	**2G457**	93.00	**88.35**	0.8
D	1/4	Solenoid/Solenoid	12 VDC	0-180°	150	61	1.7	$3^{31}/_{32}$	1	$3^7/_8$	A322SD-012-D	**2G455**	93.00	**88.35**	1.0
E	1/4	Solenoid/Solenoid	†	0-180°	150	61	1.7	$3^1/_4$	1	$3^7/_8$	A322SD-000-N	**2G453**	73.00	**69.35**	0.7
4-WAY, 3-POSITION (Spring Centered, Inlet Port Blocked, Ports Open in Neutral)															
D	1/4	Solenoid/Solenoid	120 VAC	0-180°	150	61	1.7	$3^{31}/_{32}$	1	$3^7/_8$	A722SD-120-A	**2G475**	93.00	**88.35**	1.0
D	1/4	Solenoid/Solenoid	12 VDC	0-180°	150	61	1.7	$3^{31}/_{32}$	1	$3^7/_8$	A722SD-012-D	**2G473**	93.00	**88.35**	1.0
E	1/4	Solenoid/Solenoid	†	0-180°	150	61	1.7	$3^1/_4$	1	$3^7/_8$	A722SD-000-N	**2G471**	73.00	**69.35**	0.7

Dimensions (Inches): L, W, H.

(*) Coefficient of Volume: The amount of water, in GPM, at standard conditions, which will pass through the valve at full open with 1 PSI pressure drop.
(**) 90 PSI supply, 15 PSI pressure drop. (†) Coils available separately. See below.

ACCESSORIES FOR COMPACT STACKING POWER VALVES*

Description	ARO Model	Stock No.	List	Each	Shpg. Wt.
Stacking End Plate Kit	MKP	**2G599**	$23.25	**$22.09**	0.5
Isolator Plate	PTN	**2G601**	2.90	**2.76**	0.1
Tall "L" Mounting Bracket	116807	**2F805**	16.00	**15.20**	0.7
Short "L" Mounting Bracket	116808	**2F807**	14.75	**14.01**	0.6
Tall "Z" Mounting Bracket	116809	**2F809**	22.25	**21.14**	0.7
Short "Z" Mounting Bracket	117987	**2F815**	18.25	**17.34**	0.9
Junction Box	117541	**2F811**	18.50	**17.58**	0.2
Blank Junction Box	117607	**2F813**	11.75	**11.16**	0.1

Description	Voltage	ARO Model	Stock No.	List	Each	Shpg. Wt.
COILS FOR ARO VALVES*						
Coil for Solenoid	240 VAC	116218-35	**2F789**	$10.00	**$9.50**	0.1
Coil for Solenoid	5 VDC	116218-37	**2F791**	10.00	**9.50**	0.1
Coil for Solenoid	24 VDC	116218-39	**2F793**	10.00	**9.50**	0.1
CONNECTORS FOR ARO COILS*						
Solenoid Connector Without Lead Wires	Any ARO coil	CSN	**2G505**	5.40	**5.13**	0.1
Solenoid Connector with 18" Lead Wire	Any ARO coil	CDW	**2G501**	7.10	**6.75**	0.1
Solenoid Connector with 36" Molded Wire	Any ARO coil	CHW	**2G503**	9.20	**8.74**	0.1

(*) See following page for product photos and descriptions.

STAINLESS STEEL BODY AIR CYLINDERS

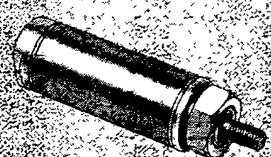
Speedaire stainless steel body air cylinders for pneumatic applications that do not require heavier duty, square head-tie rod cylinders. Available in four popular bore sizes, 7/16", 3/4", 1¹/₁₆" and 1½". Single and double acting units available in a variety of stroke lengths and mounting styles. **Cylinder is dimensionally interchangeable with leading manufacturers, allowing for model and mounting retrofit (see Interchange Guide).**

All units feature high-strength, double rolled Type 304 stainless steel barrels and aluminum alloy end caps. Piston rods are chrome-plated Type 303 stainless steel with rolled threads that are spin-riveted into aluminum alloy pistons for extended service life in high cycle applications. Sintered bronze bearing (except on Nos. 6W074-75, 6W087-88, 6W116-117 and 6W134-135) provides resistance to side load. Nitrile "U" cup piston and rod seals ensure low breakaway friction and leak free operation. Recommended for operating temperatures of -20° to 200°F.

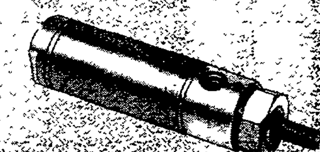
Note: Nose mount units include mounting nut. Pivot mount units include stationary pivot pin. Double end mount units include two mounting nuts. Pivot brackets, foot brackets and rod clevis ordered separately, see next page for ordering information.

SPEEDAIRE

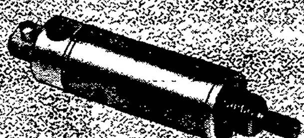
- Dimensionally interchangeable with leading manufacturers
- Type 304 stainless steel body
- Type 303 hard chrome-plated stainless steel piston rod
- 250 PSI operating pressure
- Pre-lubricated



Single Acting (Nose Mount)

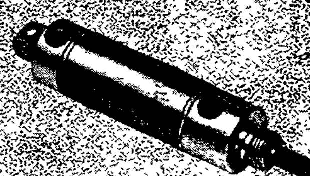


Double Acting (Nose Mount)



Single Acting (Pivot Mount)

Double Acting (Double End Mount)



Double Acting (Pivot Mount)

ACCESSORIES:

Pivot Bracket

Rod Clevis

Foot Bracket

POWER FACTORS

Bore	Extend	Retract
7/16"	0.15	0.12
3/4	0.44	0.39
1¹/₁₆	0.89	0.81
1½	1.77	1.62

Multiply air line pressure by Power Factor to determine approximate cylinder force output in pounds.

DIMENSION CHART

Bore Size	Thread Port Size	Thread Rod Size	Rod Dia.
7/16"	10-32	10-32	.18"
3/4	1/8NPT	1/4-28	.25
1¹/₁₆	1/8NPT	5/16-24	.31
1½	1/8NPT	7/16-20	.43

APPROXIMATE SPRING FORCES

Bore	Retraction Force	Extension Force
7/16"	1 lb.	2 lbs.
3/4	3 lbs.	6 lbs.
1¹/₁₆	3 lbs.	6 lbs.
1½	6 lbs.	12 lbs.

SINGLE ACTING (NOSE MOUNT)

Bore	Stroke	Stock No.	List	Each	Shpg. Wt.
7/16"	1/2"	6W074	$9.80	$9.70	0.1
7/16	1	6W075	10.70	10.58	0.1
7/16	1½	6W116	11.60	11.47	0.1
7/16	2	6W135	12.50	12.34	0.1
3/4	1	6W070	13.15	12.97	0.2
3/4	2	6W097	14.90	14.76	0.3
3/4	3	6W111	16.70	16.54	0.4
1¹/₁₆	1	6W071	14.85	14.70	0.3
1¹/₁₆	2	6W101	17.05	16.93	0.5
1¹/₁₆	3	6W124	19.30	19.12	0.6
1½	1	6W084	27.15	26.95	0.9
1½	2	6W110	30.50	30.30	1.0
1½	3	6W137	33.85	33.65	1.1

SINGLE ACTING (PIVOT MOUNT)

Bore	Stroke	Stock No.	List	Each	Shpg. Wt.
7/16"	1/2"	6W087	$12.75	$12.59	0.1
7/16	1	6W088	13.65	13.48	0.1
7/16	1½	6W117	14.55	14.37	0.1
7/16	2	6W134	15.45	15.23	0.1
3/4	1	6W078	15.95	15.79	0.3
3/4	2	6W098	17.75	17.54	0.3
3/4	3	6W133	19.55	19.35	0.5
1¹/₁₆	1	6W079	17.70	17.54	0.5
1¹/₁₆	2	6W104	19.90	19.73	0.6
1¹/₁₆	3	6W108	22.10	21.98	0.9
1½	1	6W092	30.90	30.65	1.0
1½	2	6W139	34.25	33.95	1.0
1½	3	6W138	37.60	37.40	1.5

CONTINUED ON NEXT PAGE

STAINLESS STEEL BODY AIR CYLINDERS

DOUBLE ACTING (NOSE MOUNT)

Bore	Stroke	Stock No.	List	Each	Shpg. Wt.
7/16"	1/2"	6W077	$13.00	**$12.85**	0.1
7/16	1	6W076	13.65	**13.48**	0.1
7/16	1 1/2	6W096	14.30	**14.09**	0.1
7/16	2	6W093	14.90	**14.72**	0.1
3/4	1	6W072	15.50	**15.31**	0.2
3/4	2	6W089	16.75	**16.57**	0.3
3/4	3	6W099	18.00	**17.84**	0.4
3/4	4	6W122	19.30	**19.10**	0.5
3/4	5	6W159	20.55	**20.36**	0.6
3/4	6	6W150	21.80	**21.58**	0.5
1 1/16	1	6W073	17.80	**17.60**	0.3
1 1/16	2	6W090	19.05	**18.90**	0.6
1 1/16	3	6W105	20.30	**20.12**	0.5
1 1/16	4	6W123	21.60	**21.39**	0.6
1 1/16	5	6W160	22.85	**22.67**	0.8
1 1/16	6	6W151	24.10	**23.93**	0.9
1 1/2	1	6W085	30.65	**30.45**	1.0
1 1/2	2	6W091	32.65	**32.40**	1.0
1 1/2	3	6W112	34.65	**34.45**	1.3
1 1/2	4	6W128	36.65	**36.35**	1.1
1 1/2	5	6W131	21.30	**21.11**	0.5
1 1/2	6	6W152	40.65	**40.35**	1.5

DOUBLE ACTING (DOUBLE END MOUNT)

Bore	Stroke	Stock No.	List	Each	Shpg. Wt.
7/16	1/2	6W119	15.95	**15.75**	0.1
7/16	1	6W095	16.60	**16.38**	0.1
7/16	1 1/2	6W121	17.20	**16.99**	0.1
7/16	2	6W136	17.85	**17.62**	0.1
3/4	1	6W103	18.80	**18.56**	0.2
3/4	2	6W120	20.05	**19.83**	0.3
3/4	3	6W131	21.30	**21.11**	0.5
3/4	4	6W132	22.60	**22.35**	0.5
3/4	5	6W153	23.85	**23.61**	0.6
3/4	6	6W142	25.10	**24.85**	0.6
1 1/16	1	6W109	21.40	**21.21**	0.5
1 1/16	2	6W127	22.70	**22.47**	0.6
1 1/16	3	6W140	23.95	**23.77**	0.9
1 1/16	4	6W141	25.20	**25.05**	0.9
1 1/16	5	6W154	26.45	**26.30**	1.0
1 1/16	6	6W143	27.70	**27.50**	0.9
1 1/2	1	6W115	34.85	**34.60**	1.0
1 1/2	2	6W144	36.85	**36.60**	1.2
1 1/2	3	6W145	38.85	**38.55**	1.1
1 1/2	4	6W146	40.85	**40.55**	1.5
1 1/2	5	6W155	42.85	**42.55**	1.5
1 1/2	6	6W149	44.85	**44.50**	1.5

DOUBLE ACTING (PIVOT MOUNT)

Bore	Stroke	Stock No.	List	Each	Shpg. Wt.
7/16"	1/2"	6W080	$15.70	**$15.49**	0.1
7/16	1	6W081	16.35	**16.16**	0.3
7/16	1 1/2	6W118	16.95	**16.73**	0.1
7/16	2	6W094	17.60	**17.36**	0.1
3/4	1	6W082	18.30	**18.07**	0.3
3/4	2	6W100	19.55	**19.33**	0.4
3/4	3	6W102	20.80	**20.58**	0.4
3/4	4	6W126	22.05	**21.82**	0.4
3/4	5	6W156	23.30	**23.10**	0.6
3/4	6	6W129	24.60	**24.32**	0.5
1 1/16	1	6W083	20.80	**20.60**	0.5
1 1/16	2	6W106	22.05	**21.86**	0.6
1 1/16	3	6W107	23.30	**23.16**	0.9
1 1/16	4	6W125	24.60	**24.32**	0.5
1 1/16	5	6W157	25.85	**25.65**	0.8
1 1/16	6	6W130	27.10	**26.90**	0.8
1 1/2	1	6W086	34.55	**34.25**	1.0
1 1/2	2	6W113	36.55	**36.25**	1.0
1 1/2	3	6W114	38.55	**38.00**	1.1
1 1/2	4	6W147	40.55	**40.30**	1.6
1 1/2	5	6W158	42.55	**42.25**	1.5
1 1/2	6	6W148	44.50	**44.20**	1.5

ACCESSORIES

Bore	Stock No.	List	Each	Shpg. Wt.
PIVOT BRACKET				
7/16"	6W166	$2.25	**$2.25**	0.1
3/4, 1 1/16	6W163	2.25	**2.25**	0.1
1 1/2	6W170	3.95	**3.90**	0.1
ROD CLEVIS WITH PIN AND NUT				
7/16	6W167	2.25	**2.25**	0.1
3/4	6W164	2.65	**2.60**	0.1
1 1/16	6W169	2.65	**2.60**	0.1
1 1/2	6W171	4.35	**4.32**	0.2
SINGLE ACTING FOOT BRACKET				
7/16	6W172	1.40	**1.39**	0.1
3/4	6W173	1.60	**1.55**	0.1
1 1/16	6W162	1.90	**1.89**	0.1
1 1/2	6W168	2.70	**2.63**	0.2
DOUBLE ACTING FOOT BRACKET				
7/16	6W165	1.40	**1.39**	0.1
3/4, 1 1/16	6W162	1.90	**1.89**	0.1
1 1/2	6W168	2.70	**2.63**	0.2

INTERCHANGE GUIDE

Bore	Stroke	Cylinder Type	Mounting Style	Stock No.	Model No. Bimba	Clippard	American	Humphrey	Parker
7/16"	1/2"	Single Acting	Nose	6W074	010.5	N/A*	437SNS1/2	N/A*	.44NSR0.5
			Pivot	6W087	010.5-P	N/A*	437SVS1/2	N/A*	.44PSR0.5
		Double Acting	Nose	6W077	010.5-D	N/A*	437DNS1/2	N/A*	.44DSR0.5
			Pivot	6W080	010.5-DP	N/A*	437DVS1/2	N/A*	.44DPSR0.5
			Double End	6W119	010.5-DX	N/A*	437DVS1/2 2	N/A*	.44DXPSR0.5
	1	Single Acting	Nose	6W075	011	N/A*	437SNS1	N/A*	.44NSR1
			Pivot	6W088	011-P	N/A*	437SVS1	N/A*	.44PSR1
		Double Acting	Nose	6W076	011-D	N/A*	437DNS1	N/A*	.44DSR1
			Pivot	6W081	011-DP	N/A*	437DVS1	N/A*	.44DPSR1
			Double End	6W095	011-DX	N/A*	437DVS1 2	N/A*	.44DXPSR1
	1 1/2	Single Acting	Nose	6W116	011.5	N/A*	437SNS1 1/2	N/A*	.44NSR1.5
			Pivot	6W117	011.5-P	N/A*	437SVS1 1/2	N/A*	.44PSR1.5
		Double Acting	Nose	6W096	011.5-D	N/A*	437DNS1 1/2	N/A*	.44DSR1.5
			Pivot	6W118	011.5-DP	N/A*	437DVS1 1/2	N/A*	.44DPSR1.5
			Double End	6W121	011.5-DX	N/A*	437DVS1 1/2 2	N/A*	.44DXPSR1.5
	2	Single Acting	Nose	6W135	012	N/A*	437SNS2	N/A*	.44NSR2
			Pivot	6W134	012-P	N/A*	437SVS2	N/A*	.44PSR2
		Double Acting	Nose	6W093	012-D	N/A*	437DNS2	N/A*	.44DSR2
			Pivot	6W094	012-DP	N/A*	437DVS2	N/A*	.44DPSR2
			Double End	6W136	012-DX	N/A*	437DVS2 2	N/A*	.44DXPSR2

(*) Not available.

CONTINUED ON NEXT PAGE

STAINLESS STEEL BODY AIR CYLINDERS

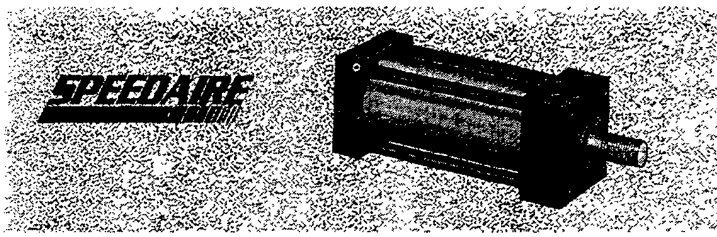
INTERCHANGE GUIDE

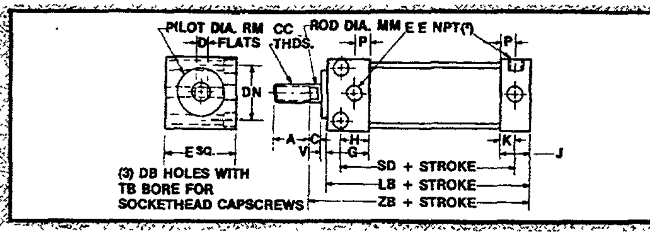
Bore	Stroke	Cylinder Type	Mounting Style	Stock No.	Model No. Bimba	Clippard	American	Humphrey	Parker
3/4"	1"	Single Acting	Nose	6W070	041	SSR-12-1	750SNS1	7-S-1	.75NSR1
			Pivot	6W078	041-P	USR-12-1	750SVS1	7-SP-1	.75PSR1
		Double Acting	Nose	6W072	041-D	SDR-12-1	750DNS1	7-D-1	.75DSR1
			Pivot	6W082	041-DP	UDR-12-1	750DVS1	7-DP-1	.75DPSR1
			Double End	6W103	041-DXP	UDR-12-1	750DVS1 2	7-DP-1	.75DXPSR1
	2"	Single Acting	Nose	6W097	042	SSR-12-2	750SNS2	7-S-2	.75NSR2
			Pivot	6W098	042-P	USR-12-2	750SVS2	7-SP-2	.75PSR2
		Double Acting	Nose	6W089	042-D	SDR-12-2	750DNS2	7-D-2	.75DSR2
			Pivot	6W100	042-DP	UDR-12-2	750DVS2	7-DP-2	.75DPSR2
			Double End	6W120	042-DXP	UDR-12-2	750DVS2 2	7-DP-2	.75DXPSR2
	3"	Single Acting	Nose	6W111	043	SSR-12-3	750SNS3	7-S-3	.75NSR3
			Pivot	6W133	043-P	USR-12-3	750SVS3	7-SP-3	.75PSR3
		Double Acting	Nose	6W099	043-D	SDR-12-3	750DNS3	7-D-3	.75DSR3
			Pivot	6W102	043-DP	UDR-12-3	750DVS3	7-DP-3	.75DPSR3
			Double End	6W131	043-DXP	UDR-12-3	750DVS3 2	7-DP-3	.75DXPSR3
	4"	Double Acting	Nose	6W122	044-D	SDR-12-4	750DNS4	7-D-4	.75DSR4
			Pivot	6W126	044-DP	UDR-12-4	750DVS4	7-DP-4	.75DPSR4
			Double End	6W132	044-DXP	UDR-12-4	750DVS4 2	7-DP-4	.75DXPSR4
	5"	Double Acting	Nose	6W159	045-D	SDR-12-5	750DNS5	7-D-5	.75DSR5
			Pivot	6W156	045-DP	UDR-12-5	750DVS5	7-DP-5	.75DPSR5
			Double End	6W153	045-DXP	UDR-12-5	750DVS5 2	7-DP-5	.75DXPSR5
	6"	Double Acting	Nose	6W150	046-D	SDR-12-6	750DNS6	7-D-6	.75DSR6
			Pivot	6W129	046-DP	UDR-12-6	750DVS6	7-DP-6	.75DPSR6
			Double End	6W142	046-DXP	UDR-12-6	750DVS6 2	7-DP-6	.75DXPSR6
1¹/₁₆"	1"	Single Acting	Nose	6W071	091	SSR-17-1	1062SNS1	6-S-1	1.06NSR1
			Pivot	6W079	091-P	USR-17-1	1062SVS1	6-SP-1	1.06PSR1
		Double Acting	Nose	6W073	091-D	SDR-17-1	1062DNS1	6-D-1	1.06DSR1
			Pivot	6W083	091-DP	UDR-17-1	1062DVS1	6-DP-1	1.06DPSR1
			Double End	6W109	091-DX	UDR-17-1	1062DVS1 2	6-DP-1	1.06DXPSR1
	2"	Single Acting	Nose	6W101	092	SSR-17-2	1062SNS2	6-S-2	1.06NSR2
			Pivot	6W104	092-P	USR-17-2	1062SVS2	6-SP-2	1.06PSR2
		Double Acting	Nose	6W090	092-D	SDR-17-2	1062DNS2	6-D-2	1.06DSR2
			Pivot	6W106	092-DP	UDR-17-2	1062DVS2	6-DP-2	1.06DPSR2
			Double End	6W127	092-DX	UDR-17-2	1062DVS2 2	6-DP-2	1.06DXPSR2
	3"	Single Acting	Nose	6W124	093	SSR-17-3	1062SNS3	6-S-3	1.06NSR3
			Pivot	6W108	093-P	USR-17-3	1062SVS3	6-SP-3	1.06PSR3
		Double Acting	Nose	6W105	093-D	SDR-17-3	1062DNS3	6-D-3	1.06DSR3
			Pivot	6W107	093-DP	UDR-17-3	1062DVS3	6-DP-3	1.06DPSR3
			Double End	6W140	093-DX	UDR-17-3	1062DVS3 2	6-DP-3	1.06DXPSR3
	4"	Double Acting	Nose	6W123	094-D	SDR-17-4	1062DNS4	6-D-4	1.06DSR4
			Pivot	6W125	094-DP	UDR-17-4	1062DVS4	6-DP-4	1.06DPSR4
			Double End	6W141	094-DX	UDR-17-4	1062DVS4 2	6-DP-4	1.06DXPSR4
	5"	Double Acting	Nose	6W160	095-D	SDR-17-5	1062DNS5	6-D-5	1.06DSR5
			Pivot	6W157	095-DP	UDR-17-5	1062DVS5	6-DP-5	1.06DPSR5
			Double End	6W154	095-DX	UDR-17-5	1062DVS5 2	6-DP-5	1.06DXPSR5
	6"	Double Acting	Nose	6W151	096-D	SDR-17-6	1062DNS6	6-D-6	1.06DSR6
			Pivot	6W130	096-DP	UDR-17-6	1062DVS6	6-DP-6	1.06DPSR6
			Double End	6W143	096-DX	UDR-17-6	1062DVS6 2	6-DP-6	1.06DXPSR6
1¹/₂"	1"	Single Acting	Nose	6W084	171	SSR-24-1	1500SNS1	5-S-1	1.50NSR1
			Pivot	6W092	171-P	CSR-24-1	1500SVS1	5-SP-1	1.50PSR1
		Double Acting	Nose	6W085	171-D	SDR-24-1	1500DNS1	5-D-1	1.50DSR1
			Pivot	6W086	171-DP	CDR-24-1	1500DVS1	5-DP-1	1.50DPSR1
			Double End	6W115	171-DX	EDR-24-1	1500DVS1 2	5-DP-1	1.50DXSR1
	2"	Single Acting	Nose	6W110	172	SSR-24-2	1500SNS2	5-S-2	1.50NSR2
			Pivot	6W139	172-P	CSR-24-2	1500SVS2	5-SP-2	1.50PSR2
		Double Acting	Nose	6W091	172-D	SDR-24-2	1500DNS2	5-D-2	1.50DSR2
			Pivot	6W113	172-DP	CDR-24-2	1500DVS2	5-DP-2	1.50DPSR2
			Double End	6W144	172-DX	EDR-24-2	1500DVS2 2	5-DP-2	1.50DXSR2
	3"	Single Acting	Nose	6W137	173	SSR-24-3	1500SNS3	5-S-3	1.50NSR3
			Pivot	6W138	173-P	CSR-24-3	1500SVS3	5-SP-3	1.50PSR3
		Double Acting	Nose	6W112	173-D	SDR-24-3	1500DNS3	5-D-3	1.50DSR3
			Pivot	6W114	173-DP	CDR-24-3	1500DVS3	5-DP-3	1.50DPSR3
			Double End	6W145	173-DX	EDR-24-3	1500DVS3 2	5-DP-3	1.50DXSR3
	4"	Double Acting	Nose	6W128	174-D	SDR-24-4	1500DNS4	5-D-4	1.50DSR4
			Pivot	6W147	174-DP	CDR-24-4	1500DVS4	5-DP-4	1.50DPSR4
			Double End	6W146	174-DX	EDR-24-4	1500DVS4 2	5-DP-4	1.50DXSR4
	5"	Double Acting	Nose	6W161	175-D	SDR-24-5	1500DNS5	5-D-5	1.50DSR5
			Pivot	6W158	175-DP	CDR-24-5	1500DVS5	5-DP-5	1.50DPSR5
			Double End	6W155	175-DX	EDR-24-5	1500DVS5 2	5-DP-5	1.50DXSR5
	6"	Double Acting	Nose	6W152	176-D	SDR-24-6	1500DNS6	5-D-6	1.50DSR6
			Pivot	6W148	176-DP	CDR-24-6	1500DVS6	5-DP-6	1.50DPSR6
			Double End	6W149	176-DX	EDR-24-6	1500DVS6 2	5-DP-6	1.50DXSR6

FOR REPLACEMENT PARTS—
SEE PAGE A2 IN FRONT OF CATALOG

SMALL BORE TIE-ROD AND COMPACT AIR CYLINDERS

SMALL BORE AIR CYLINDERS





Designed for small bore applications, these Speedaire double-acting pneumatic cylinders are made of durable aluminum and outperform the round, "throw-away" type cylinders. Unique design provides for easy repairability, bolt-thru mounting and the flexibility of attaching any one of six mounts (listed on opposite page) without removing bolts or need for retorquing. Available in 3/4" bore with 1/2 to 2" strokes and in 1⅛" bore with 1/2 to 3" strokes.

Polished chrome plated steel piston rods have 100,000 PSI minimum yield. End caps are made of 40,000 PSI minimum yield 6061-T6 aluminum. Rod bushing is 30,000 PSI cast iron for maximum strength and Teflon coated for permanent lubrication and low friction.

Tube is made of 35,000 PSI minimum yield aluminum alloy and the ID is hard anodic coated for file hard (60RC) resistance to scoring and wear. Tube end seals are made of heat resistant fiber with nitrate base elastomer as a binder. Lightweight piston is made of 40,000 PSI minimum yield 6061-T6 aluminum and designed to work with hard coated ID of the tube.

Buna N lip type rod and piston seals provide low friction characteristics, positive sealing, and long life. Tie rods are made of stressproof steel to maintain compression on tube end seals. Silver and black finish. Speedaire brand.

Bore	Rod Dia.	PUSH FORCES IN LBS. @ PSI 50	100	150	200	Piston Area	PULL FORCES IN LBS. @ PSI* 50	100	150	200	Piston Area
3/4	5/16	22.0	44.1	66.1	88.2	.441	18.2	36.5	54.7	73.0	.365
1⅛	3/8	49.8	99.5	149.2	199.0	.995	44.1	88.3	132.4	176.6	.883

Bore	A	C	CC	D	DB	DN	E	EE	G	H	J	K	LB	MM	P	RM	SD	TB	V	ZB
3/4	5/8	1/4	1/4-28	1/4	11/64	5/8	1	1/8	7/8	11/16	5/8	3/8	2¼	5/16	5/16	0.562	1 13/16	9/32	1/8	2⅝
1⅛	5/8	1/4	3/8-24	5/16	13/64	1	1½	1/8	7/8	5/8	5/8	3/8	2¼	3/8	5/16	0.750	1¾	21/64	1/8	2⅝

Bore Dia.	Stroke	Stock No.	List	Each	Shpg. Wt.	Bore Dia.	Stroke	Stock No.	List	Each	Shpg. Wt.
3/4"	1/2"	1A424	$45.60	$41.00	0.5	1-1/8"	1/2"	1A428	$49.80	$44.90	1.0
3/4	1	1A425	45.60	41.00	0.5	1-1/8	1	1A429	49.80	44.90	1.0
3/4	1½	1A426	46.50	41.85	0.5	1-1/8	2	1A430	51.30	46.25	1.1
3/4	2	1A427	46.50	41.85	0.5	1-1/8	3	1A431	52.90	47.70	1.1

(*) Diameters are deducted from piston area and force table under "Pull Forces."

COMPACT AIR CYLINDERS

Speedaire compact, high-performance pneumatic cylinders are designed for use in clamping devices, parts ejection and injection molding machines, as well as many robotic circuits. 150 PSI maximum operating pressure. Attachable mounts are listed on opposite page.

Corrosion resistant aluminum alloy heads and caps.

Pre-stressed tie rods to insure compression on tube end seals.

Aluminum tube is hard anodic coated on inside diameter for file hard (60RC) resistance to scoring and wear.

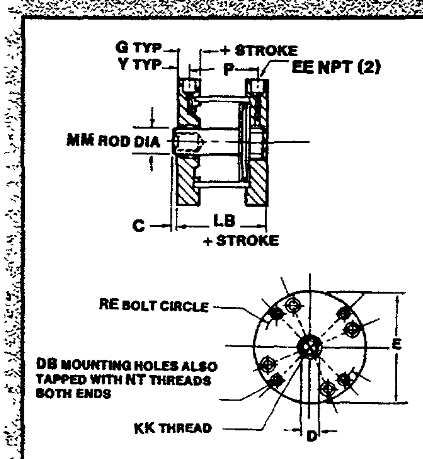
Hard, chrome-plated piston rod is ground and polished steel of 100,000 PSI minimum yield.

Strong, lightweight aluminum alloy piston has excellent wear characteristics against the hard coated ID tube.

Quad ring seal on piston and bushing combines positive sealing with minimal friction and long life

Cast-iron, Teflon coated rod bushing for maximum wear, permanent lubrication, and low friction.

Piston is threaded to the rod and retained with lock nut. Rod is then staked over the lock nut to ensure maximum cycle life.



Bore	C	D	DB	E	EE	G	KK	LB	MM	NT	P	RE	Y
3/4	1/8	1/4	#6	1½	10-32	.312	#10-32	13/16	5/16	#8-32	9/16	1 7/32	1/8
1⅛	1/8	7/16	#6	2	1/8	.500	3/8-24	1⅛	1/2	#10-32	5/8	1 11/16	1/4
1½	1/8	1/2	#10	2⅝	1/8	.515	7/16-20	1 13/64	5/8	1/4-20	45/64	2 3/16	1/4
2	1/8	1/2	#10	3⅛	1/8	.515	7/16-20	1 13/64	5/8	1/4-20	45/64	2 11/16	1/4

COMPACT AIR CYLINDERS

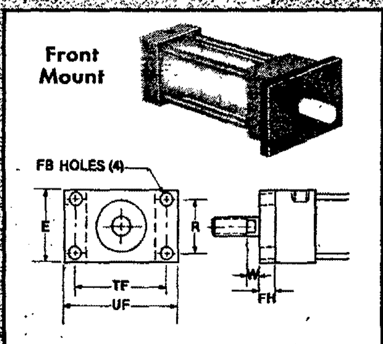
Bore	PUSH FORCES IN LBS. @ PSI 50	100	150	Piston Area Sq.-In.	PULL FORCES IN LBS. @ PSI 50	100	150	Piston Area Sq.-In.
3/4"	22	44	66	.441	18	37	55	.365
1⅛	50	100	149	.995	44	88	132	.883
1½	88	177	266	1.770	73	146	220	1.463
2	157	314	471	3.140	141	283	425	2.833

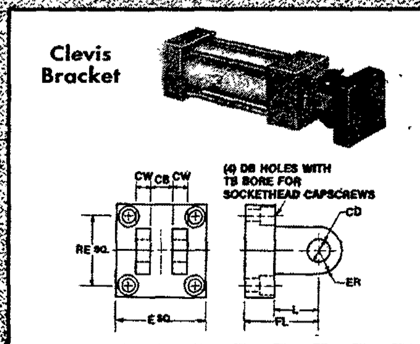
Bore Dia. x Stroke	Stock No.	List	Each	Shpg. Wt.	Bore Dia. x Stroke	Stock No.	List	Each	Shpg. Wt.
3/4" x 1/4"	2A702	$35.35	$31.75	0.1	1½ x 1/4	2A708	$51.10	$46.05	1.0
3/4 x 1/2	2A703	35.70	32.10	0.1	1½ x 1/2	2A709	52.15	47.00	1.0
3/4 x 1	2A704	36.40	32.70	0.1	1½ x 1	2A710	54.20	48.85	1.0
1⅛ x 1/4	2A705	39.90	35.85	0.1	2 x 1/4	2A711	54.60	49.25	1.2
1⅛ x 1/2	2A706	40.50	36.35	0.1	2 x 1/2	2A712	55.70	50.25	1.2
1⅛ x 1	2A707	41.55	37.30	0.1	2 x 1	2A713	57.75	52.05	1.1

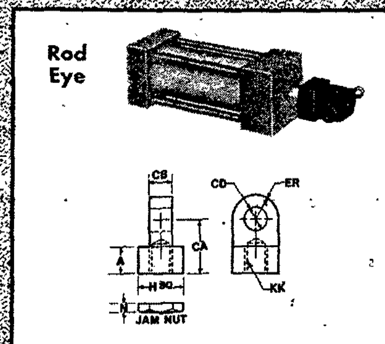
END MOUNTS FOR SMALL BORE TIE-ROD AND COMPACT AIR CYLINDERS

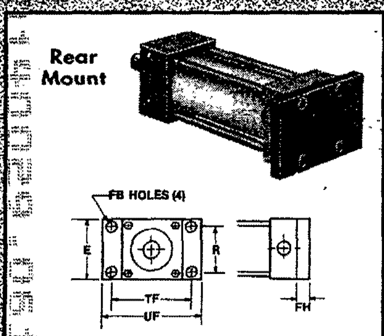
SPEEDAIRE END MOUNTS FOR SMALL BORE CYLINDERS

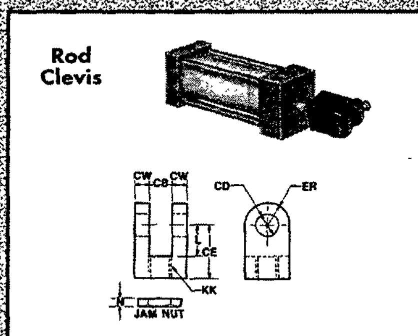
● All Mounts Can Be Added Without Removing Tie Bolts ● Includes All Mounting Hardware

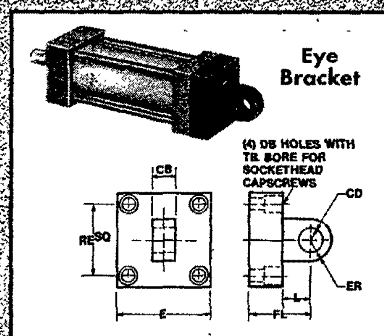












FRONT FLANGE MOUNT

Bore	Stock No.	E	FB	FH	R	TF	UF	W
3/4"	1A436	1"	7/32"	1/4"	1/2"	1 1/2"	2"	1/8"
1 1/8	1A442	1 1/2	7/32	1/4	1	2	2 1/2	1/8

Bore	Stock No.	List	Each	Shpg. Wt.
3/4"	1A436	$6.20	$5.62	0.1
1 1/8	1A442	6.20	5.62	0.3

REAR FLANGE MOUNT

Bore	Stock No.	E	FB	FH	R	TF	UF
3/4"	1A437	1"	7/32"	1/4"	1/2"	1 1/2"	2"
1 1/8	1A443	1 1/2	7/32	1/4	1	2	2 1/2

Bore	Stock No.	List	Each	Shpg. Wt.
3/4"	1A437	$6.20	$5.62	0.1
1 1/8	1A443	6.20	5.62	0.3

CLEVIS BRACKET

Bore	Stock No.	CB	CD	CW	DB	E	ER	FL	L	RE	TB
3/4"	1A432	1/4"	1/4"	1/4"	1/4"	1"	1/4"	1 1/8"	5/8"	3/4"	1/4"
1 1/8	1A438	3/8	3/8	1/4	21/64	1 1/2	3/8	1 1/8	5/8	1 1/8	5/16

Bore	Stock No.	List	Each	Shpg. Wt.
3/4"	1A432	$8.55	$7.70	0.2
1 1/8	1A438	9.15	8.29	0.4

ROD CLEVIS

Bore	Stock No.	CB	CD	CE	CW	ER	KK	L	N
3/4"	1A434	1/4"	1/4"	13/16"	1/8"	1/4"	1/4-28	1/2"	5/32"
1 1/8	1A440	3/8	3/8	7/8	3/16	3/8	3/8-24	1/2	7/32

Bore	Stock No.	List	Each	Shpg. Wt.
3/4"	1A434	$6.40	$5.76	0.1
1 1/8	1A440	6.70	6.09	0.3

ROD EYE

Bore	Stock No.	A	CA	CB	CD	ER	H	KK	N
3/4"	1A433	5/16"	3/4"	1/4"	1/4"	1/4"	1/2"	1/4-28	5/32"
1 1/8	1A439	7/16	7/8	3/8	3/8	3/8	3/4	3/8-24	7/32

Bore	Stock No.	List	Each	Shpg. Wt.
3/4"	1A433	$6.40	$5.76	0.1
1 1/8	1A439	6.70	6.09	0.3

EYE BRACKET

Bore	Stock No.	CB	CD	DB	E	ER	FL	L	RE	TB
3/4"	1A435	1/4"	1/4"	1/4"	1"	1/4"	15/16"	7/16"	3/4"	1/8"
1 1/8	1A441	3/8	3/8	21/64	1 1/2	3/8	1 1/8	5/8	1 1/8	5/16

Bore	Stock No.	List	Each	Shpg. Wt.
3/4"	1A435	$8.25	$7.45	0.2
1 1/8	1A441	8.55	7.74	0.4

END MOUNTS FOR COMPACT AIR CYLINDERS

ROD CLEVIS

Bore Dia.	Stock No.	List	Each	Shpg. Wt.
3/4"	**2A716**	$6.40	**$5.76**	0.1
1 1/8	**2A719**	6.70	**6.05**	0.1
1 1/2	**2A722**	7.20	**6.88**	0.1
2	**2A725**	7.20	**6.88**	0.1

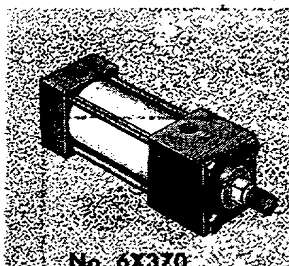
EYE BRACKETS

Bore Dia.	Stock No.	List	Each	Shpg. Wt.
3/4"	**2A715**	$11.00	**$9.87**	0.1
1 1/8	**2A718**	15.30	**13.73**	0.1
1 1/2	**2A721**	19.80	**18.89**	0.1
2	**2A724**	21.85	**20.83**	0.1

CLEVIS MOUNT & BRACKET

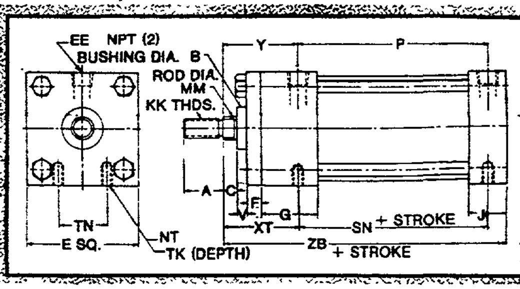
Bore Dia.	Stock No.	List	Each	Shpg. Wt.
3/4"	**2A714**	$11.80	**$10.62**	0.1
1 1/8	**2A717**	15.30	**13.73**	0.1
1 1/2	**2A720**	21.05	**20.08**	0.1
2	**2A723**	22.00	**21.00**	0.2

LARGE BORE AIR CYLINDERS



- Meets all JIC and NFPA standards
- Permanently lubricated
- 250 PSI maximum operating pressure
- 400 PSI hydraulic (nonshock)
- Bottom flush mounting holes standard

No. 6X370



Heavy-duty double acting Speedaire cylinders meet all Joint Industry Conference (JIC) and National Fluid Power Association (NFPA) standards. Unique design provides for easy addition of mounts without removing tie bolts or need for re-torquing. 8, 10, 12" stroke cylinders have adjustable cushion seals on both ends to absorb shocks, minimize noise and increase cylinder life. Seals are self-centering and pressure loaded for positive cushioning action. When pressure is reversed, the seal allows pressure to bypass and act on full piston area for fast breakaway.

Constructed of lightweight, high tensile strength aluminum. Polished chrome plated steel piston rods have 100,000 PSI minimum yield. Tie rods are of stress proof steel and torqued to maintain compression on end seals. Buna N piston lip seals and urethane rod lip seals provide low friction characteristics and long life.

Cylinders can be easily mounted with optional brackets listed on opposite page. Silver and black finish. Speedaire brand.

Bore	Rod Dia. (In.)	PUSH FORCES IN LBS. @ PSI 50	100	150	200	Piston Area, Sq. In.	PULL FORCES* IN LBS. @ PSI 50	100	150	200	Piston Area, Sq. In.
1 1/2"	5/8	88	177	266	353	1.77	73	146	220	292	1.463
2	5/8	157	314	471	628	3.14	141	283	425	567	2.833
2 1/2	5/8	245	491	737	982	4.91	230	460	691	921	4.663
3 1/4	1	415	830	1245	1659	8.30	375	751	1127	1502	7.515
4	1	628	1257	1886	2513	12.57	589	1178	1768	2356	11.785
6	1 3/8	1413	2827	4240	5654	26.27	1339	2678	4018	5357	26.785

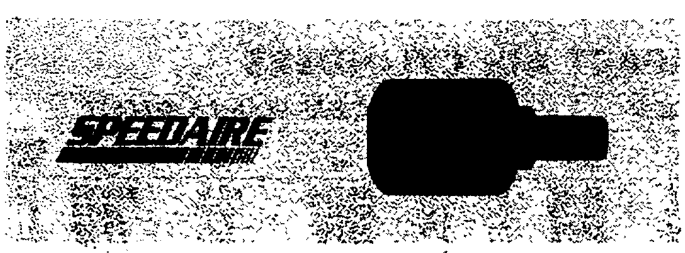
(*) Rod diameters are deducted from piston area and force table on return or pull.

Bore	A	B	C	E	EE	F	G	J	KK	MM	NT	P	SN	TK	TN	V	XT	Y	ZB
1 1/2"	3/4"	1 1/8"	3/8"	2"	1/4"	3/8"	1 1/2"	1"	1/2"-20	5/8"	1/4"-20	2 1/8"	2 1/4"	3/8"	5/8"	1/4"	1 15/16"	2"	4 5/8"
2	3/4	1 1/8	3/8	2 1/2	1/4	3/8	1 1/2	1	1/2-20	5/8	5/16-18	2 1/8	2 1/4	1/2	7/8	1/4	1 15/16	2	4 5/8
2 1/2	3/4	1 1/8	3/8	3	1/4	3/8	1 1/2	1	1/2-20	5/8	3/8-16	2 1/4	2 3/8	5/8	1 1/4	1/4	1 15/16	2	4 3/4
3 1/4	1 1/8	1 1/2	1/2	3 3/4	3/8	5/8	1 3/4	1 1/4	3/4-16	1	1/2-13	2 5/8	2 5/8	3/4	1 1/2	1/4	2 7/16	2 7/16	5 5/8
4	1 1/8	1 1/2	1/2	4 1/2	3/8	5/8	1 3/4	1 1/4	3/4-16	1	1/2-13	2 5/8	2 5/8	3/4	2 1/16	1/4	2 7/16	2 7/16	5 5/8
6	1 5/8	2	5/8	6 1/2	1/2	5/8	2	1 1/2	1-14	1 3/8	3/4-10	3	3 1/8	1 1/8	3 1/4	3/8	2 13/16	2 7/8	6 5/8

Bore Dia.	Stroke*	Stock No.	List	Each	Shpg. Wt.
1 1/2"	1"	6X370	$85.75	**$82.15**	2.4
1 1/2	2	6X371	88.45	**84.80**	2.6
1 1/2	3	6X372	91.20	**87.40**	2.6
1 1/2	4	6X373	93.90	**90.10**	3.0
1 1/2	5	6X374	96.65	**92.70**	3.1
1 1/2	6	6X375	99.40	**95.35**	3.3
1 1/2	8*	6X376	137.15	**131.40**	3.9
1 1/2	10*	6X377	142.60	**136.65**	4.2
2	1	6X378	98.50	**94.45**	3.2
2	2	6X379	101.40	**97.25**	3.4
2	3	6X380	104.40	**100.20**	3.6
2	4	6X381	107.35	**103.05**	3.9
2	5	6X382	110.30	**105.90**	4.2
2	6	6X383	113.25	**108.75**	4.4
2	8*	6X384	151.40	**145.25**	5.2
2	10*	6X385	157.35	**151.00**	5.4
2 1/2	1	6X386	107.00	**102.75**	4.3
2 1/2	2	6X387	110.30	**106.00**	4.6
2 1/2	3	6X388	113.55	**109.10**	4.8
2 1/2	4	6X389	116.90	**112.30**	5.0
2 1/2	5	6X390	120.20	**115.50**	5.2
2 1/2"	6"	6X391	$123.45	**$118.65**	5.7
2 1/2	8*	6X392	162.30	**156.00**	6.3
2 1/2	10*	6X393	168.85	**162.25**	6.5
3 1/4	2	6X394	150.70	**143.00**	8.9
3 1/4	4	6X395	160.50	**152.50**	9.8
3 1/4	6	6X396	170.30	**162.00**	11.0
3 1/4	8*	6X397	220.05	**208.50**	12.0
3 1/4	10*	6X398	229.85	**217.75**	13.0
4	2	6X399	174.20	**165.75**	12.0
4	4	6X400	184.55	**175.50**	13.0
4	6	6X467	194.90	**185.25**	14.0
4	8*	6X468	245.20	**232.50**	15.0
4	10*	6X469	255.60	**242.50**	16.0
6	4	2W489	338.60	**321.75**	25.0
6	6	2W490	355.95	**338.50**	27.0
6	8*	2W491	421.25	**399.50**	26.0
6	10*	2W492	438.65	**416.50**	31.0
6	12*	2W493	456.00	**433.00**	32.0

(*) 8, 10, and 12" stroke cylinders have cushion seals on both ends to absorb shocks.

SPEEDAIRE SELF-ALIGNING COUPLERS



- Designed to prevent binding of cylinder caused by misalignment
- Permits greater tolerance between center-line of cylinder and mating part
- Speedaire brand

Thread Sizes	Overall Dim. (In.) Length	Dia.	Max. Operating Force (Lbs.)	Stock No.	List	Each	Shpg. Wt.
1/2"-20	2 3/4	1 1/4	3500	**1A313**	$31.10	**$28.25**	0.5
3/4-16	3 7/16	1 3/4	8500	**1A314**	41.75	**38.05**	1.2
1-14	4 9/16	2 1/2	16,000	**1A315**	64.15	**60.65**	3.0

S

END MOUNTS FOR TIE-ROD AIR CYLINDERS

STEEL FRONT/REAR FLANGE MOUNT

Bore	Stock No.	Rod. Dia.	FB	FH	R	TF	UF	W
1 1/2"	6X470	5/8"	5/16"	3/8"	1.43"	2 3/4"	3 3/8"	5/8"
2	6X472	5/8	3/8	3/8	1.84	3 3/8	4 1/8	5/8
2 1/2	6X474	5/8	3/8	3/8	2.19	3 7/8	4 5/8	5/8
3 1/4	6X478	1	7/16	5/8	2.76	4 11/16	5 1/2	3/4
4	6X480	1	7/16	5/8	3.32	5 7/16	6 1/4	3/4
6	1A016	1 3/8	9/16	3/4	4.88	7 5/8	8 5/8	7/8

Bore	Stock No.	List	Each	Shpg. Wt.
1 1/2"	**6X470**	$8.25	**$7.86**	0.6
2	**6X472**	8.70	**8.35**	1.0
2 1/2	**6X474**	10.90	**10.42**	1.4
3 1/4	**6X478**	15.40	**14.57**	3.7
4	**6X480**	14.50	**13.78**	5.1
6	**1A016**	33.00	**31.50**	12.0

ANODIZED ALUMINUM SIDE LUG MOUNT

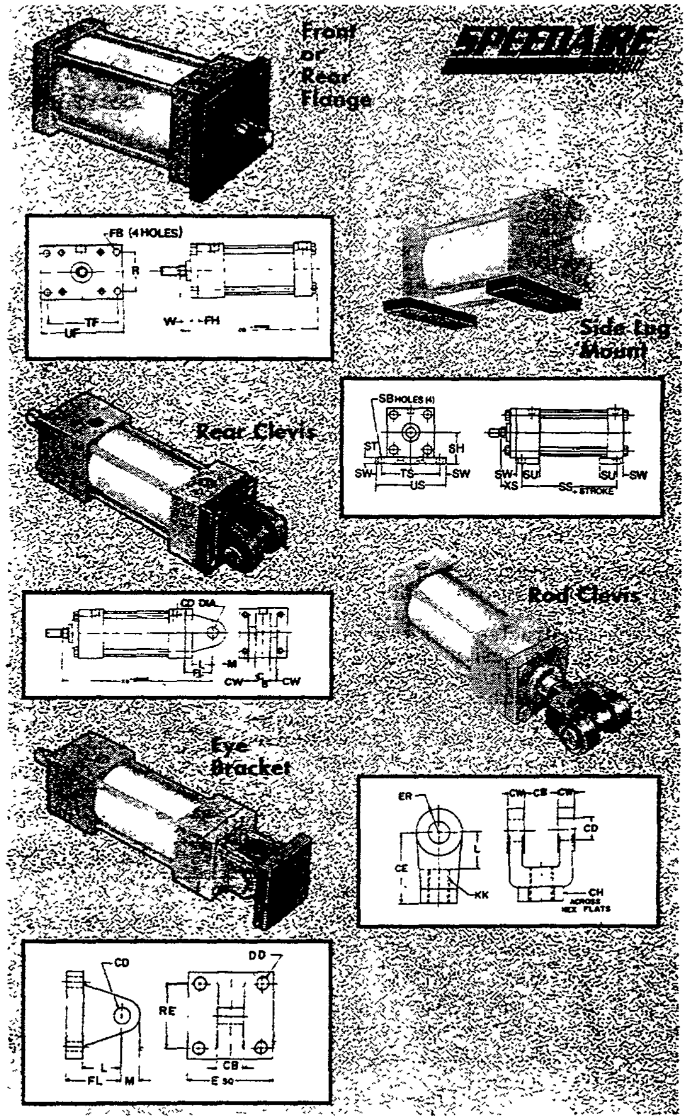
Bore	Stock No.	SB	SH	SS	ST	SU	SW	TS	US	XS
1 1/2"	1A254	7/16"	1 1/4"	2 7/8"	1/4"	1 1/8"	3/8"	2 3/4"	3 1/2"	1 3/8"
2	1A255	7/16	1 1/2	2 7/8	1/4	1 1/8	3/8	3 1/4	4	1 3/8
2 1/2	1A256	7/16	1 7/8	3	3/8	1 1/8	3/8	3 3/4	4 1/2	1 3/8
3 1/4	1A257	9/16	2 3/8	3 1/4	1/2	1 1/4	1/2	4 3/4	5 3/4	1 7/8
4	1A258	9/16	2 3/4	3 1/4	1/2	1 1/4	1/2	5 1/2	6 1/2	1 7/8
6	1A259	13/16	4	3 5/8	3/4	1 5/16	11/16	7 7/8	9 1/4	2 5/16

Bore	Stock No.	List	Each	Shpg. Wt.
1 1/2"	**1A254**	$13.30	**$12.50**	0.2
2	**1A255**	10.70	**10.10**	0.3
2 1/2	**1A256**	11.90	**11.25**	0.5
3 1/4	**1A257**	24.75	**23.36**	1.1
4	**1A258**	21.10	**19.99**	1.2
6	**1A259**	57.35	**54.30**	3.4

CAST IRON CLEVIS MOUNT

Bore	Stock No.	Rod Dia.	CB	CD	CW	FL	L	M
1 1/2"	6X471	5/8"	3/4"	1/2"	1/2"	1 1/8"	3/4"	5/8"
2	6X473	5/8	3/4	1/2	1/2	1 1/8	3/4	5/8
2 1/2	6X475	5/8	3/4	1/2	1/2	1 1/8	3/4	5/8
3 1/4	6X479	1	1 1/4	3/4	5/8	1 7/8	1 1/4	7/8
4	6X481	1	1 1/4	3/4	5/8	1 7/8	1 1/4	7/8
6	1A017	1 3/8	1 1/2	1	3/4	2 1/4	1 1/2	1

Bore	Stock No.	List	Each	Shpg. Wt.
1 1/2"	**6X471**	$12.80	**$12.15**	0.8
2	**6X473**	15.80	**15.01**	1.2
2 1/2	**6X475**	16.90	**16.11**	1.5
3 1/4	**6X479**	22.00	**20.88**	3.7
4	**6X481**	21.95	**20.91**	4.7
6	**1A017**	49.20	**46.65**	12.0



CAST IRON ROD CLEVIS MOUNT

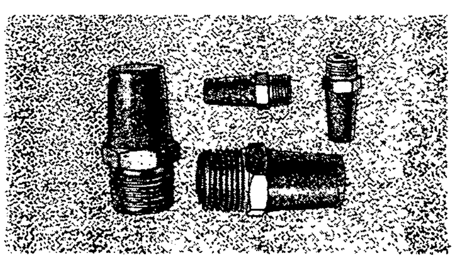
Bore	Stock No.	CB	CD	CE	CH	CW	ER	KK	L
1 1/2 - 2 1/2"	6X476	3/4"	1/2"	1 1/2"	1"	1/2"	1/2"	1/2 - 20	3/4"
3 1/4 - 4	6X482	1 1/4	3/4	2 3/8	1 1/4	5/8	3/4	3/4 - 16	1 1/4
6	1A018	1 1/2	1	3 1/8	1 1/2	3/4	1	1 - 14	1 1/2

Bore	Stock No.	List	Each	Shpg. Wt.
1 1/2 - 2 1/2"	**6X476**	$17.20	**$16.24**	0.6
3 1/4 - 4	**6X482**	25.95	**24.73**	1.7
6	**1A018**	42.50	**40.45**	3.7

CAST IRON EYE BRACKET

Bore	Stock No.	CB	CD	E	FL	L	M	RE	DD
1 1/2 - 2 1/2"	6X477	3/4"	1/2"	2 1/2"	1 1/8"	9/16"	5/8"	1.84"	11/32"
3 1/4 - 4	6X483	1 1/4	3/4	3 3/4	1 3/4	1 1/4	7/8	2.94	15/32
6	1A019	1 1/2	1	4 1/2	2 1/4	1 1/2	1	3.25	21/32

Bore	Stock No.	List	Each	Shpg. Wt.
1 1/2 - 2 1/2"	**6X477**	$14.65	**$13.74**	0.9
3 1/4 - 4	**6X483**	20.30	**19.23**	3.2
6	**1A019**	37.85	**35.95**	6.0



SPEEDAIRE PNEUMATIC EXHAUST MUFFLERS

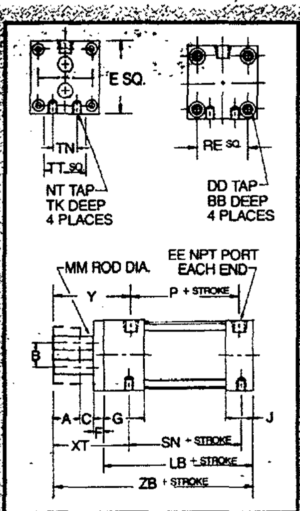
Speedaire muffler-filters diffuse air and noise from exhaust ports of valves, cylinders, and air tools. Constructed of a 40 micron porous sintered bronze element directly bonded to copper plated steel pipe thread fitting, reducing exhaust noise levels to acceptable OSHA requirements.

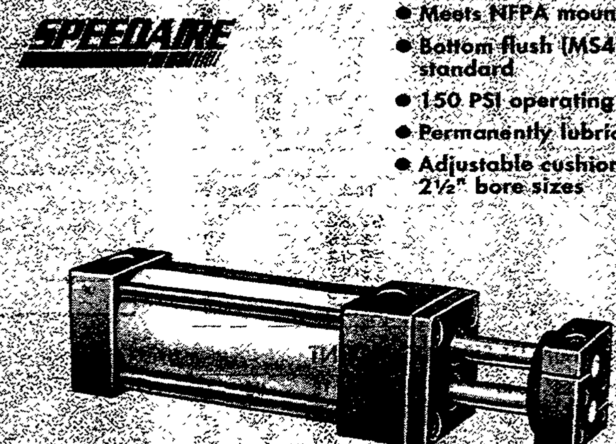
ORDERING DATA

NPT Size	Length	Hex.	Stock No.	List	Each	Shpg. Wt.
1/8"	1 1/8"	7/16"	**1A325**	$1.75	**$1.72**	0.1
1/4	1 3/8	9/16	**1A326**	1.95	**1.91**	0.1
3/8	1 1/2	11/16	**1A327**	2.65	**2.60**	0.1
1/2	1 7/8	7/8	**1A328**	3.75	**3.68**	0.1
3/4	2 1/4	1 1/16	**6F600**	5.30	**5.15**	0.2
1	2 7/8	1 7/16	**6F601**	7.70	**7.45**	0.3

PNEUMATICS

NON-ROTATING ROD AIR CYLINDERS





- Meets NFPA mounting standards
- Bottom flush (MS4) mounting holes standard
- 150 PSI operating pressure
- Permanently lubricated
- Adjustable cushions on 1½", 2", and 2½" bore sizes

Heavy-duty, double acting air cylinders for applications requiring guided movement when it is critical that piston rod not rotate. Constructed with two piston rods instead of one, design prevents rods from twisting and turning off axis, providing user with reliable, repeatable linear motion without need for external guides. Cylinder bearing wear is also minimized by the non-rotating twin-rod design.

Available in four bore sizes: 1⅛", 1½", 2", and 2½". Standard stroke lengths are 1", 2", and 3" for the 1⅛" bore, and 2", 3", 4", and 6" for all other bore sizes. All bore sizes, except 1⅛", are equipped with adjustable cushions on both ends.

Unique design offers simple field re-orientation of rod axis. Removal of four bearing retainer screws permits rotation of rod axis and tooling plate in 90 degree increments. This can be achieved without disassembling cylinder or disturbing fluid port or mounting hole locations. Tooling plate incorporates two mounting surfaces, each simplifies precise attachment of tooling.

Constructed of lightweight, high tensile strength aluminum. Meets NFPA mounting standards. Piston rods are chrome plated, ground and polished steel rated for 100,000 PSI minimum yield. Tie rods are stress proof steel and torqued to maintain compression on tube end seals. Rod bearing is heavy-duty, high load cast iron for durability and is easily removed. T-type piston seals provide low friction characteristics and long service life.

BASIC CYLINDER DIMENSIONS

BORE	A	B	BB	C	DD	E	EE	F	G	J	LB	MM	NT	P	RE	SN	TK	TN	XT	Y	ZB
1⅛	0.750	0.437	0.187	0.5	10-32	1.5	0.125	0.250	0.875	0.625	2.250	0.250	10-32	1.469	1.125	1.500	0.250	0.500	2.000	2.031	3.750
1½	1.000	0.600	0.312	0.5	1/4-28	2.0	0.250	0.375	1.500	1.000	3.625	0.312	1/4-20	2.125	1.437	2.250	0.375	0.625	2.812	2.875	5.500
2	1.000	0.875	0.312	0.5	5/16-24	2.5	0.250	0.375	1.500	1.000	3.625	0.500	5/16-18	2.125	1.843	2.250	0.375	0.875	2.812	2.875	5.500
2½	1.250	1.250	0.312	0.5	5/16-24	3.0	0.250	0.375	1.500	1.000	3.750	0.625	3/8-16	2.250	2.187	2.375	0.437	1.250	3.062	3.125	5.875

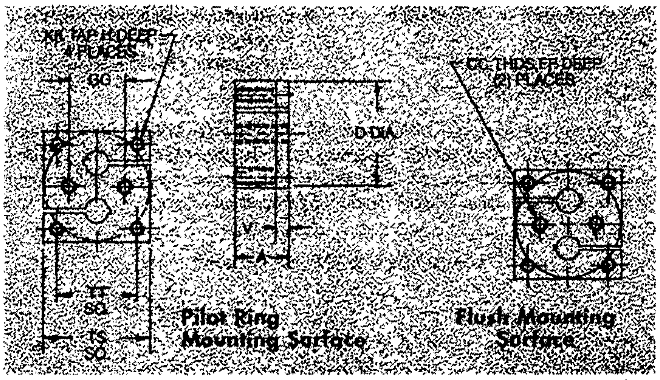
THEORETICAL EXTEND AND RETRACT FORCES IN POUNDS

Bore Size	Movement	Effective Piston Area In.²	INPUT PRESSURE—PSI 30	40	50	60	70	80	90	100	125	150	Cu. Ft. Displacement Per Inch of Stroke
1⅛"	Extend	.995	29.9	39.8	49.8	59.7	69.7	79.6	89.6	99.5	124.4	149.2	.00057
	Retract	.897	26.9	35.9	44.9	53.8	62.8	71.8	80.7	89.7	112.1	134.6	.00052
1½	Extend	1.77	53.1	70.8	88.5	106.2	123.9	141.6	159.3	177.0	221.3	265.5	.00102
	Retract	1.55	46.5	61.8	77.3	92.8	108.5	123.7	139.5	154.6	193.3	231.9	.00089
2	Extend	3.14	94.2	125.6	157.0	188.4	219.8	251.2	282.6	314.0	392.5	471.0	.00182
	Retract	2.75	82.5	109.5	137.4	164.9	192.5	219.8	247.5	274.8	343.5	412.2	.00159
2½	Extend	4.91	147.3	196.4	246.5	294.6	343.7	392.8	441.9	491.0	613.8	736.5	.00284
	Retract	4.30	129.0	171.8	214.8	257.8	301.0	343.7	387.0	429.6	537.0	644.4	.00249

AIR CYLINDER SPECIFICATIONS AND ORDERING DATA

Bore Size	Stroke Length	Stock No.	List	Each	Shpg. Wt.
1⅛"	1"	6ZC45	$125.40	**$113.85**	1.2
	2	6ZC46	128.15	**116.40**	1.3
	3	6ZC47	130.95	**120.90**	1.4
1½	2	6ZC48	194.25	**179.50**	3.0
	3	6ZC49	198.50	**183.50**	3.2
	4	6ZC50	202.80	**185.75**	3.4
	6	6ZC51	211.40	**193.50**	3.7
2"	2"	6ZC52	$214.60	**$196.75**	5.0
	3	6ZC53	220.80	**202.50**	5.3
	4	6ZC54	227.05	**191.25**	5.5
	6	6ZC55	239.50	**219.25**	6.0
2½	2	6ZC56	241.40	**221.25**	7.7
	3	6ZC57	248.35	**227.75**	8.1
	4	6ZC58	255.20	**234.00**	8.5
	6	6ZC59	269.00	**246.25**	9.2

NON-ROTATING ROD AIR CYLINDERS



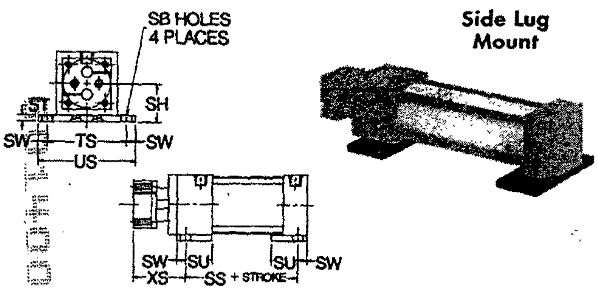
TOOLING PLATE DIMENSIONS

Bore (In.)	A	CC	D	FF	GG	H	KK
1 1/8	0.75	1/4-20	1.260	0.375	0.75	0.500	6-32
1 1/2	1.00	5/16-18	1.575	0.375	0.86	0.625	10-32
2	1.00	5/16-18	1.969	0.375	1.18	0.750	1/4-28
2 1/2	1.25	3/8-16	2.480	0.625	1.50	0.875	5/16-24

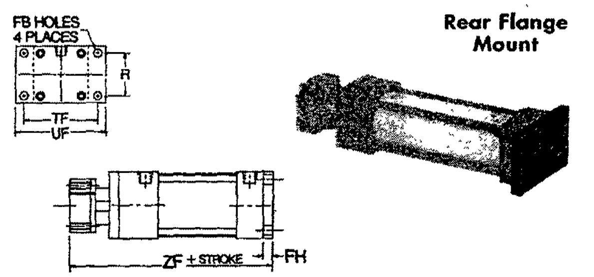
Bore (In.)	TS	TT	V	Clamping Screw Torque in Ft.-Lbs.
1 1/8	1.250	0.75	0.16	2 1/2
1 1/2	1.500	1.12	0.16	10
2	2.000	1.43	0.20	20
2 1/2	2.500	1.84	0.20	30

CYLINDER MOUNTS

Side Lug Mount



Rear Flange Mount



SIDE LUG MOUNT

Bore (In.)	Stock No.	SB	SH	SS	ST	SU	SW	TS	US	XS
1 1/8	6ZC60	0.203	1.00	1.75	0.25	0.625	0.25	1.875	2.375	1.75
1 1/2	1A254	0.437	1.25	2.875	0.25	1.125	0.375	2.75	3.5	2.25
2	1A255	0.437	1.5	2.875	0.25	1.125	0.375	3.25	4.0	2.25
2 1/2	1A256	0.437	1.875	3.0	0.375	1.125	0.375	3.75	4.5	2.5

Bore (In.)	Stock No.	List	Each	Shpg. Wt.
1 1/8	6ZC60	$8.25	**$6.16**	0.2
1 1/2	1A254	13.30	**12.50**	0.2
2	1A255	10.70	**10.10**	0.3
2 1/2	1A256	11.90	**11.25**	0.5

REAR FLANGE MOUNT

Bore (In.)	Stock No.	FB	FH	R	TF	UF	ZF
1 1/8	1A443	0.219	0.25	1.0	2.0	2.5	4.0
1 1/2	6X470	0.312	0.375	1.437	2.75	3.375	5.875
2	6ZC61	0.375	0.375	1.843	3.375	4.125	5.875
2 1/2	6ZC62	0.375	0.375	2.187	3.875	4.625	6.250

Bore (In.)	Stock No.	List	Each	Shpg. Wt.
1 1/8	1A443	$6.20	**$5.62**	0.3
1 1/2	6X470	8.25	**7.86**	0.6
2	6ZC61	9.60	**7.60**	1.1
2 1/2	6ZC62	10.35	**8.44**	1.4

Transverse Rod Deflection may be calculated by using the formula below

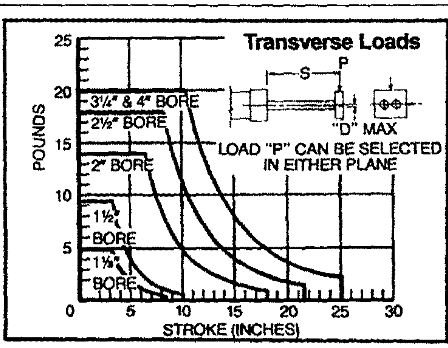
$$D = \frac{P \times S^3}{K}$$

Where: D = Deflection in inches
K = Constant
S = Stroke in inches
P = Load in pounds

Torsional Rod Deflections may be calculated by using the formula below

$$\text{Tangent of angle in degrees} = \frac{\text{Torque} \times S^3}{K_1 \times 4}$$

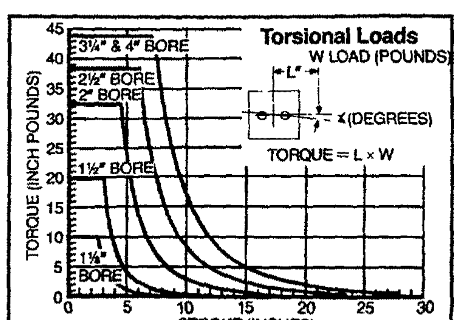
Where K = Constant
S = Stroke in in.
Torque = L x Wt. of load



Transverse or torsional loads placed on the cylinder will cause some deflection of the piston rods. Excessive deflection will adversely affect cylinder life and should be considered at the time of initial application design.

The transverse and torsional load graphs shown are to be utilized as a guideline with respect to the maximum load and stroke of each respective bore size.

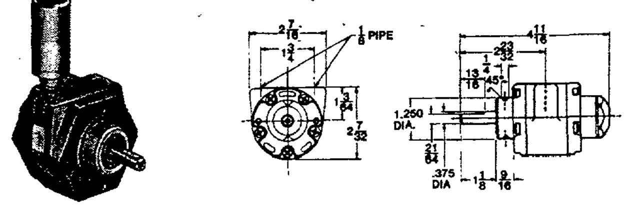
Bore (In.)	K Factor	K1 Factor
1 1/8	9,000	34,450
1 1/2	19,800	84,650
2	236,100	551,250
2 1/2	593,000	1,345,820



Theoretical deflection of the piston rods in their extended position may be calculated by using the preceding formulas for either a transverse or torsional load.

AIR MOTORS AND GEARMOTORS

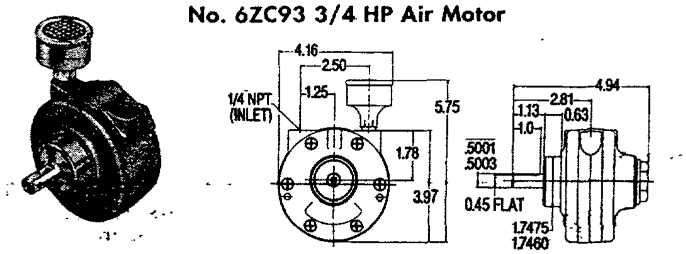
No. 4Z411 1/2 HP Air Motor



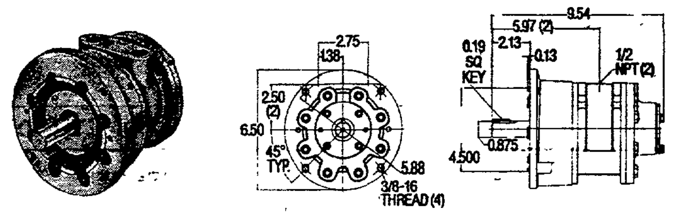
- Registered to ISO 9001
- Stall proof
- Variable speed
- Cast iron body
- Instantaneously reversible (except No. 6ZC93 which is counter clockwise only)

(*) If greater torque and lower RPM are required, air motors may be converted to air gearmotors. Boston Gear, Winsmith and Dayton brands of C-face, right angle speed reducers are available. See index under Speed Reducers.

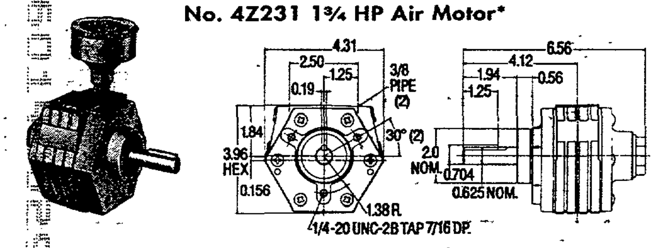
No. 6ZC93 3/4 HP Air Motor



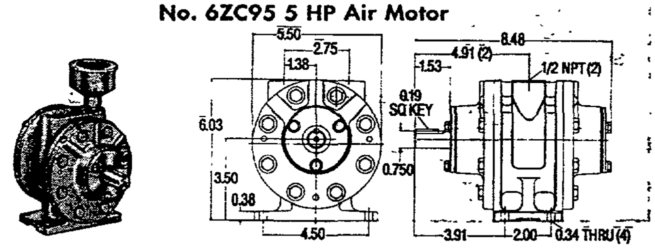
No. 6ZC94 5 HP Air Motor*



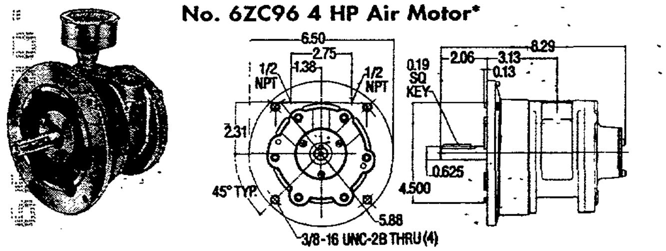
No. 4Z231 1¾ HP Air Motor*



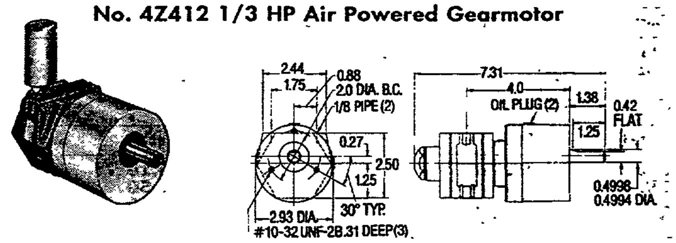
No. 6ZC95 5 HP Air Motor



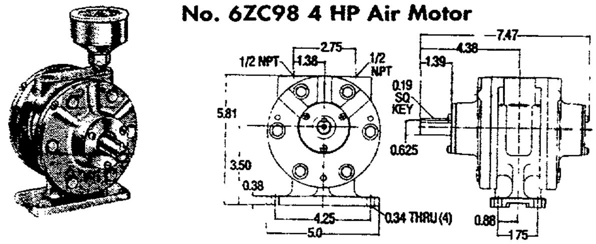
No. 6ZC96 4 HP Air Motor*



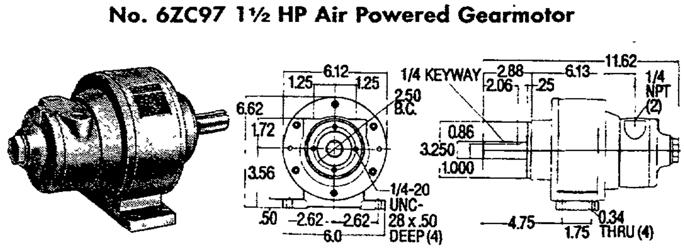
No. 4Z412 1/3 HP Air Powered Gearmotor



No. 6ZC98 4 HP Air Motor

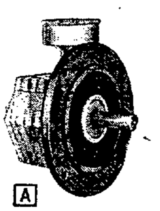


No. 6ZC97 1½ HP Air Powered Gearmotor

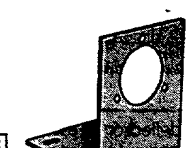


MOUNTS FOR Nos. 4Z231, 4Z411, and 4Z412

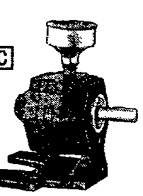
GAST



A



B



C

A NEMA 56C FRAME FLANGE MOUNT

Cast iron flange mount for No. 4Z231.
No. 6X889. Shpg. wt. 3.3 lbs. List $45.20. Each **$38.60**

B FOOT MOUNT

Sturdy foot mount for use with Nos. 4Z411 and 4Z412.
No. 5X372. Shpg. wt. 0.6 lbs. List $16.40. Each **$14.03**

C NEMA 56 FRAME FOOT MOUNT

Cast aluminum foot mount for No. 4Z231.
No. 6X890. Shpg. wt. 1.4 lbs. List $48.30. Each **$41.25**

w

AIR MOTORS & GEARMOTORS

GAST

ROTARY VANE AIR MOTORS

Gast air motors and gearmotors are a compact, lightweight, dependable source of smooth, vibrationless power.

Models will stop, start, and reverse (except No. 6ZC93 which is counter clockwise only) almost instantaneously with use of a 4-way valve. Can continuously operate in extreme temperatures up to 250°F, as well as in wet and corrosive environments. With no heat build-up or electric sparking, air motors are an excellent alternative in applications that would normally require expensive explosion-proof motors. Stalling or overloading will not damage air motors.

All units come with discharge muffler to reduce noise. Gray metallic finish. Gast brand.

Output speed and torque can be adjusted through the use of an air regulator valve placed between air source and air motor. Requires little maintenance, as vanes are self-sealing and self-adjusting.

Can be used in hundreds of continuous duty applications including construction machinery, conveyors, hoisting, mixing, packaging, paint/finishing equipment; and to operate mechanical pumps in all industries.

AIR POWERED GEARMOTORS

Parallel shaft, air-powered gearmotors provides same features and advantages of an air motor but at a higher torque and lower output speed range.

Provide high torque with smooth start-up. Torque increases and speed decreases in proportion to the ratio of the gear reducer selected. Geared speed reduction permits motor to operate at more efficient speeds, while providing better speed control under changing load and torque.

Compact and lightweight in-line design is ideal for applications where installation space is limited or where weight is a factor.

Rated for continuous duty and feature cast iron housing, high strength steel output shaft with key and plastic cover; tapered roller bearing; and hardened polished steel worm mating with forged, heat treated high manganese bronze worm gear. Supplied with AGMA #8 lubricant in gear chamber.

† PERFORMANCE DATA

	INCOMING AIR PRESSURE														
	20 PSI			40 PSI			60 PSI			80 PSI			100 PSI		
Output RPM	HP	Torque In-Lb	CFM	HP	Torque In-Lb	CFM	HP	Torque In-Lb	CFM	HP	Torque In-Lb	CFM	HP	Torque In-Lb	CFM
No. 4Z411 1/2 HP AIR MOTOR															
1000	0.02	1.6	2.0	0.05	3.2	9	0.08	4.8	12	0.10	6.5	15	*	*	*
2000	0.04	1.5	2.5	0.10	3.0	10	0.14	4.6	14	0.20	6.3	17	*	*	*
3000	0.06	1.2	3.0	0.14	2.9	11	0.22	4.5	15	0.29	6.0	20	*	*	*
4000	0.07	1.1	6.0	0.16	2.7	13	0.27	4.2	17	0.36	4.2	17	*	*	*
5000	0.08	1.0	9.0	0.20	2.5	14	0.32	4.0	19	0.44	5.5	25	*	*	*
6000	0.08	0.8	10.0	0.23	2.2	15	0.35	3.75	21	0.50	5.2	27	*	*	*
No. 6ZC93 3/4 HP AIR MOTOR															
300	0.02	5	2.5	0.05	10.5	5.2	0.07	15	8	0.09	21	11	0.17	26.3	12
500	0.04	4.8	3	0.07	10	6	0.12	14.7	9	0.15	20	12	0.20	26	13.5
1000	0.06	4	4	0.14	9.3	7	0.22	14	11	0.22	19	14.5	0.37	24.5	17
1500	0.08	3.5	5	0.20	8.5	8.5	0.31	13	13	0.45	18	17	0.55	23	20
2000	0.10	3	6	0.25	8	10	0.40	12	15	0.55	17	20	0.70	22	23.5
2500	0.10	2.3	7	0.27	7	11	0.45	11.5	17	0.65	16	22	0.83	21	27.0
3000	0.10	2	8	0.30	6.5	12.5	0.50	11	19	0.70	15	25	0.95	19	50
No. 4Z231 1¾ HP AIR MOTOR															
300	0.05	11	4.5	0.12	22	9.0	0.15	34	12	0.22	45.8	17.7	0.27	57	20.7
500	0.08	10.7	6.0	0.18	21.7	11	0.26	33.4	15.5	0.34	45	21	0.44	56	26.7
1000	0.16	10	9.0	0.32	20.7	15.7	0.51	31.7	22	0.70	42	29	0.82	53.9	36.3
1500	0.23	9	12	0.48	19.7	20.2	0.74	29.8	28	0.94	39.7	37	1.17	49.5	46
2000	0.28	8	15.5	0.59	18.3	25	0.89	28	34.5	1.17	36.8	45	1.47	46	56
2500	0.30	7	19	0.71	17	30	1.05	25.8	41	1.32	33.7	52.8	1.66	42.2	65
3000	0.32	6.5	22	0.76	15.4	34.5	1.12	23.6	47	1.46	30.5	60.5	1.80	38.8	75
Nos. 6ZC96 AND 6ZC98 4 HP AIR MOTORS															
300	0.10	22	11	0.20	46	16	0.40	73	22	0.5	93	27	0.6	114	33
500	0.20	20	13	0.40	45	20	0.60	70	25	0.8	91	33	0.9	111	40
1000	0.30	19	19	0.70	43	28	1.0	66	38	1.4	87	48	1.6	106	57
1500	0.40	17	24	1.0	41	37	1.4	63	50	2.0	82	63	2.4	100	75
2000	0.60	16	30	1.2	39	45	1.9	58	63	2.5	78	79	3.0	95	95
2500	0.65	15	35	1.5	36	55	2.2	55	75	2.9	74	95	3.6	90	112
3000	0.70	14	40	1.7	35	63	2.5	50	86	3.3	70	110	4.0	83	130
Nos. 6ZC94 AND 6ZC95 5 HP AIR MOTORS															
300	0.10	37	20	0.30	75	26	0.60	115	40	0.70	150	53	0.80	186	57
500	0.20	35	23	0.50	74	30	0.80	113	45	1.1	147	58	1.5	184	65
1000	0.40	34	28	1.0	72	40	1.6	108	60	2.2	144	75	2.7	175	87
1500	0.70	32	35	1.5	67	55	2.3	100	78	3.1	135	98	3.7	163	115
2000	0.80	27	45	1.8	60	70	2.8	90	97	3.8	125	125	4.5	148	145
2500	0.90	22	53	2.0	50	85	3.2	76	117	4.4	108	150	5.2	130	175
No. 4Z412 1/3 HP AIR POWERED GEARMOTOR															
50	0.01	20.0	5.0	0.03	43.0	8	0.05	64	12	0.07	87	14	*	*	*
100	0.03	19.0	6.0	0.06	41.0	9	0.10	63	13	0.15	85	16	*	*	*
170	0.04	18.0	6.5	0.10	40.0	10	0.17	61	14	0.23	82	19	*	*	*
200	0.05	17.0	7.0	0.12	39.0	11	0.19	60	15	*	*	*	*	*	*
300	0.06	12.0	8.0	0.16	34.0	13	0.28	58	18	*	*	*	*	*	*
400	0.06	10.0	10.0	0.18	30.0	15	0.31	50	21	*	*	*	*	*	*
No. 6ZC97 1½ HP AIR POWERED GEARMOTOR															
30	0.05	100	2.5	0.11	225	7.5	0.18	335	12.5	0.25	425	15	*	*	*
50	0.08	92	5	0.15	215	10	0.26	325	15	0.35	410	19	*	*	*
100	0.14	88	7.5	0.30	200	15	0.47	300	20	0.60	380	27.5	*	*	*
150	0.17	75	12	0.44	180	20	0.65	275	26	0.85	355	35	*	*	*
200	0.20	65	15	0.53	163	25	0.80	250	33	1.05	325	43	*	*	*
250	0.20	57	17.5	0.58	140	27.5	0.90	225	38	1.18	295	50	*	*	*
300	0.20	48	20	0.61	125	32	0.97	200	45	1.30	260	57.5	*	*	*

(†) HP = Torque in-lbs. x RPM ÷ 63025. Torque in-lbs. = HP x 63025 ÷ RPM. RPM = HP x 63025 ÷ Torque in-lbs.
(*) Not recommended.

Description	Gast Model	Stock No.	List	Each	Shpg Wt.
1/2 HP Air Motor w/Hub Mount	1 UP Series*	4Z411	$125.00	**$110.70**	4.0
3/4 HP Air Motor w/Hub Mount	2AM-NCC-16	6ZC93	114.00	**109.65**	5.0
1¾ HP Air Motor w/Hub Mount	4AM Series*	4Z231	155.00	**136.75**	8.7
4 HP Air Motor w/NEMA 56C Mount	6AM-NRV-11A	6ZC96	258.00	**247.50**	17.0
4 HP Air Motor w/Foot Mount	6AM-FRV-5A	6ZC98	237.00	**227.00**	20.0
5 HP Air Motor w/NEMA 145TC Mount	8AM-NRV-28A	6ZC94	352.00	**331.25**	31.0
5 HP Air Motor w/Foot Mount	8AM-FRV-2B	6ZC95	387.00	**269.75**	26.0
1/3 HP Air Gearmotor w/Hub Mount	1UP-GR11 Series*	4Z412	308.00	**271.75**	4.5
1½ HP Air Gearmotor w/Face or Foot Mt.	4AM-RV-75-GR20	6ZC97	645.00	**620.50**	31.0

(*) Slight variation of a standard Gast model.

MODULAR AC & DC AND SATELLITE DISH LINEAR ACTUATORS

MODULAR AC & DC LINEAR ACTUATORS

ailable in 12, 36 or 90 VDC and 115VAC ar drives and two tube assemblies ich provide 12 or 24" travel. Tube ipter and Pin-In-Groove coupling allows erchangeability between drives and es Nos. 6Z090 and 6Z091. All drives are duty cycle; one minute on, four min-s off*. All have ball bearings and are ally enclosed. Zinc die-cast gearboxes gasketed and grease lubricated. Delrin rs throughout except steel motor pin-s. Can be mounted by clevis and trun-ı or optional clamp.

6Z086, 115VAC Drive features auto t thermal protection and limit switch-'SC motor drive comes with capacitor. is mount. Gray.

6Z087, 12VDC Drive is gasketed front rear. Clutch mechanism. Clevis nt. Black.

6Z088, 36VDC Drive is for use as an nna actuator. Gasketed front and rear. ertight strain relief. Microswitch feed-k system for antenna positioning. rnal brushes and terminal strip. iator-tube mount via trunnion or onal clamp No. 2A769. May be protect-rom environment by optional boot and . Features limit switches. Black.

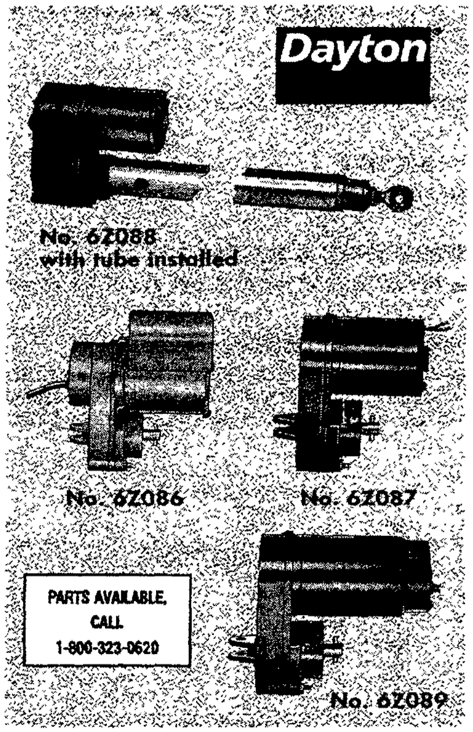
6Z089, 90VDC Drive gasketed front and . Externally accessible brushes. h mechanism. Clevis mount. Black.

LINEAR ACTUATOR TUBES

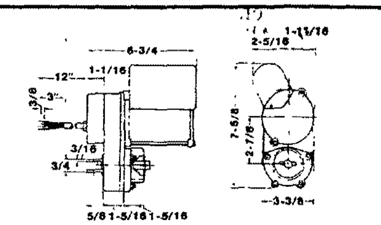
gned to mate with tube adapter and In-Groove coupling shafts of drives . 6Z086, 6Z087, 6Z088 and 6Z089. s have trunnion mounting capability rod end bearing. Alternative mounting ided by optional clamp No. 2A769. contains a 3/4"-6 right hand single Acme thread screw. Yellow dichro- finish to prevent rust.

BOOT AND WIPE

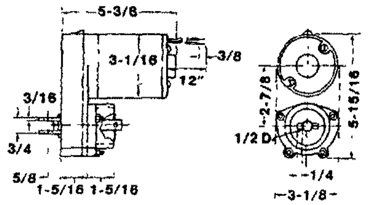
s dirt, water and other contaminants f actuator. Install on No. 6Z088 when lrive is used outside. Wipe is also le on No. 6Z090 or 6Z091. Gray.



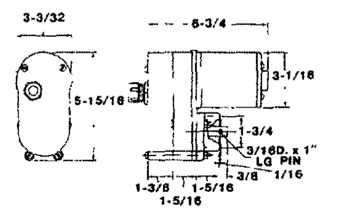
PARTS AVAILABLE. CALL 1-800-323-0620



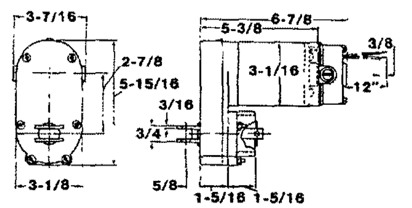
No. 6Z086



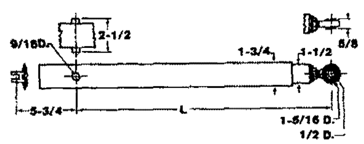
No. 6Z087



No. 6Z088

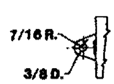


No. 6Z089



Model	Travel (In.)	L-Retracted 6Z086 6Z088	L-Retracted 6Z087 6Z089	L-Extended 6Z086 6Z088	L-Extended 6Z087 6Z089
6Z090	12	$21\frac{5}{16}$"	$20\frac{9}{16}$"	$33\frac{5}{16}$"	$34\frac{1}{16}$"
6Z091	24	$33\frac{5}{16}$	$32\frac{9}{16}$	$57\frac{5}{16}$	$58\frac{1}{16}$

No. 6Z090 and 6Z091



Clevis Mount For Drive Nos. 6Z086, 6Z087 and 6Z089

cription	Stock No.	List	Each	Shpg. Wt.
Tube	**6Z090**	$170.00	**$130.75**	8.5
Tube	**6Z091**	167.00	**127.85**	14.0
& Wipe	**6Z092**	16.00	**11.91**	0.8
Clamp	**2A769**	12.00	**8.75**	1.4

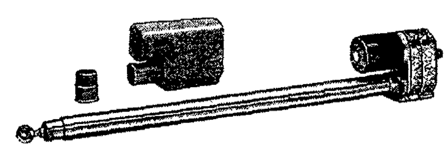
Voltage	Speed, In./Min.	Duty Cycle	Rated Load, Lbs.	Full-Load Amps	Stock No.	List	Each	Shpg. Wt.
115VAC	13	20%*	600	1.6	**6Z086**	$233.00	**$178.50**	9.5
12VDC	13	20	600	9.0	**6Z087**	194.00	**148.85**	6.5
36VDC	13	20	600	2.7	**6Z088**	188.00	**143.90**	7.5
90VDC	13	20	600	1.2	**6Z089**	171.00	**131.25**	9.5

(*) Duty cycle is based on 1 minute on/4 minutes off.

SATELLITE DISH LINEAR ACTUATORS

ble for use with 8 to 10 ft. dia. solid ft. dia. mesh-type dishes. Rated load: s. 36 VDC, available with more pop-Reed switch or potentiometer feed-signal. Includes terminal strip for rical connection, watertight strain for input cable and limit switch for adjustment from 0 to 24". Weather ction provided by zinc plating with dichromate finish, protective boot iper and lifetime lubrication. Reed a has 24 counts per inch. Potentio- valve 10KΩ, 10 turn. Von Weise

PARTS AVAILABLE. CALL 1-800-323-0620

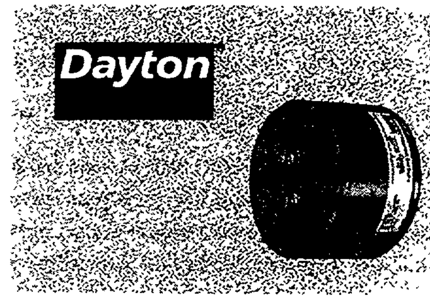


Feedback Signal	Speed In./Min.	Rated Load	Duty Cycle%*	Volts, DC	F/L Amps	von Weise Model	Stock No.	List	Each	Shpg. Wt.
Read Switch	12	600 lbs.	20	36	3.0	V76-S	**5A651**	$191.00	**$146.70**	20.0
Potentiometer	12	600	20	36	3.0	V76-Z	**5A652**	191.00	**146.70**	20.0

(*) Duty cycle is based on 1 minute on/4 minutes off.

3/8 TO 6 FT.-LB. ELECTRIC BRAKES FOR MOTORS AND GEARMOTORS

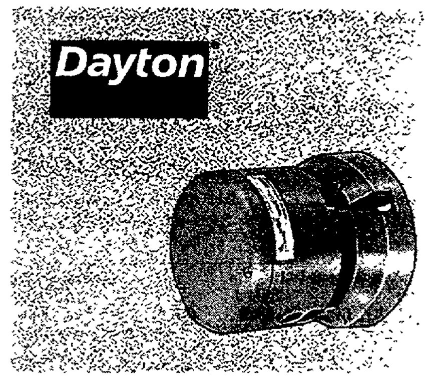
3/8 AND 3/4 FT.-LB. MAGNETIC DISC BRAKE



For 115V, 60 Hz gearmotors only. For rapid stopping and holding action on shaded pole, split-phase and PSC gearmotors used on conveyors, door openers, etc. Not intended for accurate positioning applications. Twin disc design is factory set for 3/4 ft.-lb. for use with gearmotors with 1/14 HP or larger. One disc can easily be removed to reduce torque to 3/8 ft.-lb. for use with gearmotors with 1/15 HP or smaller. 40°C maximum ambient, 1.0 service factor, continuous duty. Brake mounts on shaft extension of gearmotors by using brake hub and mounting bolts (incl.); engages and holds loads under power-off conditions, releases when power is applied. 115V, 60 Hz. 15" long leads connect to motor. $2\frac{27}{32}$" long, $4\frac{1}{16}$" diameter. In rush amp .36; holding amp .16. Other coils to convert voltage are available, call 1-800-323-0620. Dayton brand.

No. 5X400. Shpg. wt. 0.5 lbs. List $82.21. Each **$64.00**

1½ FT.-LB. MAGNETIC DISC BRAKES



For 115/230V, 60 Hz gearmotors only*. Magnetic disc brake designed for single and three-phase TEFC gearmotors applications such as conveyors and door openers, requiring rapid stopping and holding action. Not intended for vertical holding applications such as vertical conveyors or hoists. Brake package contains replacement fan and endbell for converting TEFC gearmotors to brake gearmotors.

Single-phase static torque brake rated for 115/230V, 60 Hz operation. 40°C ambient, 1.0 service factor, continuous duty. For three-phase gearmotors use brake with optional 230/460V, 60 Hz magnet assembly, No. 4X573 listed below.

Brake engages and holds load under power-off conditions, automatically releases when power is applied. Load can be released when power is off by switching manual lever. Overall length of gearmotor increases $4\frac{3}{8}$"; $5\frac{11}{16}$" diameter. 18" leads for easy connection. Dayton brand.

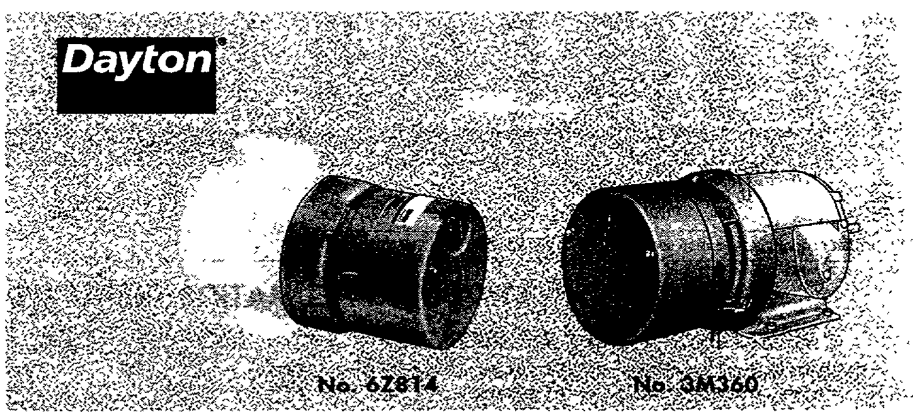
Gearmotor Phase	Fits these Dayton High Torque Gearmotors							Stock No.	List	Each	Shpg. Wt.
Single	2Z842	2Z845	6K353	6K375	6K506	6Z400	6Z403	**4Z447**	$180.49	**$141.95**	7.5
	2Z843	6K351	6K354	6K383	6K583	6Z401					
	2Z844	6K352	6K369	6K396	6Z399	6Z402					
Three*	4Z384	4Z386	4Z388	4Z390	4Z392	4Z394	6Z405				
	4Z385	4Z387	4Z389	4Z391	4Z393	6Z404					

(*) **MAGNET ASSEMBLY** for converting bı to 460V three-phase gearmotors.
No. 4X573. Shpg. wt. 1.6 lbs. List $36.1C
Each **$28**

3 AND 6 FT.-LB. NOMINAL MAGNETIC DISC BRAKES

Magnetic spring-set disc brakes mount on most totally enclosed fan-cooled Dayton general purpose motors, many right-angle gearmotors, and many mechanical adjustable speed drives. Use in applications requiring rapid stopping and holding action such as conveyors and door openers. Not intended for accurate positioning or indexing applications or vertical holding applications such as vertical conveyors and hoists.

Brake engages and holds load under power-off condition and automatically releases when power is applied. Load can be manually released when power is off by switching release lever. Include fan shroud, brake, fan, shaft adapter, and other hardware needed to mount to fan end of motor. Gray enamel finish. Dayton brand.



Static Torque Ft.-Lbs.	Max. RPM Input	Voltage AC 60 Hz	Voltage AC 50 Hz	Amps Holding	Amps Inrush	Ambient	Service Factor	Dimensions (Inches) Length	Dimensions (Inches) Diameter	Power Leads Length	Stock No.	List	Each	Shpg. Wt.
3 **6**	3450	115/230	95/190	0.3/0.2	3.6/1.8	40°C	1.0	$4\frac{11}{16}$	$6\frac{5}{8}$	24"	**6Z814** **6Z815**	$268.00 326.00	**$187.50** **228.00**	9.0 9.0
3 **6**	3450	230/460	190/380	0.144/0.72	1.82/0.91	40°C	1.0	$4\frac{7}{16}$	$6\frac{5}{8}$	13	**3M360** **2Z871**	253.00 325.00	**177.00** **227.25**	8.0 8.0

FIT THESE GEARMOTORS, TEFC MOTORS, AND ADJUSTABLE SPEED DRIVES

No. 6Z814									No. 6Z815				No. 3M360			No. 2Z871	
2N863	3N017	3N442	3N627	5K672	6K306	6K436	6K599	6K727	3K300	3N337	3N550	5K565	2Z872	3N176	3Z857	2Z876	3Z609
2N864	3N087	3N443	3N628	5K960	6K307	6K472	6K619	6K827	3K344	3N343	3N551	5K641	2Z873	3N925	4Z497	2Z877	4Z888
2N865	3N234	3N446	3N680	6K045	6K308	6K473	6K622	6K831	3N018	3N344	3N553	5K961	2Z874	3N926	4Z886	3N299	4Z889
2N866	3N235	3N460	4K766	6K122	6K309	6K483	6K637	6K937	3N236	3N444	3N554	6K311	3N169	3N928	4Z887	3N300	
2N915	3N237	3N471	4K936	6K123	6K342	6K484	6K639	6K938	3N238	3N445	3N629	6K338	3N170	3N509	4Z893	3N301	
2N916	3N285	3N472	5K121	6K124	6K358	6K562	6K640	6K950	3N265	3N447	3N681	6K600	3N171	3N513	4Z894	3N510	
2N924	3N317	3N548	5K262	6K181	6K407	6K592	6K674	6K952	3N266	3N461	3N608	6K702	3N172	3N514	4Z895	3N511	
2N925	3N335	3N549	5K341	6K182	6K408	6K596	6K710	6K959	3N286	3N462	4K419	6K740	3N173	3Z499	4Z896	3N512	
2N926	3N342	3N625	5K502	6K184	6K409	6K597	6K714	6K975	3N287	3N473	4K420	6K828	3N174	3Z605	4Z897	3Z607	
3K348	3N427	3N626	5K636	6K197	6K418	6K598	6K719		3N336	3N486	4K767	6K832	3N175	3Z606		3Z608	

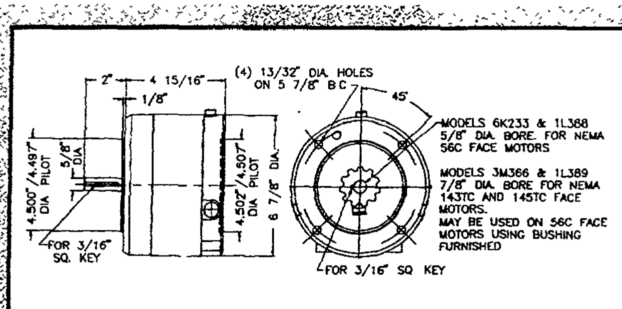
3 TO 6 FT.-LB. ELECTRIC BRAKES AND 5 TO 15 FT.-LB. ELECTRIC CLUTCH

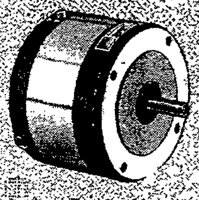
DOUBLE C-FACE MAGNETIC DISC BRAKES

Dayton

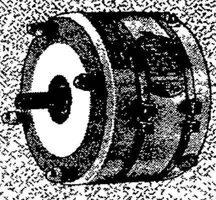
13814

PARTS AVAILABLE, CALL 1-800-323-0620

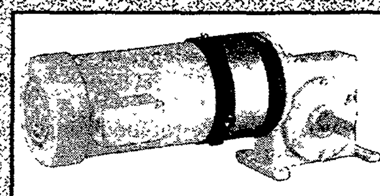




Standard Double C-Face Magnetic Disc Brake



Washdown Double C-Face Magnetic Disc Brake



- **·ake coil is rated at 115/208-230 volt, 60 Hz or 10/208-220 volt, 50 Hz single phase**
- **›r use with single-phase motors or, when wired per ·structions included, with 230/460 dual voltage three-hase motors**
- **5" long coil leads**
- **rakes are rated at 40°C maximum ambient temperature nd 3450 RPM maximum input speed**

WASHDOWN BRAKE FEATURES:

- **ISSC Certified**
- **omplies with NEMA Def. MG1-1.26.5 for waterproof achines**
- **SDA approved white epoxy paint**
- **omplies with 3A Dairy Standards pertaining to nonprod-:t contact surfaces**

Designed for operation on NEMA C-face motors up to 3 HP at 3450 (NEMA 56C, 143TC, and 145TC—see dimensional drawing above). Used for applications that require rapid stopping and holding power: conveyors, door openers, and general machine drives.

Brake is not intended for accurate positioning applications.

Brake engages and holds load under power-off condition. Brake must be energized at the same time as the motor. Brake has a manual release which resets automatically when magnet coil is energized.

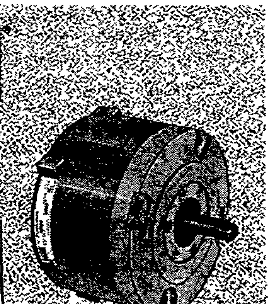
Nos. 6K233 and 3M366 brakes may be used to convert a NEMA C-face motor to a brake motor. They also may be used between a NEMA C-face motor and NEMA C-face gear reducer to make a brake gearmotor. Nos. 1L388 and 1L389 brakes can only be used to make a brake gearmotor.

Standard brake has a black finish and the washdown brake has a white finish. CSA Certified (13814). Dayton brand.

			STANDARD DRIPPROOF BRAKES				WASHDOWN BRAKES			
Nominal ·atic Torque, Ft.-Lbs.	Maximum Input HP at 1725	3450 RPM	Stock No.	List	Each	Shpg. Wt.	Stock No.	List	Each	Shpg. Wt.
3	1	2	**6K233**	$202.09	**$160.25**	13.0	**1L388**	$321.92	**$251.25**	14.0
6	2	3	**3M366**	224.77	**178.00**	14.0	**1L389**	349.03	**272.25**	14.0

ADJUSTABLE AC MAGNETIC CLUTCH FOR C-FACE MOTORS

Dayton



PARTS AVAILABLE, CALL 1-800-323-0620

Dayton AC magnetic clutch is designed to fit on 56C-face motors and speed reducers from 1/4 to 2 HP. Clutch is mounted between the motor and speed reducer. This allows the clutch to engage and disengage the motor from the speed reducer while the motor remains in operation. This avoids having to start and stop the motor repeatedly which may reduce its life.

If the load must be held in position when clutch is released, then Dayton C-face brakes, Nos. 6K233 or 3M366 (listed above) should be used and mounted between the clutch and reducer. Clutch operates on single phase 115/230V, 60 Hz. Gray finish. CSA Certified (13814). Dayton brand.

Nominal Static Torque, Ft.-Lbs.	Maximum Input HP at 1725 RPM	Stock No.	List	Each	Shpg. Wt.
5 to 15	2	**4Z831**	$626.40	**$496.50**	17.0

BRAKE SELECTION GUIDE AND CLOSE-COUPLED SPRING-SET AC DISC BRAKES

Stearns®

SELECTING A MOTOR BRAKE

Brake selection can be determined from the table at right given the horsepower (HP) and speed (RPM) of motor.

1. Select torque rating from chart.
2. Select mounting type: Double C-Face (page 258) or Close Coupled (pages 254 and 256).
3. Select series.
4. Select NEMA enclosure type and frame and voltage.

High cycling or high inertia loads require specific calculation to determine thermal rating of brake.

Heat Dissipation in Cyclic Applications: In general, a brake will repetitively stop a load at the duty cycle that a standard electric motor can repetitively start the load.

NOTE: In the table at right, brake torque ratings are no less than 140% of the motor full-load torque.

Thermal capacity is the maximum amount of energy (heat) a mass can absorb and dissipate in a given amount of time at a given ambient temperature. The value is rated in horsepower seconds per minute (HP sec/min). Each brake is designed not to exceed a given thermal capacity limit.

BRAKE SELECTION GUIDE

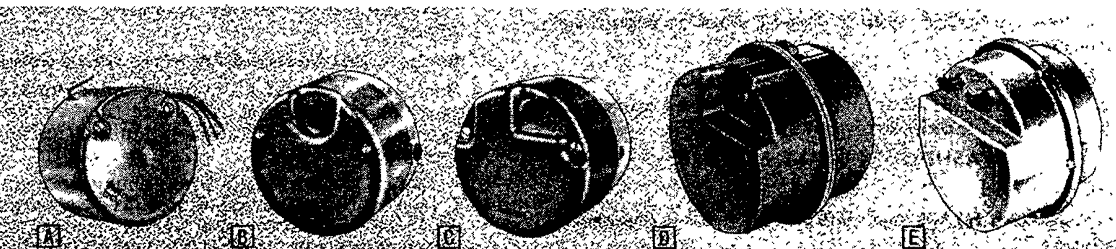
Motor HP	Motor Shaft Speed (RPM) 700	900	1200	1500	1800	3000	3600
	Static Torque Rating of Brake (ft-lbs)						
1/6	3	1.5	1.5	1.5	0.75	0.5	0.5
1/4	3	3	3	1.5	1.5	0.75	0.5
1/3	6	3	3	3	1.5	1.5	0.75
1/2	6	6	3	3	3	1.5	1.5
3/4	10	6	6	6	6	3	3
1	15	10	6	6	6	3	3
1½	20	15	10	10	10	6	3
2	25	20	15	10	10	6	6
3	35	25	20	15	15	10	6
5	75	50	35	25	20 or 25	15	10
7½	105	75	50	50	35	25	15
10	105	105	75	50	50	25	25
15	175	125	105	75	75	50	35
20	230	175	125	105	105	50	50
25	330	230	175	125	105	75	50
30	330	330	230	175	125	75	75
40	440	330	330	230	175	105	105
50	550	440	330	330	230	*	*
60	750	550	440	330	330	*	*
75	1000	750	550	440	330	*	*
100	—	1000	750	500	440	*	*
125	—	1000	1000	750	500	*	*
150	—	—	1000	750	750	*	*
200	—	—	—	100	1000	*	*
250	—	—	—	—	1000	*	*

(*) Exceeds maximum speed rating for Series 81,000, 82,000 and 86,000 brakes.

CLOSE-COUPLED SPRING-SET AC DISC BRAKES

Stearns®

LR6254



PARTS AVAILABLE, CALL 1-800-323-0620

CONTINUED ON NEXT PAGE

- **For 60/50 Hz operation**
- **All brakes operate on both single and three phase**
- **40°C ambient**
- **Class B coil insulation**
- ***Continuous duty***
- **Static torque range 1.5 through 1000 ft.-lbs.**
- **NEMA C-face mounting 48C through 445TC**
- **Splined hubs ensure contact between hub and friction disc**
- **Splined hub design can be used as a replacement brake in any application**
- **Horizontal mounting on Series 82,000, 86,000 and 87,000 brakes**
- **All position mounting on Series 56,000 brakes**
- **Non-asbestos friction discs**
- **Unitized construction for easy servicing of friction discs**
- **Spring-set design ensures automatic stopping and holding any time power to brake is interrupted; brake releases electrically**
- **Brake features manual release with automatic reset**
- **Simple 2 wire connection; leads supplied**
- **CSA Certified (LR6254)**

Typical Applications: Direct replacement for OEM brakemot applications already in service. Performance matched desig for rapid stopping and holding of all major brakemotor desig used in material handling, hoist, door openers, and gener machine drives.

Brake engages and holds load under power-off condition ar automatically releases when power is applied. Brake is n intended for accurate positioning applications.

Series 48,000 and 56,000 Brakes compensate for friction linin wear with simple manual adjustments.

Series 82,000, 86,000, and 87,000 Brakes have a self-adjusting fe ture to compensate for friction lining wear and are designed f more efficient operation where rapid cycling occurs.

NEMA 1 Enclosures are commonly used for indoor or enclosur protected outdoor environments. Enclosure limits drops of li uid or solid particles from entering when striking from any angl from 0 to 15° downward from the vertical. Meet NEMA 1-1.25. specification*.

NEMA 4 Enclosures are commonly used for outdoor installations or where there are moist, abrasive, or dusty environments Enclosure limits the entry of dust, abrasives, and water that i sprayed on the enclosure. Meet NEMA MG 1-1.26.5 specifica tion*.

(*) Reference NEMA specifications for a detailed explanation and test method.

CLOSE COUPLED SPRING-SET AC DISC BRAKES

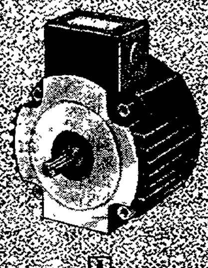
Stearns®

Static Torque Ft.-Lbs.	Thermal Capacity HP Sec. / Min.	Voltage AC 60 Hz	Voltage AC 50 Hz	Maximum RPM	Motor Mounting	Dimensions (Inches) Length	Dimensions (Inches) Diameter	Input Bore Diameter	Keyway	Stearns Model	Stock No.	List	Each	Shpg. Wt.
SERIES 48,100—NEMA 1 Enclosure														
1.5	4	115/208-230	95/190	5000	48C	3.92	5.50	0.625"	0.187" x 0.092"	104815101BP	**5U269**	$201.00	**$173.75**	4.8
3	4	115/208-230	95/190	5000	48C	3.92	5.50	0.625	0.187 x 0.092	104816101BP	**5U271**	201.00	**173.75**	4.8
6	4	115/208-230	95/190	5000	48C	3.92	5.50	0.625	0.187 x 0.092	104817101BP	**5U273**	211.00	**182.75**	5.0
1.5	4	208-230/460	190/380	5000	48C	3.92	5.50	0.625	0.187 x 0.092	104815101BQ	**5U270**	201.00	**173.75**	4.8
3	4	208-230/460	190/380	5000	48C	3.92	5.50	0.625	0.187 x 0.092	104816101BQ	**5U272**	201.00	**173.75**	4.8
6	4	208-230/460	190/380	5000	48C	3.92	5.50	0.625	0.187 x 0.092	104817101BQ	**5U274**	211.00	**182.75**	5.0
SERIES 56,000—NEMA 1 Enclosure														
1.5	9	115/208-230	95/190	5000	56C	4.00	6.56	0.625	0.187 x 0.092	105600100BPF	**5U283**	240.00	**180.00**	6.4
3	9	115/208-230	95/190	5000	56C	4.00	6.56	0.625	0.187 x 0.092	105601100BPF	**5U285**	246.00	**184.50**	6.4
6	9	115/208-230	95/190	5000	56C	4.00	6.56	0.625	0.187 x 0.092	105602100BPF	**5U287**	287.00	**215.25**	6.4
10	9	115/208-230	95/190	5000	56C	4.00	6.56	0.625	0.187 x 0.092	105603100BPF	**5U289**	342.00	**256.50**	6.9
15	9	115/208-230	95/190	5000	143-5TC	4.00	6.56	0.875	0.187 x 0.092	105604100DPF	**5U291**	392.00	**294.00**	6.9
20	9	115/208-230	95/190	5000	143-5TC	4.81	6.88	0.875	0.187 x 0.092	105605100DPF	**5U278**	438.00	**328.50**	9.0
25	9	115/208-230	95/190	5000	143-5TC	5.12	6.88	0.875	0.187 x 0.092	105606100DPF	**5U281**	498.00	**373.25**	9.0
1.5	9	208-230/460	190/380	5000	56C	4.00	6.56	0.625	0.187 x 0.092	105600100BQF	**5U284**	240.00	**180.00**	6.4
3	9	208-230/460	190/380	5000	56C	4.00	6.56	0.625	0.187 x 0.092	105601100BQF	**5U286**	246.00	**184.50**	6.4
6	9	208-230/460	190/380	5000	56C	4.00	6.56	0.625	0.187 x 0.092	105602100BQF	**5U288**	287.00	**215.25**	6.9
10	9	208-230/460	190/380	5000	56C	4.00	6.56	0.625	0.187 x 0.092	105603100BQF	**5U290**	342.00	**256.50**	6.9
15	9	208-230/460	190/380	5000	143-5TC	4.00	6.56	0.875	0.187 x 0.092	105604100DQF	**5U292**	392.00	**294.00**	6.9
20	9	208-230/460	190/380	5000	143-5TC	4.81	6.88	0.875	0.187 x 0.092	105605100DQF	**5U279**	438.00	**328.50**	9.0
25	9	208-230/460	190/380	5000	143-5TC	5.12	6.88	0.875	0.187 x 0.092	105606100DQF	**5U282**	498.00	**373.25**	9.0
SERIES 56,000—NEMA 4 Enclosure														
3	9	115/208-230	95/190	5000	56C	4.72	6.88	0.625	0.187 x 0.092	105601200BPF	**5U275**	321.00	**240.75**	8.0
6	9	115/208-230	95/190	5000	56C	4.72	6.88	0.625	0.187 x 0.092	105602200BPF	**5U276**	362.00	**271.25**	8.0
10	9	115/208-230	95/190	5000	56C	4.97	6.88	0.625	0.187 x 0.092	105603200BPF	**5U277**	417.00	**312.75**	9.0
15	9	115/208-230	95/190	5000	56C	5.28	6.88	0.625	0.187 x 0.092	105604200BPF	**5U280**	467.00	**350.00**	8.0
SERIES 87,000—NEMA 1 Enclosure														
6	20	230/460	190/380	4000	182/184TC	7.38	9.38	1.125	0.250 x 0.125	1087001S0EQF	**5U331**	480.00	**415.50**	20.0
10	20	230/460	190/380	4000	182/184TC	7.38	9.38	1.125	0.250 x 0.125	1087011S0EQF	**5U335**	480.00	**415.50**	20.0
15	20	230/460	190/380	4000	182/184TC	7.38	9.38	1.125	0.250 x 0.125	1087021S0EQF	**5U339**	500.00	**432.50**	21.0
25	20	230/460	190/380	4000	182/184TC	7.38	9.38	1.125	0.250 x 0.125	1087031S0EQF	**5U343**	512.00	**443.50**	22.0
35	20	230/460	190/380	4000	182/184TC	7.38	9.38	1.125	0.250 x 0.125	1087041S0EQF	**5U347**	584.00	**506.00**	25.0
50	20	230/460	190/380	4000	213/215TC	7.88	9.38	1.375	0.312 x 0.156	1087051S0GQF	**5U351**	719.00	**622.50**	24.0
75	20	230/460	190/380	4000	254/256TC	7.88	9.38	1.625	0.375 x 0.187	1087061S0HQF	**5U355**	986.00	**854.50**	27.0
105	20	230/460	190/380	4000	254/256TC	8.38	9.38	1.625	0.375 x 0.187	1087081S0HQF	**5U359**	1276.00	**1106.00**	32.0
SERIES 87,000—NEMA 4 Enclosure														
6	20	230/460	190/380	4000	182/184TC	7.56	9.38	1.125	0.250 x 0.125	1087002S0EQF	**5U332**	625.00	**541.00**	43.0
10	20	230/460	190/380	4000	182/184TC	7.56	9.38	1.125	0.250 x 0.125	1087012S0EQF	**5U336**	625.00	**541.00**	43.0
15	20	230/460	190/380	4000	182/184TC	7.56	9.38	1.125	0.250 x 0.125	1087022S0EQF	**5U340**	752.00	**651.50**	45.0
25	20	230/460	190/380	4000	182/184TC	7.56	9.38	1.125	0.250 x 0.125	1087032S0EQF	**5U344**	799.00	**691.50**	47.0
35	20	230/460	190/380	4000	182/184TC	7.56	9.38	1.125	0.250 x 0.125	1087042S0EQF	**5U348**	882.00	**764.00**	49.0
50	20	230/460	190/380	4000	213/215TC	8.06	9.38	1.375	0.312 x 0.156	1087052S0GQF	**5U352**	1037.00	**898.00**	51.0
75	20	230/460	190/380	4000	254/256TC	8.06	9.38	1.625	0.375 x 0.187	1087062S0HQF	**5U356**	1337.00	**1159.00**	52.0
105	20	230/460	190/380	4000	254/256TC	8.56	9.38	1.625	0.375 x 0.187	1087082S0HQF	**5U360**	1682.00	**1457.00**	59.0
SERIES 82,000—NEMA 1 Enclosure														
125	50	230/460	190/380	1800	324/326TC	12.12	15.75	2.125	0.500 x 0.250	108201102NQF	**5U313**	3103.00	**2840.00**	186.0
175	50	230/460	190/380	1800	324/326TC	12.12	15.75	2.125	0.500 x 0.250	108202102NQF	**5U315**	3183.00	**2913.00**	186.0
230	50	230/460	190/380	1800	364/365TC	12.12	15.75	2.375	0.625 x 0.312	108203102RQF	**5U317**	3425.00	**3132.00**	190.0
330	50	230/460	190/380	1800	364/365TC	12.12	15.75	2.375	0.625 x 0.312	108204102RQF	**5U319**	3781.00	**3461.00**	195.0
440	50	230/460	190/380	1800	364/365TC	13.38	15.75	2.375	0.625 x 0.312	108205102RQF	**5U321**	4231.00	**3873.00**	212.0
550	50	230/460	190/380	1800	404/405TC	13.38	15.75	2.875	0.750 x 0.375	108206102XQF	**5U323**	4711.00	**4313.00**	218.0
SERIES 82,000—NEMA 4 Enclosure														
125	50	230/460	190/380	1800	324/326TC	12.19	15.75	2.125	0.500 x 0.250	108201202NQF	**5U314**	3608.00	**3303.00**	194.0
175	50	230/460	190/380	1800	324/326TC	12.19	15.75	2.125	0.500 x 0.250	108202202NQF	**5U316**	3713.00	**3396.00**	194.0
230	50	230/460	190/380	1800	364/365TC	12.19	15.75	2.375	0.625 x 0.312	108203202RQF	**5U318**	3985.00	**3648.00**	195.0
330	50	230/460	190/380	1800	364/365TC	12.19	15.75	2.375	0.625 x 0.312	108204202RQF	**5U320**	4396.00	**4025.00**	195.0
440	50	230/460	190/380	1800	404/405TC	13.44	15.75	2.875	0.750 x 0.375	108205202XQF	**5U322**	4917.00	**4502.00**	212.0
550	50	230/460	190/380	1800	404/405TC	13.44	15.75	2.875	0.750 x 0.375	108206202XQF	**5U324**	5474.00	**5013.00**	218.0
SERIES 86,000—NEMA 1 Enclosure														
500	80	460	380	1800	444/445TC	13.31	18.50	3.375	0.875 x 0.437	108602102TLF	**5U325**	6338.00	**5802.00**	318.0
750	80	460	380	1800	444/445TC	13.31	18.50	3.375	0.875 x 0.437	108603102TLF	**5U327**	6990.00	**6399.00**	340.0
1000	80	460	380	1800	444/445TC	13.31	18.50	3.375	0.875 x 0.437	108604102TLF	**5U329**	7646.00	**7000.00**	362.0
SERIES 86,000—NEMA 4 Enclosure														
500	80	460	380	1800	444/445TC	13.38	18.50	3.375	0.875 x 0.437	108602202TLF	**5U326**	7079.00	**6481.00**	315.0
750	80	460	380	1800	444/445TC	13.38	18.50	3.375	0.875 x 0.437	108603202TLF	**5U328**	7733.00	**7080.00**	348.0
1000	80	460	380	1800	444/445TC	13.38	18.50	3.375	0.875 x 0.437	108604202TLF	**5U330**	8389.00	**7681.00**	370.0

DOUBLE C-FACE ELECTRICALLY SET MODULAR CLUTCHES, BRAKES AND CLUTCH/BRAKES

Stearns

E71115 LR6254



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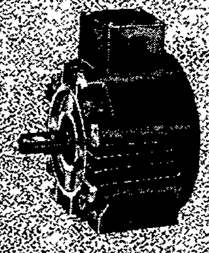

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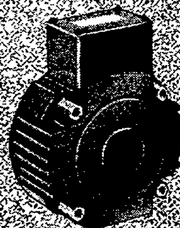

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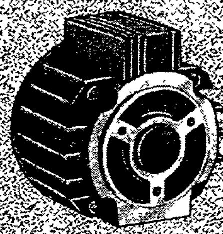
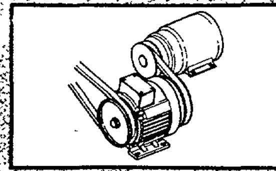
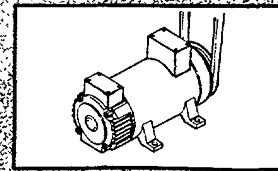
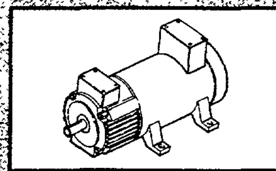


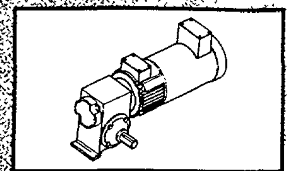
D

TYPICAL APPLICATIONS









Selection Chart

CAUTION: RPM refers to shaft speed at clutch or brake.
Based on 2.75 service factor

RPM x 100 / HP	2	4	6	8	10	12	15	18	20	24	30	36	40	46	50
1/20															
1/12															
1/8															
1/6															
1/4															
1/3															
1/2															
3/4															
1															
1½					SM-100/180 SERIES										
2															
3															
5															
7½							SM-250 SERIES								
10															
15															
20															
25															

- **Optional modular kits (voltage, mounting, and base) available; see page 257**
- **Designed to accommodate standard motors that have been reworked with C-face kits**
- **Pre-burnished for out-of-box operation**
- **Large fully gasketed conduit boxes**
- **Exclusive bi-directional internal fan insures the same operational temperature in both directions of operation; no external fan kits are required to operate at unit's rating**
- **Input shaft key is permanently installed**
- **Automatic air gap adjustment**
- **Precision sealed ball bearings**
- **Non-asbestos friction linings**
- **Class H magnet wire**
- **Epoxy encapsulated coil construction for uniform heat transfer and superb moisture resistance**
- **Stainless steel internal hub for longer life**
- **UL Listed and CSA Certified**

SELECTING A CLUTCH/BRAKE, CLUTCH, OR BRAKE

Selection can be determined from the table above given the horsepower (HP) and speed (RPM) of motor.

1. Select Series rating from chart.
2. Select type of unit: Clutch/Brake, C-Face Clutch, C-Face Brake, or C-Face Brake—No Output Shaft.

Designed as direct replacements for Warner Electric, Dodge, a Inertia Dynamics units. 50, 100, and 180 Series units are offer in TENV designs which match competitors open torque ratin and thermal capacities.

Starting and stopping of the load is achieved by switchi between the clutch and brake. Load will start when voltage applied to the clutch and will stop when voltage is applied to tl brake. Motor will run continuously, eliminating premature mot failure. Units mount between a C-face motor and a C-face redu er or indirect using optional adapter kit from page 257. Load c be connected directly to the output shaft of the clutch/brak clutch, or brake.

Mounting: Available for mounting to 56C, 143TC, 145TC, 182T 184TC, 213TC, or 215TC motors and can be converted to bas mounting by adding optional base kits on page 257. Option input adapter kit on page 257 provides for indirect coupling to standard motor (utilizing a belt and sheave arrangement).

Voltage: 24 and 90 VDC units available. 90 VDC units can be co verted to operate on either 115 or 230 volts alternating curre by adding optional Tor-ac® unit into the conduit box. Order To ac unit separately from page 257.

Overhung Load: 85 lbs. all units

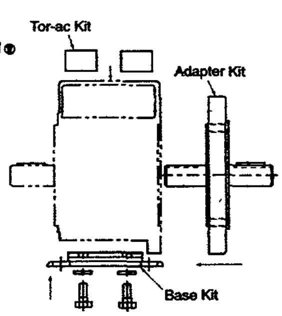
Enclosure: Totally enclosed non-ventilated (TENV) on 50, 100, an 180 Series which meet IP54; splash proof on 210 and 250 Serie which meet IP21.

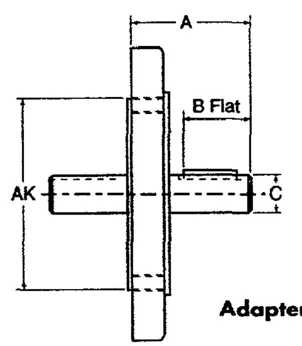
CONTINUED ON NEXT PAGE

DOUBLE C-FACE CLUTCHES, BRAKES AND CLUTCH/BRAKES AND ACCESSORIES

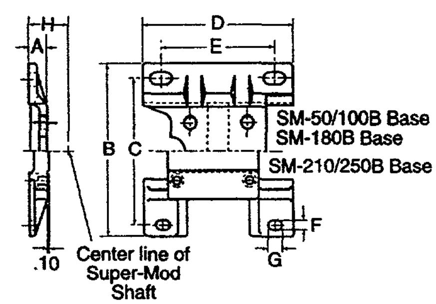
Key Page 256	Static Torque Ft.-Lbs.	Thermal Capacity HP Sec./Min.	Series	Input and Output Shaft Dia.	Enclosure	Voltage DC	Max. RPM	Motor Mounting	Dimensions, (In.) Overall Length	Width	Stearns Model	Stock No.	List	Each	Shpg. Wt.
CLUTCH/BRAKES															
A	16	15	SM-50	5/8"	TENV	90	3600	56C	6.77	6.90	235056101AJL	**5U333**	$626.00	**$427.25**	25.0
A	16	15	SM-50	5/8	TENV	24	3600	56C	6.77	6.90	235056101AEL	**5U367**	626.00	**427.25**	25.0
A	35	15	SM-100	5/8	TENV	90	3600	56C	6.77	6.90	235056102AJL	**5U334**	794.00	**542.00**	25.0
A	35	15	SM-100	5/8	TENV	24	3600	56C	6.77	6.90	235056102AEL	**5U368**	794.00	**542.00**	25.0
A	35	15	SM-180	7/8	TENV	90	3600	143-5TC	6.83	6.90	235140102AJO	**5U337**	794.00	**542.00**	25.0
A	35	15	SM-180	7/8	TENV	24	3600	143-5TC	6.83	6.90	235140102AEO	**5U383**	794.00	**542.00**	25.0
B	75	7	SM-210	1 1/8	Splash Proof	90	3600	182-4TC	8.70	9.00	235180003AJR	**5U338**	1413.00	**965.00**	43.0
B	145	6	SM-250	1 3/8	Splash Proof	90	3600	213-5TC	9.14	9.00	235210004AJU	**5U341**	1536.00	**1050.00**	43.0
C-FACE CLUTCHES															
	16	15	SM-50	5/8	TENV	90	3600	56C	6.77	6.90	236056101AJL	**5U342**	524.00	**357.75**	20.0
	35	15	SM-100	5/8	TENV	90	3600	56C	6.77	6.90	236056102AJL	**5U345**	670.00	**457.50**	20.0
	35	15	SM-180	7/8	TENV	90	3600	143-5TC	6.83	6.90	236140102AJO	**5U346**	670.00	**457.50**	20.0
	75	7	SM-210	1 1/8	Splash Proof	90	3600	182-4TC	8.70	9.00	236180003AJR	**5U349**	1188.00	**811.50**	34.0
	145	6	SM-250	1 3/8	Splash Proof	90	3600	213-5TC	9.14	9.00	236210004AJU	**5U350**	1300.00	**888.50**	35.0
C-FACE BRAKES															
	16	15	SM-50	5/8	TENV	90	3600	56C	5.20	6.90	237056101AJL	**5U353**	361.00	**246.25**	16.0
	16	15	SM-50	5/8	TENV	24	3600	56C	5.20	6.90	237056101AEL	**5U384**	361.00	**246.25**	15.0
	35	15	SM-100	5/8	TENV	90	3600	56C	5.20	6.90	237056102AJL	**5U354**	460.00	**314.00**	15.0
	35	15	SM-100	5/8	TENV	24	3600	56C	5.20	6.90	237056102AEL	**5U385**	459.00	**313.25**	15.0
	35	15	SM-180	7/8	TENV	90	3600	143-5TC	5.26	6.90	237140102AJO	**5U357**	459.00	**313.25**	15.0
	35	15	SM-180	7/8	TENV	24	3600	143-5TC	5.26	6.90	237140102AEO	**5U386**	459.00	**313.25**	15.0
	75	7	SM-210	1 1/8	Splash Proof	90	3600	182-4TC	7.20	9.00	237180003AJR	**5U358**	893.00	**610.00**	30.0
	145	6	SM-250	1 3/8	Splash Proof	90	3600	213-5TC	7.64	9.00	237210004AJU	**5U361**	994.00	**679.00**	32.0
C-FACE BRAKES—NO OUTPUT SHAFT															
	16	15	SM-50	5/8	TENV	90	3600	56C	3.14	6.90	237056101XJL	**5U362**	331.00	**226.25**	15.0
	16	15	SM-50	5/8	TENV	24	3600	56C	3.14	6.90	237056101XEL	**5U387**	331.00	**226.25**	15.0
	35	15	SM-100	5/8	TENV	90	3600	56C	3.14	6.90	237056102XJL	**5U363**	447.00	**305.25**	13.0
	35	15	SM-100	5/8	TENV	24	3600	56C	3.14	6.90	237056102XEL	**5U388**	447.00	**305.00**	13.0
	35	15	SM-180	7/8	TENV	90	3600	143-5TC	3.14	6.90	237140102XJO	**5U364**	447.00	**305.00**	14.0
	35	15	SM-180	7/8	TENV	24	3600	143-5TC	3.14	6.90	237140102XEO	**5U389**	447.00	**305.00**	14.0
	75	7	SM-210	1 1/8	Splash Proof	90	3600	182-4TC	4.61	9.00	237180003XJR	**5U365**	858.00	**586.50**	27.0
	145	6	SM-250	1 3/8	Splash Proof	90	3600	213-5TC	4.61	9.00	237210004XJU	**5U366**	954.00	**652.00**	27.0

OPTIONAL ACCESSORIES FOR DOUBLE C-FACE CLUTCHES AND BRAKES





Adapter Kit



Base Kit

or-ac® Kit allows 90 VDC clutches and rakes to operate on either 115 or 230 olts alternating current input by adding nit into conduit box maintained. UL and SA unit approval.

1put Adapter Kit provides for indirect couling to a standard motor (utilizing a belt nd sheave arrangement).

ase Kit converts double C-face clutches nd clutch/brakes to base mounting by dding appropriate base kit. No base kit or brakes only.

Tor-ac® KITS

Input Voltage	Output Voltage	Dimensions (Inches) Length	Width	Thickness	Stearns Model	Stock No.	List	Each	Shpg. Wt.
115 AC	90 VDC	1.40	0.90	0.62	412019400	**5U391**	$47.00	**$31.70**	0.5
230 AC	90 VDC	1.40	0.90	0.62	412029000	**5U392**	55.00	**37.65**	0.5

INPUT ADAPTER KITS

For Series	Dimensions (Inches) AK	A	B	C	Key	Stearns Model	Stock No.	List	Each	Shpg. Wt.
SM-50/100	4.50	2.78	1.41	0.625/0.624	3/16" x 3/16"	578610031	**5U310**	$145.80	**$99.60**	3.6
SM-180	4.50	2.84	1.41	0.875/0.874	3/16 x 3/16	578610032	**5U311**	145.80	**99.60**	4.0
SM-210	8.50	3.33	1.78	1.125/1.124	1/4 x 1/4	578000023	**5U312**	275.00	**187.75**	8.1
SM-250	8.50	3.87	2.41	1.375/1.374	5/16 x 5/16	578000024	**5U390**	647.00	**236.50**	9.3

BASE KITS

For Series	Dimensions (Inches) A	B	C	D	E	F	G	Bolt Size	Lock Washer Size	Stearns Model	Stock No.	List	Each	Shpg. Wt.
M-50/100	0.54	6.00	5.00	5.25	4.00	0.41	0.78	3/8-16 x 3/4" Hex Head	3/8" Split LKW	578110101	**5U307**	$29.00	**$19.33**	1.0
M-180	1.54	6.00	5.00	5.25	4.00	0.41	0.78	3/8-16 x 3/4" Hex Head	3/8" Split LKW	578110102	**5U308**	40.00	**27.35**	1.9
M-210/250	0.63	9.00	7.75	8.00	6.00	0.54	0.78	3/8-16 x 1" Socket Head	3/8" Split LKW	578000130	**5U309**	61.00	**41.20**	2.8

STRAIGHT BEVEL GEAR DRIVES

- For industrial applications where low speed/high torque drives are required
- Multiposition mounting flexibility—extra threaded bolt holes allow installation of gear drive in almost any position
- Feature compact, rugged construction and precision forged straight tooth bevel gears
- Made in USA

SELECTION CHART—RATINGS FOR 1.0 SERVICE FACTOR

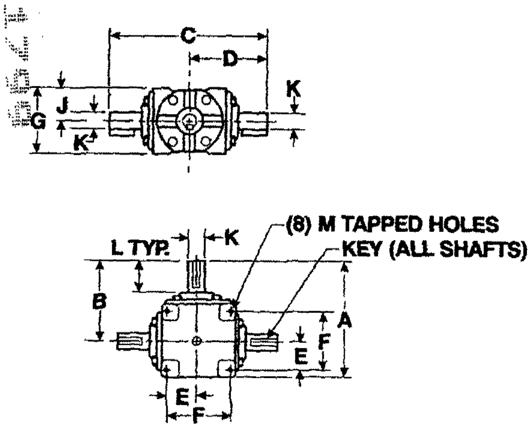
Ratio	Max. Input RPM	Max. Output RPM	R1211‡ & R1215 Output HP*	R1211‡ & R1215 Output Torque†	R1211‡ & R1215 Stock No.	R1214 Output HP*	R1214 Output Torque†	R1214 Stock No.	R1412 Output HP*	R1412 Output Torque†	R1412 Stock No.	R1413 Output HP*	R1413 Output Torque†	R1413 Stock No.
1:1	1150 690 100	1150 690 100	18.6 13.1 2.9	1020 1200 1800	1L922‡ 1L929	13.1 9.2 2.4	718 836 1490	1L925	24.7 4.8	2260 3010	1L932	17.4 4.2	1590 2630	1L935
REDUCER														
1.35:1	1750 1150 690 100	1296 852 511 74	10.8 7.6 1.5	799 940 1300	1L923‡ 1L930	13.3 10.2 7.0 1.3	647 755 857 1090	1L926	22.8 15.5 2.2	1690 1910 1910	1L933	18.9 13.2 2.2	1400 1630 1910	1L936
1.5:1	1750 1150 690 100	1167 767 460 67	13.5 10.1 7.1 1.2	730 830 977 1100	1L924‡ 1L931	12.6 9.7 6.6 1.1	681 793 904 1050	1L927	17.1 11.6 1.7	1410 1590 1590	1L934	17.1 11.6 1.7	1410 1590 1590	1L937
2:1	1750 1150 690 100	875 575 345 50				6.7 5.1 3.5 0.64	469 557 632 807	1L928				12.6 9.4 6.6 0.96	908 1030 1200 1210	1L938
INCREASER														
1:1.35	1150 690 100	1552 932 135	7.6 1.5	516 714	1L923‡ 1L930	10.2 7.0 1.3	414 470 598	1L926	15.5 2.2	1048 1048	1L933	13.2 2.2	880 1046	1L936
1:1.5	1150 690 100	1750 1032 150	10.1 7.1 1.2	369 435 492	1L924‡ 1L931	9.7 6.6 1.1	353 402 466	1L927	17.1 11.6 1.7	625 706 706	1L934	17.1 11.6 1.7	625 706 706	1L937
1:2	690 100	1380 200				3.5 0.64	158 202	1L928				6.6 0.96	300 303	1L938

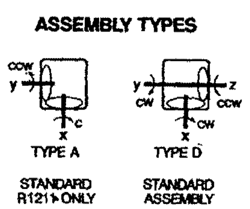
(*) Input HP approx. 5% higher. (†) Maximum torque in lbs. per inch. (‡) Single shaft—Type A.
NOTE: On other than 1:1 ratios pinion will always be on X shaft.

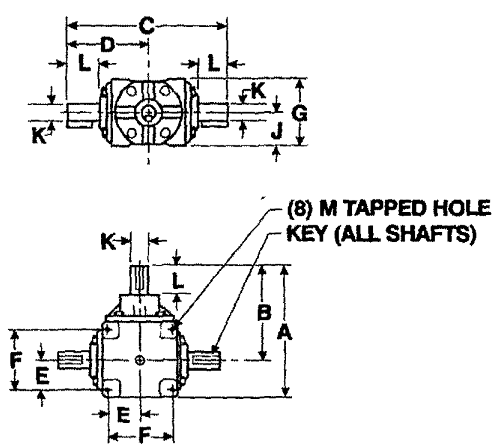
ORDERING DATA

Boston Model	Stock No.	List	Each
R1211-1-A	1L922	$295.87	$248.50
R1211-1.35-A	1L923	306.20	257.00
R1211-1.5-A	1L924	306.20	257.00
R1214-1-D	1L925	386.35	324.25
R1214-1.35-D	1L926	443.79	372.50
R1214-1.5-D	1L927	443.79	372.50
R1214-2-D	1L928	417.64	350.50
R1215-1-D	1L929	328.38	275.50
R1215-1.35-D	1L930	348.69	292.75
R1215-1.5-D	1L931	348.69	292.75
R1412-1-D	1L932	497.23	417.00
R1412-1.35-D	1L933	490.21	411.25
R1412-1.5-D	1L934	501.70	420.75
R1413-1-D	1L935	541.63	454.25
R1413-1.35-D	1L936	547.03	458.75
R1413-1.5-D	1L937	555.52	466.00
R1413-2-D	1L938	575.17	482.50

DIMENSIONAL DRAWINGS FOR STRAIGHT BEVEL GEAR DRIVES







Model No.	A	B	C	D	E	F	G	J	Type K*	Type L	M	Key
R1211	8¼	5½	—	5½	2⅛	4¼	4⅛	2¹⁄₁₆	1	2	3/8-16	1/4 x 1⅜ Lg.
R1215	8¼	5½	11	5½	2⅛	4¼	4⅛	2¹⁄₁₆	1	2	3/8-16	1/4 x 1⅜ Lg.
R1412	9⅜	6½	13	6½	2¼	4½	5⅝	2¹³⁄₁₆	1¼	2½	1/2-13	1/4 x 1⅜ Lg.

(*) +0.000-0.002.

Model No.	A	B	C	D	E	F	G	J	Type K*	Type L	M	Key
R1214	10⅛	7⅜	11	5½	2⅛	4¼	4⅛	2¹⁄₁₆	1	2	3/8-16	1/4 x 1¾ Lg.
R1413	11¼	8⅜	13	6½	2¼	4½	5⅝	2¹³⁄₁₆	1¼	2½	1/2-16	1/4 x 1⅜ Lg.

(*) +0.000-0.002.

SPIRAL BEVEL GEAR DRIVES

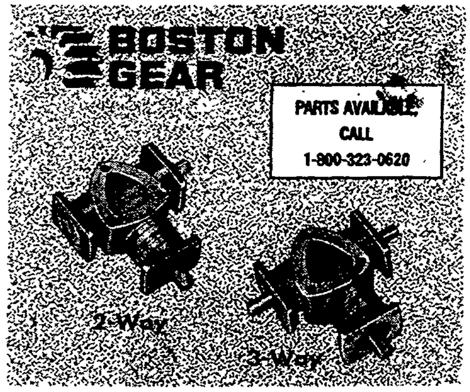
ORDERING DATA

ston idel	2-WAY SPIRAL BEVEL GEARS Stock No.	List	Each	Shpg. Wt.	Ratio	3-WAY SPIRAL BEVEL GEARS Boston Model	Stock No.	List	Each	Shpg. Wt.
21	**1L910**	$192.94	**$181.75**	1.0	1:1	RA631	**1L916**	$192.94	**$181.75**	1.3
22	**1L911**	224.64	**211.50**	1.3	2:1	RA632	**1L917**	224.64	**211.50**	1.3
021	**1L912**	260.60	**245.75**	4.0	1:1	RA1031	**1L918**	260.60	**245.75**	3.5
022	**1L913**	346.76	**326.50**	3.3	2:1	RA1032	**1L919**	346.76	**326.50**	3.4
521	**1L914**	485.58	**457.00**	8.8	1:1	RA1531	**1L920**	485.58	**457.00**	9.0
522	**1L915**	641.01	**603.50**	10.0	2:1	RA1532	**1L921**	641.01	**603.50**	8.9

SELECTION CHART—RATINGS FOR 1.0 SERVICE FACTOR

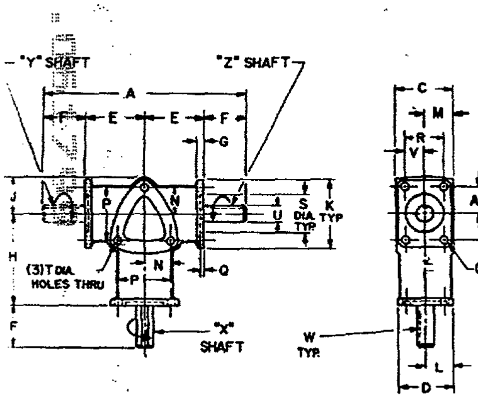
Input RPM	Output RPM	Boston Series RA621 & RA631 HP	Output Torque†	Stock No.	Boston Series RA1021 & RA1031 HP	Output Torque†	Stock No.	Boston Series RA1521 & RA1531 HP	Output Torque†	Stock No.
1750	1750	0.33	12.0		1.5	54.0		3.5	125.0	
1150	1150	0.27	15.0	1L910‡	1.0	56.0	1L912‡	2.5	135.0	1L914‡
690	690	0.18	16.0	1L916	0.62	57.0	1L918	1.6	142.0	1L920
100	100	0.03	19.0		0.10	60.0		0.28	174.0	
		Boston Series RA622 & RA632			Boston Series RA1022 & RA1032			Boston Series RA1522 & RA1532		
REDUCER (Use Shaft "X")										
1750	875	0.13	9.5		0.55	40.0		1.8	132.0	
1150	575	0.10	10.5	1L911‡	0.40	45.0	1L913‡	1.4	150.0	1L915‡
690	345	0.06	11.0	1L917	0.25	47.0	1L919	0.89	162.0	1L921
100	50	0.01	12.0		0.04	50.0		0.14	175.0	
INCREASER* (Use Shaft "Y" or "Z")										
1750	3500	0.13	2.4		0.55	10.0		1.8	33.0	
1150	2300	0.10	2.6	1L911‡	0.40	11.2	1L913‡	1.4	37.5	1L915‡
690	1380	0.06	2.8	1L917	0.25	11.7	1L919	0.89	40.5	1L921
100	200	0.01	3.0		0.04	12.5		0.14	43.8	

plicable ratings when used as a speed increaser and driven by "Y" or "Z" shaft only (see drawing below).
rque in Lbs./In. (‡) 2-Way spiral bevel gear drive.



RIGHT-90 SERIES

- Designed for high efficiency, quiet operation, and long service life
- Gears are made of hardened alloy steel
- Precision ground alloy steel shafts are mounted on precision ball bearings
- Housings are made of aluminum alloy; with all mounting surfaces precision machined
- All shaft projections have high quality oil seals
- Prelubricated for life
- Made in USA



DIMENSIONAL DRAWING FOR SPIRAL BEVEL GEAR DRIVES

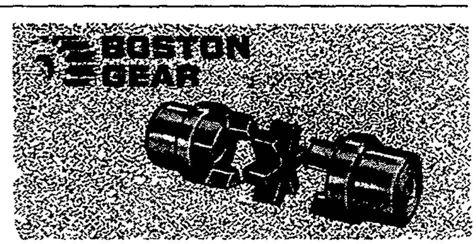
Model No.	A	B	C	D	E	F	G	H	J	K	L	M
RA6	3 15/16	3 21/32	1 1/4	1 7/32	1 3/8	19/32	3/16	2 5/32	29/32	1 9/16	5/8	5/8
RA10	7 1/4	6 1/32	2	1 15/16	2 1/8	1 1/2	1/4	3 1/4	1 9/32	2 7/16	15/16	1
RA15	10	8 7/8	3	2 15/16	3	2	5/16	5	1 7/8	3 3/4	1 15/32	1 1/2

Model No.	N	P	Q	R	S	T Holes	TT Holes	U#	All Shafts V	W Keyway		AA	BB
RA6	21/32	1 5/16	3/32	7/8	7/8	3/16	5/32	3/8	7/16	FLAT		0.59	1.19
RA10	15/16	1 7/8	3/32	1 3/8	1 3/8	17/64	17/64	5/8	11/16	3/16	3/32	0.94	1.88
RA15	1 1/2	3	1/8	2 1/4	2 1/8	5/16	5/16	3/4	1 1/8	3/16	3/32	1.50	3.00

(#) +0.000-0.001.

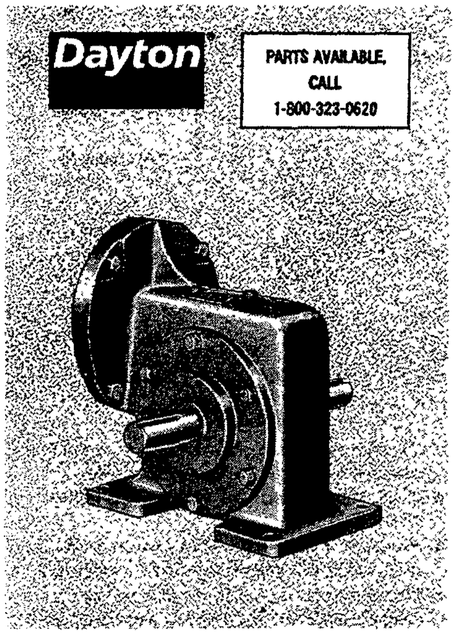
SHAFT COUPLINGS

- ecision machined high quality steel rmits accurate assembly, minimizes oration, and assures quiet operation
- sert (3-jaw) type
- Three types of spider inserts available for different service requirements (see listing below)
- No lubrication needed
- Complete with keyway and setscrew



OD	Overall Length	3/8"	7/16"	1/2"	9/16"	5/8"	3/4"	7/8"	15/16"	1"	1 1/8"	1 3/16"	1 1/4"	1 3/8"	1 7/16"	1 1/2"	1 9/16"	1 5/8"	1 3/4"	1 7/8"	2"	2 1/8"	List	Each	Shpg. Wt.
1/4"	2 5/16"	2L028	2L029	2L030	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	$15.60	$14.94	0.2
1/2	2 3/4	—	—	2L031	2L032	2L033	2L034	2L035	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19.20	18.38	0.4
	3 11/16	—	—	2L036	2L037	2L038	2L039	2L040	2L041	6G234	—	—	—	—	—	—	—	—	—	—	—	—	26.67	25.55	1.2
1/2	4 1/8	—	—	—	—	—	2L042	2L043	—	2L044	2L045	2L046	2L047	—	—	—	—	—	—	—	—	—	41.60	39.85	1.8
	5 16/32	—	—	—	—	—	—	—	—	2L048	2L049	—	2L050	2L051	2L052	2L053	—	—	—	—	—	—	57.10	54.65	3.8
1/4	6 5/16	—	—	—	—	—	—	—	—	—	—	—	2L054	—	—	2L055	2L056	2L057	2L058	2L059	—	—	90.73	86.85	7.7
1/2	7 3/16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2L060	2L061	2L062	2L063	130.75	125.10	13.0

C-FACE RIGHT ANGLE SPEED REDUCERS AND MOTOR/REDUCER COMBINATIONS



Nominal Output RPM	Torque (In.-Lbs.) 1/4 HP	1/3 HP	1/2 HP	3/4 HP
29	241	336	537	—
35	225	313	498	—
43	200	277	431	—
69	140	193	319	492
86	115	163	265	422
138	80	115	185	292
173	65	92	146	226

- **Shipped with oil**
- **29 to 173 RPM, continuous duty**
- **For use with 1/4 to 3/4 HP, NEMA 56C, 1725 RPM motors**
- **Double output shafts**
- **2.62" Worm Center Distance**

Worm: Case hardened, ball bearing supported

Output Gear: High strength bronze, tapered roller bearing supported

Housing: Cast iron

Mounting: Horizontal floor or ceiling only

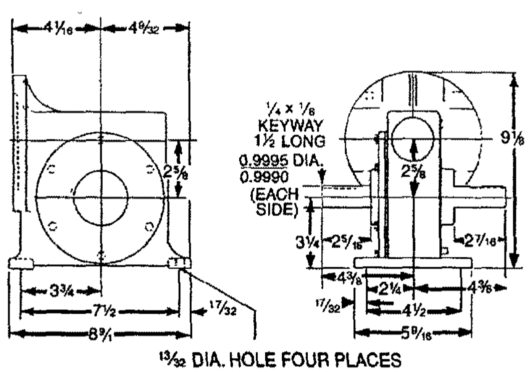
Nominal Output RPM	Ratio	Overhung Load (Lbs.)	Stock No.	Less Motor List	Each	Shpg. Wt.
29	60:1	1117	**6Z128**	$323.00	**$226.00**	30.0
35	50:1	986	**2Z151**	323.00	**226.00**	30.0
43	40:1	870	**6Z129**	323.00	**226.00**	30.0
69	25:1	679	**2Z152**	323.00	**226.00**	30.0
86	20:1	629	**2Z153**	323.00	**226.00**	31.0
138	12.5:1	487	**2Z154**	323.00	**226.00**	28.0
173	10:1	432	**2Z936**	323.00	**226.00**	29.0

Input Motor HP	Nom. Output RPM	Torque In.-Lbs.	REDUCER with DRIPPROOF MOTOR* Stock No.	Each	Shpg. Wt.	REDUCER & ENCLOSED MOTOR Stock No.	Each	Shpg. Wt.
REDUCER WITH SINGLE-PHASE, 1725 RPM, 115/230V, 60 Hz BALL BEARING MOTORS								
1/4	29	241	**7Z066**	**$318.75**	47.0	**7Z072**	**$335.50**	48
	35	225	**7Z715**	**318.75**	47.0	**7Z720**	**335.50**	4[illegible]
	43	200	**7Z069**	**318.75**	47.0	**7Z075**	**335.50**	4[illegible]
	69	140	**7Z716**	**318.75**	47.0	**7Z721**	**335.50**	4[illegible]
	86	115	**7Z717**	**318.75**	48.0	**7Z722**	**335.50**	4[illegible]
	138	80	**7Z718**	**318.75**	45.0	**7Z723**	**335.50**	4[illegible]
	173	65	**7Z719**	**318.75**	46.0	**7Z724**	**335.50**	4[illegible]
1/3	29	336	**7Z067**	**338.25**	48.0	**7Z073**	**347.00**	5[illegible]
	35	313	**7Z228**	**338.25**	48.0	**7Z239**	**347.00**	5[illegible]
	43	277	**7Z070**	**338.25**	48.0	**7Z077**	**347.00**	5[illegible]
	69	193	**7Z229**	**338.25**	48.0	**7Z240**	**347.00**	5[illegible]
	86	163	**7Z230**	**338.25**	49.0	**7Z241**	**347.00**	5[illegible]
	138	115	**7Z231**	**338.25**	46.0	**7Z242**	**347.00**	4[illegible]
	173	92	**7Z725**	**338.25**	47.0	**7Z728**	**347.00**	4[illegible]
1/2	29	537	**7Z068**	**355.00**	51.0	**7Z074**	**369.75**	5[illegible]
	35	498	**7Z232**	**355.00**	51.0	**7Z243**	**369.75**	5[illegible]
	43	431	**7Z071**	**355.00**	51.0	**7Z078**	**369.75**	5[illegible]
	69	319	**7Z233**	**355.00**	51.0	**7Z244**	**369.75**	5[illegible]
	86	265	**7Z234**	**355.00**	52.0	**7Z245**	**369.75**	5[illegible]
	138	185	**7Z235**	**355.00**	49.0	**7Z246**	**369.75**	5[illegible]
	173	146	**7Z726**	**355.00**	50.0	**7Z729**	**369.75**	5[illegible]
3/4	69	492	**7Z236†**	**384.25**	57.0	**7Z247**	**398.25**	58
	86	422	**7Z237†**	**384.25**	58.0	**7Z248**	**398.25**	59
	138	292	**7Z238†**	**384.25**	55.0	**7Z249**	**398.25**	56
	173	226	**7Z727†**	**384.25**	56.0	**7Z730**	**398.25**	57
REDUCER WITH 3-PHASE, 1725 RPM, 208-220/440V, 60 Hz BALL BEARING MOTORS								
1/3	29	336	**7Z079**	**332.50**	48.0	**7Z083**	**350.75**	48.
	35	313	**7Z250**	**332.50**	48.0	**7Z261**	**350.75**	48
	43	277	**7Z081**	**332.50**	48.0	**7Z085**	**350.75**	48
	69	193	**7Z251**	**332.50**	48.0	**7Z262**	**350.75**	48
	86	163	**7Z252**	**332.50**	49.0	**7Z263**	**350.75**	49.[illegible]
	138	115	**7Z253**	**332.50**	46.0	**7Z264**	**350.75**	46.0
	173	92	**7Z731**	**332.50**	47.0	**7Z734**	**350.75**	47.0
1/2	29	537	**7Z080**	**349.25**	50.0	**7Z084**	**372.75**	52.0
	35	498	**7Z254**	**349.25**	50.0	**7Z265**	**372.75**	52.0
	43	431	**7Z082**	**349.25**	50.0	**7Z089**	**372.75**	52.0
	69	319	**7Z255**	**349.25**	50.0	**7Z266**	**372.75**	52.0
	86	265	**7Z256**	**349.25**	51.0	**7Z267**	**372.75**	53.0
	138	185	**7Z257**	**349.25**	48.0	**7Z268**	**372.75**	50.0
	173	146	**7Z732**	**349.25**	49.0	**7Z735**	**372.75**	51.0
3/4	69	492	**7Z258**	**364.00**	52.0	**7Z269**	**382.25**	55.0
	86	422	**7Z259**	**364.00**	53.0	**7Z270**	**382.25**	56.0
	138	292	**7Z260**	**364.00**	50.0	**7Z271**	**382.25**	53.0
	173	226	**7Z733**	**364.00**	51.0	**7Z736**	**382.25**	54.0

(*) Dayton brand motors (†) 3/4 HP, continuous duty.

Dayton

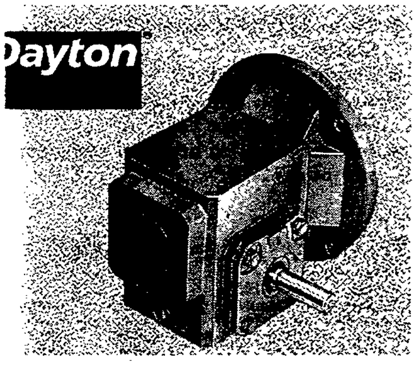
C-FACE RIGHT ANGLE



C-FACE RIGHT ANGLE SPEED REDUCER DIMENSIONAL DRAWINGS

These dimensional drawings are represen tative of the speed reducers found on thi page.

C-FACE RIGHT ANGLE SPEED REDUCERS



Worm Center Distance	Overhung Load (Lbs.)
1.33"	275
1.75	700
2.06	875
2.62	1300
3.25	1500

? to 350 RPM
ngle (left hand facing C-face input)
ıd double output shafts
terchangeable with most Grove
lexaline) and Ohio (Uniline)
ll units shipped with oil

gned for low speed/high torque, con-
ıus duty applications when coupled to
:MA 56C face (some 3.25" WCD units
on input shaft and frame size), 1750
motor (not included). Features dou-
ipped and spring loaded shaft seals
large oil sump.

ing: Cast iron

ngs: Ball on input shaft, tapered roller
ıngs on output shaft

n: Thread-rolled and hardened alloy
worm for higher strength and lower
er loss with forged bronze and hard-
worm gear

nting: Any position (with optional
s from page 271) except input motor
up

Nom. Output RPM at 1750 RPM	Worm Ctr. Dist. (WCD)	Nominal Ratio	1/4 HP	1/3 HP	1/2 HP	3/4 HP	1 HP	1½ HP	2 HP	3 HP	5 HP	7½ HP	Stock No. Double Shaft	Stock No. Single Shaft	List	Each	Shpg. Wt.
			CONTINUOUS DUTY OUTPUT TORQUE at 1750 RPM In.-Lbs. at Input Motor HP Shown (1.0 Service Factor)														
29	1.33"	60:1	209	—	—	—	—	—	—	—	—	—	4Z001	4Z284	$313.00	$218.50	17.0
29	1.75	60:1	314	415	—	—	—	—	—	—	—	—	—	4Z292	342.00	238.75	20.0
29	2.06	60:1	305	423	636	—	—	—	—	—	—	—	4Z008	4Z300	377.00	263.50	26.0
29	2.62	60:1	—	407	653	1021	—	—	—	—	—	—	—	4Z730	533.00	372.75	53.0
29	3.25	60:1	—	—	619	995	1371	—	—	—	—	—	4Z015	—	747.00	522.50	75.0
35	1.33	50:1	225	—	—	—	—	—	—	—	—	—	—	4Z285	313.00	218.50	18.0
35	1.75	50:1	279	379	449	—	—	—	—	—	—	—	—	4Z293	342.00	238.75	20.0
35	2.06	50:1	—	372	581	—	—	—	—	—	—	—	—	4Z301	377.00	263.50	25.0
35	2.62	50:1	—	356	572	805	—	—	—	—	—	—	—	4Z731	533.00	372.75	47.0
35	3.25	50:1	—	—	—	870	1199	1857	—	—	—	—	6Z130	—	764.00	534.50	79.0
44	1.33	40:1	220	—	—	—	—	—	—	—	—	—	4Z002	4Z286	313.00	218.50	17.0
44	1.75	40:1	235	324	477	—	—	—	—	—	—	—	—	4Z294	342.00	238.75	20.0
44	2.06	40:1	—	315	492	—	—	—	—	—	—	—	4Z009	4Z302	377.00	263.50	26.0
44	2.62	40:1	—	300	482	755	1028	—	—	—	—	—	—	4Z732	533.00	372.75	47.0
44	3.25	40:1	—	—	—	732	1009	1563	—	—	—	—	4Z016	—	747.00	522.50	73.0
58	1.33	30:1	195	233	—	—	—	—	—	—	—	—	4Z003	4Z287	313.00	218.50	17.0
58	1.75	30:1	189	260	401	—	—	—	—	—	—	—	—	4Z295	342.00	238.75	20.0
58	2.06	30:1	—	—	397	610	—	—	—	—	—	—	4Z010	4Z303	377.00	263.50	27.0
58	2.62	30:1	—	—	386	604	823	983	—	—	—	—	—	4Z733	533.00	372.75	47.0
58	3.25	30:1	—	—	—	—	805	1247	1689	—	—	—	4Z017	—	747.00	522.50	74.0
88	1.33	20:1	139	189	212	—	—	—	—	—	—	—	4Z004	4Z288	313.00	218.50	17.0
88	1.75	20:1	—	185	286	436	—	—	—	—	—	—	—	4Z296	342.00	238.75	21.0
88	2.06	20:1	—	—	282	434	586	—	—	—	—	—	4Z011	4Z304	377.00	263.50	27.0
88	2.62	20:1	—	—	—	427	582	891	—	—	—	—	—	4Z734	533.00	372.75	47.0
88	3.25†	20:1	—	—	—	—	—	—	1191	1816	—	—	4Z018	—	746.00	522.00	81.0
117	1.33	15:1	109	147	203	—	—	—	—	—	—	—	4Z005	4Z289	313.00	218.50	17.0
117	1.75	15:1	—	—	221	338	430	—	—	—	—	—	—	4Z297	342.00	238.75	21.0
117	2.06	15:1	—	—	—	338	456	614	—	—	—	—	4Z012	4Z305	377.00	263.50	26.0
117	2.62	15:1	—	—	—	—	461	691	925	—	—	—	—	4Z735	533.00	372.75	47.0
117	3.25†	15:1	—	—	—	—	—	—	923	1407	—	—	4Z019	—	746.00	522.00	80.0
175	1.33	10:1	75	102	155	182	—	—	—	—	—	—	4Z006	4Z290	313.00	218.50	17.0
175	1.75	10:1	—	—	—	237	316	407	—	—	—	—	—	4Z298	342.00	238.75	23.0
175	2.06	10:1	—	—	—	—	314	477	554	—	—	—	4Z013	4Z306	377.00	263.50	27.0
175	2.62	10:1	—	—	—	—	—	474	639	972	—	—	—	4Z736	533.00	372.75	47.0
175	3.25†	10:1	—	—	—	—	—	—	632	964	1629	—	4Z020	—	746.00	522.00	81.0
350	1.33	5:1	39	52	80	121	163	—	—	—	—	—	4Z007	4Z291	313.00	218.50	18.0
350	1.75	5:1	—	—	—	120	164	246	276	—	—	—	—	4Z299	342.00	238.75	20.0
350	2.06	5:1	—	—	—	—	—	245	329	—	—	—	4Z014	4Z307	377.00	263.50	27.0
350	2.62	5:1	—	—	—	—	—	242	327	496	—	—	—	4Z737	533.00	372.75	47.0
350	3.25*	5:1	—	—	—	—	—	—	—	—	—	1260	4Z021	—	746.00	522.00	79.0

(*) Input motor has 213TC frame with 1⅜" bore and 5/16 x 5/32" keyway.
(†) Input motor has 182TC or 184TC frame with 1⅛" and 1/4 x 1/8" keyway.

OPTIONAL MOUNTING BASES AVAILABLE FOR SPEED REDUCERS LISTED ABOVE, SEE PAGE 271

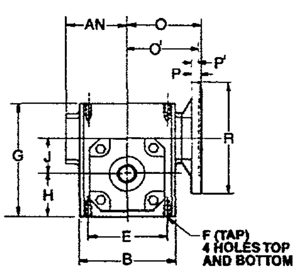
PARTS AVAILABLE, CALL 1-800-323-0620

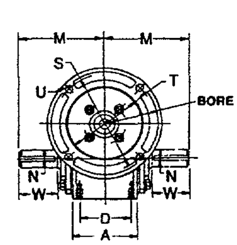
C-FACE RIGHT ANGLE SPEED REDUCER DIMENSIONAL DRAWINGS

'hese dimensional drawings are representative of the
peed reducers found above. Right and left hand shafts
re determined while facing C-face input.

Dayton

C-FACE RIGHT ANGLE

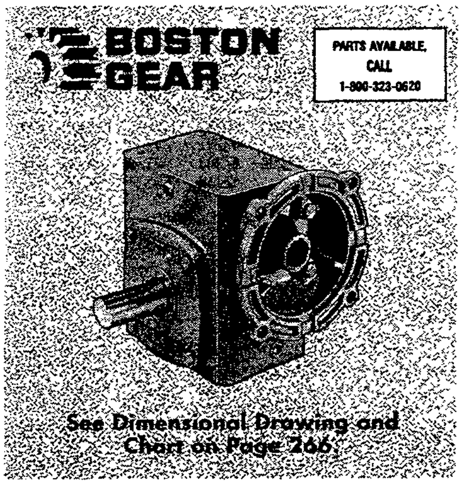




›rm ıter ınce	A	B	D	E	F	G	H	J	AN
	Dimensions (Inches)								
3"	3.50	4.13	3.00	3.00	1/4-20	4.94	1.75	1.33	2.22
5	3.38	4.81	2.75	4.19	5/16-18	5.75	2.06	1.75	2.75
6	3.75	5.50	3.00	4.75	5/16-18	6.38	2.28	2.06	3.00
2	4.44	7.13	3.38	6.38	3/8-16	8.00	2.94	2.63	3.69
5	5.00	8.50	4.00	7.50	7/16-14	9.38	3.50	3.25	4.88

/orm ɜnter ıtance	Output Shaft M	Output Shaft N	Output Shaft W	Output Shaft Keyway	56C O	182TC 184TC O¹	P	P¹	R	S	T	U	Bore	Keyway
	Dimensions (Inches)													
33"	4.38	0.625	1.75	.188 x 1.25	3.94	—	0.50	—	6.50	5.88	4.50	0.41	0.625	.188 x 1.38
75	4.31	0.875	1.88	.188 x 1.38	4.38	—	—	0.56	9.00	7.25	8.50	0.53	1.125	.250 x 1.13
06	4.69	1.000	2.00	.250 x 1.75	4.75	—	—	0.56	9.00	7.25	8.50	0.53	1.125	.250 x 1.13
62	5.63	1.250	2.50	.250 x 2.00	5.69	—	—	0.56	9.00	7.25	8.50	0.53	1.375	.313 x 1.38
25	7.06	1.500	3.31	.375 x 2.50	6.56	7.00	—	0.56	9.00	7.25	8.50	0.53	1.375	.313 x 1.38

C-FACE RIGHT ANGLE SPEED REDUCERS



- **BOSTON LIFETIME LIMITED WARRANTY. See page facing inside back cover of catalog for details**
- **SHIPPED LESS OIL (See listing for No. 4ZF30 on page 266)**

Heavy-duty worm gear speed reducers with value-engineered features for flexible installation, long life, and simplified maintenance. Fine-grained cast-iron housing. Integral input worm and shaft of case-hardened alloy steel.

Oversized ball and roller bearings for maximum performance. Extra threaded bolt holes, when used with base, allow multiposition installation on floor, sidewall, or ceiling (with optional base kits). Boston brand.

- **29 to 350 RPM with 1750 RPM inpu motor**
- **Single output shaft**
- **All position mounting with base kits shown on page 266**
- **Fan kit must be ordered separately; see page 266**

INPUT BORE DIMENSIONS

Bore Code*	NEMA Mounting	Bore	Keyway
B4	42CZ	0.500"	1/8 x 1/1
B5	56C	0.625	3/16 x 3/
B7	140TC/180C	0.875	3/16 x 3/
B9	180TC/210C	1.125	1/4 x 1/8
B11	210TC/250VC	1.375	5/16 x 5/
B13	250TC	1.625	3/8 x 3/1

(*) Bore code found in Boston Model No.

Nom. Output RPM at 1750 RPM	Worm Ctr. Dist. (WCD)	Nominal Ratio	AT 1750 RPM CONTINUOUS DUTY OUTPUT TORQUE In.-lbs. at Input Motor HP Shown (1.0 Service Factor) 1/6 HP	1/4 HP	1/3 HP	1/2 HP	3/4 HP	1 HP	1½ HP	2 HP	3 HP	5 HP	7½ HP	10 HP	15 HP	See Chart Above for Bore Dimensions Boston Model	Stock No.	List	Each	SI
29	1.75"	60:1	223	335	440	—	—	—	—	—	—	—	—	—	—	F-718-60-B5-G	1L295	$483.52	$392.25	
29	2.06	60:1	—	335	440	670	—	—	—	—	—	—	—	—	—	F-721-60-B5-G	1L324	574.34	465.50	
29	2.38	60:1	—	—	440	670	—	—	—	—	—	—	—	—	—	F-724-60-B5-G	1L329	640.81	521.50	
29	2.62	60:1	—	—	—	670	1004	—	—	—	—	—	—	—	—	F-726-60-B5-G	1L370	837.53	681.50	
29	3.25	60:1	—	—	—	—	1004	—	—	—	—	—	—	—	—	F-732-60-B5-G	1L860	1066.38	966.00	
29	3.25	60:1	—	—	—	—	—	1340	2009	—	—	—	—	—	—	F-732-60-B7-G	1L861	1066.38	966.00	
29	3.75	60:1	—	—	—	—	—	—	2009	2678	—	—	—	—	—	F-738-60-B7-G	1L869	1280.36	1160.00	1
29	5.16	60:1	—	—	—	—	—	—	—	—	4020	7392	—	—	—	RF-752-60-B9-G	1L878	2025.64	1835.00	2:
29	6.00	60:1	—	—	—	—	—	—	—	—	4020	7392	—	—	—	RF-760-60-B9-G	1L885	3000.45	2717.00	2-
35	1.00	50:1	120	—	—	—	—	—	—	—	—	—	—	—	—	F-710-50-B4-G	1L237	333.91	269.75	
35	1.00	50:1	120	—	—	—	—	—	—	—	—	—	—	—	—	F-710-50-B5-G	1L251	333.91	269.75	1
35	1.33	50:1	210	—	—	—	—	—	—	—	—	—	—	—	—	F-713-50-B5-G	1L269	390.67	316.25	1
35	1.54	50:1	210	315	—	—	—	—	—	—	—	—	—	—	—	F-715-50-B5-G	1L282	454.73	368.75	1
35	1.75	50:1	—	315	420	—	—	—	—	—	—	—	—	—	—	F-718-50-B5-G	1L296	483.52	392.25	2
35	2.06	50:1	—	—	420	630	—	—	—	—	—	—	—	—	—	F-721-50-B5-G	1L325	574.34	465.50	2
35	2.38	50:1	—	—	—	630	945	—	—	—	—	—	—	—	—	F-724-50-B5-G	1L330	640.81	521.50	3
35	2.62	50:1	—	—	—	—	945	1260	—	—	—	—	—	—	—	F-726-50-B5-G	1L363	837.53	681.50	4
35	3.25	50:1	—	—	—	—	—	—	1890	2520	—	—	—	—	—	F-732-50F-B5-G	1L858	1066.38	966.00	72
35	3.25	50:1	—	—	—	—	—	—	1890	2520	—	—	—	—	—	F-732-50-B7-G	1L859	1066.38	966.00	72
35	3.75	50:1	—	—	—	—	—	—	1890	2520	—	—	—	—	—	F-738-50-B7-G	1L867	1280.36	1160.00	104
35	3.75	50:1	—	—	—	—	—	—	—	—	4016*	—	—	—	—	F-738-50-B9-G	1L868	1280.36	1160.00	112
35	5.16	50:1	—	—	—	—	—	—	—	—	3780	6300*	—	—	—	F-752-50-B9-G	1L877	2025.64	1835.00	218
35	6.00	50:1	—	—	—	—	—	—	—	—	—	—	9450*	—	—	F-760-50-B11-G	1L884	3000.45	2717.00	246.
44	1.00	40:1	128	—	—	—	—	—	—	—	—	—	—	—	—	F-710-40-B4-G	1L238	333.91	269.75	7
44	1.00	40:1	128	—	—	—	—	—	—	—	—	—	—	—	—	F-710-40-B5-G	1L252	333.91	269.75	9.
44	1.33	40:1	178	—	—	—	—	—	—	—	—	—	—	—	—	F-713-40-B5-G	1L270	390.67	316.25	13.
44	1.54	40:1	178	266	355	—	—	—	—	—	—	—	—	—	—	F-715-40-B5-G	1L283	454.73	368.75	19.
44	1.75	40:1	—	266	355	—	—	—	—	—	—	—	—	—	—	F-718-40-B5-G	1L297	483.52	392.25	22.
44	2.06	40:1	—	—	355	533	—	—	—	—	—	—	—	—	—	F-721-40-B5-G	1L326	574.34	465.50	26
44	2.38	40:1	—	—	—	533	800	—	—	—	—	—	—	—	—	F-724-40-B5-G	1L331	640.81	521.50	35.
44	2.62	40:1	—	—	—	—	800	1066	—	—	—	—	—	—	—	F-726-40-B5-G	1L364	837.53	681.50	46
44	2.62	40:1	—	—	—	—	—	1066	—	—	—	—	—	—	—	F-726-40-B7-G	1L371	837.53	681.50	46.
44	3.75	40:1	—	—	—	—	—	—	1598	2131	—	—	—	—	—	F-732-40-B7-G	1L857	1066.38	966.00	73
44	3.75	40:1	—	—	—	—	—	—	—	—	3196	—	—	—	—	F-738-40-B9-G	1L866	1280.36	1160.00	112.
44	5.16	40:1	—	—	—	—	—	—	—	—	3196	5328	—	—	—	RF-752-40-B9-G	1L876	2025.64	1835.00	218.
44	6.00	40:1	—	—	—	—	—	—	—	—	—	—	7992*	—	—	RF-760-40-B11-G	1L883	3000.45	2717.00	246
58	1.00	30:1	132	—	—	—	—	—	—	—	—	—	—	—	—	F-710-30-B4-G	1L239	333.91	269.75	7.0
58	1.00	30:1	132	—	—	—	—	—	—	—	—	—	—	—	—	F-710-30-B5-G	1L253	333.91	269.75	7.0
58	1.33	30:1	132	208	—	—	—	—	—	—	—	—	—	—	—	F-713-30-B5-G	1L271	390.67	316.25	11.0
58	1.54	30:1	—	208	277	—	—	—	—	—	—	—	—	—	—	F-715-30-B5-G	1L284	454.73	368.75	19.0
58	1.75	30:1	—	—	277	416	—	—	—	—	—	—	—	—	—	F-718-30-B6-G	1L298	483.52	392.25	22.0
58	2.06	30:1	—	—	—	416	624	—	—	—	—	—	—	—	—	F-721-30-B5-G	1L327	574.34	465.50	26.0
58	2.38	30:1	—	—	—	—	624	832	—	—	—	—	—	—	—	F-724-30-B5-G	1L332	640.81	521.50	33.0
58	2.38	30:1	—	—	—	—	—	832	—	—	—	—	—	—	—	F-724-30-B7-G	1L340	640.81	521.50	32.0
58	2.62	30:1	—	—	—	—	—	832	1247	—	—	—	—	—	—	F-726-30-B5-G	1L366	837.53	681.50	46.0
58	2.62	30:1	—	—	—	—	—	—	1247	—	—	—	—	—	—	F-726-30-B7-G	1L365	837.53	681.50	46.0
58	3.25	30:1	—	—	—	—	—	—	1247	1663	—	—	—	—	—	F-732-30-B7-G	1L855	1066.38	966.00	72.0
58	3.25	30:1	—	—	—	—	—	—	—	—	2495*	—	—	—	—	F-732-30-B9-G	1L856	1066.38	966.00	81.0
58	3.75	30:1	—	—	—	—	—	—	—	—	2495	—	—	—	—	F-738-30-B9-G	1L865	1280.36	1160.00	112.0
58	5.16	30:1	—	—	—	—	—	—	—	—	2495	4180	—	—	—	RF-752-30-B9-G	1L874	2025.64	1835.00	218.0
58	5.16	30:1	—	—	—	—	—	—	—	—	—	—	6236*	—	—	RF-752-30-B11-G	1L875	2025.64	1835.00	218.0
58	6.00	30:1	—	—	—	—	—	—	—	—	—	—	6236	8580	—	RF-760-30-B11-G	1L882	3000.45	2717.00	246.0

(*) Recommended ratings are only applicable when using optional fan kit. Order appropriate fan kit separately from page 266.

CONTINUED ON NEXT PAGE

BOSTON GEAR

BOSTON GEAR Established in 1877 PRODUCT MADE IN THE USA QUALITY - VALUE - TRADITION

PARTS AVAILABLE, CALL 1-800-323-0620

CONTINUED FROM PREVIOUS PAGE

Nom. Output RPM at 1750 RPM	Worm Ctr. Dist. (WCD)	Nom-inal Ratio	AT 1750 RPM CONTINUOUS DUTY OUTPUT TORQUE In.-lbs. at Input Motor HP Shown (1.0 Service Factor)													See Chart on Page 264 for Bore Dimensions				
			1/6 HP	1/4 HP	1/3 HP	1/2 HP	3/4 HP	1 HP	1½ HP	2 HP	3 HP	5 HP	7½ HP	10 HP	15 HP	Boston Model	Stock No.	List	Each	Shpg Wt.
70	1.33"	25:1	117	175	234	—	—	—	—	—	—	—	—	—	—	F-713-25-B5-G	1L272	$390.67	$316.25	12.0
70	1.54	25:1	—	—	234	350	—	—	—	—	—	—	—	—	—	F-715-25-B5-G	1L285	454.73	368.75	19.0
70	1.75	25:1	—	—	234	350	—	—	—	—	—	—	—	—	—	F-718-25-B5-G	1L299	483.52	392.25	22.0
'0	2.06	25:1	—	—	—	350	526	702	—	—	—	—	—	—	—	F-721-25-B5-G	1L328	574.34	465.50	26.0
0	2.38	25:1	—	—	—	—	526	702	1056	—	—	—	—	—	—	F-724-25-B5-G	1L333	640.81	521.50	33.0
0	2.38	25:1	—	—	—	—	—	—	1056	—	—	—	—	—	—	F-724-25-B7-G	1L349	640.81	520.00	33.0
0	2.62	25:1	—	—	—	—	—	702	1056	—	—	—	—	—	—	F-726-25-B5-G	1L368	837.53	681.50	45.0
0	2.62	25:1	—	—	—	—	—	—	1056	—	—	—	—	—	—	F-726-25-B7-G	1L367	837.53	681.50	46.0
0	3.25	25:1	—	—	—	—	—	—	1056	1440	—	—	—	—	—	F-732-25-B7-G	1L853	1066.38	966.00	72.0
0	3.25	25:1	—	—	—	—	—	—	—	—	2150	—	—	—	—	F-732-25-B9-G	1L854	1066.38	966.00	82.0
8	1.00	20:1	98	130	—	—	—	—	—	—	—	—	—	—	—	F-710-20-B4-G	1L240	333.91	269.75	7.0
8	1.00	20:1	—	130	—	—	—	—	—	—	—	—	—	—	—	F-710-20-B5-G	1L254	333.91	269.75	9.0
8	1.33	20:1	—	148	197	—	—	—	—	—	—	—	—	—	—	F-713-20-B5-G	1L273	390.67	316.25	12.0
8	1.54	20:1	—	—	197	295	—	—	—	—	—	—	—	—	—	F-715-20-B5-G	1L286	454.73	368.75	19.0
8	1.75	20:1	—	—	—	295	443	—	—	—	—	—	—	—	—	F-718-20-B5-G	1L300	483.52	392.25	22.0
8	2.06	20:1	—	—	—	—	443	590	—	—	—	—	—	—	—	F-721-20-B5-G	1L318	574.34	465.50	26.0
8	2.06	20:1	—	—	—	—	—	590	—	—	—	—	—	—	—	F-721-20-B7-G	1L322	574.34	465.50	26.0
8	2.38	20:1	—	—	—	—	—	590	—	—	—	—	—	—	—	F-724-20-B5-G	1L335	640.81	521.50	33.0
8	2.38	20:1	—	—	—	—	—	590	886	—	—	—	—	—	—	F-724-20-B7-G	1L334	640.81	521.50	33.0
8	2.62	20:1	—	—	—	—	—	—	886	1180	—	—	—	—	—	F-726-20-B5-G	1L358	837.53	681.50	46.0
8	2.62	20:1	—	—	—	—	—	—	886	1180	—	—	—	—	—	F-726-20-B7-G	1L369	837.53	681.50	46.0
8	3.25	20:1	—	—	—	—	—	—	—	1180	—	—	—	—	—	F-732-20-B7-G	1L851	1066.38	966.00	72.0
8	3.25	20:1	—	—	—	—	—	—	—	—	1772	—	—	—	—	F-732-20-B9-G	1L852	1066.38	966.00	82.0
88	3.75	20:1	—	—	—	—	—	—	—	—	1772	2952	—	—	—	F-738-20-B9-G	1L864	1280.36	1160.00	112.0
88	5.16	20:1	—	—	—	—	—	—	—	—	—	—	4428	6300	—	RF-752-20-B11-G	1L873	2025.64	1835.00	218.0
88	6.00	20:1	—	—	—	—	—	—	—	—	—	—	—	—	8856*	RF-760-20-B13-G	1L881	3000.45	2717.00	246.0
117	1.00	15:1	77	116	—	—	—	—	—	—	—	—	—	—	—	F-710-15-B4-G	1L241	333.91	269.75	7.0
117	1.00	15:1	—	116	—	—	—	—	—	—	—	—	—	—	—	F-710-15-B5-G	1L255	333.91	269.75	9.0
117	1.33	15:1	—	116	155	232	—	—	—	—	—	—	—	—	—	F-713-15-B5-G	1L267	390.67	316.25	13.0
117	1.54	15:1	—	—	—	232	348	—	—	—	—	—	—	—	—	F-715-15-B5-G	1L287	454.73	368.75	19.0
117	1.75	15:1	—	—	—	—	348	422	—	—	—	—	—	—	—	F-718-15-B5-G	1L292	483.52	392.25	22.0
117	2.06	15:1	—	—	—	—	—	464	646	—	—	—	—	—	—	F-721-15-B5-G	1L319	574.34	465.50	25.0
117	2.06	15:1	—	—	—	—	—	464	646	—	—	—	—	—	—	F-721-15-B7-G	1L323	574.34	465.50	26.0
117	2.38	15:1	—	—	—	—	—	464	—	—	—	—	—	—	—	F-724-15-B5-G	1L337	640.81	521.50	33.0
117	2.38	15:1	—	—	—	—	—	—	697	929	—	—	—	—	—	F-724-15-B7-G	1L336	640.81	521.50	33.0
117	2.62	15:1	—	—	—	—	—	—	697	929	—	—	—	—	—	F-726-15-B7-G	1L359	837.53	681.50	46.0
117	3.25	15:1	—	—	—	—	—	—	—	—	1393	2230*	—	—	—	F-732-15-B9-G	1L850	1066.38	966.00	82.0
117	3.75	15:1	—	—	—	—	—	—	—	—	1393	2322	—	—	—	F-738-15-B9-G	1L863	1280.36	1160.00	112.0
117	5.16	15:1	—	—	—	—	—	—	—	—	—	—	3483	4644	—	RF-752-15-B11-G	1L872	2025.64	1835.00	218.0
117	6.00	15:1	—	—	—	—	—	—	—	—	—	—	—	—	6966*	RF-760-15-B13-G	1L880	3000.45	2717.00	246.0
175	1.00	10:1	53	80	107	—	—	—	—	—	—	—	—	—	—	F-710-10-B4-G	1L242	333.91	269.75	7.0
175	1.00	10:1	—	—	107	—	—	—	—	—	—	—	—	—	—	F-710-10-B5-G	1L256	333.91	269.75	10.0
175	1.33	10:1	—	—	107	160	240	—	—	—	—	—	—	—	—	F-713-10-B5-G	1L268	390.67	316.25	12.0
175	1.54	10:1	—	—	—	—	240	320	—	—	—	—	—	—	—	F-715-10-B5-G	1L288	454.73	368.75	19.0
175	1.75	10:1	—	—	—	—	—	320	460	—	—	—	—	—	—	F-718-10-B5-G	1L293	483.52	392.25	22.0
175	1.75	10:1	—	—	—	—	—	—	460	—	—	—	—	—	—	F-718-10-B7-G	1L290	483.52	392.25	21.0
175	2.06	10:1	—	—	—	—	—	320	—	—	—	—	—	—	—	F-721-10-B5-G	1L321	574.34	465.50	25.0
175	2.06	10:1	—	—	—	—	—	—	480	640	—	—	—	—	—	F-721-10-B7-G	1L320	574.34	465.50	26.0
175	2.38	10:1	—	—	—	—	—	—	480	640	—	—	—	—	—	F-724-10-B7-G	1L338	640.81	521.50	33.0
175	2.62	10:1	—	—	—	—	—	—	480	640	—	—	—	—	—	F-726-10-B7-G	1L361	837.53	681.50	46.0
175	2.62	10:1	—	—	—	—	—	—	—	640	960	—	—	—	—	F-726-5-B9-G	1L360	837.53	681.50	46.0
175	3.25	10:1	—	—	—	—	—	—	—	—	972	1602	—	—	—	F-732-10-B9-G	1L849	1066.38	966.00	82.0
175	3.75	10:1	—	—	—	—	—	—	—	—	—	—	2403	—	—	F-738-10-B11-G	1L862	1280.36	1160.00	112.0
175	5.16	10:1	—	—	—	—	—	—	—	—	—	—	2403	3204	—	RF-752-10-B11-G	1L870	2025.64	1835.00	218.0
175	5.16	10:1	—	—	—	—	—	—	—	—	—	—	—	—	4800	RF-752-10-B13-G	1L871	2025.64	1835.00	218.0
175	6.00	10:1	—	—	—	—	—	—	—	—	—	—	—	—	4806	RF-760-10-B13-G	1L879	3000.45	2717.00	246.0
350	1.00	5:1	27	41	55	82	—	—	—	—	—	—	—	—	—	F-710-5-B4-G	1L243	333.91	269.75	6.7
350	1.00	5:1	27	41	55	—	—	—	—	—	—	—	—	—	—	F-710-5-B5-G	1L257	333.91	269.75	9.7
350	1.33	5:1	—	—	55	82	123	164	—	—	—	—	—	—	—	F-713-5-B5-G	1L266	390.67	316.25	12.0
350	1.54	5:1	—	—	—	—	123	—	—	—	—	—	—	—	—	F-715-5-B5-G	1L274	454.73	368.50	18.0
350	1.54	5:1	—	—	—	—	123	164	256	—	—	—	—	—	—	F-715-5-B7-G	1L289	454.73	368.75	19.0
350	1.75	5:1	—	—	—	—	—	164	256	328	—	—	—	—	—	F-718-5-B5-G	1L291	483.52	392.25	20.0
350	1.75	5:1	—	—	—	—	—	—	256	328	—	—	—	—	—	F-718-5-B7-G	1L294	483.52	392.25	23.0
350	2.06	5:1	—	—	—	—	—	—	256	328	—	—	—	—	—	F-721-5-B7-G	1L317	574.34	465.50	26.0
350	2.38	5:1	—	—	—	—	—	—	—	—	491	—	—	—	—	F-724-5-B9-G	1L339	640.81	521.50	43.0
350	2.62	5:1	—	—	—	—	—	—	—	—	491	—	—	—	—	F-726-5-B9-G	1L362	837.53	681.50	54.0

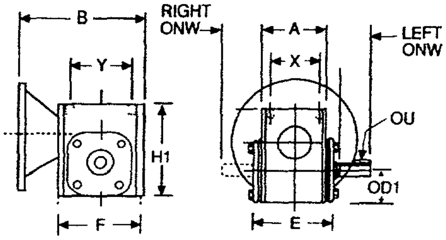
Recommended ratings are only applicable when using optional fan kit. Order appropriate fan kit separately from page 266.

LET US SUPPLY YOUR SAFETY AND SECURITY EQUIPMENT

C-FACE RIGHT ANGLE SPEED REDUCER ACCESSORIES

BOSTON GEAR

C-FACE RIGHT ANGLE



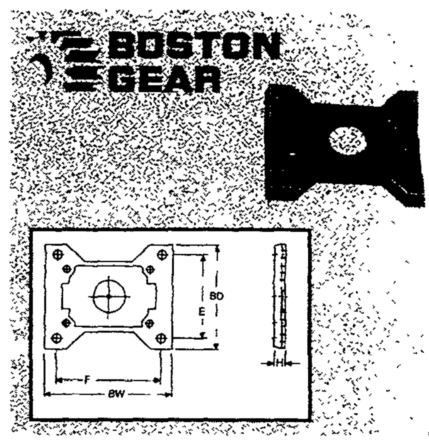
SPEED REDUCER DIMENSIONAL DRAWINGS

These dimensional drawings are represe tative of the speed reducers found (pages 264 and 265. Left hand shaft determined while facing C-face input.

Worm Center Distance	Overhung Load (Lbs.)	A	B 42CZ	B 56C 140TC	B 180TC 210TC	B 180TC 210TC 250TC	E	F	H1	X	Y	Tap Size	Depth	Output Shaft (Inches) OD1	OU	ONW	Keywa
1.00"	150	2.50	4.78	5.56	—	—	3.34	3.25	3.63	1.69	2.63	1/4-20	.44	1.31	.500	1.19	1/8 x 5/
1.33	200	2.88	—	6.06	—	—	4.3	4.25	4.66	2.00	3.25	5/16-18	.50	1.72	.625	2.00	3/16 x 1
1.54	300	3.69	—	7.06	—	—	5.06	5.13	5.38	2.75	4.19	5/16-18	.50	1.91	.750	1.78	3/16 x 1
1.75	600	3.69	—	7.44	—	—	5.03	5.50	5.75	2.75	4.19	5/16-18	.50	2.06	.875	1.78	3/16 x 1
2.06	700	3.81	—	8.06	—	—	5.19	6.00	6.38	2.88	5.00	3/8-16	.56	2.28	1.000	2.09	1/4 x 1/
2.38	900	4.06	—	8.44	8.88	—	5.43	6.38	6.94	2.88	5.00	3/8-16	.56	2.50	1.125	2.63	1/4 x 1/
2.62	1000	4.44	—	9.44	9.88	—	5.9	7.38	8.00	3.38	6.38	3/8-16	.56	2.94	1.125	2.63	1/4 x 1
3.25	1300	5.88	—	11.06	11.50	—	7.56	9.00	9.38	4.00	7.50	7/16-14	.66	3.50	1.375	3.25	5/16 x 2
3.75	2000	6.38	—	12.06	12.50	—	8.38	10.00	10.44	4.75	8.50	1/2-13	.75	3.88	1.625	3.50	3/8 x 2
5.16	2200	7.38	—	—	—	22.56	9.65	13.13	13.75	5.81	11.00	5/8-11	1.00	5.31	2.000	4.16	1/2 x 2
6.00	2400	8.13	—	—	—	23.99	10.75	14.50	16.50	6.13	12.75	5/8-11	1.00	6.50	2.250	4.56	1/2 x 3

HORIZONTAL MOUNTING BASES

- Aluminum or cast-iron construction
- For use with Boston speed reducers on pages 264 and 265
- Includes hardware

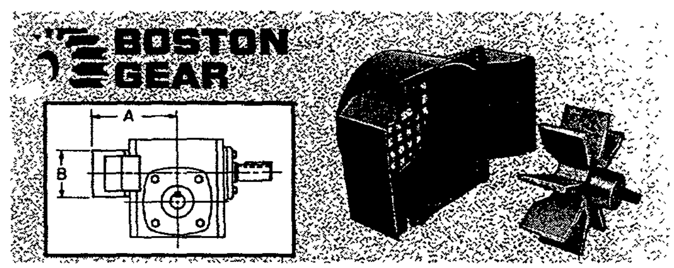


SPECIFICATIONS AND ORDERING DATA

Worm Ctr. Dist.	Dimensions (Inches) BD	BW	E	F	H	Boston Model	Stock No.	List	Each	Shpg. Wt.
1.00"	3.69	4.63	2.88	3.75	0.44	56575	**1L372**	$5.47	**$4.82**	0.4
1.33	4.19	5.38	3.31	4.38	0.53	56577	**1L373**	6.84	**6.03**	0.6
1.54	5.44	6.44	4.31	5.25	0.60	56581	**1L374**	8.38	**7.38**	1.0
1.75	5.69	7.00	4.50	5.75	0.69	56585	**1L375**	9.21	**8.13**	1.2
2.06	5.94	7.75	4.69	6.38	0.72	56587	**1L376**	10.36	**9.12**	1.5
2.38	6.19	8.50	4.88	7.06	0.75	56591	**1L377**	11.23	**9.89**	1.7
2.62	6.66	9.63	5.25	8.00	0.75	56595	**1L378**	25.63	**22.56**	2.0
3.25	7.66	11.19	6.13	9.50	0.88	56599	**2L085**	58.51	**51.55**	10.0
3.75	8.66	12.13	7.00	10.38	0.94	56603	**2L086**	70.97	**62.50**	12.0
5.16	10.63	16.38	8.38	14.13	1.13	56607	**2L087**	138.26	**121.75**	27.0
6.00	12.00	19.00	9.50	16.50	1.25	56610	**2L088**	171.10	**150.75**	39.0

FAN KITS

- For use with Boston speed reducers on pages 264 and 265



SPECIFICATIONS AND ORDERING DATA

Reducer Model	Dimensions (In.) A	B	Boston Model	Stock No.	List	Each	Shpg. Wt.
732	7.60	4.87	51450	**2L089**	$54.37	**$47.95**	2.0
738	8.09	5.19	51451	**2L090**	60.71	**53.55**	2.0
752	10.87	6.25	51452	**2L091**	116.23	**102.35**	11.0
760	11.56	7.50	51453	**2L092**	132.99	**117.15**	13.0

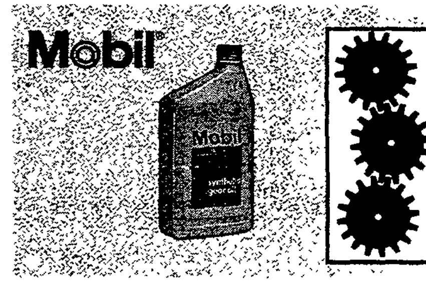
SYNTHETIC GEAR OIL

Mobil SHC® 634 (Quart). Multi-viscosity synthetic oil based on synthesized hydrocarbon fluid technology. Lubricant is recommended for industrial enclosed gear sets and heavily loaded plain or rolling bearings operating under severe conditions such as extremely high or low temperatures and loads. It contains additives that enhance its oxidation stability, corrosion protection, and protection against wear.

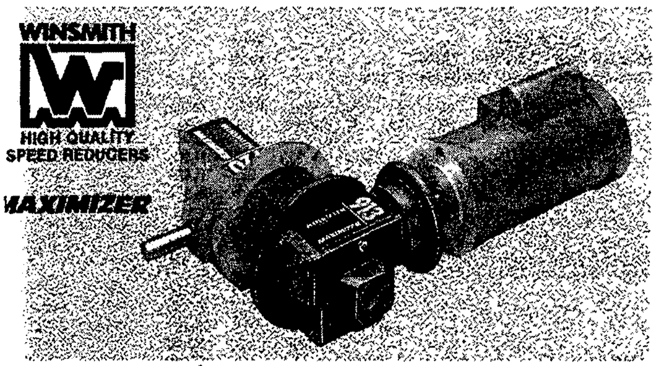
Viscosity (SUS at 100°F): 2236
ISO Viscosity Grade: 460
Flash Point (°F) min.: 460
Pour Point (°F) max.: -20

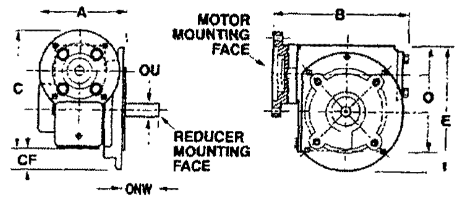
No. 4ZF30.❸ Shpg. wt. 2.0 lbs. List .$10.00. Each...$8.50

❸ These products are covered by OSHA Hazard Communication Standard, and Material Safety Data Sheets (MSDS) are available. See page opposite inside back cover.



DOUBLE REDUCTION MODULE AND 42C-FACE INPUT MOTORS





Stock No.	A	B	C	CF	E	O	OU	ONW
	Dimensions (Inches)							
1L392	4.44	6.39	5.33	1.50	5.83	4.33	.625	2.06
1L390	4.44	6.39	5.33	1.50	5.83	4.33	.875	2.13
1L393	4.57	7.5	6.38	1.12	6.75	5.63	.625	2.06
1L391	4.57	7.5	7.38	1.12	6.75	5.63	.625	2.06

esigned for use with speed reducers om page 268 and input motors list- d below

or applications requiring speeds ower than 29 RPM/60:1 in C-face esign

hart selects components using the peed and torque values needed for e application

implifies drive design with less need use sprocket/pulley speed reduc- on at the output shaft

ses 42CZ fractional HP motors listed elow

las double C-face construction for asy assembly

erformance matched with listed educers only

Inits have "Maximizer" features

Browning   Fenner Manheim

R A WIDE SELECTION OF V-BELTS, SEE PAGES 294 THRU 298.

Output Speed (RPM) at 1725 RPM	Continuous Duty Output Torque In.-Lbs. at Input Motor HP Shown 1/8 HP	1/6 HP	1/4 HP	1/3 HP	Required Components: Reducer Stock No. (See page 268)	Ratio Multiplier Stock No.	Final Ratio With Multiplier plus Reducer
11	391	547	—	—	1L405	1L392	150:1
	—	—	856	—	2Z714	1L392	150:1
	—	—	—	1207	4Z511	1L391 or 1L393	150:1
5.7	576	—	—	—	1L406	1L392	300:1
	767	—	—	—	2Z715	1L392	300:1
	—	1075	—	—	4Z510	1L392	300:1
	—	—	1689	—	1L425	1L390	300:1
	—	—	—	2376	2Z696	1L391 or 1L393	300:1
3.8	905	—	—	—	2Z716	1L392	450:1
	1092	1529	—	—	4Z509	1L392	450:1
	—	—	2410	—	2Z697	1L392	450:1
	—	—	—	3393	2Z697	1L391 or 1L393	450:1
2.8	1408	—	—	—	1L408	1L392	600:1
	—	1984	—	—	1L415	1L392	600:1
	—	—	3110	—	2Z698	1L392	600:1
1.9	1001	—	—	—	1L409	1L392	900:1
	1931	—	—	—	1L416	1L392	900:1
	—	2709	—	—	2Z699	1L392	900:1
	—	—	4155	—	1L437	1L390	900:1
1.4	2454	3345	—	—	2Z700	1L392	1200:1
	—	—	5290	—	1L438	1L390	1200:1
1.1	2943	—	—	—	2Z722	1L392	1500:1
	—	4063	—	—	1L439	1L390	1500:1
	—	—	5095	—	1L439	1L390	1500:1
0.95	3362	4698	—	—	1L440	1L390	1800:1
0.71	3773	—	—	—	1L422	1L392	2400:1
0.57	2906	—	—	—	1L423	1L392	3000:1

SPECIFICATIONS AND ORDERING DATA

Input Flange	Output Flange	Max. Torque In.-Lbs.	Ratio	Winsmith Stock No.	Stock No.	List	Each	Shpg. Wt.
42CZ/48C	56C	444	30:1	MDD91342/56	**1L392**	$390.11	**$314.25**	18.0
56C	56C	634	30:1	MDD92056/56	**1L391**	448.89	**361.75**	24.0
42CZ/48C	56C	634	30:1	MDD92042/56	**1L393**	448.89	**361.75**	23.0
42CZ/48C	143/145TC	444	30:1	MDD91342/143	**1L390**	390.11	**314.25**	18.0

42C-FACE INPUT MOTORS FOR ABOVE DRIVES

Dayton®

ings: Double-shielded ball
: 1/2" diameter
ion: CW/CCW
nal Protection: None
ent: 40°C
Continuous
: Gray
l: Dayton

60 Hz, TEFC, Capacitor-Start, 42CZ Frame with 1/2" Dia. Shaft

HP	Name-plate RPM	Volts 60 Hz	Full-Load Amps at 115V	230V	Ser-vice Fctr.	Ins. Class	Stock No.	List	Each	Shpg. Wt.
1/8	1725	115/230	4.0	2.0	1.0	B	**1K056**	$154.00	**$117.70**	18.0
1/6	1725	115/230	4.2	2.1	1.0	B	**1K057**	158.00	**120.85**	18.0
1/4	1725	115/230	5.2	2.6	1.0	B	**1K058**	166.00	**126.90**	22.0
1/3	1725	115/230	7.0	3.5	1.0	B	**1K059**	182.00	**139.15**	23.0

60/50 Hz, TEFC, Three-Phase, 42CZ Frame with 1/2" Dia. Shaft

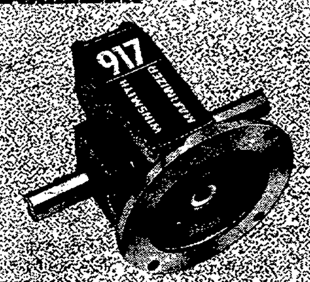
HP	Nameplate RPM at 60 Hz	50 Hz	Volts 60/50 Hz	NEMA Nom. Eff.	Full-Load Amps at 220V	440V	Ser-vice Fctr.	Ins. Class	Stock No.	List	Each	Shpg. Wt.
1/4	1725	1425	208-220/440	66.0	1.0	0.5	1.0	B	**3N841**	$162.00	**$123.95**	17.0
1/3	1725	1425	208-220/440	70.0	1.3	0.65	1.0	B	**3N842**	170.00	**130.00**	20.0

C-FACE RIGHT ANGLE SPEED REDUCERS

WINSMITH

HIGH QUALITY SPEED REDUCERS

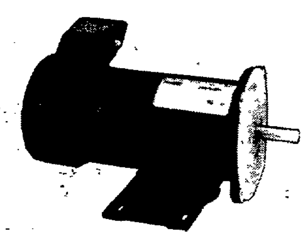
MAXIMIZER



Maximum Protection for Standard and Severe Duty Applications

See Dimensional Drawing and Chart on Facing Page.

- **WINSMITH 24 MONTH LIMITED WARRANTY, see page facing inside back cover of catalog for details**
- **USDA APPROVED EPOXY COATING prevents rust and corrosion in washdown environments**
- **USDA rust preventative coating on all shafts**
- **Shaft slingers used to prevent contaminants from contacting oil seals**
- **Breather vent to prevent liquids from entering reducer**
- **Filled with Mobil SHC629 synthetic lubricant**
- **Double output shafts**
- **Reducers can be mounted with or without optional bases using predrilled and tapped holes provided (see bases on facing page)**



Dayton 90 and 180V PMDC Motors Available, See Page 196.

Nom. Output RPM at 1725 RPM	NEMA Frame	Worm Ctr. Dist. (WCD)	Nominal Ratio	At 1725 RPM CONTINUOUS DUTY OUTPUT TORQUE In.-Lbs. at Input Motor HP Shown (1.0 Service Factor) 1/4 HP	1/3 HP	1/2 HP	3/4 HP	1 HP	1½ HP	2 HP	3 HP	5 HP	7½ HP	Max. Torque	Winsmith Model MWN-LR	Stock No.	List	Each	Shpg. Wt.
17	56C	2.37"	100:1	501	—	—	—	—	—	—	—	—	—	579	924	**1L414**	$402.06	**$324.00**	41.
17	56C	2.65	100:1	509	726	—	—	—	—	—	—	—	—	771	926	**1L421**	453.64	**365.50**	48.
17	56C	3.50	100:1	—	—	952	1618	—	—	—	—	—	—	1678	935	**1L423**	760.70	**613.00**	71
22	56C	2.37	80:1	421	599	—	—	—	—	—	—	—	—	739	924	**1L413**	402.06	**324.00**	40.
22	56C	2.65	80:1	427	608	974	—	—	—	—	—	—	—	985	926	**1L420**	453.64	**365.50**	48.
22	56C	3.50	80:1	—	—	795	1351	1906	—	—	—	—	—	2133	935	**1L422**	760.70	**613.00**	81
29	56C	1.33	60:1	—*	—	—	—	—	—	—	—	—	—	203	913	**1L404***	284.13	**229.00**	1
29	56C	1.75	60:1	366	—	—	—	—	—	—	—	—	—	366	917	**6Z777**	307.43	**248.00**	
29	56C	2.00	60:1	373	512	—	—	—	—	—	—	—	—	559	920	**2Z721**	352.00	**283.50**	
29	56C	2.37	60:1	333	474	759	—	—	—	—	—	—	—	901	924	**1L412**	402.06	**324.00**	
29	56C	2.65	60:1	—	480	768	1200	—	—	—	—	—	—	1201	926	**1L419**	453.64	**365.50**	
29	56C	3.00	60:1	—	—	769	1206	1642	—	—	—	—	—	1809	930	**2Z723**	587.69	**473.75**	
29	145TC	2.65	60:1	—	480	768	1200	—	—	—	—	—	—	1201	926	**1L431**	453.64	**365.50**	
29	145TC	3.00	60:1	—	—	769	1206	1642	—	—	—	—	—	1809	930	**1L436**	587.69	**473.75**	
29	145TC	3.50	60:1	—	—	—	1062	1499	2373	—	—	—	—	2575	935	**1L440**	760.70	**613.00**	
35	56C	1.33	50:1	—†	—	—	—	—	—	—	—	—	—	214	913	**1L403†**	284.13	**229.00**	
35	56C	1.75	50:1	316	416	—	—	—	—	—	—	—	—	416	917	**1L407**	307.43	**248.00**	
35	56C	2.00	50:1	321	440	—	—	—	—	—	—	—	—	594	920	**2Z720**	352.00	**283.50**	
35	56C	2.37	50:1	285	407	651	—	—	—	—	—	—	—	955	924	**1L411**	402.06	**324.00**	
35	56C	2.65	50:1	—	—	658	1028	—	—	—	—	—	—	1275	926	**1L418**	453.64	**365.50**	
35	56C	3.00	50:1	—	—	658	1032	1405	—	—	—	—	—	1916	930	**2Z722**	587.69	**473.75**	
35	145TC	2.65	50:1	—	—	658	1028	—	—	—	—	—	—	1275	926	**1L430**	453.64	**365.50**	
35	145TC	3.00	50:1	—	—	658	1032	1045	—	—	—	—	—	1916	930	**1L435**	587.69	**473.75**	
35	145TC	3.50	50:1	—	—	—	—	1281	2029	2776	—	—	—	2776	935	**1L439**	760.70	**613.00**	
43	56C	1.33	40:1	219	—	—	—	—	—	—	—	—	—	220	913	**2Z713**	284.13	**229.00**	
43	56C	1.75	40:1	262	359	—	—	—	—	—	—	—	—	433	917	**6Z778**	307.43	**248.00**	
43	56C	2.00	40:1	265	363	561	—	—	—	—	—	—	—	620	920	**2Z719**	352.00	**283.50**	
43	56C	2.37	40:1	—	335	536	837	—	—	—	—	—	—	995	924	**1L410**	402.06	**324.00**	
43	56C	2.65	40:1	—	—	542	846	1150	—	—	—	—	—	1325	926	**1L417**	453.64	**365.50**	
43	56C	3.00	40:1	—	—	—	849	1156	1770	—	—	—	—	1983	930	**2Z700**	587.69	**473.75**	
43	145TC	2.65	40:1	—	—	542	846	1150	—	—	—	—	—	1325	926	**1L429**	453.64	**365.50**	
43	145TC	3.00	40:1	—	—	—	849	1156	1770	—	—	—	—	1983	930	**1L434**	587.69	**473.75**	
43	145TC	3.50	40:1	—	—	—	—	1053	1668	2282	—	—	—	2769	935	**1L438**	760.70	**613.00**	
58	56C	1.33	30:1	201	—	—	—	—	—	—	—	—	—	225	913	**2Z712**	284.13	**229.00**	
58	56C	1.75	30:1	204	279	432	—	—	—	—	—	—	—	444	917	**6Z779**	307.43	**248.00**	
58	56C	2.00	30:1	—	282	436	—	—	—	—	—	—	—	634	920	**2Z718**	352.00	**283.50**	
58	56C	2.37	30:1	—	—	416	650	883	—	—	—	—	—	1014	924	**1L409**	402.06	**324.00**	
58	56C	2.65	30:1	—	—	—	655	891	1362	—	—	—	—	1362	926	**1L416**	453.64	**365.50**	
58	56C	3.00	30:1	—	—	—	—	894	1369	1844	—	—	—	2006	930	**2Z699**	587.69	**473.75**	
58	145TC	2.65	30:1	—	—	—	655	891	1362	—	—	—	—	1362	926	**1L428**	453.64	**365.50**	
58	145TC	3.00	30:1	—	—	—	—	894	1369	1844	—	—	—	2006	930	**1L433**	587.69	**473.75**	61
58	145TC	3.50	30:1	—	—	—	—	—	1287	1762	2710	—	—	2745	935	**1L437**	760.70	**613.00**	71
58	182TC	3.00	30:1	—	—	—	—	894	1369	1844	—	—	—	2006	930	**1L445**	587.69	**473.75**	61
58	182TC	3.50	30:1	—	—	—	—	—	1287	1762	2710	—	—	2745	935	**1L448**	760.70	**613.00**	71
86	56C	1.33	20:1	144	195	—	—	—	—	—	—	—	—	222	913	**2Z711**	284.13	**229.00**	17
86	56C	1.75	20:1	144	197	305	—	—	—	—	—	—	—	434	917	**6Z780**	307.43	**248.00**	23
86	56C	2.00	20:1	—	—	307	470	619	—	—	—	—	—	619	920	**2Z717**	352.00	**283.50**	25
86	56C	2.37	20:1	—	—	—	456	620	947	—	—	—	—	994	924	**1L408**	402.06	**324.00**	42
86	56C	2.65	20:1	—	—	—	—	623	953	1283	—	—	—	1321	926	**1L415**	453.64	**365.50**	40.
86	56C	3.00	20:1	—	—	—	—	—	956	1287	1950	—	—	1975	930	**2Z698**	587.69	**473.75**	61
86	145TC	2.65	20:1	—	—	—	—	623	953	1283	—	—	—	1321	926	**1L427**	453.64	**365.50**	48.
86	145TC	3.00	20:1	—	—	—	—	—	956	1287	1950	—	—	1975	930	**1L432**	587.69	**473.75**	53
86	182TC	3.00	20:1	—	—	—	—	—	956	1287	1950	—	—	1975	930	**1L444**	587.69	**473.75**	61.
86	182TC	3.50	20:1	—	—	—	—	—	—	1233	1896	—	—	2758	935	**1L447**	760.70	**613.00**	71.
115	56C	1.33	15:1	111	151	218	—	—	—	—	—	—	—	218	913	**2Z710**	284.13	**229.00**	17.
115	56C	1.75	15:1	—	151	234	358	—	—	—	—	—	—	429	917	**6Z781**	307.43	**248.00**	23.
115	56C	2.00	15:1	—	—	296	360	458	—	—	—	—	—	610	920	**2Z716**	352.00	**283.50**	25.
115	56C	2.37	15:1	—	—	—	348	474	724	975	—	—	—	978	924	**4Z509**	402.06	**324.00**	42.
115	56C	3.00	15:1	—	—	—	—	—	729	982	1488	—	—	1927	930	**2Z697**	587.69	**473.75**	61.
115	145TC	2.65	15:1	—	—	—	—	476	728	980	—	—	—	1296	926	**1L426**	453.64	**365.50**	48.
115	182TC	3.00	15:1	—	—	—	—	—	729	982	1488	—	—	1927	930	**1L443**	587.69	**473.75**	61.
115	182TC	3.50	15:1	—	—	—	—	—	—	—	1446	2458	—	2636	935	**1L446**	760.70	**613.00**	71.
172	56C	1.33	10:1	77	104	160	—	—	—	—	—	—	—	204	913	**2Z709**	284.13	**229.00**	17.0
172	56C	1.75	10:1	—	—	160	245	330	—	—	—	—	—	398	917	**1L406**	307.43	**248.00**	21.0
172	56C	2.00	10:1	—	—	—	246	331	502	—	—	—	—	565	920	**2Z715**	352.00	**283.50**	25.0
172	56C	2.37	10:1	—	—	—	—	324	495	666	—	—	—	898	924	**4Z510**	402.06	**324.00**	42.0
172	56C	3.00	10:1	—	—	—	—	—	—	669	1014	1704	—	1764	930	**2Z696**	587.69	**473.75**	61.0
172	145TC	2.65	10:1	—	—	—	—	—	497	669	1013	—	—	1188	926	**1L425**	453.64	**365.50**	48.0
172	182TC	3.00	10:1	—	—	—	—	—	—	669	1014	1704	—	1764	930	**1L442**	587.69	**473.75**	58.0
345	56C	1.33	5:1	40	54	83	125	168	—	—	—	—	—	171	913	**2Z708**	284.13	**229.00**	17.0
345	56C	1.75	5:1	—	—	—	125	168	255	333	—	—	—	333	917	**1L405**	307.43	**248.00**	23.0
345	56C	2.00	5:1	—	—	—	—	169	265	342	—	—	—	461	920	**2Z714**	352.00	**283.50**	25.0
345	56C	2.37	5:1	—	—	—	—	—	262	339	513	—	—	732	924	**4Z511**	402.06	**324.00**	42.0
345	145TC	2.65	5:1	—	—	—	—	—	—	—	514	863	—	967	926	**1L424**	453.64	**365.50**	48.0
345	182TC	3.00	5:1	—	—	—	—	—	—	—	514	864	1302	1435	930	**1L441**	587.69	**473.75**	61.0

(*) Output torque 180 in.-lbs. at 1/6 HP. (†) Output torque 160 in.-lbs. at 1/6 HP.

C-FACE RIGHT ANGLE SPEED REDUCERS

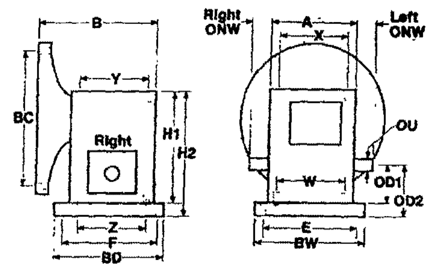
C-FACE SPEED REDUCER DIMENSIONAL DRAWINGS

hese dimensional drawings are representative of the speed educers found on facing page. These drawings may show imensional references that do not apply. If a dimension is not eferenced in the chart, it does not apply.

ight and left hand shafts are determined while facing C-face iput. Unless otherwise specified, on double shafted speed ducers the right ONW and left ONW dimensions are of equal ngths.

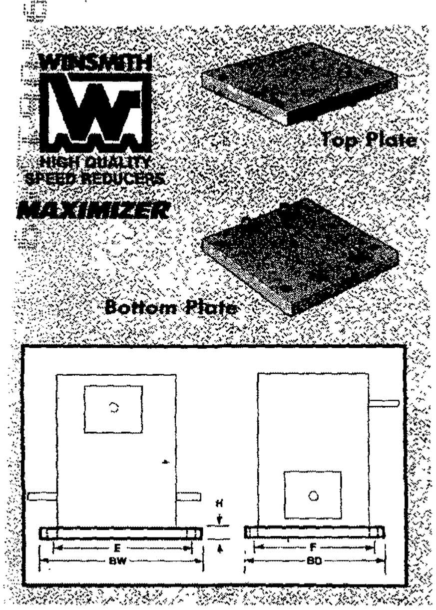
WINSMITH
HIGH QUALITY SPEED REDUCERS
MAXIMIZER

C-FACE RIGHT ANGLE



nsmith lodel VN-LR	NEMA Frame	Overhung Load (Lbs.)	A	B	BC	H1	W	X	Y	Z	OD1	ONW	OU	Keyway	Bore	Keyway
			Dimensions (Inches)								OUTPUT SHAFTS				INPUT SHAFT	
913	56C	290	3 7/8	6 7/16	5 7/8	4 1/3	1 3/8	1 3/8	2 3/8	3 1/8	1 3/4	2 1/16	3/4	3/16 x 3/32 x 1 7/8	5/8	3/16 x 3/32
917	56C	650	4 3/8	7 1/2	5 7/8	5 3/8	1 3/4	1 3/4	3 3/8	3 7/8	2 1/8	2 9/16	1	1/4 x 1/8 x 2 5/16	5/8	3/16 x 3/32
920	56C	650	4 3/8	7 1/2	5 7/8	5 3/8	1 3/4	1 3/4	3 3/8	4 3/8	2 1/8	2 9/16	1	1/4 x 1/8 x 2 5/16	5/8	3/16 x 3/32
924	56C	1025	5 3/8	9 7/8	5 7/8	7 1/4	2 1/4	2 1/4	4 3/8	4 3/8	2 7/8	2 13/16	1 1/4	1/4 x 1/8 x 2 5/16	5/8	3/16 x 3/32
926	56C	1025	5 3/8	9 7/8	5 7/8	7 7/8	2 1/4	2 1/4	4 7/8	4 7/8	3 1/8	2 13/16	1 1/4	1/4 x 1/8 x 2 5/16	5/8	3/16 x 3/32
926	145TC	1025	5 3/8	9 7/8	5 7/8	7 7/8	2 1/4	2 1/4	4 7/8	4 7/8	3 1/8	2 13/16	1 1/4	1/4 x 1/8 x 2 5/16	7/8	3/16 x 3/32
930	56C	1350	6	10 3/16	5 7/8	9	2 5/8	2 5/8	5 1/2	5 1/2	3 1/2	2 7/8	1 3/8	5/16 x 5/32 x 2 3/4	5/8	3/16 x 3/32
930	145TC	1350	6	10 3/16	5 7/8	9	2 5/8	2 5/8	5 1/2	5 1/2	3 1/2	2 7/8	1 3/8	5/16 x 5/32 x 2 3/4	7/8	3/16 x 3/32
930	182TC	1350	6	10 3/16	7 1/4	9	2 5/8	2 5/8	5 1/2	5 1/2	3 1/2	2 7/8	1 3/8	5/16 x 5/32 x 2 3/4	1 1/8	1/4 x 1/8
935	56C	2130	6 1/2	11 1/4	5 7/8	10 1/8	2 5/8	2 5/8	6 1/2	6 1/2	4	3 3/4	1 3/4	3/8 x 3/16 x 3 5/8	5/8	3/16 x 3/32
935	145TC	2130	6 1/2	11 1/4	5 7/8	10 1/8	2 5/8	2 5/8	6 1/2	6 1/2	4	3 3/4	1 3/4	3/8 x 3/16 x 3 5/8	7/8	3/16 x 3/32
935	182TC	2130	6 1/2	11 1/4	7 1/4	10 1/8	2 5/8	2 5/8	6 1/2	6 1/2	4	3 3/4	1 3/4	3/8 x 3/16 x 3 5/8	1 1/8	1/4 x 1/8

OPTIONAL BASE KITS

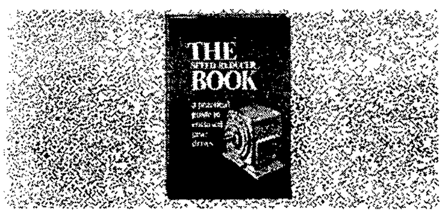


SPECIFICATIONS AND ORDERING DATA

Worm Center Distance	BD	BW	E	F	H	Winsmith Model	Stock No.	List	Each	Shpg. Wt.
	Dimensions (Inches)									
TOP MOUNTING PLATE (WB BASE)										
1.33"	3 7/8	5	4	2 1/2	1/4	9998006G	**1L382**	$14.08	**$11.34**	1.5
1.75	4 5/8	5	4	3 1/2	1/2	9998002G	**1L402**	18.77	**15.12**	3.6
2.00	5 1/4	5	4	3 1/2	1/4	9998009G	**1L383**	22.42	**18.06**	2.0
2.37	5 3/4	7	5 3/4	4 1/2	3/8	9998014G	**1L399**†	27.92	**22.49**	7.0
2.65	6	7	5 3/4	4 1/2	3/8	9998017G	**1L397**	31.26	**25.20**	4.5
3.00	6 3/4	8	6 1/2	5 1/4	1/2	9998019G	**1L381**	36.17	**29.15**	7.5
3.50	10	6 1/2	5 1/4	8 1/4	1/2	9998034G	**1L396**	38.51	**31.05**	9.2
BOTTOM MOUNTING PLATE (WT BASE)										
1.33	3 7/8	5	4	2 1/2	3/8	9998007G	**1L379**	14.08	**11.34**	2.2
1.75	5	5	4	3 1/2	1/2	9998003G	**1L401**	18.77	**15.12**	3.6
2.00	5 1/2	5	4	3 1/2	1/2	9998010G	**1L380**	22.42	**18.06**	4.0
2.37	5 3/4	7	5 3/4	4 1/2	3/8	9998013G	**1L400**	27.92	**22.49**	8.3
2.65	6	7	5 3/4	4 1/2	3/8	9998017G	**1L398**	31.26	**25.20**	4.5
3.00	6 3/4	8	6 1/2	5 1/4	1/2	9998019G	**1L381**	36.17	**29.15**	7.5
3.50	10	6 1/2	5 1/4	8 1/4	1/2	9998034G	**1L395**	38.51	**31.05**	9.7
BOTTOM MOUNTING PLATE FOR "D-LINE" CONVERSION* (DT BASE)										
1.33	5	4	3 1/4	4 1/4	1/4	9998005G	**1L384**	14.08	**11.34**	1.6
2.00	5 7/8	4 1/2	3 3/4	5	1/2	9998008G	**1L385**	22.42	**18.06**	4.0
3.00	8	6	4 3/4	7	1/2	9998018G	**1L386**	36.17	**29.15**	6.7

NOTE: All base kits include hardware.
(*) These bases match the mouting dimensions of Winsmith's "D-Line" units, however input shaft and other dimensions may vary. (†) Contains two plates.

THE SPEED REDUCER BOOK

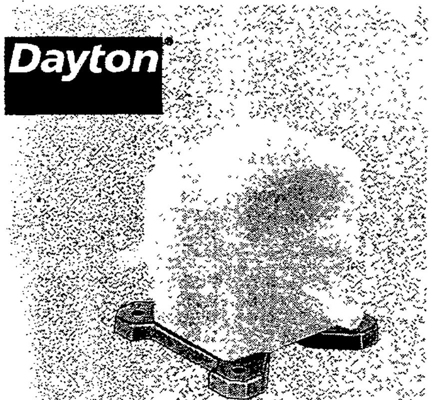


From Winsmith. Book explains how the various types of speed reducers work. It also defines industry terms and ratings. Chapters include speed reducer fundamentals, types, applications, installation and maintenance. It is tailored to the beginner. 179 pages.

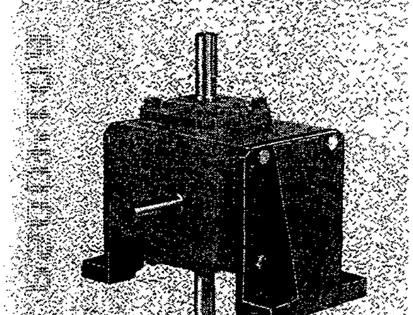
ORDERING INFORMATION

Stock No.	List	Each	Shpg. Wt.
1L394	$10.60	**$6.62**	0.5

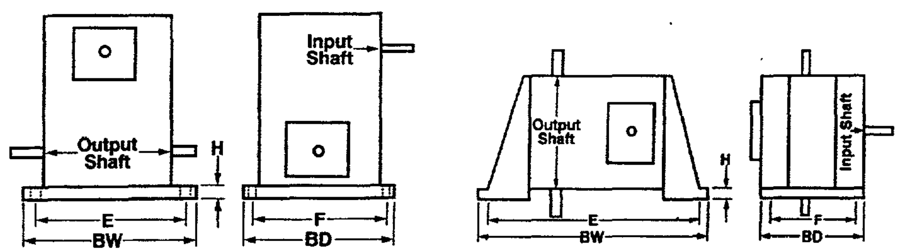
MOUNTING BASES



Horizontal Base


Vertical Base

For Dayton Speed Reducers Only

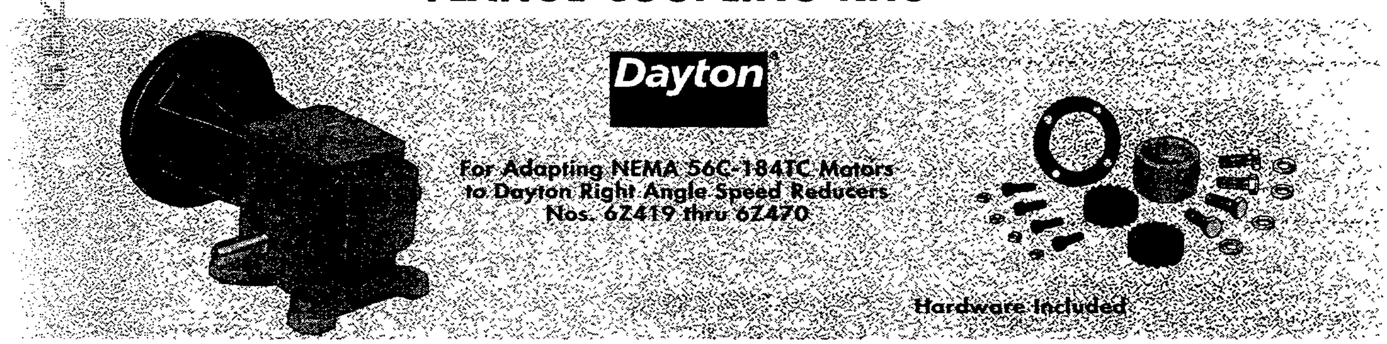


HORIZONTAL BASE

VERTICAL BASE

Worm Center Distance	BD	BW	E	F	H	Stock No.	Sold & Priced Per Pair List	Each	Shpg. Wt.
HORIZONTAL BASES									
1.00"	$4\frac{3}{8}$	$3\frac{1}{2}$	$2\frac{7}{8}$	$3\frac{3}{4}$	3/8	**3A699**	$17.00	**$11.68**	1.0
1.33	$5\frac{5}{8}$	$5\frac{5}{8}$	$4\frac{3}{8}$	$4\frac{3}{8}$	1/2	**6X499**	17.00	**11.79**	1.9
1.75	7	$5\frac{9}{16}$	$4\frac{1}{2}$	$5\frac{3}{4}$	11/16	**6X093**	24.00	**16.20**	3.2
2.06	$7\frac{11}{16}$	$5\frac{7}{8}$	$4\frac{11}{16}$	$6\frac{3}{8}$	23/32	**6X500**	27.00	**18.77**	3.6
2.62	$9\frac{1}{4}$	$6\frac{1}{2}$	$5\frac{1}{4}$	8	3/4	**1A507**	32.00	**21.89**	5.3
3.25	$11\frac{1}{8}$	$7\frac{3}{4}$	$6\frac{1}{8}$	$9\frac{1}{2}$	7/8	**6X501**	45.00	**30.90**	7.6
VERTICAL BASES									
1.00	$3\frac{5}{16}$	$5\frac{3}{4}$	$5\frac{1}{8}$	$2\frac{1}{8}$	1/8	**3A700**	27.00	**18.47**	1.5
1.33	$4\frac{1}{2}$	$7\frac{9}{16}$	$6\frac{1}{2}$	3	1/2	**6X502**	47.00	**32.50**	5.0
1.75	$4\frac{13}{16}$	$8\frac{7}{16}$	$7\frac{3}{8}$	4	5/8	**6X094**	54.00	**37.30**	5.2
2.06	6	$9\frac{3}{8}$	$8\frac{3}{8}$	$4\frac{7}{8}$	11/16	**6X503**	56.00	**38.70**	6.4
2.62	$7\frac{1}{8}$	$11\frac{1}{4}$	$10\frac{1}{8}$	$5\frac{3}{4}$	3/4	**1A508**	79.00	**55.20**	10.0
3.25	$8\frac{1}{2}$	$13\frac{3}{8}$	$11\frac{7}{8}$	$6\frac{1}{8}$	13/16	**6X504**	81.00	**56.15**	18.0

FLANGE COUPLING KITS

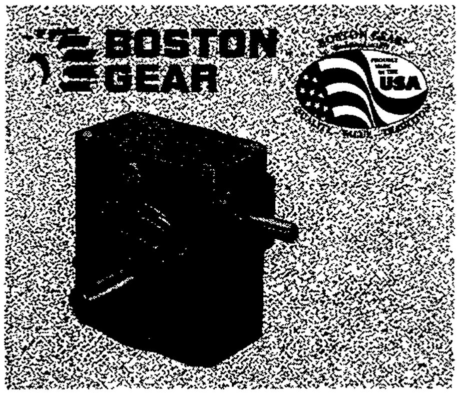


Worm Center Distance	Input Motor Frame Size	Overall Length Reducer / Flange	BC	Motor Coupling Bore	Motor Coupling Keyway	Reducer Coupling Bore	Reducer Coupling Keyway	Stock No.	List	Each	Shpg. Wt.
1.33"	56C	$9\frac{19}{32}$"	$5\frac{7}{8}$"	5/8"	3/16 x 3/32"	1/2"	1/8 x 1/16"	**3A701**	$103.00	**$72.00**	7.5
1.75, 2.06	56C	$10\frac{13}{32}$	$5\frac{7}{8}$	5/8	3/16 x 3/32	5/8	3/16 x 3/32	**3A702**	103.00	**72.00**	7.9
	143TC/145TC	$10\frac{21}{32}$	$5\frac{7}{8}$	7/8	3/16 x 3/32	5/8	3/16 x 3/32	**3A703**	112.00	**77.75**	3.6
2.62	56C	$12\frac{5}{32}$	$5\frac{7}{8}$	5/8	3/16 x 3/32	3/4	3/16 x 3/32	**3A706**	149.00	**104.15**	5.0
	143TC/145TC	$13\frac{1}{16}$	$5\frac{7}{8}$	7/8	3/16 x 3/32	3/4	3/16 x 3/32	**3A707**	149.00	**104.15**	5.0
3.25	56C	$14\frac{13}{16}$	$5\frac{7}{8}$	5/8	3/16 x 3/32	7/8	3/16 x 3/32	**3A708**	150.00	**104.40**	5.0
	143TC/145TC	$14\frac{13}{16}$	$5\frac{7}{8}$	7/8	3/16 x 3/32	7/8	3/16 x 3/32	**3A709**	150.00	**104.40**	5.0
	182TC/184TC	$15\frac{13}{16}$	$7\frac{1}{4}$	$1\frac{1}{8}$	1/4 x 1/8	7/8	3/16 x 3/32	**3A710**	182.00	**127.05**	9.0

LIBRARY OF TECHNICAL MANUALS

Helpful reference books for the tradesman, student, and homeowner. Topics cover electricity, electric motors, welding, plumbing, refrigeration, and air conditioning, hydraulics, and much more. See Index under Books, Technical.

INDIRECT DRIVE RIGHT ANGLE SPEED REDUCERS



- **BOSTON LIFETIME LIMITED WARRANTY. See page facing inside back cover of catalog for details.**
- **SHIPPED LESS OIL (see listing for No. 4ZF30 gear oil on page 266)**
- **29 to 350 RPM with 1750 RPM input motor**
- **Single output shaft (left hand facing input shaft)**
- **All position mounting with base kits**

Heavy-duty worm gear speed reducers with value-engineered features for flexible installation, long life and simplified maintenance. Fine-grained cast-iron housing. Integral input worm and shaft of case-hardened alloy steel. Oversized ball and roller bearings for maximum performance. Extra threaded bolt holes, when used with base, allow multiposition installation on floor, sidewall or ceiling (see base kits, page 266). Boston brand.

DAYTON 180V PMDC MOTORS AVAILABLE, SEE PAGE 196.

Nom. Output RPM at 1750 RPM	Worm Ctr. Dist. (WCD)	Nominal Ratio	CONTINUOUS DUTY OUTPUT TORQUE AT 1750 RPM In.-Lbs. at Input Motor HP Shows (1.0 Service Factor) 1/6 HP	1/4 HP	1/3 HP	1/2 HP	3/4 HP	1 HP	1½ HP	2 HP	3 HP	Boston Model	Stock No.	List	Each	Shp Wt
29	1.75"	60:1	223	335	440	—	—	—	—	—	—	718-60-G	1L303	$465.14	$377.25	20.
29	2.06	60:1	—	335	440	670	—	—	—	—	—	721-60-G	1L316	562.18	456.00	25.
29	2.38	60:1	—	—	440	670	—	—	—	—	—	724-60-G	1L347	573.05	465.50	33.
29	2.62	60:1	—	—	—	670	1004	—	—	—	—	726-60-G	1L356	718.61	585.00	43.
35	1.00	50:1	120	—	—	—	—	—	—	—	—	710-50-G	1L244	328.16	265.00	7.
35	1.33	50:1	210	—	—	—	—	—	—	—	—	713-50-G	1L265	374.61	303.25	12.
35	1.54	50:1	210	315	—	—	—	—	—	—	—	715-50-G	1L275	415.29	336.75	18.
35	1.75	50:1	—	315	420	—	—	—	—	—	—	718-50-G	1L304	465.14	377.25	22.
35	2.06	50:1	—	—	420	630	—	—	—	—	—	721-50-G	1L311	562.18	456.00	27
35	2.38	50:1	—	—	—	630	945	—	—	—	—	724-50-G	1L348	573.05	465.50	32
35	2.62	50:1	—	—	—	—	945	1260	—	—	—	726-50-G	1L357	718.61	585.00	4
44	1.00	40:1	128	—	—	—	—	—	—	—	—	710-40-G	1L245	328.16	265.00	
44	1.33	40:1	178	—	—	—	—	—	—	—	—	713-40-G	1L259	374.61	303.25	
44	1.54	40:1	178	266	355	—	—	—	—	—	—	715-40-G	1L276	415.29	336.75	
44	1.75	40:1	—	266	355	—	—	—	—	—	—	718-40-G	1L305	465.14	377.25	
44	2.06	40:1	—	—	355	533	—	—	—	—	—	721-40-G	1L312	562.18	456.00	
44	2.38	40:1	—	—	—	533	800	—	—	—	—	724-40-G	1L343	573.05	465.50	
44	2.62	40:1	—	—	—	—	800	1066	—	—	—	726-40-G	1L350	718.61	585.00	
58	1.00	30:1	132	—	—	—	—	—	—	—	—	710-30-G	1L246	328.16	265.00	
58	1.33	30:1	132	208	—	—	—	—	—	—	—	713-30-G	1L260	374.61	303.25	
58	1.54	30:1	—	208	277	—	—	—	—	—	—	715-30-G	1L277	415.29	336.75	
58	1.75	30:1	—	—	277	416	—	—	—	—	—	718-30-G	1L306	465.14	377.25	
58	2.06	30:1	—	—	—	416	624	—	—	—	—	721-30-G	1L313	562.18	456.00	
58	2.38	30:1	—	—	—	—	624	832	—	—	—	724-30-G	1L344	573.05	465.50	
58	2.62	30:1	—	—	—	—	—	832	1247	—	—	726-30-G	1L351	718.61	585.00	
70	1.33	25:1	117	175	234	—	—	—	—	—	—	713-25-G	1L261	374.61	303.25	
88	1.00	20:1	98	130	—	—	—	—	—	—	—	710-20-G	1L247	328.16	265.00	
88	1.33	20:1	—	148	197	—	—	—	—	—	—	713-20-G	1L262	374.61	303.25	
88	1.54	20:1	—	—	197	296	—	—	—	—	—	715-20-G	1L278	415.29	336.75	
88	1.75	20:1	—	—	—	296	443	—	—	—	—	718-20-G	1L307	465.14	377.25	
88	2.06	20:1	—	—	—	—	443	590	—	—	—	721-20-G	1L314	562.18	456.00	
88	2.38	20:1	—	—	—	—	—	590	886	—	—	724-20-G	1L341	573.05	465.50	
88	2.62	20:1	—	—	—	—	—	—	886	1180	—	726-20-G	1L352	718.61	585.00	
117	1.00	15:1	77	116	—	—	—	—	—	—	—	710-15-G	1L248	328.16	265.00	
117	1.33	15:1	—	116	155	232	—	—	—	—	—	713-15-G	1L263	374.61	303.25	
117	1.54	15:1	—	—	—	232	348	—	—	—	—	715-15-G	1L279	415.29	336.75	
117	1.75	15:1	—	—	—	—	348	422	—	—	—	718-15-G	1L308	465.14	377.25	
117	2.06	15:1	—	—	—	—	—	464	646	—	—	721-15-G	1L315	562.18	456.00	
117	2.38	15:1	—	—	—	—	—	—	697	929	—	724-15-G	1L342	573.05	465.50	
117	2.62	15:1	—	—	—	—	—	—	697	929	—	726-15-G	1L353	718.61	585.00	
175	1.00	10:1	53	80	107	—	—	—	—	—	—	710-10-G	1L249	328.16	265.00	
175	1.33	10:1	—	—	107	160	240	—	—	—	—	713-10-G	1L264	374.61	303.25	12
175	1.54	10:1	—	—	—	—	240	320	—	—	—	715-10-G	1L280	415.29	336.75	18
175	1.75	10:1	—	—	—	—	—	320	480	—	—	718-10-G	1L301	465.14	377.25	20
175	2.06	10:1	—	—	—	—	—	—	480	640	—	721-10-G	1L309	562.18	456.00	27
175	2.38	10:1	—	—	—	—	—	—	480	640	—	724-10-G	1L345	573.05	465.50	32
175	2.62	10:1	—	—	—	—	—	—	—	640	960	726-10-G	1L354	718.61	585.00	45
350	1.00	5:1	27	41	55	82	—	—	—	—	—	710-5-G	1L250	328.16	265.00	7
350	1.33	5:1	—	—	55	82	123	164	—	—	—	713-5-G	1L258	374.61	303.25	12.
350	1.54	5:1	—	—	—	—	123	164	256	—	—	715-5-G	1L281	415.29	336.75	18.
350	1.75	5:1	—	—	—	—	—	164	256	328	—	718-5-G	1L302	465.14	377.25	21.
350	2.06	5:1	—	—	—	—	—	—	256	328	—	721-5-G	1L310	562.18	456.00	26.
350	2.38	5:1	—	—	—	—	—	—	—	—	491	724-5-G	1L346	573.05	465.50	32.
350	2.62	5:1	—	—	—	—	—	—	—	—	491	726-5-G	1L355	718.61	585.00	43.

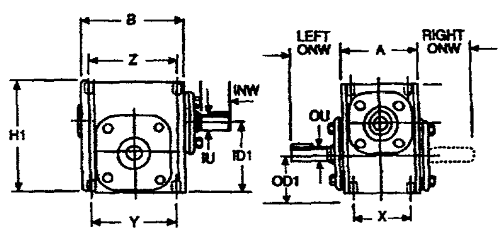
SPEED REDUCER DIMENSIONAL DRAWINGS

These dimensional drawings are representative of the speed reducers found above. These drawings may show dimensional references that do not apply. If a dimension is not referenced in the chart, it does not apply.

Left hand output shaft is determined while facing input shaft.

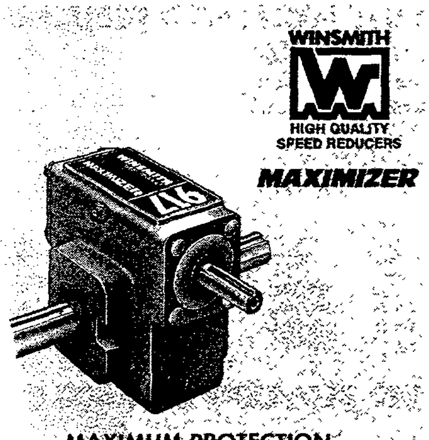
BOSTON GEAR

INDIRECT DRIVE RIGHT ANGLE



Worm Center Distance	Overhung Load	Shaft Dimensions (Inches) A	B	H1	Input Shaft ID1	INW	IU	Key	Output Shaft OD1	ONW	OU	Key
1.00"	150	2.50	3.25	3.63	2.31	0.81	.375	3/32 x 3/8	1.31	1.19	.500	1/8 x 5/8
1.33	200	2.88	4.25	4.64	3.05	1.31	.500	1/8 x 5/8	1.72	2.00	.625	3/16 x 1
1.54	300	3.69	5.13	5.36	3.45	1.56	.625	3/16 x 13/16	1.91	1.78	.750	3/16 x 1
1.75	500	3.69	5.50	5.75	3.81	1.56	.625	3/16 x 13/16	2.06	1.78	.875	3/16 x 1
2.06	700	3.81	6.00	6.38	4.34	1.56	.625	3/16 x 13/16	2.28	2.09	1.000	1/4 x 1¼
2.38	900	4.06	6.38	6.94	4.88	2.00	.750	3/16 x 1	2.50	2.38	1.125	1/4 x 1¼
2.62	1000	4.44	7.38	8.00	5.56	2.00	.750	3/16 x 1	2.94	2.62	1.125	1/4 x 1 15/16

INDIRECT DRIVE RIGHT ANGLE SPEED REDUCERS



MAXIMUM PROTECTION FOR STANDARD AND SEVERE DUTY APPLICATIONS

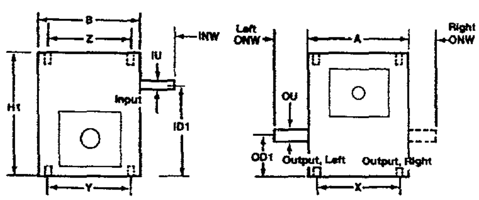
- WINSMITH 24 MONTH LIMITED WARRANTY, see page facing inside back cover of catalog for details
- USDA APPROVED EPOXY COATING prevents rust and corrosion in washdown environments
- USDA rust preventative coating on all shafts
- Shaft slingers used to prevent contaminants from contacting oil seals
- Breather vent to prevent liquids from entering reducer
- Double output shafts
- Filled with Mobil SHC629 synthetic lubricant
- Can be mounted with or without optional base using predrilled and tapped holes provided (See bases below).

Nominal Output RPM at 1725 RPM	Worm Ctr. Dist. (WCD)	Nominal Ratio	1/4 HP	1/3 HP	1/2 HP	3/4 HP	1 HP	1½ HP	2 HP	3 HP	Max. Torque	Winsmith Model WN-LR	Stock No.	List	Each	Shpg. Wt.
			At 1725 RPM Input CONTINUOUS DUTY OUTPUT TORQUE In.-Lbs. at Input Motor HP Shown (1.0 Service Factor)													
29	2.00"	60:1	373	512	—	—	—	—	—	—	559	920	**2Z954**	$286.96	**$231.50**	20.0
29	3.00	60:1	—	—	769	1206	1642	—	—	—	1809	930	**2Z961**	533.08	**429.50**	51.0
35	2.00	50:1	321	440	—	—	—	—	—	—	594	920	**2Z953**	286.96	**231.50**	20.0
35	3.00	50:1	—	—	658	1032	1405	—	—	—	1916	930	**2Z960**	533.08	**429.50**	51.0
43	1.33	40:1	219	—	—	—	—	—	—	—	220	913	**2Z946**	250.56	**202.00**	13.0
43	2.00	40.1	265	363	561	—	—	—	—	—	620	920	**2Z952**	286.96	**231.50**	20.0
43	3.00	40:1	—	—	—	849	1156	1770	—	—	1983	930	**2Z959**	533.08	**429.50**	51.0
58	1.33	30:1	201	—	—	—	—	—	—	—	225	913	**2Z945**	250.56	**202.00**	13.0
58	2.00	30:1	—	282	436	—	—	—	—	—	634	920	**2Z951**	286.96	**231.50**	20.0
58	3.00	30:1	—	—	—	—	894	1369	1844	—	2006	930	**2Z958**	533.08	**429.50**	51.0
86	1.33	20:1	144	195	—	—	—	—	—	—	222	913	**2Z944**	250.56	**202.00**	13 0
86	2.00	20:1	—	—	307	470	619	—	—	—	619	920	**2Z950**	286.96	**231.50**	20 0
86	3.00	20.1	—	—	—	—	—	956	1287	1950	1975	930	**2Z957**	533.08	**429.50**	51.0
115	1.33	15:1	111	151	218	—	—	—	—	—	218	913	**2Z943**	250.56	**202.00**	13.0
115	2.00	15:1	—	—	236	360	485	—	—	—	610	920	**2Z949**	286.96	**231.50**	20.0
115	3.00	15:1	—	—	—	—	—	729	982	1488	1927	930	**2Z956**	533.08	**429.50**	51.0
172	1.33	10:1	77	104	160	—	—	—	—	—	204	913	**2Z942**	250.56	**202.00**	13 0
172	2.00	10:1	—	—	—	246	331	502	—	—	565	920	**2Z948**	286.96	**231.50**	20 0
172	3.00	10:1	—	—	—	—	—	—	669	1014	1764	930	**2Z955**	533.08	**429.50**	51 0
345	1.33	5:1	40	54	83	125	168	—	—	—	171	913	**2Z941**	250.56	**202.00**	13.0
345	2.00	5:1	—	—	—	—	169	255	342	—	461	920	**2Z947**	286.96	**231.50**	20.0

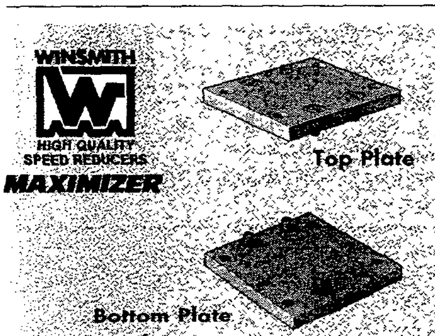
SPEED REDUCER DIMENSIONAL DRAWINGS

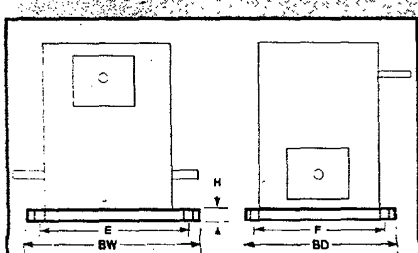
Right and left hand output shafts are determined while facing input shaft. Unless otherwise specified, on double shafted speed reducers the right ONW and left ONW dimensions are of equal length.

WINSMITH
HIGH QUALITY SPEED REDUCERS
MAXIMIZER



Winsmith Model WN-LR	Overhung Load (Lbs.)	A	B	H1	X	Y	Z	OD1	ONW	OU	ID1	INW	IU
		Dimensions (Inches)						OUTPUT SHAFTS			INPUT SHAFT		
913	290	3⅞	5⅛	4⅓	1⅜	3⅛	2⅜	1¾	2 1/16	3/4	3 3/32	1 11/16	1/2
920	650	4⅜	6¼	5⅝	1¾	4⅜	3⅜	2⅛	2 9/16	1	4⅛	2 1/16	5/8
930	1350	6	8 9/16	9	2⅝	5½	5½	3½	2⅞	1⅜	6½	2⅝	1





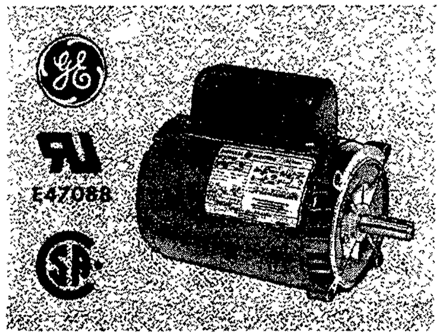
OPTIONAL BASE KITS

Worm Center Distance	BD	BW	E	F	H	Winsmith Model	Stock No.	List	Each	Shpg. Wt.
		Dimensions (Inches)								
TOP MOUNTING PLATE (WB BASE)										
1.33"	3⅞	5	4	2½	1/4	9998006G	**1L382**	$14.08	**$11.34**	1.5
1.75	4⅝	5	4	3½	1/2	9998002G	**1L402**	18.77	**15.12**	3.6
2.00	5¼	5	4	3½	1/4	9998009G	**1L383**	22.42	**18.06**	2.0
2.37	5¾	7	5¾	4½	3/8	9998014G	**1L399**†	27.92	**22.49**	7.0
2.65	6	7	5¾	4½	3/8	9998017G	**1L397**	31.26	**25.20**	4.5
3.00	6¾	8	6½	5¼	1/2	9998019G	**1L381**	36.17	**29.15**	7.5
3.50	10	6½	5¼	8¼	1/2	9998034G	**1L396**	38.51	**31.05**	9.2
BOTTOM MOUNTING PLATE (WT BASE)										
1.33	3⅞	5	4	2½	3/8	9998007G	**1L379**	14.08	**11.34**	2.2
1.75	5	5	4	3½	1/2	9998003G	**1L401**	18.77	**15.12**	3.6
2.00	5½	5	4	3½	1/2	9998010G	**1L380**	22.42	**18.06**	4.0
2.37	5¾	7	5¾	4½	3/8	9998013G	**1L400**	27.92	**22.49**	8.3
2.65	6	7	5¾	4½	3/8	9998017G	**1L398**	31.26	**25.20**	4.5
3.00	6¾	8	6½	5¼	1/2	9998019G	**1L381**	36.17	**29.15**	7.5
3.50	10	6½	5¼	8¼	1/2	9998034G	**1L395**	38.51	**31.05**	9.7
BOTTOM MOUNTING PLATE FOR "D-LINE" CONVERSION* (DT BASE)										
1.33	5	4	3¼	4¼	1/4	9998005G	**1L384**	14.08	**11.34**	1.6
2.00	5⅞	4½	3¾	5	1/2	9998008G	**1L385**	22.42	**18.06**	4.0
3.00	8	6	4¾	7	1/2	9998018G	**1L386**	36.17	**29.15**	6.7

NOTE: All base kits include hardware.
(*) These bases match the mouting dimensions of Winsmith's "D-Line" units, however input shaft and other dimensions may vary. (†) Contains two plates.

OPEN DRIPPROOF AND TEFC MOTORS, AN INDIRECT DRIVE RIGHT ANGLE SPEED REDUCI

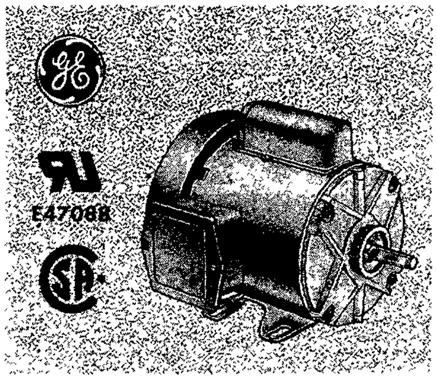
OPEN DRIPPROOF MOTORS FOR USE WITH SPEED REDU



Bearings: Ball
Enclosure: Open dripproof
Ambient: 40°C
Insulation Class: B
Thermal Protection: None
NEMA Frame: 56C
Duty: Continuous
Rotation: CW/CCW
Finish: Gray
Brand: GE

HP	Name-plate RPM	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	GE Stock No.	Stock No.	List	Each
1/4	1725	115/208-230	5.2/2.7-2.6	1.35	C1296	**3K070**	$166.00	**$100.60**
1/3	1725	115/208-230	6.6/3.4-3.3	1.35	C355	**3K071**	201.00	**121.80**
1/2	1725	115/208-230	8.8/4.4-4.2	1.25	C358	**3K072**	228.00	**138.10**
3/4	1725	115/208-230	13.2/6.2-6.0	1.25	C361	**3K073**	275.00	**166.75**

TEFC MOTORS FOR USE WITH SPEED REDUCERS ON PAGE



Bearings: Prelubricated ball
Enclosure: TEFC **Ambient:** 40°C
Thermal Protection: None
Duty: Continuous
Rotation: CW/CCW
Finish: Gray **Brand:** GE

HP	Name-plate RPM	NEMA Frame	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Service Factor	Insu-lation Class	GE Stock No.	Stock No.	List	Each
1/2	1725	56	115/230	8.6/4.3	1.15	B	C261	**2K591**	$240.00	**$145.40**
3/4	1725	56	115/230	10.4/5.2	1.0	B	C268	**2K597**	286.00	**173.75**
1	1725	56	115/230	13.2/6.6	1.0	B	C275	**2K602**	327.00	**198.50**
1½	1725	56H	115/230	14.8/7.4	1.0	B	C281	**2K607***	371.00	**225.25**
2	1725	182T	115/230	23.4/11.7	1.0	B	N777	**3K155**	416.00	**267.25**
3	1725	184T	115/230	34.0/17.0	1.0	B	N779	**3K156**	496.00	**318.50**
5	1730	184T	230	22.0	1.0	F	N781	**3K159***	562.00	**361.00**

(*) Capacitor-start, capacitor-run with two externally mounted capacitors; all other models are capacitor-start, induction-run.

INDIRECT DRIVE RIGHT ANGLE SPEED REDUCERS

- **2" Worm center distance**
- **30 to 157 RPM***
- **Single output shaft**
- **All units shipped with oil**

Designed for continuous duty, high torque, slow speed applications where a compact, dependable speed reducer is required. Factory lubricated with an AGMA 8C oil. Gray finish. Dayton brand.

Worm Gear: Hardened steel

Worm Wheel: Forged bronze

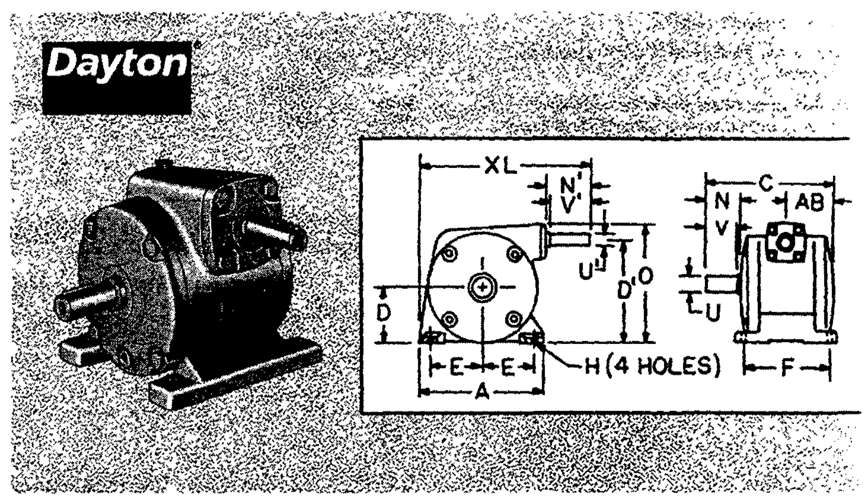
Bearings: Tapered roller on output shaft for greater overhung load capacity.

Overhung Load: 600 lbs.

Oil Seals: Double-lip seals on input and output shaft. Inner lip is spring-loaded to keep lubricant in and outer lip keeps dirt and foreign matter out

Recommended Motors: 1/3 to 1 HP, 1725 RPM

Mounting: All position



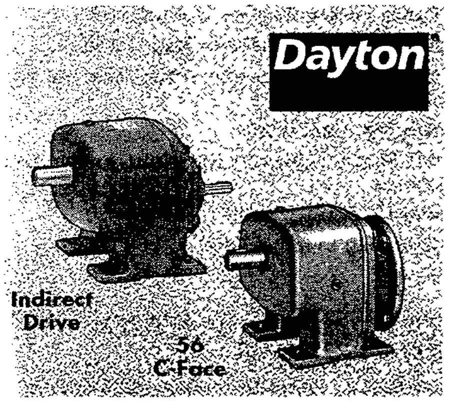
Nominal Output RPM*	Output Torque In.-Lbs.*	Max. Input HP*	Nominal Gear Ratio	Stock No.	List	Each	Shpg. Wt.
30	285	1/3	58:1	**2Z306**	$301.00	**$210.50**	11.0
45	337	1/2	39:1	**2Z307**	301.00	**210.50**	10.0
67	385	3/4	26:1	**2Z308**	301.00	**210.50**	11.0
96	360	1	18:1	**2Z309**	301.00	**210.50**	10.0
157	302	1	11:1	**2Z310**	301.00	**210.50**	11.0

(*) Based on 1725 RPM input speed at max. HP. Lower input speed may be used with a proportional decrease in input HP and output speed. Lower input HP may be used with a proportional reduction in output torque.

Dimensions (Inches)

A	C	D	D'	E	F	H	N	N'	O	U		U'		V	V'	AB	XL
5¾	7 1/16	2½	4½	2⅜	4¾	11/32	1 13/16	2	5 13/16	0.7500	0.7495	0.6250	0.6245	1 7/16	1⅞	2 7/16	8

INDIRECT DRIVE AND C-FACE PARALLEL SHAFT SPEED REDUCERS



Large prefilled oil reservoir and die-cast housing provide superior heat dissipation

ions & Gears: Carburized steel pinions. duction hardened helical and spur gears e computer matched for high efficiency; signed from AGMA standards.
arings: Deep groove ball bearings on put, output, and intermediate shafts
arcase: Die-cast aluminum alloy
brication: AGMA #4
als: Spring-loaded double lip seals on put and output shafts
ounting: Horizontal mount only
nish: Gray

INDIRECT DRIVE AND 56 C-FACE SPEED REDUCERS

Type	Dimensions (Inches) (Reference Drawing Pg. 276) B	BC	E	F	H2	Input Shaft ID2	INW	IU	Key	Output Shaft OD2	ONW	OU	Key
C-Face	7 3/16	5 7/8	5 11/16	4 1/2	7 9/16	—	—	—	—	4 7/8	2	0.99	1/4 sq. x 1 1/4
Indir. Drv.	7 3/8	5 7/8	5 11/16	4 1/2	7 9/16	3 1/2	1 7/8	5/8	3/16 sq. x 1 3/8	4 7/8	2	0.99	1/4 sq. x 1 1/4

INDIRECT DRIVE REDUCERS

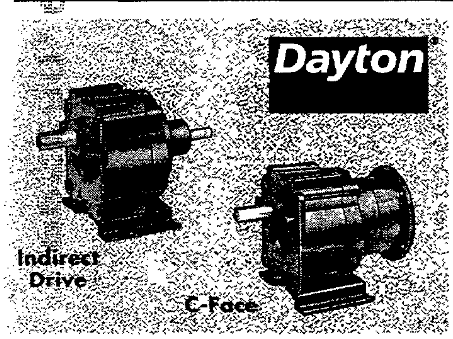
Nominal Output RPM*	Ratio	No. of Stages	Over-hung Load Lbs.	Torque, In.-Lbs. 1/4 HP	1/3 HP	1/2 HP	3/4 HP	1 HP	Stock No.	List	Less Motor Each	Shpg. Wt.
20	87:1	3	1192	748	998	—	—	—	**4Z856**	$370.00	**$258.75**	33.0
30	57.5:1	3	885	499	665	998	—	—	**4Z857**	370.00	**258.75**	24.0
45	38.5:1	3	863	333	443	665	—	—	**4Z858**	370.00	**258.75**	26.0
55	31:1	3	712	272	363	544	816	—	**4Z859**	370.00	**258.75**	24.0
99	17.5:1	2	773	151	201	302	454	—	**4Z860**	370.00	**258.75**	24.0
140	12.5:1	2	709	107	143	214	320	427	**4Z861**	370.00	**258.75**	25.0

56 C-FACE REDUCERS

Nominal Output RPM*	Ratio	No. of Stages	Over-hung Load Lbs.	Torque, In.-Lbs. 1/4 HP	1/3 HP	1/2 HP	3/4 HP	1 HP	Stock No.	List	Less Motor Each	Shpg. Wt.
20	87:1	3	1192	748	998	—	—	—	**4Z720**	$413.00	**$288.75**	25.0
30	57.5:1	3	885	499	665	998	—	—	**4Z614**	413.00	**288.75**	24.0
45	38.5:1	3	863	333	443	665	—	—	**4Z615**	413.00	**288.75**	23.0
55	31:1	3	712	272	363	544	816	—	**4Z616**	413.00	**288.75**	24.0
99	17.5:1	2	773	151	201	302	454	—	**4Z617**	413.00	**288.75**	24.0
140	12.5:1	2	709	107	143	214	320	427	**4Z719**	413.00	**288.75**	23.0

(*) At 1725 RPM input motor speed.

PARTS AVAILABLE FOR INDIRECT DRIVE AND C-FACE PARALLEL SHAFT SPEED REDUCERS, CALL 1-800-323-0620



- **Meets AGMA Class I design criteria**

Pinion & Gears: Heat-treated steel with helical first stage gearing
Bearings: Heavy-duty needle and ball bearings and thrust balls
Base: Removable to allow high or low positioning of output shaft; face mounting holes on output side of reducer
Gearcase: Die-cast aluminum housing
Lubrication: Shipped with heavy-duty oil lubricant in gear case
Seals: Spring-loaded lip-type oil seals or input and output shaft
Mounting: All position
Finish: Gray

No. 4Z498 matches NEMA 42 frame shaft height. Nos. 4Z499 thru 4Z503 match NEMA 48 frame shaft height.

INDIRECT DRIVE AND 42 C-FACE SPEED REDUCERS

Stock No.	Dimensions (Inches) (Reference Drawing Pg. 276) A	B	E	F	H2	Input Shaft ID2	INW	IU	Output Shaft OD2	ONW	OU	Key
2Z819-2Z821	4 1/32	4 3/16	4	1 1/2	4 1/2	2 51/64	1 3/8	1/2	3 1/2	1 1/2	5/8	3/16 sq. x 1
4Z498	4 1/32	4 15/16	4	1 1/2	4 31/32	2 5/8	1 3/8	1/2	3 11/32	1 1/2	5/8	3/16 sq. x 1
4Z499-4Z503	4 1/32	4 15/16	4	1 1/2	5 11/32	3	1 3/8	1/2	3 23/32	1 1/2	5/8	3/16 sq. x 1
1L511-1L516 1L537	4 1/32	5 3/4	4	1 1/2	5	—	—	—	3 3/4	1 1/2	5/8	3/16 sq. x 1

INDIRECT DRIVE REDUCERS

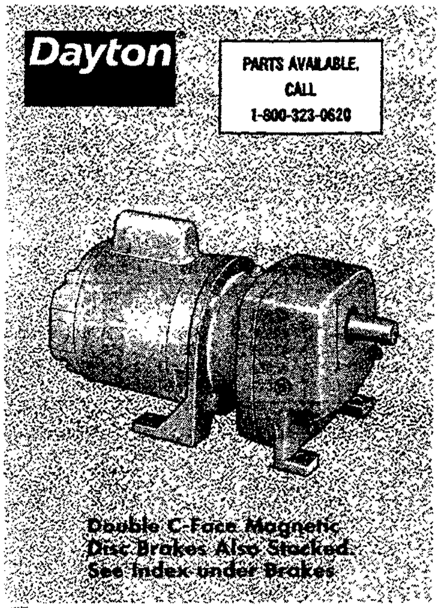
Nominal Output at 1725 RPM*	Ratio	No. of Stages	Over-hung Load Lbs.	Continuous Duty Output Torque, In.-Lbs. 1/40 HP	1/20 HP	1/12 HP	1/10 HP	1/6 HP	1/4 HP	1/3 HP	Stock No.	List	Each	Shpg. Wt.
15	118:5	3	175	95	200	—	—	—	—	—	**2Z819**	$178.00	**$136.70**	4.0
19	92:0	3	175	74	148	246	290	—	—	—	**4Z498**	178.00	**136.70**	5.5
33	52:9	2	175	44	88	148	175	—	—	—	**2Z820**	178.00	**136.70**	4.7
34	50:8	3	175	41	82	136	163	260	—	—	**4Z499**	178.00	**136.70**	5.0
48	35:8	3	175	29	58	96	115	192	295	—	**4Z500**	203.00	**156.00**	5.0
61	28:8	2	175	24	48	80	97	161	225	—	**4Z501**	203.00	**156.00**	5.0
72	23:4	2	175	20	40	66	79	100	—	—	**2Z821**	203.00	**156.00**	4.3
90	19:1	2	175	13	27	53	64	107	160	225	**4Z502**	203.00	**156.00**	5.0
135	12:7	2	175	10	21	36	43	71	106	175	**4Z503**	203.00	**156.00**	5.0

42CZ/48 C-FACE REDUCERS

Nominal Output at 1725 RPM*	Ratio	No. of Stages	Over-hung Load Lbs.	Continuous Duty Output Torque, In.-Lbs. 1/8 HP	1/6 HP	1/4 HP	1/3 HP	Stock No.	List	Each	Shpg. Wt.
20	87.8:1	3	175	260	—	—	—	**1L515**	$251.00	**$192.75**	6.8
30	58.3:1	3	175	230	—	—	—	**1L537**	251.00	**192.75**	5.0
48	35.8:1	3	175	145	195	290	—	**1L514**	251.00	**192.75**	6.7
61	28.1:1	2	175	120	160	240	—	**1L513**	230.00	**176.25**	6.8
76	22.7:1	2	175	95	125	190	—	**1L512**	230.00	**176.25**	5.0
90	19.1:1	2	175	80	110	160	215	**1L511**	230.00	**176.25**	7.0
135	12.7:1	2	175	55	70	110	150	**1L516**	230.00	**176.25**	6.2

(*) Maximum input speed is 1750 RPM.

C-FACE PARALLEL SHAFT SPEED REDUCERS AND REDUCER/MOTOR COMBINATIONS



- **All units shipped with oil**
- **30 to 91 RPM, continuous duty**
- **For use with 1/4 to 1/2 HP NEMA 56C, 1725 RPM motors**
- **Reversible rotation**

Dayton parallel shaft speed reducers have heat treated, annealed cast-iron housings, precision machined for accurate alignment of gears. Reducers are available separately or with motors (see list of combinations below). Gray finish. Dayton brand.

Gears: Heavy-duty helical cut steel
Input Shaft: Ball bearing supported
Output Shaft: Tapered roller bearing supported
Housing: Cast iron
Oil Seals: Lip-type on input and output shafts
Mounting: Horizontal
Overhung Load: 660 lbs.

SPECIFICATIONS

Nominal Output RPM*	Ratio	Torque, In.-Lbs. 1/4 HP	1/3 HP	1/2 HP
30	57.5:1	470	638	955
44	39:1	320	435	651
60	29:1	235	318	478
91	19:1	160	217	326

(*) At 1725 RPM input motor speed

SPEED REDUCERS

Nominal Output RPM	Stock No.	Less Motor List	Each	Shpg. Wt.
30	2Z932	$414.00	**$289.50**	33.0
44	2Z933	414.00	**289.50**	33.0
60	2Z934	414.00	**289.50**	33.0
91	2Z935	414.00	**289.50**	31.0

REDUCER WITH DAYTON SINGLE-PHASE CAPACITOR-START, 1725 RPM, 115/230V, 60 Hz BALL BEARING MOTOR

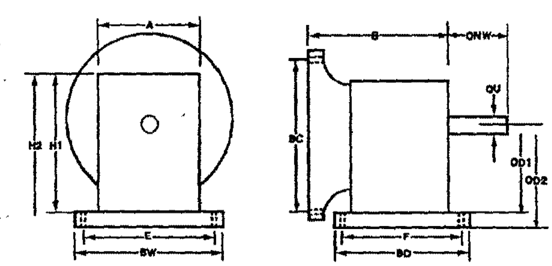
Input Motor HP	Nom. Output RPM	Torque In.-Lbs.	REDUCER with DRIPPROOF MOTOR 50°C Rise, Continuous Duty: Stock No.	Each	Shpg. Wt.	REDUCER with ENCL. FAN-COOLED MOTOR 55°C Rise, Continuous Duty: Stock No.	Each	Shpg. Wt.
1/4	30	470	7Z737	**$379.00**	50.0	7Z741	**$395.75**	51.0
	44	320	7Z738	**379.00**	50.0	7Z742	**395.75**	51.0
	60	235	7Z739	**379.00**	50.0	7Z743	**395.75**	51.0
	91	160	7Z740	**379.00**	48.0	7Z744	**395.75**	49.0
1/3	30	638	7Z135	**398.75**	51.0	7Z147	**407.25**	53.0
	44	435	7Z172	**398.75**	51.0	7Z176	**407.25**	53.0
	60	318	7Z136	**398.75**	51.0	7Z148	**407.25**	53.0
	91	217	7Z137	**398.75**	49.0	7Z149	**407.25**	51.0
1/2	30	955	7Z138	**415.25**	54.0	7Z150	**430.00**	55.0
	44	651	7Z173	**415.25**	54.0	7Z177	**430.00**	55.0
	60	478	7Z139	**415.25**	54.0	7Z151	**430.00**	55.0
	91	326	7Z140	**415.25**	52.0	7Z152	**430.00**	53.0

REDUCER WITH DAYTON 3-PHASE, 1725 RPM, 208-220/440V, 60 Hz BALL BEARING MOTOR

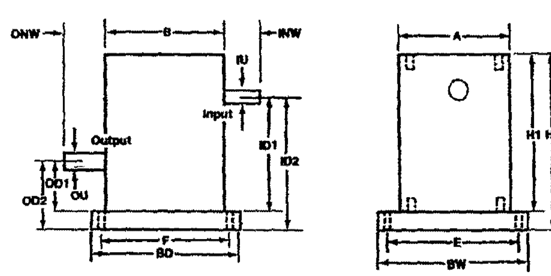
Input Motor HP	Nom. Output RPM	Torque In.-Lbs.	REDUCER with DRIPPROOF MOTOR 40°C Rise, Continuous Duty: Stock No.	Each	Shpg. Wt.	REDUCER with ENCL. FAN-COOLED MOTOR 55°C Rise, Continuous Duty: Stock No.	Each	Shpg. Wt.
1/3	30	638	7Z141	**393.00**	51.0	7Z153	**411.00**	51.0
	44	435	7Z174	**393.00**	51.0	7Z178	**411.00**	51.0
	60	318	7Z142	**393.00**	51.0	7Z154	**411.00**	51.0
	91	217	7Z143	**393.00**	49.0	7Z155	**411.00**	49.0
1/2	30	955	7Z144	**409.50**	53.0	7Z156	**433.00**	55.0
	44	651	7Z175	**409.50**	53.0	7Z179	**433.00**	55.0
	60	478	7Z145	**409.50**	53.0	7Z157	**433.00**	55.0
	91	326	7Z146	**409.50**	51.0	7Z158	**433.00**	53.0

SPEED REDUCER DIMENSIONAL DRAWINGS

These dimensional drawings are representative of the style of speed reducers found on this page and page 275 (dimensions listed below are for models on this page; see dimensional charts on page 275 for specific dimensions for speed reducers shown on that page). These drawings may show dimensional references that do not apply. If a dimension is not referenced in the chart, it does not apply.



C-FACE PARALLEL SHAFT

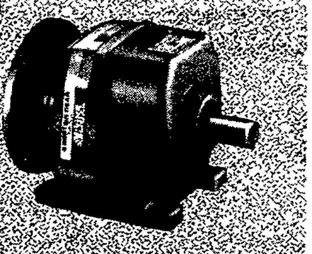


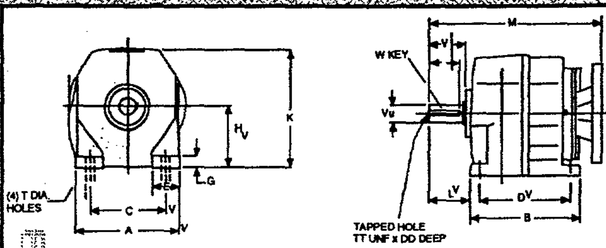
INDIRECT DRIVE PARALLEL SHAFT

Dimensions (Inches)									
B	BC	BD	DD2	OD2	F	H2	ONW	OU	Key
6 5/16	5 7/8	8 9/16	4 7/8	5 3/4	7 1/2	7 3/16	2	1	1/4 sq. x 1 1/4

NEW Product Offering

BOSTON GEAR





See Specific Dimensions Below

- Standard NEMA C-face allows use of any industry standard motor
- Ratios up to 71:1 in only two stages; increases efficiency and reduces case size
- Patented input bushing system allows positive torque transfer and eliminates fretting corrosion
- Dimensionally interchangeable with SEW Eurodrive inline helical reducers
- All units shipped prelubricated (shipped with Mobil SHC634 lubricant, No. 4ZF30)
- Powdered epoxy paint suitable for washdown applications
- Boston Gear 2-Year Warranty; see page facing inside back cover of catalog for details

INPUT BORE DIMENSIONS

Bore Code*	NEMA Mounting	Input Shaft Bore	Input Shaft Keyway
B5	56C	0.625	3/16 x 3/32
B7	140TC/180C	0.875	3/16 x 3/32
B9	180TC/210C	1.125	1/4 x 1/8
B11	210TC/250VC	1.375	5/16 x 5/32

(*) Bore code found in Boston model number.

Nominal Output RPM*	Ratio	AT 1750 RPM CONTINUOUS DUTY OUTPUT TORQUE In.-Lbs. at Input Motor HP Shown (1.0 Service Factor) 1/4 HP	1/3 HP	1/2 HP	3/4 HP	1 HP	1½ HP	2 HP	3 HP	5 HP	7½ HP	Boston Model	Stock No.	List	Each	Shpg. Wt.
24	71:1	503	—	—	—	—	—	—	—	—	—	F832A-71-SB5	**1F864**	$330.77	**$306.75**	28.0
		—	768	1150	—	—	—	—	—	—	—	F842A-71-SB5	**1F846**	416.07	**354.75**	36.0
		—	—	—	1685	2246	—	—	—	—	—	F862A-71-SB5	**1F828**	559.83	**519.50**	50.0
		—	—	—	—	—	3418	4557	—	—	—	F872A-71-SB7	**1F810**	991.53	**893.50**	85.0
27	63:1	503	—	—	—	—	—	—	—	—	—	F832A-63-SB5	**1F866**	330.77	**306.75**	28.0
		—	674	1011	—	—	—	—	—	—	—	F842A-63-SB5	**1F848**	416.07	**354.75**	36.0
		—	—	—	—	—	3060	—	—	—	—	F862A-63-SB7	**1F830**	609.62	**589.50**	50.0
		—	—	—	—	—	3076	4102	—	—	—	F872A-63-SB7	**1F812**	910.56	**845.00**	85.0
31	56:1	490	—	—	—	—	—	—	—	—	—	F832A-56-SB5	**1F868**	360.18	**306.75**	28.0
		—	617	925	—	—	—	—	—	—	—	F842A-56-SB5	**1F850**	382.09	**354.75**	36.0
		—	—	—	1400	1866	—	—	—	—	—	F862A-56-SB5	**1F832**	609.62	**589.50**	50.0
		—	—	—	—	—	2797	3730	—	—	—	F872A-56-SB7	**1F814**	910.56	**845.00**	85.0
35	50:1	431	575	—	—	—	—	—	—	—	—	F832A-50-SB5	**1F870**	360.18	**306.75**	28.0
		—	—	814	1220	—	—	—	—	—	—	F842A-50-SB5	**1F852**	382.09	**354.75**	36.0
		—	—	—	—	—	2496	—	—	—	—	F862A-50-SB7	**1F834**	609.62	**589.50**	50.0
		—	—	—	—	—	—	—	5034	—	—	F872A-50-SB9	**1F816**	963.58	**893.50**	85.0
38	45:1	372	486	—	—	—	—	—	—	—	—	F832A-45-SB5	**1F872**	360.18	**306.75**	28.0
		—	—	766	1150	—	—	—	—	—	—	F842A-45-SB5	**1F854**	382.09	**354.75**	36.0
		—	—	—	—	—	2199	2932	—	—	—	F862A-45-SB7	**1F836**	609.62	**589.50**	50.0
		—	—	—	—	—	—	—	4456	—	—	F872A-45-SB9	**1F818**	963.58	**893.50**	85.0
48	36:1	—	416	684	—	—	—	—	—	—	—	F832A-36-SB5	**1F874**	360.18	**306.75**	28.0
		—	—	—	925	1233	—	—	—	—	—	F842A-36-SB5	**1F856**	382.09	**354.75**	36.0
		—	—	—	—	—	1827	2436	—	—	—	F862A-36-SB7	**1F838**	609.62	**589.50**	50.0
		—	—	—	—	—	—	—	3646	5470	—	F872A-36-SB9	**1F820**	991.53	**893.50**	85.0
62	28:1	—	327	491	—	—	—	—	—	—	—	F832A-28-SB5	**1F876**	360.18	**306.75**	28.0
		—	—	—	726	968	—	—	—	—	—	F842A-28-SB5	**1F858**	416.07	**354.75**	36.0
		—	—	—	—	—	—	—	2867	—	—	F862A-28-SB9	**1F840**	636.11	**589.50**	50.0
		—	—	—	—	—	—	—	—	4762	—	F872A-28-SB9	**1F822**	991.53	**894.00**	85.0
79	22:1	—	—	402	584	—	—	—	—	—	—	F832A-22-SB5	**1F878**	330.77	**306.75**	28.0
		—	—	—	—	—	1140	—	—	—	—	F842A-22-SB7	**1F860**	416.07	**354.50**	36.0
		—	—	—	—	—	—	—	2281	—	—	F862A-22-SB9	**1F842**	636.11	**589.50**	50.0
		—	—	—	—	—	—	—	2408	4014	—	F872A-22-SB9	**1F824**	991.53	**894.00**	85.0
97	18:1	—	—	—	474	596	—	—	—	—	—	F832A-18-SB5	**1F880**	330.77	**306.75**	28.0
		—	—	—	—	—	894	1192	—	—	—	F842A-18-SB7	**1F862**	416.07	**354.50**	36.0
		—	—	—	—	—	—	—	1788	—	—	F862A-18-SB9	**1F844**	609.62	**589.50**	50.0
		—	—	—	—	—	—	—	—	—	4717	F872A-18-SB11	**1F826**	963.58	**894.00**	85.0

(*) At 1750 RPM input motor speed.

DIMENSIONS (Inches)

Size	A	B	C	D	E	G	H	K	L	M NEMA Mounting 56C	140TC	180TC	210TC	T	U	V	W-Key SQ.	W-Key Length	TT	DD	WT
F832A	5.31	4.33	4.33	3.35	0.98	0.47	2.95	5.79	2.28	9.82	9.82	10.65	—	0.39	0.750	1.57	0.19	1.28	1/4	0.63	25
F842A	5.71	6.30	4.33	5.12	1.38	0.63	3.54	7.01	2.95	10.73	10.73	11.55	—	0.39	1.000	1.97	0.25	1.75	1/4	0.63	32
F862A	7.48	7.87	5.31	6.50	2.17	0.79	4.53	9.06	3.54	12.26	12.26	14.61	—	0.59	1.250	2.36	0.25	2.00	3/8	0.87	63
F872A	9.06	9.65	6.69	8.07	2.36	0.98	5.51	10.83	4.53	—	15.15	16.76	16.76	0.75	1.625	3.15	0.38	2.37	5/8	1.42	99

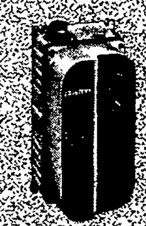
WASHDOWN DC MOTORS AND DC SPEED CONTROLS

WASHDOWN DC SPEED CONTROLS

- Durable, non-absorbent, non-toxic, white epoxy finish
- Approved by USDA agricultural Canada
- NEMA rated washdown enclosure
- Built-in transient and surge suppression
- Jumpers for current scaling/horsepower adjustment
- UL Listed

NEW Product Offering

Dayton



No. 1F792

Shunt Arm VDC	Wound Field VDC	HP Range	Input Volts	Speed Range	Enclosure Type	Dimensions (Inches) H	W	D	Additional Switches	Stock No.	List	Each	Shpg. Wt.
90	100	1/8-1	115	50:1	NEMA 4/12	9½	5	5½	Forward/Reverse	**1F794**	$424.08	**$372.00**	9.0
180	200	1/3-2	230	50:1	NEMA 4/12	9½	5	5½	Forward/Reverse	**1F792**	424.08	**372.00**	9.0

PERMANENT MAGNET DC WASHDOWN MOTORS

- Gasketed construction
- Stainless steel shaft
- Shaft seals at drive and non-drive ends
- USDA approved white epoxy paint
- Drain holes at 3, 6, 9, and 12 o'clock positions
- UL and CSA Approved

Typical Uses: Designed for variable speed operation in food beverage or processing plants where motor is exposed to high pressure washdowns or other high humidity or wet environments.

Type: Permanent magnet

Bearings: Ball

Mounting: C-face with removable base

Ambient: 40°C

Insulation Class: F

Service Factor: 1.0

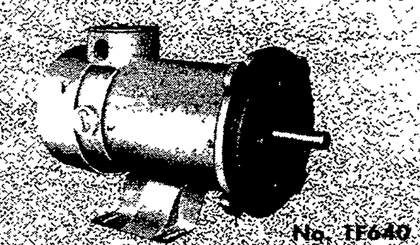
Duty: Continuous

Rotation: CW/CCW

Brand: Dayton

NEW Product Offering

Dayton

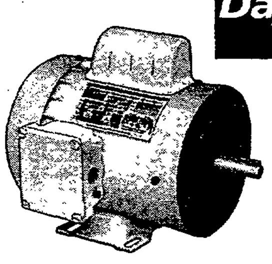


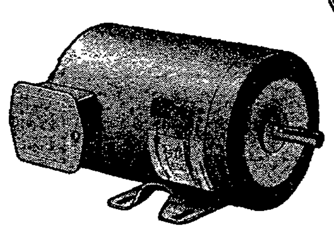
No. 1F640

HP	Nameplate RPM	Full-Load Torque In.-Lbs.	Full-Load Amps at Nameplate Volts	NEMA Frame	Overall Length	Stock No.	List	Each	Shpg. Wt.
90 VDC WASHDOWN MOTORS									
1/4	1725	9.1	3.0	56C	10 7/16"	**1F654**	$429.09	**$283.25**	17.0
1/3	1725	12.2	3.5	56C	10 13/16	**1F652**	461.25	**304.50**	18.0
1/2	1725	18.3	5.5	56C	12¾	**1F650**	493.80	**326.00**	25.0
3/4	1725	27.4	8.2	56C	14¾	**1F646**	578.70	**382.00**	32.0
1	1725	36.5	10.9	56C	16¾	**1F642**	693.00	**457.50**	38.0
180 VDC WASHDOWN MOTORS									
1/2	1725	18.3	2.8	56C	12¾	**1F648**	493.80	**326.00**	25.0
3/4	1725	27.4	4.1	56C	14¾	**1F644**	578.70	**382.00**	32.0
1	1725	36.5	5.3	56C	16¾	**1F640**	693.00	**457.50**	38.0

A WIDE SELECTION OF WASHDOWN AC MOTORS IS AVAILABLE

Dayton





- USDA approved corrosion-resistant white epoxy primer and paint to meet sanitary requirements
- Feature 303 stainless steel shaft with V-ring seal
- Dayton models have cast-iron C-face with drain holes at 3, 6, 9, and 12 o'clock positions and comply with BISSC, 2A Dairy Standard and NEMA definition MG1-1.26.5 standard for waterproof motors

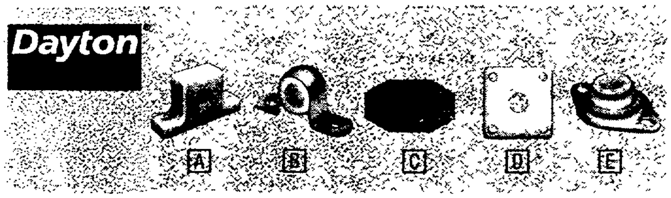
FOR A COMPLETE LISTING OF WASHDOWN AC MOTORS, SEE PAGES 152 THRU 154.

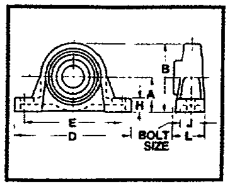
Typical Uses: For extended life on equipment in food, beverage, or chemical processing plants where motor is constantly exposed to high pressure washdowns or other high humidity or wet environments.

APPENDIX 9

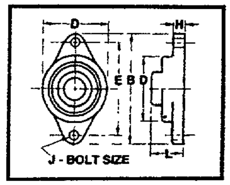
WASHDOWN DRIVE COMPONENTS

UHMW-PE PLASTIC (WASHDOWN) BEARINGS

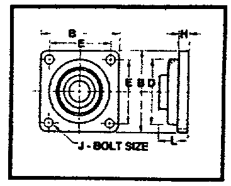




Base Mount



2 Bolt Flange Mount



4 Bolt Flange Mount

- **Bearings are Ultra-High Molecular Weight Polyethylene (UHMW-PE) impregnated with a food-grade fluid lubricant for lower friction and longer wear**
- **For washdown applications in wet/harsh environments or where sanitary conditions must be maintained; USDA and FDA approved**
- **Resistant to corrosion, abrasion, and high impact**
- **Self-lubricating requires little or no maintenance**
- **Dimensionally interchangeable with most metal units**
- **Temperature range: -400 to +165°F**

Solid Rigid Type: Entire bearing is UHMW-PE plastic.

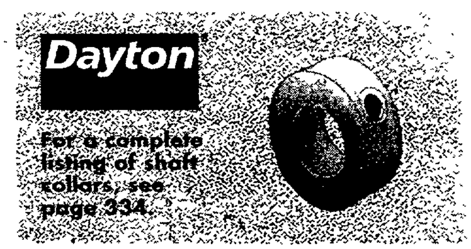
Self-Aligning Type: Bearing is UHMW-PE plastic. Housing is sturdy, 2-piece pressed stainless steel (304).

For a complete listing of bearings, see pages 312 thru 326.

NEW Product Offering

Bore Dia.	A	B	D	E	J	H	L	Stock No.	List	Each	Shpg. Wt.
	Dimensions (Inches)										
BASE MOUNT PLASTIC PILLOW BLOCKS											
A UHMW-PE Plastic Bearing, Solid Rigid Type											
1/2	1 3/16	2 3/16	3 3/8	4 3/4	7/16	5/8	1 1/2	**1F624**	$23.38	**$15.58**	0.4
5/8	1 3/16	2 3/16	3 3/8	4 3/4	7/16	5/8	1 1/2	**1F622**	23.38	**15.58**	0.4
3/4	1 5/16	2 1/2	3 3/4	5 1/4	7/16	5/8	1 1/2	**1F620**	25.92	**17.28**	0.4
1	1 7/16	2 3/4	4	5 1/2	7/16	3/4	1 1/2	**1F618**	26.97	**17.98**	0.4
B UHMW-PE Plastic Bearing, Self-Aligning Type											
1/2	1	2	4	3	7/16	1/8	1 1/8	**1F638**	9.09	**6.06**	0.3
5/8	1	2	4	3	7/16	1/8	1 1/8	**1F636**	9.09	**6.06**	0.3
3/4	1	2	4	3	7/16	1/8	1 1/8	**1F634**	9.09	**6.06**	0.3
1	1	2	4	3	7/16	1/8	1 1/8	**1F632**	9.09	**6.06**	0.3
FLANGE MOUNT PLASTIC PILLOW BLOCKS											
C UHMW-PE Plastic Bearing, Solid Rigid Type (2 Bolt)											
1/2	—	4 7/16	2 1/2	3 9/16	7/16	—	1 1/2	**1F568**	25.96	**17.30**	0.5
5/8	—	4 7/16	2 1/2	3 9/16	7/16	—	1 1/2	**1F566**	25.96	**17.30**	0.5
3/4	—	4 7/16	2 1/2	3 9/16	7/16	—	1 1/2	**1F564**	25.96	**17.30**	0.5
1	—	4 15/16	2 3/4	3 7/8	7/16	—	1 1/2	**1F562**	27.76	**18.50**	0.5
D UHMW-PE Plastic Bearing, Solid Rigid Type (4 Bolt)											
1/2	—	3	—	2 1/8	7/16	—	1 1/4	**1F560**	19.24	**12.83**	0.6
5/8	—	3	—	2 1/8	7/16	—	1 1/4	**1F558**	19.24	**12.83**	0.6
3/4	—	3 3/8	—	2 1/2	7/16	—	1 1/4	**1F556**	19.99	**13.33**	0.6
1	—	3 3/4	—	2 3/4	7/16	—	1 1/4	**1F554**	20.89	**13.93**	0.6
E UHMW-PE Plastic Bearing, Self-Aligning Type											
1/2	—	4 3/8	2 3/4	3 3/8	7/16	1/8	1 1/8	**1F576**	10.59	**7.06**	0.3
5/8	—	4 3/8	2 3/4	3 3/8	7/16	1/8	1 1/8	**1F574**	10.59	**7.06**	0.3
3/4	—	4 3/8	2 3/4	3 3/8	7/16	1/8	1 1/8	**1F572**	10.59	**7.06**	0.3
1	—	4 3/8	2 3/4	3 3/8	7/16	1/8	1 1/8	**1F570**	10.59	**7.06**	0.3

WASHDOWN SHAFT COLLARS



Typical Uses: Shaft collars are used on tools, machinery, and equipment to lock various components, including bearings, sprockets, and pulleys, in place. Also used as shaft protectors, spacers, and depth stops.

Plastic (Delrin) Shaft Collars provide high strength, weigh less than steel units, and are ideal for washdown applications because Delrin plastic is USDA/FDA approved. Delrin absorbs less moisture than other plastics, holds its form in temperatures up to 185°F and has good resistance to impact, abrasion, solvents, chemicals, and other harsh operating elements. Furnished with stainless steel setscrews.

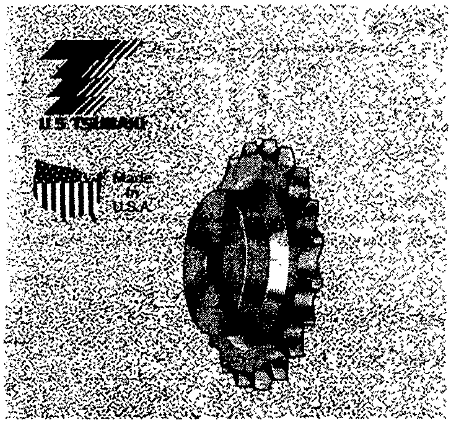
STANDARD ONE-PIECE PLASTIC SHAFT COLLARS

ID	OD	Width	Screw	Stock No.	Each	Shpg. Wt.
1/4"	5/8"	3/8"	#10-32	**1F518**	**$1.42**	0.1
5/16	5/8	3/8	#10-32	**1F514**	**1.42**	0.1
3/8	3/4	7/16	1/4-28	**1F510**	**1.42**	0.1
1/2	1/2	1/2	1/4-28	**1F504**	**1.52**	0.1
5/8	1 1/8	1/2	1/4-28	**1F500**	**1.72**	0.1
3/4	1 1/4	1/2	5/16-18	**1F496**	**1.82**	0.1
7/8	1 3/8	9/16	5/16-18	**1F492**	**2.52**	0.1
1	1 1/2	9/16	5/16-18	**1F488**	**2.72**	0.1
1 1/8	1 3/4	9/16	5/16-18	**1F486**	**4.72**	0.1
1 1/4	2	11/16	3/8-16	**1F534**	**5.82**	0.1
1 3/8	2 1/4	3/4	3/8-16	**1F532**	**6.94**	0.2
1 1/2	2 1/4	3/4	3/8-16	**1F530**	**8.44**	0.2
1 5/8	2 1/2	3/4	3/8-16	**1F528**	**9.14**	0.2
1 3/4	2 3/4	7/8	1/2-13	**1F526**	**9.84**	0.2
1 7/8	2 3/4	7/8	1/2-13	**1F524**	**9.84**	0.2
2	3	7/8	1/2-13	**1F522**	**10.74**	0.2

ONE AND TWO-PIECE CLAMP STYLE PLASTIC SHAFT COLLARS

ID	OD	Width	Screw	One-Piece Stock No.	One-Piece Each	Two-Piece Stock No.	Two-Piece Each	Shpg. Wt.
1/4"	5/8"	9/32"	#4-40	**1F470**	**$3.12**	**1F594**	**$3.12**	0.1
5/16	11/16	9/32	#4-40	**1F468**	**3.12**	**1F592**	**3.12**	0.1
3/8	7/8	11/32	#4-40	**1F466**	**3.22**	**1F590**	**3.22**	0.1
1/2	1 1/8	13/32	#8-32	**1F464**	**3.42**	**1F588**	**3.42**	0.1
5/8	1 5/16	7/16	#10-32	**1F462**	**3.72**	**1F586**	**3.72**	0.1
3/4	1 1/2	1/2	1/4-28	**1F460**	**3.82**	**1F584**	**3.82**	0.1
7/8	1 5/8	1/2	1/4-28	**1F458**	**4.32**	**1F582**	**4.32**	0.1
1	1 3/4	1/2	1/4-28	**1F456**	**4.72**	**1F580**	**4.72**	0.1
1 1/8	1 7/8	1/2	1/4-28	**1F454**	**5.52**	**1F578**	**5.52**	0.1
1 1/4	2 1/16	1/2	1/4-28	**1F484**	**6.32**	**1F608**	**6.32**	0.1
1 3/8	2 1/4	9/16	1/4-28	**1F482**	**7.14**	**1F606**	**7.14**	0.2
1 1/2	2 3/8	9/16	1/4-28	**1F480**	**8.04**	**1F604**	**8.04**	0.2
1 5/8	2 5/8	11/16	5/16-24	**1F478**	**8.84**	**1F602**	**8.84**	0.2
1 3/4	2 3/4	11/16	5/16-24	**1F476**	**9.74**	**1F600**	**9.74**	0.2
1 7/8	2 7/8	11/16	5/16-24	**1F474**	**11.14**	**1F598**	**11.14**	0.2
2	3	11/16	5/16-24	**1F472**	**12.04**	**1F596**	**12.04**	0.2

PLAIN BORE ROLLER CHAIN SPROCKETS



- Roller chain sprockets in ANSI sizes 120, 140, 160 are sold with a minimum plain bore. User may machine to maximum bore indicated and add keyway and setscrew hole as required. See Standard Keyway and Setscrew Machining Guide shown below.
- For fixed bore sprockets see pages 282 and 283

PLAIN BORE ROLLER CHAIN SPROCKETS

OD (In.)	Pitch Dia. (In.)	No. of Teeth	Stock Bore	Max. Bore*	Hub Dia.‡	LTB† Dimension	UST Model	Stock No.	List	Each	Shpg. Wt.
ANSI SPROCKET No. 120 — 1 1/2" Pitch											
5.022	4.386	9	1 1/4"	2 3/16"	3 3/8"	2 1/4"	120B9	**6G150**	$86.00	**$55.95**	5.6
5.517	4.854	10	1 1/4	2 1/4	3 1/4	2 1/4	120B10	**6G151**	94.00	**61.30**	7.0
6.009	5.325	11	1 1/4	2 3/8	3 9/16	2 1/8	120B11	**6G152**	104.00	**67.75**	8.4
6.498	5.796	12	1 1/4	2 3/4	4 1/8	2 1/8	120B12	**6G153**	117.00	**76.75**	10.0
6.986	6.296	13	1 1/4	3	4 9/16	2 1/4	120B13	**6G154**	131.00	**85.85**	12.0
7.472	6.741	14	1 1/4	3 1/4	4 3/4	2 1/4	120B14	**6G155**	145.00	**94.60**	16.0
7.956	7.215	15	1 1/4	3 1/4	4 3/4	2 1/4	120B15	**6G156**	159.00	**103.90**	16.0
ANSI SPROCKET No. 140 — 1 3/4" Pitch											
7.011	6.213	11	1 3/8	2 3/4	4 1/4	2 1/4	140B11	**6G157**	157.00	**102.60**	12.0
7.581	6.762	12	1 3/8	3	4 1/2	2 1/4	140B12	**6G158**	174.00	**113.70**	15.0
8.150	7.313	13	1 3/8	3 3/4	5 1/4	2 3/8	140B13	**6G159**	191.00	**125.10**	20.0
8.717	7.865	14	1 3/8	3 3/4	5 1/4	2 3/8	140B14	**6G160**	208.00	**136.20**	22.0
19.282	8.418	15	1 3/8	4 1/4	6 1/4	2 1/2	140B15	**6G161**	225.00	**147.15**	26.0
ANSI SPROCKET No. 160 — 2" Pitch											
6.028	5.226	8	1 3/8	1 7/8	2 13/16	2 1/4	160B8	**6G162**	155.00	**101.25**	8.0
6.696	5.848	9	1 3/8	2 3/8	3 5/8	2 1/4	160B9	**6G163**	163.00	**106.55**	12.0
7.356	6.472	10	1 3/8	2 3/4	4	2 1/4	160B10	**6G164**	171.00	**111.85**	14.0
8.012	7.100	11	1 3/8	3 1/4	4 3/4	2 1/2	160B11	**6G165**	195.00	**127.25**	18.0
8.664	7.728	12	1 3/8	3 3/4	5 1/4	2 5/8	160B12	**6G166**	218.00	**142.90**	22.0
9.314	8.358	13	1 3/8	4	6	2 3/4	160B13	**6G167**	244.00	**159.75**	28.0
9.962	8.988	14	1 3/8	4 1/4	6 1/4	2 3/4	160B14	**6G168**	264.00	**173.25**	32.0
10.608	9.620	15	1 3/8	5 1/4	7	2 3/4	160B15	**6G169**	289.00	**189.25**	39 0

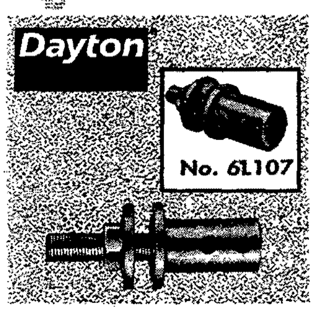
(*) Dimensions shown allow for standard keyway with setscrew at 90°.
(†) Length through bore.
(‡) Hub diameters may vary to suit bore sizes.

STANDARD KEYWAY AND SETSCREW MACHINING GUIDE

Dia. of Shaft (In.)	Keyset Width x Depth (In.)	Dia. of Setscrew (In.)*	Dia. of Shaft (In.)	Keyset Width x Depth (In.)	Dia. of Setscrew (In.)*
5/16-7/16	3/32 x 3/64	8-32	2 13/16-3 1/4	3/4 x 3/8	3/4
1/2-9/16	1/8 x 1/16	10-24	3 5/16-3 3/4	7/8 x 7/16	3/4
5/8-7/8	3/16 x 3/32	1/4	3 13/16-4 1/2	1 x 1/2	3/4
15/16-1 1/4	1/4 x 1/8	5/16	4 9/16-5 1/2	1 1/4 x 5/8	3/4
1 5/16-1 3/8	5/16 x 5/32	5/16	5 9/16-6 1/2	1 1/2 x 3/4	1
1 7/16-1 3/4	3/8 x 3/16	3/8	6 9/16-7 1/2	1 3/4 x 7/8	1
1 13/16-2 1/4	1/2 x 1/4	1/2	7 9/16-8 15/16	2 x 1	1
2 5/16-2 3/4	5/8 x 5/16	5/8	9-10 15/16	2 1/2 x 1 1/4	1

(*) Setscrew size may vary depending on hub wall thickness.
NOTE: As a general rule, the hub wall over the keyway should be equal to or greater than the diameter of the setscrew.
NOTE: Maximum bore guidelines should be adhered to in order to ensure maximum product quality standards and user safety.

FRACTIONAL HP MOTOR SHAFT ARBORS

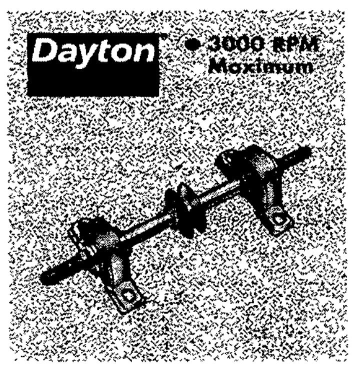


- Made from solid bar stock, then plated
- Accepts 1/2" bore buffing/finishing wheel up to 1 1/4" wide max.
- Includes socket setscrews, hex nut, and 1 1/2" OD flanged washers
- Right hand thread for CCW rotation facing shaft
- Left hand thread for CW rotation facing shaft

Fits Drive Shaft	Thread	Stock No.	List	Each	Shpg. Wt.
1/2"	1/2-20 RH	**6L104**	$5.46	**$3.84**	0.4
5/8	1/2-20 RH	**6L105****	9.10	**6.34**	0.5
1/2	1/2-20 LH	**6L106**	5.46	**3.84**	0.4
5/8	1/2-20 LH	**6L107****	9.10	**6.43**	0.5

(**) Features motor shaft keyway.

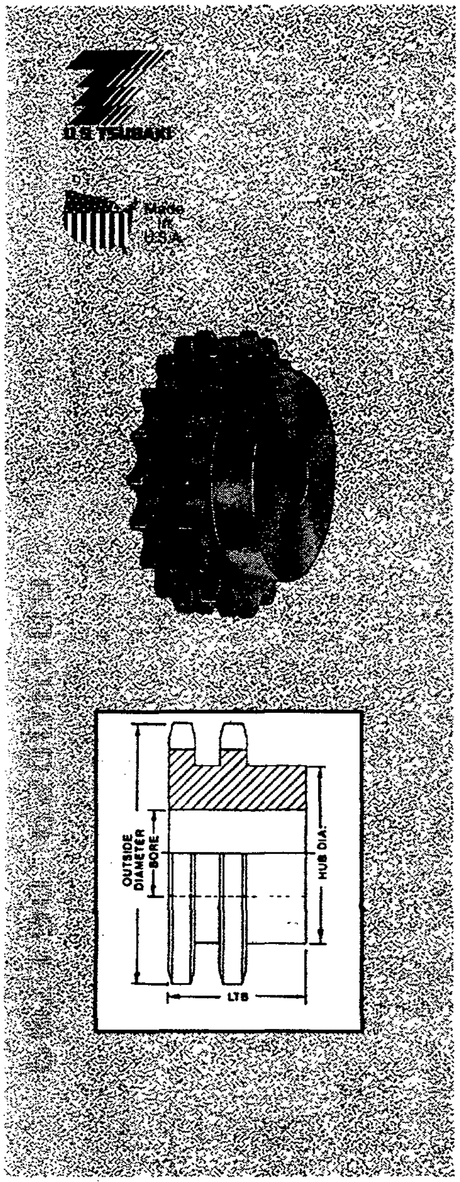
HEAVY-DUTY MANDRELS



- Precision ball bearing pillow blocks are pre-lubricated and sealed for maintenance-free operation
- Will take up to 1" thick buffing/finishing wheels
- 2" dia. pulley uses A or 4L type V-belt
- Includes hex nut and two washers (1 1/2" OD) for each end
- All components are plated to resist rust

Drive Shaft (In.)	Treaded Ends RH	Treaded Ends LH	OD Pulley	Stock No.	List	Each	Shpg. Wt.
5/8 x 12	1/2-20	1/2-20	2"	**6L098**	$50.40	**$35.55**	3.3
3/4 x 12	5/8-11	5/8-11	2	**6L099**	50.40	**35.60**	3.6

DOUBLE STRAND SPROCKETS



- For use with Nos. 35-2, 40-2, 50-2, 60-2 80-2, and 100-2 double strand roller chain on page 288
- Precision machined from high alloy carbon steel
- Nos. 35 through 80, typically used as the drive sprocket, have hardened teeth for extra durability
- Maximum bore guidelines should be adhered to in order to ensure maximum product quality standards
- When selecting multiple strand sprockets refer to Keyway and Setscrew Machining Guide on page 282

*) Length through bore.

OD	No. of Teeth	Stock Bore	Max. Bore	Hub Dia.	LTB* Dimension	UST Model	Stock No.	List	Each	Shpg. Wt.
ANSI DOUBLE STRAND SPROCKETS No. 35-2										
1.746"	13	1/2"	3/4"	1 1/8"	1 1/4"	D35B13H	**6L347**	$23.00	**$11.65**	0.4
1.868	14	1/2	13/16	1 1/4	1 1/4	D35B14H	**6L348**	24.00	**11.81**	0.4
1.989	15	1/2	7/8	1 11/32	1 1/4	D35B15H	**6L349**	25.00	**12.02**	0.5
2.110	16	1/2	15/16	1 15/32	1 1/4	D35B16H	**6L350**	26.00	**12.13**	0.3
2.231	17	1/2	1 1/16	1 19/32	1 1/4	D35B17H	**6L351**	27.00	**13.06**	0.7
2.352	18	1/2	1 1/8	1 23/32	1 1/4	D35B18H	**6L352**	28.00	**13.75**	1.0
2.472	19	1/2	1 1/4	1 27/32	1 1/4	D35B19H	**6L353**	29.00	**14.48**	1.0
2.593	20	1/2	1 5/16	1 31/32	1 3/8	D35B20H	**6L354**	31.00	**15.42**	1.0
2.713	21	1/2	1 3/8	2 1/16	1 3/8	D35B21H	**6L355**	32.00	**16.01**	1.2
2.833	22	1/2	1 7/16	2 3/16	1 3/8	D35B22H	**6L356**	33.00	**16.69**	1.0
2.954	23	1/2	1 1/2	2 5/16	1 3/8	D35B23H	**6L357**	34.00	**17.26**	1.5
3.074	24	1/2	1 5/8	2 7/16	1 3/8	D35B24H	**6L358**	35.00	**17.84**	1.5
3.194	25	1/2	1 11/16	2 9/16	1 3/8	D35B25H	**6L359**	39.00	**18.48**	2.0
ANSI DOUBLE STRAND SPROCKETS No. 40-2										
2.003	11	1/2	3/4	1 7/16	1 1/2	D40B11H	**6L360**	36.00	**18.01**	0.6
2.166	12	1/2	7/8	1 9/16	1 1/2	D40B12H	**6L361**	37.00	**18.10**	1.0
2.328	13	1/2	1	1 1/2	1 1/2	D40B13H	**6L362**	38.00	**18.31**	1.0
2.490	14	1/2	1 1/8	1 21/32	1 1/2	D40B14H	**6L363**	40.00	**18.68**	1.0
2.650	15	1/2	1 1/4	1 13/16	1 1/2	D40B15H	**6L364**	40.00	**18.68**	1.0
2.814	16	5/8	1 3/8	1 31/32	1 1/2	D40B16H	**6L365**	41.00	**18.79**	1.5
2.974	17	5/8	1 7/16	2 5/32	1 1/2	D40B17H	**6L366**	42.00	**19.36**	1.6
3.136	18	5/8	1 1/2	2 5/16	1 1/2	D40B18H	**6L367**	43.00	**20.46**	1.9
3.292	19	5/8	1 5/8	2 15/32	1 1/2	D40B19H	**6L368**	44.00	**21.46**	2.0
3.457	20	5/8	1 3/4	2 5/8	1 1/2	D40B20H	**6L369**	46.00	**22.88**	2.5
3.618	21	5/8	1 7/8	2 25/32	1 5/8	D40B21H	**6L370**	48.00	**23.93**	3.3
3.778	22	5/8	1 7/8	2 15/16	1 5/8	D40B22H	**6L371**	50.00	**24.87**	3.3
3.938	23	5/8	2	3 3/32	1 5/8	D40B23H	**6L372**	54.00	**26.55**	3.9
4.098	24	5/8	2 1/4	3 9/32	1 5/8	D40B24H	**6L373**	57.00	**28.00**	4.2
4.258	25	5/8	2 1/4	3 7/16	1 5/8	D40B25H	**6L374**	58.00	**28.65**	4.4
ANSI DOUBLE STRAND SPROCKETS No. 50-2										
2.504	11	5/8	15/16	1 15/32	1 3/4	D50B11H	**6L375**	52.00	**25.75**	0.9
2.708	12	5/8	1 1/8	1 11/16	1 3/4	D50B12H	**6L376**	53.00	**25.85**	1.2
2.911	13	5/8	1 5/16	1 7/8	1 3/4	D50B13H	**6L377**	54.00	**26.55**	1.5
3.113	14	5/8	1 3/8	2 3/32	1 3/4	D50B14H	**6L378**	55.00	**27.15**	1.9
3.315	15	5/8	1 1/2	2 9/32	1 3/4	D50B15H	**6L379**	55.00	**27.15**	2.3
3.517	16	5/8	1 5/8	2 1/2	1 3/4	D50B16H	**6L380**	56.00	**27.80**	2.7
3.718	17	5/8	1 7/8	2 11/16	1 3/4	D50B17H	**6L381**	58.00	**28.55**	3.1
3.919	18	5/8	1 15/16	2 7/8	1 3/4	D50B18H	**6L382**	59.00	**29.30**	3.6
4.121	19	5/8	2 1/8	3 3/32	1 3/4	D50B19H	**6L383**	60.00	**29.70**	4.1
4.321	20	5/8	2 1/4	3 9/32	1 3/4	D50B20H	**6L384**	62.00	**30.85**	4.6
4.522	21	3/4	2 3/8	3 1/2	1 3/4	D50B21H	**6L385**	65.00	**32.40**	5.1
4.722	22	3/4	2 3/8	3 9/16	1 7/8	D50B22H	**6L386**	65.00	**32.40**	5.9
4.923	23	3/4	2 1/2	3 3/4	1 7/8	D50B23H	**6L387**	68.00	**33.85**	6.5
5.123	24	3/4	2 1/2	3 3/4	1 7/8	D50B24H	**6L388**	71.00	**35.55**	6.9
5.323	25	1	2 1/2	3 3/4	1 7/8	D50B25H	**6L389**	73.00	**36.30**	7.5
ANSI DOUBLE STRAND SPROCKETS No. 60-2										
3.005	11	3/4	1 3/16	1 25/32	2 1/8	D60B11H	**6L390**	49.00	**24.04**	1.8
3.249	12	3/4	1 3/8	2 1/32	2 1/8	D60B12H	**6L391**	51.00	**24.99**	2.5
3.493	13	3/4	1 1/2	2 1/4	2 1/8	D60B23H	**6L392**	55.00	**27.15**	2.8
3.736	14	3/4	1 3/4	2 1/2	2 1/8	D60B24H	**6L393**	58.00	**28.55**	3.5
3.978	15	3/4	1 7/8	2 3/4	2 1/8	D60B15H	**6L394**	60.00	**29.70**	4.0
4.220	16	3/4	2	3	2 1/8	D60B16H	**6L395**	64.00	**31.80**	4.8
4.462	17	3/4	2 1/4	3 7/32	2 1/8	D60B17H	**6L396**	67.00	**33.55**	6.0
4.703	18	1	2 3/8	3 7/16	2 1/8	D60B18H	**6L397**	70.00	**34.95**	6.2
4.945	19	1	2 1/2	3 11/16	2 1/8	D60B19H	**6L398**	74.00	**36.95**	7.0
5.186	20	1	2 1/2	3 3/4	2 1/8	D60B20H	**6L399**	79.00	**39.55**	10.0
5.426	21	1	2 3/4	4 1/8	2 1/8	D60B21H	**6L400**	84.00	**42.00**	10.0
5.666	22	1	2 3/4	4 1/4	2 1/8	D60B22H	**6L401**	86.00	**42.60**	9.7
5.907	23	1	2 3/4	4 1/4	2 1/8	D60B23H	**6L402**	87.00	**42.90**	10.0
6.147	24	1	2 3/4	4 1/4	2 1/8	D60B24H	**6L403**	88.00	**43.65**	11.0
6.387	25	1	2 3/4	4 1/4	2 1/8	D60B25H	**6L404**	91.00	**45.40**	12.0
ANSI DOUBLE STRAND SPROCKETS No. 80-2										
3.678	10	1	1 3/8	2 9/16	2 3/4	D80B10H	**6L405**	83.00	**41.65**	3.5
4.006	11	1	1 9/16	2 3/8	2 1/2	D80B11H	**6L406**	85.00	**42.05**	3.9
4.332	12	1	1 13/16	2 11/16	2 1/2	D80B12H	**6L407**	90.00	**44.60**	4.5
4.657	13	1	2	3 1/32	2 1/2	D80B13H	**6L408**	96.00	**48.05**	6.1
4.981	14	1	2 1/4	3 5/16	2 1/2	D80B14H	**6L409**	101.00	**50.45**	7.3
5.304	15	1	2 1/2	3 5/8	2 1/2	D80B15H	**6L410**	110.00	**54.65**	8.7
5.627	16	1	2 3/4	4	2 3/4	D80B16H	**6L411**	119.00	**59.55**	11.0
5.949	17	1	2 7/8	4 5/16	2 3/4	D80B17H	**6L412**	129.00	**64.20**	13.0
6.271	18	1	3 1/8	4 5/8	2 3/4	D80B18H	**6L413**	138.00	**68.80**	15.0
6.593	19	1	3 5/16	4 15/16	2 3/4	D80B19H	**6L414**	153.00	**76.40**	17.0
6.914	20	1	3 5/16	5	2 3/4	D80B20H	**6L415**	169.00	**84.15**	18.0
ANSI DOUBLE STRAND SPROCKETS No. 100-2										
4.185	9	1	1 1/2	2 5/16	2 7/8	D100B9	**6L416**	114.00	**56.85**	4.7
4.598	10	1	1 3/4	2 11/16	2 7/8	D100B10	**6L417**	122.00	**60.95**	6.5
5.008	11	1	2 1/8	3 1/8	2 7/8	D100B11	**6L418**	134.00	**66.65**	8.3
5.415	12	1 1/8	2 1/4	3 3/8	2 7/8	D100B12	**6L419**	146.00	**72.70**	9.7
5.821	13	1 1/8	2 1/2	3 3/4	2 7/8	D100B13	**6L420**	160.00	**79.65**	11.0
6.226	14	1 1/8	2 3/4	4 3/16	2 7/8	D100B14	**6L421**	174.00	**86.95**	14.0
6.630	15	1 1/4	3 1/8	4 9/16	3 1/8	D100B15	**6L422**	191.00	**95.50**	17.0

FIXED BORE ROLLER CHAIN SPROCKETS

- ANSI standard sprockets for use with standard roller chain (see page 288)
- For larger sprockets order ANSI 120, 140, and 160 stock bore sprockets from page 285
- Unique cellular manufacturing in U.S. production facilities assures precise quality control
- Constructed of high alloy carbon steel
- Standard keyway and setscrew included (except on 3/8" bore size)

For Plain Bore Roller Chain Sprockets See Page 280

For Double Strand Sprockets See Page 281

For Stainless Steel Sprockets See Page 286

ANSI SPROCKET No. 35 — 3/8" Pitch

OD	Pitch Dia	No. Teeth	UST Model	For Bore Size, Specify Stock No. 3/8"†	1/2"	5/8"	3/4"	1"	List	Each	Shpg. Wt.
1.256"	1.097"	9	35B9F	**6L774**	—	—	—	—	$10.00	**$6.60**	0.1
1.379	1.214	10	35B10F	**6L775**	**6L776**	**6L777***	—	—	11.00	**6.75**	0.1
1.502	1.331	11	35B11F	**6L778**	**6L779**	**6L780**	**6L781***	—	11.50	**7.01**	0.2
1.625	1.449	12	35B12F	—	**6L782**	**6L783**	**6L784**	—	12.00	**7.22**	0.2
1.746	1.567	13	35B13F	—	**6L785**	**6L786**	**6L787**	—	13.00	**7.49**	0.3
1.868	1.685	14	35B14F	—	**6L788**	**6L789**	**6L790**	—	13.00	**7.49**	0.3
1.989	1.804	15	35B15F	—	**6L791**	**6L792**	**6L793**	**6L794***	13.50	**7.64**	0.3
2.110	1.922	16	35B16F	—	**6L795**	**6L796**	**6L797**	**6L798**	14.00	**8.11**	0.4
2.231	2.041	17	35B17F	—	**6L799**	**6L800**	**6L801**	**6L802**	14.25	**8.39**	0.5
2.352	2.160	18	35B18F	—	**6L803**	**6L804**	**6L805**	**6L806**	14.75	**8.87**	0.5
2.472	2.279	19	35B19F	—	**6L807**	**6L808**	**6L809**	**6L810**	16.00	**9.98**	0.6
2.593	2.397	20	35B20F	—	**6L811**	**6L812**	**6L813**	**6L814**	18.00	**11.15**	0.7
2.713	2.516	21	35B21F	—	**6L815**	**6L816**	**6L817**	**6L818**	20.00	**12.38**	0.7
2.833	2.635	22	35B22F	—	**6L819**	**6L820**	**6L821**	**6L822**	21.00	**13.48**	0.8
2.954	2.754	23	35B23F	—	**6L823**	**6L824**	**6L825**	**6L826**	22.00	**14.38**	0.8
3.074	2.873	24	35B24F	—	**6L827**	**6L828**	**6L829**	**6L830**	23.00	**15.27**	0.9
3.194	2.992	25	35B25F	—	**6L831**	**6L832**	**6L833**	**6L834**	25.00	**16.38**	0.9

ANSI SPROCKET No. 40 — 1/2" Pitch

OD	Pitch Dia.	No. Teeth	UST Model	For Bore Size, Specify Stock No. 1/2"	5/8"	3/4"	7/8"	1"	1¼"	List	Each	Shpg. Wt.
1.674"	1.462"	9	40B9F	**6L835**	**6L836**	—	—	—	—	$12.50	**$7.37**	0.2
1.839	1.618	10	40B10F	**1L104**	**1L105**	**1L106**	—	—	—	13.50	**7.64**	0.3
2.003	1.775	11	40B11F	**6L837**	**6L838**	**6L839**	**6L840**	—	—	13.75	**7.98**	0.4
2.166	1.932	12	40B12F	**1L108**	**1L109**	**1L110**	**1L111**	**1L112**	—	14.50	**8.74**	0.4
2.328	2.089	13	40B13F	**6L841**	**1L113**	**1L114**	**1L115**	**1L116**	—	15.00	**9.15**	0.5
2.490	2.247	14	40B14F	**1L117**	**1L118**	**1L119**	**1L120**	**1L121**	—	15.50	**9.63**	0.7
2.652	2.405	15	40B15F	**6L842**	**1L122**	**1L123**	**1L124**	**1L125**	**6L843***	17.00	**10.39**	0.7
2.814	2.563	16	40B16F	—	**1L126**	**1L127**	**1L128**	**1L129**	**6L844**	17.50	**11.00**	0.8
2.974	2.721	17	40B17F	—	**1L130**	**1L131**	**1L132**	**1L133**	**6L845**	18.50	**11.63**	0.9
3.136	2.879	18	40B18F	—	**1L134**	**1L135**	**1L136**	**1L137**	**6L846**	19.50	**12.25**	1.0
3.292	3.038	19	40B19F	—	**6L847**	**1L138**	**6L848**	**1L139**	**6L849**	21.50	**13.63**	1.0
3.457	3.196	20	40B20F	—	**6L850**	**1L140**	**1L141**	**1L142**	**6L851**	24.00	**15.61**	1.4
3.618	3.355	21	40B21F	—	**6L852**	**6L853**	**6L854**	**6L855**	**6L856**	26.00	**16.99**	1.8
3.778	3.513	22	40B22F	—	**6L857**	**6L858**	**6L859**	**6L860**	**6L861**	29.00	**18.64**	1.7
3.938	3.672	23	40B23F	—	**6L862**	**6L863**	**6L864**	**6L865**	**6L866**	32.00	**20.64**	1.7
4.098	3.831	24	40B24F	—	**6L867**	**1L143**	**6L868**	**1L144**	**6L869**	34.00	**22.14**	2.2
4.258	3.989	25	40B25F	—	**6L870**	**6L871**	**6L872**	**6L873**	**6L874**	37.00	**24.08**	1.9
4.418	4.148	26	40B26F	—	**6L875**	**6L876**	**6L877**	**6L878**	**6L879**	40.00	**25.60**	1.9
4.738	4.465	28	40B28F	—	**6L880**	**6L881**	**6L882**	**6L883**	**6L884**	45.00	**29.35**	2.1
5.057	4.783	30	40B30F	—	**6L885**	**6L886**	**6L887**	**1L145**	**6L888**	49.00	**32.05**	2.3
5.856	5.578	35	40B35F	—	—	—	—	**1L146**	—	49.00	**32.05**	2.7

ANSI SPROCKET No. 41 — 1/2" Pitch

OD	Pitch Dia.	No. Teeth	UST Model	For Bore Size, Specify Stock No. 1/2"	5/8"	3/4"	1"	List	Each	Shpg. Wt.
1.674"	1.462"	9	41B9F	**6L889**	**6L890**	—	—	$11.50	**$7.01**	0.2
1.839	1.618	10	41B10F	**6L891**	**6L892**	**6L893**	—	12.50	**7.37**	0.3
2.003	1.775	11	41B11F	**6L894**	**6L895**	**6L896**	—	13.50	**7.64**	0.4
2.166	1.932	12	41B12F	**6L897**	**6L898**	**6L899**	—	14.00	**8.11**	0.4
2.328	2.089	13	41B13F	**6L900**	**6L901**	**6L902**	**6L903**	14.25	**8.39**	0.5
2.490	2.247	14	41B14F	**6L904**	**6L905**	**6L906**	**6L907**	14.75	**8.87**	0.6
2.652	2.405	15	41B15F	**6L908**	**6L909**	**6L910**	**6L911**	15.50	**9.63**	0.7
2.814	2.563	16	41B16F	—	**6L912**	**6L913**	**6L914**	16.50	**10.25**	0.8
2.974	2.721	17	41B17F	—	**6L915**	**6L916**	**6L917**	17.50	**11.00**	0.9
3.136	2.879	18	41B18F	—	**6L918**	**6L919**	**6L920**	19.00	**11.77**	1.1
3.292	3.038	19	41B19F	—	**6L921**	**6L922**	**6L923**	20.50	**12.86**	1.2
3.457	3.196	20	41B20F	—	**6L924**	**6L925**	**6L926**	22.00	**14.38**	1.3

(*) Setscrew located directly over keyway. (†) 3/8" Bore size has no keyway.

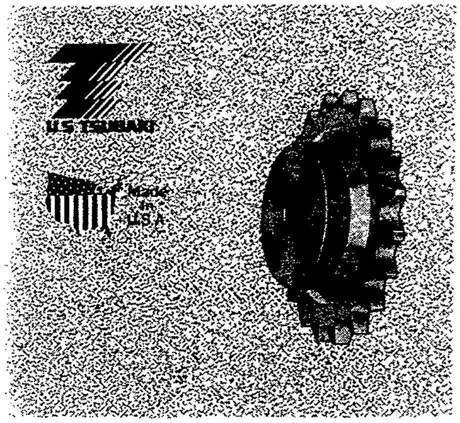
STANDARD KEYWAY AND SETSCREW MACHINING GUIDE

Dia. of Shaft (In.)	Keyseat Width x Depth (In.)	Dia. of Setscrew*	Dia. of of Shaft (In.)	Keyseat Width x Depth (In.)	Dia. of Setscrew*
5/16 - 7/16	3/32 x 3/64	8-32	2 13/16 - 3 1/4	3/4 x 3/8	3/4"
1/2 - 9/16	1/8 x 1/16	10-24	3 5/16 - 3 3/4	7/8 x 7/16	3/4
5/8 - 7/8	3/16 x 3/32	1/4	3 13/16 - 4 1/2	1 x 1/2	3/4
15/16 - 1 1/4	1/4 x 1/8	5/16	4 9/16 - 5 1/2	1 1/4 x 5/8	3/4
1 5/16 - 1 3/8	5/16 x 5/32	5/16	5 9/16 - 6 1/2	1 1/2 x 3/4	1
1 7/16 - 1 3/4	3/8 x 3/16	3/8	6 9/16 - 7 1/2	1 3/4 x 7/8	1
1 13/16 - 2 1/4	1/2 x 1/4	1/2	7 9/16 - 8 15/16	2 x 1	1
2 5/16 - 2 3/4	5/8 x 5/16	5/8	9 - 10 15/16	2 1/2 x 1 1/4	1

(*) Setscrew size may vary depending on hub wall thickness.
NOTE: As a general rule, the hub wall over the keyway should be equal to or greater than the diameter of the setscrew.
NOTE: Maximum bore guidelines should be adhered to in order to ensure maximum product quality standards.

COMPLETE INDEX AT BACK OF CATALOG WILL HELP YOU QUICKLY LOCATE YOUR NEEDS

FIXED BORE ROLLER CHAIN SPROCKETS



- ANSI standard sprockets for use with 35 through 160 pitch roller chain (see page 288)
- For larger sprockets order ANSI 120, 140, and 160 plain bore sprockets from page 285
- Unique cellular manufacturing in U.S. production facilities assures precise quality control
- Constructed of high alloy carbon steel
- Standard keyway and setscrew included (except on 3/8" bore size)
- For standard keyway and setscrew machining guide see page 282

For Riveted Roller Chain See Page 288

For Riveted Roller Chain Repair Links See Page 289

For Plain Bore Roller Chain Sprockets See Page 280

For Double Strand Sprockets See Page 281

For Stainless Steel Sprockets See Page 286

ANSI SPROCKET No. 50—5/8" Pitch

OD	Pitch Dia.	No. of Teeth	UST Model	For Bore Size, Specify Stock No. 3/4"	7/8"	1"	1 1/8"	1 3/16"	1 1/4"	List	Each	Shpg. Wt.
2.093"	1.828"	9	50B9F	6L927	—	—	—	—	—	$16.00	$10.11	0.3
2.299	2.023	10	50B10F	1L147	6L928	6L929*	—	—	—	17.00	10.87	0.5
2.504	2.219	11	50B11F	1L148	6L930	6L931	—	—	—	18.00	11.36	0.5
2.708	2.415	12	50B12F	1L149	6L932	1L150	1L151	6L933	6L934	18.00	11.77	0.7
2.911	2.612	13	50B13F	1L152	6L935	1L153	1L154	6L936	6L937	19.00	12.25	0 8
3.113	2.809	14	50B14F	1L155	6L938	1L156	6L939	6L940	1L230	20 00	13.00	1.0
3.315	3.006	15	50B15F	1L157	6L941	1L158	1L159	6L942	1L160	21.00	13.63	1.3
3.517	3.204	16	50B16F	1L161	6L943	1L162	1L163	6L944	1L164	22.00	14.38	1.5
3.718	3.401	17	50B17F	1L165	6L945	1L166	1L167	6L946	1L168	25.00	16.09	1.7
3.919	3.599	18	50B18F	6L947	6L948	6L949	6L950	6L951	6L952	28.00	17.88	2.2
4.121	3.798	19	50B19F	6L953	6L954	6L955	6L956	6L957	6L958	31.00	19.88	2.3
4.321	3.995	20	50B20F	1L169	6L959	1L170	6L960	6L961	6L962	34.00	21.60	2.4
4.522	4.194	21	50B21F	6L963	6L964	6L965	6L966	6L967	6L968	40.00	26.05	2.4
4.722	4.392	22	50B22F	6L969	6L970	6L971	6L972	6L973	6L974	43.00	28.25	2.4
4.923	4.590	23	50B23F	6L975	6L976	6L977	6L978	6L979	6L980	47.00	30.45	2.5
5.123	4.788	24	50B24F	6L981	6L982	1L171	6L983	6L984	6L985	52.00	33.15	2.9
5.323	4.987	25	50B25F	6L986	6L987	6L988	6L989	6L990	6L991	54.00	34.95	3.0
5.523	5.185	26	50B26F	6L992	6L993	6L994	6L995	6L996	6L997	56.00	36.20	3.2
5.723	5.384	27	50B27F	6L998	6L999	6G001	6G002	6G003	6G004	57.00	36.65	3.2
5.922	5.582	28	50B28F	6G005	6G006	6G007	6G008	6G009	6G010	58.00	37.45	3.4
6.122	5.781	29	50B29F	6G011	6G012	6G013	6G014	6G015	6G016	59.00	37.90	3.5
6.321	5.979	30	50B30F	6G017	6G018	6G019	6G020	6G021	6G022	60.00	38.30	3 7

ANSI SPROCKET No. 60—3/4" Pitch

OD	Pitch Dia.	No. of Teeth	UST Model	For Bore Size, Specify Stock No. 3/4"	1"	1 1/8"	1 1/4"	1 3/8"	1 7/16"	1 1/2"	List	Each	Shpg. Wt.
2.511"	2.193"	9	60B9F	—	6G023	—	—	—	—	—	$17.00	$10.87	0.6
2.759	2.427	10	60B10F	1L172	6G024	—	—	—	—	—	18.00	11.36	0.9
3.005	2.663	11	60B11F	—	1L173	1L174	1L175*	—	—	—	19.00	12.25	1.0
3.249	2.898	12	60B12F	—	1L176	6G025	1L177*	—	—	—	21.00	13.63	1 2
3.493	3.134	13	60B13F	—	1L178	1L179	1L180	6G026*	6G027*	6G028*	24.00	15.14	1.5
3.736	3.371	14	60B14F	—	1L181	6G029	1L182	6G030	6G031*	6G032*	28.00	17.88	1.9
3.978	3.608	15	60B15F	—	1L183	1L184	1L185	6G033	6G034	6G035	33.00	20.64	2 3
4.220	3.845	16	60B16F	—	1L186	6G036	1L187	6G037	6G038	6G039	36.00	22.98	2 7
4.462	4.082	17	60B17F	—	1L188	6G040	6G041	6G042	6G043	6G044	39.00	25.40	3.0
4.703	4.319	18	60B18F	—	1L189	1L190	1L191	6G045	6G046	6G047	42.00	28.05	3 8
4.945	4.557	19	60B19F	—	6G048	6G049	1L192	6G050	6G051	6G052	45.00	29.35	3.6
5.186	4.794	20	60B20F	—	6G053	6G054	1L193	6G055	6G056	6G057	48.00	30.70	3.8
5.426	5.033	21	60B21F	—	6G058	6G059	6G060	6G061	6G062	6G063	54.00	34.95	4.3
5.666	5.270	22	60B22F	—	6G064	6G065	6G066	6G067	6G068	6G069	58.00	37.45	4.7
5.907	5.508	23	60B23F	—	6G070	6G071	6G072	6G073	6G074	6G075	60.00	38.30	4.9
6.147	5.746	24	60B24F	—	6G076	6G077	6G078	6G079	6G080	6G081	63.00	40.95	5.4

ANSI SPROCKET No. 80—1" Pitch

OD	Pitch Dia.	No. of Teeth	UST Model	For Bore Size, Specify Stock No. 1"	1 1/4"	1 3/8"	1 1/2"	1 3/4"	1 7/8"	1 15/16"	List	Each	Shpg. Wt.
3.348"	2.924"	9	80B9F	6G082	6G083	—	—	—	—	—	$29.00	$18.37	1.7
3.678	3.236	10	80B10F	6G084	6G085	—	—	—	—	—	32.00	20.23	1.9
4.006	3.550	11	80B11F	6G086	6G087	6G088	6G089	—	—	—	35.00	22.57	2.5
4.332	3.864	12	80B12F	6G090	6G091	6G092	6G093	6G094*	—	—	39.00	25.40	2.9
4.657	4.179	13	80B13F	6G095	6G096	6G097	6G098	6G099	6G100	—	42.00	28.05	3.9
4.981	4.494	14	80B14F	6G101	6G102	6G103	6G104	6G105	6G106*	—	49.00	30.90	4.3
5.304	4.810	15	80B15F	6G107	6G108	6G109	6G110	6G111	6G112	—	51.00	32.95	5.6
5.627	5.126	16	80B16F	6G113	6G114	6G115	6G116	6G117	—	6G118	55.00	35.90	6.1
5.949	5.442	17	80B17F	6G119	6G120	6G121	6G122	6G123	—	6G124	66.00	42.95	5.5
6.271	5.759	18	80B18F	6G125	6G126	6G127	6G128	6G129	—	6G130	70.00	45.90	6.9

ANSI SPROCKET No. 100—1 1/4" Pitch

OD	Pitch Dia.	No. of Teeth	UST Model	For Bore Size, Specify Stock No. 1"	1 1/4"	1 15/16"	2"	2 3/16"	List	Each	Shpg. Wt.
4.185"	3.655"	9	100B9F	6G131	6G132	—	—	—	$76.00	$49.65	3.0
4.598	4.045	10	100B10F	6G133	6G134	—	—	—	83.00	54.00	4.1
5.008	4.438	11	100B11F	6G135	6G136	6G137	6G138	6G139	93.00	60.75	6.0
5.415	4.830	12	100B12F	6G140	6G141	6G142	6G143	6G144	100.00	65.20	8.0
5.821	5.224	13	100B13F	6G145	6G146	6G147	6G148	6G149	107.00	69.80	6.7

(*) Setscrew located directly over keyway.

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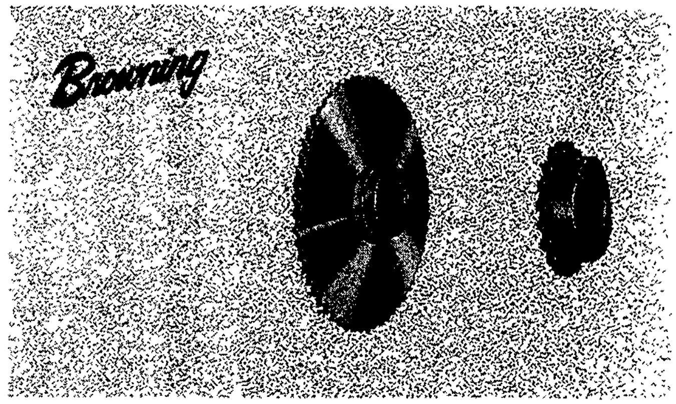
BUSHED BORE ROLLER CHAIN SPROCKETS

- **For use with Nos. 40, 50, 60, and 80 pitch roller chain**
- **Precision machined**
- **Sprockets with 30 teeth or less have hardened teeth for increased life**
- **Outside diameter (OD) range: 2.65" to 23.46"**
- **Bore range 1/2" to 3⁷⁄₁₆" with required split taper bushing (not included); order split taper bushing separately on page 308**



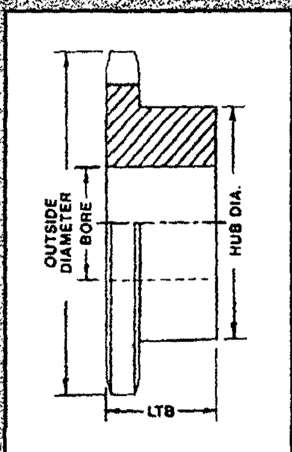
ROLLER CHAIN AVAILABLE, SEE PAGE 288

SPLIT TAPER BUSHINGS AVAILABLE, SEE PAGE 308

OD	Pitch Dia.	No. of Teeth	Bushing Req'd.	Browning Model	Stock No.	List	Each	Shpg. Wt.
ANSI SPROCKET No. 40								
2.65"	2.405"	15	H	H40H15	6L527	$44.76	$17.29	0.6
2.80	2.563	16	H	H40H16	6L528	46.56	17.98	0.7
2.96	2.721	17	H	H40H17	6L529	50.16	19.39	0.7
3.14	2.879	18	H	H40H18	1L194	53.16	20.56	0.7
3.30	3.038	19	H	H40H19	1L195	56.36	21.77	0.8
3.45	3.196	20	H	H40H20	1L196	69.12	26.75	0.9
3.62	3.555	21	P1	H40P21	6L530	61.94	23.96	1.6
3.75	3.513	22	P1	H40P22	6L531	69.14	26.80	1.7
3.94	3.672	23	P1	H40P23	6L532	73.56	28.45	1.8
4.10	3.831	24	H	H40H24	1L197	88.72	34.40	1.2
4.26	3.989	25	P1	H40P25	6L533	81.56	31.60	1.9
4.42	4.148	26	P1	H40P26	6L534	85.16	33.00	2.0
4.58	4.307	27	P1	H40P27	6L535	86.96	33.65	2.1
4.74	4.466	28	P1	H40P28	6L536	89.56	34.65	2.2
4.90	4.625	29	P1	H40P29	6L537	91.40	35.40	2.3
5.06	4.783	30	H	H40H30	1L198	96.32	37.30	1.7
5.38	5.101	32	P1	40P32	6L538	101.56	39.25	2.6
5.86	5.578	35	P1	40P35	6L539	104.76	40.55	2.9
6.02	5.737	36	P1	40P36	1L199	110.42	42.75	3.1
6.65	6.373	40	P1	40P40	1L200	120.62	46.65	3.6
6.97	6.691	42	P1	40P42	6L540	122.82	47.55	3.6
7.45	7.168	45	P1	40P45	1L201	125.02	48.40	4.3
7.93	7.645	48	P1	40P48	1L202	130.02	50.30	5.0
8.89	8.599	54	P1	40P54	6L541	136.22	52.70	5.3
9.84	9.554	60	Q1	40Q60	1L203	114.52	44.30	7.7
11.43	11.145	70	Q1	40Q70	1L204	151.10	58.40	9.4
ANSI SPROCKET No. 50								
3.32	3.006	15	P1	H50P15	6L542	48.78	18.85	1.3
3.52	3.204	16	P1	H50P16	6L543	50.18	19.38	1.5
3.72	3.401	17	P1	H50P17	6L544	61.94	23.96	1.6
3.92	3.599	18	H	H50H18	1L205	78.12	30.25	1.5
4.12	3.797	19	P1	H50P19	6L545	66.54	25.70	1.9
4.32	3.995	20	H	H50H20	1L206	88.18	34.10	1.4
4.52	4.194	21	P1	H50P21	6L546	90.00	34.85	2.1
4.72	4.392	22	P1	H50P22	6L547	92.60	35.85	2.2
4.92	4.590	23	Q1	H50Q23	6L548	69.52	26.90	3.0
5.12	4.788	24	Q1	H50Q24	1L207	73.52	28.45	4.0
5.32	4.987	25	Q1	H50Q25	6L549	77.52	30.00	3.4
5.52	5.185	26	Q1	H50Q26	6L550	85.12	32.95	3.5
5.72	5.384	27	Q1	H50Q27	6L551	90.12	34.85	3.7
5.92	5.582	28	Q1	H50Q28	1L208	96.72	37.45	5.0
6.32	5.979	30	Q1	H50Q30	6L552	102.52	39.70	4.2
6.72	6.376	32	Q1	50Q32	6L553	106.12	41.10	4.6
7.32	6.972	35	Q1	50Q35	6L554	111.32	43.10	5.5
7.52	7.171	36	Q1	50Q36	1L209	113.12	43.75	5.7
8.32	7.966	40	Q1	50Q40	1L210	122.52	47.40	6.6
8.72	8.363	42	Q1	50Q42	6L555	126.12	48.75	6.9
9.31	8.960	45	Q1	50Q45	1L211	130.52	50.45	7.8
9.91	9.556	48	Q1	50Q48	1L212	137.72	53.20	8.6
11.11	10.749	54	Q1	50Q54	6L556	166.52	64.40	10.0
12.30	11.942	60	Q1	50Q60	1L213	173.12	66.90	13.0

OD	Pitch Dia.	No. of Teeth	Bushing Req'd.	Browning Model	Stock No.	List	Each	Shpg. Wt.
ANSI SPROCKET No. 60								
3.45"	3.134"	13	P1	H60P13	1L214	$54.58	$21.08	1.2
3.74	3.371	14	P1	H60P14	1L215	66.54	25.75	1.3
3.98	3.607	15	P1	H60P15	1L216	70.34	27.20	1.7
4.22	3.844	16	P1	H60P16	6L557	81.56	31.60	2.0
4.46	4.082	17	P1	H60P17	6L558	89.40	34.60	2.2
4.70	4.319	18	P1	H60P18	1L217	98.00	37.90	2.4
4.95	4.557	19	P1	H60P19	6L559	102.40	39.55	2.6
5.19	4.794	20	Q1	H60Q20	1L218	77.52	30.00	3.3
5.43	5.032	21	Q1	H60Q21	1L219	80.32	31.10	4.0
5.67	5.270	22	Q1	H60Q22	1L220	87.32	33.85	4.4
5.91	5.508	23	Q1	H60Q23	6L560	91.32	35.35	4.1
6.15	5.746	24	Q1	H60Q24	1L221	98.92	38.30	5.0
6.39	5.984	25	Q1	H60Q25	1L222	104.72	40.50	5.2
6.63	6.222	26	Q1	H60Q26	1L223	128.52	49.70	5.0
6.87	6.460	27	Q1	H60Q27	6L561	148.40	57.45	5.2
7.11	6.699	28	Q1	H60Q28	6L562	130.72	50.60	6.1
7.59	7.175	30	Q1	H60Q30	1L224	131.72	50.95	6.7
8.07	7.652	32	Q1	60Q32	6L563	145.92	56.45	7.4
8.78	8.367	35	Q1	60Q35	1L225	148.32	57.40	8.5
9.02	8.605	36	Q1	60Q36	6L564	150.92	58.35	8.7
9.98	9.559	40	Q1	60Q40	1L226	154.52	59.70	11.0
10.46	10.036	42	Q1	60Q42	6L565	174.70	67.50	12.0
11.18	10.752	45	Q1	60Q45	1L227	176.50	68.20	13.0
11.89	11.467	48	Q1	60Q48	6L566	208.30	80.45	15.0
13.33	12.899	54	Q1	60Q54	6L567	212.90	82.25	20.0
14.73	14.331	60	Q1	60Q60	1L228	273.12	105.50	23.0
17.12	16.717	70	Q1	60Q70	6L568	306.32	118.30	31.0
17.63	17.194	72	Q1	60Q72	1L229	323.32	124.90	32.0
ANSI SPROCKET No. 80								
4.98	4.494	14	Q1	H80Q14	6L569	80.72	31.25	2.9
5.31	4.810	15	Q1	H80Q15	6L570	111.32	43.10	6.0
5.63	5.126	16	Q1	H80Q16	6L571	116.12	44.95	3.9
5.95	5.442	17	Q1	H80Q17	6L572	130.52	50.45	5.0
6.27	5.759	18	Q1	H80Q18	6L573	143.92	55.65	3.5
6.59	6.076	19	Q1	H80Q19	6L574	158.52	61.30	6.0
6.91	6.392	20	Q1	H80Q20	6L575	174.30	67.40	8.0
7.24	6.710	21	Q1	H80Q21	6L576	177.90	68.80	6.0
7.56	7.027	22	Q1	H80Q22	6L577	183.90	71.10	7.2
7.88	7.344	23	Q1	H80Q23	6L578	189.90	73.40	7.7
8.20	7.661	24	Q1	H80Q24	6L579	193.50	74.80	10.0
8.52	7.979	25	Q1	H80Q25	6L580	199.10	77.00	10.0
8.84	8.296	26	Q1	H80Q26	6L581	219.70	84.95	10.0
9.16	8.614	27	Q1	H80Q27	6L582	224.50	86.80	9.7
9.48	8.931	28	Q1	H80Q28	6L583	234.32	90.60	11.0
10.11	9.567	30	Q1	H80Q30	6L584	240.52	93.00	12.0
10.75	10.202	32	Q1	80Q32	6L585	252.12	97.40	14.0
11.07	10.520	33	Q1	80Q33	6L586	258.32	99.85	15.0
11.39	10.838	34	Q1	80Q34	6L587	265.72	102.70	15.0
11.71	11.156	35	Q1	80Q35	6L588	270.92	104.70	16.0
13.94	13.382	42	R1	80R42	6L589	246.18	95.05	26.0
14.90	14.336	45	R1	80R45	6L590	355.72	137.35	30.0
15.86	15.290	48	R1	80R48	6L591	320.78	123.85	41.0
17.77	17.198	54	R1	80R54	6L592	358.98	138.55	41.0
19.68	19.107	60	R1	80R60	6L593	533.14	206.25	41.0
22.83	22.289	70	R1	80R70	6L594	665.90	257.25	68.0
23.46	22.926	72	R1	80R72	6L595	730.90	282.25	70.0

STAINLESS STEEL SPROCKETS



- For use with Nos. 40, 50, and 60 stainless steel roller chains found on page 288
- Precision machined from 304 stainless steel
- When selecting multiple strand sprockets refer to Keyway and Setscrew Machining Guide below

OD	No. of Teeth	Stock Bore	Max. Bore	Hub Dia.	LTB† Dimension	UST Model	Stock No.	List	Each	Shpg. Wt.
ANSI SINGLE STRAND STAINLESS STEEL SPROCKETS No. 40										
1.840"	10	1/2"	3/4"	1 1/4"	7/8"	40B10SS	**6L423**	$63.00	**$31.35**	0.3
2.000	11	1/2	13/16	1 3/8	7/8	40B11SS	**6L424**	67.00	**33.55**	0.4
2.170	12	1/2	15/16	1 9/16	7/8	40B12SS	**6L425**	72.00	**35.80**	0.4
2.330	13	1/2	1 1/16	1 9/16	7/8	40B13SS	**6L426**	74.00	**36.95**	0.5
2.490	14	1/2	1 1/8	1 11/16	7/8	40B14SS	**6L427**	77.00	**38.40**	0.6
2.650	15	1/2	1 1/4	1 13/16	7/8	40B15SS	**6L428**	80.00	**40.00**	0.7
2.810	16	5/8	1 3/8	2	7/8	40B16SS	**6L429**	84.00	**41.60**	0.8
2.980	17	5/8	1 7/16	2 1/8	1	40B17SS	**6L430**	90.00	**44.80**	1.1
3.140	18	5/8	1 1/2	2 5/16	1	40B18SS	**6L431**	96.00	**47.95**	1.2
3.300	19	5/8	1 3/4	2 1/2	1	40B19SS	**6L432**	110.00	**54.80**	1.4
3.460	20	5/8	1 7/8	2 5/8	1	40B20SS	**6L433**	126.00	**62.65**	1.6
3.620	21	5/8	1 7/8	2 3/4	1	40B21SS	**6L434**	137.00	**68.40**	1.7
3.780	22	5/8	1 7/8	2 7/8	1	40B22SS	**6L435**	150.00	**74.80**	1.8
3.940	23	5/8	2	3	1	40B23SS	**6L436**	160.00	**80.00**	2.2
4.100	24	5/8	2	3	1	40B24SS	**6L437**	174.00	**87.00**	2.2
4.260	25	5/8	2	3	1	40B25SS	**6L438**	186.00	**92.65**	2.3
4.420	26	5/8	2	3	1	40B26SS	**6L439**	199.00	**99.30**	2.4
4.740	28	5/8	2	3	1	40B28SS	**6L440**	214.00	**106.95**	2.8
5.060	30	5/8	2	3	1	40B30SS	**6L441**	251.00	**124.85**	2.9
5.860	35	5/8	2	3	1	40B35SS	**6L442**	268.00	**134.00**	3.3
ANSI SINGLE STRAND STAINLESS STEEL SPROCKETS No. 50										
2.300	10	5/8	7/8	1 9/16	1	50B10SS	**6L443**	90.00	**44.80**	0.5
2.500	11	5/8	1	1 3/4	1	50B11SS	**6L444**	97.00	**48.15**	0.6
2.710	12	5/8	1 1/4	1 63/64	1	50B12SS	**6L445**	101.00	**50.40**	0.7
2.910	13	5/8	1 5/16	1 7/8	1	50B13SS	**6L446**	106.00	**52.70**	0.8
3.110	14	5/8	1 7/16	2 1/8	1	50B14SS	**6L447**	110.00	**54.80**	1.0
3.320	15	5/8	1 1/2	2 3/8	1	50B15SS	**6L448**	115.00	**57.05**	1.0
3.520	16	5/8	1 3/4	2 1/2	1	50B16SS	**6L449**	123.00	**61.45**	1.7
3.720	17	5/8	1 7/8	2 11/16	1	50B17SS	**6L450**	132.00	**66.00**	1.5
3.920	18	5/8	1 7/8	2 7/8	1	50B18SS	**6L451**	144.00	**71.85**	2.0
4.120	19	5/8	1 3/4	2 1/2	1	50B19SS	**6L452**	154.00	**76.60**	2.0
4.320	20	3/4	1 3/4	2 1/2	1	50B20SS	**6L453**	176.00	**87.80**	2.0
4.520	21	3/4	2	3	1	50B21SS	**6L454**	201.00	**100.50**	2.0
4.720	22	3/4	2	3	1	50B22SS	**6L455**	232.00	**115.70**	2.2
4.920	23	3/4	2	3	1	50B23SS	**6L456**	256.00	**127.90**	2.5
5.120	24	3/4	2	3	1 1/4	50B24SS	**6L457**	280.00	**139.65**	3.5
5.320	25	3/4	2	3	1 1/4	50B25SS	**6L458**	307.00	**153.25**	3.0
5.520	26	3/4	2	3	1 1/4	50B26SS	**6L459**	322.00	**160.75**	3.8
5.920	28	3/4	2	3	1 1/4	50B28SS	**6L460**	332.00	**166.25**	4.0
6.320	30	3/4	2	3	1 1/4	50B30SS	**6L461**	355.00	**177.50**	4.0
7.320	35	3/4	2	3	1 1/4	50B35SS	**6L462**	384.00	**192.00**	5.2
ANSI SINGLE STRAND STAINLESS STEEL SPROCKETS No. 60										
3.250	12	3/4	1 3/8	2 3/8	1 1/4	60B12SS	**6L463**	112.00	**56.00**	1.1
3.490	13	3/4	1 3/8	2 11/32	1 1/4	60B13SS	**6L464**	123.00	**61.45**	1.5
3.740	14	3/4	1 3/8	2 9/16	1 1/4	60B14SS	**6L465**	135.00	**67.05**	2.0
3.980	15	3/4	1 7/8	2 7/8	1 1/4	60B15SS	**6L466**	163.00	**81.50**	2.8
4.220	16	3/4	2	3 1/16	1 1/4	60B16SS	**6L467**	177.00	**88.20**	2.8
4.466	17	3/4	2 1/4	3 1/4	1 1/4	60B17SS	**6L468**	195.00	**97.40**	3.0
4.700	18	3/4	2	3	1 1/4	60B18SS	**6L469**	213.00	**106.25**	3.0
4.950	19	3/4	2	3	1 1/4	60B19SS	**6L470**	232.00	**115.70**	3.2
5.190	20	3/4	2	3	1 1/4	60B20SS	**6L471**	250.00	**124.60**	3.8
5.430	21	3/4	2	3	1 1/4	60B21SS	**6L472**	262.00	**130.85**	4.0
5.670	22	3/4	2	3	1 1/4	60B22SS	**6L473**	291.00	**145.40**	4.2
5.910	23	3/4	2	3	1 1/4	60B23SS	**6L474**	323.00	**161.25**	4.5
6.150	24	3/4	2	3	1 1/4	60B24SS	**6L475**	358.00	**179.00**	5.0
6.390	25	3/4	2	3	1 1/4	60B25SS	**6L476**	403.00	**201.50**	5.0
6.630	26	3/4	2	3	1 1/4	60B26SS	**6L477**	422.00	**211.25**	5.0
7.110	28	3/4	2 3/8	3 1/2	1 1/4	60B28SS	**6L478**	443.00	**221.75**	6.4
7.590	30	3/4	2 3/8	3 1/2	1 1/4	60B30SS	**6L479**	460.00	**230.00**	7.7
8.780	35	3/4	2 3/8	3 1/2	1 1/4	60B35SS	**6L480**	498.00	**249.25**	7.7

(†) Length through bore.

STANDARD KEYWAY AND SETSCREW MACHINING GUIDE

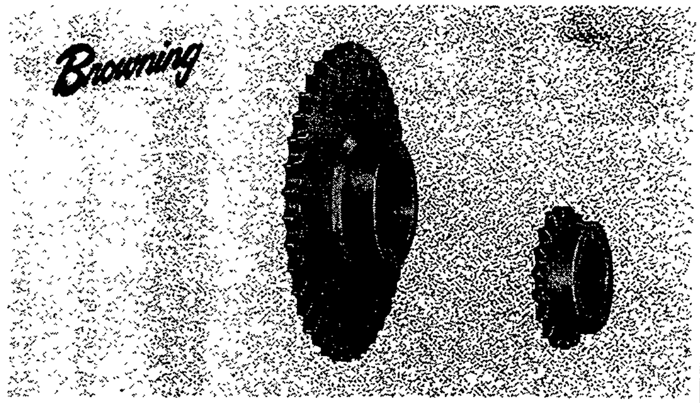
Dia. of Shaft (In.)	Keyseat Width x Depth (In.)	Dia. of Setscrew*	Dia. of of Shaft (In.)	Keyseat Width x Depth (In.)	Dia. of Setscrew*
5/16 - 7/16	3/32 x 3/64	8-32	2 13/16 - 3 1/4	3/4 x 3/8	3/4"
1/2 - 9/16	1/8 x 1/16	10-24	3 5/16 - 3 3/4	7/8 x 7/16	3/4
5/8 - 7/8	3/16 x 3/32	1/4	3 13/16 - 4 1/2	1 x 1/2	3/4
15/16 - 1 1/4	1/4 x 1/8	5/16	4 9/16 - 5 1/2	1 1/4 x 5/8	3/4
1 5/16 - 1 3/8	5/16 x 5/32	5/16	5 9/16 - 6 1/2	1 1/2 x 3/4	1
1 7/16 - 1 3/4	3/8 x 3/16	3/8	6 9/16 - 7 1/2	1 3/4 x 7/8	1
1 13/16 - 2 1/4	1/2 x 1/4	1/2	7 9/16 - 8 15/16	2 x 1	1
2 5/16 - 2 3/4	5/8 x 5/16	5/8	9 - 10 15/16	2 1/2 x 1 1/4	1

(*) Setscrew size may vary depending on hub wall thickness.
NOTE: As a general rule, the hub wall over the keyway should be equal to or greater than the diameter of the setscrew.
NOTE: Maximum bore guidelines should be adhered to in order to ensure maximum product quality standards.

COMPLETE INDEX AT BACK OF CATALOG WILL HELP YOU QUICKLY LOCATE YOUR NEEDS

BUSHED BORE ROLLER CHAIN SPROCKETS

- For use with Nos. 100, 120, 140, and 160 pitch roller chain
- Precision machined
- Sprockets with 30 teeth or less have hardened teeth since they are traditionally the driver sprocket
- Bore range 3/4 to 3⁷⁄₁₆" with required split taper bushing (not included); order split taper bushing separately on page 308



ROLLER CHAIN AVAILABLE, SEE PAGES 287 THRU 289

SPLIT TAPER BUSHINGS AVAILABLE, SEE PAGE 308

OD	Pitch Dia.	No. of Teeth	Bushing Req'd.	Browning Model	Stock No.	List	Each	Shpg. Wt.
				ANSI SPROCKET No. 100				
5.42"	4.830"	12	Q1	H100Q12	**6L596**	$148.72	**$57.55**	3.4
5.82	5.223	13	Q1	H100Q13	**6L597**	181.12	**70.10**	4.2
6.23	5.617	14	Q1	H100Q14	**6L598**	212.94	**82.35**	4.9
6.63	6.012	15	Q1	H100Q15	**6L599**	240.52	**93.05**	5.6
7.03	6.407	16	Q1	H100Q16	**6L600**	245.32	**94.85**	6.2
7.44	6.803	17	Q1	H100Q17	**6L601**	252.52	**97.65**	7.1
7.84	7.198	18	Q1	H100Q18	**6L602**	340.40	**131.60**	7.9
8.24	7.595	19	Q1	H100Q19	**6L603**	341.40	**132.00**	8.7
8.64	7.991	20	Q1	H100Q20	**6L604**	346.20	**133.85**	9.6
9.04	8.387	21	Q1	H100Q21	**6L605**	346.20	**133.80**	12.0
9.44	8.783	22	Q1	H100Q22	**6L606**	348.80	**134.80**	12.0
9.84	9.180	23	Q1	H100Q23	**6L607**	351.20	**135.75**	13.0
10.25	9.577	24	R1	H100R24	**6L608**	271.44	**104.90**	14.0
10.65	9.973	25	Q1	H100Q25	**6L609**	361.20	**139.60**	17.0
11.05	10.370	26	R1	H100R26	**6L610**	288.86	**111.60**	18.0
11.45	10.767	27	R1	H100R27	**6L611**	302.86	**117.05**	19.0
11.84	11.164	28	Q1	H100Q28	**6L612**	402.80	**155.75**	18 0
12.64	11.958	30	Q1	H100Q30	**6L613**	426.40	**165.00**	19.0
13.44	12.753	32	R1	100R32	**6L614**	373.06	**144.00**	27.0
14.64	13.945	35	R1	100R35	**6L615**	432.46	**167.50**	31.0
15.04	14.342	36	R1	100R36	**6L616**	449.86	**174.00**	33.0
16.63	15.932	40	R1	100R40	**6L617**	546.68	**211.50**	40.0
17.43	16.727	42	R1	100R42	**6L618**	617.68	**238.75**	44.0
18.63	17.920	45	R1	100R45	**6L619**	642.70	**248.75**	50.0
19.82	19.112	48	R1	100R48	**6L620**	707.30	**273.50**	64.0
22.21	21.498	54	R1	100R54	**6L621**	830.32	**321.00**	70.0
24.55	23.884	60	R1	100R60	**6L622**	922.52	**356.50**	81.0
				ANSI SPROCKET No. 120				
6.50	5.796	12	Q1	H120Q12	**6L623**	281.52	**108.85**	5.9
6.99	6.268	13	Q1	H120Q13	**6L624**	319.12	**123.40**	7.0
7.47	6.741	14	Q1	H120Q14	**6L625**	349.52	**135.10**	8.2
7.96	7.215	15	Q1	H120Q15	**6L626**	386.72	**149.50**	9.7
8.39	7.689	16	R1	H120R16	**6L627**	387.26	**149.70**	10.0
8.88	8.163	17	R1	H120R17	**6L628**	396.86	**153.50**	11.0
9.41	8.638	18	R1	H120R18	**6L629**	402.66	**155.75**	15.0
9.89	9.113	19	R1	H120R19	**6L630**	432.46	**167.50**	17.0
10.37	9.589	20	R1	H120R20	**6L631**	466.68	**180.50**	17.0
10.85	10.064	21	R1	H120R21	**6L632**	486.08	**188.25**	20.0
11.33	10.540	22	R1	H120R22	**6L633**	499.48	**193.50**	22.0
12.29	11.492	24	R1	H120R24	**6L634**	522.08	**202.00**	26.0
13.25	12.444	26	R1	H120R26	**6L635**	589.68	**228.00**	28.0
14.21	13.397	28	R1	H120R28	**6L636**	636.90	**246.50**	30.0
15.17	14.350	30	R1	H120R30	**6L637**	686.70	**265.50**	45.0
16.13	15.303	32	R1	120R32	**6L638**	832.72	**322.25**	49.0
17.57	16.734	35	R2	120R35	**6L639**	852.46	**329.75**	69.0
18.05	17.211	36	R2	120R36	**6L640**	875.26	**338.25**	70.0
19.96	19.118	40	S1	120S40	**6L641**	802.00	**309.75**	83.0
22.35	21.503	45	S1	120S45	**6L642**	938.60	**362.75**	100.0
26.65	25.798	54	S1	120S54	**6L643**	1262.04	**487.50**	140.0
29.52	28.661	60	S1	120S60	**6L644**	1495.56	**578.00**	140.0

OD	Pitch Dia.	No. of Teeth	Bushing Req'd.	Browning Model	Stock No.	List	Each	Shpg. Wt.
				ANSI SPROCKET No. 140				
7.01"	6 212"	11	Q1	H140Q11	**6L645**	$337.52	**$130.50**	6 8
7.58	6.762	12	Q1	H140Q12	**6L646**	401.12	**155.25**	9.1
8.15	7.313	13	R1	H140R13	**6L647**	337.76	**130.55**	10 0
8.72	7.864	14	R1	H140R14	**6L648**	432.50	**167.50**	13.0
9.28	8.417	15	R1	H140R15	**6L649**	455.28	**176.25**	14.0
9.85	8.970	16	R1	H140R16	**6L650**	485.10	**187.75**	17.0
10.41	9.524	17	R1	H140R17	**6L651**	507.72	**196.25**	18.0
10.97	10.078	18	R1	H140R18	**6L652**	529.96	**205.25**	20.0
12.10	11.187	20	R1	H140R20	**6L653**	621.12	**240.50**	25 0
12.66	11.742	21	R1	H140R21	**6L654**	630.72	**244.00**	27.0
13.22	12.297	22	R1	H140R22	**6L655**	654.90	**253.50**	30.0
14.34	13.407	24	R1	H140R24	**6L656**	796.56	**308.00**	40.0
14.90	13.963	25	R1	H140R25	**6L657**	813.34	**314.50**	40.0
15.46	14 513	26	R1	H140R26	**6L658**	832.74	**322.25**	40 0
17.70	16.742	30	R2	H140R30	**6L659**	942.26	**364.25**	69.0
20.49	19.523	35	R2	140R35	**6L660**	1122.08	**433.50**	89.0
21.05	20.079	36	S1	140S36	**6L661**	1060.62	**409.75**	89.0
23.29	22.305	40	S1	140S40	**6L662**	1189.28	**459.50**	108.0
26.08	25.087	45	S1	140S45	**6L663**	1383.70	**535.00**	109.0
31.10	30.097	54	S2	140S54	**6L664**	1783.38	**689.50**	115.0
34.44	33.438	60	S2	140S60	**6L665**	1869.74	**722.50**	128.0
				ANSI SPROCKET No. 160				
8.01	7.099	11	R1	H160R11	**6L666**	451.82	**175.00**	11.0
8.66	7.727	12	R1	H160R12	**6L667**	492.88	**190.50**	14.0
9.31	8.357	13	R1	H160R13	**6L668**	537.08	**208.00**	15.0
9.96	8.988	14	R1	H160R14	**6L669**	589.74	**228.50**	17.0
10.61	9.620	15	R1	H160R15	**6L670**	690.86	**267.50**	23.0
11.25	10.252	16	R1	H160R16	**6L671**	757.98	**293.25**	24.0
11.90	10.885	17	R1	H160R17	**6L672**	802.40	**310.50**	26.0
12.54	11.518	18	R1	H160R18	**6L673**	840.00	**325.00**	30 0
13.19	12.151	19	R1	H160R19	**6L674**	959.56	**371.00**	38.0
13.83	12.785	20	R2	H160R20	**6L675**	964.86	**373.25**	39.0
15.11	14.053	22	R2	H160R22	**6L676**	1084.50	**419.25**	59.0
16.39	15.323	24	R2	H160R24	**6L677**	1172.30	**453.00**	68.0
17.03	15.958	25	R2	H160R25	**6L678**	1211.90	**468.50**	70.0
17.67	16.593	26	R2	H160R26	**6L679**	1307.40	**505.50**	76.0
18.95	17.863	28	R2	H160R28	**6L680**	1397.02	**540.50**	87.0
20.23	19.134	30	S2	H160S30	**6L681**	1366.30	**503.50**	110.0
23.42	22.312	35	S2	160S35	**6L682**	1505.70	**582.00**	141.0
26.61	25.491	40	S2	160S40	**6L683**	2152.02	**831.50**	158.0
29.80	28.671	45	S2	160S45	**6L684**	2586.08	**999.00**	200.0

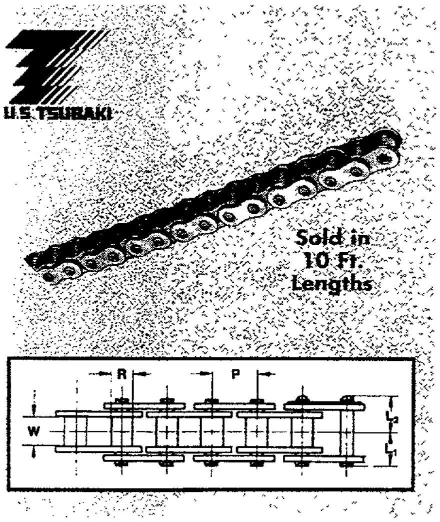
WIDE RANGE OF COMPRESSORS

We have stationary and portable air compressors, air pumps, air tools, abrasive blast finishing equipment, spray guns, and air line components. See Index for complete product listings.

Let Us Supply Your In-Plant Safety Equipment

First aid kits, fire extinguishers, eye and face protectors, flammable liquid containers, work gloves, and audible and visual warning devices are available from this catalog. Refer to Index for page listings.

CORROSION-RESISTANT RIVETED ROLLER CHAIN AND INDIVIDUAL LINKS



POLY CHAIN (PC)

·esigned for conditions where lubrication · impractical or undesirable. Can with- ·and some corrosive conditions and is ·ited for environments requiring sanitary ·nditions. Inner links are polyacetal, ·iter links are 304 stainless steel.

NICKEL PLATED (NP)

uitable for slightly corrosive environ- ents and for outdoor conditions exposed · rain. Temperature range: 15°F to 140°F. ·ot recommended in applications exposed · food or high temperature variance.

304 STAINLESS STEEL (SS)

·leal for fresh and saltwater exposures. ·uitable for corrosive conditions involving ·od, chemicals, and pharmaceuticals. ·mperature range: -40°F to 750°F.

600 STAINLESS STEEL (AS)

·ombines corrosion resistance of 304 ·ainless steel with a 50% higher maximum ·lowable load made possible through ·at treating of pins, bushings, and ·llers. Temperature range: -40°F to ·0°F.

For more detailed information on specific substance compatibility, see "Corrosion Resistance Guide" above right.

A WIDE SELECTION OF BELTS IS AVAILABLE, SEE PAGES 294 THRU 298.

RIVETED ROLLER CHAIN

SPECIFICATIONS AND ORDERING DATA

ANSI Size	Pitch P	Width W	Dia. R	Connecting End to Center Line L_1	Rivet End to Center Line L_2	Over-all Width L_1 & L_2	Maximum Allowable Load (Lbs.)	Stock No.	List	Each 10 Ft. Length	Shpg. Wt.
40PC	1/2"	5/16"	0.312"	0.325"	0.392"	0.717"	100	**6L079**	$178.00	**$153.50**	2.6
50PC	5/8	3/8	0.400	0.406	0.472	0.878	154	**6L080**	223.00	**192.75**	4.0
60PC	3/4	1/2	0.469	0.506	0.581	1.087	198	**6L081**	311.00	**268.75**	6.0
40NP	1/2	5/16	0.312	0.325	0.392	0.717	660	**6L073**	42.00	**36.25**	4.5
50NP	5/8	3/8	0.400	0.406	0.472	0.878	1140	**6L074**	60.00	**51.40**	7.0
60NP	3/4	1/2	0.469	0.506	0.581	1.087	1630	**6L075**	79.00	**67.85**	11.0
40SS	1/2	5/16	0.312	0.325	0.392	0.717	100	**6L076**	209.00	**180.50**	4.4
50SS	5/8	3/8	0.400	0.406	0.472	0.878	154	**6L077**	262.00	**226.75**	7.0
60SS	3/4	1/2	0.469	0.506	0.581	1.087	231	**6L078**	366.00	**316.25**	10.0
40AS	1/2	5/16	0.312	0.325	0.392	0.717	165	**6L070**	275.00	**237.75**	4.3
50AS	5/8	3/8	0.400	0 406	0 472	0.878	230	**6L071**	363.00	**313.75**	7 0
60AS	3/4	1/2	0.469	0.506	0.581	1.087	350	**6L072**	494.00	**426.50**	10.0

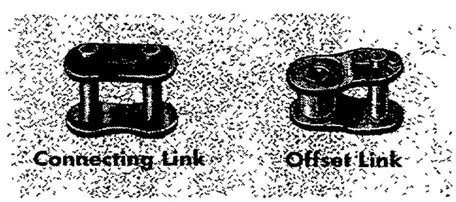
CORROSION RESISTANCE GUIDE

Substance	Chain Type SS AS	NP	PC	Substance	Chain Type SS AS	NP	PC
Acetone	•	=	•	Carbon Tetrachloride	#	=	#
Oil (Plant, Mineral)	•	•	•	Potassium Hydroxide (20%)	•	=	=
Alcohol	•	=	•	Sodium Hydroxide (20%)	•	=	=
Ammonia Water	•	=	•	Nitric Acid (5%)	•	=	=
Sodium Chloride	#	=	#	Vinegar	#	=	#
Hydrochloric Acid (2%)	=	=	=	Hypochlorite Soda	=	=	=
Sea Water	#	=	#	Soft Drinks	•	=	•
Hydrogen Peroxide	•	=	=	Soap and Water Solution	•	#	•
Caustic Soda (25%)	•	=	=	Paraffin	•	•	•
Gasoline	•	=	•	Fruit Juice	•	=	•
Formic Acid	=	=	=	Benzene	•	=	•
Formaldehyde	•	=	•	Water	•	#	•
Milk	•	=	•	Vegetable Juice	•	=	•
Lactic Acid	•	=	•	Iodine	=	=	=
Citric Acid	•	=	#	Sulfuric Acid	=	=	=
Chromic Acid (10%)	•	=	=	Phosphoric Acid (10%)	#	=	=
Acetic Acid (5%)	•	=	=				

• Highly corrosion resistant. # Marginally corrosion resistant (depending on application conditions).
= Not corrosion resistant.

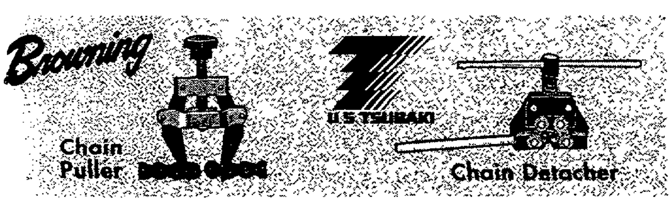
INDIVIDUAL CHAIN LINKS

(SOLD IN PACKAGES OF 5)



ANSI Size	CONNECTING LINKS Stock No.	List	Per Pkg.	Shpg. Wt.	OFFSET LINKS Stock No.	List	Per Pkg.	Shpg. Wt.
40NP	**6L091**	$10.00	**$8.07**	0.1	**6L082**	$19.00	**$16.30**	0.1
50NP	**6L092**	12.00	**10.25**	0.3	**6L083**	25.00	**21.05**	0.2
60NP	**6L093**	20.00	**16.34**	0.3	**6L084**	30.00	**25.30**	0.3
40SS*	**6L094**	21.00	**16.38**	0.1	**6L085**	35.00	**29.85**	0.1
50SS*	**6L095**	23.00	**19.15**	0.2	**6L086**	41.00	**35.35**	0.2
60SS*	**6L096**	29.00	**24.32**	0.3	**6L087**	57.00	**49.15**	0.3
40AS	**1L541**	22.00	**18.65**	0.1	**6L088**	44.00	**37.35**	0.1
50AS	**1L540**	26.00	**22.37**	0.2	**6L089**	52.00	**44.30**	0.2
60AS	**1L539**	36.00	**30.70**	0.3	**6L090**	71.00	**61.40**	0.3

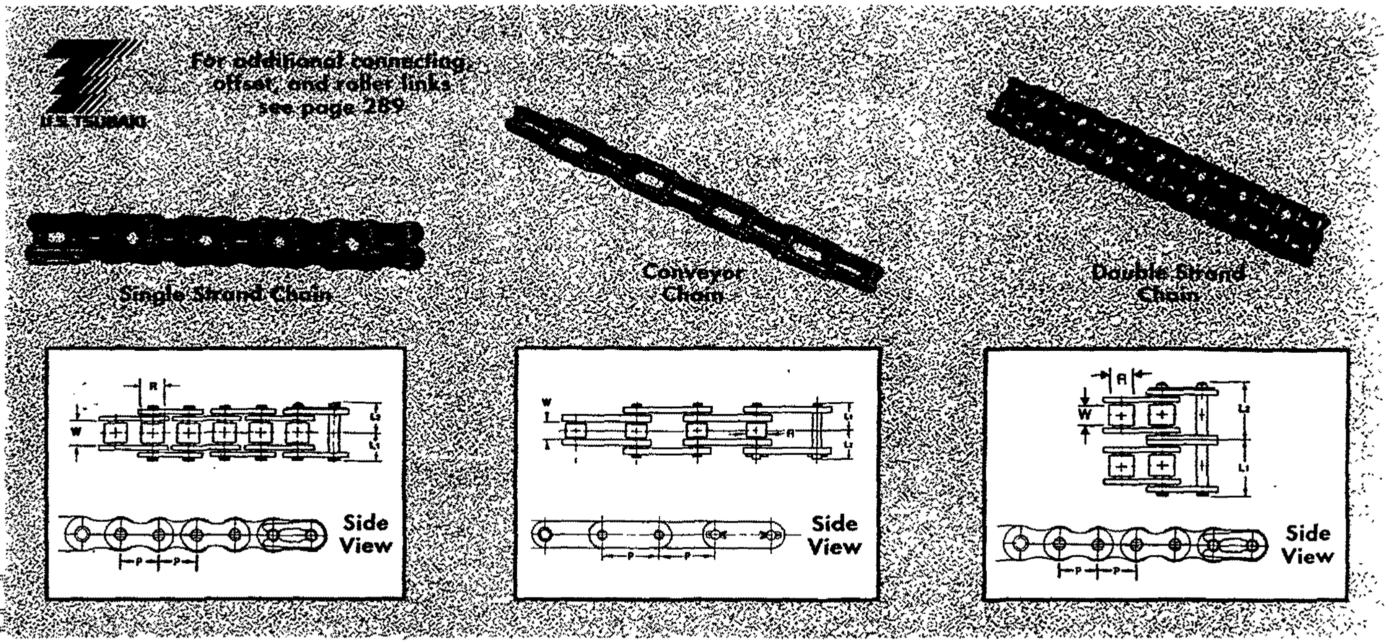
(*) Also for use on Nos. 6L079 through 6L081.



ROLLER CHAIN TOOLS

Description	ANSI Size	Mfr.	Mfr's. Model	Stock No.	List	Each	Shpg. Wt.
Chain Puller	35-60	Browning	35	**5A555**	$29.04	**$17.29**	0.4
Chain Puller	80-240	Browning	80	**5A556**	55.17	**32.95**	2.2
Chain Detacher	35-50	UST	D-35	**1A911**	31.00	**26.35**	1.0
Chain Detacher	60-100	"ST	D-60	**1A912**	58.00	**49.65**	1.6

RIVETED ROLLER CHAIN



ORDERING DATA

ANSI Size	Stock No.	List	Each	Shpg. Wt.
SINGLE STRAND CHAIN* 10 Ft. Lengths				
35	**2W092**	$25.00	**$20.82**	2.4
40	**2W093**	26.00	**21.45**	4.5
41	**2W094**	19.00	**15.84**	2.8
50	**2W095**	37.00	**31.05**	7.3
60	**2W096**	51.00	**42.55**	11.0
80	**2W221**	83.00	**70.25**	18.0
100	**2W222**	217.00	**156.50**	27.0
120	**6L481**	324.00	**234.00**	39.0
140	**6L482**	377.00	**272.50**	52.0
160	**6L483**	470.00	**340.00**	68.0
SINGLE STRAND CHAIN* 100 Ft. Lengths				
35	**2W192**	246.00	**190.00**	26.0
40	**2W193**	244.00	**187.75**	48.0
41	**2W194**	189.00	**144.30**	33.0
50	**2W195**	366.00	**282.50**	75.0
60	**3W098**	502.00	**387.25**	110.0
CONVEYOR CHAIN* 10 Ft. Lengths				
C2040	**6L511**	44.00	**36.60**	5.0
C2050	**6L512**	55.00	**46.05**	5.7
C2060H	**6L513**	81.00	**68.10**	8.0
C2080H	**6L514**	145.00	**122.85**	15.0
DOUBLE STRAND CHAIN* 10 Ft. Lengths				
35-2	**6L484**	84.00	**71.10**	3.5
40-2	**6L485**	113.00	**95.30**	8.0
50-2	**6L486**	140.00	**118.75**	14.0
60-2	**6L487**	213.00	**180.75**	21.0
80-2	**6L488**	336.00	**285.00**	35.0
100-2	**6L489**	529.00	**448.50**	53.0

(*) Includes one connecting link for each 10 ft. of chain.

- **Factory preloaded to reduce initial stretch to 0.01%, minimizing necessary adjustments after first use**
- **Special prelubrication minimizes stretch to increase wear life and reduce maintenance costs**
- **Advanced micron production control ensures total contact between pin and bushing, increasing chain wear life**
- **Rollers and special wide-waist plates have been shot peened for greater maximum allowable loads**
- **Meet all American National Standards Institute (ANSI) requirements**
- **Fully interchangeable with other ANSI roller chain**

ROLLER CHAIN SPECIFICATIONS

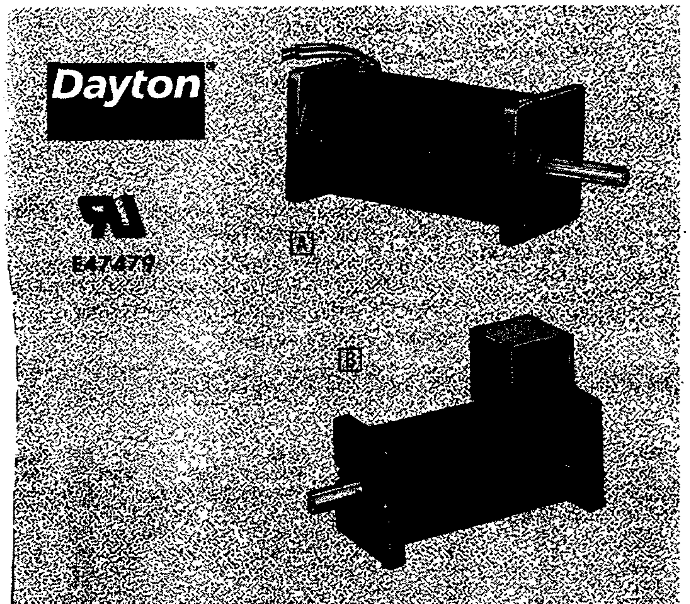
ANSI Size	Pitch P	Roller / Bushing Width W	Roller / Bushing Dia. R	Rivet End to Center Line L2	Connecting End to Center Line L1	Overall Width L1 & L2	Maximum Allowable Load (Lbs.)	Average Ultimate Strength (Lbs.)
SINGLE STRAND CHAIN								
35	3/8"	3/16"	0.200"	0.270"	0.230"	0.500"	430	2,310
40	1/2	5/16	0.312	0.392	0.325	0.717	730	4,180
41	1/2	1/4	0.306	0.313	0.266	0.579	430	2,200
50	5/8	3/8	0.400	0.472	0.406	0.878	1,260	6,930
60	3/4	1/2	0.469	0.581	0.506	1.087	1,750	9,570
80	1	5/8	0.625	0.758	0.640	1.398	2,970	16,280
100	1¼	3/4	0.750	0.900	0.778	1.678	5,060	26,400
120	1½	1	0.875	1.138	0.980	2.118	6,800	37,400
140	1¾	1	1.000	1.248	1.059	2.307	9,000	48,500
160	2	1¼	1.125	1.451	1.254	2.705	11,900	60,600
CONVEYOR CHAIN								
C2040	1	5/16	0.312	0.380	0.325	0.705	595	3,515
C2050	1¼	3/8	0.400	0.469	0.406	0.875	970	5,795
C2060H	1½	1/2	0.469	0.652	0.573	1.225	1,410	8,075
C2080H	2	5/8	0.625	0.823	0.720	1.543	2,400	15,400
DOUBLE STRAND CHAIN								
35-2	3/8	3/16	0.200	0.469	0.429	0.898	810	4,750
40-2	1/2	5/16	0.312	0.675	0.608	1.283	1,370	8,075
50-2	5/8	3/8	0.400	0.833	0.762	1.595	2,380	13,395
60-2	3/4	1/2	0.469	1.053	0.955	2.008	3,310	18,810
80-2	1	5/8	0.625	1.335	1.217	2.552	5,610	33,440
100-2	1¼	3/4	0.750	1.606	1.484	3.090	8,600	52,800

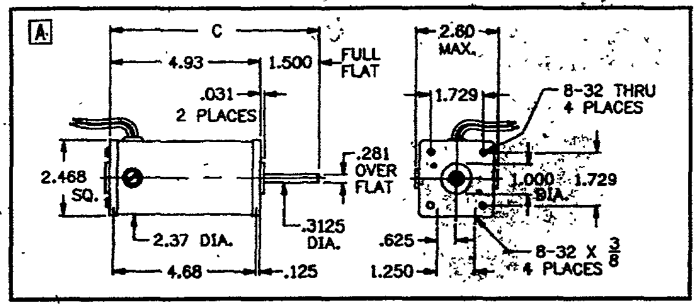
Maximum Allowable Load is the maximum tension a chain may be safely subjected to. This value should never be exceeded by the actual design load factored by speed, temperature, and dynamic adjustments as applicable.
Average Ultimate Tensile Strength is the mean average of a series of tensile tests where the chains are loaded to a destructive failure. Average Ultimate Tensile Strength is not a measure of the load at which a chain may be applied; it is indicative only of the tensile strength quality of the chain.

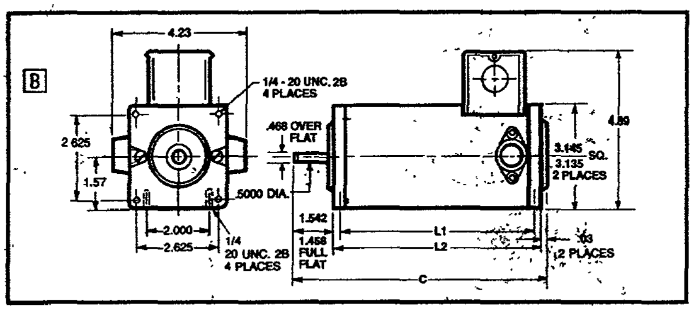
Appendix 8

PERMANENT MAGNET DC MOTORS AND SPEED CONTROL

90 VDC PERMANENT MAGNET MOTORS







ushes: Externally replaceable
earings: Ball
lounting: All-position face and base
nclosure: Totally enclosed nonventilated
mbient: 40°C
ervice Factor: 1.0
nsulation Class: B
uty: Continuous
otation: CW/CCW
JL Recognized: E47479
inish: Black
Brand: Dayton

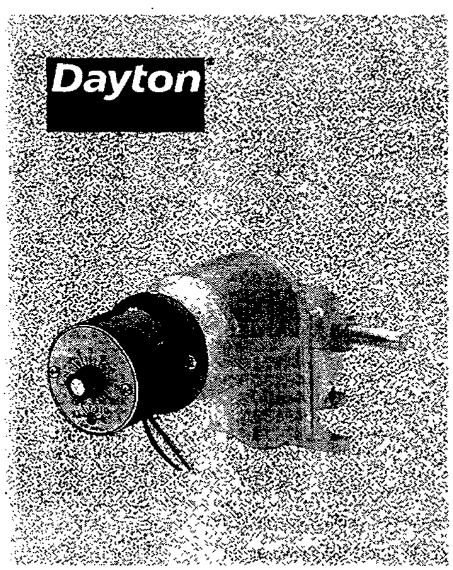
90 VDC, TENV, FACE MOUNTING, BOTH ENDS*

Key	HP	Name-plate RPM	Overall Length (C)	L_1	Full-Load Amps	Full-Load Torque In./Lbs.	Stock No.	List	Each	Shpg. Wt.
A	1/27	1800	6 7/16"	4.68"	0.5	1.30	**4Z142**	$117.00	**$75.10**	3.5
B	1/18	1800	6 13/16	4.42	0.75	1.95	**4Z141**	179.00	**127.45**	6.3
B	1/8	1800	8 13/32	6.42	1.5	4.38	**4Z140**	187.00	**133.75**	9.1
B	1/6	1800	9 1/2	7.42	1.8	5.63	**4Z528**	201.00	**143.95**	10.0

(*) Use with proper control listed on nearby page—or with other 90 volt DC rectified power sources (provided Form Factor does not exceed 1.3), or with nonpulsating 115 volt DC power.

90 VDC Motors Performance Matched with Control Listed on Page 203.

DIRECT MOUNT GEARMOTOR SPEED CONTROL



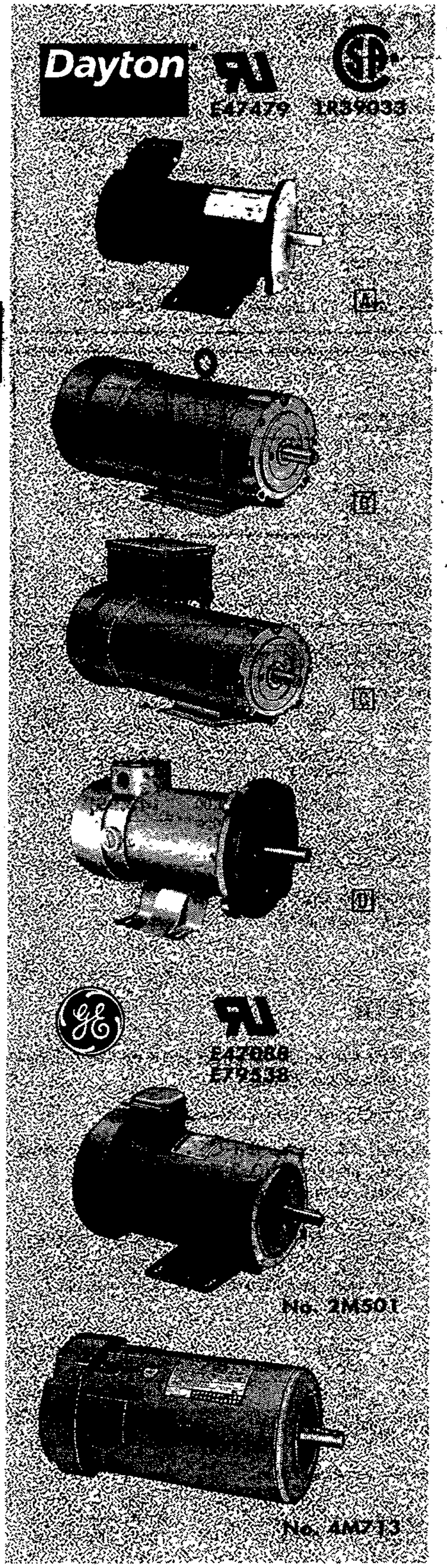
- Mounts directly to many Dayton permanent magnet DC gearmotors
- Can be panel mounted for use with many other 90V PMDC gearmotors
- Ideal for applications that require convenient speed adjustment right at the gearmotor
- Eliminates need to run long wires from controller to gearmotor, offering streamlined, compact drive package
- Full wave unfiltered control with free-wheeling diode
- Made of strong Noryl plastic
- Adjustments: On-Off speed knob and current limit (0.2-4.0 amps) and min./max. speed
- Adaptable to von Weise models VW07, VW31, VW33, VW62, VW80, VW83, VW94, VW88, VW89 using 90 VDC permanent magnet motors

Input Volts (60 Hz)	HP Range	Arm. Volts	Constant Torque Spd. Range	Speed Reg.	Stock No.	List	Each	Shpg. Wt.
115	1/35-1/6	90	15:1	10-30%	**6A191**	$75.00	**$57.50**	0.5

GEARMOTOR/MOTOR COMPATIBILITY

Mounts Directly to rear of Nos.:	Mounts remotely with panel to Nos.:			
4Z530 thru 4Z533	6A192 thru 6A194	4Z128 thru 4Z134	4Z381 thru 4Z383	4Z534 thru 4Z539
4Z534 thru 4Z539	1L491	4Z135 thru 4Z138	4Z528	4Z723 thru 4Z728
4Z723 thru 4Z728	1L492	4Z140 thru 4Z142	4Z530 thru 4Z533	6Z910 thru 6Z916

PERMANENT MAGNET DC MOTORS



Typical Uses: Designed for use with 90 and 180V speed controllers or NEMA type K DC power supplies on constant or diminishing torque applications. Applications include drives for conveyors, food packaging, and processing machinery.

Motors have a 10-32, 1/2" deep tapped hole on the fan end shaft. This hole can be used to mount No. 6Z392 pulse generator (see listing below).

All Dayton models and GE 56 frame models have a removable base. GE 148ATC and 1412ATC are footless. Use 140 frame accessory kits from page 197 with these models. All Dayton models and GE Nos. 2M501 thru 2M508 are performance matched with Dayton and Dart speed controllers on nearby pages.

Type: Permanent magnet
Bearings: Ball
Mounting: C-face
Service Factor: 1.0
Insulation Class: F
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW
Dayton Approvals: UL Recognized (E47479) CSA Certified (LR39033)
GE Approvals: 56 frame UL Recognized (E47088), CSA Certified (LR56410); 140 frame UL Recognized (E79538) only.
Brand: Dayton and GE

DAYTON BRAND PERMANENT MAGNET DC MOTORS

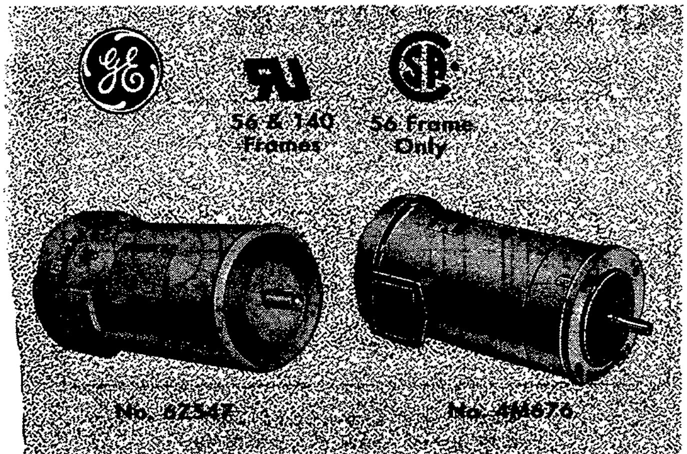
Key	HP	Nameplate RPM	Full-Load Torque In.-Lbs.	Enclosure	Full-Load Amps at Nameplate Volts	NEMA Frame	Overall Length	Stock No.	List	Each	Shpg Wt.
90 VDC MOTORS											
A	1/4	1725	9.1	TEFC	3.0	56C	10 7/16"	**2M167**	$314.00	**$187.00**	17.0
A	1/3	1725	12.2	TEFC	3.5	56C	10 13/16	**2M509**	359.00	**213.25**	18.0
A	1/2	1725	18.3	TEFC	5.5	56C	12 3/4	**2M168**	377.00	**223.25**	25.0
A	3/4	1725	27.4	TEFC	8.2	56C	14 3/4	**2M169**	490.00	**280.50**	32.0
A	1	1725	36.5	TEFC	10.9	56C	16 3/4	**2M170**	593.00	**355.00**	38.0
90 VDC WASHDOWN MOTORS											
D	1/4	1725	9.1	TEFC	3.0	56C	10 7/16	**1F654**	429.09	**283.25**	17.0
D	1/3	1725	12.2	TEFC	3.5	56C	10 13/16	**1F652**	461.25	**304.50**	18.0
D	1/2	1725	18.3	TEFC	5.5	56C	12 3/4	**1F650**	493.80	**326.00**	25.0
D	3/4	1725	27.4	TEFC	8.2	56C	14 3/4	**1F646**	578.70	**382.00**	32.0
D	1	1725	36.5	TEFC	10.9	56C	16 3/4	**1F642**	693.00	**457.50**	38.0
180 VDC MOTORS											
A	1/2	1725	18.3	TEFC	2.8	56C	12 3/4	**4Z524**	377.00	**215.75**	25.0
A	3/4	1725	27.4	TEFC	4.1	56C	14 3/4	**4Z525**	490.00	**280.75**	28.0
A	1	1725	36.5	TEFC	5.3	56C	16 3/4	**4Z378**	593.00	**355.00**	38.0
B	1 1/2	1750	54.0	TEFC	8.0	143/145TC	17 3/4	**4Z379**	1320.00	**603.50**	76.0
B	2	1750	72.0	TEFC	10.9	143/145TC	18 3/4	**4Z380**	1579.00	**698.00**	82.0
C	3	1750	108.0	TEFC	15.0	143/145TC	22 1/4	**6Z791**	2027.00	**930.50**	95.0
180 VDC WASHDOWN MOTORS											
D	1/2	1725	18.3	TEFC	2.8	56C	12 3/4	**1F648**	493.80	**326.00**	25.0
D	3/4	1725	27.4	TEFC	4.1	56C	14 3/4	**1F644**	578.70	**382.00**	32.0
D	1	1725	36.5	TEFC	5.3	56C	16 3/4	**1F640**	693.00	**457.50**	38.0

GE BRAND PERMANENT MAGNET DC MOTORS

HP	Nameplate RPM	Full-Load Torque In.-Lbs.	Enclosure	Full-Load Amps at Nameplate Volts	NEMA Frame	Overall Length	GE Model	Stock No.	List	Each	Shpg. Wt.
90 VDC MOTORS											
1/4	1725	9.1	TENV	2.8	56C	10.53"	5BPB56HAA37	**2M501***	$293.00	**$187.75**	21.0
1/3	1725	12.2	TENV	3.6	56C	11.53	5BPB56KAA52	**2M502***	335.00	**214.25**	26.0
1/2	1725	18.3	TEFC	5.5	56C	12.91	5BPB56KAA51	**2M503***	350.00	**224.50**	29.0
3/4	1725	27.4	TEFC	8.0	56C	14.91	5BPB56PAA29	**2M504***	440.00	**281.75**	39.0
1	1725	36.5	TEFC	10.7	56C	14.91	5BPB56SAA42	**2M505***	556.00	**356.75**	44.0
180 VDC MOTORS											
1/2	1725	18.3	TEFC	2.8	56C	12.91	5BPB56KAA53	**2M507***	338.00	**216.75**	29.0
3/4	1725	27.4	TEFC	4.0	56C	14.91	5BPB56PAA30	**2M508***	440.00	**282.00**	39.0
1	1725	36.5	TEFC	5.3	56C	14.91	5BPB56SAA43	**2M506***	556.00	**356.75**	44.0
1	1150	54.8	TEFC	5.0	148ATC	16.86	5CD123GP001B	**4M705†**	1080.00	**697.50**	78.0
1 1/2	2500	37.8	TEFC	7.5	148ATC	16.86	5CD123UP001B	**4M710†**	1080.00	**697.00**	67.0
1 1/2	1750	54.0	TEFC	7.1	148ATC	16.86	5CD123PP001B	**4M709†**	1080.00	**694.00**	79.0
1 1/2	1150	82.2	TEFC	7.2	1412ATC	20.73	5CD125TP001B	**4M708†**	1344.00	**867.50**	115.0
2	2500	50.4	TEFC	9.8	148ATC	16.86	5CD123UP002B	**4M713†**	1080.00	**793.50**	77.0
2	1750	72.0	TEFC	9.8	149ATC	17.98	5CD124TP001B	**4M712†**	1192.00	**766.50**	90.0
2	1150	109.6	TEFC	9.8	1412ATC	20.73	5CD125TP002B	**4M711†**	1459.00	**941.50**	115.0
3	2500	75.6	TEFC	14.5	1412ATC	20.73	5CD125YP001B	**4M715†**	1459.00	**1058.00**	115.0
3	1750	108.0	TEFC	14.5	1412ATC	20.73	5CD125WP001B	**4M714†**	1459.00	**943.50**	115.0

(*) Has 3/8" dia. hole 1/2" deep, drilled on opposite drive shaft to accommodate a tach mounting kit and includes a 10-32 adapter to allow use with pulse generator below.
(†) Has 1/2" dia. shaft 1/2" long on opposite drive shaft to accommodate No. 6Z557 tach mounting kit.

WOUND FIELD DC MOTORS



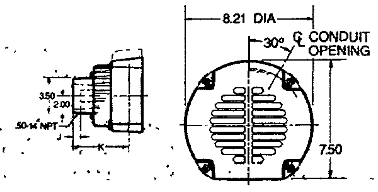
Typical Uses: Conveyors, wire feeders, photo, food and paper processing, printing, factories and textile mills, and other constant or diminishing torque applications with NEMA Type K DC power supplies.

Special Features: Smooth operation at low speeds. C-face all-angle mounting. Continuous rated torque to 5% base speed (when used with properly matched controller with free-wheeling diode).

Type: Shunt wound
Bearings: Ball
Mounting: C-face (foot optional, except on 56C frame)
Ambient: 40°C
Service Factor: 1.0
Insulation Class: F
Duty: Continuous
Rotation: CW/CCW
UL Recognized: 56 frame (E47088); 140 frame (E79538)
CSA Certified: 56 frame (LR56410)
Finish: Gray
Brand: GE

TACHOMETER MOUNTING KIT

Type	Dimensions J	Dimensions K
PY	0.63"	9.85"
Servo Tek	0.74	5.40



140 FRAME ACCESSSORY KITS

Type	GE Model 893A-	Stock No.	List	Each	Shpg. Wt.
Flush Foot	658AAG01	**6Z554**	$27.00	**$18.19**	1.4
Pedestal Foot	658BAG01	**6Z555**	86.00	**58.00**	4.0
Thermostat	659AAG01	**6Z556**	86.00	**58.05**	1.0
PY Tach. Mtg. Kit†	690AAG01	**6Z557**	334.00	**225.50**	3.3

(†) Tachometer not included, see page 204. No. 6Z557 also works with 180 frames.

PARTS AVAILABLE; CALL 1-800-323-0620

HP	Name-plate RPM	NEMA Frame	Rabbet Dia.	Arm. Volts DC	Field Volts VDC	F/L Amps at Name-plate Volts	Inertia WK² Ft.-Lbs.	Full-Load Torque In.-Lbs.	Overall Length	GE Model	Stock No.	List	Each	Shpg. Wt.
OPEN DRIPPROOF FULLY GUARDED														
	1750	L182ACY	4½"	180	200/100	4.9	0.28	36.0	15.26"	5CD142GE011B002	**4M716**	$1417.00	**$872.50**	115.0
1/2	1750	L182ACY	4½	180	200/100	7.3	0.28	54.0	15.26	5CD142GE011B005	**4M717**	1559.00	**959.00**	107.0
	1750	186ACY	4½	180	200/100	9.4	0.45	72.0	16.76	5CD143ME003B001	**4M718**	2001.00	**1231.00**	130.0
	1750	186ATC	8½	180	200/100	9.4	0.45	72.0	16.76	5CD143MC003B006	**4M719**	2001.00	**1231.00**	92.0
	1750	186ACY	4½	180	200/100	14.4	0.45	108.0	16.76	5CD143ME003B010	**4M720‡**	2001.00	**1231.00**	105.0
3	1750	L186ATC	8½	180	200/100	14.4	0.45	108.0	18.76	5CD143MC003B012	**4M721**	2972.00	**1759.00**	138.0
5	1750	L186ATC	8½	180	200/100	24.1	0.67	180.1	18.76	5CD144UC023B001	**4M724***	3751.00	**2309.00**	148.0
5	1750	219ATC	8½	180	200/100	23.7	1.49	180.1	25.22	5CD153TC008B006	**4M723**	4063.00	**2499.00**	245.0
TOTALLY ENCLOSED FAN COOLED														
1/4	1725	56C#	4½	90	100	2.8	0.038	9.1	11.2	5BCD56CD247	**4M701†**	587.00	**357.00**	24.0
1/3	1725	56C#	4½	90	100	3.6	0.058	12.2	11.9	5BCD56ED307	**4M678†**	649.00	**394.25**	29.0
1/2	1725	56C#	4½	90	100	5.0	0.082	18.3	13.9	5BCD56ND88	**4M702†**	768.00	**467.00**	40.0
1/2	1725	56C#	4½	180	200	2.6	0.082	18.3	13.9	5BCD56ND91	**4M703†**	785.00	**476.75**	42.0
3/4	1725	56C#	4½	90	100	8.4	0.10	27.4	15.9	5BCD56RD397	**4M675**	867.00	**527.00**	54.0
3/4	1725	56C#	4½	180	200	3.8	0.10	27.4	15.9	5BCD56RD418	**4M676**	884.00	**537.00**	55.0
1	2500	146ATC	4½	180	200/100	5.3	0.14	25.2	15.61	5CD122NE001B	**6Z545**	793.00	**488.00**	62.0
1	1725	56C#	4½	180	200	5.1	0.10	36.5	15.9	5BCD56RD398	**4M677**	1008.00	**612.50**	56.0
1	1750	146ATC	4½	180	200/100	5.1	0.14	36.0	15.61	5CD122HE001B	**6Z544**	811.00	**499.25**	56.0
1	1750	L182ACY	4½	180	200/100	5.0	0.28	36.0	15.26	5CD142FE012B008	**4M726†**	1873.00	**1153.00**	92.0
1	1750	L182ATC	8½	180	200/100	5.0	0.28	36.0	15.26	5CD142FC008B018	**4M725†**	1873.00	**1153.00**	102.0
1	1150	148ATC	4½	180	200/100	5.0	0.18	54.8	16.86	5CD123GE001B	**6Z543**	949.00	**548.50**	69.0
1½	2500	148ATC	4½	180	200/100	7.5	0.18	37.8	16.86	5CD123UE001B	**6Z548**	959.00	**590.00**	69.0
1½	1750	148ATC	4½	180	200/100	7.3	0.18	54.0	16.86	5CD123PE001B	**6Z547**	976.00	**600.50**	59.0
1½	1750	186ACY	4½	180	200/100	7.3	0.45	54.0	16.76	5CD143LE007B005	**4M727†**	2049.00	**1261.00**	102.0
1½	1750	186ATC	8½	180	200/100	7.3	0.45	54.0	16.76	5CD143LC007B021	**4M722†**	2049.00	**1261.00**	140.0
1½	1150	1412ATC	4½	180	200/100	7.0	0.32	82.2	20.73	5CD125TE001B	**6Z546**	1237.00	**761.50**	105.0
2	2500	148ATC	4½	180	200/100	9.8	0.18	50.4	16.86	5CD123UE002B	**6Z551**	1150.00	**707.50**	69.0
2	1750	149ATC	4½	180	200/100	9.5	0.23	72.0	17.98	5CD124TE001B	**6Z550**	1168.00	**719.00**	69.0
2	1750	L186ACY	4½	180	200/100	9.5	0.67	72.0	18.76	5CD144SE005B008	**4M728†**	2409.00	**1483.00**	128.0
2	1750	L186ATC	8½	180	200/100	9.5	0.67	72.0	18.76	5CD144SC003B032	**4M729†**	2409.00	**1483.00**	128.0
2	1150	1412ATC	4½	180	200/100	9.5	0.32	109.6	20.73	5CD125TE002B	**6Z549**	1481.00	**911.00**	100.0
3	2500	1412ATC	4½	180	200/100	14.5	0.32	75.6	20.73	5CD125YE001B	**6Z553**	1481.00	**911.50**	104.0
3	1750	1412ATC	4½	180	200/100	14.0	0.32	108.0	20.73	5CD125WE001B	**6Z552**	1499.00	**921.50**	93.0
3	1750	189ACY	4½	180	200/100	13.9	0.77	108.0	20.76	5CD145VE005B006	**4M731†**	3060.00	**1882.00**	165.0
3	1750	189ATC	8½	180	200/100	13.9	0.77	108.0	20.76	5CD145VC005B001	**4M730†**	3060.00	**1882.00**	162.0
5	1750	2110ATC	8½	180	200/100	23.0	1.71	180.1	26.72	5CD154ZC802B802	**4M732†**	5009.00	**3082.00**	289.0

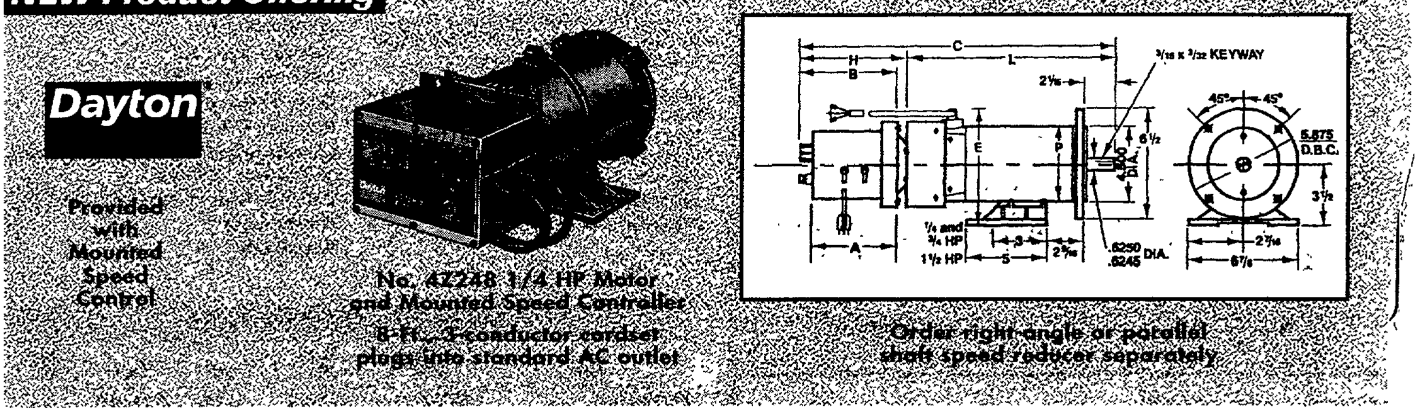
(*) Blower ventilated. (†) TENV. (‡) Suitable for constant torque to 60% of base speed. (#) No base.

No. 6Z558. Servo-Tek Tach Mounting Kit (tachometer not included). Use with 140 frame only. GE Model 893A666AAG01. Shpg. wt. 3.3 lbs. List $334.00. Each **$225.50**

PERMANENT MAGNET DC MOTORS WITH MATCHED SPEED CONTROLS

90 & 180 VDC PERMANENT MAGNET MOTORS

NEW Product Offering



Typical Uses: Packaging equipment, pumps, fans, blowers, conveyors, and other constant or diminishing torque applications. Not for constant HP, cyclic load, or rapid reversing applications.

Special Features: Permanent magnet DC motor has matched speed controller mounted to end bracket of motor. Control has eight-foot, 3-conductor cordset for plugging into standard AC receptacle (no wiring required). Controller supplies DC power to motor through an additional eight-foot, 3-conductor cordset between motor and controller. Allows remote mounting of controller when removed from motor end bracket. External access to motor brushes.

Input Voltage: 115 VAC, 60/50 Hz on Nos. 4Z248, 1F800, 1F796, 2Z846, and 1F798; 230V, 60/50 Hz on No. 4Z226 (requires 250V, 20A receptacle)

Bearings: Prelubricated ball

Mounting: C-face with removable rigid base

Enclosure: Motor, TEFC; control, NEMA 4/12

Ambient: 40°C

Service Factor: 1.0

Insulation Class: F

Duty: Continuous

Rotation: CW/CCW

Brand: Dayton

SPEED CONTROL FEATURES

Speed Regulation: Within 5% of namepla RPM

Full-Wave Rectification

Min. and Max. Speed Adjustable

Current/Torque Limit: Built-in (adjustable)

IR Compensation: Built-in (fixed)

Soft Start Acceleration

Transient and Surge Protection

Control Circuitry on One Printed Board

Control Protection: Fused

Forward On/Off/Reverse On Switch

Power-On Indicator Light

NEMA 4/12 Enclosure

UL Listed (E165942)

SPECIFICATIONS

Max. HP	Stock No.	Max. Output Torque at all Speeds, In.-Lbs.	Continuous Duty HP at Set Speed: 2500 RPM	2100 RPM	1725 RPM	1300 RPM	900 RPM	500 RPM	125 RPM	85 RPM	50 RPM	35 RPM	Controller Speed Range
1/4	4Z248	9.1	—	—	0.250	0.188	0.130	0.072	0.018	0.012	0.007	0.005	50 to 1
1/2	1F800	16.2	—	—	0.500	0.376	0.260	0.144	0.036	0.024	0.013	0.009	50 to 1
3/4	2Z846	18.9	0.750	0.630	0.517	0.390	0.270	0.150	0.037	0.025	0.015	—	50 to 1
3/4	1F796	27.2	—	—	0.750	0.565	0.391	0.217	0.054	0.037	0.022	0.015	50 to 1
1	1F798	36.5	—	—	1.000	0.753	0.521	0.290	0.072	0.049	0.029	0.020	50 to 1
1½	4Z226	37.8	1.500	1.260	1.034	0.780	0.540	0.300	0.075	0.051	0.030	—	50 to 1
1½	1F802	54.8	—	—	1.500	1.130	0.782	0.435	0.108	0.074	0.043	0.030	50 to 1
2	1F804	73.0	—	—	2.000	1.150	1.040	0.579	0.145	0.098	0.058	0.041	50 to 1

ORDERING DATA

Max. HP	Name-plate RPM	NEMA Frame	Input Volts AC, 60/50 Hz	Armature Volts DC	Full-Load Amps	Dimensions (Inches): A	B	C	D	E	H	L	P	Stock No.	List	Each	Shpg. Wt.
1/4	1725	56C	115	90	4.2	5	5¾	17 1/16	5¼	6⅞	6¼	10 13/16	4½	**4Z248**	$500.18	**$438.75**	21.0
1/2	1725	56C	115	90	5.4	5	5¾	16 13/16	5¼	6⅞	6¼	10 7/16	4½	**1F800**	512.13	**448.25**	21.0
3/4	2500	56C	115	90	11.0	5	5¾	19 1/16	5¼	6⅞	6¼	12 13/16	4½	**2Z846**	623.58	**547.00**	28.0
3/4	1725	56C	115	90	8.1	5	5¾	18 13/16	5¼	6⅞	6¼	12 7/16	4½	**1F796**	613.81	**537.50**	75.0
1	1725	56C	115	90	10.6	5	5¾	20 13/16	5¼	7½	6¼	14 9/16	6½	**1F798**	884.39	**774.00**	67.0
1½	2500	56HC	230	180	11.0	5	5¾	22 9/16	7½	7½	6¼	16 5/16	6½	**4Z226**	1005.48	**882.00**	60.0
1½	1750	143TC	230	180	8.2	5	5¾	24¼	7½	7½	6¼	18	6½	**1F802**	1102.89	**964.00**	29.0
2	1750	143TC	230	180	11.6	5	5¾	25¼	7½	7½	6¼	19	6½	**1F804**	1332.43	**1166.00**	21.0

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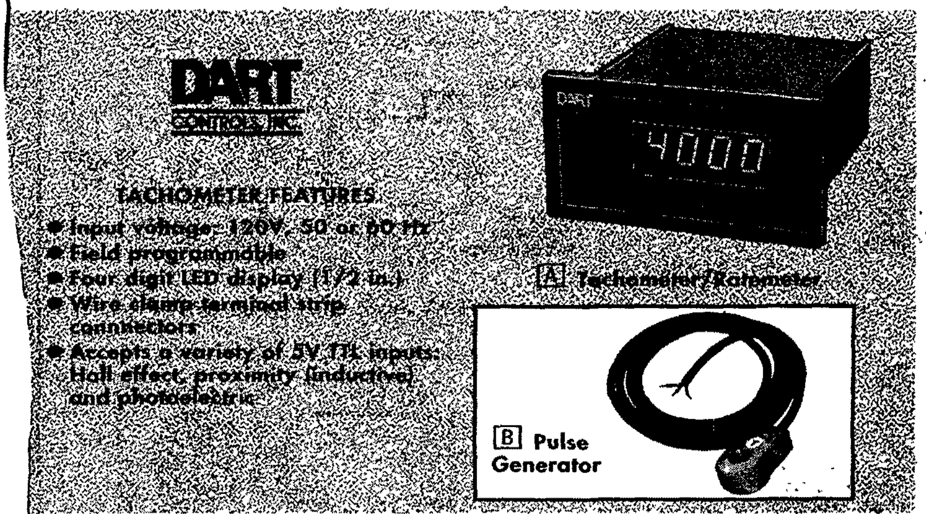
DIGITAL TACHOMETERS, PULSE GENERATOR, AND SPEED CONTROL

FIELD PROGRAMMABLE DIGITAL TACHOMETER AND PULSE GENERATOR



Compact in size, sturdy aluminum construction. Field programmable rate based display. Four digit .58" LED display. Wire clamp terminal strip for easy connections. Operates on 5 volt square wave pulse supplied by No. 6Z392 pulse generator or equivalent. Input voltage: 120V, 60 Hz. –10° to 45°C ambient. ±10% rated line voltage. Dart brand.

[A] **No. 6Z390 Tachometer/Ratemeter** converts input pulses to engineering units (RPM, Gal./Min., Ft./Sec., etc.)

[B] **No. 6Z392 Pulse Generator** provides 5 volt square wave pulse with frequency proportional to shaft RPM of unit to which it is mounted. 6 foot cord. Maximum shaft speed is 5000 RPM. 70°C ambient.

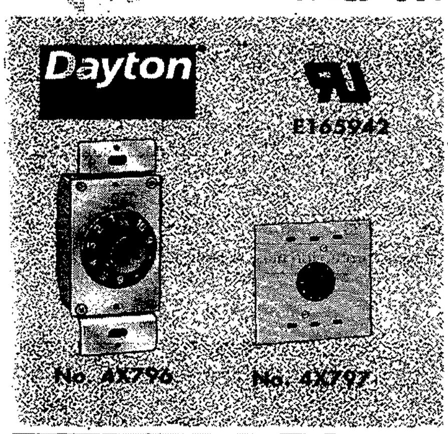
Key	Dart Model	Stock No.	List	Each	Shpg. Wt.
A	DM4004	**6Z390**	$263.00	**$175.25**	1.1
B	PU-2E	**6Z392**	69.00	**45.40**	0.5

DOUBLE C-FACE DC TACHOMETER GENERATORS

- Self-contained design producing linear output voltage in direct proportion to actual motor speed
- Provides 35 VDC/1000 RPM output suitable for use with tach feedback for DC controls
- Mounting configuration designed for mounting between a C-face motor and a flanged speed reducer
- Not intended for overhung loads on the output shaft

Voltage Output 1000/RPM	Max. Speed RPM	For Motor Series	Input Shaft Dia.	Output Shaft Dia.	Temperature Constant Per Degree F	Stock No.	List	Each	Shpg. Wt.
35 VDC	2000	56C	.6257/.6252	.6245/.6250	.04 Volts	**1F806**	$833.77	**$756.00**	7.0
35 VDC	2000	140TC-180TC	.8757/.8752	.8745/.8750	.04 Volts	**1F808**	898.25	**813.50**	7.0

SPEED CONTROLS FOR AC/DC AND SERIES DC MOTORS



- Use only with 115V AC/DC universal or Series DC brush-type motors
- Clockwise turn of dial permits control of motor speed from 20 to 100% of full speed
- Typical uses are gearmotors, power tools, sewing machines, grinders, blowers, and pumps
- Input 115 VAC (±10%) 60 or 50 Hz
- Mount in panels or directly into standard "handy" boxes (handy box not included)
- No. 4X796 uses single gang wall plate; No. 4X797 uses double gang wall plate (wall plates not included)
- Controls are not intended for shaded pole, PSC, split-phase, or capacitor-start motors
- Instructions furnished
- UL Recognized (E165942)

Max. Amps	Stock No.	List	Each	Shpg. Wt.
5	**4X796**	$26.26	**$23.01**	0.3
10	**4X797**	30.95	**27.15**	0.4

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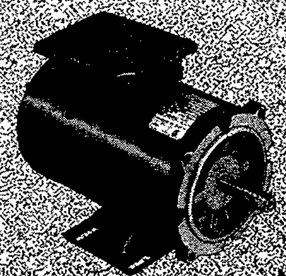
90 AND 180V PMDC MOTORS AND MOTOR/ADJ. DC CONTROL COMBINATIONS

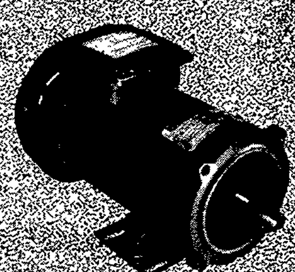
RELIANCE ELECTRIC

E47479

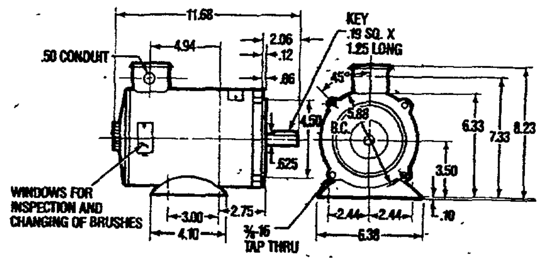
- TENV design provides constant torque in full 20:1 speed range with or without free-wheeling diode
- TEFC design provides continuous full-load torque from base speed to 5% of base speed with free-wheeling diode



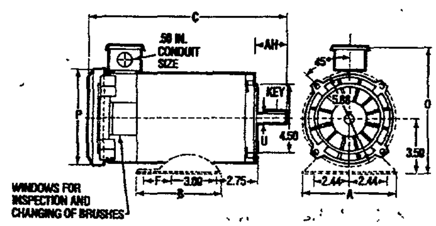
No. 6Z804



No. 6Z807



TENV, Nos. 6Z804 thru 6Z806



TEFC, Nos. 6Z807 thru 6Z811

Typical Uses: Conveyors and packaging equipment, exercise equipment, pumps, fans, blowers, and other constant or diminishing torque applications.

TENV and TEFC DC permanent magnet motors, 1725 RPM are performance matched with DC-1 VS drives on facing page. Designed for adjustable speed applications with continuous rated torque over a 20:1 speed range on single phase, full-wave power supply with a freewheeling diode. Continuous torque capabilities are reduced between 100% and 5% base speed if operated on a power supply with no freewheeling diode. Features external brush access, conduit box, and built-in thermostat†. Black finish. Reliance brand.

Bearings: Permanently lubricated double-shielded ball
Mounting: NEMA 56C face and mounting base
Service Factor: 1.0
Insulation Class: F
Ambient: 40°C
Duty: Continuous
Rotation: CW/CCW

SPECIFICATIONS AND ORDERING DATA

HP	Arm. Volts DC	Nameplate RPM	Full-Load Amps	Frame	Enclosure	Reliance Model	Stock No.*	List	Each	Shpg. Wt.
1/4	90	1750	2.8	56C	TENV	T56H1050	**6Z804**	$302.91	**$256.25**	20.0
1/3	90	1750	3.6	56C	TENV	T56H1051	**6Z805**	335.64	**283.75**	22.0
1/2	90	1750	5.2	56C	TENV	T56H1052	**6Z806**	372.00	**319.50**	31.0
3/4	90	1750	7.8	56C	TEFC	T56H1055	**6Z807**	423.25	**385.75**	33.0
1	90	1750	10.0	56C	TEFC	T56H1059	**6Z808**	494.95	**451.00**	38.0
	180	1750	5.0	56C	TEFC	T56H1056	**6Z809**	494.95	**451.00**	38.0
1½	180	1750	7.3	56HCZ	TEFC	T56H1057	**6Z810**	816.34	**742.50**	50.0
2	180	1750	9.8	56HCZ	TEFC	T56H1058	**6Z811**	969.80	**882.00**	59.0

(*) Limited availability—contact local branch.

DIMENSIONS FOR TEFC MODELS

Stock Nos.	A	B	C	O	F	P	U	AH	Key Sq.	Key Lgth.
6Z807	6.38	5.72	12.59	8.74	2.00	6.22	.625	2.06	.19	1.25
6Z808, 6Z809	6.38	5.72	14.34	8.74	2.00	6.22	.625	2.06	.19	1.25
6Z810	6.62	5.88	17.30	9.00	2.00	7.33	.875	2.12	.19	1.38
6Z811	6.62	5.88	18.92	9.00	2.00	7.33	.875	2.12	.19	1.38

(†) If a motor thermostat is not used, another means of motor thermal protection must be utilized.

MOTOR SPECIFICATIONS			MOTOR AND DRIVE COMBINATIONS						
Stock No.	Nameplate RPM	HP	Combination Stock No.	Each	Combination Stock No.	Each	Combination Stock No.	Each	Shpg. Wt.
90 VDC MOTORS			**No. 6Z801 Drive**		**No. 6Z802 Drive**		**No. 6Z803 Drive**		
6Z804	1725	1/4	**7Z194**	**$630.50**	**7Z203**	**$744.50**	**7Z211**	**$744.50**	27.0
6Z805	1725	1/3	**7Z195**	**656.50**	**7Z204**	**770.50**	**7Z212**	**770.50**	29.0
6Z806	1725	1/2	**7Z196**	**690.50**	**7Z205**	**804.50**	**7Z213**	**804.50**	38.0
6Z807	1725	3/4	**7Z197**	**753.50**	**7Z206**	**867.50**	**7Z214**	**867.50**	40.0
6Z808	1725	1	**7Z198**	**815.50**	**7Z207**	**929.50**	**7Z215**	**929.50**	45.0
180 VDC MOTORS			**No. 6Z801 Drive**		**No. 6Z802 Drive**		**No. 6Z803 Drive**		
6Z809	1725	1	**7Z199**	**815.50**	**7Z208**	**929.50**	**7Z216**	**929.50**	45.0
6Z810	1725	1½	**7Z200**	**1093.00**	**7Z209**	**1207.00**	**7Z217**	**1207.00**	57.0
6Z811	1725	2	**7Z202**	**1225.00**	**7Z210**	**1339.00**	**7Z218**	**1339.00**	66.0

DC/SCR CONTROL/MOTOR COMBINATIONS AND ADJUSTABLE DC CONTROLS

90V AND 180V MOTOR/CONTROL COMBINATIONS

Dayton®

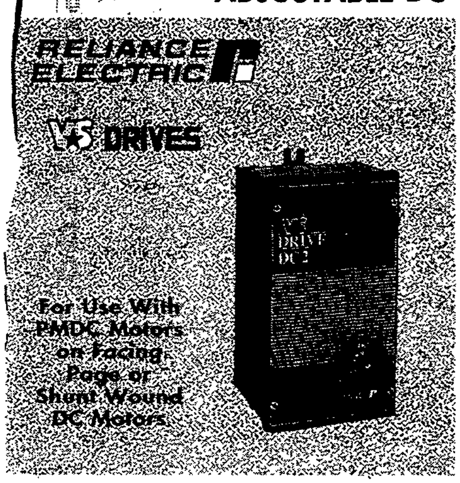
DART CONTROLS, INC.

rformance-matched combinations of Dayton ·rmanent magnet 90V DC motors with ıyton and Dart controls DC/SCR speed ntrols are provided at right. For more tailed specifications, the motors and eed controls indicated at right are listed nearby pages.

ɔw to use: Locate motor by stock number the left hand column. To the right will the stock numbers for that item combined with different controllers. See column heading for the specific control sired. Note that this is not an exhaus- e list.

MOTOR SPECIFICATIONS				MOTOR AND CONTROL COMBINATIONS						
Stock No.	Name-plate RPM	Full-Load Torque In.-Lbs.	HP	Combination Stock No.	Each	Combination Stock No.	Each	Combination Stock No.	Each	Shpg. Wt.
90 VDC MOTORS				No. 4Z827 Control		No. 4Z527 Control		No. 4Z828 Control		
4Z142	1800	1.3	1/27	7Z857	$172.75	7Z861	$181.75	7Z865	$258.00	6.0
4Z141	1800	1.95	1/18	7Z858	172.75	7Z862	181.75	7Z866	258.00	8.8
4Z140	1800	4.38	1/8	7Z859	178.75	7Z863	187.75	7Z867	264.00	11.6
4Z528	1800	5.63	1/6	7Z860	190.25	7Z864	197.25	7Z868	273.75	12.5
90 VDC MOTORS				No. 5X412 Control		No. 6X165 Control		No. 2M510 Control		
4Z142	1800	1.3	1/27	7Z701	228.00	7Z581	435.00	7Z219	133.60	4.2
4Z141	1800	1.95	1/18	7Z702	228.00	7Z580	435.00	7Z220	183.25	7.0
4Z140	1800	4.38	1/8	7Z703	233.75	7Z579	441.00	7Z221	189.00	9.8
4Z528	1800	5.63	1/6	7Z793	243.50	7Z019	450.50	7Z222	198.75	10.7
90 VDC MOTORS				No. 5X485 Control		No. 2M171 Control		No. 4Z829 Control		
2M167	1725	9.1	1/4	7M005	488.00	7M001	569.00	7Z869	655.50	23.8
2M168	1725	18.3	1/2	7M006	522.50	7M002	603.50	7Z870	690.00	31.8
2M169	1725	27.4	3/4	7M007	577.00	7M003	658.00	7Z871	744.50	38.8
2M170	1725	36.5	1	—		7M004	728.50	7Z872	815.50	44.8
180 VDC MOTORS				No. 4Z377 Control		No. 6Z386 Control		No. 2M510 Control		
4Z524	1725	18.3	1/2	7Z784	556.00	7Z223	384.00	7Z225	267.00	25.7
4Z525	1725	27.4	3/4	7Z785	617.50	7Z224	445.75	7Z226	328.75	28.7
180 VDC MOTORS				No. 4Z377 Control		No. 6Z386 Control		No. 6Z812 Control		
4Z378	1725	36.5	1	7Z751	688.00	7Z227	516.50	—	—	40.0
4Z379	1725	54.0	1½	7Z752	924.00	7Z274	752.50	—	—	78.0
4Z380	1725	72.0	2	7Z753	1014.00	7Z275	842.00	—	—	84.0
6Z791	1725	108.0	3	—	—	—	—	7Z276	1578.00	107.0

ADJUSTABLE DC CONTROLS FOR PM AND SHUNT WOUND MOTORS



- **±10% rated voltage**
- **AC frequency: 48 to 62 Hz**
- **All circuitry packaged on a single accessible surface mount circuit board**
- **Armature voltage or motor driven DC tachometer feedback**
- **Complete application adjustments**
- **Must be used with power disconnect switch between controller and power supply**
- **Built-in surge suppressor**
- **Relay in control circuit prevents automatic restarting after power outage**

Typical Uses: For use with permanent magnet DC motors on facing page, or shunt wound DC motors, in a variety of constant or diminishing torque applications requiring wide range adjustable speed control. These include conveyors, assembly lines, packaging, food processing, exercise, silk screening, mixing, and photo processing equipment.

DC2 V★S® drives feature adjustable minimum (0 to 50%)/maximum (50 to 100%) speed, IR drop compensation (5 to 10%) and current limit (10 to 150%). Internal jumper reconnections match the drive incoming power (115 or 230VAC, 50 or 60 Hz) and select motor horsepower (1/4 thru 2), desired feedback, armature voltage or motor driven DC tachometer.

Power cube contains all semiconductors. Speed regulation with 95% load change: voltage feedback 2-5%, with 20:1 constant torque; tachometer feedback 1%, with 50:1 constant torque. (Separately adjustable accel/decel rates of 0.5 to 30 seconds.)

Full-wave, half-control power conversion with back diode. Built-in half wave field supply for operation of short circuit protection and accessibility.

NEMA/UL Type 12K construction. 0°C to 40°C ambient, up to 3300 feet (1000 meters) in elevation. 1.0 service factor. UL Listed (E59092), IEC classified, CSA certified. Black finish. Reliance® brand.

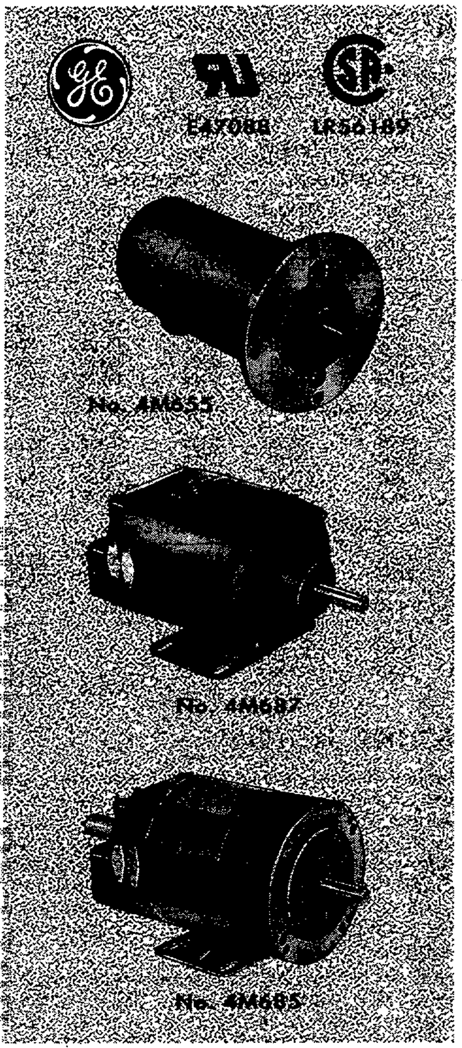
	115 VAC Input—90 VDC Output						230 VAC Input—180 VDC Output					
HP	Max AC Amps#	Input KVA	Rated Armature Volts	Rated Armature Amps	Avail. Field Volts	Avail. Field Amps	Max AC Amps#	Input KVA	Rated Armature Volts	Rated Armature Amps	Avail. Field Volts	Avail. Field Amps
1/4	3.1	.36	90	2.5	50	2.0	—	—	—	—	—	—
1/3	4.2	.48	90	3.7	50	2.0	—	—	—	—	—	—
1/2	6.2	.71	90	5.0	50	2.0	3.1	.71	180	2.5	100	2.0
3/4	9.4	1.0	90	7.5	50	2.0	4.7	1.0	180	3.7	100	2.0
1	12.5	1.4	90	10.0	50	2.0	6.2	1.4	180	5.0	100	2.0
1½	—	—	—	—	—	—	9.4	2.2	180	7.5	100	2.0
2	—	—	—	—	—	—	12.5	2.9	180	10.0	100	2.0

(#) Includes motor field current.

Specific Control Features	HP	Input Volts AC 60/50 Hz	Output Volts DC	Reliance Model	Stock No.	List	Each	Shpg. Wt.
Standard	1/4-2	115/230	90/180	DC2-70	6Z801	$436.88	$407.00	7.0
Standard, Switch Rev, Dynamic Braking†	1/4-2	115/230	90/180	DC2-71	6Z802	567.80	527.00	7.0
Standard, Isolated Process Interface	1/4-2	115/230	90/180	DC2-72	6Z803	567.80	527.00	7.0

(†) Not to be used with motor driven DC tachometer feedback.

TACHOMETER GENERATORS



Tachometer Generator is a generator mechanically coupled to a rotating machine whose main function is to generate a voltage, the magnitude or frequency of which is used either to determine the speed of rotation or the common shaft or to supply a signal to a control circuit to provide speed regulation.

Typical Uses: Speed indication on a variety of mill drives, machine tools, paper machines, and industrial machines.

Special Features: Hazardous location models have built-in temperature-sensing switch with leads brought out. When properly wired to the external control circuit, maximum frame temperature is limited as required by UL and the NEC.

Bearings: Ball

Enclosure: TENV

Insulation Class: A

Duty: Continuous

Rotation: CW/CCW or reversing service

Field: Alnico magnets

Finish: Gray

GE PY59 FRAME DESIGN

Speed Range	Poles	Volts Per 1000 RPM	GE Frame	Output	Ambient	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
PY TACH ADAPTER KIT MOUNT										
400-5000	4	28	59	AC	40°C	D120	**4M652**	$362.00	**$220.00**	5.0
100-5000	2	50	59	DC	40°C	D123	**4M655***	1004.00	**610.00**	6.0
100-5000	2	50	59	DC	40°C	D251	**4M657***	875.00	**532.00**	6.0
100-5000	2	50	59	DC	40°C	D252	**4M658**	1004.00	**610.00**	8.0
100-2500	2	100	59	DC	40°C	D122	**4M659**	1004.00	**610.00**	6.0
100-2500	2	100	59	DC	40°C	D250	**4M661**	875.00	**532.00**	8.0
BASE MOUNT										
400-5000	4	20	59	AC	40°C	D246	**4M654**	483.00	**294.00**	4.5
400-5000	4	28	59	AC	40°C	D121	**4M653**	344.00	**209.25**	4.5
100-5000	2	50	59	DC	40°C	D125	**4M656***	1004.00	**610.00**	7.0
100-2500	2	100	59	DC	40°C	D124	**4M660**	1004.00	**610.00**	8.0

(*) Reversing service up to 2500 RPM maximum.

GE BC42 and BC46 DC DESIGN SINGLE SHAFT

Speed Range	Poles	Volts Per 1000 RPM	GE Frame	Ambient	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
NEMA 56 C-FACE MOUNT									
100-5000	2	50	BC46	65°C	D130	**4M683**	$3332.00	**$2024.00**	39.0
100-5000	2	50	BC42	65°C	D141	**4M684**	1902.00	**1157.00**	30.0
100-3600	2	100	BC46	65°C	D131	**4M688**	3332.00	**2024.00**	40.0
100-2750	2	100	BC42	65°C	D142	**4M692**	1902.00	**1157.00**	28.0
NEMA 56 BASE MOUNT									
100-5000	2	50	BC42	65°C	D126	**4M681**	1881.00	**1144.00**	25.0
100-5000	2	50	BC46	65°C	D127	**4M682**	3311.00	**2012.00**	36.0
100-3600	2	100	BC46	65°C	D128	**4M687**	3311.00	**2012.00**	37.0
100-2750	2	100	BC42	65°C	D136	**4M691**	1881.00	**1144.00**	25.0
100-1800	2	200	BC46	65°C	D138	**4M695**	3311.00	**2012.00**	35.0
100-1375	2	200	BC42	65°C	D137	**4M697**	1881.00	**1144.00**	27.0

HAZARDOUS LOCATION—CLASS I, GROUP D; CLASS II, GROUPS E, F, & G

Speed Range	Poles	Volts Per 1000 RPM	GE Frame	Ambient	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
NEMA 56 C-FACE MOUNT									
100-5000	2	50	BC42	65°C	D267	**4M666**	$2579.00	**$1568.00**	38.0
100-2750	2	100	BC42	65°C	D268	**4M700**	2579.00	**1568.00**	39.0
NEMA 56 BASE MOUNT									
100-5000	2	50	BC42	65°C	D255	**4M667**	2565.00	**1559.00**	33.0
100-2750	2	100	BC42	65°C	D256	**4M668**	2565.00	**1559.00**	33.0

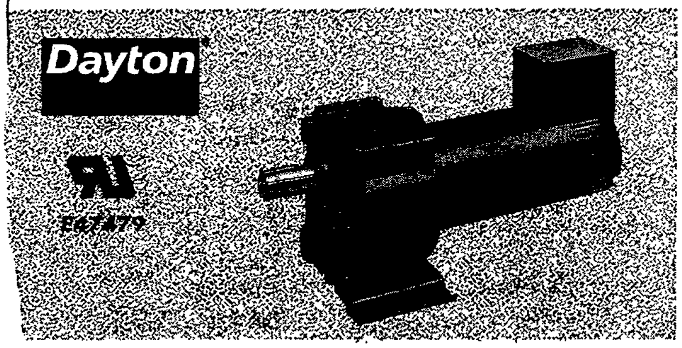
GE BC42 and BC46 DC DESIGN DOUBLE SHAFT EXTENSION†

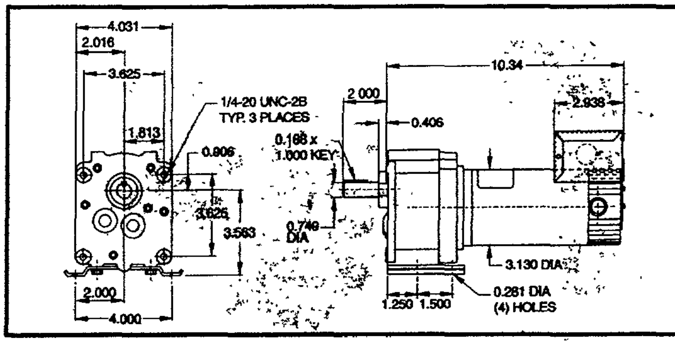
Speed Range	Poles	Volts Per 1000 RPM	GE Frame	Ambient	GE Stock No.	Stock No.	List	Each	Shpg. Wt.
NEMA 56 C-FACE MOUNT WITH REMOVABLE BASE									
100-5000	2	50	BC46	65°C	D144	**4M685**	$3432.00	**$2086.00**	40.0
100-5000	2	50	BC42	65°C	D149	**4M686‡**	2004.00	**1218.00**	30.0
100-3600	2	100	BC46	65°C	D132	**4M689‡**	3432.00	**2086.00**	42.0
100-2750	2	100	BC42	65°C	D143	**4M693**	2004.00	**1218.00**	33.0
100-1800	2	200	BC46	65°C	D133	**4M694**	3432.00	**2086.00**	42.0
NEMA 56 BASE MOUNT									
100-3600	2	100	BC46	65°C	D139	**4M690**	3347.00	**2035.00**	37.0
100-1800	2	200	BC46	65°C	D140	**4M696**	3347.00	**2035.00**	37.0

(†) Double shaft extension is 1⅞" long x 5/8" diameter with keyway each end. (‡) Include base.

ENERGY SAVING PRODUCTS FOR HOME, FARM, AND INDUSTRY
Including blowers, fans, furnaces, heaters, lighting, motors, controls, thermostats water heaters, and other items. See Index under Energy Saving Products.

24 AND 90 VDC PERMANENT MAGNET PARALLEL SHAFT GEARMOTORS





254 IN.-LBS., HIGH TORQUE

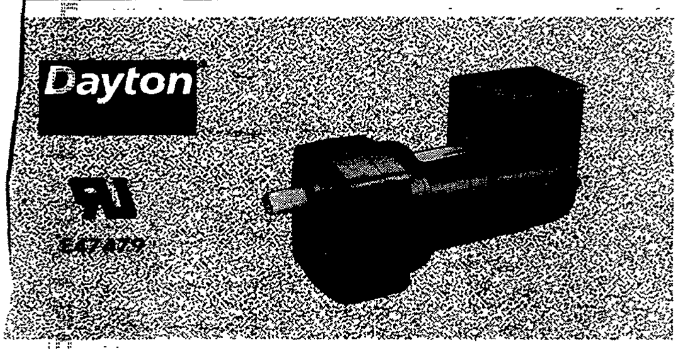
ırcase: Die-cast aluminum
rication: Heavy fluid gear oil
rs: Hardened steel
rings: Needle with thrust ls on case; ball on motor
ls: Spring-loaded lip-type input and output seals
nting: All position

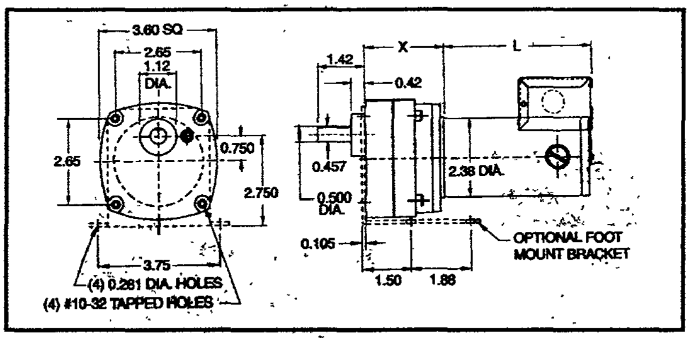
Rotation: Reversible
Thermal Protection: None
Brushes: Externally replaceable
Ambient: 40°C
Duty: Continuous
Enclosure: TENV
Warranty: 2 Year

24 VDC PERMANENT MAGNET TENV

Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Full-Load Amps at 24 VDC	Gear Ratio	Stock No.	List	Each	Shpg. Wt.
30	254	291	1/8	5.3	60:1	**1L848**	$396.00	**$304.25**	14.0

FOR DC GEARMOTOR SELECTION GUIDE SEE PAGES 212 AND 213





20.4 TO 100 IN.-LBS., HIGH TORQUE

ıearcase: Die-cast aluminum
ubrication: Permanent heavy luid gear oil
Gears: 1st stage steel, helical; subsequent stages steel or heat-treated powdered metal spur
Bearings: Needle on case output shaft; ball on motor
Seals: Spring-loaded lip-type neoprene on input and output shafts

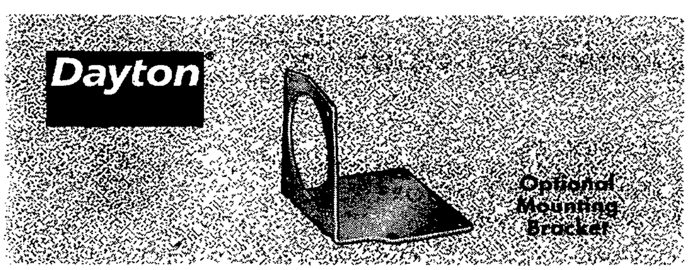
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Brushes: Externally replaceable
Ambient: 40°C
Duty: Continuous
Enclosure: TENV
Warranty: 2 Year

90 VDC PERMANENT MAGENT TENV

Name-plate RPM	F/L Torque In.-Lbs.	Overhung Load Lbs.	Input HP	F/L Amps at 90 VDC	Gear Ratio	Stock No.	List	Each	Shpg. Wt.
2.6	100	90	1/40	0.36	702:1	**6Z910**	$252.00	**$193.25**	6.0
5	100	90	1/40	0.36	362:1	**6Z911**	252.00	**193.25**	6.0
9	100	90	1/40	0.36	185.5:1	**6Z912**	252.00	**193.25**	6.0
20	100	90	1/20	0.6	95.5:1	**6Z913**	252.00	**193.25**	6.0
37	74	90	1/20	0.6	49:1	**6Z914**	252.00	**193.25**	6.0
71	40	90	1/20	0.6	25.2:1	**6Z915**	252.00	**193.25**	6.0
139	20.4	90	1/20	0.6	12.9:1	**6Z916**	252.00	**193.25**	6.0

SPECIFICATIONS

Stock No.	L	X	Stock No.	L	X
6Z910	5.44"	2.45"	6Z914	4.69"	3.15"
6Z911	5.44	2.45	6Z915	4.69	3.15
6Z912	5.44	2.45	6Z916	4.69	3.15
6Z913	5.44	2.45			

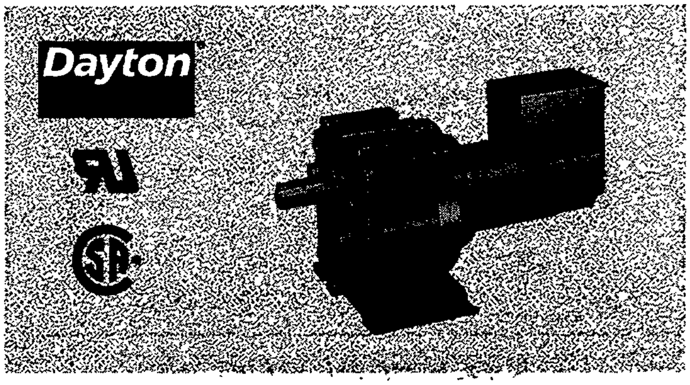


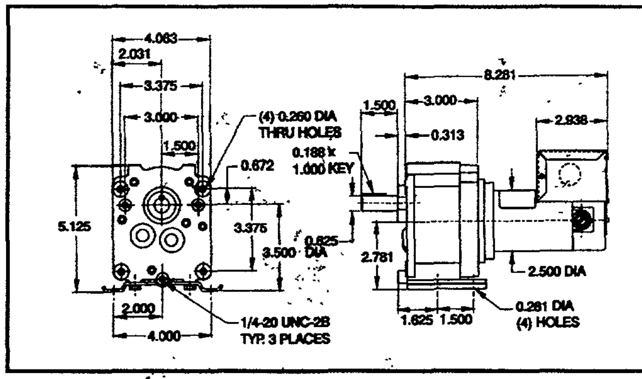
Optional Mounting Bracket for Nos. 6Z910 thru 6Z916 attaches to face of gear box to provide floor, wall or ceiling mount. Includes steel bracket and four screws. Dayton brand.

No. 2A754. Shpg. wt. 0.7 lbs. List $14.00. Each **$10.37**

PARTS AVAILABLE FOR MANY DC GEARMOTORS, CALL 1-800-323-0620

90 VDC PERMANENT MAGNET PARALLEL SHAFT GEARMOTORS



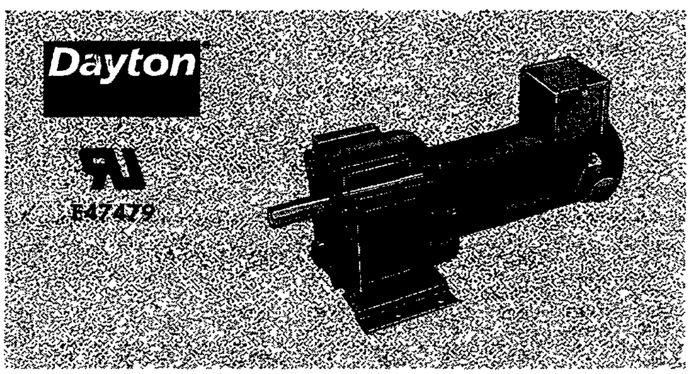


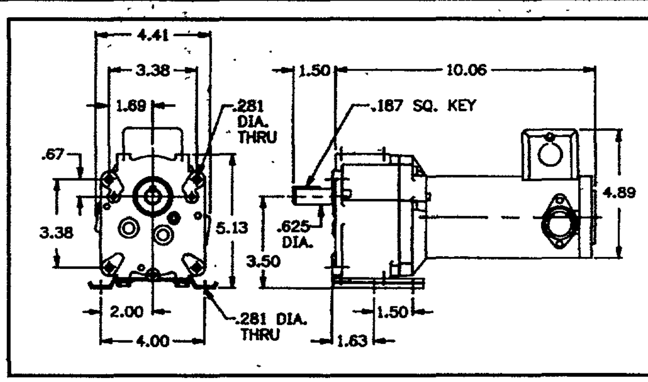
27 TO 250 IN.-LBS., HIGH TORQUE

Gearcase: Die-cast aluminum
Lubrication: Permanent heavy fluid gear oil
Gears: Hardened steel; 1st stage helical, subsequent stages spur
Bearings: Needle roller and thrust balls on case; ball on motor
Seals: Spring-loaded lip-type on input and output shafts
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Brushes: Externally replaceable
Ambient: 40°C
Duty: Continuous
Enclosure: TENV
Approvals: Nos. 6A193 and 6A194 are CSA Certified (68769); Nos. 4Z131-4Z134 are UL Recognized (E47479)
Warranty: 2 Year

90 VDC PERMANENT MAGNET TENV

Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Full-Load Amps at 90 VDC	Gear Ratio	Stock No.	List	Each
5	227	150	1/20	0.4	336:1	6A193	$300.00	$230.25
9	250	150	1/20	0.6	208:1	6A194	300.00	230.25
18	150	150	1/20	0.6	101:1	4Z134	300.00	230.25
34	82	150	1/20	0.6	53:1	4Z133	300.00	230.25
51	55	150	1/20	0.6	35:1	4Z132	300.00	230.25
109	27	150	1/20	0.6	16.5:1	4Z131	300.00	230.25





43 TO 280 IN.-LBS., HIGH TORQUE

Gearcase: Die-cast aluminum
Lubrication: Permanent heavy fluid gear oil
Gears: Hardened steel
Bearings: Needle roller and thrust balls on case; ball on motor
Seals: On input and output shafts
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Brushes: Externally replaceable
Ambient: 40°C
Duty: Continuous
Enclosure: TENV
Warranty: 2 Year

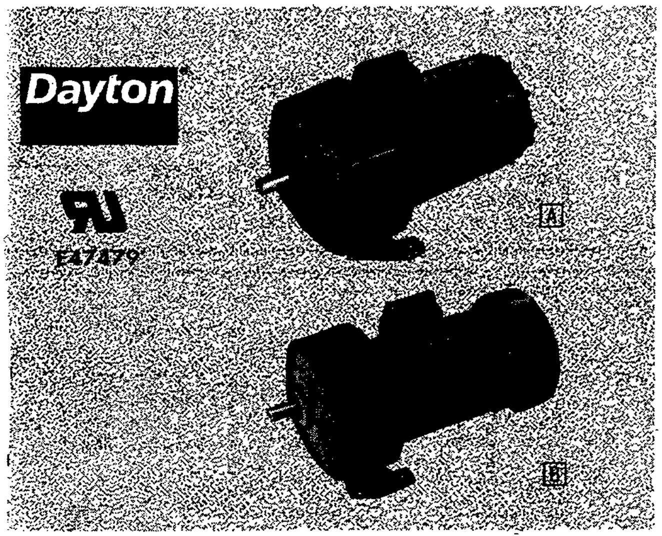
90 VDC PERMANENT MAGNET TENV

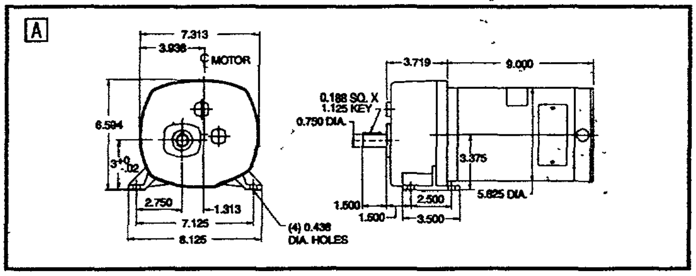
Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Full-Load Amps at 90 VDC	Gear Ratio	Stock No.	List	Each	Shpg Wt.
24	280	150	1/8	1.5	77:1	4Z130	$384.00	$285.50	13.(
31	244	150	1/8	1.5	58:1	4Z383	384.00	285.50	13.(
54	130	150	1/8	1.5	34:1	4Z129	352.00	262.00	12.0
61	113	150	1/8	1.5	30:1	4Z382	352.00	262.25	13.0
92	77	150	1/8	1.5	20:1	4Z381	352.00	262.25	13.0
167	43	150	1/8	1.5	11:1	4Z128	352.00	262.25	13.0

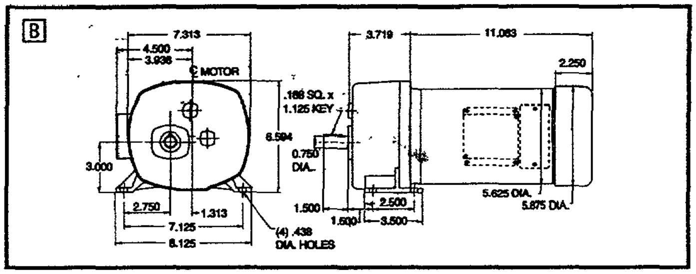
PARTS AVAILABLE FOR MANY DC GEARMOTORS, CALL 1-800-323-0620

90 VDC PERMANENT MAGNET PARALLEL SHAFT GEARMOTOR & SPEED CONTROL

PARALLEL SHAFT GEARMOTORS







101 TO 1112 IN.-LBS., HIGH TORQUE

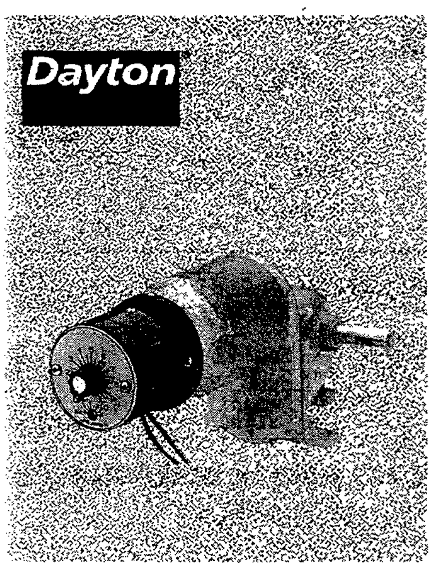
rcase: Die-cast aluminum
rication: Permanent, heavy d gear oil
ars: Hardened steel, 1st ge helical, spur subsequent ges
arings: Heavy-duty ball and edle roller and thrust balls case; ball on motor
als: Lip-type on input and tput shafts

Mounting: All position
Rotation: Reversible
Thermal Protection: None
Brushes: Extra large for long life
Ambient: 40°C
Duty: Continuous
Enclosure: A TENV; B TEFC
Warranty: 2 Year

PARTS AVAILABLE FOR MANY DC GEARMOTORS, CALL 1-800-323-0620

Key	Name-plate RPM	Full-Load Torque In.-Lbs.	Over-hung Load Lbs.	Input HP	Full-Load Amps at 90 VDC	Gear Ratio	Stock No.	List	Each	Shpg. Wt.
90 VDC PERMANENT MAGNET TENV										
A	8	1087	325	1/4	2.75	195.9:1	**6Z406**	$609.00	**$468.00**	32.0
A	13	960	325	1/4	2.75	130.8:1	**6Z407**	609.00	**468.00**	32.0
A	20	727	325	1/4	2.75	86.5:1	**6Z408**	609.00	**468.00**	32.0
A	40	353	325	1/4	2.75	41:1	**6Z409**	609.00	**468.00**	32.0
A	60	238	325	1/4	2.75	28:1	**6Z410**	609.00	**468.00**	32.0
A	90	152	325	1/4	2.75	19.3:1	**6Z411**	609.00	**468.00**	32.0
A	146	101	325	1/4	2.75	11.8:1	**6Z412**	609.00	**468.00**	32.0
90 VDC PERMANENT MAGNET TEFC										
B	20	1112	325	1/2	5.0	86.5:1	**6Z413**	660.00	**507.50**	40.0
B	34	822	325	1/2	5.0	50.3:1	**6Z414**	660.00	**507.50**	40.0
B	40	705	325	1/2	5.0	41:1	**6Z415**	660.00	**507.50**	40.0
B	60	476	325	1/2	5.0	28:1	**6Z416**	660.00	**507.50**	40.0
B	90	305	325	1/2	5.0	19.3:1	**6Z417**	660.00	**507.50**	40.0
B	146	202	325	1/2	5.0	11.8:1	**6Z418**	660.00	**507.50**	37.0

DIRECT MOUNT GEARMOTOR SPEED CONTROL



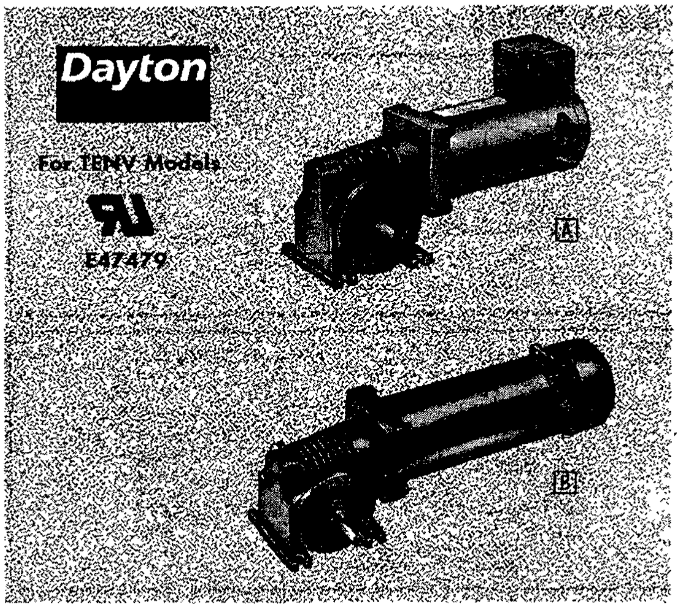
- Mounts directly to many Dayton permanent magnet DC gearmotors
- Can be panel mounted for use with many other 90V PMDC gearmotors
- Ideal for applications that require convenient speed adjustment right at the gearmotor
- Eliminates need to run long wires from controller to gearmotor, offering streamlined, compact drive package
- Full wave unfiltered control with free-wheeling diode
- Made of strong Noryl plastic
- Adjustments: On-Off speed knob and current limit (0.2-4.0 amps) and min./max. speed
- Adaptable to von Weise models VW07, VW31, VW33, VW62, VW80, VW83, VW94, VW88, VW89 using 90 VDC permanent magnet motors

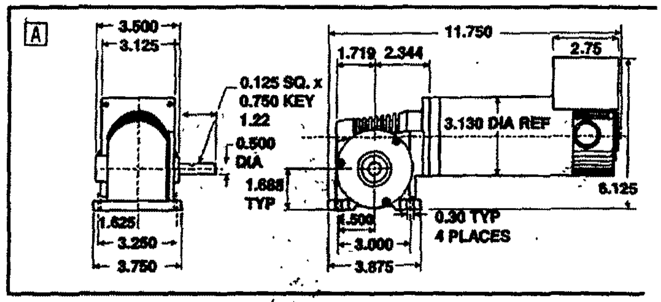
Input Volts (60 Hz)	HP Range	Arm. Volts	Constant Torque Spd. Range	Speed Reg.	Stock No.	List	Each	Shpg. Wt.
115	1/35-1/6	90	15:1	10-30%	**6A191**	$75.00	**$57.50**	0.5

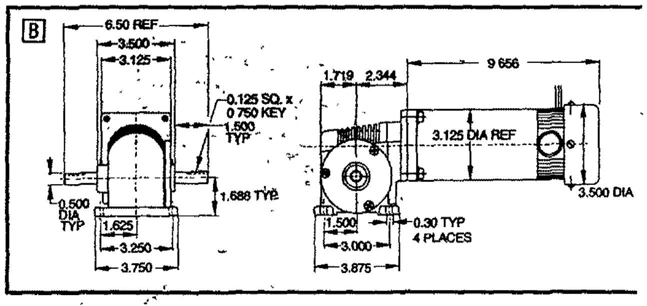
GEARMOTOR/MOTOR COMPATIBILITY

Mounts Directly to rear of Nos.:	Mounts remotely with panel to Nos.:			
4Z530 thru 4Z533	6A192 thru 6A194	4Z128 thru 4Z134	4Z381 thru 4Z383	4Z534 thru 4Z539
4Z534 thru 4Z539	1L491	4Z135 thru 4Z138	4Z528	4Z723 thru 4Z728
4Z723 thru 4Z728	1L492	4Z140 thru 4Z142	4Z530 thru 4Z533	6Z910 thru 6Z916

90 VDC PERMANENT MAGNET RIGHT ANGLE GEARMOTORS



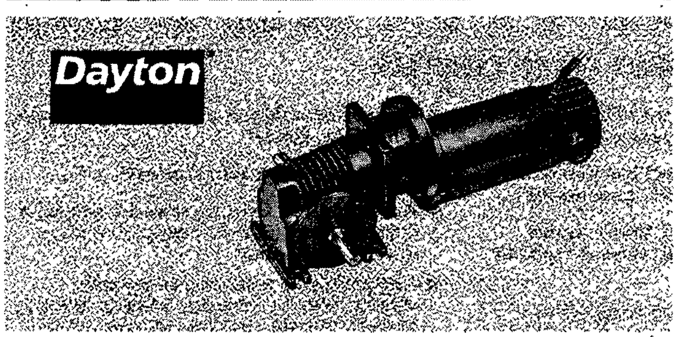


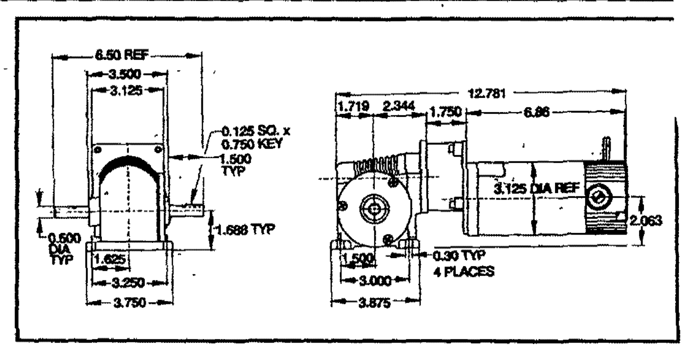


36 TO 140 IN.-LBS., HIGH TORQUE

Gearcase: Die-cast aluminum
Lubrication: Oil filled
Gears: Worm, hardened steel; output gear bronze alloy
Bearings: Needle/ball on case; ball on motor
Seals: Lip-type on input and output shafts
Mounting: All position; except with input motor down (under gear head)
Rotation: Reversible
Thermal Protection: None
Output Shaft:
[A] 1/8 HP single shafted
[B] 1/4 HP double shafted
Brushes: Externally replaceable
Ambient: 40°C
Duty: Continuous
Enclosure: [A] TENV; [B] TEFC
Warranty: 2 Year

Key	Name-plate RPM	Full-Load Torque In.-Lbs.	Over-hung Load Lbs.	Input HP	Full-Load Amps at 90 VDC	Gear Ratio	Stock No.	List	Each	Sh[illegible]
90 VDC PERMANENT MAGNET TENV										
A	30	102	175	1/8	1.5	60:1	**4Z138**	$430.00	**$330.75**	1[illegible]
A	40	88	175	1/8	1.5	45:1	**6A192**	430.00	**330.75**	1[illegible]
A	60	74	175	1/8	1.5	30:1	**4Z137**	430.00	**330.75**	15
A	90	59	175	1/8	1.5	20.5:1	**4Z136**	430.00	**330.75**	14
A	180	36	175	1/8	1.5	10.3:1	**4Z135**	430.00	**330.75**	15
90 VDC PERMANENT MAGNET TEFC										
B	30	200	200	1/4	2.8	60:1	**1L496**	569.00	**437.00**	17
B	40	160	200	1/4	2.8	45:1	**1L497**	569.00	**437.00**	1[illegible]
B	60	120	200	1/4	2.8	30:1	**1L498**	569.00	**437.00**	16
B	90	95	200	1/4	2.8	20.5:1	**1L499**	569.00	**437.00**	17.[illegible]
B	180	55	200	1/4	2.8	10.3:1	**1L500**	569.00	**437.00**	17.[illegible]





200 TO 215 IN.-LBS., HIGH TORQUE

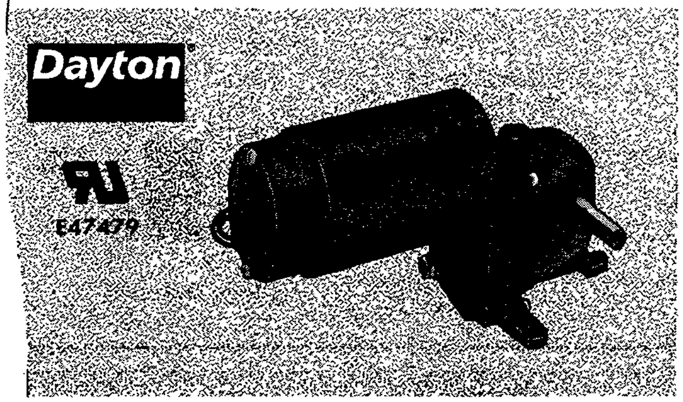
Gearcase: Die-cast aluminum
Lubrication: Oil filled
Gears: 1st stage steel, helical; 2nd stage hardened steel worm, bronze alloy
Bearings: Needle/ball on case; ball on motor
Seals: Lip-type on input and output shafts
Mounting: All position, except with input motor down (under gear head)
Rotation: Reversible
Thermal Protection: None
Output Shaft: 1/10 HP double shafted
Brushes: Externally replaceable
Ambient: 40°C
Duty: Continuous
Enclosure: TENV
Warranty: 2 Year

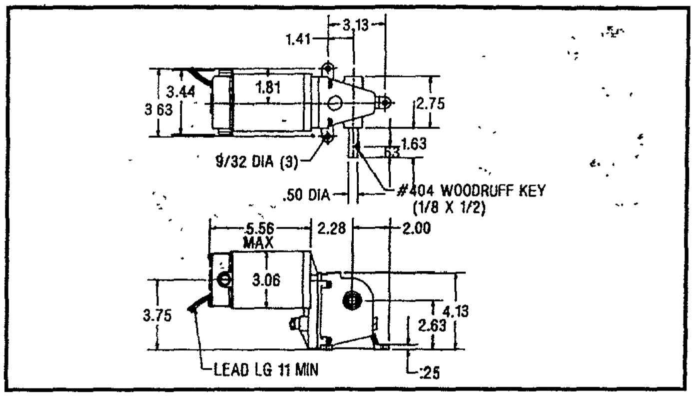
Name-plate RPM	Full-Load Torque In.-Lbs.	Over-hung Load Lbs.	Input HP	Full-Load Amps at 90 VDC	Gear Ratio	Stock No.	List	Each	Shpg. Wt.
90 VDC PERMANENT MAGNET TENV									
5	215	200	1/10	0.8	351:1	**1L491**	$620.00	**$476.75**	14.0
22	200	200	1/10	1.3	81:1	**1L492**	620.00	**476.75**	15.0

PARTS AVAILABLE FOR MANY DC GEARMOTORS, CALL 1-800-323-0620

RIGHT ANGLE 90 VDC GEARMOTORS AND UNIVERSAL 115V AC/DC GEARMOTORS

90 VDC RIGHT ANGLE GEARMOTORS





34 TO 340 IN.-LBS.

ircase: Zinc die-cast
rication: Grease packed
brs: Input gear, steel; worm, rdened steel; output gear, t iron
arings: Bronze sleeve on e; ball on motor
ls: On output shaft

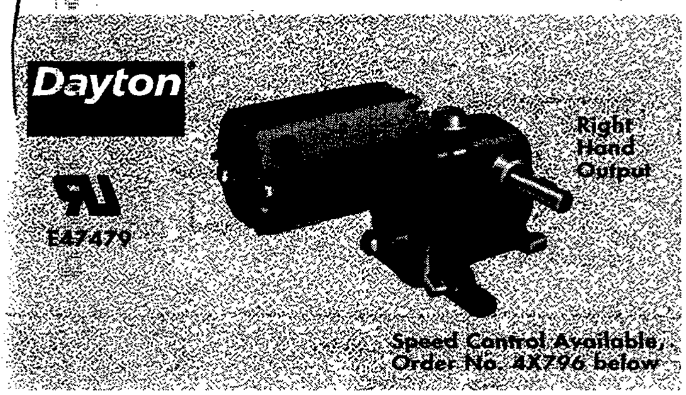
Mounting: All-position
Rotation: Reversible
Thermal Protection: None
Brushes: Externally replaceable
Ambient: 40°C
Duty: Continuous
Enclosure: TENV

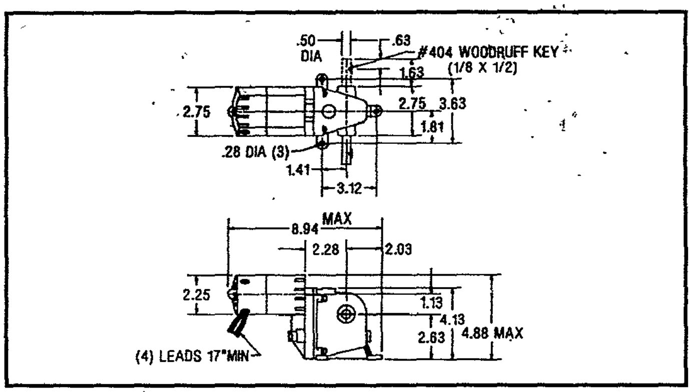
90 VDC PERMANENT MAGNET TENV

Name-plate RPM	F/L Torque In.-Lbs.	Overhung Load Lbs.	Input HP	F/L Amps at 90 VDC	Gear Ratio	Stock No.	List	Each	Shpg. Wt.
3.2	340*	100	1/12	0.80	525:1	**4Z723**	$265.00	**$203.50**	10.0
6	177	100	1/12	0.83	275:1	**4Z724**	265.00	**203.50**	10.0
9.9	228	100	1/12	0.83	167:1	**4Z725**	265.00	**203.50**	10.0
23.5	102	100	1/12	0.83	70:1	**4Z726**	265.00	**203.50**	10.0
45	56	100	1/12	0.83	37:1	**4Z727**	265.00	**203.50**	10.0
89	34	100	1/10	0.89	37:1	**4Z728**	265.00	**203.50**	10.0

(*) Intermittent rating. If continuous application, rating is 250 in.-lbs.

UNIVERSAL 115V AC/DC RIGHT ANGLE GEARMOTOR





27 TO 250 IN.-LBS.

Gearcase: Zinc die-cast
Lubrication: Grease packed
Gears: Input gear, phenolic and steel; output gear, cast iron
Bearings: Bronze sleeve on both case and motor
Seals: On output shaft
Mounting: All position
Rotation: Reversible

Thermal Protection: None
Input HP: 1/15
Brushes: Replaceable; approx. 300 hours life
Ambient: 40°C
Duty: Continuous
Enclosure: Vented
Speed Control: Adaptable to No. 4X796

UNIVERSAL 115V AC/DC 50/60 Hz

Name-plate RPM	No Load Speed RPM	Full-Load Torque In.-Lbs.	Over-hung Load Lbs.	Gear Ratio	Full-Load Amps at 115V	Stock No.† Right Hand Output	Stock No.† Left Hand Output	List	Each	Shpg. Wt.
2.8*	9	250	100	1787:1	1.3	**2Z797**	**1L486**	$177.00	**$135.70**	6.0
6.7	24	162	100	745:1	1.3	**2Z798**	**1L485**	177.00	**135.70**	6.0
12.8	37	110	100	390:1	1.3	**2Z799**	**1L484**	177.00	**135.70**	6.0
21	66	100	100	238:1	1.3	**2Z800**	**1L483**	177.00	**135.70**	6.0
21	66	100	100	238:1	1.3	**2Z801‡**	—	177.00	**135.70**	6.1
50	176	45	100	100:1	1.3	**2Z802**	**1L482**	177.00	**135.70**	6.0
100	306	27	100	52:1	1.3	**2Z803**	**1L481**	177.00	**135.70**	6.2

(*) No. 1L486 is 4 RPM. (†) Output shaft viewed facing lead end of motor.
(‡) Double output shaft.

REPLACEMENT PARTS FOR AC/DC GEARMOTORS

No. 2M184. Input 115V, 5000 RPM, AC/DC Motor. Shpg. wt. 2.7 lbs. List $89.00. Each...**$66.45**

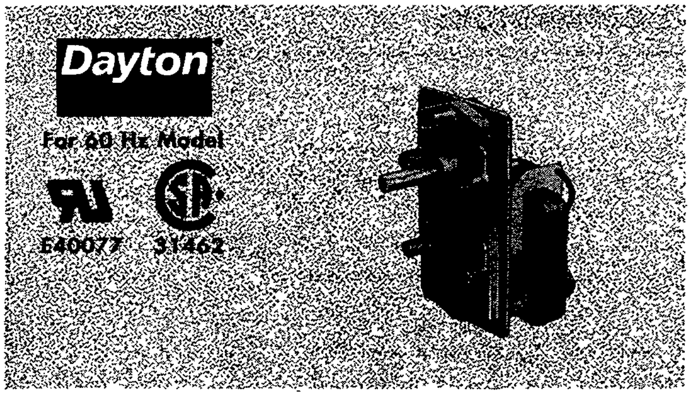
No. 1R410. Replacement Brushes (Pkg. of 6). Shpg. wt. 0.1 lbs. List $24.00. Each...**$18.45**

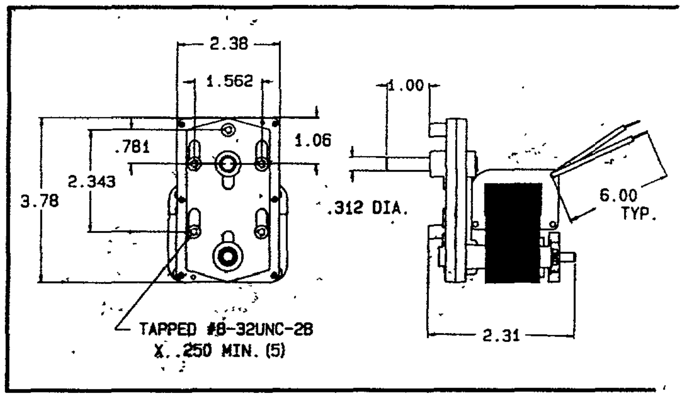
REPLACEMENT ARMATURE AVAILABLE, CALL 1-800-323-0620

SPEED CONTROL FOR AC/DC GEARMOTOR

No. 4X796. 5 Amp Speed Control. Shpg. wt. 0.3 lbs. List ...$26.26. Each...**$23.01**

SUBFRACTIONAL AC GEARMOTORS





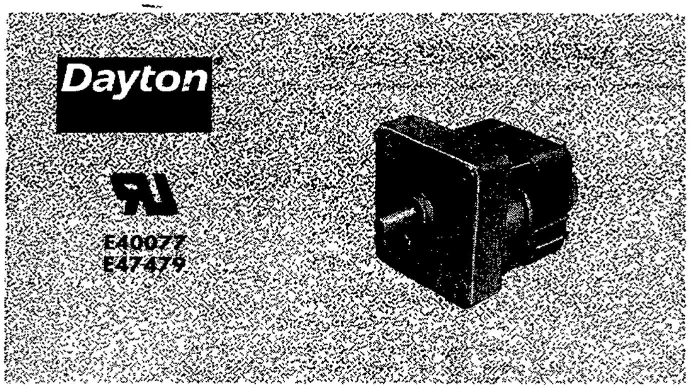
18 IN.-LBS.

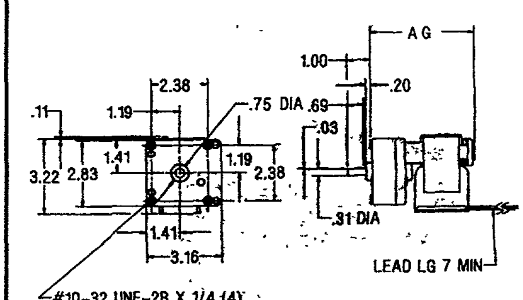
Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Delrin and steel
Bearings: Porous bronze sleeve on both case and motor
Mounting: All position
Rotation: CW facing output shaft
Thermal Protection: Impedance

SHADED POLE

Torque In.-Lbs. Start	Torque In.-Lbs. Run	Overhung Load Lbs.	Input HP	Gear Ratio	115V, 60 Hz Name-plate RPM	115V, 60 Hz Full-Load Amps	115V, 60 Hz Stock No.	220-240V, 50 Hz Name-plate RPM	220-240V, 50 Hz Full-Load Amps	220-240V, 50 Hz Stock No.	List	Each	S
18	18	3.5	1/250	734:1	4	0.32	**3M098**	3.3	0.2	**1L452**	$30.78	**$27.75**	1

PARTS AVAILABLE FOR MANY AC GEARMOTORS, CALL 1-800-323-0620





Stock No.	AG
2Z804	3.6"
2Z805	3.6
2Z806	3.6
2Z807	4.1
2Z808	3.85
2Z809	3.85
2Z810	3.85
2Z811	3.85
2Z812	3.85

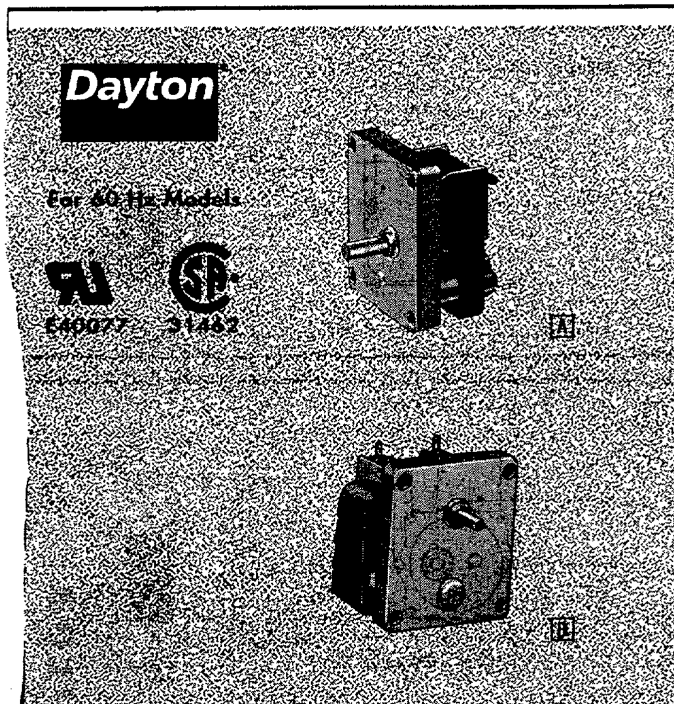
1.18 TO 50 IN.-LBS.

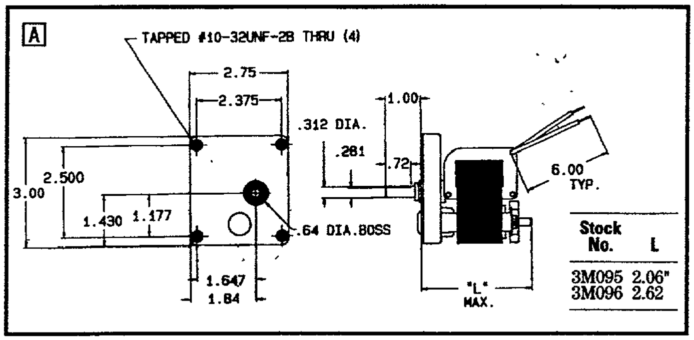
Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Heat treated cut steel and acetal
Bearings: Porous bronze sleeve on both case and motor
Mounting: All position
Rotation: CW facing output shaft
Thermal Protection: Impedance

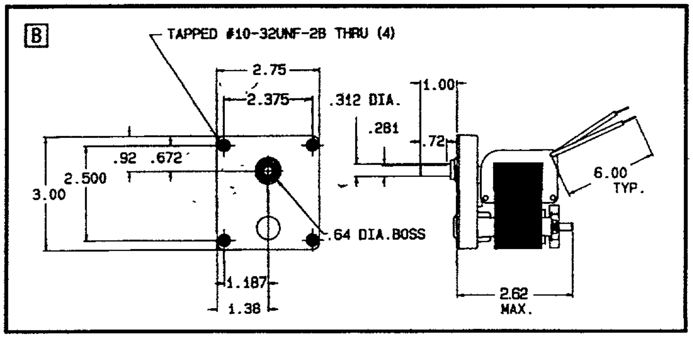
SHADED POLE—115V, 60 Hz

Torque In.-Lbs. Start	Torque In.-Lbs. Run	Overhung Load Lbs.	Input HP	Gear Ratio	Name-plate RPM	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.
50	50	50	1/400	2965:1	1	0.3	**2Z804**	$54.00	**$40.90**	2.5
25	25	50	1/400	1471:1	2	0.4	**2Z805**	54.00	**40.90**	2.6
21.50	22.5	50	1/330	495:1	6	0.4	**2Z806**	54.00	**40.90**	2.3
25	25.7	50	1/135	250:1	12	0.4	**2Z807**	54.00	**40.90**	3.3
10.50	15.2	50	1/120	149:1	20	0.5	**2Z808**	54.00	**40.90**	3.8
6.50	11.6	50	1/120	96:1	30	0.5	**2Z809**	54.00	**40.90**	3.3
3.25	4.7	50	1/120	48:1	60	0.4	**2Z810**	54.00	**40.90**	3.3
1.50	2.7	50	1/120	24:1	120	0.4	**2Z811**	54.00	**40.90**	3.5
0.75	1.18	50	1/120	15:1	200	0.4	**2Z812**	54.00	**40.90**	3 5

SUBFRACTIONAL AC GEARMOTORS





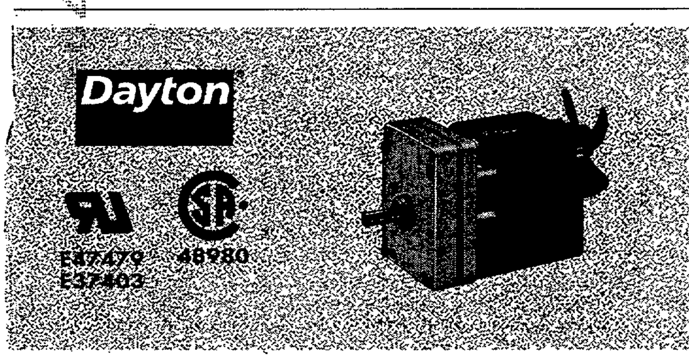


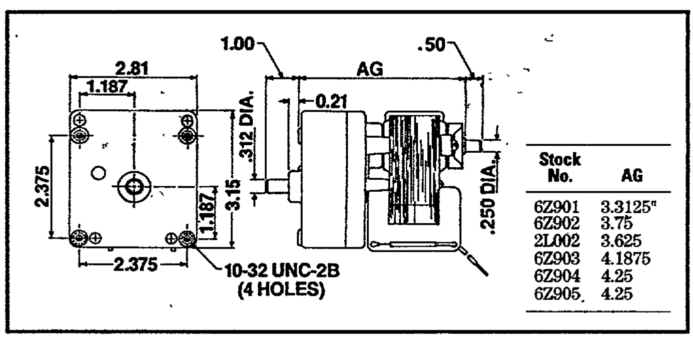
4 TO 50 IN.-LBS.

arcase: Zinc die-cast
brication: Grease filled
ears: Delrin and steel
earings: Porous bronze sleeve on both se and motor
ounting: All position
tation: CW facing output shaft
ermal Protection: Impedance

SHADED POLE

						115V, 60 Hz			220-240V, 50 Hz					
Key	Torque In.-Lbs. Start	Torque In.-Lbs. Run	Overhung Load Lbs.	Input HP	Gear Ratio	Name-plate RPM	Full-Load Amps	Stock No.	Name-plate RPM	Full-Load Amps	Stock No.	List	Each	Shpg. Wt.
A	50	50	3.5	1/250	2645:1	1	0.32	**3M095**	0.9	0.2	**1L449**	$34.28	**$30.90**	1.8
A	27	35	3.5	1/100	439:1	7	0.55	**3M096**	5.8	0.3	**1L450**	34.28	**30.90**	2.7
B	9.5	13	3.5	1/100	166:1	18	0.55	**3M099**	16	0.3	**1L453**	34.28	**30.90**	2.6
B	6.75	9.25	3.5	1/100	125:1	25	0.55	**3M100**	21	0.3	**1L454**	34.28	**30.90**	2.7
B	5	7	3.5	1/100	90.4:1	35	0.55	**3M101**	29	0.3	**1L455**	34.28	**30.90**	2.7
B	3	4	3.5	1/100	65.6:1	50	0.55	**3M097**	41	0.3	**1L451**	34.28	**30.90**	2.5





3.3 TO 100 IN.-LBS., HIGH TORQUE

Gearcase: Gasketed zinc die-cast with screws
Lubrication: Grease filled
Gears: Hardened steel and phenolic
Bearings: Roller on case; ball and porous bronze sleeve on motor
Mounting: All position
Rotation: CW facing output shaft
Thermal Protection: Auto
Warranty: 2 Year

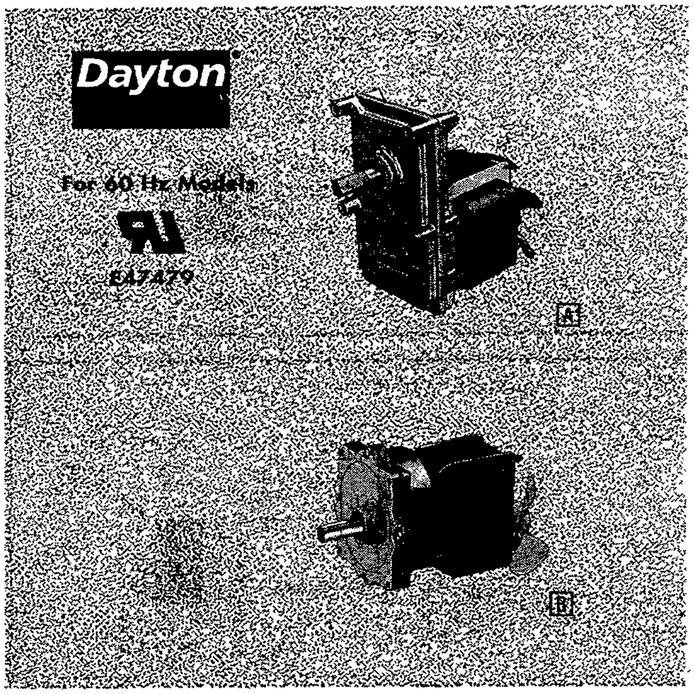
SHADED POLE—115V, 60/50 Hz*

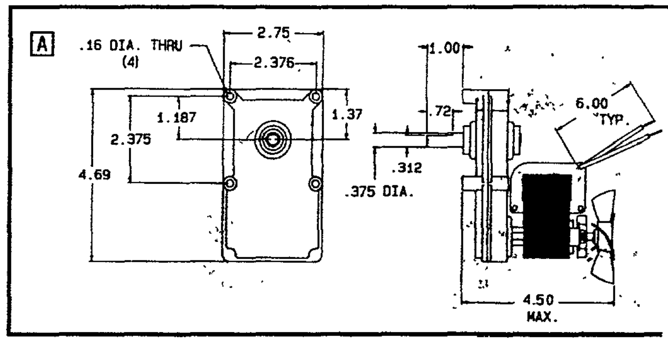
Torque In.-Lbs. Start	Torque In.-Lbs. Run	Overhung Load Lbs.	Input HP	Gear Ratio	Name-plate RPM	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.
100	100	65	1/150	6860:1	0.5	0.26	**6Z901**	$75.00	**$57.00**	3.4
100	100	65	1/100	3237.24:1	1	0.47	**6Z902**	75.00	**57.00**	3.4
40	50	50	1/100	487.56:1	6	0.46	**2L002**	70.00	**53.40**	2.9
40	50	22	1/85	268.47:1	12	1.02	**6Z903**	70.00	**53.40**	3.6
4	5	2.6	1/45	16.81:1	200	1.51	**6Z904**	70.00	**53.40**	3.8
3	3.3	1.5	1/45	9.625:1	360	1.51	**6Z905**	70.00	**53.40**	3.8

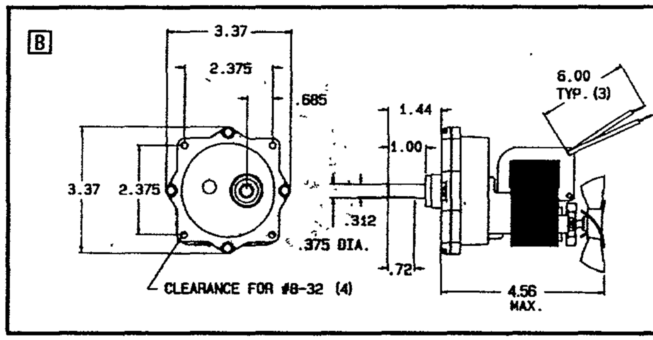
(*) All ratings are at 60 Hz. Also operable at 50 Hz at 5/6 of 60 Hz rating for HP, amps, and RPM.

PARTS AVAILABLE FOR ALL AC GEARMOTORS, CALL 1-800-323-0620

SUBFRACTIONAL AC GEARMOTORS





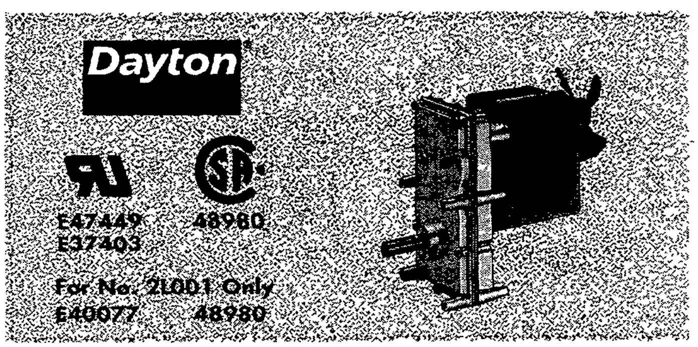


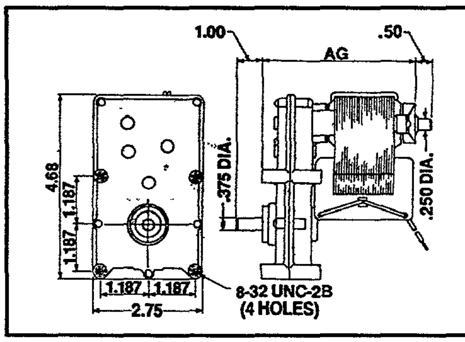
12 TO 120 IN.-LBS.

Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Phenolic, sintered and cut steel
Bearings: Porous bronze sleeve on both case and motor
Mounting: All position
Rotation: CW facing output shaft
Thermal Protection: None

SHADED POLE

Key	Torque In.-Lbs. Start	Torque In.-Lbs. Run	Over-hung Load Lbs.	Input HP	Gear Ratio	115V, 60 Hz Name-plate RPM	115V, 60 Hz Full-Load Amps	115V, 60 Hz Stock No.	220-240V, 50 Hz Name-plate RPM	220-240V, 50 Hz Full-Load Amps	220-240V, 50 Hz Stock No.	List	Each	Shpg. Wt.
A	100	120	7	1/60	525:1	6	1.65	**3M104**	5	0.7	**1L457**	$59.73	**$53.80**	4.3
B	50	65	7	1/60	291:1	10	1.65	**3M103**	8.3	0.7	**1L456**	74.00	**66.60**	4.1
A	21.5	21.5	7	1/60	126:1	25	1.5	**4Z146**	21	0.7	**1L458**	59.73	**53.80**	4.4
A	10	12	7	1/60	63.6:1	50	1.2	**4Z147**	42	0.7	**1L459**	59.73	**53.80**	4.4





Stock No.	AG
2L001	3.625"
6Z906	3.625
6Z907	4.0
6Z908	4.0
6Z909	4.25

25 TO 150 IN.-LBS., HIGH TORQUE

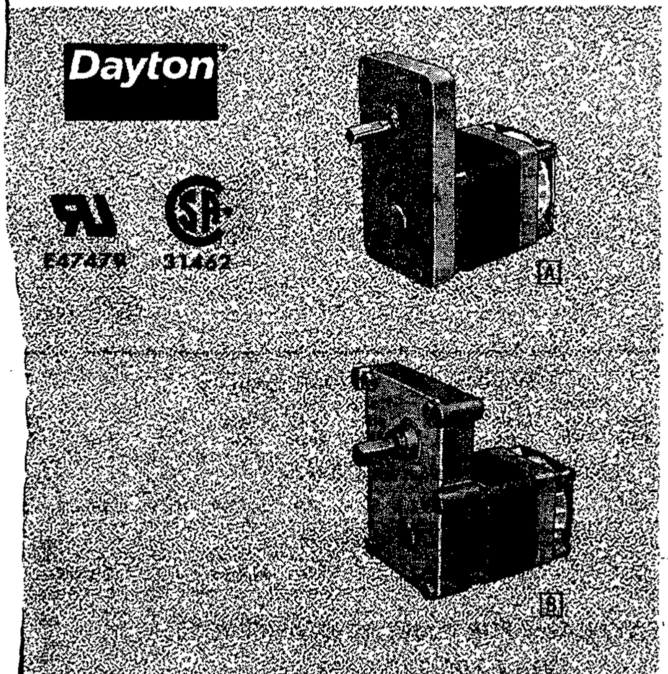
Gearcase: Zinc die-cast with screws and gasketed cover
Lubrication: Grease filled
Gears: Hardened steel and phenolic
Bearings: Roller on case; ball and porous bronze sleeve on motor
Mounting: All position
Rotation: CW facing output shaft
Thermal Protection: Auto
Warranty: 2 Year

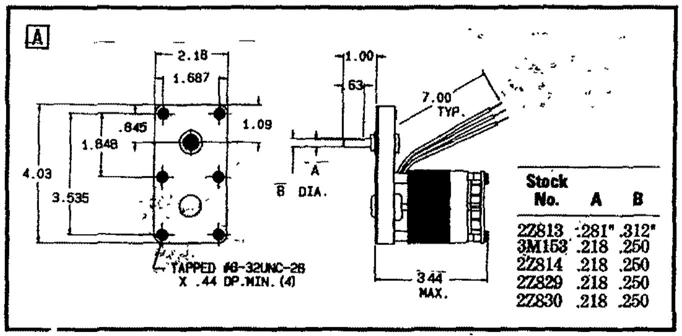
SHADED POLE—115V, 60/50 Hz*

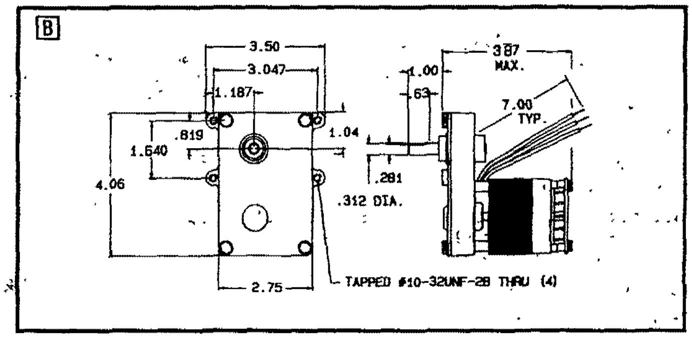
Torque In.-Lbs. Start	Torque In.-Lbs. Run	Overhung Load Lbs.	Input HP	Gear Ratio	Name-plate RPM	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.
80	100	56	1/100	2685.27:1	1	0.55	**2L001**	$80.00	**$61.20**	3.6
80	130	56	1/90	786.61:1	4	0.85	**6Z906**	80.00	**61.20**	3.0
150	150	65	1/85	562.52:1	6	1.06	**6Z907**	80.00	**61.20**	4.8
25	45	15	1/85	124.11:1	25	1.06	**6Z908**	80.00	**61.20**	4.8
15	25	10	1/45	60.71:1	50	1.40	**6Z909**	80.00	**61.20**	4.9

(*) All ratings are at 60 Hz. Also operable at 50 Hz at 5/6 of 60 Hz ratings for HP, amps, and RPM.

SUBFRACTIONAL AC AND AC BRAKE TYPE GEARMOTORS







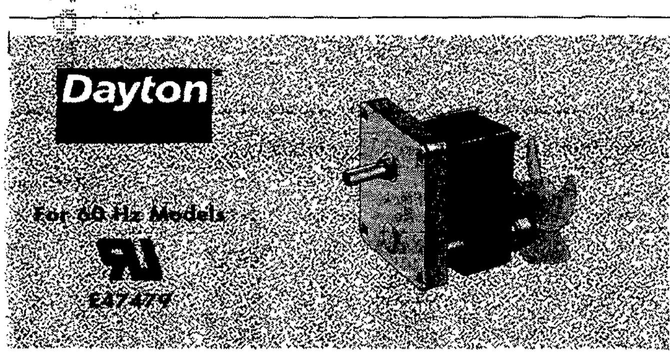
2 TO 30 IN.-LBS.

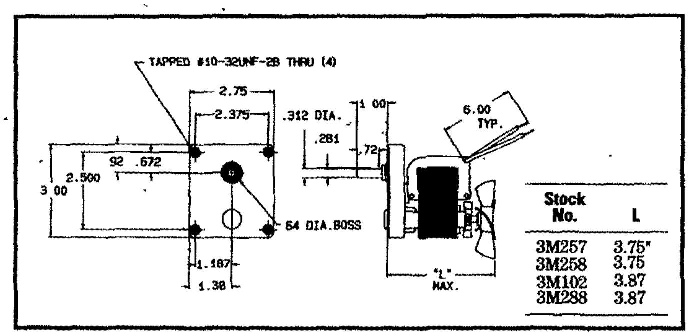
arcase: Zinc die-cast with steel cover
rication: Grease filled
ars: Phenolic and metal
arings: Porous bronze sleeve on both ise and motor
ounting: All position
tation: Reversible
ermal Protection: None
pacitor: Required, Order No. 6X652 separately

PSC—115V, 60/50 Hz*

Key	Torque In.-Lbs. Start	Torque In.-Lbs. Run	Overhung Load Lbs.	Input HP	Gear Ratio	Name-plate RPM	Full-Load Amps	Stock No.	List	Each	Shpg. Wt.	Capacitor Req'd. Stock No.	Capacitor Req'd. Each
A	45	30	3.5	1/100	286:1	4	0.3	**2Z813**	$52.77	**$47.50**	2.5	6X652	$4.49
B	31	26	3.5	1/100	286:1	10	0.3	**3M154**	68.32	**61.50**	3.0	6X652	4.49
A	18	13	3.5	1/100	140:1	20	0.3	**3M153**	52.77	**47.50**	2.4	6X652	4.49
A	10	7.5	3.5	1/100	98.5:1	30	0.3	**2Z814**	52.77	**47.50**	2.4	6X652	4.49
A	7	4	3.5	1/100	50.5:1	60	0.3	**2Z829**	52.77	**47.50**	2.4	6X652	4.49
A	3.5	2	3.5	1/100	30.9:1	100	0.3	**2Z830**	52.77	**47.50**	2.3	6X652	4.49

(*) All ratings are at 60 Hz. Also operable at 50 Hz at 5/6 of 60 Hz ratings for HP, amps, and RPM.





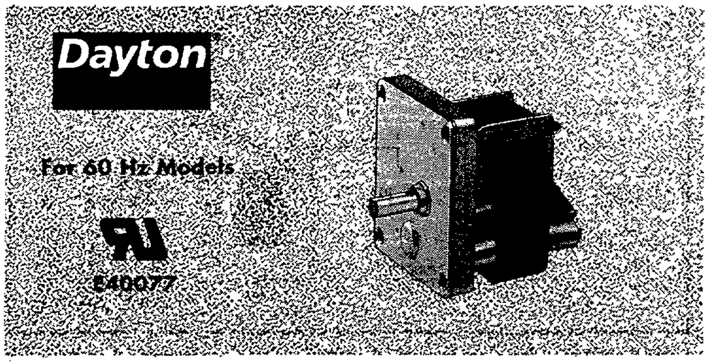
BRAKE TYPE, 6 TO 13 IN.-LBS.

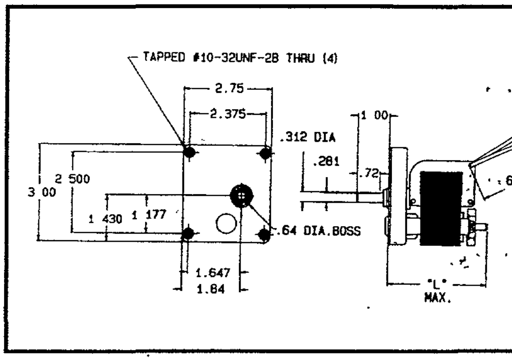
Gearcase: Zinc die-cast with steel cover
Lubrication: Grease filled
Gears: Sintered steel and phenolic
Bearings: Porous bronze sleeve on both case and motor
Mounting: All position on models with magnetic brake; output shaft horizontal only on models with cone brake
Rotation: CW facing output shaft
Thermal Protection: None

Torque In.-Lbs. Start	Torque In.-Lbs. Run	Overhung Load Lbs.	Input HP	Gear Ratio	115V, 60 Hz Name-plate RPM	115V, 60 Hz Full-Load Amps	115V, 60 Hz Stock No.	220-240V, 50 Hz Name-plate RPM	220-240V, 50 Hz Full-Load Amps	220-240V, 50 Hz Stock No.	List	Each	Shpg. Wt.
SHADED POLE, MAGNETIC BRAKE													
11	13	3.5	1/70	125:1	25	0.75	**3M257**	21	0.36	**1L466**	$45.39	**$40.90**	2.9
4.5	6	3.5	1/70	65.6:1	50	0.75	**3M258**	42	0.36	**1L465**	46.96	**42.30**	3.0
SHADED POLE, CONE BRAKE													
11	13	3.5	1/70	125:1	25	0.75	**3M102**	21	0.36	**1L468**	41.02	**36.95**	2.6
4.5	6	3.5	1/70	65.6:1	50	0.75	**3M288**	42	0.36	**1L467**	44.17	**39.80**	2.7

PARTS AVAILABLE FOR MANY AC GEARMOTORS, CALL 1-800-323-0620

SUBFRACTIONAL AC GEARMOTORS BRAKE TYPE





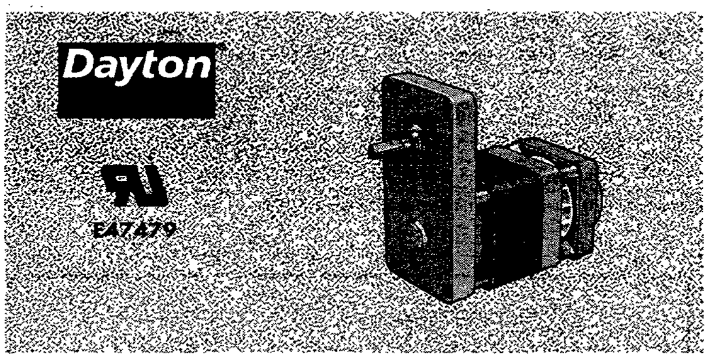
Stock No.	L
3M231	3.12"
3M287	3.18

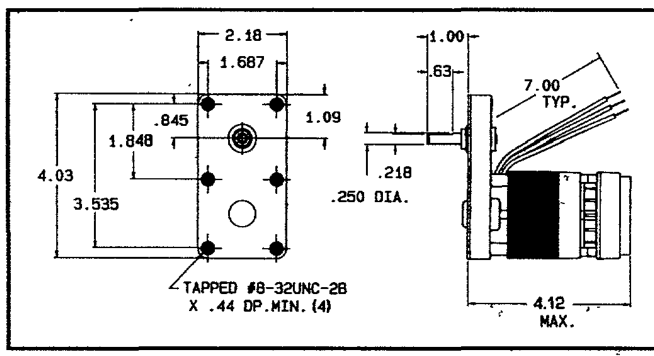
30 IN.-LBS.

Gearcase: Zinc die-cast with steel cover
Lubrication: Grease filled
Gears: Sintered steel
Bearings: Porous bronze sleeve on both case and motor
Mounting: All position on models with magnetic brake; output shaft horizontal only on models with cone brake
Rotation: CW facing output shaft
Thermal Protection: Impedance
Brake: Magnetic clapper type or cone type

Torque In.-Lbs. Start	Torque In.-Lbs. Run	Overhung Load Lbs.	Input HP	Gear Ratio	115V, 60 Hz Name-plate RPM	115V, 60 Hz Full-Load Amps	115V, 60 Hz Stock No.	220-240V, 50 Hz Name-plate RPM	220-240V, 50 Hz Full-Load Amps	220-240V, 50 Hz Stock No.	List	Each	Sl W
SHADED POLE, MAGNETIC BRAKE													
22	30	3.5	1/100	439:1	7	0.55	**3M231**	5.8	0.19	**1L464**	$48.46	**$43.65**	3
SHADED POLE, CONE BRAKE													
22	30	3.5	1/100	439:1	7	0.55	**3M287**	5.8	0.3	**1L463**	40.71	**36.65**	2

PARTS AVAILABLE FOR MANY AC GEARMOTORS, CALL 1-800-323-0620





1.5 TO 42 IN.-LBS.

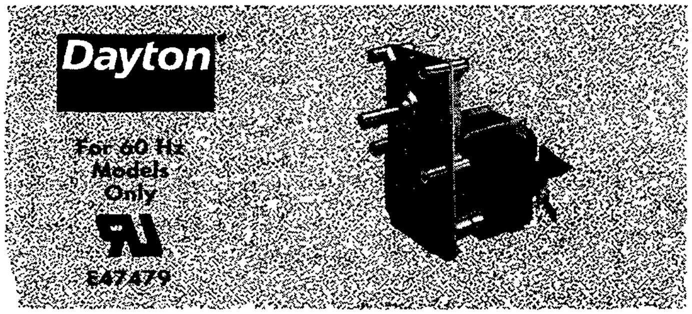
Gearcase: Zinc die-cast with steel cover
Lubrication: Grease filled
Gears: Phenolic and steel
Bearings: Porous bronze sleeve on both case and motor
Mounting: Output shaft horizontal only
Rotation: Reversible
Thermal Protection: None
Brake: Spring-loaded friction type
Capacitor: Required, order No. 6X652 separately

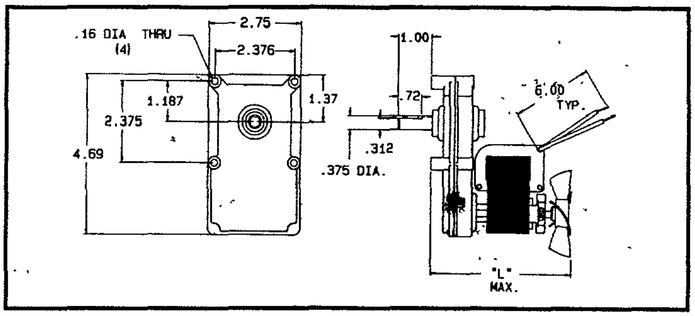
PSC, FRICTION-TYPE BRAKE—115V, 60/50 Hz*

Torque In.-Lbs. Start	Torque In.-Lbs. Run	Overhung Load Lbs.	Input HP	Gear Ratio	Name-plate RPM	Full-Load Amps	Stock No.	List	Each	Shpg. Wt.	Capacitor Req'd. Stock No.	Capacitor Req'd. Each
56	42	3.5	1/100	2645:1	1	0.35	**4Z451**	$59.19	**$53.30**	3.0	6X652	$4.49
35	26	3.5	1/100	758:1	4	0.35	**4Z452**	59.19	**53.30**	2.6	6X652	4.49
24	18	3.5	1/100	439:1	7	0.35	**4Z453**	59.19	**53.30**	2.8	6X652	4.49
15	11	3.5	1/100	250:1	12	0.35	**4Z454**	59.19	**53.30**	3.0	6X652	4.49
11	8	3.5	1/100	173:1	18	0.35	**4Z455**	59.19	**53.30**	3.0	6X652	4.49
8	6	3.5	1/100	125:1	25	0.35	**4Z456**	59.19	**53.30**	2.5	6X652	4.49
5	4	3.5	1/100	90.4:1	36	0.35	**4Z457**	59.19	**53.30**	2.6	6X652	4.49
3.5	2.6	3.5	1/100	58.6:1	55	0.35	**4Z458**	59.19	**53.30**	3.0	6X652	4.49
2	1.5	3.5	1/100	30.9:1	98	0.35	**4Z459**	59.19	**53.30**	2.5	6X652	4.49

(*) Ratings are for 60 Hz. Also operable at 50 Hz at 5/6 of 60 Hz ratings for HP, amps, and RPM.

SUBFRACTIONAL AC GEARMOTORS
BRAKE TYPE



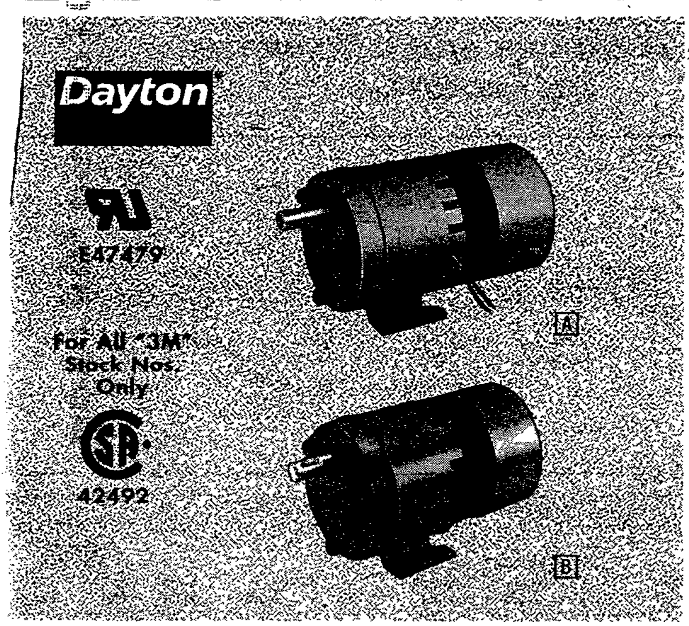


12 TO 72 IN.-LBS.

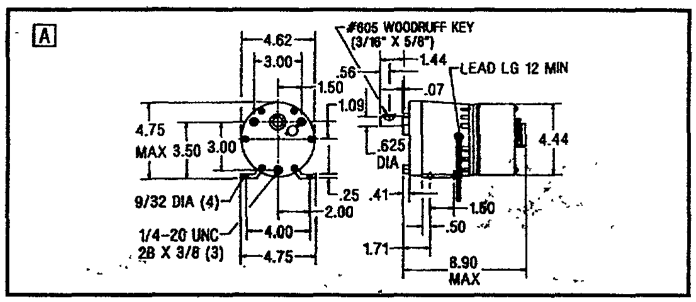
ıarcase: Zinc die-cast with steel cover
ɔrication: Grease filled
ɑrs: Phenolic and steel
ɑrings: Porous bronze sleeve on both se and motor
unting: All position
tation: CW facing output shaft
ermal Protection: None
ake: Magnetic clapper type

SHADED POLE, MAGNETIC BRAKE													
					115V, 60 Hz			220-240V, 50 Hz					
Torque In-Lbs. Start	Torque In-Lbs. Run	Overhung Load Lbs.	Input HP	Gear Ratio	Name-plate RPM	Full-Load Amps	Stock No.	Name-plate RPM	Full-Load Amps	Stock No.	List	Each	Shpg. Wt.
72	72	7	1/60	525:1	6	1.4	**4Z148**	5	0.65	**1L462**	$71.49	**$64.35**	4.5
18	21	7	1/60	126:1	25	1.5	**4Z149**	21	0.65	**1L461**	71.49	**64.35**	4.5
9	12	7	1/60	63.6:1	50	1.2	**4Z150**	42	0.65	**1L460**	71.49	**64.35**	4.5

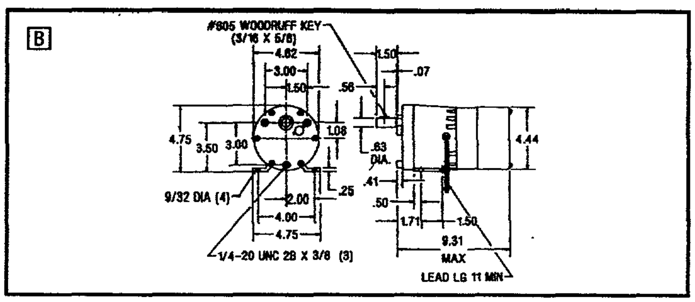
PARTS AVAILABLE FOR MANY AC GEARMOTORS, CALL 1-800-323-0620



A



B

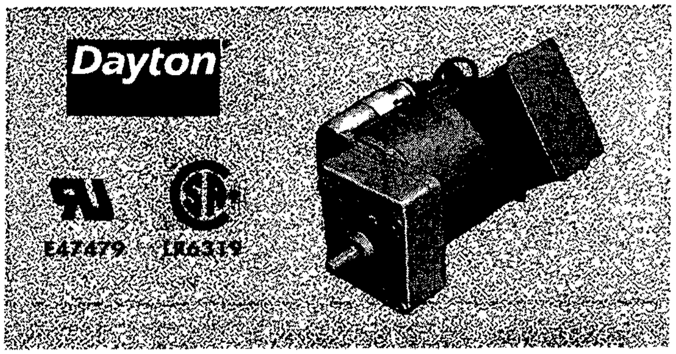


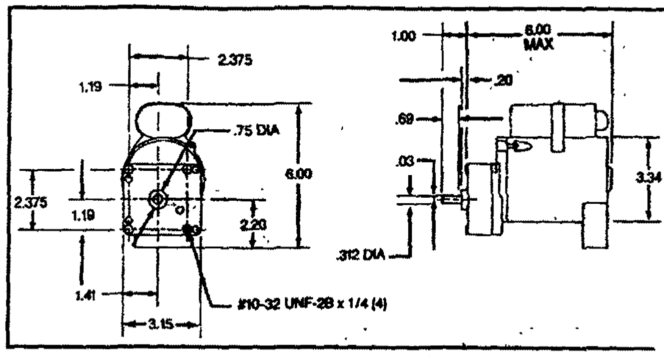
59 TO 113 IN.-LBS.

Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Phenolic and steel
Bearings: Porous bronze sleeve on case; ball on motor
Seals: On output shafts
Mounting: All position
Rotation: CW facing output shaft
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: Open fan cooled
Brake: A Ratchet type; B None

Key	Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps	Stock No.	List	Each	Shpg. Wt.
SHADED POLE, OPEN FAN COOLED, RATCHET PAWL-TYPE BRAKE—115V, 60 Hz										
A	2	113	150	1/10	739:1	2.6	**1L490**	$233.00	**$179.00**	12.0
A	6	113	150	1/10	250:1	2.6	**1L489**	233.00	**179.00**	12.0
A	12	113	150	1/10	128:1	2.6	**1L488**	233.00	**179.00**	12.0
A	30	113	150	1/10	26.6:1	2.6	**3M158**	233.00	**179.00**	12.0
A	60	59	150	1/10	52:1	2.6	**1L487**	233.00	**179.00**	12.0
SHADED POLE, OPEN FAN COOLED, NO BRAKE—115V, 60 Hz										
B	6	113	150	1/10	250:1	2.1	**3M135**	187.00	**143.55**	12.0
B	12	113	150	1/10	128:1	2.1	**3M136**	187.00	**143.55**	12.0
B	30	113	150	1/10	52:1	2.1	**3M137**	187.00	**143.55**	12.0
B	60	59	150	1/10	26.6:1	2.1	**3M138**	187.00	**143.55**	12.0

FRACTIONAL AC GEARMOTORS PARALLEL SHAFT





12 TO 50 IN.-LBS.

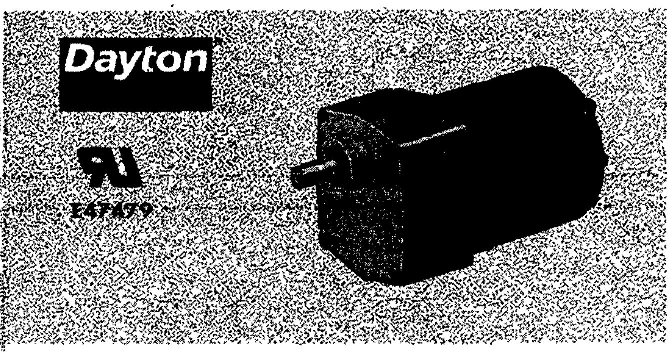
Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Steel, first stage Celcon
Bearings: Sleeve on both case and motors
Seals: On output shaft
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: TENV
Capacitor: Included

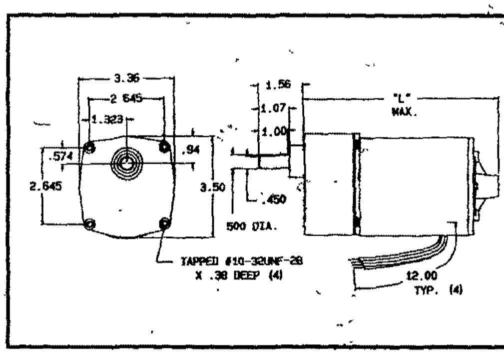
PSC, TENV—115/230V, 60/50 Hz*

Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.
3.5	50	50	1/250	975:1	0.42	**1L548**	$126.00	**$96.50**	7.0
7	50	50	1/125	482:1	0.42	**1L549**	126.00	**96.50**	6.9
35	50	50	1/25	98:1	0.56	**1L550**	126.00	**96.50**	6.0
67	30	50	1/25	50:1	0.61	**1L551**	126.00	**96.50**	7.5
107	20	50	1/20	31:1	0.64	**1L552**	126.00	**96.50**	6.0
185	12	50	1/20	18:1	0.65	**1L553**	126.00	**96.50**	6.0

(*) Ratings are for 60 Hz. Also operable at 50 Hz at 5/6 of 60 Hz ratings for HP, amps, and RPM.

PARTS AVAILABLE FOR MANY AC GEARMOTORS, CALL 1-800-323-0620





Stock No.	L
4Z062	6.31"
4Z063	6.81
4Z064	6.31
4Z065	6.31
4Z612	6.37
4Z613	6.37

12 TO 67 IN.-LBS.

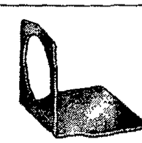
Gearcase: Die-cast alloy
Lubrication: Grease filled
Gears: Phenolic, sintered and cut steel
Bearings: Heavy-duty needle on output shaft on case; ball on motor
Seals: Grease seals on input and output shafts
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: TENV
Brake: Adaptable to No. 5X400 brake
Capacitor: Required, order No. 6X653 separately

PSC, TENV—115V, 60/50 Hz*

Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
14	67	50	1/60	108.6:1	0.38	**4Z062**	$124.46	**$112.05**	6.7	6X653	$4.49
28	50	50	1/25	58.1:1	0.51	**4Z063**	124.46	**112.05**	7.4	6X653	4.49
54	30	50	1/25	28.7:1	0.51	**4Z064**	126.90	**114.25**	6.3	6X653	4.49
95	20	50	1/25	15.7:1	0.59	**4Z065**	126.90	**114.25**	6.5	6X653	4.49
124	14	50	1/25	11.8:1	0.51	**4Z612**	126.90	**114.25**	6.8	6X653	4.49
154	12	50	1/25	10.5:1	0.59	**4Z613**	126.90	**114.25**	6.8	6X653	4.49

(*) Ratings are for 60 Hz. Also operable at 50 Hz at 5/6 of 60 Hz ratings for HP, amps, and RPM.

Optional Mounting Bracket attaches to face of gear box to provide floor, wall, or ceiling mount. Includes steel bracket and four screws. Dayton brand.
No. 2A754. Shpg. wt. 0.7 lbs. List $14.00. Each **$10.37**



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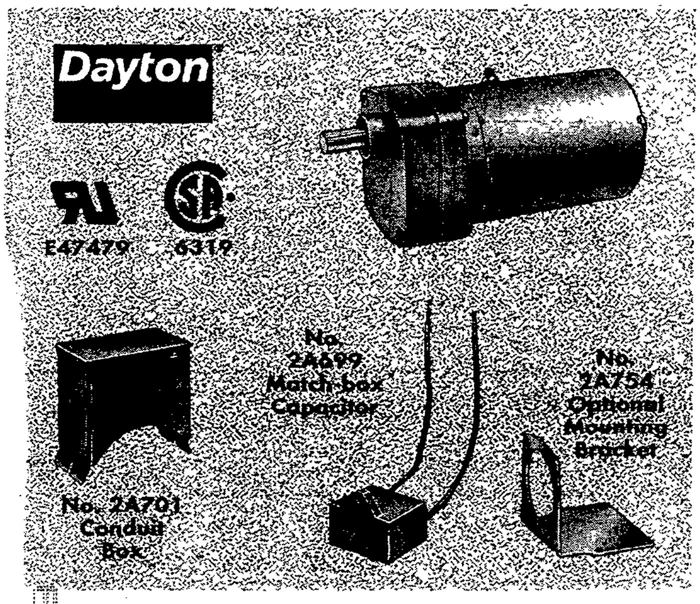
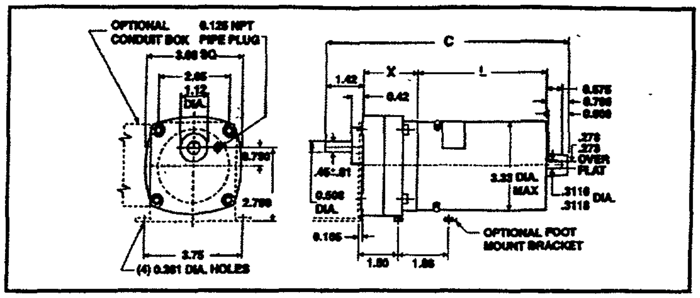
FRACTIONAL AC GEARMOTORS PARALLEL SHAFT





Stock No.	Dimensions (Inches) L	C	X	Stock No.	Dimensions (Inches) L	C	X
6A195	4.09	8.40	2.10	1L526	4.92	9.23	2.10
6A196	4.34	8.65	2.10	1L529	4.92	9.23	2.10
6A197	4.34	8.65	2.10	1L531	4.92	9.23	2.10
6A198	4.09	8.40	2.10	1L532	4.11	9.12	2.80
6Z073	3.46	8.47	2.80	1L517	4.92	9.23	2.10
6Z074	3.46	8.47	2.80	1L520	4.92	9.23	2.10
6Z075	3.46	8.47	2.80	1L523	4.92	9.23	2.10
6Z076	3.46	8.47	2.80	1L527	4.92	9.23	2.10
6Z077	4.09	8.40	2.10	1L528	4.92	9.23	2.10
6Z078	4.09	8.40	2.10	1L530	4.92	9.23	2.10
1L518	4.92	9.23	2.10	6Z079	4.09	8.40	2.10
1L519	4.11	9.12	2.80	6Z080	4.34	8.65	2.10
1L521	4.92	9.23	2.10	6Z081	4.34	8.65	2.10
1L522	4.11	9.12	2.80	6Z082	4,34	8.65	2.10
1L524	4.92	9.23	2.10	6Z083	4.34	8.65	2.10
1L525	4.11	9.12	2.80	6Z084	4.34	8.65	2.10

20 TO 100 IN.-LBS., HIGH TORQUE

earcase: Die-cast aluminum
brication: Permanent heavy gear oil
ears: 1st stage steel, helical; subsequent ages steel or heat treated powdered etal spur
earings: Heavy-duty needle on output haft on case; ball on motor
eals: Spring-loaded lip-type on input and utput shafts
ounting: All position
otation: Reversible
hermal Protection: None
Ambient: 40°C
Duty: Continuous
Brake: Adaptable to No. 5X400
Warranty: 2 Year

ACCESSORIES

Conduit Box Kit includes conduit box and cover. Capacitor mounting stud welded to inside cover. Accepts Nos. 2A699 and 2A700. "Matchbox" capacitors not included. Dayton brand.
No. 2A701. Shpg. wt. 0.5 lbs. List $5.16. Each....................................**$4.95**

4 MFD "Matchbox" Capacitor designed for use with conduit box No. 2A701 and 1/80 HP 115V gearmotors (only) listed on this page.
No. 2A699. Shpg. wt. 0.1 lbs. List $7.85. Each....................................**$7.27**

8 MFD "Matchbox" Capacitor (not shown) designed for use with conduit box No. 2A701 and 1/20 HP 115V gearmotors (only) listed on this page.
No. 2A700. Shpg. wt. 0.1 lbs. List $10.52. Each....................................**$9.88**

Mounting Bracket attaches to face of gear box to provide floor, wall, or ceiling mount. Includes steel bracket and four screws. Dayton brand.
No. 2A754. Shpg. wt. 0.7 lbs. List $14.00. Each....................................**$10.37**

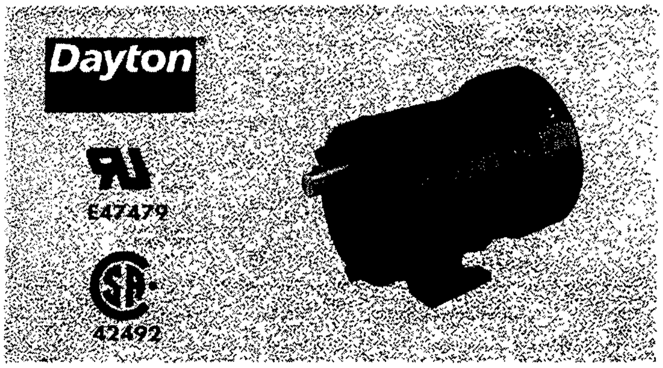
Name-plate RPM	F/L Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps	Stock No.	List	Each	Shpg. Wt.	Capacitor Req'd. Stock No.	Each
PSC, OPEN VENTILATED—115V, 60/50 Hz*											
1.2	100	90	1/80	1369:1	0.30	**6Z073**	$217.00	**$166.75**	5.9	6X652	$4.49
2.3	100	90	1/80	702:1	0.30	**6Z074**	217.00	**166.75**	5.7	6X652	4.49
4.5	100	90	1/80	362:1	0.30	**6Z075**	217.00	**166.75**	5.5	6X652	4.49
8.8	76	90	1/80	186:1	0.30	**6Z076**	217.00	**166.75**	5.3	6X652	4.49
16.7	100	90	1/20	96:1	0.62	**6Z077**	217.00	**166.75**	6.6	6X655	5.38
32.7	96	90	1/20	49:1	0.62	**6Z078**	217.00	**166.75**	6.4	6X655	5.38
63	49	90	1/20	25:1	0.62	**6Z079**	217.00	**166.75**	6.2	6X655	5.38
95	30	90	1/20	17:1	0.62	**6A195**	217.00	**166.75**	6.0	6X655	5.38
124	25	90	1/20	13:1	0.62	**6Z080**	217.00	**166.75**	6.0	6X655	5.38
154	20	90	1/20	10:1	0.62	**6A198**	217.00	**166.75**	6.0	6X655	5.38
PSC, OPEN VENTILATED—230V, 60 Hz; 220V, 50 Hz*											
1.2	100	90	1/80	1369:1	0.24	**1L532**	222.00	**170.75**	8.0	Included	
2.3	100	90	1/80	702:1	0.24	**1L525**	222.00	**170.75**	9.0	Included	
4.5	100	90	1/80	362:1	0.24	**1L522**	222.00	**170.75**	5.7	Included	
8.8	76	90	1/80	186:1	0.24	**1L519**	222.00	**170.75**	6.0	Included	
PSC, OPEN VENTILATED—230V, 60 Hz; 220-240V, 50 Hz*											
16.7	100	90	1/20	96:1	0.32	**1L526**	222.00	**170.75**	6.5	Included	
32.7	96	90	1/20	49:1	0.32	**1L524**	222.00	**170.75**	6.5	Included	
63	49	90	1/20	25:1	0.32	**1L521**	222.00	**170.75**	6.0	Included	
95	30	90	1/20	17:1	0.32	**1L518**	222.00	**170.75**	10.0	Included	
124	25	90	1/20	13:1	0.32	**1L531**	222.00	**170.75**	9.0	Included	
154	20	90	1/20	10:1	0.32	**1L529**	222.00	**170.75**	7.7	Included	
PSC, TENV—115V, 60 Hz											
16.7	100	90	1/20	96:1	0.62	**6Z081**	223.00	**171.25**	7.2	6X655	5.38
32.7	96	90	1/20	49:1	0.62	**6Z082**	223.00	**171.25**	7.0	6X655	5.38
63	49	90	1/20	25:1	0.62	**6Z083**	223.00	**171.25**	6.8	6X655	5.38
95	30	90	1/20	17:1	0.62	**6A197**	223.00	**171.25**	6.5	6X655	5.38
124	25	90	1/20	13:1	0.62	**6Z084**	223.00	**171.25**	6.6	6X655	5.38
154	20	90	1/20	10:1	0.62	**6A196**	223.00	**171.25**	6.0	6X655	5.38
PSC, TENV—230V, 60 Hz; 220V, 50 Hz*											
16.7	100	90	1/20	96:1	0.33	**1L527**	228.00	**175.25**	7.5	Included	
32.7	96	90	1/20	49:1	0.33	**1L523**	228.00	**175.25**	8.0	Included	
63	49	90	1/20	25:1	0.33	**1L520**	228.00	**175.25**	6.0	Included	
95	30	90	1/20	17:1	0.33	**1L517**	228.00	**175.25**	7.9	Included	
124	25	90	1/20	13:1	0.33	**1L530**	228.00	**175.25**	8.0	Included	
154	20	90	1/20	10:1	0.33	**1L528**	228.00	**175.25**	7.0	Included	

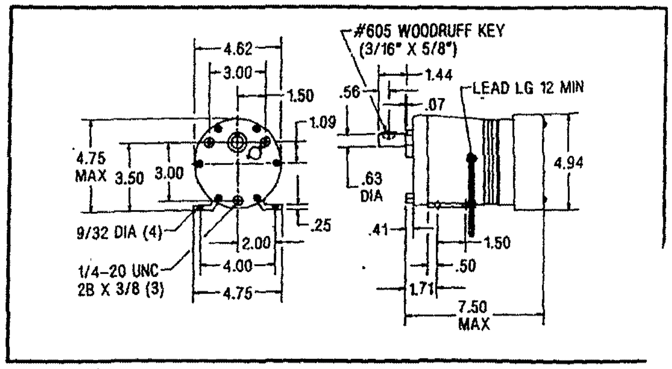
(*) All ratings are for 60 Hz. Also operable at 50 Hz at 5/6 of 60 Hz ratings for HP, amps, and RPM.

PARTS AVAILABLE FOR MANY AC GEARMOTORS,

CALL 1-800-323-0620

FRACTIONAL AC GEARMOTORS PARALLEL SHAFT



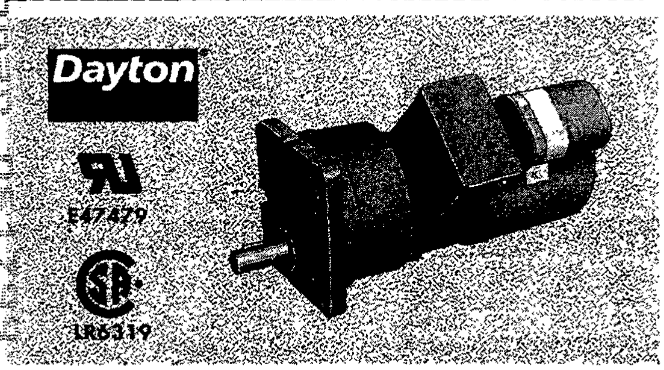


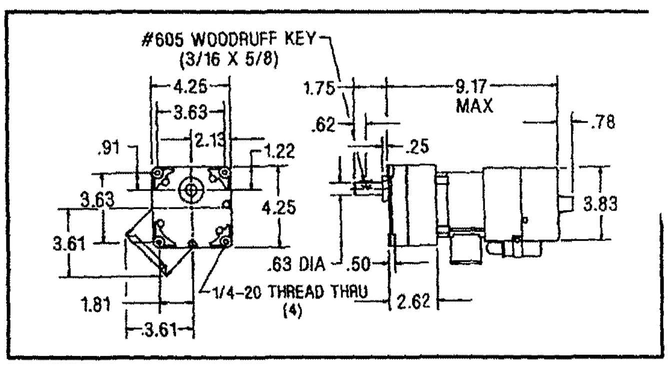
42 TO 113 IN.-LBS.

Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Phenolic and steel
Bearings: Porous bronze sleeve on case; ball on motor
Seals: On output shafts
Mounting: All position
Rotation: CW facing output shaft
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: TEFC

SHADED POLE, TEFC—115V, 60 Hz

Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115V	Stock No.	List	Each	Shpg Wt.
2	113	150	1/20	739:1	1.3	**3M125**	$187.00	**$143.55**	11.0
6	113	150	1/20	250:1	1.3	**3M126**	187.00	**143.55**	11.0
12	113	150	1/20	128:1	1.3	**3M127**	187.00	**143.55**	9.6
30	42	150	1/20	52:1	1.3	**3M128**	187.00	**143.55**	10.0





30 TO 150 IN.-LBS.

Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Steel/heat treated steel
Bearings: Needle/sleeve on case; ball on motor
Seals: On output shaft
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: TEFC
Brake: Adaptable to No. 5X400 using one disc in brake
Capacitor: Included

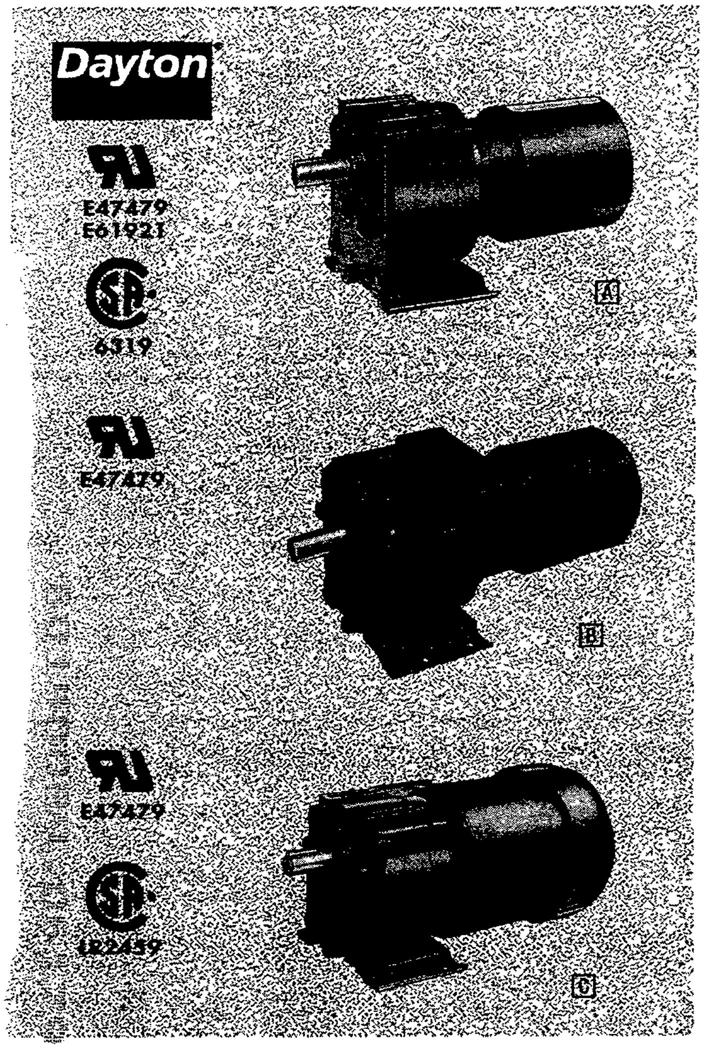
PSC, TEFC—115/230V, 60/50 Hz*

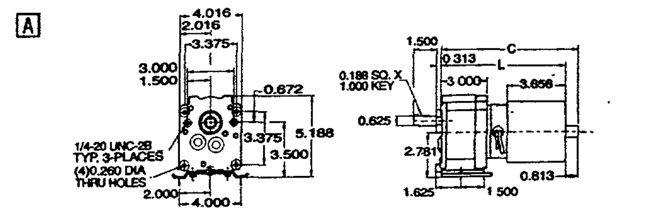
Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.
29	150	150	1/13	53:1	1.4	**1L586**	$317.00	**$243.75**	14.0
57	85	150	1/13	27:1	1.4	**1L587**	317.00	**243.75**	13.0
86	55	150	1/13	18:1	1.4	**1L588**	317.00	**243.75**	14.0
155	30	150	1/12	10:1	1.4	**1L589**	317.00	**243.75**	13.0

(*) All ratings are for 60 Hz. Also operable at 50 Hz at 5/6 of 60 Hz ratings for HP, amps, and RPM.

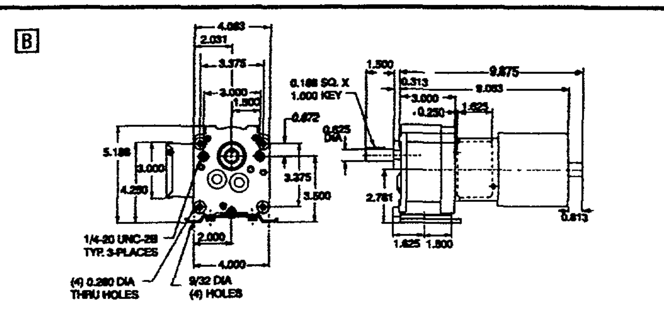
PARTS AVAILABLE FOR MANY AC GEARMOTORS, CALL 1-800-323-0620

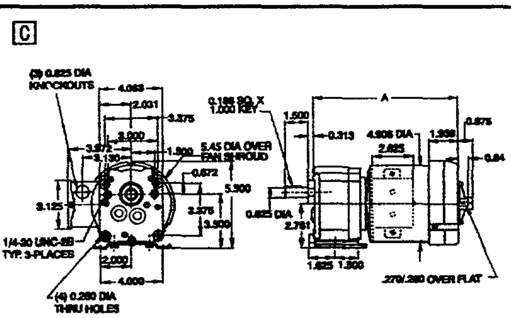
FRACTIONAL AC GEARMOTORS PARALLEL SHAFT





Stock No.	L	C	Stock No.	L	C
3M326	7.5"	8.313"	3M329	8.063"	8.875"
3M327	7.5	8.313	3M330	8.063	8.875
3M328	7.625	8.438			





Stock No.	A
6K325	8.75"
6K328	9.125
6K329	9.125
6K331	9.125
6K332	9.125
6K334	9.125

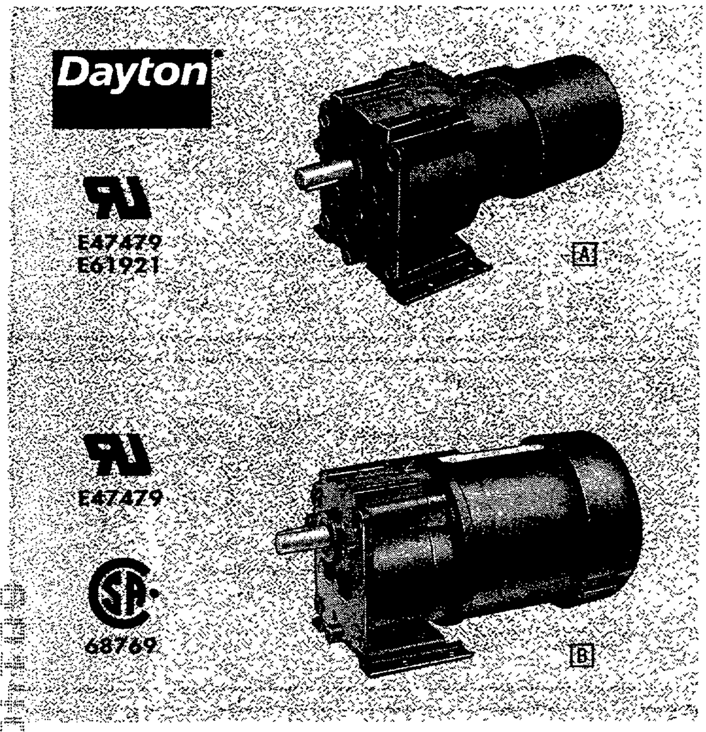
38 TO 350 IN.-LBS., HIGH TORQUE

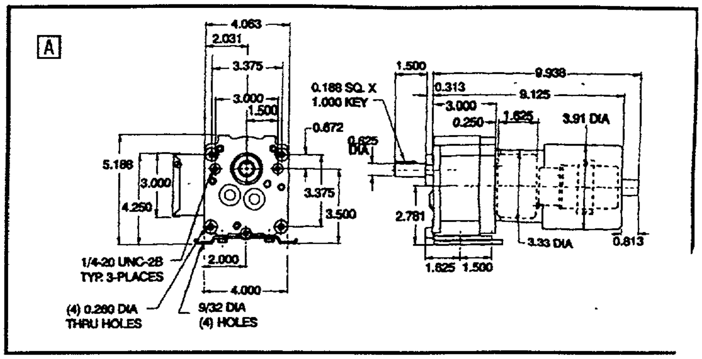
Gearcase: Die-cast aluminum
Lubrication: Permanent heavy gear oil
Gears: Hardened steel; helical 1st stage, spur subsequent stages, AGMA Class 9
Bearings: Heavy-duty needle roller and thrust balls on case; ball on motor
Seals: Lip-type on input and output shafts
Mounting: All position
Rotation: CW facing output shaft on shaded pole models; reversible on split-phase models
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: TEFC
Brake: Adaptable to No. 5X400 brake
Warranty: 2 Year

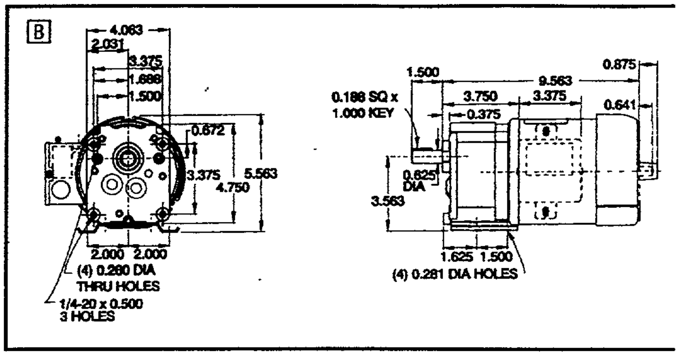
Key	Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Brake Discs Req'd.	Gear Ratio	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.
SHADED POLE, TEFC—115V, 60 Hz											
A	4	200	175	1/40	1	396:1	1.4	**3M326**	$262.00	**$201.00**	9.0
A	6	200	175	1/40	1	265:1	1.4	**3M327**	262.00	**201.00**	9.0
A	13.5	200	175	1/20	1	118:1	1.6	**3M328**	262.00	**201.00**	10.0
A	30	125	175	1/15	1	53:1	2.2	**3M329**	262.00	**201.00**	11.0
A	67.5	55	175	1/15	1	23:1	2.2	**3M330**	262.00	**201.00**	10.0
SPLIT-PHASE, TEFC—115V, 60 Hz											
B	13.5	200	175	1/15	1	118:1	1.7	**2Z817**	323.00	**248.25**	12.0
B	30	125	175	1/15	1	53:1	1.7	**6K303**	323.00	**248.25**	11.0
B	67.5	55	175	1/15	1	23:1	1.7	**2Z818**	323.00	**248.25**	11.0
B	100	38	175	1/15	1	17:1	1.7	**2Z841**	323.00	**248.25**	11.0
C	13.5	350	175	1/12	1	127.4:1	2.6	**6K325**	394.00	**303.00**	14.0
C	27	275	175	1/6	2	64.6:1	4.2	**6K328**	394.00	**303.00**	17.0
C	40	225	175	1/6	2	42.7:1	4.2	**6K329**	394.00	**303.00**	17.0
C	60	150	175	1/6	2	28.1:1	4.2	**6K331**	394.00	**303.00**	17.0
C	90	100	175	1/6	2	19.1:1	4.2	**6K332**	394.00	**303.00**	17.0
C	135	65	175	1/6	2	12.65:1	4.2	**6K334**	394.00	**303.00**	17.0

PARTS AVAILABLE FOR MANY AC GEARMOTORS, CALL 1-800-323-0620

FRACTIONAL AC GEARMOTORS PARALLEL SHAFT







30 TO 385 IN.-LBS., HIGH TORQUE

Gearcase: Die-cast aluminum
Lubrication: Permanent heavy gear oil
Gears: Hardened steel; helical 1st stage, spur subsequent stages, AGMA Class 9
Bearings: Heavy-duty needle roller and thrust balls on case; ball on motor
Seals: Lip-type on input and output shafts
Mounting: All position; can also be face mounted
Rotation: Reversible
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: TEFC
Brake: Adaptable to No. 5X400
Capacitor: Included
Warranty: 2 Year

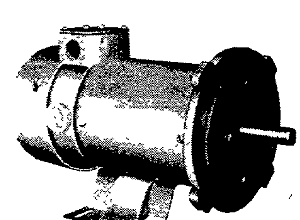
PSC, TEFC—115/230V, 60 Hz; 110/220V, 50 Hz*

Key	Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Brake Discs Req'd.	Gear Ratio	Full-Load Amps at 115/230V	Stock No.	List	Each	Shpg. Wt.
A	15	202	175	1/15	1	107:1	1.3/.65	**4Z518**	$378.00	**$264.50**	12.0
A	30	135	175	1/15	1	53:1	1.3/.65	**4Z519**	312.00	**240.00**	12.0
A	45	92	175	1/15	1	35:1	1.3/.65	**4Z520**	312.00	**240.00**	12.0
A	70	61	175	1/15	1	23:1	1.3/.65	**4Z521**	312.00	**240.00**	12.0
A	97	43	175	1/15	1	16.5:1	1.3/.65	**4Z522**	312.00	**240.00**	12.0
A	139	30	175	1/15	1	11.5:1	1.3/.65	**4Z523**	312.00	**240.00**	12.0
B	8	320†	175	1/12	1	215:1	1.9/1.0	**6Z816**	388.00	**297.75**	17.0
B	16	385	175	1/6	1	102.4:1	2.3/1.2	**6Z817**	388.00	**297.75**	16.0
B	30	278	175	1/6	2	58.3:1	2.3/1.2	**6Z818**	388.00	**297.75**	17.0
B	40	210	175	1/6	2	42.9:1	2.3/1.2	**6Z819**	388.00	**297.75**	17.0
B	60	157	175	1/6	2	28:1	2.3/1.2	**6Z820**	388.00	**297.75**	17.0
B	90	100	175	1/6	2	19.1:1	2.3/1.2	**6Z821**	388.00	**297.75**	17.0
B	156	60	175	1/6	2	10.6:1	2.3/1.2	**6Z822**	388.00	**297.75**	17.0

(*) Ratings are for 60 Hz. Also operable at 50 Hz at 5/6 of 60 Hz ratings for HP, amps, and RPM.
(†) Motor limited.

PARTS AVAILABLE FOR MANY AC GEARMOTORS, CALL 1-800-323-0620

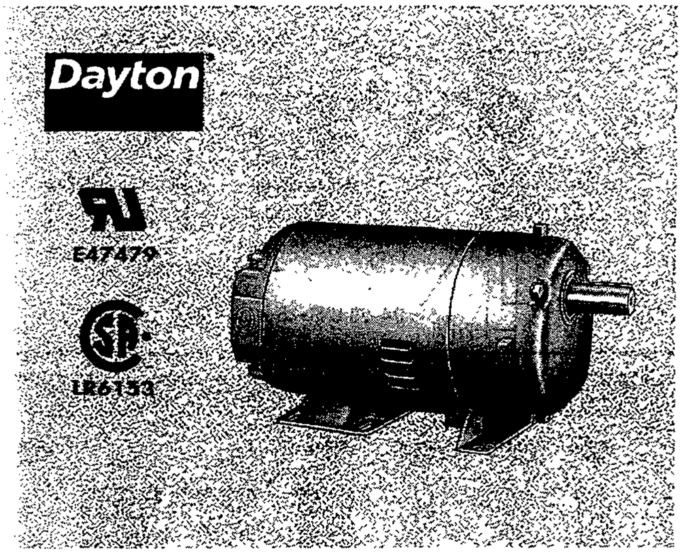
A WIDE SELECTION OF WASHDOWN PRODUCTS IS AVAILABLE

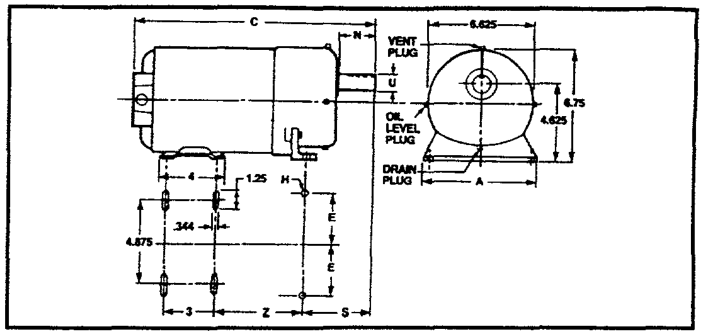


Washdown products are for applications in food, beverage, or chemical processing plants where product is constantly exposed to high pressure washdowns or other high humidity or wet environments. Many washdown products feature USDA approved corrosion-resistant white epoxy primer and paint to meet sanitary requirements.

For Washdown DC Speed Controls, **See Page 278.**
For Permanent Magnet DC Washdown Motors, **See Page 278.**
For AC Washdown Motors, **See Pages 152 thru 154.**
For UHMW-PE Plastic Washdown Bearings, **See Page 279.**
For Washdown Shaft Collars, **See Page 279.**
For Washdown Speed Reducers, **See Pages 268 and 277.**

FRACTIONAL AC GEARMOTORS PARALLEL SHAFT





Stock No.	Dimensions (Inches) A	C	E	H	N*	S	U	Z
2Z847	7.125	14.031	3.125	0.40625	2.25	4.375	1.0	4.75
2Z848	6.5	13.406	2.75	†	1.62	3.8125	0.625	4.6875
2Z849	6.5	13.406	2.75	†	1.62	3.8125	0.625	4.6875
2Z850	6.5	13.406	2.75	†	1.62	3.8125	0.625	4.6875
2Z851	6.5	14.031	2.75	†	1.62	3.8125	0.625	5.125

(*) Key dimension 3/16 x 3/16 x 1¹/₈" long; except No. 2Z847 is 1/4 x 1/4 x 1³/₈" long.
(†) 11/32W x 5/8"L elongated hole.

69 TO 438 IN.-LBS.

·arcase: Cast iron
orication: SAE #90 type EP differential
ars: Steel
arings: Ball on output shaft on case; ball i motor
als: Lip-type on input and output shafts
ounting: Horizontal
otation: Reversible
hermal Protection: None
mbient: 40°C
uty: Continuous
iclosure: Open dripproof

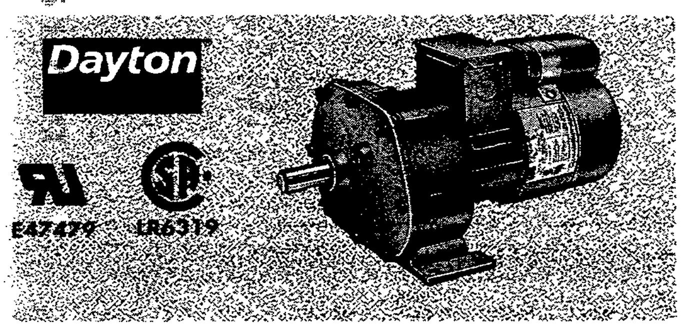
SPLIT-PHASE, OPEN DRIPPROOF—115V, 60 Hz

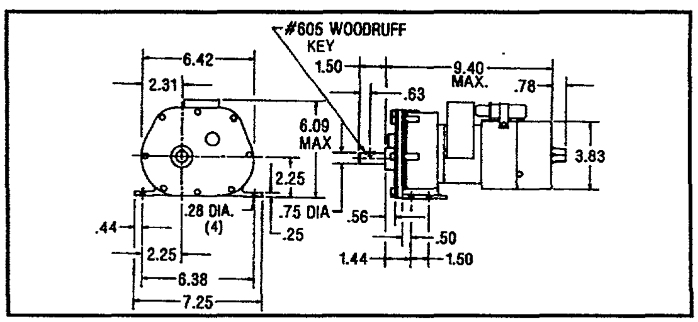
Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.
45	438	385	1/3	38:1	5.8	**2Z847**	$525.00	**$367.25**	39.0
89	219	245	1/3	19:1	5.8	**2Z848**	433.00	**303.00**	39.0
157	125	245	1/3	11:1	5.8	**2Z849**	433.00	**303.00**	37.0
288	69	245	1/3	6:1	5.8	**2Z850**	393.00	**275.00**	36.0

THREE-PHASE, OPEN DRIPPROOF—208-220/440V, 60 Hz*

Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 220V	Stock No.	List	Each	Shpg. Wt.
157	125	245	1/3	11:1	1.4	**2Z851**	$524.00	**$366.75**	36.0

(*) All ratings are for 60 Hz. Also operable at 50 Hz at 5/6 of 60 Hz ratings for HP, amps, and RPM.





100 TO 600 IN.-LBS.

Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Heat treated steel/phenolic
Bearings: Needle/ball/sleeve on case; ball on motor
Seals: On output shaft
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: TEFC
Brake: Adaptable to No. 5X400 using one disc in brake
Capacitor: Included

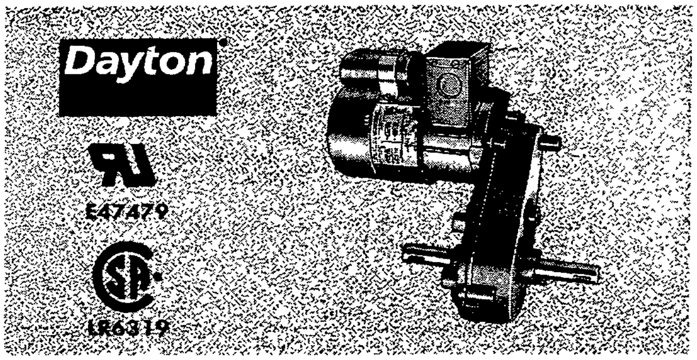
PSC, TEFC—115/230V, 60/50 Hz*

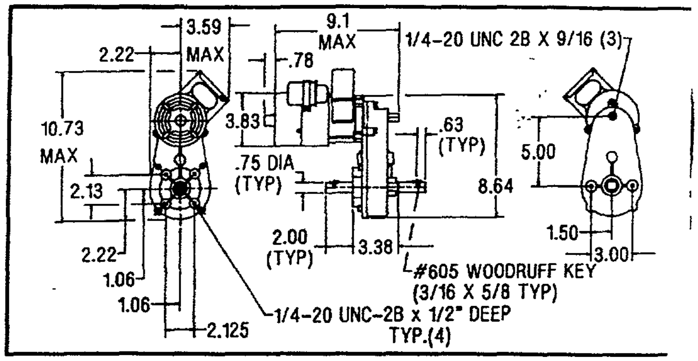
Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.
6	600	250	1/12	267:1	1.3	**1L572**	$338.00	**$259.50**	16.0
12	400	250	1/14	133:1	1.4	**1L573**	338.00	**259.50**	15.0
19	250	250	1/12	81:1	1.4	**1L574**	338.00	**259.50**	15.0
28	175	250	1/13	56:1	1.4	**1L575**	338.00	**259.50**	15.0
48	100	250	1/12	32:1	1.4	**1L576**	338.00	**259.50**	15.0

(*) All ratings are for 60 Hz. Also operable at 50 Hz at 5/6 of 60 Hz ratings for HP, amps, and RPM.

PARTS AVAILABLE FOR MANY AC GEARMOTORS, CALL 1-800-323-0620

FRACTIONAL AC GEARMOTORS PARALLEL SHAFT





175 TO 600 IN.-LBS.

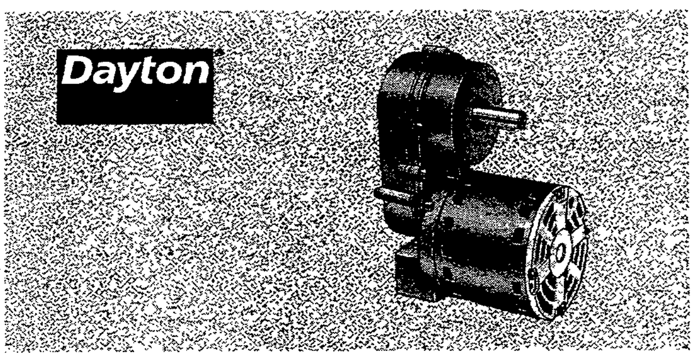
Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Steel/heat treated steel
Bearings: Needle/sleeve on case; ball on motor
Seals: On output shaft
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: TEFC
Brake: Adaptable to No. 5X400 using one disc in brake
Capacitor: Included

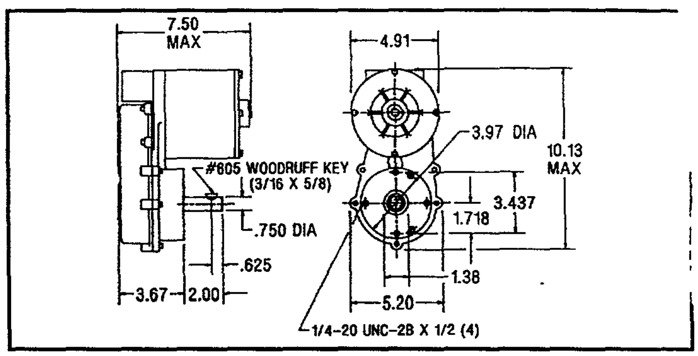
PSC, TEFC—115/230V, 60/50Hz*

Nameplate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.
6	600	300	1/12	267:1	1.3	**1L565**	$423.00	**$325.25**	17.[illegible]
12	400	300	1/14	133:1	1.4	**1L566**	423.00	**325.25**	17.[illegible]
19	250	300	1/12	81:1	1.4	**1L567**	423.00	**325.25**	17.[illegible]
28	175	300	1/12	53.6:1	1.4	**1L568**	423.00	**325.25**	17.[illegible]

(*) All ratings are for 60 Hz. Also operable at 50 Hz at 5/6 of 60 Hz ratings for HP, amps, and RPM.

PARTS AVAILABLE FOR MANY AC GEARMOTORS, CALL 1-800-323-0620





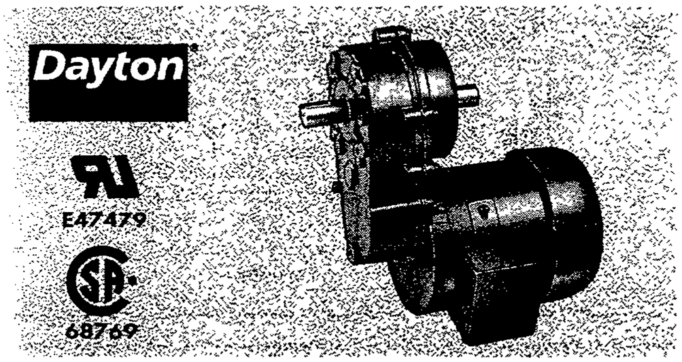
500 TO 700 IN.-LBS.

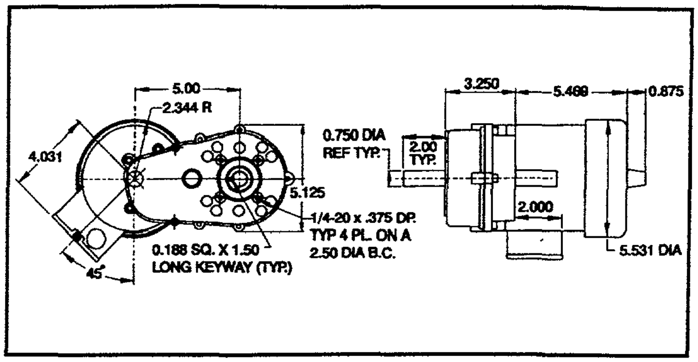
Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Heat treated steel
Bearings: Needle/ball/sleeve on case; ball on motor
Seals: On output shaft
Mounting: All position
Rotation: CCW
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: Open vent

SPLIT-PHASE, OPEN VENTED—115V, 60 Hz

Nameplate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.
8	700	300	1/8	2053:1	2.3	**1L563**	$423.00	**$325.25**	22.0
13	500	300	1/8	137:1	2.5	**1L564**	423.00	**325.25**	23.0

FRACTIONAL AC GEARMOTORS PARALLEL SHAFT





100 IN.-LBS., HIGH TORQUE

arcase: Die-cast aluminum
rication: Permanent heavy gear oil
ars: Hardened steel; helical 1st stage, ir subsequent stages. AGMA Class 9
arings: Heavy-duty ball and needle roller case; ball on motor
als: Lip-type on input and output shafts
ounting: All position; can also be face ounted
ation: Reversible
ermal Protection: None
bient: 40°C
ty: Continuous
atures: Double output shafts
closure: TEFC
ake: Adaptable to No. 5X400 using two scs
apacitor: Required, order No. 6X660 separately
'arranty: 2 Year

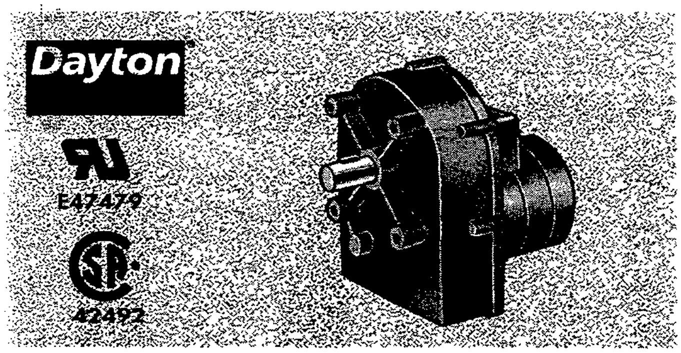
PSC, TEFC—115/230V, 60 Hz; 110/220V, 50 Hz*

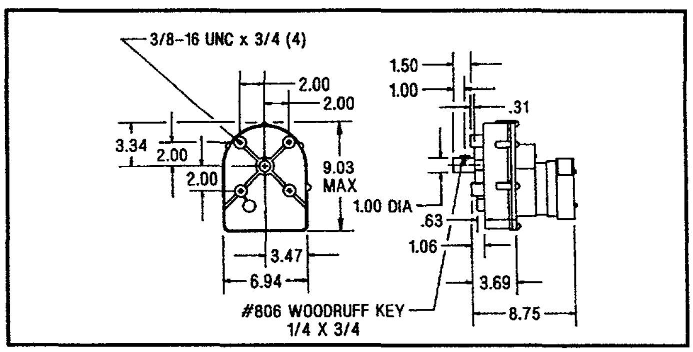
Nameplate RPM 60 Hz	Nameplate RPM 50 Hz	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115/230V	Full-Load Amps at 110/220V	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
6	5	1100	550	1/4	261:1	1.67/.88	1.72/.94	**1L510**	$509.00	**$391.00**	22.0	6X660	$11.45
12	10	1100	550	1/4	138:1	2.4/1.23	2.57/1.32	**1L509**	509.00	**391.00**	23.0	6X660	11.45

(*) Ratings are for 60 Hz. Also operable at 50 Hz at 5/6 of 60 Hz ratings for HP, amps, and RPM.

A WIDE SELECTION OF DEFINITE PURPOSE MOTORS IS AVAILABLE

For C-Face Motors, See Pages 118 thru 125.
For Hazardous Location Motors, See Pages 126 thru 133.
For 50 Hz and 60/50 Hz Motors, See Pages 134 thru 138.
For Instant Reverse Motors, See Page 139.
For Farm Duty Motors, See Pages 140 thru 148.
For Pump Motors, See Pages 149 thru 173.
For Appliance/Tool Motors, See Pages 174 thru 183.





1900 TO 3000 IN.-LBS.

Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Heat treated steel/phenolic
Bearings: Needle/sleeve on case; ball on motor
Seals: On output shaft
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: TEFC
Capacitor: Required, order No. 6X655 separately

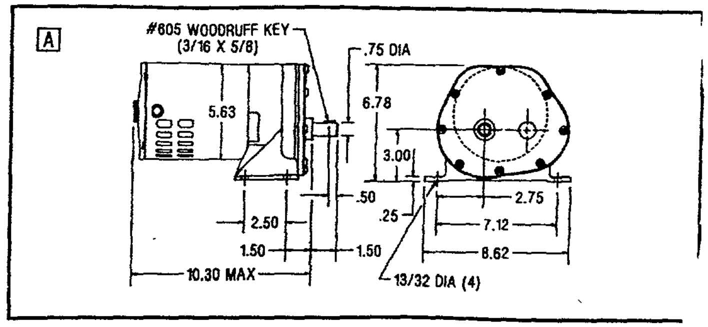
PSC, TEFC—115/230V, 60/50 Hz*

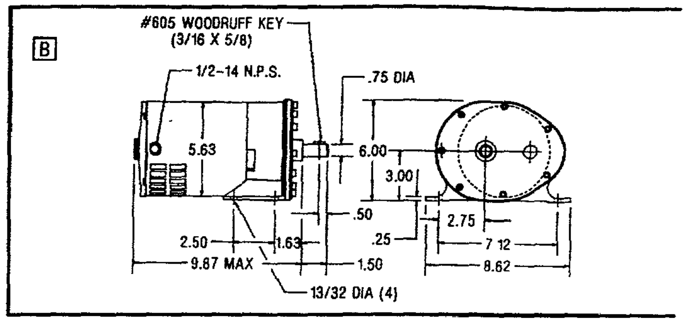
Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
1	3000	550	1/15	1586:1	1.5	**1L570**	$486.00	**$373.50**	29.0	6X655	$5.38
2	1900	550	1/12	827:1	1.5	**1L571**	486.00	**373.50**	28.0	6X655	5.38

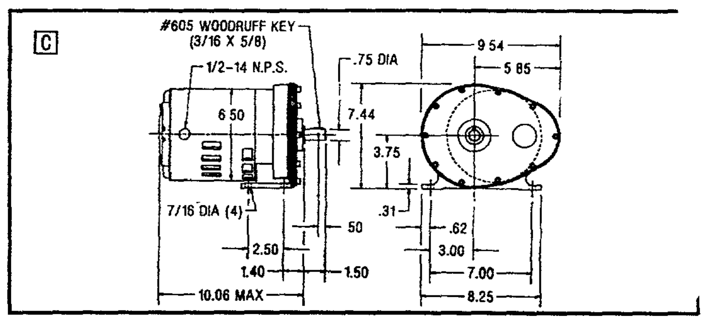
(*) Ratings are for 60 Hz. Also operable at 50 Hz at 5/6 of 60 Hz ratings for HP, amps, and RPM.

PARTS AVAILABLE FOR MANY AC GEARMOTORS,
CALL 1-800-323-0620

FRACTIONAL AC GEARMOTORS PARALLEL SHAFT







100 TO 800 IN.-LBS.

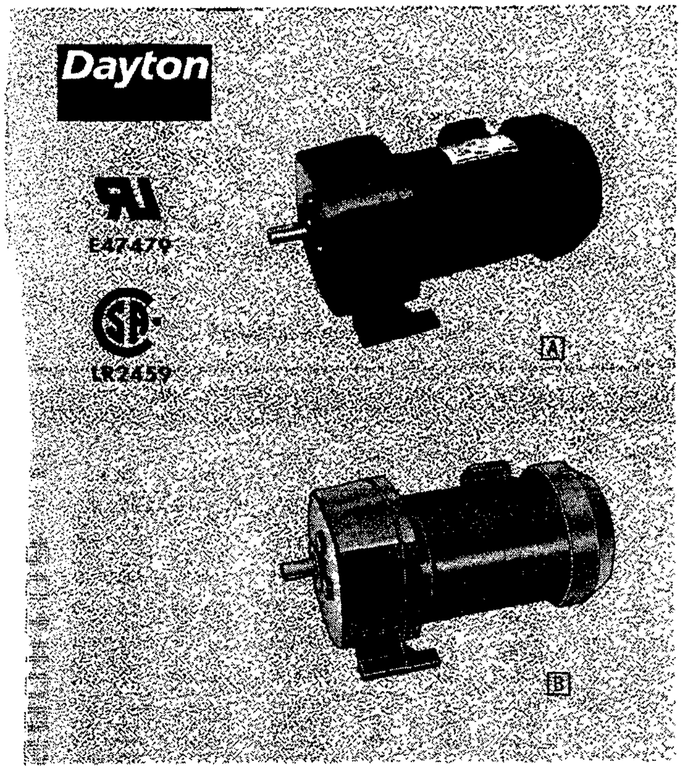
Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Cut steel and phenolic
Bearings: A & B Porous bronze sleeve on case; ball on motor
Bearings: C Ball on case and motor
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: Open dripproof

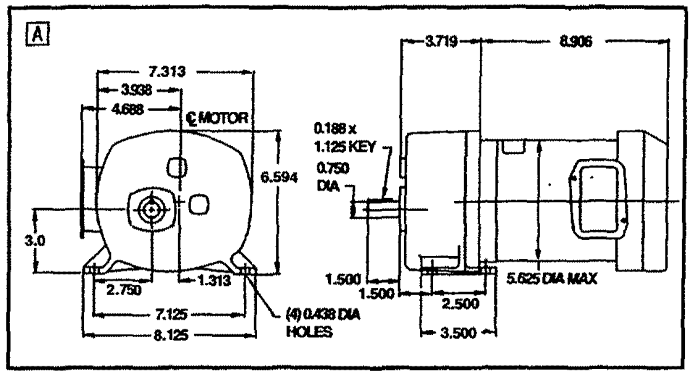
SPLIT-PHASE, OPEN DRIPPROOF—115V, 60 Hz

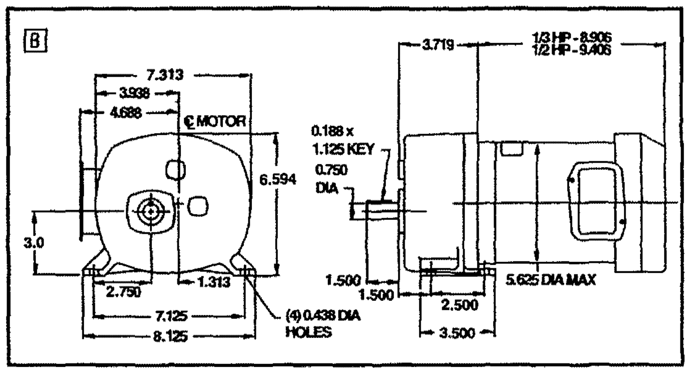
Key	Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.
A	6	600	300	1/4	288:1	4.6	**5K933**	$321.00	**$246.50**	26.0
A	12	600	300	1/4	144:1	4.6	**5K934**	321.00	**246.50**	25.0
A	18	550	300	1/4	96:1	4.6	**5K935**	321.00	**246.50**	26.0
B	30	400	190	1/4	58:1	4.6	**5K939**	321.00	**246.50**	22.0
B	40	330	190	1/4	42:1	4.6	**5K941**	321.00	**246.50**	21.0
B	60	200	190	1/4	29:1	4.6	**5K940**	321.00	**246.50**	21.0
B	90	150	150	1/4	19.2:1	4.6	**6K993**	321.00	**246.50**	21.0
B	120	100	110	1/4	14.4:1	4.6	**5K942**	321.00	**246.50**	21.0
C	30	800	400	1/2	58:1	8.3	**2Z794**	496.00	**381.25**	32.0
C	60	400	400	1/2	29:1	8.3	**2Z795**	496.00	**381.25**	32.0
C	90	287	400	.1/2	19.2:1	8.3	**2Z796**	496.00	**381.25**	32.0

PARTS AVAILABLE FOR MANY AC GEARMOTORS, CALL 1-800-323-0620

FRACTIONAL AC GEARMOTORS PARALLEL SHAFT







70 TO 1105 IN.-LBS., HIGH TORQUE

earcase: Die-cast aluminum
brication: Permanent heavy gear oil
ears: Hardened steel; helical 1st stage, pur subsequent stages. AGMA Class 9
Bearings: Heavy-duty ball and needle roller, and thrust balls on case; ball on motor
Seals: Lip-type on input and output shafts
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: TEFC
Brake: Adaptable to No. 4Z447 brake
Warranty: 2 Year

PARTS AVAILABLE FOR MANY AC GEARMOTORS, CALL 1-800-323-0620

SPLIT-PHASE, TEFC—115V, 60 Hz

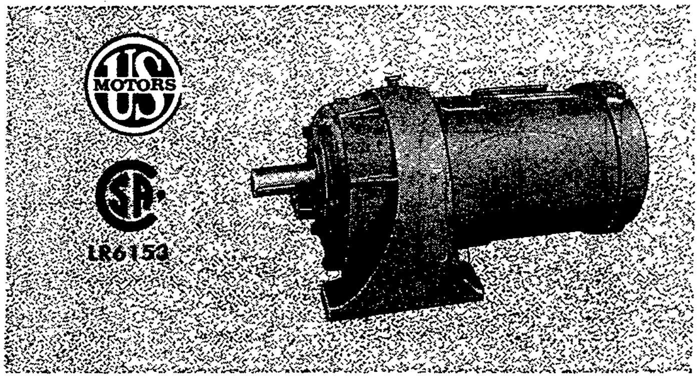
Key	Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.
A	5.4	1087	325	1/4	315.5:1	3.7	**6Z399**	$516.00	**$396.75**	27.0
A	8	974	325	1/4	210:1	3.7	**6Z400**	516.00	**396.75**	27.0
A	12	992	325	1/4	142.9:1	3.7	**6K351**	516.00	**396.75**	27.0
A	18	800	325	1/4	95:1	3.7	**6Z401**	516.00	**396.75**	27.0
A	27	500	325	1/4	63.5:1	3.7	**6K352**	516.00	**396.75**	26.0
A	60	240	325	1/4	28.6:1	3.7	**6K353**	516.00	**396.75**	26.0
A	135	100	325	1/4	12.7:1	3.7	**6K354**	516.00	**396.75**	26.0
A	18	1017	325	1/3	95:1	5.7	**6Z402**	508.00	**390.50**	28.0
A	27	700	325	1/3	63.5:1	5.7	**6K396**	508.00	**390.50**	28.0
A	40	450	325	1/3	42.8:1	5.7	**2Z842**	508.00	**390.50**	27.0
A	60	320	325	1/3	28.6:1	5.7	**6K369**	508.00	**390.50**	27.0
A	90	220	325	1/3	19:1	5.7	**2Z843**	508.00	**390.50**	26.0
A	157	125	325	1/3	11:1	5.7	**2Z844**	508.00	**390.50**	26.0
A	288	70	325	1/3	6.1:1	5.7	**2Z845**	508.00	**390.50**	26.0
A	22	1105	325	1/2	80:1	7.9	**6Z403**	571.00	**438.50**	30.0
A	40	700	325	1/2	42.8:1	7.9	**6K375**	571.00	**438.50**	29.0
A	60	480	325	1/2	28.6:1	7.9	**6K583**	571.00	**438.50**	28.0
A	90	320	325	1/2	19:1	7.9	**6K383**	571.00	**438.50**	28.0
A	135	215	325	1/2	12.7:1	7.9	**6K506**	571.00	**438.50**	28.0

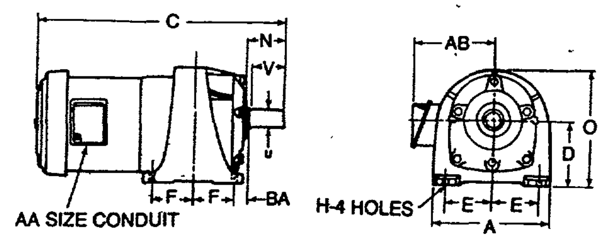
THREE-PHASE, TEFC—208-230/460V, 60 Hz

Key	Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 230V	Stock No.	List	Each	Shpg. Wt.
B	18	1017	325	1/3*	95:1	1.5	**6Z404**	$609.00	**$468.25**	28.0
B	27	700	325	1/3*	63.5:1	1.5	**4Z384**	609.00	**468.25**	27.0
B	40	450	325	1/3*	42.8:1	1.5	**4Z385**	609.00	**468.25**	24.0
B	60	320	325	1/3*	28.6:1	1.5	**4Z386**	609.00	**468.25**	24.0
B	90	220	325	1/3*	19:1	1.5	**4Z387**	609.00	**468.25**	24.0
B	157	125	325	1/3*	11:1	1.5	**4Z388**	609.00	**468.25**	24.0
B	288	70	325	1/3*	6.1:1	1.5	**4Z389**	609.00	**468.25**	24.0
B	22	1105	325	1/2	80:1	2.2	**6Z405**	668.00	**513.50**	30.0
B	40	700	325	1/2	42.8:1	2.2	**4Z390**	668.00	**513.50**	27.0
B	60	480	325	1/2	28.6:1	2.2	**4Z391**	668.00	**513.50**	25.0
B	90	320	325	1/2	19:1	2.2	**4Z392**	668.00	**513.50**	25.0
B	135	215	325	1/2	12.7:1	2.2	**4Z393**	668.00	**513.50**	25.0
B	288	100	325	1/2	6.1:1	2.2	**4Z394**	668.00	**513.50**	25.0

(*) Operable on 190/380V, 50 Hz at 5/6 of 60 Hz ratings for HP and RPM.

INTEGRAL AC GEARMOTORS
PARALLEL SHAFT





See Specifications Below

332 TO 4202 IN.-LBS.

Gearcase: Cast iron

Lubrication: Shipped less oil; see owner's manual

Gears: Cut steel

Bearings: Ball and tapered roller on case; ball on motor

Seals: Double lipped on input and output shaft

Mounting: All position, except shaft down

Rotation: Reversible

Thermal Protection: None

Ambient: 40°C

Duty: Continuous

Enclosure: TEFC

Brake: Optional brakes Nos. 3M360 and 2Z871 available for selected models, see page 252.

THREE-PHASE, TEFC—230/460V, 60 Hz*

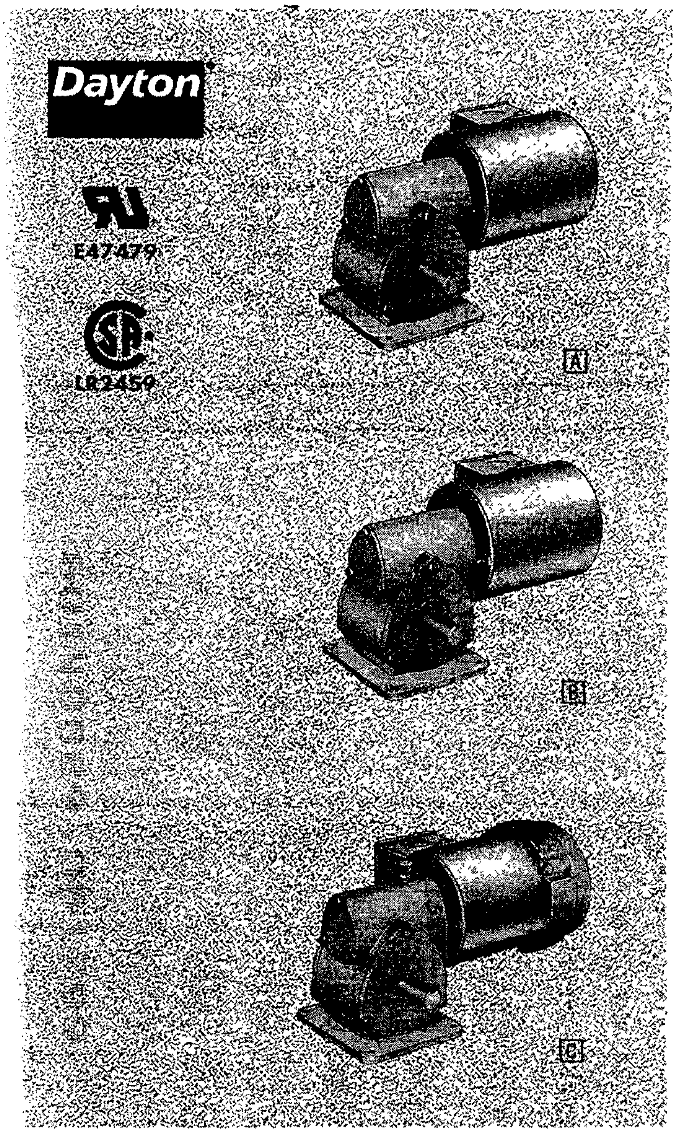
Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Lube Qty. Qt.	Gear Ratio	Full-Load Amps at 230V†	USEM Model	Stock No.	List	Each	Shp Wt
30	2100	1460	1	4	39.4:1	4.8	B934	**4Z886**	$1399.00	**$979.00**	128
45	1400	825	1	1	37.9:1	3.8	8082	**2Z872**	1382.00	**967.00**	69
68	927	716	1	1	25.7:1	3.8	6977	**4Z887**	1196.00	**837.00**	70
100	630	636	1	1	16.9:1	3.8	8081	**2Z873**	1060.00	**742.00**	73
190	332	510	1	1	9.46:1	3.8	9224	**2Z874**	974.00	**681.50**	70
30	4200	1995	2	4.5	37.6:1	8.0	8841	**3Z950**	1936.00	**1355.00**	203
45	2804	1270	2	4	39.4:1	6.5	6004	**4Z888**	1739.00	**1217.00**	126
68	1854	1100	2	4	25.6:1	6.5	B935	**4Z889**	1446.00	**1012.00**	126
100	1260	636	2	1	16.9:1	6.8	6001	**2Z876**	1427.00	**998.50**	75
190	663	510	2	1	9.46:1	6.8	6010	**2Z877**	1105.00	**773.50**	73
45	4202	1995	3	4.5	37.6:1	9.0	8839	**3Z951**	1969.00	**1378.00**	202
68	2781	1100	3	4	25.6:1	9.0	B937	**4Z890**	1720.00	**1204.00**	148
100	1891	976	3	4	17.1:1	9.0	8817	**4Z891**	1486.00	**1040.00**	144
190	-995	780	3	4	9.32:1	9.0	9227	**4Z892**	1289.00	**902.00**	210

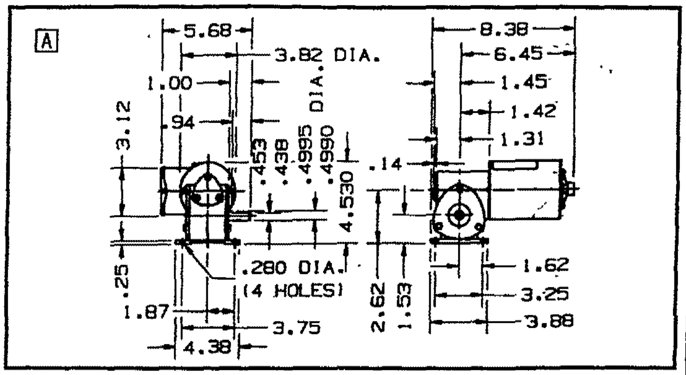
(*) All ratings are for 60 Hz. Also operable at 190/380V, 50 Hz at 5/6 of 60 Hz ratings for HP and RPM.
(†) 460V amperage ratings are half of 230V ratings.

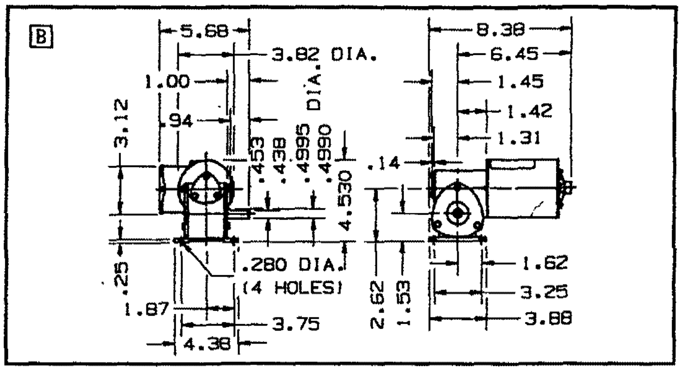
SPECIFICATIONS

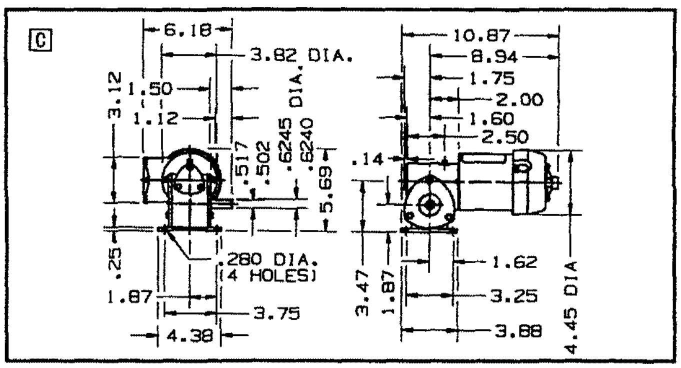
Stock No.	Frame	Dimensions (Inches) A	C	D	E	F	H Dia.	N	O	U	V Min.	AA	AB	BA	Sq. Key
4Z886	145T-21	12.68	20.68	6.25	5.125	5.0	0.6875	3.1875	11.25	1.625	3.0	0.75	6.0	1.5	3/8 x 1⅝
2Z872	143T-5	8.5	17.1875	4.5	3.375	3.0	0.5	2.625	7.9375	1.25	2.21	0.75	6.0	0.78	1/4 x 1⅝
4Z887		8.5	17.1875	4.5	3.375	3.0	0.5	2.625	7.9375	1.25	2.21	0.75	6.0	0.78	1/4 x 1⅝
2Z873		8.5	17.1875	4.5	3.375	3.0	0.5	2.625	7.9375	1.25	2.21	0.75	6.0	0.78	1/4 x 1⅝
2Z874		8.5	17.1875	4.5	3.375	3.0	0.5	2.625	7.9375	1.25	2.21	0.75	6.0	0.78	1/4 x 1⅝
3Z950	184T-30	15.25	27.15	6.75	6.25	5.875	0.6875	3.43	13.37	1.75	3.25	0.75	6.31	1.62	3/8 x 2 7/16
4Z888	145T-21	12.68	20.68	6.25	5.125	5.0	0.6875	3.1875	11.25	1.625	3.0	0.75	6.0	1.5	3/8 x 1⅝
4Z889		12.68	20.68	6.25	5.125	5.0	0.6875	3.1875	11.25	1.625	3.0	0.75	6.0	1.5	3/8 x 1⅝
2Z876	145T-5	8.5	17.68	4.5	3.375	3.0	0.5	2.62	7.93	1.25	2.21	0.75	6.0	0.78	1/4 x 1⅝
2Z877		8.5	17.68	4.5	3.375	3.0	0.5	2.62	7.93	1.25	2.21	0.75	6.0	0.78	1/4 x 1⅝
3Z951	182T-30	15.25	27.15	6.75	6.25	5.875	0.6875	3.43	13.37	1.75	3.25	0.75	6.31	1.62	3/8 x 2 7/16
4Z890	182T-21	12.6875	25.21	6.25	5.125	5.0	0.6875	3.1875	11.25	1.625	3.0	0.75	6.31	1.5	3/8 x 1⅝
4Z891		12.6875	25.21	6.25	5.125	5.0	0.6875	3.1875	11.25	1.625	3.0	0.75	6.31	1.5	3/8 x 1⅝
4Z892		12.6875	25.21	6.25	5.125	5.0	0.6875	3.1875	11.25	1.625	3.0	0.75	6.31	1.5	3/8 x 1⅝

FRACTIONAL AC GEARMOTORS RIGHT ANGLE









13 TO 85 IN.-LBS.

earcase: Zinc alloy
ıbrication: [A] & [B] Grease filled; [C] Oil lled
ears: [A] & [B] Hardened steel worm, phe- ›lic output gear; [C] Hardened steel orm, forged bronze output gear
:arings: Ball on output shaft of case; ball ı motor
ounting: All position except input motor ıaft up
ıtation: Reversible
ermal Protection: None
nbient: 40°C
ıty: Continuous
closure: [A] & [B] TENV; [C] TEFC
ake: Adaptable to No. 5X400 using one ;c with 1/20 HP, two discs with 1/12 and ¦ HP models
pacitor: Required; order separately

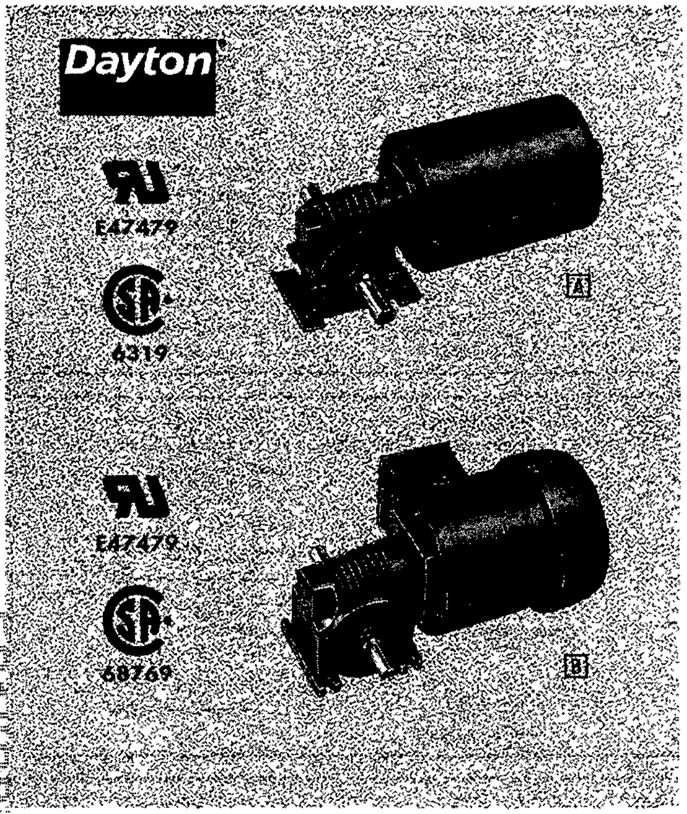
Key	Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Each
PSC, TENV—115V, 60 Hz; 105V, 50 Hz*												
A	43	21	70	1/20	40:1	1.0	**4Z277**	$261.00	**$182.25**	9.8	6X652	$4.49
A	86	22	60	1/20	20:1	1.0	**4Z276**	261.00	**182.25**	10.0	6X652	4.49
A	173	13	50	1/20	10:1	1.0	**4Z275**	261.00	**182.25**	10.0	6X652	4.49
B	43	55	110	1/12	40:1	1.3	**4Z280**	281.00	**196.25**	15.0	6X654	5.00
B	86	41	90	1/12	20:1	1.3	**4Z279**	281.00	**196.25**	15.0	6X654	5.00
B	173	23	70	1/12	10:1	1.3	**4Z278**	281.00	**196.25**	15.0	6X654	5.00
PSC, TEFC—115V, 60 Hz; 105V, 50 Hz*												
C	29	85	130	1/8	60:1	2.0	**4Z721**	324.00	**226.50**	15.0	6X658	8.82
C	43	77	110	1/8	40:1	2.0	**4Z283**	324.00	**226.50**	15.0	6X658	8.82
C	57	68	100	1/8	30:1	2.0	**4Z722**	324.00	**226.50**	15.0	6X658	8.82
C	86	55	90	1/8	20:1	2.0	**4Z282**	324.00	**226.50**	15.0	6X658	8.82
C	173	31	70	1/8	10:1	2.0	**4Z281**	324.00	**226.50**	15.0	6X658	8.82

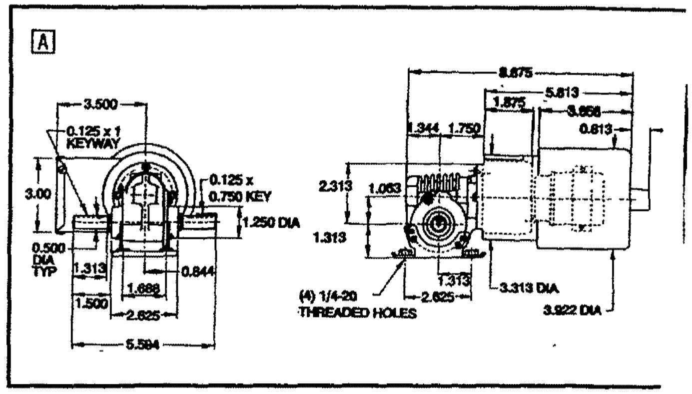
(*) Ratings are for 60 Hz. Also operable at 105V, 50 Hz at 5/6 of rated HP and RPM.

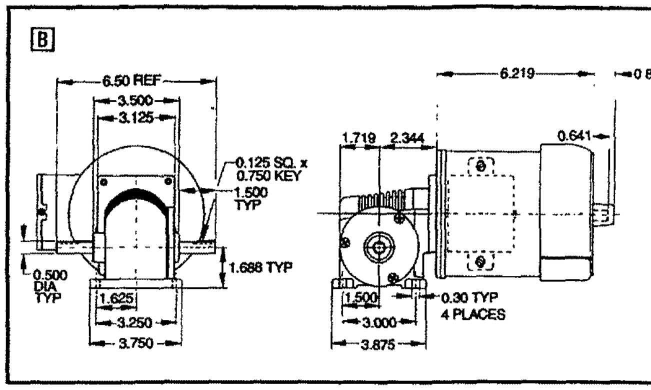
PARTS AVAILABLE FOR MANY AC GEARMOTORS, CALL 1-800-323-0620

POWER TRANSMISSION: GEARMOTORS

FRACTIONAL AC GEARMOTORS RIGHT ANGLE







20 TO 200 IN.-LBS., HIGH TORQUE

Gearcase: Die-cast aluminum
Lubrication: Oil filled
Gears: Worm, hardened steel; output gear, bronze
Bearings: Needle bearing on case; ball on motor
Seals: Lip-type on input and output shafts
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: TEFC
Features: Double output shafts
Brake: Adaptable to No. 5X400 brake
Capacitor: Required; included on A models; order separately for B models
Warranty: 2 Year

PSC, TEFC—115/230V, 60 Hz; 110/220V, 50 Hz

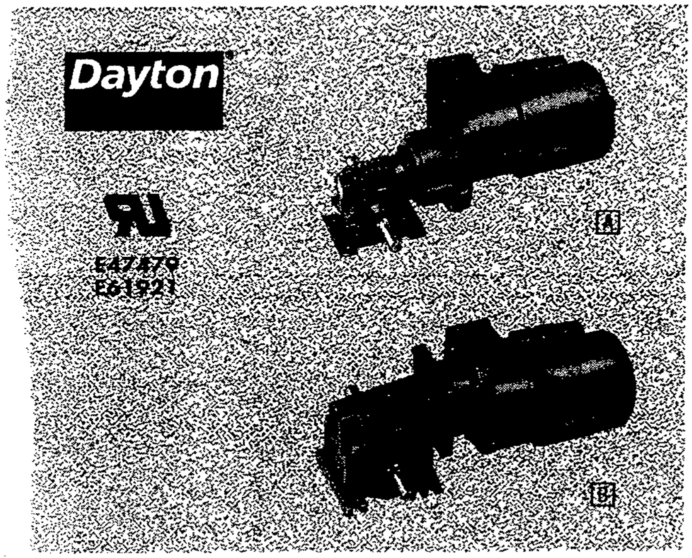
Key	Nameplate RPM 60 Hz	Nameplate RPM 50 Hz	Full-Load Torque In.-Lbs.	Over-hung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115/230V	Full-Load Amps at 110/220V	Stock No.	List	Each	Shpg. Wt.	Capacitor Required Stock No.	Capacitor Required Each
A	27	23	75	225	1/15	60:1	1.3/.65	1.2/.61	1L536	$422.00	$324.50	10.0	Included	
A	41	34	57	225	1/15	40:1	1.3/.65	1.2/.61	1L538	422.00	324.50	12.0	Included	
A	54	45	45	225	1/15	30:1	1.3/.65	1.2/.61	1L535	422.00	324.50	10.0	Included	
A	80	67	33	225	1/15	20:1	1.3/.65	1.2/.61	1L534	422.00	324.50	10.0	Included	
A	157	130	20	200	1/15	10:1	1.3/.65	1.2/.61	1L533	422.00	324.50	7.0	Included	
B	28	23	200	200	1/4	60:1	2.4/1.2	2.6/1.4	1L501	549.00	422.00	20.0	6X660	$11.45
B	36	30	185	200	1/4	45:1	2.4/1.2	2.6/1.4	1L502	549.00	422.00	17.0	6X660	11.45
B	55	46	130	200	1/4	30:1	2.4/1.2	2.6/1.4	1L503	549.00	422.00	18.0	6X660	11.45
B	80	67	108	200	1/4	20:1	2.4/1.2	2.6/1.4	1L504	549.00	422.00	13.0	6X660	11.45
B	160	133	62	200	1/4	10:1	2.4/1.2	2.6/1.4	1L505	549.00	422.00	17.0	6X660	11.45

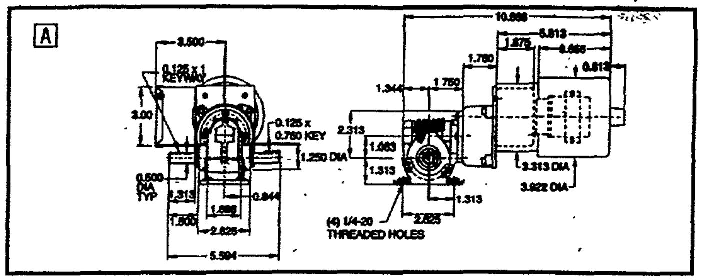
PARTS AVAILABLE FOR MANY AC GEARMOTORS, CALL 1-800-323-0620

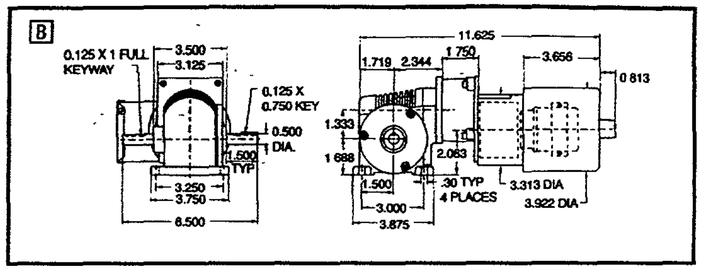
TECHNICAL REFERENCE LITERATURE

Technical reference literature is available on such subjects as welding, basic electricity, electric motors, and hydraulics and pneumatics
See Index under Books.

FRACTIONAL AC GEARMOTORS RIGHT ANGLE







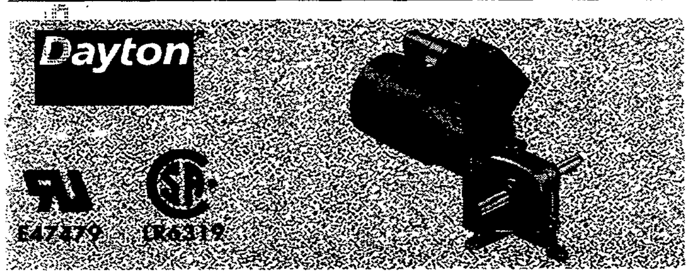
140 TO 215 IN.-LBS., HIGH TORQUE

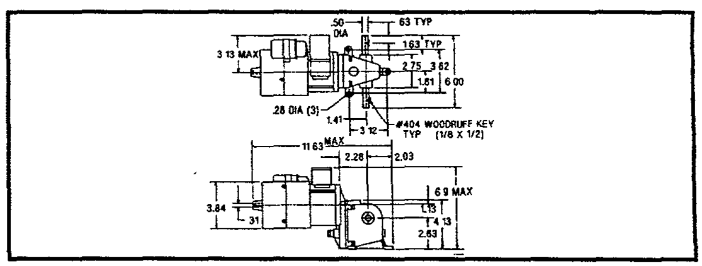
ırcase: Die-cast aluminum
rication: Oil filled
ırs: 1st stage steel helical, 2nd stage dened steel worm, bronze alloy
ıls: Lip-type on input and output shafts
arings: Needle bearing on case; ball on otor
ounting: All position
tation: Reversible
ermal Protection: None
ıbient: 40°C **Duty:** Continuous
closure: TEFC
atures: Double output shaft
rake: Adaptable to No. 5X400 brake
apacitor: Included **Warranty:** 2 Year

PSC, TEFC—115/230V, 60 Hz; 110/220, 50 Hz

Key	Nameplate RPM 60 Hz	Nameplate RPM 50 Hz	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115/230V	Full-Load Amps at 110/220V	Stock No.	List	Each	Shpg. Wt.
A	5.2	4	150	225	1/15	312:1	1.0/0.5	1.0/0.5	**1L506**	$527.00	**$405.00**	14.0
A	10	8	150	225	1/15	160:1	1.0/0.5	1.0/0.5	**1L508**	527.00	**405.00**	14.0
A	20	17	140	225	1/15	81:1	1.3/0.65	1.2/0.61	**1L507**	527.00	**405.00**	14.0
B	5	4.1	215	200	1/15	351:1	1.0/0.5	1.0/0.5	**1L493**	609.00	**468.25**	16.0
B	10	8.3	215	200	1/15	160:1	1.3/0.65	1.2/0.61	**1L494**	609.00	**468.25**	16.0
B	20	16.6	150	200	1/15	81:1	1.3/0.65	1.2/0.61	**1L495**	609.00	**468.25**	14.0

PARTS AVAILABLE FOR MANY AC GEARMOTORS, CALL 1-800-323-0620





89 TO 250 IN.-LBS.

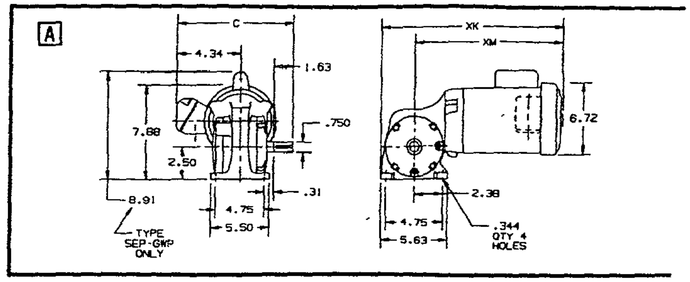
Gearcase: Zinc die-cast
Lubrication: Grease filled
Gears: Heat treated steel
Bearings: Sleeve on case; ball on motor
Seals: On output shaft
Mounting: All position
Rotation: Reversible
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: TEFC
Brake: Adaptable to No. 5X400 brake using one disc in brake
Capacitor: Included

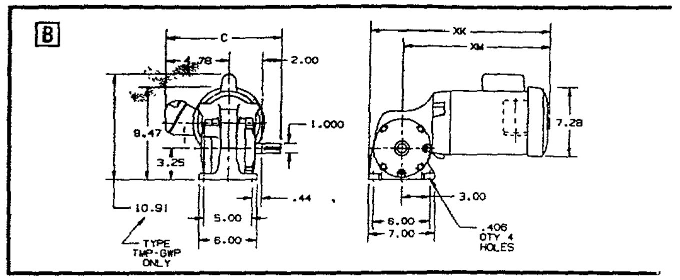
PSC, TEFC—115/230V, 60/50 Hz*

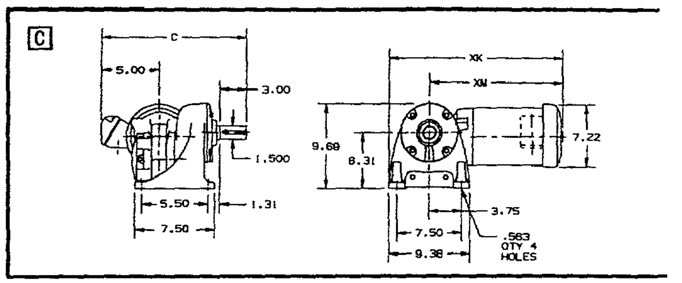
Name-plate RPM	Full-Load Torque In.-Lbs.	Overhung Load Lbs.	Input HP	Gear Ratio	Full-Load Amps at 115V	Stock No.	List	Each	Shpg. Wt.
1.3	250	100	1/50	1255:1	1.0	**1L554**	$270.00	**$207.50**	13.0
3	200	100	1/20	525:1	1.1	**1L555**	271.00	**207.50**	14.0
5.6	200	100	1/14	275:1	1.1	**1L556**	271.00	**207.50**	13.0
9	200	100	1/16	167:1	1.1	**1L557**	271.00	**207.75**	12.0
21	170	100	1/12	70:1	1.4	**1L558**	271.00	**207.75**	12.0
39	89	100	1/12	37:1	1.4	**1L559**	271.00	**207.75**	12.0

(*) Ratings are for 60 Hz. Also operable at 50 Hz at 5/6 of 60 Hz ratings for HP, amps, and RPM.

FRACTIONAL/INTEGRAL AC GEARMOTORS RIGHT ANGLE







163 TO 2410 IN.-LBS.

Gearcase: Die-cast aluminum
Lubrication: Shipped with oil
Gears: Hardened steel worm, forged bronze output gear
Bearings: Open ball on case; ball on motor
Seals: One double lip on input shaft; two double lip on output shaft
Mounting: Horizontal, vertical, or at 90° angles
Rotation: Reversible
Thermal Protection: None
Ambient: 40°C
Duty: Continuous
Enclosure: TEFC
Features: Single output shaft
Brake: Three-phase models use brake No. 3M360 or 2Z871; order separately from page 252.

SPECIFICATIONS

Key	Frame	Type	C	XK	XM	Sq. Key
A	48-1	SEP-GWP	8.81	17.28	14.47	.19 x 1.00
B	56-6	TMP-GWP	9.28	17.41	13.91	.25 x 1.12
B	56-6	UTP-GWP	10.16	16.44	12.94	.25 x 1.12
B	143T-6	UTP-GWP	10.16	18.94	15.44	.25 x 1.12
B	145T-6	UTP-GWP	10.16	18.94	15.44	.25 x 1.12
C	56-6	UTP-GWBP	15.31	17.63	12.94	.38 X 2.00
C	143T-6	UTP-GWBP	15.31	20.13	15.44	.38 X 2.00
C	145T-6	UTP-GWBP	15.31	20.13	15.44	.38 X 2.00

Key	Name-plate RPM	Full-Load Torque In.-Lbs.	Over-hung Load Lbs.	Input HP	Lube Qty. Qt.	USEM Frame No.	USEM Frame Type	Gear Ratio	Full-Load Amps at Nameplate Volts	USEM Model	Stock No.	List	Each	Sh W
SINGLE-PHASE CAPACITOR-START, TEFC—115/208-230V, 60 Hz														
A	30	381	670	1/3	3/4	48-1	SEP-GWP	58:1	6.2/3.1	G814	**5K535**	$526.00	**$368.00**	31.(
A	45	299	670	1/3	3/4	48-1	SEP-GWP	39:1	6.2/3.1	G815	**5K536**	526.00	**368.00**	28.(
A	68	222	670	1/3	3/4	48-1	SEP-GWP	26:1	6.2/3.1	G816	**5K537**	526.00	**368.00**	29.(
A	100	163	670	1/3	3/4	48-1	SEP-GWP	18:1	6.2/3.1	G817	**5K538**	526.00	**368.00**	28.(
B	30	680	980	1/2	1	56-6	TMP-GWP	58:1	9.0/4.5	G818	**5K539**	568.00	**397.50**	48.(
A	45	456	670	1/2	3/4	48-1	SEP-GWP	39:1	7.6/3.8	G819	**5K540**	543.00	**379.75**	29.(
A	68	344	670	1/2	3/4	48-1	SEP-GWP	26:1	7.6/3.8	G820	**5K541**	543.00	**379.75**	32.0
A	100	254	670	1/2	3/4	48-1	SEP-GWP	18:1	7.6/3.8	G821	**5K542**	543.00	**379.75**	31.0
A	155	173	640	1/2	3/4	48-1	SEP-GWP	11:1	7.6/3.8	G822	**5K919**	543.00	**379.75**	32.0
B	45	743	980	3/4	1	56-6	TMP-GWP	39:1	10.4/5.2	G823	**5K544**	619.00	**433.25**	49.0
B	68	537	932	3/4	1	56-6	TMP-GWP	26:1	10.4/5.2	G824	**5K545**	619.00	**433.25**	48.0
B	100	394	831	3/4	1	56-6	TMP-GWP	17.6:1	10.4/5.2	G825	**5K546**	619.00	**433.25**	49.0
THREE-PHASE, TEFC—230/460V, 60/50 Hz*														
B	30	680	980	1/2	1	56-6	UTP-GWP	58:1	2.0/1.0	G826	**3N169**	534.00	**373.75**	38.0
B	45	507	980	1/2	1	56-6	UTP-GWP	39:1	2.0/1.0	G827	**3N170**	534.00	**373.75**	38.0
B	68	367	932	1/2	1	56-6	UTP-GWP	26:1	2.0/1.0	G828	**3N171**	534.00	**373.75**	38.0
B	100	265	831	1/2	1	56-6	UTP-GWP	17.6:1	2.0/1.0	G829	**3N172**	534.00	**373.75**	38.0
C	30	1310	1240	3/4	1	56-6	UTP-GWBP	57:1	2.8/1.4	G842	**4Z893**	826.00	**578.00**	80.0
B	45	743	980	3/4	1	56-6	UTP-GWP	39:1	2.8/1.4	G830	**4Z894**	560.00	**391.75**	36.0
B	68	537	932	3/4	1	56-6	UTP-GWP	26:1	2.8/1.4	G831	**4Z895**	560.00	**391.75**	36.0
B	100	394	831	3/4	1	56-6	UTP-GWP	17.6:1	2.8/1.4	G832	**4Z896**	560.00	**391.75**	36.0
B	155	269	723	3/4	1	56-6	UTP-GWP	11.3:1	2.8/1.4	G833	**4Z897**	560.00	**391.75**	36.0
C	30	1740	1240	1	1	143T-6	UTP-GWBP	57:1	3.6/1.8	G839	**3N298**	842.00	**589.00**	95.0
B	45	966	980	1	1	143T-6	UTP-GWP	39:1	3.6/1.8	G837	**3N176**	577.00	**403.50**	45.0
B	68	796	932	1	1	143T-6	UTP-GWP	26:1	3.6/1.8	G834	**3N173**	577.00	**403.50**	46.0
B	100	522	831	1	1	143T-6	UTP-GWP	17.6:1	3.6/1.8	G835	**3N174**	577.00	**403.50**	45.0
B	155	357	723	1	1	143T-6	UTP-GWP	11.3:1	3.6/1.8	G836	**3N175**	577.00	**403.50**	46.0
C	45	2410	1240	2	1	145T-6	UTP-GWBP	36.6:1	6.2/3.1	G840	**3N299**	885.00	**619.00**	95.0
C	68	1570	1060	2	1	145T-6	UTP-GWBP	25.1:1	6.2/3.1	G841	**3N300**	885.00	**619.00**	97.0
B	155	711	723	2	1	145T-6	UTP-GWP	11.3:1	6.2/3.1	G838	**3N301**	619.00	**433.25**	51.0

(*) Ratings are at 60 Hz. Also operable on 190/380V, 50 Hz at 5/6 of 60 Hz ratings for HP and RPM.

1/2 HP ADJUSTABLE SPEED DRIVES

- ***Fully assembled and aligned***

.djustable speed drives are variable speed elt drive transmissions. Include integral- y mounted open dripproof or totally ·nclosed electric motor.

)esigned for low speed applications and ·here speed adjustments are desired. :sed on conveyors, shop equipment, ıachine drives, mixers, and other similar ɔplications.

eed is controlled by a 14 turn hand- ıeel providing stepless speeds using ustable pitch pulleys and deep cog belt. ved shaft. 40°C ambient, continuous y. 1.0 Service factor. Gray finish. CSA tified (LR6153). Dayton brand.

RIGHT ANGLE

- ***ntegrally mounted right angle drive or low speed and high torque appli- ations***
- ***lepeatable speed setting capabilities***

GEARCASE CONSTRUCTION

rm Gear: Hardened steel

m Wheel: Bronze forged

put Shaft: Interchangeable for left or t hand output

rings: Tapered roller bearings for high rhung load applications

nting: Horizontal, vertical, or at 90° gles

PARALLEL SHAFT

- ***Shaft rotation easily reversed by elec- trical reconnection***
- ***Constant torque and horsepower ranges on all units***
- ***Automatic anticreep device maintains speed setting***
- ***Relubrication eliminated by sealed ball bearings and mechanical design which allows disks to slide on shaft with no metal to metal contact***

GEARCASE CONSTRUCTION

:ase: Die-cast aluminum

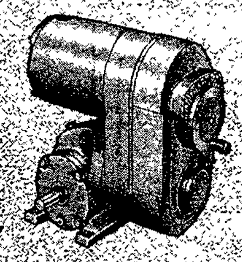
earings: Sealed ball

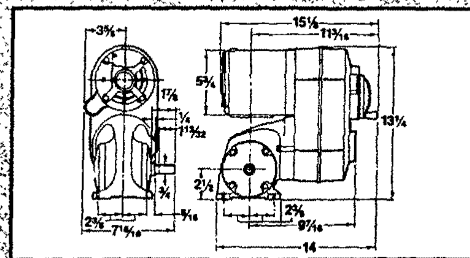
Aounting: Adjustable, 180° swing cradle ɔase which permits drive to be tilted at ıny angle

Dayton

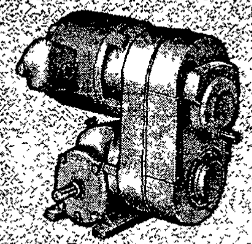
PARTS AVAILABLE, CALL 1-800-323-0620

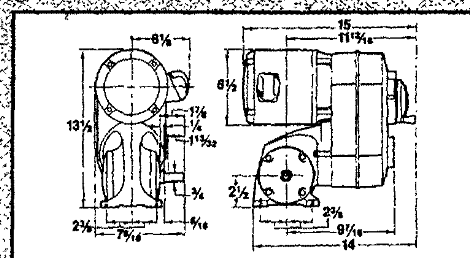
LR6153



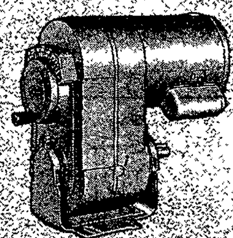


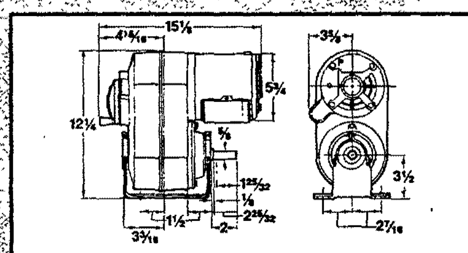
A Single-Phase, Right Angle



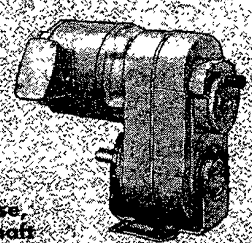


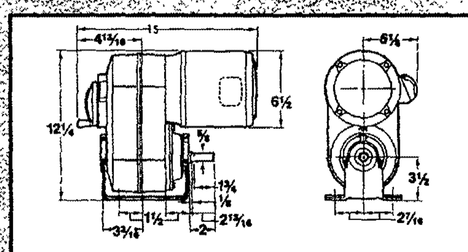
B Three-Phase, Right Angle





C Single-Phase, Parallel Shaft





D Three-Phase, Parallel Shaft

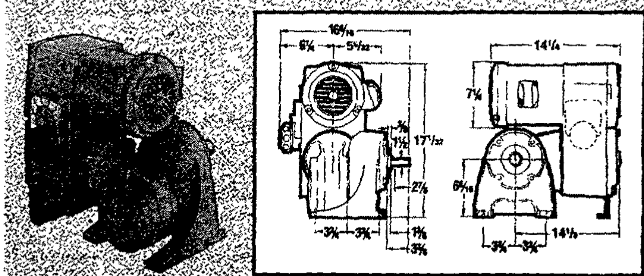
Key	Input HP	Output Shaft RPM Min. to Max.	Full-Load Torque In.-Lbs.	Continuous Duty Output HP	Overhung Load Lbs.	Phase	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Input Motor RPM	Enclosure Type	Rotation	Stock No.	List	Each	Shpg. Wt.
A	1/2	12-72	265-243	1/20-1/4	890	Single	115/230	11.0/5.5	1725	Op Drpf	Reversible	**4Z370**	$961.00	**$672.50**	41.0
B	1/2	12-72	265-243	1/20-1/4	890	Three	230/460*	3.1/1.55	1725	TEFC	Reversible	**3N297**	1083.00	**757.50**	48.0
A	1/2	18-108	204-185	1/16-1/3	810	Single	115/230	11.0/5.5	1725	Op Drpf	Reversible	**6K119**	908.00	**635.50**	41.0
B	1/2	18-108	204-185	1/16-1/3	810	Three	230/460*	3.1/1.55	1725	TEFC	Reversible	**3N259**	1026.00	**718.00**	44.0
A	1/2	64-364	68.8-65.2	1/14-2/5	570	Single	115/230	11.0/5.5	1725	Op Drpf	Reversible	**4Z369**	908.00	**635.50**	41.0
B	1/2	64-364	68.8-65.2	1/14-2/5	570	Three	230/460*	3.1/1.55	1725	TEFC	Reversible	**4Z367**	1026.00	**718.00**	45.0
A	1/2	141-846	32.8-29.5	1/14-2/5	450	Single	115/230	11.0/5.5	1725	Op Drpf	Reversible	**4Z368**	908.00	**635.50**	41.0
B	1/2	141-846	32.8-29.5	1/14-2/5	450	Three	230/460*	3.1/1.55	1725	TEFC	Reversible	**4Z366**	1026.00	**718.00**	41.0
C	1/2	705-4230	18.3-7.5	1/5-1/2	108-100	Single	115/230	11.0/5.5	1725	Op Drpf	Reversible	**5K994**	612.00	**428.00**	35.0
D	1/2	705-4230	18.3-7.5	1/5-1/2	108-100	Three	230/460*	2.8/1.4	1725	TEFC	Reversible	**4Z365**	730.00	**510.50**	40.0

(*) Operable on 190/380V, 50 Hz at 5/6 rated speed and HP of 60 Hz.

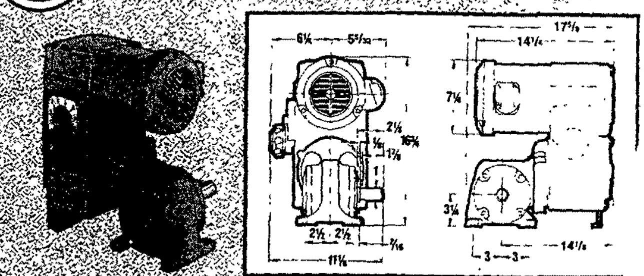
1 & 1$^1/_2$ HP ADJUSTABLE SPEED DRIVES

LR6153

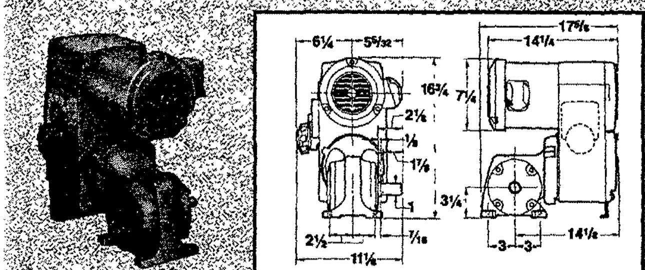
PARTS AVAILABLE, CALL 1-800-323-0620



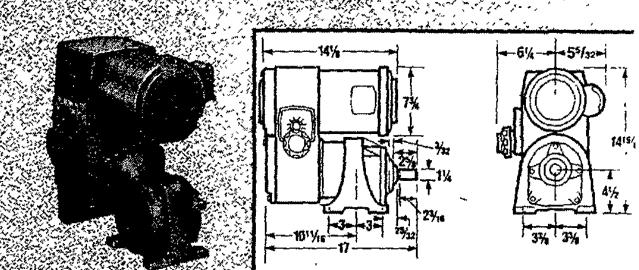
[A] 1 HP, Right Angle



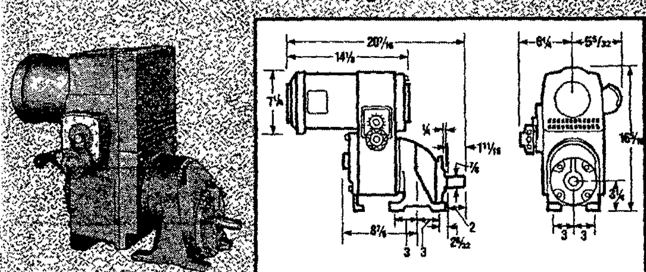
[B] 1 HP, Right Angle



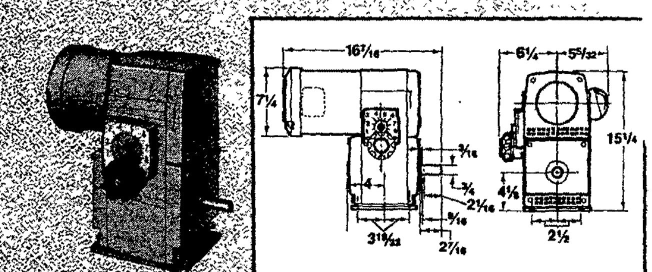
[C] 1½ HP, Right Angle Horizontal, Vertical, or 90° Angle Mount



[D] 1½ HP, Parallel



[E] 1½ HP, Parallel Shaft



[F] 1½ HP, Parallel

Adjustable speed drives are variable speed belt drive transmissions, furnished complete with a totally enclosed fan cooled motor. Designed for applications which include conveyors, shop equipment, machine drives, and mixers.

Speed controlled by a 14 turn handwheel providing stepless speeds using an adjustable pitch pulley and deep cog belt. 40° ambient, continuous duty. 1.0 service factor. Gray finish. USEM brand.

GEARCASE CONSTRUCTION†

Worm Gear: Hardened steel

Worm Wheel: Bronze forged

Output Shaft: Interchangeable for LH or RH output (Nos. 3Z499 3N296, and 4Z497 only)

Bearings: Tapered roller bearings for high overhung load applications

Brake: Adaptable to No. 3M360 (available on pg. 252)

Key	Input HP	Output Shaft RPM Min. to Max.	Full-Load Torque In.-Lbs.	Continuous Duty Output HP	Overhung Load Lbs.	Phase	Volts 60 Hz	Full-Load Amps at Nameplate Volts	Input Motor RPM	Enclosure Type	Rotation	Stock No.	List	Each	Shpg. Wt.
A	1	7.5-75	1090-560	0.13-0.67	1160	Three	208-230/460*	3.6-3.6/1.8	1745	TEFC	Reversible	**3Z857**	$1630.00	**$1141.00**	137.0
B	1	20.3-203	370-198	0.12-0.64	679	Three	208-230/460	3.6-3.6/1.8	1745	TEFC	Reversible	**4Z497**	1354.00	**947.50**	78.0
C	1½	11-109	872-411	0.14-0.72	980	Three	208-230/460*	5.0/2.5	1730	TEFC	Reversible	**3Z499**	1360.00	**952.00**	82.0
C	1½	20.3-203	575-262	0.18-0.84	879	Three	208-230/460*	5.0/2.5	1730	TEFC	Reversible	**3N296**	1360.00	**952.00**	82.0
D	1½	21-208	750-303	0.25-1	107	Three	230/460*	5.0/2.5	1725	TEFC	Reversible	**3Z605**	1540.00	**1078.00**	105.0
E	1½	190-1900	82-33	0.25-1	82	Three	230/460*	5.0/2.5	1725	TEFC	Reversible	**3Z606**	1496.00	**1047.00**	91.0
F	1½	428-4275	36.5-14.7	0.25-1	75	Three	208-230/460*	5.0/2.5	1725	TEFC	Reversible	**3N295**	1067.00	**746.50**	69.0

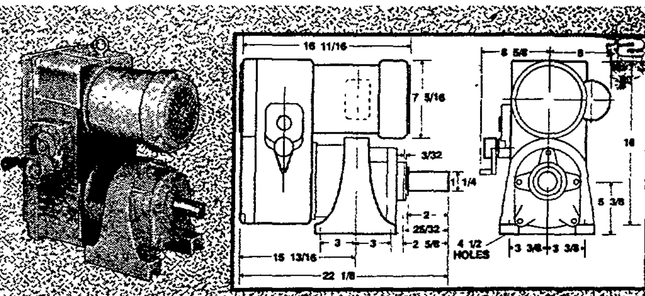
(*) Operable on 190/380V, 50 Hz at 5/6 of rated 60 Hz speed and HP. (†) No. 3N295 has no gearcase.

2, 3 & 5 HP ADJUSTABLE SPEED DRIVES

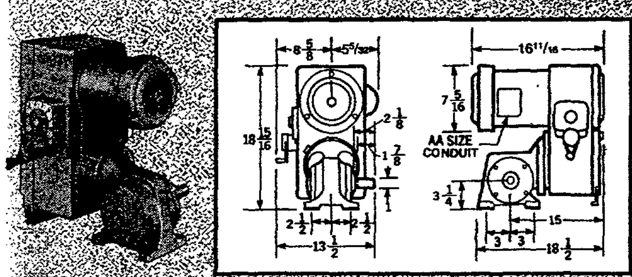
US MOTORS

E40077

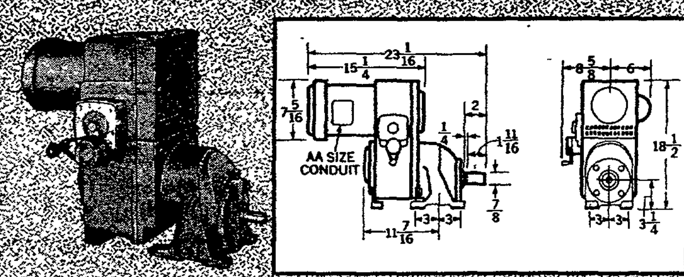
PARTS AVAILABLE, CALL 1-800-323-0620



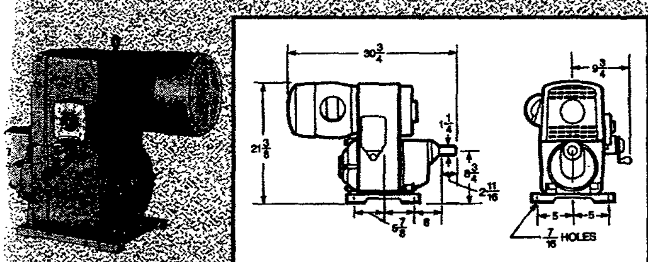
[A] Parallel Shaft



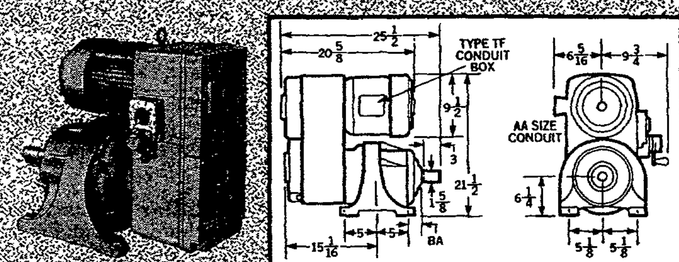
[B] Right Angle



[C] Parallel Shaft



[D] Parallel Shaft



[E] Parallel Shaft

- **Constant torque and HP ranges on all models**
- **Cast-iron gearcase**
- **Automatic anticreep device maintains speed setting**

Designed for applications such as conveyors, pumps, textile machinery, and other general duty industrial jobs.

Control knob adjusts speed smoothly through adjustable-pitch pulleys and deep cog belt. Sealed ball bearings eliminate the need for relubrication. The mechanical design permits discs to slide on shaft with no metal to metal contact. Anticreep device maintains speed setting. Constant torque and HP ranges on all units. 40°C ambient, continuous duty. 1.0 service factor. Gray finish. USEM brand.

GEARCASE CONSTRUCTION

Gears & Pinions: Hardened steel

Bearings: Ball and tapered roller

Oil Seals: 2 HP models are friction type, 3 and 5 HP models are friction type, double lip

Gearcase: Cast iron

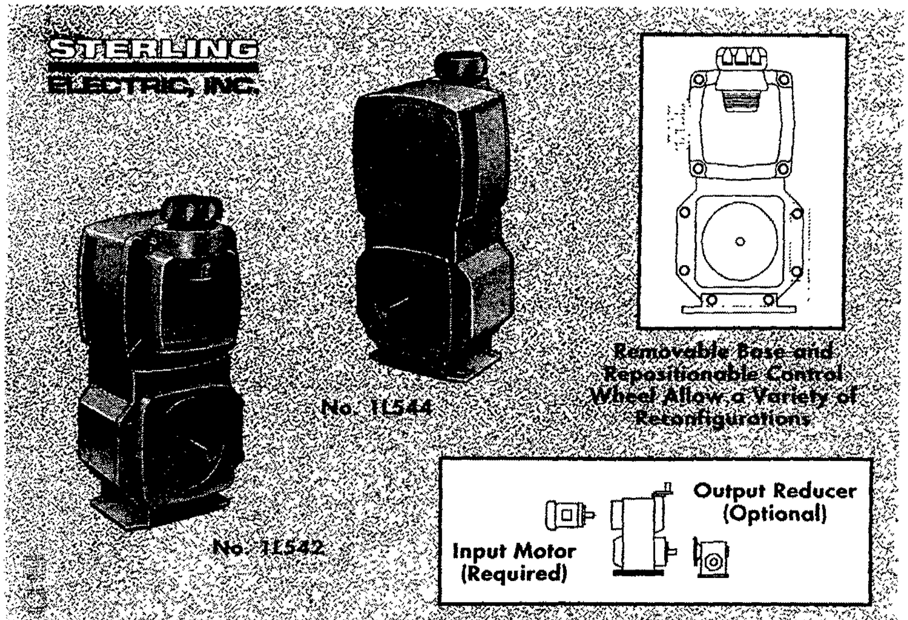
Shaft Rotation: 3 and 5 HP models can be easily reversed by electrical reconnection

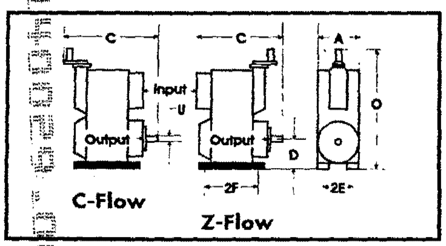
Brake: 2 HP models are adaptable to No. 2Z871 (available on page 252)

Key	Input HP	Output Shaft RPM Min. to Max.	Full-Load Torque In.-Lbs.	Continuous Duty Output HP	Overhung Load Lbs.	Phase	Volts 60 Hz*	Full-Load Amps at Nameplate Volts	Input Motor RPM	Enclosure Type	Rotation	Stock No.	List	Each	Shpg. Wt.
A	2	16.6-166	1880-760	0.5-2	716	Three	230/460	7.2/3.6	1725	TEFC	Reversible	**3Z607**	$2089.00	**$1462.00**	153.0
B	2	24.3-243	799-440	0.3-1.7	831	Three	230/460	8.4/4.2	1725	TEFC	Reversible	**3Z608**	1603.00	**1122.00**	119.0
C	2	190-1900	164-66	0.5-2	200	Three	230/460	7.2/3.6	1725	TEFC	Reversible	**3Z609**	1740.00	**1218.00**	110.0
D	3	204-2036	240-93	0.8-3	480	Three	230/460	11.0/5.5	1725	TEFC	Reversible	**3Z506**	2139.00	**1497.00**	246.0
D	3	14.4-144	3400-1313	0.8-3	1170	Three	230/460	11.0/5.5	1725	TEFC	Reversible	**3Z507**	2829.00	**1980.00**	270.0
E	5	230-1820	400-173	1.5-5	480	Three	230/460	16.4/8.2	1725	TEFC	Reversible	**3Z610**	2640.00	**1848.00**	257.0
E	5	37-292	2500-1079	1.5-5	905	Three	230/460	16.4/8.2	1725	TEFC	Reversible	**3Z611**	2768.00	**1937.00**	294.0

(*) Also operable on 190/380V, 50 Hz at 5/6 of rated 60 Hz HP and RPM.

MODULAR DRIVES





Stock No.	A	C	D	O	U	2E	2F
1L542	7.18	7.94	3.75	15.56	.625	3.25	3.25
1L543	7.18	8.81	3.75	15.56	.625	3.25	3.25
1L544	7.62	12.31	4.12	19.44	.875	6.25	7.75
1L545	7.62	13.44	4.12	22.81	.875	6.25	7.75
1L546	9.75	16.75	5.25	23.13	1.125	7.75	12.25
1L547	9.75	17.50	5.25	26.88	1.125	7.75	12.25

- **Constant torque from maximum to minimum RPM**
- **Suitable for NEMA C-face input and output**
- **No lubrication required**

Modular adjustable speed drives are mechanical transmissions using a variable pitch pulley and deep cog belt for smooth operation. Designed for applications which include conveyors, pumps, mixers and machine drives. Ideal for conversions to adjustable speed requirements from a fixed speed gear drive where a C-face motor and gear reducer exist.

TYPICAL PERFORMANCE DATA

MOTOR		MODULAR DRIVE PLUS MOTOR				
Max. Input HP	Input RPM	Rated RPM Output at Max. RPM	Rated RPM Output at Min. RPM	Rated HP Output at Max. RPM	Rated HP Output at Min. RPM	NEMA Frame
1.5	1800	4200	700	1.0	0.40	56C
2.0	1800	3940	460	1.5	0.53	140TC
2.5	1800	3220	460	2.0	0.53	140TC
1.5	1800	4660	460	1.0	0.53	140TC
4.0	1800	4270	460	3.0	1.30	180TC
5.0	1800	3220	460	5.0	1.30	180TC

NOTE: When using a worm gear reducer it is important to limit modular drive output to 1800 RPM maximum. Refer to instruction manual for details on how to adjust speed stops.

ORDERING DATA

NEMA Frame	Assembly Configuration	Sterling Model	Stock No.	List	Each	Shpg. Wt.
56C	Z-Flow	AA7E2D	**1L542**	$467.85	**$417.50**	28.0
56C	C-Flow	AA7E4D	**1L543**	467.85	**417.50**	28.0
140TC	Z-Flow	AA1G2D	**1L544**	858.66	**766.00**	48.0
140TC	C-Flow	AA8G4D	**1L545**	858.66	**766.50**	54.0
180TC	Z-Flow	AA2M2D	**1L546**	1391.08	**1248.00**	150.0
180TC	C-Flow	AA9M4D	**1L547**	1391.08	**1248.00**	153.0

SELECTION

Due to the flexibility of the modular tran mission, care needs to be taken in selec ing the proper drive motor and reducer t suit a given application. The followin steps are to be used as a guide for selec tion:

STEP 1:

Use the following formula to calculat from an application required outpu torque to motor horsepower input:

$$\frac{\text{Appl. Req'd. Torque (In.-Lbs.)} \times \text{Req'd. Maximum RPM}}{63025} = \text{HP Output}$$

Example:

$$\frac{100 \text{ (In.-Lbs.)} \times 420 \text{ RPM}}{63025} = 0.67 \text{ HP Output}$$

STEP 2:

Select the proper motor input HP by di ing the value in STEP 1 by the ratic Rate Output HP to Max. HP Input from Performance Data.

Example:

$$\frac{0.67 \text{ HP}}{1.0 \text{ HP}/1.5 \text{ HP}} = 1.0 \text{ HP motor req'd.}$$

STEP 3:

To choose the appropriate modular dr refer to Typical Performance Data; loc the proper Maximum HP calculated STEP 2 (Note: any HP motor smaller th maximum may be utilized), and th determine the input motor frame si Next, consider your application and det mine the configuration, Z-flow or C-flo that you require.

STEP 4:

Select an appropriate speed reducer required) and ratio by dividing the RP Output from the Performance Data by th application required Maximum RPM.

Example:

56C Frame:

$$\frac{\text{4200 RPM (Perf. Data)}}{\text{420 RPM (appl. req'd.)}} = 10{:}1 \text{ Ratio}$$

STEP 5:

Select an appropriate gear reducer siz from this catalog by using the HP calculat ed in STEP 1 divided by the factors liste below as the reducer HP Input rating out lined in the reducer selection tables.

WORM GEAR REDUCER	FACTOR
5 to 15:1 Ratio	.9
20 to 30:1 Ratio	.8
40 to 60:1 Ratio	.7

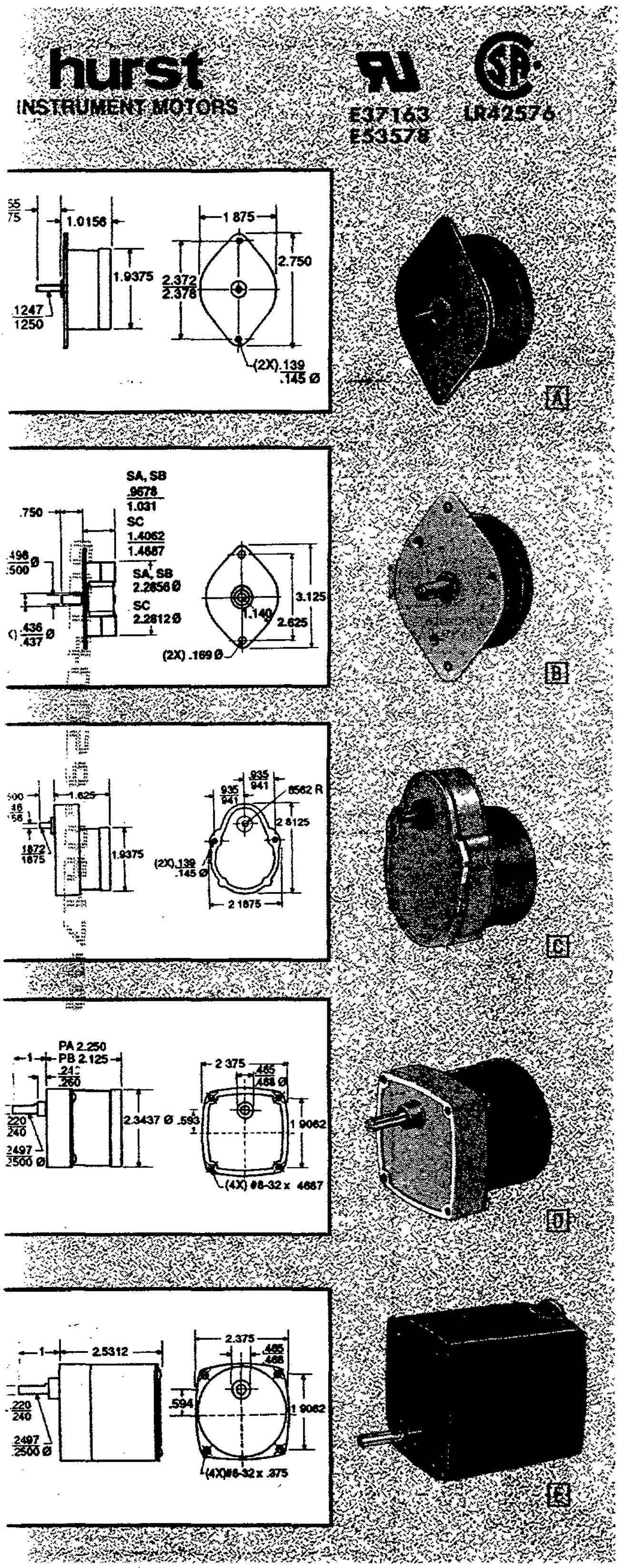
Example:

0.67 HP ÷ 0.9 (factor) = 0.74 HP

By following the above steps, proper selection has now been made from the calculated information.

1. Motor required: 1 HP
2. Transmission required: 56C frame, Z-Flow
3. Speed reducer required: 10:1 ratio with 0.74 HP input capability

REVERSIBLE SYNCHRONOUS MOTORS AND GEARMOTORS



- 115V, 60 Hz motors and gearmotors
- For applications that require constant speed under rated load, such as vending machines, chemical mixers, or in medical or food processing systems
- Permanent magnet design provides more torque, positive stop and holding
- Compact and reversible
- Corrosion protection finish
- Quiet operation; rapid acceleration

Gearcase: Gearmotors only have machined die-cast housing
Lubrication: Gearmotors only have grease lubrication
Gears: Gearmotors only have hardened steel gears
Bearings: Sintered bronze sleeve bearings
Mounting: All position
Rotation: Reversible
Ambient: 40°C
Duty: Continuous
Thermal Protection: Models SA, SB, SC, PA, PB, and T are impedance protected
Capacitor: Included

Key	Name-plate RPM	Full-Load Torque In.-Oz.	Hurst Model	Hurst Part No.	Stock No.	List	Each	Shpg. Wt.
			MOTORS					
A	300	2.0	A	3001-001	**6Z533**	$36.00	**$26.45**	0.9
A	600	2.3	AB	3005-001	**6Z534**	38.00	**28.50**	0.9
B	300	6	SA	4001-001	**6A182**	34.00	**25.20**	0.7
B	600	5.5	SB	4005-001	**6A183**	35.00	**25.95**	0.8
B	300	8.75	SC	4401-001	**6A184**	36.00	**26.70**	1.0
			GEARMOTORS					
C	1	150*	A	3002-001	**6Z535**	61.00	**45.65**	0.9
C	2	131*	A	3002-003	**6Z536**	61.00	**45.35**	0.9
C	4	110*	A	3002-005	**6Z537**	55.00	**41.20**	0.9
C	6	105	AB	3006-002	**6A188**	66.00	**48.80**	1.0
C	10	88	AB	3006-004	**6A189**	58.00	**43.40**	0.9
C	12	73	AB	3006-005	**6Z539**	58.00	**43.40**	0.9
C	20	44	AB	3006-007	**6Z540**	60.00	**44.45**	0.9
C	30	29	AB	3006-009	**6A190**	60.00	**44.70**	0.9
C	60	16	AB	3006-013	**6Z541**	56.00	**41.90**	0.9
C	120	8	AB	3006-014	**6Z542**	56.00	**41.65**	0.9
D	1	200*	PA	3202-003	**6A173**	81.00	**60.40**	1.2
D	2	174*	PA	3202-007	**6A174**	75.00	**55.70**	1.2
D	4	152*	PA	3202-011	**6A175**	76.00	**56.95**	1.1
D	6	140*	PA	3202-014	**6A176**	70.00	**51.85**	1.2
D	10	126*	PA	3202-017	**6A177**	70.00	**51.85**	1.2
D	30	77	PB	3204-019	**6A178**	70.00	**52.10**	1.3
D	60	41	PB	3204-024	**6A179**	63.00	**47.20**	1.2
D	120	20	PB	3204-026	**6A180**	62.00	**46.35**	1.3
D	360	6	PB	3204-033	**6A181**	70.00	**52.35**	1.3
E	1	250*	T	2602-001	**6Z131**	97.00	**72.30**	2.0
E	2	233*	T	2602-004	**6A185**	92.00	**68.50**	2.0
E	4	218*	T	2602-012	**6Z132**	94.00	**69.90**	2.0
E	6	210*	T	2602-013	**6A186**	84.00	**63.00**	2.0
E	10	180*	T	2602-006	**6Z133**	84.00	**63.00**	2.0
E	30	64	T	2602-014	**6Z134**	81.00	**60.05**	2.0
E	60	32	T	2602-009	**6Z135**	80.00	**59.85**	2.0
E	120	16	T	2602-015	**6A187**	84.00	**62.30**	2.0

(*) Maximum gear train loading.

A WIDE SELECTION OF BEARINGS AND BEARING ACCESSORIES IS AVAILABLE, SEE PAGES 312 THRU 326

AC AND DC LINEAR ACTUATORS

AC LINEAR ACTUATORS

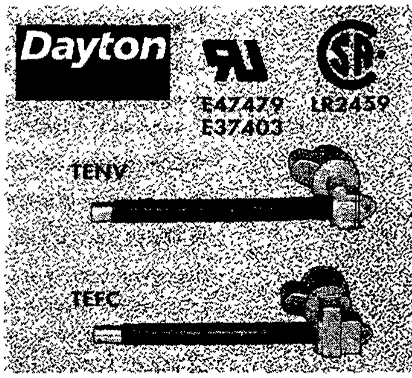
- **Linear actuators designed for light or heavy-duty applications**
- **Adjustable limit switches for user control in positioning applications**

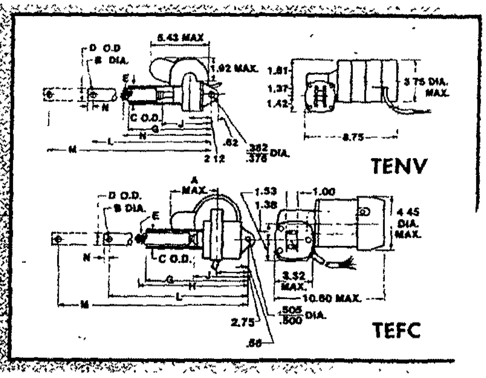
Dayton electromechanical actuators are designed for indoor use and feature permanent split capacitor motors with TENV design for light-duty applications or TEFC design for industrial duty. Provide 10 to 12" of linear motion.

Units are rated for loads from 300 to 1300 thrust lbs. at speeds from 8.4 to 20.0 in. per minute. Actuators can be modified to shorter stroke lengths. Single lead, rolled thread lifting screw with work-hardened finish provides long life and efficient, smooth operation. Built-in worm gear set for quiet gear reduction. Single right hand acme screws.

Outer tube helps protect screw and nut from dust and contaminants. Outer tube and translator tube may be removed and replaced with driver nut (included) to provide additional stroke modification. Pivot mount can be positioned at 90° intervals (Nos. 4Z845 and 4Z846 only). Adjustable limit switches provide user control in positioning-type applications.

115V, AC, 60 Hz single-phase PSC motors feature automatic reset thermal protection and 16" power cord. Capacitor included. Recognized by UL for construction (E47479) and motor protector (E37403) under the Motor Component Recognition Program. CSA certified. Dayton brand.





Stroke (Travel) In.	Enclosure	Speed In./Min.	Cont. Duty Cont. Travel In.*	Duty Cycle %†	Rated Load Lbs.	Full-Load Amps at 115 VAC	Stock No.	List	Each	Sl...
12	TENV	8.4	84	25	400	1.4	**4Z845**	$285.00	**$199.50**	[illegible]
12	TENV	19.4	194	25	300	1.4	**4Z846**	285.00	**199.50**	[illegible]
12	TEFC	8.9	89	25	1000	1.8	**4Z847**	596.00	**417.00**	[illegible]
12	TEFC	20.0	140	25	1000	4.2	**4Z848**	596.00	**417.00**	[illegible]
10	TEFC	8.9	62	25	1300	4.2	**4Z849**	728.00	**509.00**	[illegible]
10	TEFC	13.6	95	25	1150	4.2	**4Z850**	728.00	**509.00**	[illegible]

(*) Total in. of travel (up & down) until thermal overload protector cuts out. Protector automatically resets after cool-down period. (†) Duty cycle is based on 1 minute on/3 minutes off.

Stock No.	A	B	C	D	E	G	H	J	L	M
4Z845	—	0.382/0.376"	1.66"	1.38"	3/4-8"	18.92"	18.63"	4.63"	20.0"	32.0"
4Z846	—	0.382/0.376	1.66	1.38	3/4-8	18.92	18.63	4.63	20.0	32.0
4Z847	3.94"	0.382/0.376	1.66	1.38	3/4-5	18.94	19.35	4.47	20.5	32.5
4Z848	3.94	0.382/0.376	1.66	1.38	3/4-5	18.94	19.35	4.47	20.5	32.5
4Z849	3.94	0.505/0.500	2.50	2.00	1-5	19.00	19.20	5.30	20.5	32.5
4Z850	3.94	0.505/0.500	2.50	2.00	1-5	19.00	19.20	5.30	20.5	32.5

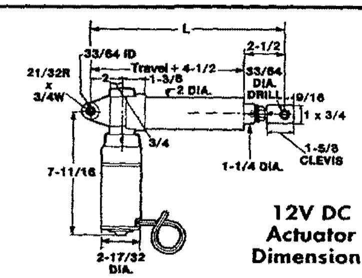
AC AND DC LINEAR ACTUATORS

- **Actuators with 6, 12 or 18" extension**
- **Integral clevis mount permits freedom of movement**

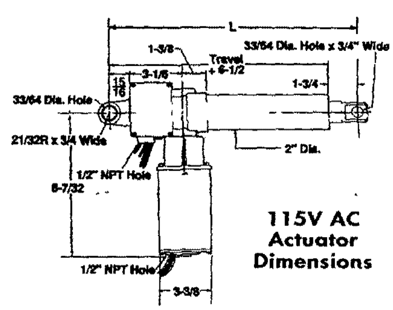
For use indoors or outdoors (with environmental protection) on stationary or mobile equipment. Feature thermally protected motors. Actuators are completely self-contained and have an enclosed weatherproof 115VAC limit switch with automatic-set ball brake.

12V DC motor, overtravel protector, load-limiting friction-disc clutch and automatic-set spring brake. High strength gear and pinion set has 20:1 ratio; double lead screw and nut are high-efficiency design.

Steel translating tube is zinc-coated and sealed at output end. All components are sealed in corrosion-resistant aluminum alloy die-cast housing. Capacitor supplied with AC units. Dayton brand.



12V DC Actuator Dimensions



115V AC Actuator Dimensions

Travel Inches	Speed In./Min.	Duty Cycle %*	Rated Load Lbs.	Volts	Full-Load Amps	Stock No.	List	Each	Shpg. Wt.
6	35	28	500	115 AC	2.2	**4Z843‡**	$467.62	**$375.25**	14.0
12	35	28	500	115	2.2	**4Z844‡**	478.56	**383.75**	16.0
18	35	28	500	115	2.2	**5A701‡**	501.41	**402.75**	20.0
6	32†	18	500	12 DC	22.0	**4Z841**	324.29	**260.25**	11.0
12	32†	18	500	12	22.0	**4Z842**	337.80	**271.25**	12.0
18	32†	18	500	12	22.0	**5A702**	351.14	**281.75**	15.0

(*) Duty cycle is based on 75°F ambient temperature. To prevent motor overheating, the actual operating time should be equally spaced throughout any period of elapsed time. (†) Lighter loads will have higher travel speed (at 100 lbs., speed is 68 in./min.; at 300 lbs., speed is 52 in./min.). (‡) CSA Certified (55270).

Travel (Inches)	L-Retracted 12VDC	L-Retracted 115VAC	L-Extended 12VDC	L-Extended 115VAC
6	13"	14¼"	19"	20¼"
12	19	20¼	31	32¼
18	25	26¼	43	44¼

DRIVE TIGHTENERS, SHAFTS, AND IDLER BUSHINGS

DRIVE TIGHTENERS

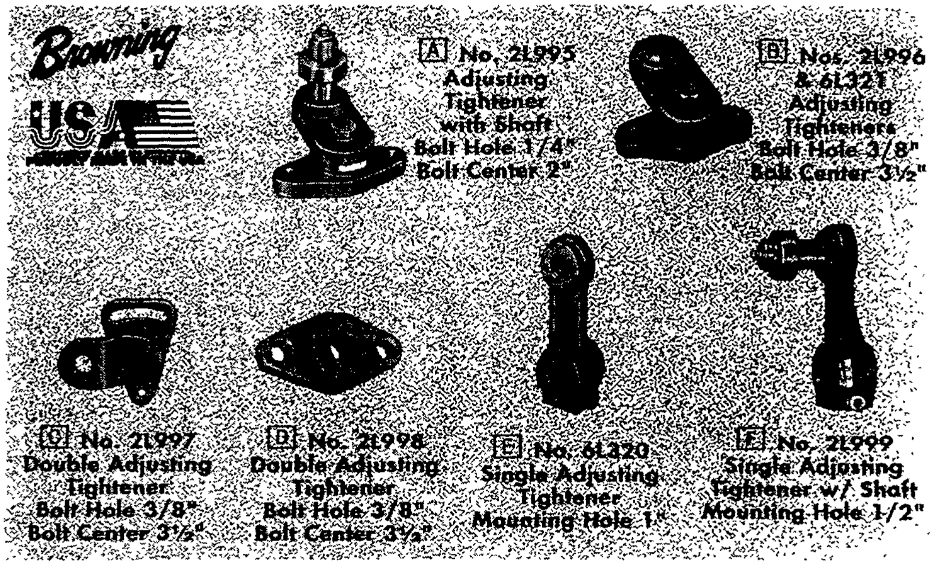
- **Drive tighteners are used to position or remove slack from V-belts, gearbelts, or roller chain drives**

Selection Procedure:

Step 1—Select drive tightener style to suit application.

Step 2—Select either a tightener shaft or idler bushing.

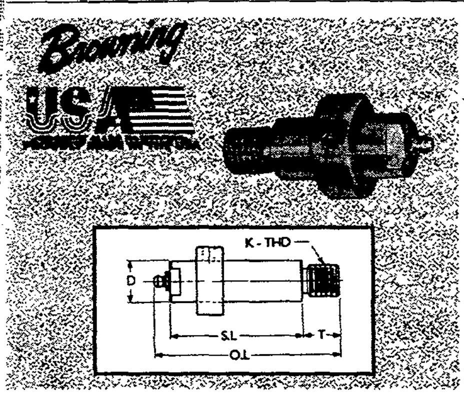
Step 3—Select idler component; needle bearing idler components for tightener shafts are found on page 291. Idler components for idler bushings include any sheave, sprocket, or gearbelt pulley which uses an H or Q1 bushing, see pages 284, 285, 300, 304, and 305.



DRIVE TIGHTENERS

Key	Stock No.	Shaft Req'd. See Below	Idler Bushing See Below	V-Belt Idler Sheaves See page 291	Idler Sprockets See page 291	Flat Face Idlers See page 291	Gearbelt Pulley Idlers See page 301	Browning Model	Stock No.	List	Each	Shpg. Wt.
		FOR USE WITH FOLLOWING STOCK NOS.										
A	2L995	*	—	6L327 & 6L328	6L332	6L339	—	ATN1	**2L995**	$72.40	**$62.75**	0.6
B	2L996	None	6L325	—	—	—	—	ATH	**2L996**	58.10	**50.40**	2.8
B	6L321	6L323, 6L324‡	6L326†	6L329, 6L330 & 6L331	6L333-6L336	6L340 & 6L341	6L337 & 6L338	ATQ	**6L321**	66.00	**57.20**	0.1
C	2L997	6L323, 6L324‡	6L326†	6L329, 6L330 & 6L331	6L333-6L336	6L340 & 6L341	6L337 & 6L338	DATSQ	**2L997**	55.00	**47.70**	2.0
D	2L998	6L323, 6L324‡	6L326†	6L329, 6L330 & 6L331	6L333-6L336	6L340 & 6L341	6L337 & 6L338	FFTQ	**2L998**	27.20	**23.54**	0.9
E	6L320	6L323, 6L324‡	6L326†	6L329, 6L330 & 6L331	6L333-6L336	6L340 & 6L341	6L337 & 6L338	SATQ	**6L320**	56.60	**49.10**	2.4
F	2L999	*	—	6L327 & 6L328	6L332	6L339	—	SATN1	**2L999**	51.30	**44.50**	0.6

(*) No 6L322 tightener shaft included. (†) No tightener shaft required when using No. 6L326 idler bushing listed below. (‡) Order shafts separately from listing below.



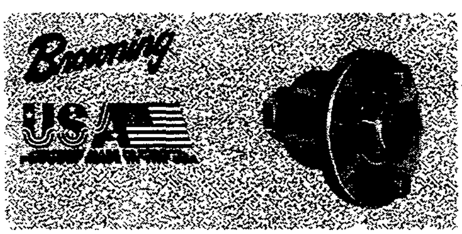
TIGHTENER SHAFTS

- **Used with drive tighteners above and idler components on pages 291 and 301**
- **Shaft surface hardened and ground to accommodate idlers with needle bearings**

TIGHTENER SHAFTS

Use With Tightener Stock Nos.	Dimensions (Inches) O.L.	D	K	T	S.L.	Browning Model	Stock No.	List	Each	Shpg. Wt.
2L995 & 2L999	2 5/16	1/2	3/8-16	7/16	1 1/2	N1	**6L322**	$22.40	**$19.40**	0.1
2L997, 2L998, 6L320 & 6L321	3 3/8	1	3/4-10	7/8	2 1/8	N2	**6L323**	26.60	**23.03**	0.7
2L997, 2L998, 6L320 & 6L321	4 3/8	1	3/4-10	7/8	3 1/8	N3	**6L324***	32.60	**28.25**	1.0

(*) No. 6L324 used with flat face idler No. 6L341 only.



- **Used with drive tighteners above**
- **Furnished with ball bearings, capscrews, stud bolts, and nuts**
- **Converts any H or Q1 Browning bushed product into an idler**

IDLER BUSHINGS

IDLER BUSHINGS

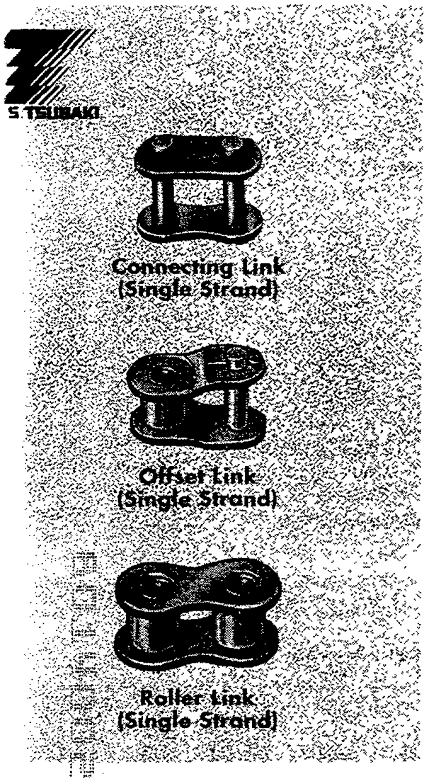
Use With Tightener Stock Nos.	Browning Model	Stock No.	List	Each	Shpg. Wt.
2L996	IDH1 x 1/2A*	**6L325**	$91.67	**$79.45**	0.9
6L321, 2L997, 2L998, & 6L320	IDQ1 x 3/4A†	**6L326**	156.04	**135.20**	5.3

(*) Use with any Browning H bushed sheaves, sprockets, or gearbelt pulley to convert to idler.
(†) Use with any Browning Q1 bushed sheaves, sprockets, or gearbelt pulley to convert to idler.

RADIAL LOAD CAPACITY (LBS.)‡

Stock No.	RPM 100	500	1000	1500	2000	2500	3000	3500
6L325	1518	1016	854	772	718	678	648	624
6L326	3320	2222	1868	1688	1568	1486	1420	1366

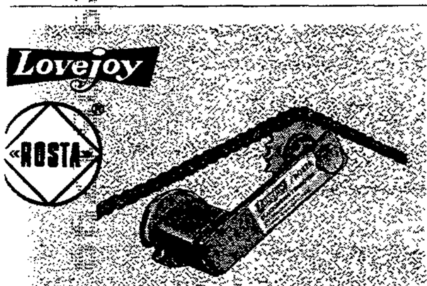
(‡) Based on 2500 hours average life at RPM shown.



RIVETED ROLLER CHAIN INDIVIDUAL LINKS

(Sold in Packages of 5 or 1)

	CONNECTING LINK Used to assemble chain strands when an even number of pitches is desired.					OFFSET LINK Used to assemble chain strands when an odd number of pitches is desired.					ROLLER LINK Used for replacement of damaged rollers.				
ANSI Size	Stock No.	Pkg. Qty.	List	Each	Shpg. Wt.	Stock No.	Pkg. Qty.	List	Each	Shpg. Wt.	Stock No.	Pkg. Qty.	List	Each Pkg.	Shpg. Wt.
SINGLE STRAND															
35	**5X290**	5	$5.50	**$3.13**	0.1	**5X291**	5	$8.50	**$6.73**	0.1	**5X292**	5	$4.00	**$2.14**	0.1
40	**5X293**	5	6.00	**3.37**	0.2	**5X294**	5	10.50	**8.03**	0.1	**5X295**	5	4.75	**2.69**	0.1
41	**5X296**	5	5.00	**2.94**	0.1	**5X297**	5	8.25	**6.50**	0.1	**5X298**	5	4.00	**2.14**	0.1
50	**5X299**	5	7.00	**4.23**	0.2	**5X300**	5	12.00	**9.91**	0.2	**5X301**	5	5.75	**3.34**	0.2
60	**5X302**	5	7.75	**5.15**	0.3	**5X303**	5	17.00	**13.06**	0.3	**5X304**	5	7.50	**5.06**	0.2
80	**6X529**	1	2.75	**1.64**	0.1	**6X530**	1	6.75	**4.10**	0.2	**6X531**	1	2.75	**1.64**	0.2
100	**6X532**	1	5.25	**2.99**	0.3	**6X533**	1	9.25	**7.14**	0.3	**6X534**	1	5.50	**3.13**	0.3
120	**6L490**	1	7.25	**4.84**	0.5	**6L493**	1	13.00	**10.29**	0.5	**6L496**	1	8.00	**5.58**	0.5
140	**6L491**	1	9.50	**7.17**	0.8	**6L494**	1	18.00	**14.93**	0.8	**6L497**	1	10.00	**7.99**	0.8
160	**6L492**	1	12.50	**9.96**	1.6	**6L495**	1	28.00	**22.94**	1.1	**6L498**	1	14.00	**11.16**	1.1
DOUBLE STRAND															
35-2	**6L499**	5	9.75	**7.97**	0.3	**6L505**	5	19.00	**15.66**	0.1				**NA**	
40-2	**6L500**	5	11.00	**8.77**	0.2	**6L506**	5	21.00	**16.74**	0.2				**NA**	
50-2	**6L501**	5	13.50	**10.80**	0.2	**6L507**	5	27.00	**22.16**	0.4				**NA**	
60-2	**6L502**	5	16.00	**12.90**	0.3	**6L508**	5	36.00	**30.55**	0.6				**NA**	
80-2	**6L503**	1	6.50	**4.03**	0.3	**6L509**	1	11.50	**9.60**	0.3				**NA**	
100-2	**6L504**	1	9.00	**7.05**	0.5	**6L510**	1	20.00	**16.68**	0.5				**NA**	
CONVEYOR															
C2040	**6L515**	1	2.00	**1.16**	0.1	**6L519**	1	3.00	**1.86**	0.1	**6L523**	1	1.00	**0.46**	0.1
C2050	**6L516**	1	2.50	**1.30**	0.1	**6L520**	1	4.50	**2.58**	0.1	**6L524**	1	1.50	**0.63**	0.1
C2060H	**6L517**	1	2.75	**1.64**	0.1	**6L521**	1	6.25	**3.45**	0.1	**6L525**	1	2.25	**1.17**	0.1
C2080H	**6L518**	1	5.00	**2.94**	0.2	**6L522**	1	8.75	**6.76**	0.2	**6L526**	1	4.25	**2.43**	0.2



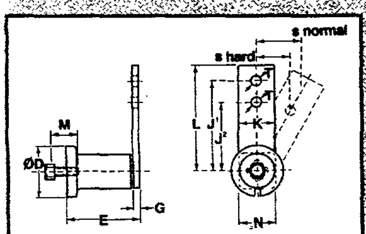
ELASTOMERIC TENSIONERS

Universally applicable tensioning device for use as an elastic spring element for chain and belt tensioning, pressing, and cushioning. Tensioners keep chain and belts taut, preventing uneven drive surges and power losses. Chain and belt life are prolonged by eliminating slap and vibration while minimizing drive, bearing, and shaft wear.

Four rubber inserts inside base isolate tensioning arm from contact with base and provide continuous resistance to applied rotary forces. Tensioning arm deflects up to 30° either side of its normal position allowing a pre-tension force that self-adjusts an idler to everyday elongation of a chain or belt while dampening vibration in the drive.

Employs no metal-to-metal connections; no lubrication is required. Dirt and grime won't affect operation. Can be used indoors or out, from –40° to 180°F. One bolt mounting makes installation easy and allows for 360° position flexibility.

Mounting bolt and idler bolt included. Nos. 1L833, 1L834, and 1L835 include 5/8" bushing. For idler sheaves and idler sprockets see page 291.

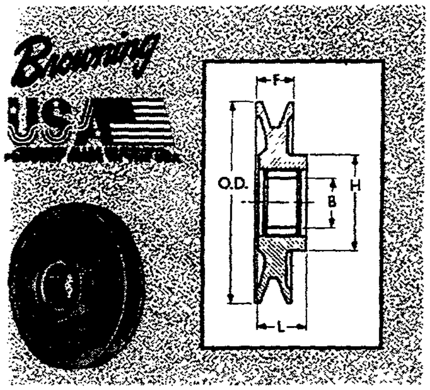


ORDERING DATA

ANSI Chain Size	V-Belt Size Range	Flat Belt Width	Rosta Model	Stock No.	List	Each	Shpg. Wt.
35	A, B, 3L	—	SE15	**1L833**	$68.00	**$34.45**	1.2
35, 40, & 41	B, C, 4L, 5L	1 & 2"	SE18	**1L834**	82.00	**41.45**	1.8
50, 60, & 80	D, E	2, 3, & 4"	SE27	**1L835**	105.00	**53.10**	4.3
80	—	4 & 5"	SE38	**1L836**	180.00	**90.95**	8.8

	ANGLE OF PRE-TENSION									SPECIFICATIONS											
	10 Degrees Force (lbs.)		Dim.	20 Degrees Force (lbs.)		Dim.	30 Degrees Force (lbs.)		Dim.	Dimensions (Inches)									Mounting Bolt		Idler Bolt
ock lo.	Normal	Hard	S	Normal	Hard	S	Normal	Hard	S	D	E	G	J1	J2	K	L	N	T	Size (Metric)	Drill Hole Size	Size
3	5.6	7.0	0.67	14.6	18.2	1.34	30.4	37.8	1.97	1.77	2.52	0.20	3.94	3.15	0.98	4.43	1.18	0.53	M8 x 20	5/16"	1/2-13 x 2"
4	16.9	20.9	0.67	40.5	50.6	1.34	78.7	98.2	1.97	2.28	3.07	0.24	3.94	3.15	1.18	4.53	1.38	0.53	M10 x 30	7/16	1/2-13 x 2½
5	33.7	43.8	0.87	85.4	111.1	1.73	179.8	233.8	2.56	3.07	4.21	0.28	5.12	3.94	1.97	6.10	2.05	0.53	M12 x 40	1/2	1/2-13 x 3½
6	65.2	81.4	1.18	164.1	205.0	2.36	337.2	421.5	3.43	3.74	5.51	0.39	6.89	5.51	2.36	8.07	2.60	0.81	M16 x 40	5/8	3/4-10 x 5

V-BELT IDLER SHEAVES, IDLER SPROCKETS, AND FLAT-FACE IDLERS



For "4L", "A", "5L" and "B" belts
Cast-iron construction
Needle bearings

V-BELT IDLER SHEAVES

V-BELT IDLER SHEAVES

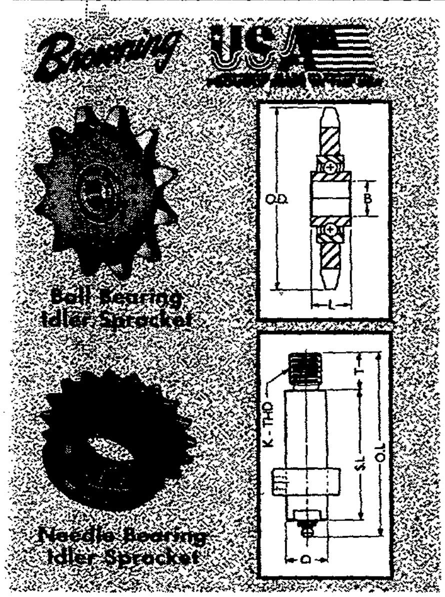
Belt Size	Shaft Req'd*	Dimensions (Inches) OD	B	F	H	L	Browning Model	Stock No.	List	Each	Shpg. Wt.
4L, A	6L322	2.50	1/2	21/32	$1^9/_{16}$	3/4	NAK25	**6L327**	$38.90	**$33.70**	0.4
4L, A	6L322	3.05	1/2	21/32	$1^9/_{16}$	3/4	NAK30	**6L328**	43.80	**38.00**	0.6
4L, A	6L323	3.95	1	3/4	$1^7/_8$	1	NAK41	**6L329**	51.30	**44.50**	1.3
5L, B	6L323	3.96	1	7/8	$1^7/_8$	1	NBK40	**6L330**	54.30	**47.10**	1.7
5L, B	6L323	4.96	1	7/8	$1^7/_8$	1	NBK52	**6L331**	58.80	**51.00**	1.9

(*) Order shafts separately from page 290.

RADIAL LOAD CAPACITY (LBS.)‡

Stock No.	RPM 100	500	1000	1500	2000	2500	3000	3500
6L327	665	406	331	294	269	250	237	226
6L328	665	406	331	294	269	250	237	226
6L329	2174	1327	1083	961	880	820	772	741
6L330	2174	1327	1083	961	880	820	772	741
6L331	2174	1327	1083	961	880	820	772	741

(*) Based on 2500 hours average life at RPM shown. For heaier radial loads see idler bushing page 290.



- Maintain proper chain tension
- Hardened steel teeth for longer life
- Heavy steel construction

IDLER SPROCKETS

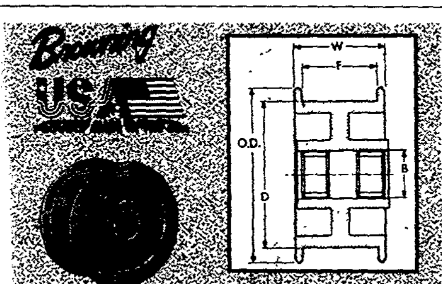
Chain Size	No. of Teeth	Tightener Shaft	Dimensions (Inches) OD	B	L	Browning Model	Stock No.	List	Each	Shpg. Wt.
BALL BEARING IDLER SPROCKETS†										
40	17	†	2.96	0.63	0.72	HB40A17 x 5/8	**5A551**	$31.09	**$21.61**	0.5
50	15	†	3.32	0.63	0.72	HB50A15 x 5/8	**5A552**	31.09	**21.62**	0.6
60	13	†	3.49	0.63	0.72	HB60A13 x 5/8	**5A553**	32.93	**22.92**	0.8
80	12	†	4.33	0.75	0.61	HB80A12 x 3/4	**5A554**	51.08	**35.70**	1.5
NEEDLE BEARING IDLER SPROCKETS (For Use with Tighteners)										
35	13	6L322*	1.75	0.50	0.75	HN35B13	**6L332**	49.40	**42.85**	0.2
40	19	6L323*	3.28	1.00	1.00	HN40B19	**6L333**	57.70	**50.00**	1.2
50	17	6L323*	3.72	1.00	1.00	HN50B17	**6L334**	64.90	**56.25**	1.4
60	17	6L323*	4.46	1.00	1.00	HN60B17	**6L335**	75.40	**65.35**	2.5
80	13	6L323*	4.66	1.25	1.00	HN60B13	**6L336**	90.50	**78.40**	2.7

(*) Order shafts separately from page 290. (†) Not for use with drive tighteners or tightener shafts.

RADIAL LOAD CAPACITY (LBS.)‡

Stock No.	RPM 100	300	500	600	900	1000	1200	1500	2000	2500	3000	3500
5A551	530	360	—	298	262	—	230	—	—	—	—	—
5A552	530	360	—	298	262	—	230	—	—	—	—	—
5A553	530	360	—	298	262	—	230	—	—	—	—	—
5A554	1660	1262	—	1061	958	—	892	—	—	—	—	—
6L332	665	—	406	—	—	331	—	294	269	250	237	226
6L333	2174	—	1327	—	—	1083	—	961	880	820	—	—
6L334	2174	—	1327	—	—	1083	—	961	880	820	—	—
6L335	2174	—	1327	—	—	1083	—	961	880	—	—	—
6L336	2174	—	1327	—	—	1083	—	961	880	—	—	—

(‡) Based on 2500 hours average life at RPM shown.



- For use with drive tighteners and tightener shafts on page 290
- Can be used on back side of V-belts or with gearbelts
- Needle bearings
- For gearbelt pulley idler see page 301

FLAT-FACE IDLERS

FLAT-FACE IDLERS

Shaft Req'd.*	Dimensions (Inches) OD	D	B	W	F	Browning Model	Stock No.	List	Each	Shpg. Wt.
6L322	$1^3/_4$	$1^3/_8$	1/2	3/4	9/16	N1D05F	**6L339**	$49.40	**$42.85**	0.3
6L323	$4^3/_8$	4	1	$1^7/_{16}$	$1^1/_{16}$	N4D1F	**6L340**	98.80	**85.55**	3.0
6L324	$4^3/_8$	4	1	$2^7/_{16}$	$2^1/_{16}$	N4D2F	**6L341**	138.00	**119.50**	4.7

(*) Order shafts separately from page 290.

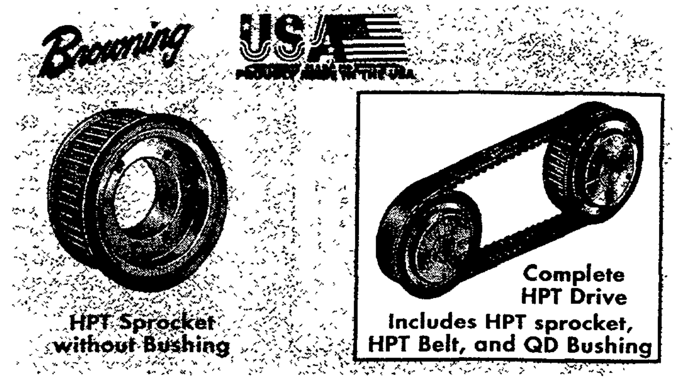
RADIAL LOAD CAPACITY (LBS.)‡

Stock No.	RPM 100	500	1000	1500	2000	2500	3000	3500
6L339	665	406	331	294	269	250	237	226
6L340	2927	1787	1458	1295	1185	1104	1047	997
6L341	4348	2654	2166	1922	1760	1640	1544	1482

(‡) Based on 2500 hours average life at RPM shown.

SYNCHRONOUS DRIVES HPT SPROCKETS

- HPT (High Performance Timing) sprockets are designed for high HP (up to 200 HP), low RPM (as low as 10 RPM) synchronous drives
- For 8mm and 14mm pitch HPT belts
- Use with HPT belts on page 293
- Available in 8mm and 14mm pitch; 20mm to 85mm width
- 8 mm pitch series for applications up to 80 HP; 14mm pitch series for applications up to 200 HP
- Positive drive, no slip
- No lubrication required
- Interchanges with HTD® sprockets
- Requires QD or split taper bushing; order separately on page 308
- Made in USA



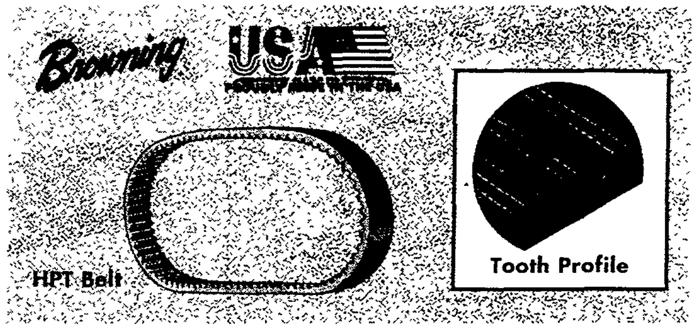
No. of Teeth	Bushing Req'd.	Pitch Dia. (In.)	Browning Model	Stock No.	List	Each	Shpg. Wt.
8mm PITCH—20mm (.79") WIDE							
22	*	2.206	B228M20B	**2L773**	$52.00	**$39.65**	1.4
24	JA	2.406	B248M20JA	**2L774**	53.00	**40.45**	0.9
26	JA	2.607	B268M20JA	**2L775**	54.00	**41.25**	0.9
28	JA	2.807	B288M20JA	**2L776**	55.00	**42.00**	1.0
28	H	2.807	B288M20H	**2L777**	55.00	**42.00**	1.2
30	JA	3.008	B308M20JA	**2L778**	57.00	**43.55**	1.2
30	H	3.008	B308M20H	**2L779**	57.00	**43.45**	1.5
32	JA	3.208	B328M20JA	**2L780**	59.00	**44.95**	1.3
32	H	3.208	B328M20H	**2L781**	59.00	**44.95**	1.7
34	SH	3.409	B348M20SH	**2L782**	60.00	**45.70**	1.6
36	SH	3.609	B368M20SH	**2L783**	62.00	**47.30**	1.8
38	SH	3.810	B388M20SH	**2L784**	64.00	**48.90**	1.9
40	SH	4.010	B408M20SH	**2L785**	68.00	**51.90**	2.3
44	SDS	4.411	B448M20SDS	**2L786**	79.00	**60.25**	2.6
48	SDS	4.812	B488M20SDS	**2L787**	92.00	**70.20**	3.5
56	SDS	5.614	B568M20SDS	**2L788**	102.00	**77.80**	4.6
64	SDS	6.416	B648M20SDS	**2L789**	125.00	**95.30**	6.3
72	SDS	7.218	B728M20SDS	**2L790**	128.00	**97.60**	7.0
80	SK	8.020	B808M20SK	**2L791**	138.00	**105.20**	11.0
90	SK	9.023	B908M20SK	**2L792**	142.00	**108.30**	12.0
8mm PITCH—30mm (1.18") WIDE							
22	*	2.206	B228M30B	**2L793**	53.00	**40.45**	1.7
24	*	2.406	B248M30B	**2L794**	54.00	**41.20**	2.0
26	*	2.607	B268M30B	**2L795**	56.00	**42.75**	2.7
28	JA	2.807	B288M30JA	**2L796**	59.00	**44.95**	1.2
28	H	2.807	B288M30H	**2L797**	59.00	**45.05**	1.5
30	JA	3.008	B308M30JA	**2L798**	60.00	**45.70**	1.5
30	H	3.008	B308M30H	**2L799**	60.00	**45.70**	1.9
32	JA	3.208	B328M30JA	**2L800**	62.00	**47.25**	1.8
32	H	3.208	B328M30H	**2L801**	62.00	**47.25**	2.3
34	SH	3.409	B348M30SH	**2L802**	63.00	**48.00**	2.4
36	SH	3.609	B368M30SH	**2L803**	68.00	**51.80**	2.1
38	SH	3.810	B388M30SH	**2L804**	70.00	**53.40**	1.9
40	SH	4.010	B408M30SH	**2L805**	78.00	**59.50**	2.9
44	SDS	4.411	B448M30SDS	**2L806**	86.00	**65.60**	3.0
48	SDS	4.812	B488M30SDS	**2L807**	93.00	**70.95**	3.8
56	SDS	5.614	B568M30SDS	**2L808**	104.00	**79.30**	5.2
64	SK	6.416	B648M30SK	**2L809**	126.00	**96.10**	8.8
72	SK	7.218	B728M30SK	**2L810**	138.00	**105.20**	12.0
80	SK	8.020	B808M30SK	**2L811**	142.00	**108.30**	10.0
90	SK	9.023	B908M30SK	**2L812**	146.00	**111.30**	12.0
112	SK	11.229	B1128M30SK	**2L813**	186.00	**141.75**	16.0
8mm PITCH—50mm (1.97") WIDE							
28	*	2.807	B288M50B	**2L814**	80.00	**61.05**	4.4
30	*	3.008	B308M50B	**2L815**	82.00	**62.60**	5.1
32	JA	3.208	B328M50JA	**2L816**	83.00	**63.20**	2.6
32	H	3.208	B328M50H	**2L817**	83.00	**63.30**	3.5
34	SH	3.409	B348M50SH	**2L818**	84.00	**64.00**	2.3
36	SH	3.609	B368M50SH	**2L819**	85.00	**64.75**	2.9
38	SH	3.810	B388M50SH	**2L820**	86.00	**65.50**	3.0
40	SH	4.010	B408M50SH	**2L821**	88.00	**67.00**	3.7
44	SD	4.411	B448M50SD	**2L822**	94.00	**71.65**	4.7
48	SD	4.812	B488M50SD	**2L823**	98.00	**74.60**	6.5
56	SK	5.614	B568M50SK	**2L824**	115.00	**87.55**	9.7
64	SK	6.416	B648M50SK	**2L825**	130.00	**98.95**	12.0
72	SK	7.218	B728M50SK	**2L826**	144.00	**109.65**	14.0
80	SF	8.020	B808M50SF	**2L827**	155.00	**117.95**	17.0
90	SF	9.023	B908M50SF	**2L828**	186.00	**141.50**	21.0
112	SF	11.229	B1128M50SF	**2L829**	234.00	**178.25**	25.0

No. of Teeth	Bushing Req'd	Pitch Dia. (In.)	Browning Model	Stock No.	List	Each	Shpg. Wt.
8mm PITCH—85mm (3.35") WIDE							
34	SH	3.409	B348M85SH	**2L830**	$95.00	**$72.35**	3.3
36	SH	3.609	B368M85SH	**2L831**	100.00	**76.15**	4.1
38	SH	3.810	B388M85SH	**2L832**	102.00	**77.70**	4.5
40	SD	4.010	B408M85SD	**2L833**	106.00	**80.70**	5.1
44	SD	4.411	B448M85SD	**2L834**	110.00	**83.75**	8.3
48	SD	4.812	B488M85SD	**2L835**	120.00	**91.35**	8.5
56	SK	5.614	B568M85SK	**2L836**	140.00	**106.55**	9.7
64	SK	6.416	B648M85SK	**2L837**	163.00	**124.05**	16.0
72	SF	7.218	B728M85SF	**2L838**	177.00	**134.70**	20.0
80	SF	8.020	B808M85SF	**2L839**	194.00	**147.65**	20.0
90	SF	9.023	B908M85SF	**2L840**	245.00	**186.50**	23.0
112	E	11.229	B1128M85E	**2L841**	308.00	**235.00**	40.0
14mm PITCH—40mm (1.57") WIDE							
28	SK	4.912	B2814M40SK	**2L842**	85.00	**64.70**	6.7
29	SK	5.088	B2914M40SK	**2L843**	90.00	**68.50**	6.9
30	SK	5.263	B3014M40SK	**2L844**	93.00	**70.85**	5.9
32	SK	5.614	B3214M40SK	**2L845**	102.00	**77.80**	7.1
34	SK	5.965	B3414M40SK	**2L846**	105.00	**80.10**	7.3
36	SF	6.316	B3614M40SF	**2L847**	115.00	**87.65**	9.7
38	SF	6.667	B3814M40SF	**2L848**	130.00	**99.10**	11.0
40	SF	7.018	B8514M40SF	**2L849**	133.00	**101.25**	15.0
44	SF	7.720	B4414M40SF	**2L850**	155.00	**118.00**	15.0
48	SF	8.421	B4814M40SF	**2L851**	165.00	**125.60**	19.0
52	SF	9.123	B5214M40SF	**2L852**	172.00	**130.95**	23.0
56	SF	9.825	B5614M40SF	**2L853**	175.00	**133.15**	23.0
60	SF	10.527	B6014M40SF	**2L854**	227.00	**173.00**	25.0
64	E	11.229	B6414M40E	**2L855**	260.00	**198.25**	33.0
68	E	11.930	B6814M40E	**2L856**	265.00	**201.75**	36.0
72	E	12.632	B7214M40E	**2L857**	272.00	**207.25**	39.0
80	E	14.036	B8014M40E	**2L858**	280.00	**213.25**	40.0
90	E	15.790	B9014M40E	**2L859**	288.00	**219.75**	37.0
112	E	19.650	B11214M40E	**2L860**	365.00	**278.00**	80.0
144	E	25.264	B14414M40E	**2L861**	480.00	**366.00**	80.0
14mm PITCH—55mm (2.17") WIDE							
28	SK	4.912	B2814M55SK	**2L862**	100.00	**76.25**	6.0
29	SK	5.088	B2914M55SK	**2L863**	105.00	**80.10**	8.7
30	SK	5.263	B3014M55SK	**2L864**	108.00	**82.35**	6.8
32	SK	5.614	B3214M55SK	**2L865**	114.00	**86.95**	8.6
34	SK	5.965	B3414M55SK	**2L866**	120.00	**91.45**	11.0
36	SF	6.316	B3614M55SF	**2L867**	125.00	**95.30**	11.0
38	SF	6.667	B3814M55SF	**2L868**	140.00	**106.70**	13.0
40	SF	7.018	B4014M55SF	**2L869**	143.00	**109.00**	14.0
44	E	7.720	B4414M55E	**2L870**	165.00	**125.60**	17.0
48	E	8.421	B4814M55E	**2L871**	170.00	**129.30**	22.0
52	E	9.123	B5214M55E	**2L872**	178.00	**135.45**	26.0
56	E	9.825	B5614M55E	**2L873**	180.00	**137.15**	31.0
60	E	10.527	B6014M55E	**2L874**	240.00	**183.25**	38.0
64	E	11.229	B6414M55E	**2L875**	275.00	**210.00**	35.0
68	E	11.930	B6814M55E	**2L876**	285.00	**217.25**	38.0
72	E	12.632	B7214M55E	**2L877**	290.00	**220.75**	40.0
80	E	14.036	B8014M55E	**2L878**	338.00	**258.00**	45.0
90	E	15.790	B9014M55E	**2L879**	345.00	**262.50**	45.0
112	E	19.650	B11214M55E	**2L880**	405.00	**308.50**	49.0
144	F	25.264	B14414M55F	**2L881**	520.00	**395.75**	90.0

(*) 1/2" Minimum plain bore.
User may machine to maximum bore indicated and add keyway and setscrew hole as required. See Standard Keyway and Setscrew machining Guide on page 302.

SYNCHRONOUS DRIVES HPT BELTS

- HPT (High Performance Timing) belts are for use with HPT sprockets on page 292
- Available in 8mm pitch, 20mm to 85mm wide, and 14mm pitch, 40mm to 55mm wide
- State of the art tooth design means quieter operation than other high performance belts
- HPT belts handle higher torque transmission than conventional gearbelt and pulley drives
- Interchangeable with HTD® belts
- Oil and heat resistant
- Made in USA

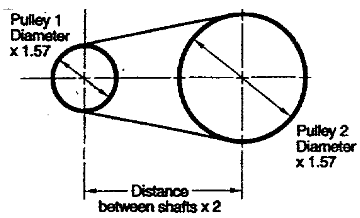


No. of Teeth	Pitch Length (mm)	Pitch Length (In.)	Browning Model	Stock No.	List	Each	Shpg. Wt.
8mm PITCH—20mm (.79") WIDE							
60	480	18.90	B4808M20	**2L882**	$14.73	**$12.91**	0.1
70	560	22.05	B5608M20	**2L883**	16.01	**14.02**	0.3
75	600	23.62	B6008M20	**2L884**	16.82	**14.74**	0.2
80	640	25.20	B6408M20	**2L885**	17.28	**15.14**	0.2
90	720	28.35	B7208M20	**2L886**	18.56	**16.26**	0.2
100	800	31.50	B8008M20	**2L887**	20.30	**17.78**	0.3
110	880	34.65	B8808M20	**2L888**	21.58	**18.92**	0.2
120	960	37.80	B9608M20	**2L889**	22.85	**20.02**	0.3
130	1040	40.94	B10408M20	**2L890**	24.13	**21.14**	0.3
140	1120	44.09	B11208M20	**2L891**	25.40	**22.26**	0.3
150	1200	47.24	B12008M20	**2L892**	26.80	**23.49**	0.3
160	1280	50.39	B12808M20	**2L893**	28.07	**24.60**	0.3
180	1440	56.69	B14408M20	**2L894**	30.62	**26.85**	0.4
200	1600	62.99	B16008M20	**2L895**	33.29	**29.20**	0.4
220	1760	69.29	B17608M20	**2L896**	35.84	**31.50**	0.4
225	1800	70.87	B18008M20	**2L897**	36.66	**32.15**	0.5
250	2000	78.74	B20008M20	**2L898**	40.14	**35.30**	0.5
300	2400	94.49	B24008M20	**2L899**	46.98	**41.25**	0.6
325	2600	102.36	B26008M20	**2L900**	50.81	**44.65**	0.7
350	2800	110.24	B28008M20	**2L901**	53.94	**47.35**	0.7
8mm PITCH—30mm (1.18") WIDE							
60	480	18.90	B4808M30	**2L902**	20.88	**18.30**	0.2
70	560	22.05	B5608M30	**2L903**	22.85	**20.02**	0.2
75	600	23.62	B6008M30	**2L904**	24.13	**21.14**	0.2
80	640	25.20	B6408M30	**2L905**	24.71	**21.64**	0.3
90	720	28.35	B7208M30	**2L906**	26.56	**23.28**	0.3
100	800	31.50	B8008M30	**2L907**	29.23	**25.65**	0.3
110	880	34.65	B8808M30	**2L908**	31.09	**27.35**	0.4
120	960	37.80	B9608M30	**2L909**	32.94	**28.95**	0.4
130	1040	40.94	B10408M30	**2L910**	34.92	**30.65**	0.5
140	1120	44.09	B11208M30	**2L911**	36.77	**32.30**	0.5
150	1200	47.24	B12008M30	**2L912**	38.74	**34.00**	0.5
160	1280	50.39	B12808M30	**6G239**	40.60	**35.65**	0.5
180	1440	56.69	B14408M30	**2L913**	44.43	**39.00**	0.6
200	1600	62.99	B16008M30	**2L914**	48.26	**42.35**	0.7
220	1760	69.29	B17608M30	**2L915**	52.08	**45.65**	1.0
225	1800	70.87	B18008M30	**2L916**	53.24	**46.70**	0.5
250	2000	78.74	B20008M30	**2L917**	58.35	**51.15**	0.5
300	2400	94.49	B24008M30	**2L918**	68.56	**60.15**	1.0
325	2600	102.36	B26008M30	**2L919**	73.78	**64.75**	1.0
350	2800	110.24	B28008M30	**2L920**	78.65	**69.00**	1.0
8mm PITCH—50mm (1.97") WIDE							
60	480	18.90	B4808M50	**2L921**	33.29	**29.20**	0.3
70	560	22.05	B5608M50	**2L922**	36.54	**32.05**	0.3
75	600	23.62	B6008M50	**2L923**	38.63	**33.90**	0.4
80	640	25.20	B6408M50	**2L924**	39.67	**34.80**	0.5
90	720	28.35	B7208M50	**2L925**	42.92	**37.65**	0.5
00	800	31.50	B8008M50	**2L926**	47.21	**41.40**	0.3
10	880	34.65	B8808M50	**2L927**	50.46	**44.30**	0.5
20	960	37.80	B9608M50	**2L928**	53.71	**47.10**	0.5
30	1040	40.94	B10408M50	**2L929**	56.84	**49.90**	0.6
40	1120	44.09	B11208M50	**2L930**	60.09	**52.75**	0.6
50	1200	47.24	B12008M50	**2L931**	63.34	**55.60**	0.5
60	1280	50.39	B12808M50	**2L932**	66.58	**58.40**	0.5
80	1440	56.69	B14408M50	**2L933**	72.96	**63.95**	0.5
00	1600	62.99	B16008M50	**2L934**	79.46	**69.65**	0.4
20	1760	69.29	B17608M50	**2L935**	85.84	**75.25**	1.0
25	1800	70.87	B18008M50	**2L936**	88.04	**77.20**	1.2
50	2000	78.74	B20008M50	**2L937**	96.63	**84.70**	1.3
00	2400	94.49	B24008M50	**2L938**	113.80	**99.75**	1.5
25	2600	102.36	B26008M50	**2L939**	123.77	**108.45**	1.7
50	2800	110.24	B28008M50	**2L940**	130.96	**114.75**	1.7

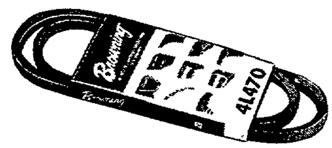
No. of Teeth	Pitch Length (mm)	Pitch Length (In.)	Browning Model	Stock No.	List	Each	Shpg. Wt.
8mm PITCH—85mm (3.35") WIDE							
60	480	18.90	B4808M85	**2L941**	$55.33	**$48.55**	0.5
70	560	22.05	B5608M85	**2L942**	60.78	**53.30**	0.6
75	600	23.62	B6008M85	**2L943**	64.44	**56.45**	0.6
80	640	25.20	B6408M85	**2L944**	66.24	**58.10**	0.7
90	720	28.35	B7208M85	**2L945**	71.69	**62.90**	0.7
100	800	31.50	B8008M85	**2L946**	79.00	**69.30**	0.8
110	880	34.65	B8808M85	**2L947**	84.45	**74.00**	0.9
120	960	37.80	B9608M85	**2L948**	89.90	**78.80**	0.3
130	1040	40.94	B10408M85	**2L949**	95.35	**83.65**	1.2
140	1120	44.09	B11208M85	**2L950**	100.80	**88.30**	1.2
150	1200	47.24	B12008M85	**2L951**	106.26	**93.15**	1.4
160	1280	50.39	B12808M85	**2L952**	111.71	**97.90**	1.5
180	1440	56.69	B14408M85	**2L953**	122.61	**107.40**	1.7
200	1600	62.99	B16008M85	**2L954**	133.63	**117.15**	1.6
220	1760	69.29	B17608M85	**2L955**	144.42	**126.60**	1.9
225	1800	70.87	B18008M85	**2L956**	148.13	**129.80**	1.8
250	2000	78.74	B20008M85	**2L957**	162.63	**142.50**	2.3
300	2400	94.49	B24008M85	**2L958**	191.75	**168.25**	2.6
325	2600	102.36	B26008M85	**2L959**	206.94	**181.50**	2.8
350	2800	110.24	B28008M85	**2L960**	220.86	**193.75**	3.1
14mm PITCH—40mm (1.57") WIDE							
69	966	38.03	B96614M40	**2L961**	110.55	**96.85**	1.0
85	1190	46.85	B119014M40	**2L962**	121.57	**106.60**	1.1
100	1400	55.12	B140014M40	**2L963**	132.24	**115.90**	1.3
115	1610	63.39	B161014M40	**2L964**	143.14	**125.45**	1.7
127	1778	70.00	B177814M40	**2L965**	152.77	**133.85**	1.7
135	1890	74.41	B189014M40	**2L966**	160.43	**140.60**	2.0
150	2100	82.68	B210014M40	**2L967**	174.81	**153.25**	2.1
165	2310	90.94	B231014M40	**2L968**	186.18	**163.50**	2.0
175	2450	94.46	B245014M40	**2L969**	193.84	**170.25**	2.5
185	2590	101.97	B259014M40	**2L970**	203.23	**178.25**	2.1
200	2800	110.24	B280014M40	**2L971**	217.38	**190.75**	3.0
225	3150	124.02	B315014M40	**2L972**	238.61	**209.25**	3.1
240	3360	132.28	B336014M40	**2L973**	249.86	**219.25**	3.4
250	3500	137.80	B350014M40	**2L974**	257.64	**226.00**	3.4
275	3850	151.58	B385014M40	**2L975**	283.62	**248.75**	3.8
309	4326	170.32	B432614M40	**2L976**	315.06	**276.25**	4.5
327	4578	180.24	B457814M40	**2L977**	332.92	**292.00**	5.0
14mm PITCH—55mm (2.16") WIDE							
69	966	38.03	B96614M55	**2L978**	145.12	**127.15**	1.3
85	1190	46.85	B119014M55	**2L979**	160.31	**140.50**	1.4
100	1400	55.12	B140014M55	**2L980**	175.16	**153.50**	1.8
115	1610	63.39	B161014M55	**2L981**	190.82	**167.50**	2.0
127	1778	70.00	B177814M55	**2L982**	203.35	**178.50**	2.3
135	1890	74.41	B189014M55	**2L983**	213.90	**187.75**	2.8
150	2100	82.68	B210014M55	**2L984**	233.74	**205.25**	2.9
165	2310	90.94	B231014M55	**2L985**	248.94	**218.50**	3.3
175	2450	94.46	B245014M55	**2L986**	259.14	**227.25**	4.0
185	2590	101.97	B259014M55	**2L987**	272.25	**238.75**	4.0
200	2800	110.24	B280014M55	**2L988**	291.86	**256.25**	3.0
225	3150	125.02	B315014M55	**2L989**	321.09	**281.50**	3.0
240	3360	132.28	B336014M55	**2L990**	337.21	**295.50**	4.0
250	3500	137.80	B350014M55	**2L991**	347.77	**305.00**	7.0
275	3850	151.58	B385014M55	**2L992**	386.40	**339.00**	6.0
309	4326	170.32	B432614M55	**2L993**	425.95	**373.25**	7.0
327	4578	180.24	B457814M55	**2L994**	451.70	**395.75**	6.0

FRACTIONAL HP 3L, 4L, & 5L V-BELTS

BELT LENGTH FORMULA



Pulley 1 Diameter x 1.57 +
Pulley 2 Diameter x 1.57 +
Distance between shafts x 2 =
BELT LENGTH

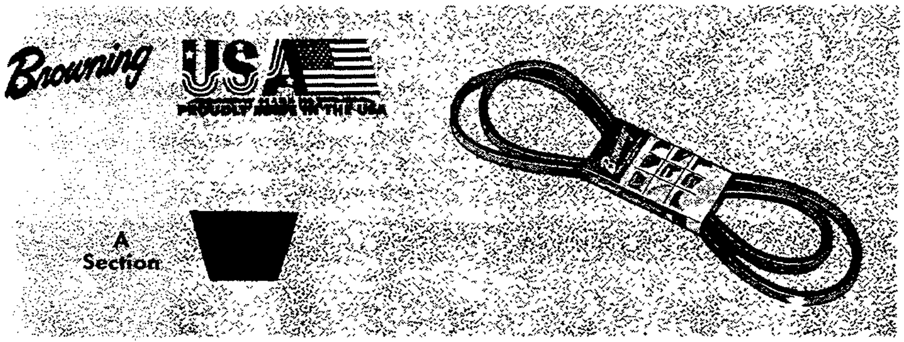


- Used for most light-duty (single groove) drive requirements
- Special weave fabric and polyester cords provide strength and quiet operation
- Can use smaller sheaves due to the belt's high flexibility
- Oil and heat resistant
- Made in USA
- Browning brand

Nom. Outside Length	Stock No.	Each	Shpg. Wt.	Nom. Outside Length	Stock No.	Each	Shpg. Wt.	Nom. Outside Length	Stock No.	Each	Shpg. Wt.	Nom. Outside Length	Stock No.	Each	Shpg. Wt.
3L V-BELTS (3/8" Top Width by 7/32" Thick)															
15"	3L150	$4.49	0.1	27"	3L270	$4.66	0.1	39"	3L390	$5.70	0.1	51"	3L510	$6.74	0.2
16	3L160	4.49	0.1	28	3L280	4.71	0.1	40	3L400	5.80	0.1	52	3L520	6.82	0.2
17	3L170	4.49	0.1	29	3L290	4.80	0.1	41	3L410	5.92	0.2	53	3L530	6.91	0.2
18	3L180	4.49	0.1	30	3L300	4.88	0.1	42	3L420	6.01	0.2	54	3L540	7.00	0.2
19	3L190	4.49	0.1	31	3L310	4.92	0.1	43	3L430	6.10	0.2	55	3L550	7.08	0.2
20	3L200	4.49	0.1	32	3L320	5.02	0.1	44	3L440	6.14	0.2	56	3L560	7.13	0.2
21	3L210	4.49	0.1	33	3L330	5.10	0.1	45	3L450	6.26	0.2	57	3L570	7.22	0.5
22	3L220	4.49	0.1	34	3L340	5.14	0.1	46	3L460	6.35	0.2	58	3L580	7.30	0.2
23	3L230	4.49	0.1	35	3L350	5.28	0.1	47	3L470	6.43	0.2	59	3L590	7.34	0.2
24	3L240	4.49	0.1	36	3L360	5.36	0.1	48	3L480	6.52	0.2	60	3L600	7.44	0.2
25	3L250	4.49	0.1	37	3L370	5.44	0.1	49	3L490	6.61	0.2	61	3L610	7.56	0.2
26	3L260	4.58	0.1	38	3L380	5.58	0.1	50	3L500	6.69	0.2	—	—	—	—
4L V-BELTS (1/2" Top Width by 5/16" Thick)															
17	4L170	3.03	0.1	36	4L360	3.64	0.2	55	4L550	4.78	0.4	74	4L740	5.97	0.5
18	4L180	3.03	0.1	37	4L370	3.66	0.2	56	4L560	4.84	0.4	75	4L750	6.01	0.4
19	4L190	3.03	0.1	38	4L380	3.76	0.3	57	4L570	4.89	0.4	76	4L760	6.06	0.4
20	4L200	3.03	0.1	39	4L390	3.86	0.2	58	4L580	4.94	0.4	77	4L770	6.14	0.5
21	4L210	3.03	0.1	40	4L400	3.91	0.2	59	4L590	4.98	0.4	78	4L780	6.23	0.5
22	4L220	3.03	0.1	41	4L410	4.00	0.3	60	4L600	5.06	0.4	79	4L790	6.34	0.5
23	4L230	3.03	0.1	42	4L420	4.05	0.3	61	4L610	5.12	0.4	80	4L800	6.42	0.5
24	4L240	3.03	0.1	43	4L430	4.12	0.3	62	4L620	5.17	0.4	82	4L820	6.64	0.5
25	4L250	3.03	0.2	44	4L440	4.22	0.3	63	4L630	5.23	0.4	84	4L840	6.84	0.6
26	4L260	3.09	0.2	45	4L450	4.30	0.3	64	4L640	5.27	0.4	86	4L860	7.03	0.5
27	4L270	3.14	0.2	46	4L460	4.34	0.3	65	4L650	5.37	0.4	88	4L880	7.23	0.5
28	4L280	3.19	0.2	47	4L470	4.39	0.3	66	4L660	5.39	0.4	90	4L900	7.42	0.5
29	4L290	3.25	0.2	48	4L480	4.42	0.3	67	4L670	5.45	0.4	92	4L920	7.62	0.5
30	4L300	3.28	0.2	49	4L490	4.48	0.3	68	4L680	5.53	0.4	94	4L940	7.78	0.6
31	4L310	3.33	0.2	50	4L500	4.52	0.3	69	4L690	5.59	0.4	96	4L960	7.95	0.6
32	4L320	3.39	0.2	51	4L510	4.55	0.3	70	4L700	5.64	0.4	98	4L980	8.12	0.6
33	4L330	3.45	0.2	52	4L520	4.61	0.3	71	4L710	5.79	0.4	100	3X543	12.88	0.3
34	4L340	3.50	0.2	53	4L530	4.67	0.3	72	4L720	5.89	0.4	—	—	—	—
35	4L350	3.55	0.2	54	4L540	4.73	0.3	73	4L730	5.94	0.5	—	—	—	—
5L V-BELTS (21/32" Top Width by 3/8" Thick)															
23	5L230	5.80	0.2	40	5L400	8.16	0.4	57	5L570	10.97	0.6	74	5L740	13.10	0.7
24	5L240	5.80	0.2	41	5L410	8.38	0.4	58	5L580	11.06	0.6	75	5L750	13.27	0.7
25	5L250	5.80	0.2	42	5L420	8.59	0.4	59	5L590	11.59	0.6	76	5L760	13.39	0.8
26	5L260	5.97	0.2	43	5L430	8.77	0.4	60	5L600	11.24	0.6	77	5L770	13.57	0.7
27	5L270	6.10	0.2	44	5L440	8.98	0.4	61	5L610	11.32	0.6	78	5L780	13.74	0.7
28	5L280	6.22	0.2	45	5L450	9.16	0.4	62	5L620	11.36	0.6	79	5L790	13.91	0.2
29	5L290	6.39	0.3	46	5L460	9.33	0.4	63	5L630	11.46	0.5	80	5L800	14.13	0.7
30	5L300	6.48	0.3	47	5L470	9.56	0.4	64	5L640	11.61	0.6	82	5L820	14.52	0.8
31	5L310	6.65	0.3	48	5L480	9.72	0.4	65	5L650	11.75	0.6	84	5L840	14.90	0.8
32	5L320	6.78	0.3	49	5L490	9.93	0.4	66	5L660	11.91	0.6	86	5L860	15.37	0.8
33	5L330	6.96	0.3	50	5L500	10.07	0.5	67	5L670	12.05	0.6	88	5L880	15.63	0.8
34	5L340	7.08	0.3	51	5L510	10.64	0.5	68	5L680	12.22	0.6	90	5L900	15.93	0.8
35	5L350	7.22	0.3	52	5L520	10.37	0.5	69	5L690	12.35	0.6	92	5L920	16.25	0.4
36	5L360	7.34	0.3	53	5L530	10.54	0.5	70	5L700	12.48	0.7	94	5L940	16.64	0.4
37	5L370	7.48	0.3	54	5L540	10.68	0.5	71	5L710	12.61	0.7	96	5L960	17.15	0.9
38	5L380	7.64	0.4	55	5L550	10.80	0.5	72	5L720	12.74	0.7	98	5L980	17.53	0.9
39	5L390	7.86	0.4	56	5L560	10.89	0.5	73	5L730	12.91	0.7	100	3X544	17.93	0.5

A SECTION V-BELTS

A SECTION SUPER GRIPBELTS® V-BELTS



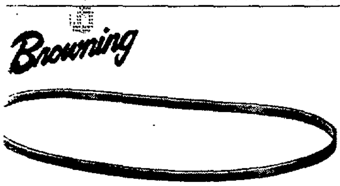
- Used for industrial applications requiring single or multiple V-belt drives
- Length matched within Rubber Mfg. Assoc. tolerances
- Oil and heat resistant
- Made in USA
- Browning brand

A SECTION V-BELTS (1/2" Top Width by 5/16" Thick)

m. t- le th.	RMA Belt No.*	Stock No.	Each	Shpg. Wt.	Nom. Out-side Lgth.	RMA Belt No.*	Stock No.	Each	Shpg. Wt.	Nom. Out-side Lgth.	RMA Belt No.*	Stock No.	Each	Shpg. Wt.	Nom. Out-side Lgth.	RMA Belt No.*	Stock No.	Each	Shpg. Wt.
	A26	**3X697**	**$7.17**	0.2	50"	A48	**3X472**	**$10.08**	0.3	71"	A69	**6L183**	**$12.92**	0.5	92"	A90	**3X631**	**$17.06**	0.6
	A27	**6A139**	**7.22**	0.2	51	A49	**1A096**	**10.22**	0.4	72	A70	**6A151**	**13.19**	0.5	93	A91	**6L193**	**17.24**	0.6
	A28	**6A140**	**7.38**	0.2	52	A50	**3X546**	**10.32**	0.5	73	A71	**3X627**	**13.28**	0.5	94	A92	**6A152**	**17.44**	0.6
	A29	**6A141**	**7.45**	0.2	53	A51	**3X473**	**10.44**	0.4	74	A72	**5A292**	**13.34**	0.6	95	A93	**6L194**	**17.60**	0.6
	A30	**1A095**	**7.60**	0.2	54	A52	**3X702**	**10.55**	0.4	75	A73	**6L184**	**13.44**	0.5	96	A94	**6L195**	**17.77**	0.6
	A31	**3X654**	**7.71**	0.3	55	A53	**6X565**	**10.65**	0.4	76	A74	**5A293**	**13.54**	0.6	97	A95	**6L196**	**17.94**	0.6
	A32	**6A142**	**7.87**	0.2	56	A54	**3X700**	**10.81**	0.4	77	A75	**3X628**	**13.77**	0.5	98	A96	**3X632**	**18.13**	0.6
	A33	**5X995**	**7.96**	0.3	57	A55	**3X622**	**10.92**	0.4	78	A76	**6L185**	**13.96**	0.5	99	A97	**6L197**	**18.35**	0.6
	A34	**6A143**	**8.16**	0.2	58	A56	**3X704**	**11.08**	0.4	79	A77	**6L186**	**14.18**	0.5	100	A98	**6L198**	**18.50**	0.7
	A35	**3X620**	**8.25**	0.3	59	A57	**6A148**	**11.12**	0.4	80	A78	**6X570**	**14.40**	0.6	102	A100	**6L199**	**18.87**	0.7
	A36	**6A144**	**8.42**	0.2	60	A58	**3X547**	**11.34**	0.4	81	A79	**6L187**	**14.60**	0.5	105	A103	**6L200**	**19.40**	0.7
	A37	**6A145**	**8.64**	0.2	61	A59	**6A149**	**11.43**	0.4	82	A80	**3X629**	**14.82**	0.6	107	A105	**3X351**	**19.78**	0.7
	A38	**3X545**	**8.82**	0.3	62	A60	**3X623**	**11.55**	0.4	83	A81	**6L188**	**15.02**	0.5	112	A110	**6L201**	**21.30**	0.8
	A39	**6A146**	**8.96**	0.3	63	A61	**6A150**	**11.71**	0.4	84	A82	**6L189**	**15.24**	0.5	114	A112	**3X352**	**21.99**	0.7
	A40	**1A109**	**9.08**	0.3	64	A62	**3X624**	**11.81**	0.4	85	A83	**6L190**	**15.50**	0.5	122	A120	**3X371**	**23.62**	0.8
	A41	**1A100**	**9.22**	0.3	65	A63	**5A290**	**11.97**	0.5	86	A84	**5A294**	**15.71**	0.6	130	A128	**3X633**	**25.30**	0.9
	A42	**3X621**	**9.44**	0.3	66	A64	**3X625**	**12.08**	0.4	87	A85	**3X630**	**15.92**	0.6	138	A136	**6L202**	**26.95**	9.0
	A43	**3X699**	**9.63**	0.3	67	A65	**5A291**	**12.18**	0.5	88	A86	**6L318**	**16.14**	0.6	146	A144	**6L203**	**28.60**	1.0
	A44	**6A147**	**9.71**	0.3	68	A66	**6X569**	**12.34**	0.5	89	A87	**6L191**	**16.40**	0.6	160	A158	**6L204**	**31.35**	1.0
	A45	**1A105**	**9.86**	0.2	69	A67	**6L182**	**12.55**	0.5	90	A88	**5A295**	**16.61**	0.7	175	A173	**6L205**	**34.40**	1.2
	A46	**3X471**	**9.86**	0.3	70	A68	**3X626**	**12.61**	0.5	91	A89	**6L192**	**16.82**	0.6	182	A180	**6L206**	**35.85**	1.2
	A47	**1A098**	**9.98**	0.3															

lanufactured to tolerances set by the RMA (Rubber Manufacturers' Association).

POLY V-BELTS FOR COMPRESSORS

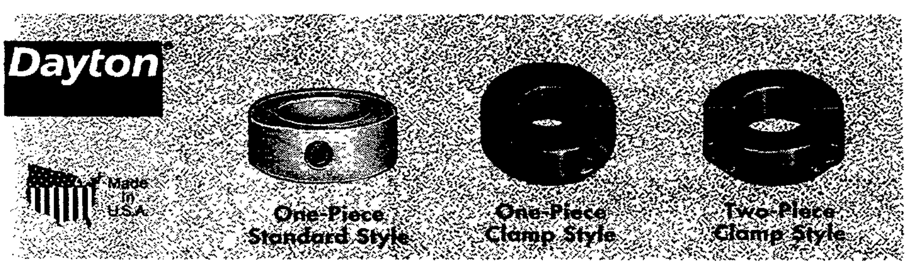


Six-rib belts for many Speedaire and other brand compressors. High tensile strength, oil/heat resistant. Browning brand.

Size L x W	RMA Belt No.*	Stock No.	Each	Shpg. Wt.
49 x 5/8"	490J6	**3X542**	**$13.33**	0.2
46 x 5/8	460J6	**3X655**	**13.31**	0.2
41 x 5/8	410J6	**3X707**	**12.81**	0.2

(*) Manufactured to tolerances set by the RMA (Rubber Manufacturers' Association).

SHAFT COLLARS AVAILABLE



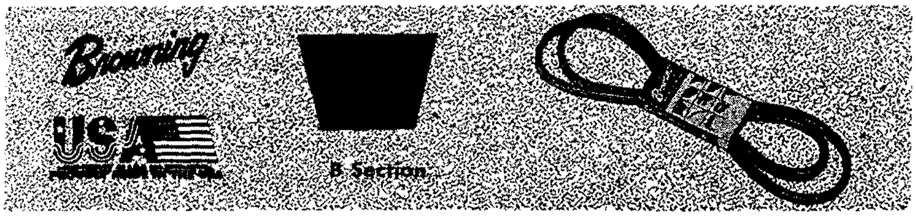
FOR A COMPLETE LISTING OF STANDARD ONE-PIECE AND CLAMP STYLE ONE AND TWO-PIECE SHAFT COLLARS SEE PAGE 334.

aft collars are used on tools, machinery, fans, blowers, and ıer equipment to lock various components in place including arings, sprockets, and pulleys. Other applications include use shaft protectors, spacers, and depth stops.

Choose from three styles of shaft collars: each style available in either cold-rolled steel or 303 stainless steel. Stainless steel collars have stainless steel setscrews.

INDUSTRIAL-DUTY B SECTION AND PREMIUM LINK-TYPE V-BELTS

B SECTION SUPER GRIPBELTS® V-BELTS



- Used for industrial applications requiring single or multiple V-belt drives
- Length matched within Rubber Mfg. Assoc. tolerances
- Oil and heat resistant
- Made in USA
- Browning brand

B SECTION V-BELTS (21/32" Top Width by 7/16" Thick)

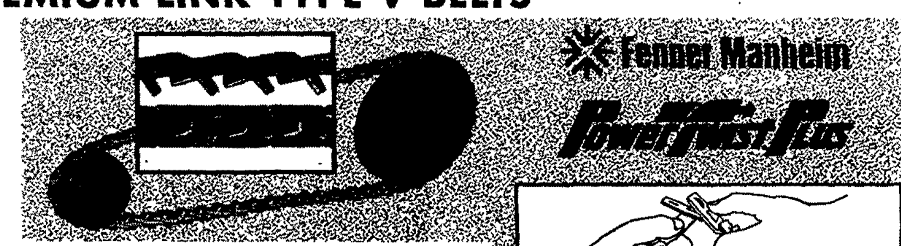
Nom. Out-side Lgth.	RMA Belt No.*	Stock No.	Each	Shpg. Wt.	Nom. Out-side Lgth.	RMA Belt No.*	Stock No.	Each	Shpg. Wt.	Nom. Out-side Lgth.	RMA Belt No.*	Stock No.	Each	Shpg. Wt.
31"	B28	**6L207**	**$9.54**	0.3	67"	B64	**3X614**	**$17.35**	0.8	103"	B100	**5X480**	**$26.45**	1.2
32	B29	**6L208**	**9.79**	0.3	68	B65	**6X999**	**17.63**	0.8	104	B101	**6L216**	**26.60**	1.1
33	B30	**1A103**	**9.98**	0.4	69	B66	**3X640**	**17.77**	0.8	106	B103	**5X481**	**27.05**	1.2
34	B31	**6L209**	**10.22**	0.3	70	B67	**6A157**	**17.94**	0.7	108	B105	**3X650**	**27.50**	1.3
35	B32	**6A153**	**10.39**	0.3	71	B68	**3X641**	**18.13**	0.8	111	B108	**5X482**	**28.55**	1.3
36	B33	**1A099**	**10.59**	0.4	72	B69	**1A102**	**18.37**	0.9	114	B111	**6L217**	**29.40**	1.2
37	B34	**6A154**	**10.75**	0.3	73	B70	**5X475**	**18.60**	0.9	115	B112	**3X353**	**29.70**	1.3
38	B35	**3X634**	**10.99**	0.5	74	B71	**3X642**	**18.86**	0.9	119	B116	**6A167**	**30.60**	1.1
39	B36	**6A155**	**11.34**	0.3	75	B72	**3X615**	**19.03**	0.8	123	B120	**3X354**	**31.35**	1.4
40	B37	**6L210**	**11.76**	0.4	76	B73	**3X705**	**19.29**	0.9	127	B124	**6A168**	**32.45**	1.2
41	B38	**3X635**	**12.12**	0.5	77	B74	**6A158**	**19.57**	0.7	131	B128	**3X372**	**33.60**	1.3
42	B39	**6L211**	**12.34**	0.4	78	B75	**3X643**	**19.77**	0.9	136	B133	**6A169**	**35.25**	1.3
43	B40	**3X698**	**12.61**	0.5	79	B76	**6A159**	**20.05**	0.7	139	B136	**5X483**	**35.90**	1.7
44	B41	**6A156**	**12.92**	0.4	80	B77	**6A160**	**20.37**	0.7	143	B140	**6L218**	**36.90**	1.6
45	B42	**3X636**	**13.21**	0.6	81	B78	**3X644**	**20.61**	0.9	147	B144	**3X651**	**37.95**	1.[illegible]
46	B43	**1A107**	**13.44**	0.5	82	B79	**6A161**	**20.83**	0.8	151	B148	**6L219**	**38.90**	1.[illegible]
47	B44	**6X571**	**13.75**	0.6	83	B80	**5X476**	**21.15**	1.0	153	B150	**6L220**	**39.40**	1.[illegible]
48	B45	**1A094**	**13.98**	0.6	84	B81	**3X645**	**21.41**	1.0	157	B154	**6L221**	**40.20**	1.[illegible]
49	B46	**3X637**	**14.29**	0.6	85	B82	**1A101**	**21.99**	1.0	161	B158	**3X374**	**41.25**	2.0
50	B47	**1A106**	**14.50**	0.6	86	B83	**3X646**	**20.72**	1.0	165	B162	**6A170**	**42.85**	1.6
51	B48	**3X474**	**14.73**	0.6	87	B84	**6A162**	**22.35**	0.8	176	B173	**5X484**	**45.10**	1.9
52	B49	**1A097**	**14.98**	0.6	88	B85	**3X647**	**22.51**	1.0	183	B180	**6A171**	**47.30**	1.8
53	B50	**3X475**	**15.19**	0.6	89	B86	**6A163**	**22.77**	0.8	193	B190	**6L222**	**49.95**	2.0
54	B51	**3X638**	**15.38**	0.7	90	B87	**6A164**	**22.93**	0.9	198	B195	**6A172**	**51.15**	2.0
55	B52	**6X874**	**15.55**	0.7	91	B88	**3X701**	**23.19**	1.1	208	B205	**6L223**	**53.55**	2.2
56	B53	**3X611**	**15.68**	0.7	92	B89	**6L212**	**23.40**	1.0	213	B210	**6L224**	**55.00**	2.3
57	B54	**6X875**	**15.81**	0.7	93	B90	**3X648**	**23.68**	1.1	228	B225	**6L225**	**58.35**	2.3
58	B55	**3X612**	**15.92**	0.7	94	B91	**6L213**	**23.93**	1.0	243	B240	**6L226**	**62.15**	2.6
59	B56	**6X876**	**16.03**	0.7	95	B92	**6A165**	**24.31**	0.9	258	B255	**6L227**	**66.20**	3.0
60	B57	**3X706**	**16.14**	0.7	96	B93	**5X477**	**24.73**	1.1	273	B270	**6L228**	**70.35**	2.9
61	B58	**6X998**	**16.23**	0.7	97	B94	**6L214**	**25.00**	1.0	288	B285	**6L229**	**74.25**	3.1
62	B59	**1A108**	**16.40**	0.7	98	B95	**5X478**	**25.30**	1.1	303	B300	**6L230**	**78.05**	3.2
63	B60	**3X639**	**16.45**	0.8	99	B96	**5X479**	**25.55**	1.2	318	B315	**6L231**	**83.55**	3.4
64	B61	**1A104**	**16.72**	0.7	100	B97	**3X649**	**25.85**	1.2	363	B360	**6L232**	**100.80**	4.0
65	B62	**3X613**	**16.92**	0.7	101	B98	**6L215**	**26.00**	1.0					
66	B63	**3X703**	**17.16**	0.8	102	B99	**6A166**	**26.20**	1.0					

(*) Manufactured to tolerances set by the RMA (Rubber Manufacturers' Association).

PREMIUM LINK-TYPE V-BELTS

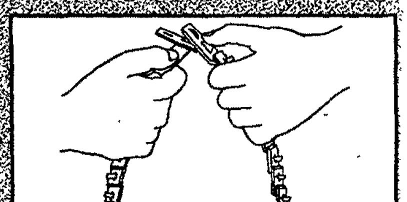
- Ideal for problem V-belt drives
- Composite polyurethane/polyester construction
- For permanent replacement of endless V-belts
- Classical V-belt power ratings
- Superior oil, water, and chemical resistance
- Operating temperature range: –40°F to 240°F
- Eliminates need to stock extensive line of replacement belts
- Reduce transmitted vibration
- Easy installation without dismantling drives

NOTE: Like rubber V-belts, PowerTwist® V-belts are designed for industrial use; **not suitable** for automotive or lawn/garden applications.



ORDERING INFORMATION

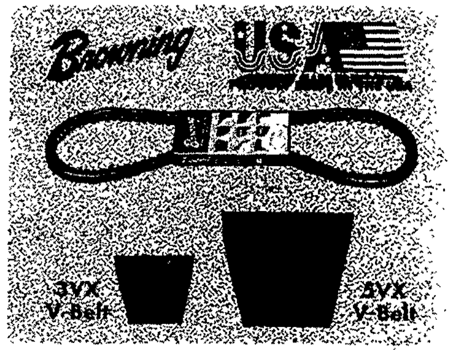
Length	Belt Type	Stock No.	List	Each	Shpg. Wt.
60 in.	A(4L)	**5A547**	$38.70	**$24.56**	0.4
72 in.	B(5L)	**5A548**	54.28	**35.80**	1.3
25 ft.	3L	**6L770**	172.38	**109.85**	1.3
25 ft.	A(4L)	**6L771**	175.70	**111.95**	1.5
25 ft.	B(5L)	**6L772**	204.88	**130.50**	1.5
25 ft.	C	**6L773**	308.95	**197.00**	3.8



Easy installation; no tools required. Assembles to any length required.

INDUSTRIAL-DUTY 3VX AND 5VX V-BELTS

- 3VX and 5VX belt drives deliver substantially more horsepower than comparable A and B section drives
- 3VX and 5VX belt drives can reduce overall drive dimensions by as much as 40% over traditional A, B, and C section drives
- 3VX and 5VX belt drives provide weight savings of up to 25% over traditional A, B, and C section drives
- Use 5VX belts with Browning B5V sheaves from page 299
- Also can be used with standard "358" wedged sheaves
- Precision molded raw edge-notched construction
- Length matched within RMA (Rubber Mfg. Assoc.) tolerances
- Oil and heat resistant
- Made in USA



Nom. Outside Length	RMA Belt No.*	Stock No.	Each	Shpg. Wt.	Nom. Outside Length	RMA Belt No.*	Stock No.	Each	Shpg. Wt.	Nom. Outside Length	RMA Belt No.*	Stock No.	Each	Shpg. Wt.
3VX V-BELTS (3/8" Top Width by 5/16" Thick)														
25.0"	3VX250	**2L377**	**$8.61**	0.1	47.5"	3VX475	**2L388**	**$12.57**	0.2	90.0"	3VX900	**2L399**	**$21.14**	0.4
26.5	3VX265	**2L378**	**8.82**	0.1	50.0	3VX500	**2L389**	**12.78**	0.3	95.0	3VX950	**2L400**	**22.24**	0.4
28.0	3VX280	**2L379**	**9.04**	0.1	53.0	3VX530	**2L390**	**13.24**	0.3	100.0	3VX1000	**2L401**	**23.59**	0.4
30.0	3VX300	**2L380**	**9.23**	0.1	56.0	3VX560	**2L391**	**13.67**	0.3	106.0	3VX1060	**2L402**	**24.89**	0.4
31.5	3VX315	**2L381**	**9.70**	0.2	60.0	3VX600	**2L392**	**14.35**	0.3	112.0	3VX1120	**2L403**	**27.20**	0.5
33.5	3VX335	**2L382**	**9.95**	0.2	63.0	3VX630	**2L393**	**14.77**	0.3	118.0	3VX1180	**2L404**	**28.90**	0.5
35.5	3VX355	**2L383**	**10.33**	0.2	67.0	3VX670	**2L394**	**15.41**	0.3	125.0	3VX1250	**2L405**	**30.95**	0.6
37.5	3VX375	**2L384**	**10.58**	0.2	71.0	3VX710	**2L395**	**16.32**	0.3	132.0	3VX1320	**2L406**	**32.75**	0.7
40.0	3VX400	**2L385**	**11.23**	0.2	75.0	3VX750	**2L396**	**17.17**	0.4	140.0	3VX1400	**2L407**	**34.70**	0.8
42.5	3VX425	**2L386**	**11.68**	0.2	80.0	3VX800	**2L397**	**18.27**	0.3	—	—	—	—	—
45.0	3VX450	**2L387**	**12.15**	0.2	85.0	3VX850	**2L398**	**19.62**	0.4	—	—	—	—	—
5VX V-BELTS (5/8" Top Width by 17/32" Thick)														
45.0	5VX450	**2L408**	**24.38**	0.8	68.0	5VX680	**2L426**	**36.30**	0.7	100.0	5VX1000	**2L444**	**52.25**	1.0
47.0	5VX470	**2L409**	**25.50**	0.5	69.0	5VX690	**2L427**	**36.90**	0.9	103.0	5VX1030	**2L445**	**55.95**	1.1
49.0	5VX490	**2L410**	**26.60**	0.7	71.0	5VX710	**2L428**	**38.00**	0.7	106.0	5VX1060	**2L446**	**57.60**	1.0
50.0	5VX500	**2L411**	**27.20**	0.5	73.0	5VX730	**2L429**	**39.10**	0.7	108.0	5VX1080	**2L447**	**58.70**	1.2
51.0	5VX510	**2L412**	**27.25**	0.5	74.0	5VX740	**2L430**	**39.70**	0.8	112.0	5VX1120	**2L448**	**60.95**	1.2
53.0	5VX530	**2L413**	**28.25**	0.6	75.0	5VX750	**2L431**	**40.20**	0.8	115.0	5VX1150	**2L449**	**62.60**	1.3
54.0	5VX540	**2L414**	**28.80**	0.6	78.0	5VX780	**2L432**	**41.80**	0.9	118.0	5VX1180	**2L450**	**64.20**	1.3
55.0	5VX550	**2L415**	**29.30**	0.6	80.0	5VX800	**2L433**	**42.85**	0.9	123.0	5VX1230	**2L451**	**66.95**	1.4
56.0	5VX560	**2L416**	**29.65**	0.6	81.0	5VX810	**2L434**	**43.40**	0.9	125.0	5VX1250	**2L452**	**68.20**	1.2
57.0	5VX570	**2L417**	**29.40**	0.6	83.0	5VX830	**2L435**	**44.40**	0.9	132.0	5VX1320	**2L453**	**71.95**	1.4
58.0	5VX580	**2L418**	**30.65**	0.6	84.0	5VX840	**2L436**	**44.95**	0.9	140.0	5VX1400	**2L454**	**75.85**	1.6
59.0	5VX590	**2L419**	**31.25**	0.6	85.0	5VX850	**2L437**	**46.20**	0.9	150.0	5VX1500	**2L455**	**81.65**	1.7
60.0	5VX600	**2L420**	**32.00**	0.6	86.0	5VX860	**2L438**	**46.70**	0.9	160.0	5VX1600	**2L456**	**87.15**	2.0
61.0	5VX610	**2L421**	**32.55**	0.7	88.0	5VX880	**2L439**	**47.75**	0.9	170.0	5VX1700	**2L457**	**92.65**	1.9
63.0	5VX630	**2L422**	**33.55**	0.7	90.0	5VX900	**2L440**	**47.90**	1.0	180.0	5VX1800	**2L458**	**98.35**	2.2
65.0	5VX650	**2L423**	**34.70**	0.7	93.0	5VX930	**2L441**	**50.35**	1.0	190.0	5VX1900	**2L459**	**104.10**	2.2
66.0	5VX660	**2L424**	**35.25**	0.8	95.0	5VX950	**2L442**	**51.45**	1.0	200.0	5VX2000	**2L460**	**109.85**	2.3
67.0	5VX670	**2L425**	**35.75**	0.7	96.0	5VX960	**2L443**	**52.00**	1.0	—	—	—	—	—

(*) Manufactured to tolerances set by the RMA (Rubber Manufacturers' Association).

ELASTOMERIC TENSIONERS

Universally applicable tensioning device for use as an elastic spring element for chain and belt tensioning, pressing, and cushioning. Tensioners keep chain and belts taut, preventing uneven drive surges and power losses. Chain and belt life are prolonged by eliminating slap and vibration while minimizing drive, bearing, and shaft wear.

Four rubber inserts inside base isolate tensioning arm from contact with base and provide continuous resistance to applied rotary forces. Tensioning arm deflects up to 30° either side of its normal position allowing a pretension force that self-adjusts an idler to everyday elongation of a chain or belt while dampening vibration in the drive.

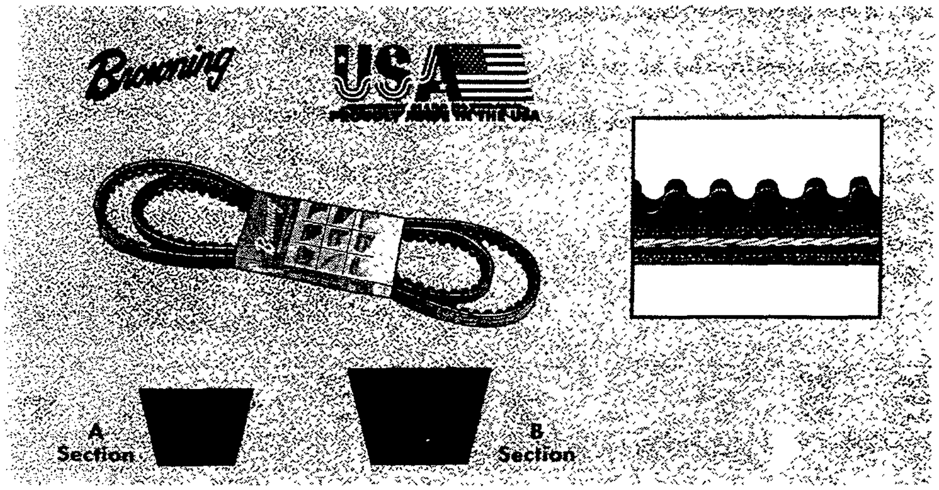
Employs no metal-to-metal connections; no lubrication is required. Dirt and grime won't affect operation. Can be used indoors or out, from -40° to 180°F. One bolt mounting makes installation easy and allows for 360° position flexibility.

Mounting bolt and idler bolt included. For idler sheaves and idler sprockets see page 29… Nos. 1L833, 1L834, and 1L835 include 5/8" bushing.

ORDERING DATA

ANSI Chain Size	V-Belt Size Range	Flat Belt Width	Rosta Model	Stock No.	List	Each	Shpg. Wt.
35	A, B, 3L	—	SE15	**1L833**	$68.00	**$34.45**	1.2
35, 40, & 41	B, C, 4L, 5L	1 & 2"	SE18	**1L834**	82.00	**41.45**	1.8
50, 60, & 80	D, E	2, 3, & 4"	SE27	**1L835**	105.00	**53.10**	4.3
80	—	4 & 5"	SE38	**1L836**	180.00	**90.95**	8.8

COG-TYPE V-BELTS



- Used for higher horsepower industrial applications
- Precision molded raw edge—notched construction
- Length matched within Rubber Mfg. Assoc. tolerances
- Oil and heat resistant
- Made in USA
- Browning brand

A SECTION (1/2" Top Width by 5/16" Thick)

Nom. Out-side Length	RMA Belt No.*	Stock No.	Each	Shpg. Wt.	Nom. Out-side Length	RMA Belt No.*	Stock No.	Each	Shpg. Wt.	Nom. Out-side Length	RMA Belt No.*	Stock No.	Each	Shpg. Wt.
28"	AX26	6A115	$8.94	0.2	55"	AX53	6L239	$13.39	0.4	87"	AX85	6L253	$20.08	0.6
30	AX28	6L233	9.25	0.2	56	AX54	6L240	13.61	0.4	92	AX90	6L254	21.46	0.6
33	AX31	6A116	9.64	0.2	57	AX55	6L241	13.72	0.4	94	AX92	6L255	21.89	0.6
35	AX33	6A117	9.99	0.2	58	AX56	6L242	13.86	0.4	98	AX96	6L256	22.84	0.7
36	AX34	6L234	10.21	0.2	62	AX60	6L243	14.47	0.4	107	AX105	6L257	24.88	0.7
37	AX35	6A118	10.33	0.2	64	AX62	6L244	14.87	0.4	112	AX110	6L258	26.85	0.8
38	AX36	6A119	10.54	0.3	66	AX64	6L245	15.24	0.4	114	AX112	6L259	27.70	0.8
39	AX37	6L235	10.79	0.3	68	AX66	6L246	15.50	0.5	122	AX120	6L260	29.80	0.8
40	AX38	6A120	11.07	0.3	70	AX68	6L247	15.84	0.5	130	AX128	6L261	31.90	0.9
44	AX42	6A121	11.87	0.3	72	AX70	6L248	16.63	0.5	138	AX136	6L262	34.00	0.9
45	AX43	6L236	12.11	0.3	73	AX71	6L249	16.75	0.5	146	AX144	6L263	36.00	1.0
48	AX46	6A122	12.44	0.3	77	AX75	6L250	17.28	0.5	160	AX158	6L264	39.65	1.1
50	AX48	6L237	12.75	0.3	80	AX78	6L251	18.12	0.5	175	AX173	6L265	43.60	1.1
53	AX51	6L238	13.09	0.4	82	AX80	6L252	18.66	0.5	182	AX180	6L266	45.30	1.2

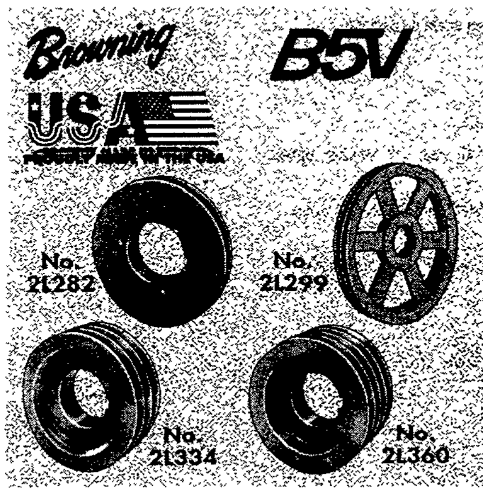
B SECTION (21/32" Top Width by 13/32" Thick)

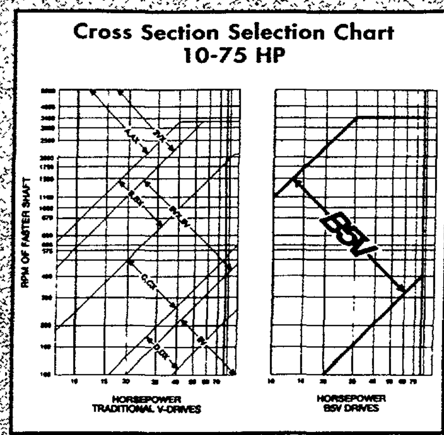
Nom. Out-side Length	RMA Belt No.*	Stock No.	Each	Shpg. Wt.	Nom. Out-side Length	RMA Belt No.*	Stock No.	Each	Shpg. Wt.	Nom. Out-side Length	RMA Belt No.*	Stock No.	Each	Shpg. Wt.
38"	BX35	6L267	$13.77	0.4	69"	BX66	6L280	$22.40	0.8	111"	BX108	6L297	$36.55	1.3
39	BX36	6A123	15.24	0.4	70	BX67	6L281	22.60	0.8	115	BX112	6A137	37.35	1.3
41	BX38	6A124	15.24	0.4	71	BX68	6A132	22.84	0.8	116	BX113	6L298	37.65	1.3
45	BX42	6A125	16.63	0.5	73	BX70	6L282	23.43	0.8	118	BX115	6L299	38.05	1.4
49	BX46	6A126	17.96	0.5	74	BX71	6A133	23.76	0.8	119	BX116	6L300	38.45	1.4
51	BX48	6A127	18.52	0.6	78	BX75	6A134	24.88	0.9	123	BX120	6L301	39.50	1.4
53	BX50	6L268	19.02	0.6	80	BX77	6L283	25.60	0.9	127	BX124	6L302	40.90	1.4
54	BX51	6L269	19.33	0.6	81	BX78	6L284	25.95	0.9	131	BX128	6L303	42.30	1.5
55	BX52	6L270	19.50	0.6	82	BX79	6L285	26.70	0.9	136	BX133	6L304	44.20	1.5
56	BX53	6L271	19.67	0.6	83	BX80	6L286	26.65	0.9	139	BX136	6L305	45.10	1.6
57	BX54	6L272	19.92	0.6	84	BX81	6L287	27.05	0.9	147	BX144	6L306	47.75	1.7
58	BX55	6A128	20.08	0.6	85	BX82	6L288	27.70	0.9	153	BX150	6L307	49.55	1.8
59	BX56	6A129	20.22	0.6	86	BX83	6L289	27.90	1.1	161	BX158	6L308	51.90	1.8
60	BX57	6L273	20.27	0.7	88	BX85	6A135	28.45	1.1	165	BX162	6L309	54.00	1.9
61	BX58	6L274	20.40	0.7	93	BX90	6A136	29.80	1.1	176	BX173	6L310	56.75	2.0
62	BX59	6L275	20.56	0.7	96	BX93	6L290	31.20	1.1	183	BX180	6L311	59.55	2.1
63	BX60	6A130	20.67	0.7	98	BX95	6L291	31.90	1.1	198	BX195	6L312	64.35	2.3
64	BX61	6L276	21.02	0.7	99	BX96	6L292	32.20	1.1	213	BX210	6L313	69.20	2.5
65	BX62	6L277	21.29	0.7	100	BX97	6L293	32.60	1.1	243	BX240	6L314	78.25	2.8
66	BX63	6L278	21.59	0.7	102	BX99	6L294	33.05	1.2	258	BX255	6L315	83.30	3.0
67	BX64	6L279	21.86	0.7	103	BX100	6L295	33.30	1.2	273	BX270	6L316	88.50	3.2
68	BX65	6A131	22.13	0.8	108	BX105	6L296	34.65	1.2	303	BX300	6L317	98.85	3.6

Manufactured to tolerances set by the RMA (Rubber Manufacturers' Association).

SINGLE AND MULTIPLE GROOVE CAST-IRON SHEAVES

- New B5V greatly simplifies V-drive selection by effectively serving 90% of all applications in the 10-75 HP range
- Combination groove accommodates A (AX), B (BX), and 5V (5VX) section belts; do NOT use with banded belts
- Durable cast-iron construction
- New "B" bushing used extensively in B5V line on sizes larger than 4.68" OD; smaller sizes use P1 bushing
- 5V performance at B groove economy means more horsepower per dollar
- New design yields higher strength and better balance than classical sheaves
- Interchanges with present B and 5V drive components
- Made in USA





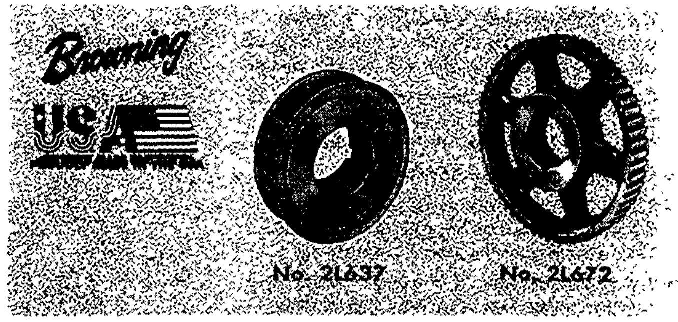
Pitch A Belts	Pitch B Belts	Pitch 5V Belts	OD (In.)	Bushing Req'd.*	Browning Model	Stock No.	List	Each	Shpg. Wt.
ONE GROOVE SHEAVES									
3.8"	4.2"	4.3"	4.48	P1	1B5V42	**2L273**	$26.47	**$20.15**	2.4
4.0	4.4	4.5	4.68	P1	1B5V44	**2L274**	27.27	**20.75**	2.8
4.2	4.6	4.7	4.88	B	1B5V46	**2L275**	30.11	**22.92**	2.5
4.4	4.8	4.9	5.08	B	1B5V48	**2L276**	30.93	**23.55**	2.8
4.6	5.0	5.1	5.28	B	1B5V50	**2L277**	31.75	**24.16**	3.2
4.8	5.2	5.3	5.48	B	1B5V52	**2L278**	32.56	**24.78**	3.5
5.0	5.4	5.5	5.68	B	1B5V54	**2L279**	33.38	**25.45**	4.0
5.2	5.6	5.7	5.88	B	1B5V56	**2L280**	34.20	**26.05**	4.4
5.4	5.8	5.9	6.08	B	1B5V58	**2L281**	35.02	**26.70**	4.8
5.6	6.0	6.1	6.28	B	1B5V60	**2L282**	36.65	**27.90**	5.2
5.8	6.2	6.3	6.48	B	1B5V62	**2L283**	38.29	**29.25**	5.5
6.0	6.4	6.5	6.68	B	1B5V64	**2L284**	39.92	**30.45**	5.8
6.2	6.6	6.7	6.88	B	1B5V66	**2L285**	43.20	**33.00**	6.2
6.4	6.8	6.9	7.08	B	1B5V68	**2L286**	44.83	**34.20**	6.6
6.6	7.0	7.1	7.28	B	1B5V70	**2L287**	46.47	**35.45**	7.2
7.0	7.4	7.5	7.68	B	1B5V74	**2L288**	49.74	**37.95**	7.8
7.6	8.0	8.1	8.28	B	1B5V80	**2L289**	51.37	**39.10**	8.2
8.2	8.6	8.7	8.88	B	1B5V86	**2L290**	54.65	**41.65**	9.1
8.6	9.0	9.1	9.28	B	1B5V90	**2L291**	55.44	**42.25**	9.3
9.0	9.4	9.5	9.68	B	1B5V94	**2L292**	56.28	**42.90**	9.3
10.6	11.0	11.1	11.28	B	1B5V110	**2L293**	66.10	**50.40**	9.4
12.0	12.4	12.5	12.68	B	1B5V124	**2L294**	77.55	**59.05**	12.0
13.2	13.6	13.7	13.88	B	1B5V136	**2L295**	82.45	**62.80**	14.0
15.0	15.4	15.5	15.68	B	1B5V154	**2L296**	106.77	**81.35**	17.0
15.6	16.0	16.1	16.28	B	1B5V160	**2L297**	123.12	**93.80**	18.0
18.0	18.4	18.5	18.68	B	1B5V184	**2L298**	139.48	**106.20**	18.0
TWO GROOVE SHEAVES									
3.8	4.2	4.3	4.48	P1	2B5V42	**2L299**	39.55	**30.20**	3.7
4.0	4.4	4.5	4.68	P1	2B5V44	**2L300**	41.69	**31.75**	4.1
4.2	4.6	4.7	4.88	B	2B5V46	**2L301**	44.83	**34.25**	3.4
4.4	4.8	4.9	5.08	B	2B5V48	**2L302**	46.47	**35.50**	4.5
4.6	5.0	5.1	5.28	B	2B5V50	**2L303**	48.10	**36.75**	4.4
4.8	5.2	5.3	5.48	B	2B5V52	**2L304**	49.74	**38.00**	5.1
5.0	5.4	5.5	5.68	B	2B5V54	**2L305**	51.37	**39.15**	6.2
5.2	5.6	5.7	5.88	B	2B5V56	**2L306**	53.01	**40.40**	6.5
5.4	5.8	5.9	6.08	B	2B5V58	**2L307**	54.65	**41.65**	6.5
5.6	6.0	6.1	6.28	B	2B5V60	**2L308**	56.28	**42.90**	7.9
5.8	6.2	6.3	6.48	B	2B5V62	**2L309**	57.92	**44.10**	8.2
6.0	6.4	6.5	6.68	B	2B5V64	**2L310**	59.55	**45.35**	9.1
6.2	6.6	6.7	6.88	B	2B5V66	**2L311**	60.37	**46.00**	9.4
6.4	6.8	6.9	7.08	B	2B5V68	**2L312**	61.19	**46.65**	8.6
6.6	7.0	7.1	7.28	B	2B5V70	**2L313**	70.78	**53.85**	10.0
7.0	7.4	7.5	7.68	B	2B5V74	**2L314**	71.60	**54.55**	11.0
7.6	8.0	8.1	8.28	B	2B5V80	**2L315**	72.42	**55.20**	11.0
8.2	8.6	8.7	8.88	B	2B5V86	**2L316**	74.05	**56.35**	11.0
8.6	9.0	9.1	9.28	B	2B5V90	**2L317**	74.88	**57.05**	11.0
9.0	9.4	9.5	9.68	B	2B5V94	**2L318**	75.69	**57.60**	11.0
0.6	11.0	11.1	11.28	B	2B5V110	**2L319**	87.14	**66.40**	15.0
2.0	12.4	12.5	12.68	B	2B5V124	**2L320**	93.68	**71.35**	17.0
3.2	13.6	13.7	13.88	B	2B5V136	**2L321**	110.04	**83.70**	19.0
5.0	15.4	15.5	15.68	B	2B5V154	**2L322**	149.29	**113.60**	23.0
5.6	16.0	16.1	16.28	B	2B5V160	**2L323**	157.47	**119.80**	25.0
8.0	18.4	18.5	18.68	B	2B5V184	**2L324**	195.09	**148.40**	33.0

Pitch A Belts	Pitch B Belts	Pitch 5V Belts	OD (In.)	Bushing Req'd.*	Browning Model	Stock No.	List	Each	Shpg. Wt.
THREE GROOVE SHEAVES									
3.8"	4.2"	4.3"	4.48	P1	3B5V42	**2L325**	$44.45	**$33.90**	4.8
4.0	4.4	4.5	4.68	P1	3B5V44	**2L326**	46.10	**35.10**	5.1
4.2	4.6	4.7	4.88	B	3B5V46	**2L327**	52.67	**40.15**	4.5
4.4	4.8	4.9	5.08	B	3B5V48	**2L328**	54.31	**41.40**	5.1
4.6	5.0	5.1	5.28	B	3B5V50	**2L329**	55.94	**42.65**	5.8
4.8	5.2	5.3	5.48	B	3B5V52	**2L330**	57.58	**43.90**	6.3
5.0	5.4	5.5	5.68	B	3B5V54	**2L331**	59.21	**45.15**	7.0
5.2	5.6	5.7	5.88	B	3B5V56	**2L332**	60.85	**46.40**	7.8
5.4	5.8	5.9	6.08	B	3B5V58	**2L333**	62.48	**47.65**	8 5
5.6	6.0	6.1	6.28	B	3B5V60	**2L334**	64.12	**48.90**	9.1
5.8	6.2	6.3	6.48	B	3B5V62	**2L335**	65.76	**50.15**	10.0
6.0	6.4	6.5	6.68	B	3B5V64	**2L336**	69.03	**52.60**	11.0
6.2	6.6	6.7	6.88	B	3B5V66	**2L337**	70.66	**53.80**	12.0
6.4	6.8	6.9	7.08	B	3B5V68	**2L338**	72.30	**55.05**	13.0
6.6	7.0	7.1	7.28	B	3B5V70	**2L339**	78.96	**60.15**	12.0
7.0	7.4	7.5	7.68	B	3B5V74	**2L340**	80.59	**61.40**	14.0
7.6	8.0	8.1	8.28	B	3B5V80	**2L341**	83.87	**63.85**	14.0
8.2	8.6	8.7	8.88	B	3B5V86	**2L342**	90.41	**68.85**	14.0
8.6	9.0	9.1	9.28	B	3B5V90	**2L343**	93.68	**71.35**	15.0
9.0	9.4	9.5	9.68	B	3B5V94	**2L344**	96.95	**73.80**	16.0
10.6	11.0	11.1	11.28	B	3B5V110	**2L345**	113.31	**86.30**	19.0
12.0	12.4	12.5	12.68	B	3B5V124	**2L346**	129.67	**98.75**	23.0
13.2	13.6	13.7	13.88	B	3B5V136	**2L347**	139.48	**106.15**	29.0
15.0	15.4	15.5	15.68	B	3B5V154	**2L348**	175.47	**133.60**	36.0
15.6	16.0	16.1	16.28	B	3B5V160	**2L349**	185.28	**140.90**	38.0
18.0	18.4	18.5	18.68	B	3B5V184	**2L350**	211.45	**161.25**	43.0
FOUR GROOVE SHEAVES									
3.8	4.2	4.3	4.48	P1	4B5V42	**2L351**	65.76	**50.15**	6.3
4.0	4.4	4.5	4.68	P1	4B5V44	**2L352**	67.39	**51.35**	6.2
4.2	4.6	4.7	4.88	B	4B5V46	**2L353**	69.03	**52.60**	5.8
4.4	4.8	4.9	5.08	B	4B5V48	**2L354**	70.66	**53.85**	6.1
4.6	5.0	5.1	5.28	B	4B5V50	**2L355**	72.30	**55.10**	7.1
4.8	5.2	5.3	5.48	B	4B5V52	**2L356**	73.93	**56.35**	7.6
5.0	5.4	5.5	5.68	B	4B5V54	**2L357**	75.57	**57.60**	8.4
5.2	5.6	5.7	5.88	B	4B5V56	**2L358**	77.21	**58.90**	9.6
5.4	5.8	5.9	6.08	B	4B5V58	**2L359**	78.84	**60.05**	10.0
5.6	6.0	6.1	6.28	B	4B5V60	**2L360**	80.48	**61.35**	11.0
5.8	6.2	6.3	6.48	B	4B5V62	**2L361**	82.11	**62.60**	12.0
6.0	6.4	6.5	6.68	B	4B5V64	**2L362**	85.38	**65.10**	13.0
6.2	6.6	6.7	6.88	B	4B5V66	**2L363**	88.66	**67.55**	13.0
6.4	6.8	6.9	7.08	B	4B5V68	**2L364**	91.93	**70.05**	14.0
6.6	7.0	7.1	7.28	B	4B5V70	**2L365**	100.22	**76.35**	14.0
7.0	7.4	7.5	7.68	B	4B5V74	**2L366**	103.49	**78.85**	15.0
7.6	8.0	8.1	8.28	B	4B5V80	**2L367**	106.77	**81.30**	15.0
8.2	8.6	8.7	8.88	B	4B5V86	**2L368**	113.31	**86.30**	17.0
8.6	9.0	9.1	9.28	B	4B5V90	**2L369**	119.04	**90.70**	17.0
9.0	9.4	9.5	9.68	B	4B5V94	**2L370**	124.76	**95.05**	19.0
10.6	11.0	11.1	11.28	B	4B5V110	**2L371**	136.21	**103.70**	27.0
12.0	12.4	12.5	12.68	B	4B5V124	**2L372**	150.93	**114.85**	30.0
13.2	13.6	13.7	13.88	B	4B5V136	**2L373**	178.74	**136.05**	35.0
15.0	15.4	15.5	15.68	B	4B5V154	**2L374**	200.29	**152.50**	38.0
15.6	16.0	16.1	16.28	B	4B5V160	**2L375**	216.64	**165.50**	41.0
18.0	18.4	18.5	18.68	B	4B5V184	**2L376**	229.73	**175.00**	55.0

Select desired bore size from bushing chart on page 308.

SYNCHRONOUS DRIVES "L" AND "H" GEARBELT PULLEYS

- Ideal for timing applications—no slip, positive drive
- For use with gearbelts on page 301
- Steel or cast-iron construction
- 60 Groove and higher are spoked design.
- "L" pulleys use 3/8" pitch belts 1/2, 3/4, or 1" wide and are for applications up to 25 HP
- "H" pulleys use 1/2" pitch belts 1 or 1½" wide and are for applications up to 75 HP
- Require Browning split taper bushing; Order separately from page 308



"L" GEARBELT PULLEYS

For "L" Belts, 3/8" Pitch, 1/2" Wide

No. of Grooves	Split Taper Bushing Req'd.	Belt Width Req'd.	Pitch Dia.	Browning Model	Stock No.	List	Each	Shpg. Wt.
18	G	1/2"	2.149"	18LG050	**2L637**	$27.60	**$14.90**	0.5
19	G	1/2	2.268	19LG050	**2L638**	28.00	**15.11**	0.6
20	G	1/2	2.387	20LG050	**2L639**	28.40	**15.33**	0.7
21	G	1/2	2.507	21LG050	**2L640**	28.80	**15.54**	0.8
22	G	1/2	2.626	22LG050	**2L641**	29.60	**15.97**	0.9
24	H	1/2	2.865	24LH050	**2L642**	31.20	**16.84**	1.0
26	H	1/2	3.104	26LH050	**2L643**	32.40	**17.50**	1.1
28	H	1/2	3.342	28LH050	**2L644**	34.80	**18.79**	1.3
30	H	1/2	3.581	30LH050	**2L645**	37.60	**20.30**	1.6
32	H	1/2	3.820	32LH050	**2L646**	40.80	**22.03**	1.9
36	H	1/2	4.297	36LH050	**2L647**	75.60	**40.85**	2.6
36	P1	1/2	4.297	36LP050	**2L648**	75.60	**40.85**	3.1
40	H	1/2	4.775	40LH050	**2L649**	76.80	**41.50**	3.5
40	P1	1/2	4.775	40LP050	**2L650**	76.80	**41.50**	3.0
44	H	1/2	5.252	44LH050	**2L651**	89.60	**48.40**	4.1
44	P1	1/2	5.252	44LP050	**2L652**	89.60	**48.40**	4.0
48	H	1/2	5.730	48LH050	**2L653**	92.40	**49.90**	4.0
48	P1	1/2	5.730	48LP050	**2L654**	92.40	**49.90**	5.0
60	H	1/2	7.162	60LH050	**2L655**	94.80	**51.20**	3.0
60	P1	1/2	7.162	60LP050	**2L656**	94.80	**51.20**	4.0

For "L" Belts, 3/8" Pitch, 3/4" Wide

No. of Grooves	Split Taper Bushing Req'd.	Belt Width Req'd.	Pitch Dia.	Browning Model	Stock No.	List	Each	Shpg. Wt.
18	G	3/4	2.149	18LG075	**2L657**	29.20	**15.76**	0.7
19	G	3/4	2.268	19LG075	**2L658**	29.60	**15.97**	0.8
20	G	3/4	2.387	20LG075	**2L659**	30.40	**16.41**	0.9
21	G	3/4	2.507	21LG075	**2L660**	31.20	**16.84**	1.0
22	G	3/4	2.626	22LG075	**2L661**	33.20	**17.91**	1.1
24	H	3/4	2.865	24LH075	**2L662**	34.80	**18.79**	1.2
26	H	3/4	3.104	26LH075	**2L663**	36.80	**19.87**	1.4
28	H	3/4	3.342	28LH075	**2L664**	39.60	**21.37**	1.8
30	H	3/4	3.581	30LH075	**2L665**	44.40	**23.96**	1.9
32	H	3/4	3.820	32LH075	**2L666**	47.20	**25.50**	2.3
36	H	3/4	4.297	36LH075	**2L667**	77.20	**41.70**	3.3
36	P1	3/4	4.297	36LP075	**2L668**	77.20	**41.70**	5.0
40	H	3/4	4.775	40LH075	**2L669**	77.60	**41.95**	3.8
40	P1	3/4	4.775	40LP075	**2L670**	77.60	**41.95**	4.4
60	H	3/4	7.162	60LH075	**2L671**	97.20	**52.50**	4.0
60	P1	3/4	7.162	60LP075	**2L672**	97.20	**52.50**	4.0

For "L" Belts, 3/8" Pitch, 1" Wide

No. of Grooves	Split Taper Bushing Req'd.	Belt Width Req'd.	Pitch Dia.	Browning Model	Stock No.	List	Each	Shpg. Wt.
18	G	1	2.149	18LG100	**2L673**	32.00	**17.28**	0.9
19	G	1	2.268	19LG100	**2L674**	33.20	**17.91**	1.9
20	G	1	2.387	20LG100	**2L675**	33.60	**18.13**	0.1
21	G	1	2.507	21LG100	**2L676**	34.80	**18.79**	1.3
22	G	1	2.626	22LG100	**2L677**	36.40	**19.65**	1.4
24	H	1	2.865	24LH100	**2L678**	37.60	**20.30**	1.4
26	H	1	3.104	26LH100	**2L679**	40.00	**21.59**	1.9
28	H	1	3.342	28LH100	**2L680**	43.20	**23.30**	2.3
30	H	1	3.581	30LH100	**2L681**	48.00	**25.90**	2.3
32	H	1	3.820	32LH100	**2L682**	52.00	**28.10**	2.7
36	H	1	4.297	36LH100	**2L683**	77.60	**41.95**	3.9
36	P1	1	4.297	36LP100	**2L684**	77.60	**41.95**	3.9
40	H	1	4.775	40LH100	**2L685**	78.40	**42.35**	4.9
40	P1	1	4.775	40LP100	**2L686**	78.40	**42.35**	5.1
44	H	1	5.252	44LH100	**2L687**	94.80	**51.20**	6.3
44	P1	1	5.252	44LP100	**2L688**	94.80	**51.20**	6.3
48	H	1	5.730	48LH100	**2L689**	98.00	**52.95**	6.9
48	P1	1	5.730	48LP100	**2L690**	98.00	**52.95**	7.8
60	H	1	7.162	60LH100	**2L691**	101.20	**54.65**	4.5
60	P1	1	7.162	60LP100	**2L692**	101.20	**54.65**	7.0

"H" GEARBELT PULLEYS

For "H" Belts, 1/2" Pitch, 1" Wide

No. of Grooves	Split Taper Bushing Req'd.	Belt Width Req'd.	Pitch Dia.	Browning Model	Stock No.	List	Each	Shpg. Wt.
14	G	1"	2.228"	14HG100	**2L693**	$40.00	**$21.59**	0.8
16	G	1	2.546	16HG100	**2L694**	40.40	**21.81**	1.3
18	H	1	2.865	18HH100	**2L695**	40.80	**22.03**	1.4
20	H	1	3.183	20HH100	**2L696**	41.20	**22.24**	1.8
22	H	1	3.501	22HH100	**2L697**	54.00	**29.20**	1.5
22	P1	1	3.501	22HP100	**2L698**	54.00	**29.20**	2.2
24	H	1	3.820	24HH100	**2L699**	58.80	**31.80**	2.6
24	P1	1	3.820	24HP100	**2L700**	58.80	**31.80**	2.8
26	H	1	4.138	26HH100	**2L701**	66.40	**35.90**	3
26	P1	1	4.138	26HP100	**2L702**	66.40	**35.90**	3
28	H	1	4.456	28HH100	**2L703**	72.80	**39.35**	4
28	P1	1	4.456	28HP100	**2L704**	72.80	**39.35**	4
30	H	1	4.775	30HH100	**2L705**	76.00	**41.05**	4
30	P1	1	4.775	30HP100	**2L706**	76.00	**41.05**	5
32	Q1	1	5.093	32HQ100	**2L707**	79.20	**42.80**	5.
36	Q1	1	5.730	36HQ100	**2L708**	91.20	**49.25**	7.
40	Q1	1	6.366	40HQ100	**2L709**	104.40	**56.35**	8.6
44	Q1	1	7.003	44HQ100	**2L710**	115.60	**62.45**	11.0
48	Q1	1	7.639	48HQ100	**2L711**	126.80	**68.45**	13.0
60	Q1	1	9.549	60HQ100	**2L712**	138.80	**74.95**	13.0
72	Q1	1	11.459	72HQ100	**2L713**	176.40	**95.25**	15.0
84	Q1	1	13.369	84HQ100	**2L714**	193.20	**104.30**	19.0
96	Q1	1	15.279	96HQ100	**2L715**	227.20	**122.60**	21.0
120	Q1	1	19.099	120HQ100	**2L716**	284.80	**153.75**	26.0

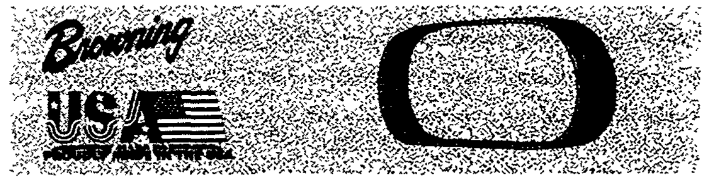
For "H" Belts, 1/2" Pitch, 1½" Wide

No. of Grooves	Split Taper Bushing Req'd.	Belt Width Req'd.	Pitch Dia.	Browning Model	Stock No.	List	Each	Shpg. Wt.
14	G	1½	2.228	14HG150	**2L717**	55.60	**30.10**	1.3
16	G	1½	2.546	16HG150	**2L718**	60.00	**32.40**	1.8
18	H	1½	2.865	18HH150	**2L719**	62.80	**33.95**	2.0
20	H	1½	3.183	20HH150	**2L720**	65.20	**35.25**	2.7
22	H	1½	3.501	22HH150	**2L721**	79.60	**43.00**	3.1
22	P1	1½	3.501	22HP150	**2L722**	79.60	**43.00**	3.0
24	H	1½	3.820	24HH150	**2L723**	86.00	**46.45**	3.9
24	P1	1½	3.820	24HP150	**2L724**	86.00	**46.45**	4.0
26	H	1½	4.138	26HH150	**2L725**	89.60	**48.40**	4.8
26	P1	1½	4.138	26HP150	**2L726**	89.60	**48.40**	4.8
28	H	1½	4.456	28HH150	**2L727**	96.00	**51.85**	5.8
28	P1	1½	4.456	28HP150	**2L728**	96.00	**51.85**	5.9
30	H	1½	4.775	30HH150	**2L729**	100.80	**54.45**	6.9
30	P1	1½	4.775	30HP150	**2L730**	100.80	**54.45**	6.9
32	Q1	1½	5.093	32HQ150	**2L731**	102.40	**55.30**	4.0
36	Q1	1½	5.730	36HQ150	**2L732**	115.20	**62.25**	1.0
40	Q1	1½	6.366	40HQ150	**2L733**	128.00	**69.10**	12.
44	Q1	1½	7.003	44HQ150	**2L734**	140.40	**75.80**	15.
48	Q1	1½	7.639	48HQ150	**2L735**	153.20	**82.70**	19
60	Q1	1½	9.549	60HQ150	**2L736**	169.60	**91.55**	15
72	Q1	1½	11.459	72HQ150	**2L737**	177.60	**95.90**	17.
84	Q1	1½	13.369	84HQ150	**2L738**	202.80	**109.45**	21
96	Q1	1½	15.279	96HQ150	**2L739**	228.40	**123.25**	24
120	Q1	1½	19.099	120HQ150	**2L740**	286.00	**154.50**	30

"XL" GEARBELT PULLEYS AND GEARBELTS ARE AVAILABLE, SEE PAGE 302

SYNCHRONOUS DRIVES "L" AND "H" GEARBELTS

- For use with synchronous drives "L" and "H" gearbelt pulleys on page 300
- "L" gearbelts are available in 1/2, 3/4, and 1" widths and 12.375 to 60" lengths
- "H" gearbelts are available in 1 and 1½" widths and 24 to 70" lengths

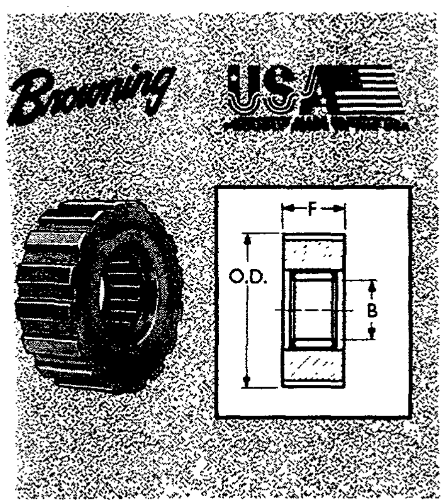


STOCK "L" 3/8" PITCH GEARBELTS

Pitch Length (In.)	No. of Teeth	1/2" WIDE "L" GEARBELTS Browning Model	Stock No.	List	Each	Shpg. Wt.	3/4" WIDE "L" GEARBELTS Browning Model	Stock No.	List	Each	Shpg. Wt.	1" WIDE "L" GEARBELTS Browning Model	Stock No.	List	Each	Shpg. Wt.
12.375	33	124L050	**2L577**	$7.68	**$5.24**	0.1	124L075	**2L597**	$10.92	**$7.46**	0.1	124L100	**2L617**	$14.00	**$9.58**	0.1
15.000	40	150L050	**2L578**	8.48	**5.79**	0.1	150L075	**2L598**	12.12	**8.29**	0.1	150L100	**2L618**	15.60	**10.67**	0.1
18.750	50	187L050	**2L579**	9.24	**6.32**	0.1	187L075	**2L599**	13.32	**9.11**	0.1	187L100	**2L619**	17.24	**11.77**	0.1
21.000	56	210L050	**2L580**	10.04	**6.86**	0.1	210L075	**2L600**	14.52	**9.92**	0.1	210L100	**2L620**	18.84	**12.88**	0.1
22.500	60	225L050	**2L581**	10.32	**7.05**	0.1	225L075	**2L601**	14.92	**10.19**	0.1	225L100	**2L621**	19.38	**13.24**	0.1
24.000	64	240L050	**2L582**	10.84	**7.43**	0.1	240L075	**2L602**	15.72	**10.74**	0.1	240L100	**2L622**	20.48	**13.99**	0.1
25.500	68	255L050	**2L583**	11.08	**7.58**	0.1	255L075	**2L603**	16.12	**11.03**	0.1	255L100	**2L623**	21.02	**14.38**	0.1
27.000	72	270L050	**2L584**	11.60	**7.93**	0.1	270L075	**2L604**	16.92	**11.57**	0.1	270L100	**2L624**	22.08	**15.09**	0.1
28.500	76	285L050	**2L585**	11.88	**8.12**	0.1	285L075	**2L605**	17.36	**11.87**	0.1	285L100	**2L625**	22.62	**15.47**	0.2
30.000	80	300L050	**2L586**	12.40	**8.47**	0.1	300L075	**2L606**	18.12	**12.37**	0.1	300L100	**2L626**	23.72	**16.20**	0.2
32.250	86	322L050	**2L587**	12.92	**8.83**	0.1	322L075	**2L607**	18.96	**12.96**	0.1	322L100	**2L627**	24.80	**16.95**	0.3
34.500	92	345L050	**2L588**	13.44	**9.19**	0.1	345L075	**2L608**	19.76	**13.50**	0.1	345L100	**2L628**	25.86	**17.68**	0.2
36.750	98	367L050	**2L589**	13.92	**9.51**	0.1	367L075	**2L609**	20.56	**14.05**	0.2	367L100	**2L629**	26.94	**18.41**	0.2
39.000	104	390L050	**2L590**	14.72	**10.07**	0.1	390L075	**2L610**	21.76	**14.87**	0.2	390L100	**2L630**	28.54	**19.51**	0.3
42.000	112	420L050	**2L591**	15.48	**10.58**	0.1	420L075	**2L611**	22.96	**15.69**	0.2	420L100	**2L631**	30.18	**20.62**	0.1
45.000	120	450L050	**2L592**	16.28	**11.12**	0.1	450L075	**2L612**	24.20	**16.54**	0.2	450L100	**2L632**	31.78	**21.71**	0.3
48.000	128	480L050	**2L593**	17.08	**11.68**	0.2	480L075	**2L613**	25.40	**17.36**	0.1	480L100	**2L633**	33.42	**22.84**	0.1
51.000	136	510L050	**2L594**	17.60	**12.03**	0.2	510L075	**2L614**	26.20	**17.90**	0.2	510L100	**2L634**	34.52	**23.59**	0.3
54.000	144	540L050	**2L595**	18.64	**12.73**	0.2	540L075	**2L615**	27.80	**18.99**	0.2	540L100	**2L635**	36.66	**25.05**	0.4
60.000	160	600L050	**2L596**	20.20	**13.81**	0.2	600L075	**2L616**	30.24	**20.66**	0.2	600L100	**2L636**	39.90	**27.35**	0.4

STOCK "H" 1/2" PITCH GEARBELTS

Pitch Length (In.)	No. of Teeth	1" WIDE "H" GEARBELTS Browning Model	Stock No.	List	Each	Shpg. Wt.	1½" WIDE "H" GEARBELTS Browning Model	Stock No.	List	Each	Shpg. Wt.
24.0	48	240H100	**2L741**	$21.00	**$14.36**	0.1	240H150	**2L757**	$30.36	**$20.74**	0.3
27.0	54	270H100	**2L742**	22.64	**15.48**	0.2	270H150	**2L758**	32.88	**22.47**	0.3
30.0	60	300H100	**2L743**	24.32	**16.61**	0.2	300H150	**2L759**	35.36	**24.16**	0.3
33.0	66	330H100	**2L744**	25.96	**17.74**	0.2	330H150	**2L760**	37.84	**25.90**	0.3
36.0	72	360H100	**2L745**	27.64	**18.89**	0.3	360H150	**2L761**	40.32	**27.70**	0.4
39.0	78	390H100	**2L746**	29.28	**20.02**	0.3	390H150	**2L762**	42.80	**29.30**	0.3
42.0	84	420H100	**2L747**	30.96	**21.17**	0.3	420H150	**2L763**	45.28	**31.10**	0.4
45.0	90	450H100	**2L748**	32.60	**22.28**	0.3	450H150	**2L764**	47.76	**32.70**	0.5
48.0	96	480H100	**2L749**	34.28	**23.42**	0.4	480H150	**2L765**	50.24	**34.45**	0.4
51.0	102	510H100	**2L750**	35.40	**24.19**	0.4	510H150	**2L766**	51.92	**35.65**	0.5
54.0	108	540H100	**2L751**	37.60	**25.80**	0.4	540H150	**2L767**	55.24	**37.90**	0.5
57.0	114	570H100	**2L752**	38.72	**26.50**	0.4	570H150	**2L768**	56.88	**39.00**	0.5
60.0	120	600H100	**2L753**	40.92	**28.05**	0.3	600H150	**2L769**	60.20	**41.25**	0.6
63.0	126	630H100	**2L754**	42.04	**28.80**	0.4	630H150	**2L770**	61.84	**42.40**	0.6
66.0	132	660H100	**2L755**	44.24	**30.30**	0.3	660H150	**2L771**	65.16	**44.75**	0.6
70.0	140	700H100	**2L756**	46.44	**31.85**	0.4	700H150	**2L772**	68.48	**46.95**	0.6



GEARBELT PULLEY IDLERS

- For "L" and "H" gearbelts shown above
- Needle bearings
- For N2 shafts and tighteners see page 290

GEARBELT PULLEY IDLERS

Gearbelt Series	No. of Grooves	Shaft Req'd.*	Dimensions (Inches) OD	F	B	Browning Model	Stock No.	List	Each	Shpg. Wt.
L	22	N2	2.60	1	1	N22L100	**6L337**	$52.78	**$45.75**	1.2
H	16	N2	2.50	1	1	N16H100	**6L338**	58.07	**50.35**	1.0

(*) Order shafts separately from page 290.

RADIAL LOAD CAPACITY (LBS.)†

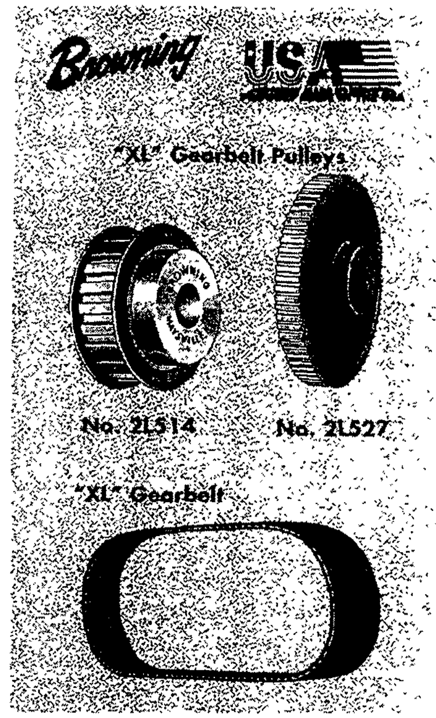
Stock No.	RPM 100	500	1000	1500	2000	2500	3000	3500
6L337	2174	1327	1083	961	880	820	772	741
6L338	2174	1327	1082	961	880	820	772	741

(†) Based on 2500 hours average life at RPM shown.

SYNCHRONOUS DRIVES "XL" GEARBELT PULLEYS AND GEARBELTS

SYNCHRONOUS DRIVES "XL" GEARBELT PULLEYS

- Ideal for timing applications—no slip, positive drive
- Lightweight aluminum construction for light-duty applications up to 15 HP
- Gearbelt pulleys are supplied with minimum plain bore; can be rebored to maximum bore specified (See Keyway and Setscrew Machining Guide below)
- "XL" pulleys use 1/5" pitch gearbelts listed below



"XL" GEARBELT PULLEYS
For "XL" 1/5" Pitch Belts, 1/4 and 3/8" Wide

No. of Grooves	Bore Size (In.)	Max. Bore (In.)	Pitch Dia. (In.)	Browning Model	Stock No.	List	Each	Shpg. Wt.
10	3/16	3/16	0.637	10XLB037	**2L514**	$9.60	**$6.72**	0.1
11	3/16	3/16	0.700	11XLB037	**2L515**	10.00	**6.97**	0.1
12	3/16	1/4	0.764	12XLB037	**2L516**	10.40	**7.00**	0.1
14	1/4	1/4	0.891	14XLB037	**2L517**	12.40	**8.68**	0.1
15	1/4	5/16	0.955	15XLB037	**2L518**	12.80	**8.97**	0.1
16	1/4	3/8	0.019	16XLB037	**2L519**	13.60	**9.53**	0.1
18	1/4	1/2	1.146	18XLB037	**2L520**	15.20	**10.65**	0.1
20	1/4	9/16	1.273	20XLB037	**2L521**	16.00	**11.21**	0.1
21	1/4	9/16	1.337	21XLB037	**2L522**	17.20	**12.04**	0.1
22	1/4	5/8	1.401	22XLB037	**2L523**	17.60	**12.28**	0.1
24	1/4	11/16	1.528	24XLB037	**2L524**	19.60	**13.73**	0.2
28	1/4	13/16	1.783	28XLB037	**2L525**	22.40	**15.70**	0.2
30	5/16	15/16	1.910	30XLB037	**2L526**	23.60	**16.53**	0.3
32	5/16	1	2.037	32XLB037	**2L527**	24.00	**16.81**	0.3
36	5/16	1	2.292	36XLB037	**2L528**	24.40	**17.08**	0.3
40	5/16	1	2.546	40XLB037	**2L529**	24.80	**17.38**	0.4
42	5/16	1	2.674	42XLB037	**2L530**	25.20	**17.65**	0.4
44	5/16	1	2.801	44XLB037	**2L531**	26.00	**18.21**	0.5
48	5/16	1	3.056	48XLB037	**2L532**	27.60	**19.25**	0.5
60	3/8	1	3.820	60XLB037	**2L533**	33.20	**23.16**	0.6
72	3/8	1	4.584	72XLB037	**2L534**	41.60	**29.10**	0.7

SYNCHRONOUS DRIVES "XL" GEARBELTS

"XL" 1/5" PITCH GEARBELTS

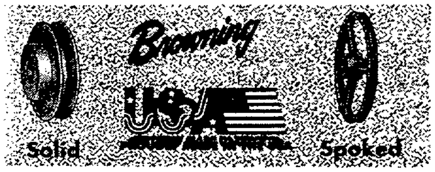
Pitch Length (In.)	No. of Teeth	1/4" WIDE "XL" GEARBELTS Browning Model	Stock No.	List	Each	Shpg. Wt.	3/8" WIDE "XL" GEARBELTS Browning Model	Stock No.	List	Each	Shpg. Wt.
6.0	30	60XL025	**2L535**	$2.92	**$1.99**	0.1	60XL037	**2L556**	$3.84	**$2.63**	0.4
7.0	35	70XL025	**2L536**	3.00	**2.07**	0.1	70XL037	**2L557**	4.00	**2.74**	0.3
8.0	40	80XL025	**2L537**	3.08	**2.10**	0.1	80XL037	**2L558**	4.12	**2.81**	0.1
9.0	45	90XL025	**2L538**	3.16	**2.15**	0.1	90XL037	**2L559**	4.24	**2.90**	0.1
10.0	50	100XL025	**2L539**	3.28	**2.24**	0.3	100XL037	**2L560**	4.36	**2.98**	0.1
11.0	55	110XL025	**2L540**	3.36	**2.30**	0.1	110XL037	**2L561**	4.52	**3.09**	0.1
12.0	60	120XL025	**2L541**	3.44	**2.36**	0.1	120XL037	**2L562**	4.60	**3.15**	0.1
13.0	65	130XL025	**2L542**	3.52	**2.41**	0.1	130XL037	**2L563**	4.76	**3.24**	0.3
14.0	70	140XL025	**2L543**	3.64	**2.49**	0.3	140XL037	**2L564**	4.88	**3.32**	0.1
15.0	75	150XL025	**2L544**	3.72	**2.53**	0.1	150XL037	**2L565**	5.00	**3.43**	0.1
16.0	80	160XL025	**2L545**	3.80	**2.60**	0.1	160XL037	**2L566**	5.16	**3.53**	0.1
17.0	85	170XL025	**2L546**	3.88	**2.67**	0.1	170XL037	**2L567**	5.24	**3.59**	0.1
18.0	90	180XL025	**2L547**	3.96	**2.70**	0.1	180XL037	**2L568**	5.40	**3.69**	0.1
19.0	95	190XL025	**2L548**	4.08	**2.78**	0.1	190XL037	**2L569**	5.52	**3.77**	0.1
20.0	100	200XL025	**2L549**	4.16	**2.86**	0.1	200XL037	**2L570**	5.64	**3.84**	0.1
21.0	105	210XL025	**2L550**	4.24	**2.90**	0.1	210XL037	**2L571**	5.76	**3.93**	0.1
22.0	110	220XL025	**2L551**	4.32	**2.94**	0.3	220XL037	**2L572**	5.92	**4.05**	0.1
23.0	115	230XL025	**2L552**	4.44	**3.04**	0.2	230XL037	**2L573**	6.00	**4.09**	0.1
24.0	120	240XL025	**2L553**	4.52	**3.09**	0.1	240XL037	**2L574**	6.16	**4.22**	0.1
25.0	125	250XL025	**2L554**	4.60	**3.15**	0.1	250XL037	**2L575**	6.28	**4.29**	0.1
26.0	130	260XL025	**2L555**	4.68	**3.20**	0.1	260XL037	**2L576**	6.40	**4.37**	0.

STANDARD KEYWAY AND SETSCREW MACHINING GUIDE

Dia. of Shaft (In.)	Keyseat Width x Depth (In.)	Dia. of Setscrew (In.)*	Dia. of Shaft (In.)	Keyseat Width x Depth (In.)	Dia. of Setscrew (In.)*
5/16-7/16	3/32 x 3/64	8-32	2 13/16-3 1/4	3/4 x 3/8	3/4
1/2-9/16	1/8 x 1/16	10-24	3 5/16-3 3/4	7/8 x 7/16	3/4
5/8-7/8	3/16 x 3/32	1/4	3 13/16-4 1/2	1 x 1/2	3/4
15/16-1 1/4	1/4 x 1/8	5/16	4 9/16-5 1/2	1 1/4 x 5/8	3/4
1 5/16-1 3/8	5/16 x 5/32	5/16	5 9/16-6 1/2	1 1/2 x 3/4	1
1 7/16-1 3/4	3/8 x 3/16	3/8	6 9/16-7 1/2	1 3/4 x 7/8	1
1 13/16-2 1/4	1/2 x 1/4	1/2	7 9/16-8 15/16	2 x 1	1
2 5/16-2 3/4	5/8 x 5/16	5/8	9-10 15/16	2 1/2 x 1 1/4	1

(*) Setscrew size may vary depending on hub wall thickness.
NOTE: As a general rule, the hub wall over the keyway should be equal to or greater than the diameter of the setscrew.
NOTE: Maximum bore guidelines should be adhered to in order to ensure maximum product quality standards.

SINGLE GROOVE CAST-IRON SHEAVES



- Durable cast-iron construction; solid on fixed bore through 3.95" OD and on bushed bore through 6.45" OD, others are spoked design
- Precision machined and balanced
- Finished bore sheaves have standard keyway with hollow head setscrew (no keyway on 1/2" bore sheaves)
- Use Browning split taper bushings for bushed sheaves; Order separately from page 308
- Made in USA

FIXED BORE A(4L) AND 3L SINGLE GROOVE SHEAVES

OD (In.)	Pitch Diameter (In.) A Belt	3-L Belt	Type	Browning Model	For Bore Size, Specify Stock Number 1/2	5/8	3/4	7/8	1	List	Each	Shpg. Wt.
1.75	1.50	1.16	Solid	AK17	**3X758**	**3X759**	—	—	—	$8.32	**$6.45**	0.4
2.00	1.80	1.46	Solid	AK20	**3X760**	**3X761**	**3X762**	—	—	8.32	**6.45**	0.5
2.20	2.00	1.66	Solid	AK22	**3X763**	**3X764**	**3X808**	—	—	8.68	**6.73**	0.5
2.50	2.30	1.96	Solid	AK25	**3X765**	**3X766**	**3X767**	**3X768**	—	9.60	**7.42**	0.6
2.80	2.60	2.26	Solid	AK28	**3X769**	**3X770**	**3X771**	**3X772**	—	11.00	**8.53**	0.8
3.45	3.20	2.86	Solid	AK34	**3X773**	**3X774**	**3X775**	**3X776**	—	13.32	**10.32**	1.0
3.75	3.50	3.16	Solid	AK39	**3X886**	**3X887**	**3X888**	**3X889**	**3X890**	16.60	**12.85**	1.5
3.95	3.70	3.36	Solid	AK41	**3X777**	**3X778**	**3X779**	**3X813**	**3X809**	19.16	**14.82**	1.8
4.45	4.20	3.86	Spoked	AK46	**3X781**	**3X782**	**3X783**	**3X814**	**3X810**	20.56	**15.93**	1.7
4.95	4.70	4.36	Spoked	AK51	**3X784**	**3X785**	**3X786**	**3X815**	**3X811**	21.92	**16.99**	2.1
5.45	5.20	4.86	Spoked	AK56	**3X787**	**3X788**	**3X789**	**3X816**	**3X812**	23.96	**18.57**	2.1
5.93	5.78	—	Spoked	AL64-SP	—	**3X790**	**3X791**	**6L062**	**3X792**	15.56	**12.06**	1.4
6.93	6.78	—	Spoked	AL74-SP	—	**3X793**	**3X794**	**6L063**	**3X795**	17.76	**13.76**	1.5
7.93	7.78	—	Spoked	AL84-SP	—	**3X796**	**3X797**	**6L064**	**3X798**	20.24	**15.67**	1.8
8.93	8.78	—	Spoked	AL94-SP	—	**3X799**	**3X800**	**6L065**	**3X801**	25.56	**19.80**	2.3
9.93	9.78	—	Spoked	AL104-SP	—	—	**3X802**	**6L066**	**3X803**	28.20	**21.84**	3.2
10.93	10.78	—	Spoked	AL114-SP	—	—	**3X804**	**6L067**	**3X805**	31.20	**24.17**	3.4
11.93	11.78	—	Spoked	AL124-SP	—	—	—	**6L068**	**3X806**	37.40	**29.00**	3.9
14.16	14.00	—	Spoked	AM144-SP	—	—	—	**6L069**	**3X807**	61.20	**47.50**	5.5

FIXED BORE A(4L) AND B(5L) SINGLE GROOVE SHEAVES

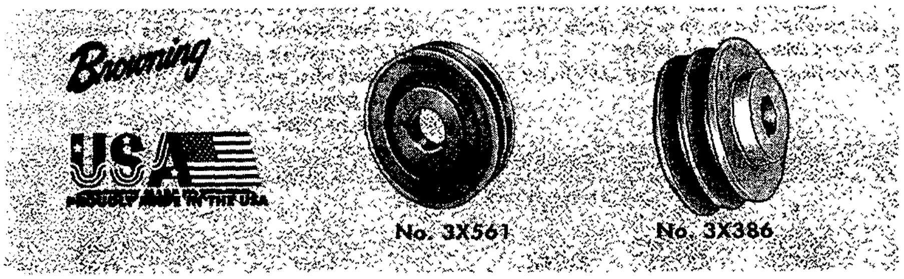
OD (In.)	Pitch Dia. (In.) A Belt	B Belt	Type	Browning Model	For Bore Size, Specify Stock Number 1/2	5/8	3/4	7/8	1	1⅛	List	Each	Shpg. Wt.
.00	—	1.9	Solid	BS20	**3X821**	**3X822**	**3X823**	—	—	—	$13.22	**$9.25**	0.5
.50	1.9	2.3	Solid	Solid	**3X824**	**3X825**	**3X826**	**3X827**	—	—	12.00	**9.28**	0.6
.70	2.1	2.5	Solid	BK27	**1A275**	**3X855**	**3X856**	**3X857**	—	—	13.20	**10.22**	0.7
.95	2.2	2.6	Solid	BK28	—	**3X829**	**3X830**	**3X831**	—	—	13.20	**10.22**	0.8
.15	2.4	2.8	Solid	BK30	**3X858**	**3X859**	**3X860**	**3X861**	—	—	13.56	**10.50**	0.9
.35	2.6	3.0	Solid	BK32	—	**3X833**	**3X834**	**3X835**	**3X852**	—	14.72	**11.39**	1.0
.55	2.8	3.2	Solid	BK34	—	**3X863**	**3X864**	**3X865**	**3X866**	—	18.08	**13.99**	1.4
.75	3.0	3.4	Solid	BK36	—	**3X868**	**3X869**	**3X870**	**3X871**	**3X949**	19.72	**15.24**	1.6
.95	3.2	3.6	Solid	BK40	—	**3X837**	**3X838**	**3X872**	**3X850**	**3X950**	20.56	**15.93**	1.8
.25	3.5	3.9	Spoked	BK45	—	**3X841**	**3X842**	**3X873**	**3X439**	**3X953**	21.04	**16.28**	1.8
.75	4.0	4.4	Spoked	BK50	—	**3X880**	**3X881**	—	**3X853**	**3X954**	23.04	**17.86**	2.0
.95	4.2	4.6	Spoked	BK52	—	**3X844**	**3X845**	**3X883**	**3X851**	**3X955**	23.12	**17.91**	2.1

BUSHED BORE A(4L) AND B(5L) SINGLE GROOVE SHEAVES

OD (In.)	Pitch Diameter (In.) A Belt	B Belt	Bushing Req'd.	Type	Browning Model	SELECT DESIRED BORE SIZE FROM BUSHING CHART ON PAGE 308 Stock No.	Less Bushings List	Each	Shpg. Wt.
3.15	2.4	2.8	H	Solid	BK30H	**3X956**	$21.68	**$17.32**	1.4
3.35	2.6	3.0	H	Solid	BK32H	**3X957**	23.06	**18.43**	1.5
3.55	2.8	3.2	H	Solid	BK34H	**3X951**	23.10	**18.46**	1.7
3.75	3.0	3.4	H	Solid	BK36H	**3X952**	23.28	**18.60**	1.3
3.95	3.2	3.6	H	Solid	BK40H	**3X582**	23.34	**18.65**	1.4
4.25	3.5	3.9	H	Solid	BK45H	**3X583**	23.84	**19.05**	2.0
4.45	3.7	4.1	H	Solid	BK47H	**3X584**	24.36	**19.45**	2.3
4.75	4.0	4.4	H	Solid	BK50H	**3X585**	24.92	**19.92**	2.2
4.95	4.2	4.6	H	Solid	BK52H	**3X586**	25.44	**20.33**	2.7
5.25	4.5	4.9	H	Solid	BK55H	**3X587**	25.96	**20.73**	2.8
5.45	4.7	5.1	H	Solid	BK57H	**3X588**	26.46	**21.13**	2.9
5.75	5.0	5.4	H	Solid	BK60H	**3X589**	26.76	**21.34**	2.6
5.95	5.2	5.6	H	Solid	BK62H	**3X590**	28.20	**22.52**	3.1
6.25	5.5	5.9	H	Solid	BK65H	**3X591**	30.08	**24.05**	2.8
6.45	5.7	6.1	H	Solid	BK67H	**3X592**	30.96	**24.73**	3.2
6.75	6.0	6.4	H	Spoked	BK70H	**3X593**	32.04	**25.65**	3.0
6.95	6.2	6.6	H	Spoked	BK72H	**3X594**	33.52	**26.85**	3.1
7.25	6.5	6.9	H	Spoked	BK75H	**3X595**	34.92	**28.00**	4.0
7.75	7.0	7.4	H	Spoked	BK80H	**3X597**	35.96	**28.80**	4.8
8.25	7.5	7.9	H	Spoked	BK85H	**3X598**	39.92	**31.95**	4.7
8.75	8.0	8.4	H	Spoked	BK90H	**3X599**	42.48	**34.00**	4.3
9.25	8.5	8.9	H	Spoked	BK95H	**3X600**	45.68	**36.60**	5.0
9.75	9.0	9.4	H	Spoked	BK100H	**3X601**	47.44	**38.00**	5.0
0.25	9.5	9.9	H	Spoked	BK105H	**3X602**	48.36	**38.70**	5.3
0.75	10.0	10.4	H	Spoked	BK110H	**3X603**	52.16	**41.70**	6.1
1.25	10.5	10.9	H	Spoked	BK115H	**3X604**	53.80	**43.05**	6.7
1.75	11.0	11.4	H	Spoked	BK120H	**3X605**	57.72	**46.20**	7.0
2.75	12.0	12.4	H	Spoked	BK130H	**3X606**	63.16	**50.55**	7.2
3.75	13.0	13.4	H	Spoked	BK140H	**3X607**	71.64	**57.30**	8.9
4.75	14.0	14.4	H	Spoked	BK150H	**3X608**	77.80	**62.15**	10.0
5.75	15.0	15.4	H	Spoked	BK160H	**3X609**	83.72	**66.95**	11.0
8.75	18.0	18.4	H	Spoked	BK190H	**3X610**	114.52	**91.50**	13.0

TWO GROOVE CAST-IRON SHEAVES

TWO GROOVE CAST-IRON SHEAVES



- Durable cast-iron construction
- Precision machined and balanced
- OD range: 2.5" to 4.95" finished, 3.35" to 18.75" bushed
- Finished bore sheaves have standard keyway with hollow head setscrew
- Use A and B V-belts
- Use split taper bushings for bushed sheaves; Order separately on page 308

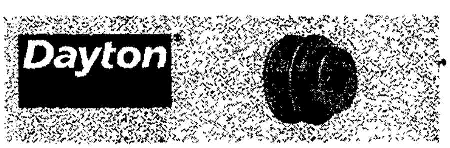
FIXED BORE SHEAVES

OD (In.)	Pitch Dia. (In.) A Belt	Pitch Dia. (In.) B Belt	Browning Model	For Bore Size, Specify Stock Number 5/8"	3/4"	7/8"	1"	1-1/8"	1-3/8"	List	Each	Shpg. Wt.
2.50	1.9	2.3	2BK25	**3X386**	**3X513**	**3X414**	—	—	—	$29.12	**$22.56**	1.3
2.70	2.1	2.5	2BK27	**3X387**	—	**3X415**	**3X515**	—	—	30.08	**23.30**	1.6
2.95	2.2	2.6	2BK28	**3X388**	—	**3X384**	**3X517**	**3X419**	—	32.36	**25.10**	1.6
3.15	2.4	2.8	2BK30	**3X441**	**3X389**	**3X390**	**3X518**	**3X420**	—	34.44	**26.70**	2.0
3.35	2.6	3.0	2BK32	—	—	**3X442**	**3X520**	**3X443**	—	36.00	**28.00**	2.6
3.55	2.8	3.2	2BK34	**3X408**	**3X521**	**3X357**	—	**3X316**	—	37.56	**29.15**	2.5
3.75	3.0	3.4	2BK36	**3X409**	—	**3X328**	—	**3X392**	**3X528**	38.60	**30.00**	3.0
3.95	3.2	3.6	2BK40	—	—	—	**3X529**	**3X530**	—	40.36	**31.30**	3.1
4.25	3.5	3.9	2BK45	—	—	—	**3X532**	**3X533**	**3X449**	43.48	**33.75**	3.5
4.45	3.7	4.1	2BK47	—	—	—	**3X534**	**3X535**	—	44.00	**34.10**	3.7
4.75	4.0	4.4	2BK50	—	—	—	—	**3X538**	—	46.64	**36.15**	4.2
4.95	4.2	4.6	2BK52	—	—	—	—	**3X541**	—	47.88	**37.15**	4.5

BUSHED BORE SHEAVES

SELECT DESIRED BORE SIZE FROM BUSHING CHART ON PAGE 308

OD (In.)	Pitch Diameter (In.) A Belt	Pitch Diameter (In.) B Belt	Bushing Req.'d	Browning Model	Stock No.	Less Bushings List	Less Bushings Each	Shpg. Wt.
3.35	2.6	3.0	H	2BK32H	**3X550**	$39.56	**$31.65**	2.4
3.55	2.8	3.2	H	2BK34H	**3X551**	39.84	**31.90**	2.8
3.75	3.0	3.4	H	2BK36H	**3X552**	40.64	**32.55**	2.5
3.95	3.2	3.6	H	2BK40H	**3X553**	41.04	**32.85**	2.8
4.25	3.5	3.9	H	2BK45H	**3X554**	42.08	**33.65**	3.2
4.45	3.7	4.1	H	2BK47H	**3X555**	46.36	**37.10**	3.1
4.75	4.0	4.4	H	2BK50H	**3X556**	47.24	**37.80**	3.8
4.95	4.2	4.6	H	2BK52H	**3X557**	48.44	**38.75**	3.8
5.25	4.5	4.9	H	2BK55H	**3X558**	52.44	**41.90**	4.0
5.45	4.7	5.1	H	2BK57H	**3X559**	53.32	**42.65**	4.8
5.75	5.0	5.4	H	2BK60H	**3X560**	54.52	**43.60**	4.8
5.95	5.2	5.6	H	2BK62H	**3X561**	55.24	**44.20**	5.0
6.25	5.5	5.9	H	2BK65H	**3X562**	59.56	**47.65**	5.0
6.45	5.7	6.1	H	2BK67H	**3X563**	60.60	**48.45**	5.1
6.75	6.0	6.4	H	2BK70H	**3X564**	62.24	**49.75**	5.3
7.75	7.0	7.4	H	2BK80H	**3X565**	72.28	**57.80**	7.0
8.75	8.0	8.4	H	2BK90H	**3X566**	73.64	**58.90**	8.0
9.75	9.0	9.4	H	2BK100H	**3X567**	85.48	**68.35**	9.3
10.75	10.0	10.4	H	2BK110H	**3X568**	92.60	**74.00**	11.0
11.75	11.0	11.4	H	2BK120H	**3X569**	105.76	**84.55**	12.0
12.75	12.0	12.4	H	2BK130H	**3X570**	113.64	**90.85**	14.0
13.75	13.0	13.4	H	2BK140H	**3X571**	128.60	**102.80**	15.0
15.75	15.0	15.4	H	2BK160H	**1W962**	134.92	**107.85**	19.0
18.75	18.0	18.4	H	2BK190H	**1W963**	151.40	**120.95**	23.0



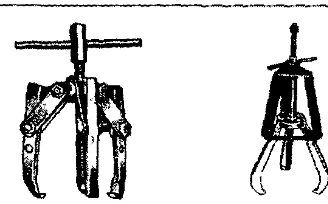
MOTOR PULLEY REPLACEMENT FOR DOMESTIC SEWING MACHINES

Description	Stock No.	List	Each	Shpg. Wt.
Motor Pulley, 7/8" Dia., 1/4" Bore	**1X459**	$3.61	**$2.80**	0.1

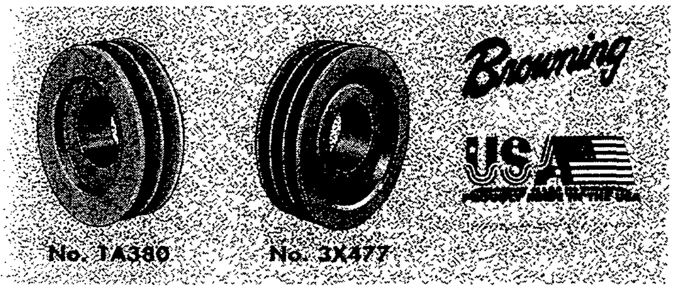
OTC

Made in U.S.A.

PULLERS ARE AVAILABLE, SEE PAGES 1271-1274



TWO AND THREE GROOVE CAST-IRON SHEAVES



- Durable cast-iron construction
- Precision machined and balanced
- OD range: 3.75" to 18.75"; bore range: 3/4" to 2⅝"
- Requires Browning split taper bushing (order separately from page 308)
- Use with A and B V-belts
- Easy to mount and remove
- Used in applications with integral horsepower motors and large drive systems where large bore sheaves are needed

OD (Inches)	Pitch Diameter (Inches) A Belt	B Belt	Browning Model Sheave	Bushing*	Stock No.	Sheave Less Bushing List	Each	Shpg. Wt.
TWO GROOVE SHEAVES								
3.75	3.0	3.4	2TB34	P1	**1A380**	$34.17	**$26.50**	3.1
4.15	3.4	3.8	2TB38	P1	**1A010**	37.43	**29.05**	3.0
4.55	3.8	4.2	2TB42	P1	**1A011**	40.67	**31.60**	3.9
4.95	4.2	4.6	2TB46	P1	**1A381**	46.17	**35.90**	4.9
5.15	4.4	4.8	2TB48	P1	**1A012**	47.80	**37.15**	5.3
5.35	4.6	5.0	2TB50	P1	**1A013**	49.40	**38.40**	6.0
5.75	5.0	5.4	2TB54	P1	**1A382**	52.63	**40.85**	7.1
6.15	5.4	5.8	2TB58	P1	**1A014**	55.90	**43.40**	8.5
6.35	5.6	6.0	2TB60	P1	**1A383**	57.50	**44.60**	8.9
6.75	6.0	6.4	2TB64	P1	**1A384**	60.73	**47.10**	8.5
7.15	6.4	6.8	2TB68	P1	**1A385**	62.37	**48.40**	8.8
7.35	6.6	7.0	2TB70	Q1	**1A386**	62.67	**48.60**	11.0
7.75	7.0	7.4	2TB74	Q1	**1A387**	63.50	**49.30**	12.0
8.35	7.6	8.0	2TB80	Q1	**3X675**	64.30	**49.85**	14.0
8.95	8.2	8.6	2TB86	Q1	**1A070**	65.93	**51.15**	17.0
9.35	8.6	9.0	2TB90	Q1	**1A071**	66.73	**51.80**	15.0
9.75	9.0	9.4	2TB94	Q1	**1A388**	67.53	**52.35**	17.0
11.35	10.6	11.0	2TB110	Q1	**1A389**	78.87	**61.15**	20.0
12.75	12.0	12.4	2TB124	Q1	**1A390**	85.37	**66.15**	23.0
13.95	13.2	13.6	2TB136	Q1	**1A391**	101.57	**78.75**	24.0
15.75	15.0	15.4	2TB154	Q1	**2W601**	140.43	**108.85**	26.0
18.75	18.0	18.4	2TB184	Q1	**2W602**	185.80	**143.95**	38.0
THREE GROOVE SHEAVES								
3.75	3.0	3.4	3TB34	P2	**3X477**	38.00	**29.55**	3.8
3.95	3.2	3.6	3TB36	P2	**3X484**	39.63	**30.75**	4.6
4.15	3.4	3.8	3TB38	P1	**3X478**	42.27	**32.85**	4.0
4.35	3.6	4.0	3TB40	P1	**3X485**	43.90	**34.10**	4.7
4.55	3.8	4.2	3TB42	P1	**3X479**	45.53	**35.35**	5.8
4.75	4.0	4.4	3TB44	P1	**3X486**	47.13	**36.55**	5.5
4.95	4.2	4.6	3TB46	P1	**3X487**	54.27	**42.15**	6.2
5.15	4.4	4.8	3TB48	P1	**3X488**	55.90	**43.40**	6.9
5.35	4.6	5.0	3TB50	P1	**3X489**	57.50	**44.60**	7.7
5.55	4.8	5.2	3TB52	P1	**3X490**	59.13	**45.85**	8.1
5.75	5.0	5.4	3B54Q	Q1	**3X491**	50.50	**39.20**	8.3
5.95	5.2	5.6	3B56Q	Q1	**3X492**	52.13	**40.45**	9.0
6.15	5.4	5.8	3B58Q	Q1	**3X453**	53.77	**41.70**	10.0
6.35	5.6	6.0	3B60Q	Q1	**3X454**	55.37	**42.95**	11.0
6.55	5.8	6.2	3B62Q	Q1	**3X455**	57.00	**44.25**	11.0
6.75	6.0	6.4	3B64Q	Q1	**3X456**	60.23	**46.70**	13.0
6.95	6.2	6.6	3B66Q	Q1	**3X457**	61.87	**47.95**	14.0
7.15	6.4	6.8	3B68Q	Q1	**3X656**	63.47	**49.20**	15.0
7.35	6.6	7.0	3TB70	Q1	**3X458**	70.77	**54.90**	14.0
7.75	7.0	7.4	3TB74	Q1	**3X459**	72.40	**56.15**	15.0
8.35	7.6	8.0	3TB80	Q1	**3X460**	75.63	**58.65**	17.0
8.95	8.2	8.6	3TB86	Q1	**3X461**	82.13	**63.70**	19.0
9.35	8.6	9.0	3TB90	Q1	**3X462**	85.37	**66.20**	19.0
9.75	9.0	9.4	3TB94	Q1	**3X463**	88.60	**68.65**	19.0
11.35	10.6	11.0	3TB110	Q1	**3X464**	104.80	**81.25**	23.0
12.75	12.0	12.4	3TB124	Q1	**3X616**	121.00	**93.80**	25.0
13.95	13.2	13.6	3TB136	QI	**3X617**	130.73	**101.30**	30.0
15.75	15.0	15.4	3TB154	Q1	**3X618**	166.37	**128.95**	31.0
18.75	18.0	18.4	3TB184	Q1	**3X619**	201.93	**156.75**	42.0

Select desired bore size from bushing chart on page 308.

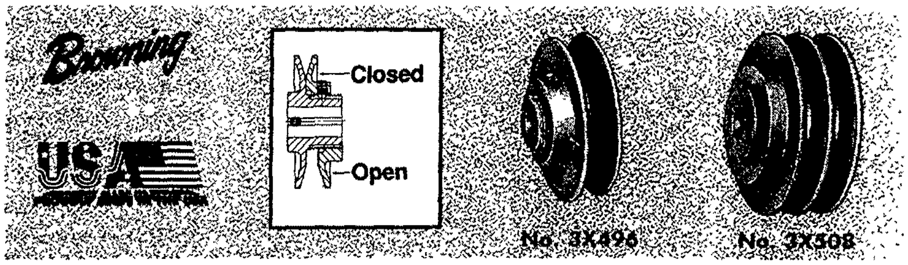
HELPFUL GUIDES TO TERMINOLOGY AND TECHNICAL DATA

**Provided for many of the product lines listed in this catalog.
See pages in rear of catalog.**

POWER TRANSMISSION: SHEAVES

VARIABLE PITCH SHEAVES

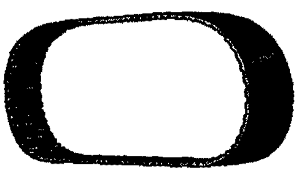
- Durable cast-iron construction
- Screw flange adjusts to allow speed range variation
- Standard keyways on all sizes except 1/2" bore which cannot accommodate a keyway



OD (In.)	Pitch Diameter Range (Inches) 3L Belt	4L or A Belt	5L or B Belt	5V Belt	Browning Model	For Bore Size, Specify Stock No. 1/2"*	5/8"	3/4"	7/8"	1"	1¼"	1⅜"	List	Each	Shpg. Wt.
SINGLE GROOVE VARIABLE PITCH SHEAVES															
2.50	1.6-2.4	—	—	—	1VL25	**3X496**	**3X497**	—	—	—	—	—	$11.72	**$9.08**	0.8
2.87	1.8-2.7	—	—	—	1VL30	**3X498**	**3X499**	—	—	—	—	—	12.20	**9.44**	1.0
3.15	1.7-2.5	1.9-2.9	2.4-3.2	—	1VL34	**3X262**	**3X263**	**3X273**	—	—	—	—	12.20	**9.44**	1.0
3.15	1.7-2.5	1.9-2.9	2.4-3.2	—	1VP34	—	—	—	**2L461**	—	—	—	23.60	**18.27**	1.4
3.75	2.3-3.1	2.4-3.4	2.7-3.7	—	1VL40	**3X274**	**3X264**	**3X265**	—	—	—	—	15.00	**11.61**	1.3
3.75	2.3-3.1	2.4-3.4	2.7-3.7	—	1VL40	—	—	—	**3X500**	—	—	—	16.08	**12.44**	1.3
4.15	2.7-3.5	2.8-3.8	3.1-4.1	—	1VL44	**3X275**	**3X276**	**3X266**	**3X501**	—	—	—	19.00	**14.68**	1.3
4.15	2.7-3.5	2.8-3.8	3.1-4.1	—	1VP44	—	—	—	—	**2L462**	**2L463**	—	35.80	**27.80**	2.6
4.75	3.3-4.1	3.4-4.4	3.7-4.7	—	1VM50	—	**3X438**	**3X502**	**3X503**	—	—	—	30.00	**23.21**	2.7
4.75	3.3-4.1	3.4-4.4	3.7-4.7	—	1VP50	**2L464**	—	—	—	—	—	—	30.40	**23.52**	3.1
4.75	3.3-4.1	3.4-4.4	3.7-4.7	—	1VP50	—	—	—	—	**2L465**	**3X945**	—	43.52	**33.75**	3.6
5.35	3.9-4.7	4.0-5.0	4.3-5.3	—	1VP56	**2L466**	**3X494**	**2L467**	—	—	—	—	45.40	**35.25**	3.8
5.35	3.9-4.7	4.0-5.0	4.3-5.3	—	1VP56	—	—	—	**3X505**	**2L468**	**3X946**	—	58.60	**45.45**	4.6
5.95	4.5-5.3	4.6-5.6	4.9-5.9	5.3-6.3	1VP62	—	**3X495**	**2L473**	**3X507**	**2L474**	**3X947**	**2L475**	71.68	**55.55**	6.0
6.00	—	4.2-5.2	4.3-5.5	—	1VP60	—	—	**2L469**	**2L470**	—	**2L471**	**2L472**	71.00	**55.00**	6.3
6.50	—	4.7-5.7	4.8-6.0	5.2-6.4	1VP65	—	—	**2L476**	**2L477**	—	**2L478**	**2L479**	74.30	**57.55**	7.1
6.55	5.1-5.9	5.2-6.2	5.5-6.5	5.9-6.9	1VP68	—	—	**2L480**	**2L481**	**2L482**	**3X948**	**2L483**	74.60	**57.80**	6.9
7.10	—	5.3-6.3	5.4-6.6	5.8-7.0	1VP71	—	—	**2L484**	**2L485**	—	**2L486**	**2L487**	79.20	**61.40**	8.5
7.50	—	5.7-6.7	5.8-7.0	6.2-7.4	1VP75	—	—	**2L488**	**2L489**	—	**2L490**	**2L491**	105.70	**81.85**	9.4
DOUBLE GROOVE VARIABLE PITCH SHEAVES															
3.35	1.9-2.7	2.0-3.0	2.5-3.3	—	2VP36	—	**3X508**	**2L492**	**3X509**	**2L493**	—	—	56.80	**44.05**	3.3
3.95	2.5-3.3	2.6-3.6	2.9-3.9	—	2VP42	—	**3X417**	**2L494**	**3X418**	**2L495**	**3X510**	—	65.10	**50.50**	4.2
4.75	3.3-4.1	3.4-4.4	3.7-4.7	—	2VP50	—	**3X436**	**2L497**	**3X398**	**2L498**	**3X511**	—	75.04	**58.10**	6.0
5.35	3.9-4.7	4.0-5.0	4.3-5.3	—	2VP56	—	—	**2L500**	**3X399**	**2L501**	**3X400**	—	88.30	**68.40**	7.6
5.95	4.5-5.3	4.6-5.6	4.9-5.9	5.3-6.3	2VP62	—	—	—	—	—	**3X401**	**3X512**	112.90	**87.40**	9.0
6.50	—	4.7-5.7	4.8-6.0	5.2-6.4	2VP65	—	—	**2L502**	**2L503**	—	**2L504**	**2L505**	121.00	**93.70**	13.0
6.55	5.1-5.9	5.2-6.2	5.5-6.5	5.9-6.9	2VP68	—	—	—	—	—	**3X402**	**3X403**	124.90	**87.55**	11.0
7.10	—	5.3-6.3	5.4-6.6	5.8-7.0	2VP71	—	—	**2L506**	**2L507**	—	**2L508**	**2L509**	128.00	**99.10**	15.0
7.50	—	5.7-6.7	5.8-7.0	6.2-7.4	2VP75	—	—	**2L510**	**2L511**	—	**2L512**	**2L513**	189.60	**146.75**	16.0

(*) 1/2" Bore size cannot accommodate a keyway.


No. 4L470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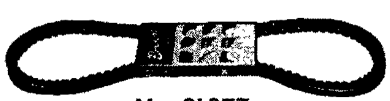
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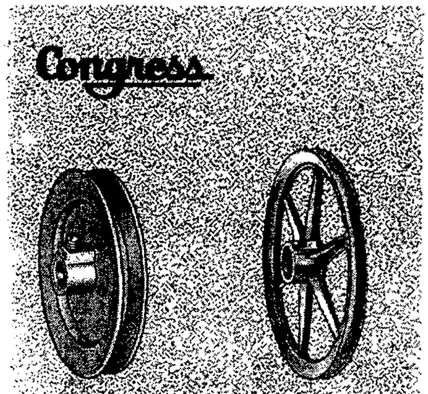
A WIDE VARIETY OF BROWNING BELTS IS AVAILABLE:

For "XL" Gearbelts	See Page 302
For "L" and "H" Gearbelts	See Page 301
For HPT Belts	See Page 293
For 3L, 4L, and 5L V-Belts	See Page 294
For A Section V-Belts	See Page 295
For B Section V-Belts	See Page 296
For 3VX and 5VX V-Belts	See Page 298
For Cog-Type V-Belts	See Page 297

DIE-CAST, VARIABLE PITCH, AND 3 AND 4-STEP SHEAVES

DIE-CAST SHEAVES

- Precision cast, machine grooved, balanced, and tested
- Hollow head setscrew
- 3/8 and 1/2" bores have no keyway
- 5/8, 3/4, 1, and 1³⁄₁₆" bores have keyway on sheaves with 2" OD and larger
- 5" OD sheaves and smaller are solid construction, 6" and larger are spoke construction
- For 7/8" shafts use No. 2X653 spacer bushing
- Use with 3L and A or 4L V-belts
- Congress brand



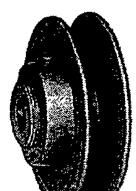
No. 3X891 Solid   No. 3X918 Spoked

OD (In.)	Pitch Dia.* (In.)	Congress Model	3/8"	1/2"	5/8"	3/4"	1"	1³⁄₁₆"	List	Each	Shpg. Wt.
			For Bore Size, Specify Stock No.								
1½	1.35	1½A	3X891	3X892	3X893	—	—	—	$3.08	**$2.22**	0.2
2	1.85	2A	3X894	3X895	3X896	3X897	—	—	3.20	**2.31**	0.3
2¼	2.10	2¼A	—	3X898	3X899	—	—	—	3.32	**2.40**	0.4
2½	2.35	2½A	—	3X900	3X901	3X902	—	—	3.52	**2.54**	0.4
2¾	2.60	2¾A	—	1L837	1L838	—	—	—	4.40	**3.18**	0.6
3	2.85	3A	—	3X903	3X904	3X905	—	—	3.88	**2.80**	0.5
3½	3.35	3½A	—	3X906	3X907	3X908	—	—	4.64	**3.35**	0.5
4	3.85	4A	—	3X909	3X910	3X911	—	—	5.20	**3.75**	0.6
4½	4.35	4½A	—	3X912	3X913	3X914	—	—	6.16	**4.45**	0.7
5	4.85	5A	—	3X915	3X916	3X917	—	—	6.80	**4.91**	0.7
6	5.85	6A	—	3X918	3X919	3X920	3X921	—	7.60	**5.49**	0.9
7	6.85	7A	—	3X922	3X923	3X924	3X925	—	8.52	**6.15**	1.1
8	7.85	8A	—	3X926	3X927	3X928	3X929	—	9.56	**6.90**	1.3
9	8.85	9A	—	3X930	3X931	3X932	3X933	—	12.28	**8.87**	1.3
10	9.85	10A	—	3X934	3X935	3X936	3X937	—	14.76	**10.66**	1.7
11	10.85	11A	—	—	1L839	1L840	1L841	—	15.84	**11.44**	1.9
12	11.85	12A	—	3X938	3X939	3X940	3X941	—	17.96	**12.97**	2.4
14	13.85	14A	—	—	1L847	—	—	—	23.12	**16.69**	3.2
14	13.85	14A	—	—	—	3X942	3X943	—	23.12	**16.69**	-3.2
14	13.85	14A	—	—	—	—	—	3X944	28.36	**20.48**	3.8

(*) Pitch diameter for "A" or "L" belts. Pitch diameter for "3L" belts is 0.3" less.

VARIABLE PITCH SHEAVES FOR SPEED ADJUSTMENT

Congress



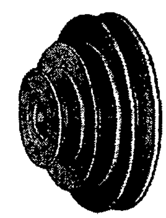
- Durable die-cast construction
- Speed variation range of 30%
- Use on motor driven equipment where speed must be set exactly
- Screw adjustment with socket setscrews
- Keyway on Nos. 1X448 and 1L845
- Congress brand

VARIABLE PITCH SHEAVES

D (In.)	Pitch Diameter (In.) A or 4L Belt	B or 5L Belt	Congress Model	For Bore Size, Specify Stock No. 1/2"	5/8"	List	Each	Shpg. Wt.
1/4	2.1-3.1	2.4-3.2	VP325 x ½	1X447	—	$8.40	**$6.06**	0.8
1/4	2.1-3.1	2.4-3.2	VP325 x ⅝	—	1X448	8.40	**6.06**	0.9
/2	2.4-3.4	2.9-3.5	VP350 x ½	1L844	—	8.72	**6.30**	1.0
/2	2.4-3.4	2.9-3.5	VP350 x ⅝	—	1L845	8.72	**6.30**	1.1
/4	2.1-3.6	3.1-3.7	VP375 x ½	1L846	—	9.08	**6.56**	1.1

3 & 4-STEP DIE-CAST SHEAVES

Congress



- Use with 3L, 4L, and A Belts
- Use with 5/8 or 1/2" diameter shaft with reducing bushing included
- Pitch diameter is 0.15" less than outside diameter
- Congress brand

Diameters (In.)	Congress Model	Stock No.	List	Each	Shpg. Wt.
3-STEP SHEAVES					
4, 3, & 2	SCA43	**4X559**	$11.80	**$8.52**	1.0
5, 4, & 3	SCA53	**1L842**	19.24	**13.89**	1.6
4-STEP SHEAVES					
4, 3³⁄₈, 2⁵⁄₈, & 2	SCA44	**4X560**	15.00	**10.83**	1.3
5, 4, 3, & 2	SCA54	**1L843**	21.12	**15.25**	1.9

MANY BRANDS OF HAND TOOLS AVAILABLE

QD® AND SPLIT TAPER BUSHINGS

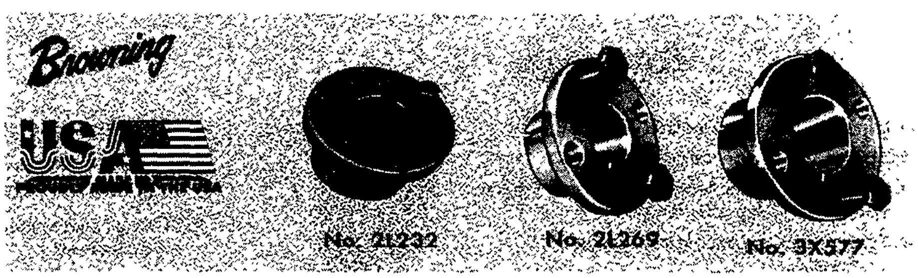
QD® BUSHINGS

- 3/4" per foot taper for ultimate shaft clamping
- Used with many HPT sprockets on page 292
- Also can be used with other competitive sheave and sprocket systems that utilize QD bushings

Mfr's. Model	For Bushing Bore Size, Specify Stock No.												Each	Shpg. Wt.
	1/2"	5/8"	3/4"	7/8"	15/16"	1"	1 1/8"	1 3/16"	1 1/4"	1 3/8"				
JA	2L093	2L094	2L095	2L096	2L097	2L098	2L099	2L100	—	—			$6.94	0.4
SH	2L101	2L102	2L103	2L104	2L105	2L106	2L107	2L108	2L109	2L110			9.48	1.0
SDS	2L115	2L116	2L117	2L118	2L119	2L120	2L121	2L122	2L123	2L124			11.02	1.5
SD	2L133	2L134	2L135	2L136	2L137	2L138	2L139	2L140	2L141	2L142			13.25	1.9
SK	2L151	2L152	2L153	2L154	2L155	2L156	2L157	2L158	2L159	2L160			17.07	3.3
SF	2L171	2L172	2L173	2L174	2L175	2L176	2L177	2L178	2L179	2L180			21.00	5.0
E	—	—	—	2L195	—	2L196	2L197	—	2L198	2L199			44.15	11.0
	1 7/16"	1 1/2"	1 9/16"	1 5/8"	1 11/16"	1 3/4"	1 7/8"	1 15/16"	2"	2 1/8"	2 3/16"	2 3/8"		
SH	2L111	2L112	2L113	2L114	—	—	—	—	—	—	—	—	9.48	0.7
SDS	2L125	2L126	2L127	2L128	2L129	2L130	2L131	2L132	—	—	—	—	11.02	1.1
SD	2L143	2L144	2L145	2L146	2L147	2L148	2L149	2L150	—	—	—	—	13.24	1.2
SK	2L161	2L162	2L163	2L164	2L165	2L166	2L167	2L168	2L169	2L170	—	—	17.08	2.7
SF	2L181	2L182	—	2L183	2L184	2L185	2L186	2L187	2L188	2L189	2L190	—	21.00	4.2
E	2L200	2L201	—	2L202	—	2L203	2L204	2L205	2L206	2L207	2L208	2L209	44.15	9.8
F	—	—	—	—	—	—	—	2L218	2L219	2L220	2L221	2L222	79.05	16.0
	2 7/16"	2 1/2"	2 11/16"	2 15/16"	3"	3 1/8"	3 7/16"	3 1/2"	3 15/16"					
SF	2L191	2L192	2L193	2L194	—	—	—	—	—				21.02	0.5
E	2L210	2L211	2L212	2L213	2L214	2L215	2L216	2L217	—				44.15	6.0
F	2L223	2L224	2L225	2L226	2L227	2L228	2L229	2L230	2L231				79.05	15.0

SPLIT TAPER BUSHINGS

- Used on Browning sheaves, sprockets, pulleys, gearbelt pulleys, and chain couplings
- 3/4" per foot taper for ultimate shaft clamping
- External key on the bushing provides positive drive (except Models G & H)
- Features solid flange for true concentricity



Mfr's. Model	For Bushing Bore Size, Specify Stock No.																		Each	Shpg. Wt.
	3/8"	7/16"	1/2"	9/16"	5/8"	3/4"	7/8"	15/16"	1"											
G	2L264	2L265	2L266	2L267	2L268	2L269	2L270	2L271	2L272										$4.60	0.4
	1/2"	5/8"	3/4"	7/8"	15/16"	1"	1 1/8"	1 3/16"	1 1/4"	1 3/8"	1 7/16"	1 1/2"	24mm							
H	3X884	3X572	3X573	3X574	3X575	3X576	3X577	3X578	3X579	3X580	3X581	3X885	5A021						4.59	0.8
	5/8"	3/4"	7/8"	1"	1 1/8"	1 3/16"	1 1/4"	1 3/8"	1 7/16"	1 1/2"	1 5/8"									
P1	1A276	3A146	1A015	3A147	3X483	3A148	3A149	3X482	1A392	3A150	1A072								8.01	1.6
P2	—	—	—	—	3X480	—	—	3X481	—	—	—								8.76	1.8
	1/2"	9/16"	5/8"	11/16"	3/4"	13/16"	7/8"	15/16"	1"	1 1/16"	1 1/8"	1 3/16"	1 1/4"	1 5/16"	1 3/8"	1 7/16"				
B	2L232	2L233	2L234	2L235	2L236	2L237	2L238	2L239	2L240	2L241	2L242	2L243	2L244	2L245	2L246	2L247			8.02	3.
	1 1/2"	1 9/16"	1 5/8"	1 11/16"	1 3/4"	1 13/16"	1 7/8"	1 15/16"	2"	2 1/16"	2 1/8"	2 3/16"	2 1/4"	2 5/16"	2 3/8"	2 7/16"				
B	2L248	2L249	2L250	2L251	2L252	2L253	2L254	2L255	2L256	2L257	2L258	2L259	2L260	2L261	2L262	2L263			8.02	2.
	3/4"	7/8"	1"	1 1/8"	1 3/16"	1 1/4"	1 3/8"	1 7/16"	1 1/2"	1 9/16"	1 5/8"	1 11/16"	1 3/4"	1 7/8"	1 15/16"	2 1/8"	2 3/8"	2 5/8"		
Q1	3A151	3A152	3A153	3X465	3X466	3A154	3X467	3X468	3A155	3X666	3X469	3X470	3X667	3X668	3X669	1A393	1A394	1A395	15.73	4.
	1 3/4"	1 15/16"	2"	2 1/8"	2 3/16"	2 3/8"	2 7/16"	2 1/2"	2 5/8"	2 11/16"	2 3/4"	2 7/8"	2 15/16"	3"	3 3/16"	3 7/16"				
R1	6L685	6L686	6L687	6L688	6L689	6L690	6L691	6L692	6L693	6L694	6L695	6L696	6L697	6L698	6L699	6L700			38.85	9
R2	—	6L701	6L702	—	6L703	—	6L704	6L705	6L706	6L707	6L708	6L709	6L710	6L711	—	6L712			43.75	13.
	2 3/16"	2 7/16"	2 1/2"	2 7/8"	2 15/16"	3"	3 3/8"	3 7/16"												
S1	6L713	6L714	6L715	6L716	6L717	6L718	—	6L719											77.75	16
S2	6L720	6L721	6L722	—	6L723	6L724	6L725	6L726											97.15	22.

STEEL RACK AND STEEL MITER GEARS

HOW TO SELECT GEARS

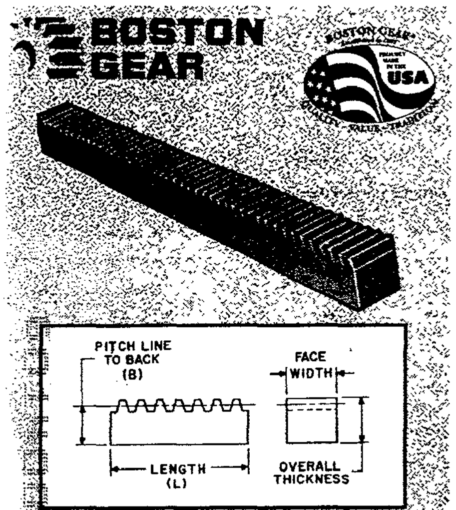
ars are toothed devices that mesh with other toothed devices transmit motion and to change speed and direction. Gears sed together should have the same number of teeth, and the ıme pitch and pressure angle.

pur Gears provide parallel and linear motion in one plane.

Iiter Gears provide motion at a right angle on two planes.

Pitch is the ratio of teeth in gear to diameter of pitch circle.

Pressure Angle is the angle between a line from the contact points of gear teeth and a radial line of a gear's pitch point. For standard gears, pressure angles of 14½° and 20° have been adopted by ANSI and the gear industry.



STANDARD TOLERANCES	
Dimension (In.)	**Tolerance (In.)**
All Lengths*	+1.000-0.000
Face Widths 1/8-3/4	+0.000-0.002
Face Widths 7/8-1½	+0.000-0.003
Face Widths 1¾-2	+0.000-0.004
Face Width 3	+0.000-0.006

(*) Ends not machined. Tolerance allows for cutting and matching.

STEEL RACK

- **Industry standard 14½° pressure angle for applications where control of backlash is critical (will not operate with 20° spurs)**
- **For use with spur gears on page 310**
- **High quality steel**
- **Precise machining for minimal center distance variation and improved concentricity of mating spur gears**

Pitch	Face Width	Overall Thickness	Pitch Line to Back (B)	Nominal Length (L)	Boston Model	Stock No.	List	Each	Shpg. Wt.
32	0.188"	0.188"	0.156"	4 ft.	L503-4	**1L886**	$61.98	**$33.45**	2.0
24	0.250	0.250	0.208	4	L505-4	**1L887**	62.44	**33.65**	2.0
20	0.375	0.375	0.325	4	L509-4	**1L888**	68.72	**37.15**	3.0
20	0.375	0.375	0.325	6	L509-6	**1L899**	103.08	**55.60**	4.5
16	0.500	0.500	0.438	4	L512-4	**1L889**	68.72	**37.10**	6.0
16	0.500	0.500	0.438	6	L512-6	**1L900**	103.08	**55.60**	6.5
12	0.750	0.500	0.417	4	L514-4	**1L890**	66.08	**35.80**	5.5
12	0.750	0.500	0.417	6	L514-6	**1L901**	103.08	**60.45**	8.3
12	0.750	0.750	0.667	4	L515-4	**1L891**	74.71	**40.30**	9.0
12	0.750	0.750	0.667	6	L515-6	**1L902**	112.07	**60.40**	12.0
10	1.000	0.625	0.525	4	L516-4	**1L892**	83.37	**44.95**	8.8
10	1.000	0.625	0.525	6	L516-6	**1L903**	125.05	**67.35**	13.0
10	1.000	1.000	0.900	4	L517-4	**1L893**	89.61	**48.30**	14.0
10	1.000	1.000	0.900	6	L517-6	**1L904**	134.41	**72.40**	21.0
8	1.250	0.750	0.625	4	L518-4	**1L894**	112.49	**60.65**	13.0
8	1.250	0.750	0.625	6	L518-6	**1L905**	168.73	**90.90**	17.0
8	1.250	1.250	1.125	4	L519-4	**1L895**	133.29	**71.75**	21.0
8	1.250	1.250	1.125	6	L519-6	**1L906**	199.93	**107.65**	29.0
6	1.500	1.000	0.833	4	L520-4	**1L896**	150.51	**81.05**	18.0
6	1.500	1.000	0.833	6	L520-6	**1L907**	225.76	**121.60**	27.0
6	1.500	1.500	1.333	4	L521-4	**1L897**	170.81	**92.00**	28.0
6	1.500	1.500	1.333	6	L521-6	**1L908**	256.21	**137.95**	44.0
5	1.750	1.250	1.050	4	L522-4	**1L898**	208.50	**112.25**	26.0
5	1.750	1.250	1.050	6	L522-6	**1L909**	312.75	**169.00**	39.0

STANDARD TOLERANCES	
Dimension	**Tolerance (In.)**
All Bore Dimensions	±0.0005

STEEL MITER GEARS

- **Industry standard 20° pressure angle for transmitting motion and power between intersecting shafts positioned at right angles**
- **1:1 ratio operation**
- **High quality, precision machined steel**
- **Patented Coniflex® tooth form allows minor adjustment of gears in assembly and provides even load distribution for increased life**

Pitch	Face Width	No. of Teeth	Pitch Dia.	Bore	Mounting Distance	Depth (D)	Hub Dia.	Hub Proj.	Boston Model	Stock No.	List	Each	Shpg. Wt.
16	0.22"	16	1.000"	0.375"	1.062"	0.750"	0.75"	0.44"	L110Y	**1L996**	$12.24	**$9.89**	0.1
16	0.27	20	1.250	0.438	1.250	0.844	1.00	0.50	L111Y	**1L997**	13.82	**11.16**	0.2
16	0.31	24	1.500	0.500	1.375	0.875	1.00	0.50	L112Y	**1L998**	16.04	**12.95**	0.3
14	0.19	14	1.000	0.375	1.062	0.734	0.88	0.50	L124Y	**1L999**	12.81	**10.35**	0.1
12	0.27	15	1.250	0.375	1.250	0.859	1.00	0.50	L125Y	**2L012**	14.34	**11.57**	0.2
12	0.27	15	1.250	0.500	1.250	0.859	1.00	0.50	L101Y	**2L013**	14.34	**11.57**	0 2
12	0.32	18	1.500	0.500	1.500	1.016	1.25	0.63	L127Y	**2L014**	16.93	**13.67**	0.2
12	0.32	18	1.500	0.625	1.500	1.016	1.25	0.63	L102Y	**2L015**	16.93	**13.67**	0.3
12	0.39	21	1.750	0.500	1.750	1.188	1.38	0.69	L119Y	**2L016**	17.70	**14.30**	0.5
12	0.39	21	1.750	0.625	1.750	1.188	1.38	0.69	L121Y	**2L017**	17.70	**14.30**	0.4
12	0.43	24	2.000	0.500	1.875	1.219	1.31	0.69	L113Y	**2L018**	20.63	**16.65**	0.6
12	0.54	30	2.500	0.625	2.312	1.484	1.63	0.84	L114Y	**2L019**	30.02	**24.23**	1.0
10	0.44	20	2.000	0.500	2.000	1.359	1.63	0.81	L128Y	**2L020**	23.72	**19.16**	0 8
10	0.44	20	2.000	0.625	2.000	1.359	1.63	0.81	L129Y	**2L021**	23.72	**19.16**	0.7
10	0.44	20	2.000	0.750	2.000	1.359	1.63	0.81	L103Y	**2L022**	23.72	**19.16**	0.7
10	0.55	25	2.500	0.750	2.438	1.625	2.00	0.94	L130Y	**2L023**	33.60	**27.20**	1.5
10	0.55	25	2.500	1.000	2.438	1.625	2.00	0.94	L131Y	**2L024**	33.60	**27.20**	1.3
8	0.64	24	3.000	0.750	2.562	1.578	1.75	0.81	L115Y	**2L025**	39.21	**31.75**	1.6
8	0.64	24	3.000	1.000	2.750	1.766	2.50	1.00	L105Y-A	**2L026**	39.21	**31.75**	2.3
8	0.84	32	4.000	1.000	3.625	2.281	3.00	1.13	L123Y	**2L027**	79.22	**64.00**	5.0

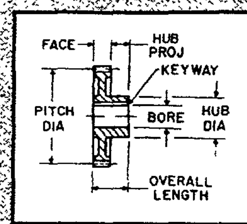
SPUR GEARS

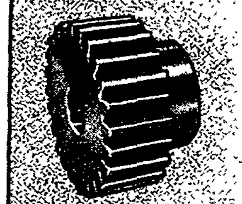
- Industry standard 14½° pressure angle for replacement gearing and new applications (will not operate with 20° spurs)
- For transmitting motion and power between parallel shafts
- For up and down and back and forward motion
- Ideal for applications where control of backlash is critical
- Use with steel rack on page 309
- Precision machined of high quality steel or cast iron
- Close concentricity between bore, pitch diameter and outside diameter facilitates reboring modifications (reference Keyway and Setscrew Machining Guide on page 286)
- Smooth, quiet operation

BOSTON GEAR

STANDARD TOLERANCES	
Dimensions	Tolerance
All Bore Dimensions	±0.0005"
All Hub Diameter Dimensions	±1/32"

For Right Angle See Miter Gears on Page 309.





Pitch	Face Width	No. of Teeth	Pitch Dia.	Bore	Type	Outside Dia.	Overall Length	Hub Dia.	Hub Proj.	Boston Model	Stock No.	List	Each	Shpg. Wt.
32	0.187"	16	0.500"	0.187"	Steel	0.562"	0.497"	0.40"	0.31"	H3216*	**1L939**	$12.96	**$10.47**	0.1
32	0.187	18	0.562	0.187	Steel	0.624	0.497	0.46	0.31	H3218*	**1L940**	13.05	**10.53**	0.1
32	0.187	20	0.625	0.250	Steel	0.687	0.497	0.53	0.31	H3220*	**1L941**	13.05	**10.53**	0.1
32	0.187	24	0.750	0.312	Steel	0.812	0.497	0.65	0.31	H3224*	**1L942**	13.05	**10.53**	0.1
32	0.187	40	1.250	0.375	Steel	1.312	0.557	0.87	0.37	H3240*	**1L943**	13.29	**10.73**	0 1
24	0.250	12	0.500	0.250	Steel	0.583	0.560	0.38	0.31	H2412*	**1L944**	8.69	**7.02**	0.1
24	0.250	16	0.667	0.312	Steel	0.750	0.560	0.54	0.31	H2416*	**1L945**	10.57	**8.54**	0.3
24	0.250	20	0.833	0.312	Steel	0.916	0.560	0.71	0.31	H2420*	**1L946**	11.57	**9.35**	0.1
24	0.250	24	1.000	0.375	Steel	1.083	0.630	0.87	0.38	H2424*	**1L947**	13.64	**11.02**	0.1
20	0.375	12	0.600	0.313	Steel	0.700	0.755	0.45	0.38	NA12B	**1L948**	6.93	**5.59**	0.1
20	0.375	16	0.800	0.375	Steel	0.900	0.755	0.64	0.38	NA16B	**1L949**	8.71	**7.04**	0.1
20	0.375	20	1.000	0.375	Steel	1.100	0.755	0.84	0.38	NA20B	**1L950**	10.42	**8.42**	0.1
20	0.375	24	1.200	0.375	Steel	1.300	0.755	0.92	0.38	NA24	**1L951**	11.69	**9.45**	0.1
20	0.375	32	1.600	0.375	Steel	1.700	0.875	1.31	0.50	NA32	**1L952**	15.10	**12.19**	0.4
20	0.375	48	2.400	0.375	Steel	2.500	0.875	1.33	0.50	NA48A	**1L953**	23.36	**18.86**	0.6
16	0.500	12	0.750	0.375	Steel	0.875	0.753	0.56	0.44	NB12B	**1L954**	8.24	**6.65**	0.1
16	0.500	14	0.875	0.375	Steel	1.000	0.753	0.69	0.44	NB14B	**1L955**	9.15	**7.39**	0.1
16	0.500	16	1.000	0.500	Steel	1.125	0.753	0.81	0.44	NB16B	**1L956**	10.42	**8.42**	0.1
16	0.500	18	1.125	0.500	Steel	1.250	0.753	0.94	0.44	NB18B	**1L957**	11.45	**9.25**	0.2
16	0.500	20	1.250	0.500	Steel	1.375	0.753	0.95	0.44	NB20B	**1L958**	11.69	**9.45**	0.2
16	0.500	24	1.500	0.500	Steel	1.625	0.753	1.19	0.44	NB24B	**1L959**	12.88	**10.40**	0.4
16	0.500	30	1.875	0.500	Steel	2.000	0.813	1.56	0.50	NB30B	**1L960**	17.98	**14.53**	0.6
16	0.500	32	2.000	0.500	Steel	2.125	1.000	1.69	0.50	NB32	**1L961**	20.13	**16.25**	0.7
16	0.500	40	2.500	0.500	Steel	2.625	1.000	1.69	0.50	NB40	**1L962**	23.18	**18.72**	0.9
16	0.500	48	3.000	0.500	Steel	3.125	1.000	2.19	0.50	NB48	**1L963**	25.98	**20.98**	1.5
12	0.750	12	1.000	0.500	Steel	1.167	1.250	0.75	0.50	ND12B	**1L964**	11.45	**9.25**	0.2
12	0.750	14	1.167	0.500	Steel	1.334	1.250	0.91	0.50	ND14B	**1L965**	12.88	**10.40**	0.2
12	0.750	16	1.333	0.625	Steel	1.500	1.250	0.98	0.50	ND16B	**1L966**	14.82	**11.96**	0.3
12	0.750	18	1.500	0.625	Steel	1.667	1.250	1.14	0.50	ND18B	**1L967**	15.46	**12.49**	0.4
12	0.750	20	1.667	0.625	Steel	1.834	1.250	1.31	0.50	ND20B	**1L968**	16.80	**13.56**	0.5
12	0.750	24	2.000	0.625	Steel	2.167	1.250	1.64	0.50	ND24B	**1L969**	21.35	**17.24**	0.8
12	0.750	30	2.500	0.625	Steel	2.667	1.380	2.14	0.63	ND30	**1L970**	23.08	**18.63**	1.5
12	0.750	32	2.667	0.625	Steel	2.834	1.380	1.92	0.63	ND32A	**1L971**	25.32	**20.46**	0.1
12	0.750	48	4.000	0.750	Cast Iron	4.167	1.500	1.75	0.75	ND48	**1L972**	36.15	**29.20**	1.8
10	1.000	12	1.200	0.625	Steel	1.400	1.630	0.92	0.63	NF12B	**1L973**	14.54	**11.73**	0.3
10	1.000	14	1.400	0.625	Steel	1.600	1.630	1.02	0.63	NF14B	**1L974**	16.80	**13.56**	0.4
10	1.000	16	1.600	0.750	Steel	1.800	1.630	1.20	0.63	NF16B	**1L975**	20.13	**16.25**	0.5
10	1.000	18	1.800	0.750	Steel	2.000	1.630	1.41	0.63	NF18B	**1L976**	21.35	**17.24**	0.8
10	1.000	20	2.000	0.750	Steel	2.200	1.630	1.61	0.63	NF20B	**1L977**	23.08	**18.63**	1.2
10	1.000	24	2.400	0.750	Steel	2.600	1.630	2.02	0.63	NF24B	**1L978**	26.16	**21.12**	1.8
10	1.000	30	3.000	0.750	Steel	3.200	1.880	2.02	0.88	NF30A	**1L979**	37.42	**30.30**	2.7
10	1.000	40	4.000	0.875	Cast Iron	4.200	1.880	2.13	0.88	NF40	**1L980**	45.83	**37.05**	2.0
10	1.000	48	4.800	0.875	Cast Iron	5.000	1.880	2.13	0.88	NF48	**1L981**	63.94	**51.65**	4.2
8	1.250	12	1.500	0.750	Steel	1.750	2.000	1.13	0.75	NH12B	**1L982**	22.47	**18.15**	0.6
8	1.250	14	1.750	0.750	Steel	2.000	2.000	1.30	0.75	NH14B	**1L983**	26.16	**21.13**	0.9
8	1.250	16	2.000	0.875	Steel	2.250	2.000	1.55	0.75	NH16B	**1L984**	29.31	**23.65**	1.3
8	1.250	18	2.250	0.875	Steel	2.500	2.000	1.80	0.75	NH18B	**1L985**	31.38	**25.35**	1.8
8	1.250	20	2.500	0.875	Steel	2.750	2.000	2.05	0.75	NH20B	**1L986**	34.97	**28.35**	2.2
8	1.250	24	3.000	0.875	Steel	3.250	2.130	2.06	0.88	NH24A	**1L987**	45.61	**36.85**	3.1
8	1.250	32	4.000	1.000	Steel	4.250	2.130	3.00	0.88	NH32A	**1L988**	61.81	**49.95**	5.9
6	1.500	12	2.000	1.000	Steel	2.333	2.380	1.44	0.88	NJ12B	**1L989**	29.22	**23.60**	1.3
6	1.500	14	2.333	1.000	Steel	2.666	2.380	1.78	0.88	NJ14B	**1L990**	33.28	**26.95**	2.0
6	1.500	16	2.667	1.000	Steel	3.000	2.380	2.13	0.88	NJ16B	**1L991**	41.56	**33.60**	2.8
6	1.500	18	3.000	1.000	Steel	3.333	2.380	2.45	0.88	NJ18B	**1L992**	45.61	**36.85**	3.7
6	1.500	24	4.000	1.125	Steel	4.333	2.380	3.00	0.88	NJ24A	**1L993**	65.49	**52.95**	6.5
6	1.500	30	5.000	1.125	Steel	5.333	2.380	4.00	0.88	NJ30A	**1L994**	84.79	**68.50**	11.0
5	1.750	20	4.000	1.063	Steel	4.400	2.630	3.38	0.88	NK20B	**1L995**	61.81	**49.95**	7.0

(*) Furnished with standard setscrew.

BOSTON GEAR

OPEN GEAR INTERCHANGE

Stock No.	BOSTON	MCMASTER	MARTIN	BROWNING	UNION
L939	H3216	6325K89	N/A	NSS3216	N/A
L940	H3218	6325K94	N/A	NSS3218	N/A
L941	H3220	6325K95	N/A	NSS3220	N/A
L942	H3224	6325K96	N/A	NSS3224	N/A
L943	H3240	6325K97	N/A	NSS3240	N/A
L944	H2412	6325K31	S2412	NSS2412	N/A
L945	H2416	6325K75	S2416	NSS2416	N/A
L946	H2420	6325K87	S2420	NSS2420	N/A
L947	H2424	6325K88	S2424	NSS2424	N/A
L948	NA12B	6325K81	S2012	NSS2012	20HG12
L949	NA16B	6325K82	S2016	NSS2016	20HG16
L950	NA20B	6325K83	S2020	NSS2020	20HG20
L951	NA24	6325K84	S2024	NSS2024	20HG24
L952	NA32	6325K85	S2032	NSS2032	20HG32
L953	NA48A	6325K86	S2048	NSS2048	20G48
L954	NB12B	6325K11	S1612	NSS1612	16HG12
.955	NB14B	6325K12	S1614	NSS1614	16HG14
L956	NB16B	6325K13	S1616	NSS1616	16HG16
L957	NB18B	6325K14	S1618	NSS1618	16HG18
L958	NB20B	6325K15	S1620	NSS1620	16HG20
L959	NB24B	6325K16	S1624	NSS1624	16HG24
L960	NB30B	6325K17	S1630	NSS1630	16HG30
L961	NB32	6325K18	S1632	NSS1632	16HG32
L962	NB40	6325K19	C1640	N/A	16G40
L963	NB48	6325K21	C1648	N/A	16G48
L964	ND12B	6325K22	S1212	NSS1212	12HG12
'965	ND14B	6325K23	S1214	NSS1214	12HG14
56	ND16B	6325K24	S1216	NSS1216	12HG16
.967	ND18B	6325K25	S1218	NSS1218	12HG18
L968	ND20B	6325K26	S1220	NSS1220	12HG20
L969	ND24B	6325K27	S1224	NSS1224	12HG24
L970	ND30	6325K28	S1230	NSS1230	12HG30
L971	ND32A	6325K29	S1232	NSS1232	12HG32
L972	ND48	6325K32	C1248	N/A	12G48
L973	NF12B	6325K33	S1012	NSS1012	10HG12
L974	NF14B	6325K34	S1014	NSS1014	10HG14
L975	NF16B	6325K35	S1016	NSS1016	10HG16
L976	NF18B	6325K36	S1018	NSS1018	10HG18
L977	NF20B	6325K37	S1020	NSS1020	10HG20
L978	NF24B	6325K38	S1024	NSS1024	10HG24
L979	NF30A	6325K39	C1030	N/A	10G30
L980	NF40	6325K42	C1040	N/A	10G40
L981	NF48	6325K43	C1048	N/A	10G48
L982	NH12B	6325K44	S812	NSS812	8HG12
L983	NH14B	6325K45	S814	NSS814	8HG14
L984	NH16B	6325K46	S816	NSS816	8HG16
L985	NH18B	6325K47	S818	NSS818	8HG18
L986	NH20B	6325K48	S820	NSS820	8HG20
L987	NH24A	6325K49	C824	N/A	8G24
L988	NH32A	6325K52	C832	N/A	8G32
L989	NJ12B	6325K55	S612	NSS612	6HG12

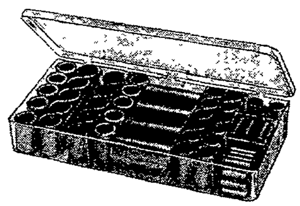
Stock No.	BOSTON	MCMASTER	MARTIN	BROWNING	UNION
1L990	NJ14B	6325K56	S614	NSS614	6HG14
1L991	NJ16B	6325K57	S616	NSS616	6HG16
1L992	NJ18B	6325K58	S618	NSS618	6HG18
1L993	NJ24A	6325K61	C624	N/A	6G24
1L994	NJ30A	6325K62	S630	N/A	6G30
1L995	NK20B	6325K91	S520	NSS520	5HG20
1L996	L110Y	6529K11	M1616	YSM16B16	SMT1616
1L997	L111Y	6529K13	M1620	YSM16B20	SMT1620
1L998	L112Y	6529K16	M1624	YSM16B24	SMT1624
1L999	L124Y	6529K12	M1414	YSM14B14	N/A
2L012	L125Y	6529K14	M1215	YSM12B15	SMT1215-A
2L013	L101Y	6529K15	M1215B	YSM12B15 1/2	SMT1215-B
2L014	L127Y	6529K17	M1218	YSM12B18	SMT1218-A
2L015	L102Y	6529K18	M1218A	YSM12B18 5/8	SMT1218-B
2L016	L119Y	6529K19	M1221	YSM12B21	SMT1221-A
2L017	L121Y	6529K21	M1221B	YSM12B21 5/8	SMT1221-B
2L018	L113Y	6529K22	M1224	YSM12B24	SMT1224
2L019	L114Y	6529K26	M1230	YSM12B30	N/A
2L020	L128Y	6529K23	M1020A	YSM10B20	N/A
2L021	L129Y	6529K24	M1020B	YSM10B20 5/8	N/A
2L022	L103Y	6529K25	M1020	YSM10B20 3/4	N/A
2L023	L130Y	6529K27	M1025	YSM10B25	SMT1025A
2L024	L131Y	6529K29	M1025B	YSM10B25-1	SMT1025C
2L025	L115Y	6529K31	M824	YSM8B24	SMT824A
2L026	L105YA	6529K32	M824AJ	YSM8B24-1	SMT824B
2L027	L123Y	6529K36	M832	YSM8B32	SMT832
1L886	L503-4	6295K242	N/A	4NSR32X3/16	N/A
1L887	L505-4	6295K232	R24X4	4NSR24X1/4	N/A
1L888	L509-4	6295K112	R20X4	4NSR20X3/8	R20X4
1L899	L509-6	6295K113	R20X6	6NSR20X3/8	N/A
1L889	L512-4	6295K123	RA16X4	4NSR16X1/2	R16X4
1L900	L512-6	6295K124	RA16X6	6NSR16X1/2	R16X6
1L890	L514-4	6295K132	R12X4	4NSR12X1/2	LR12X4
1L901	L514-6	6295K133	R12X6	6NSR12X1/2	LR12X6
1L891	L515-4	6295K142	RA12X4	4NSR12X3/4	R12X4
1L902	L515-6	6295K143	RA12X6	6NSR12X3/4	R12X6
1L892	L516-4	6295K152	R10X4	4NSR10X5/8	LR10X4
1L903	L516-6	6295K153	R10X6	6NSR10X5/8	LR10X6
1L893	L517-4	6295K163	RA10X4	4NSR10X1	R10X4
1L904	L517-6	6295K164	RA10X6	6NSR10X1	R10X6
1L894	L518-4	6295K172	R8X4	4NSR8X3/4	LR8X4
1L905	L518-6	6295K173	R8X6	6NSR8X3/4	LR8X6
1L895	L519-4	6295K182	RA8X4	4NSR8X1 1/4	R8X4
1L906	L519-6	6295K183	RA8X6	6NSR8X1 1/4	R8X6
1L896	L520-4	6295K192	R6X4	4NSR6X1	LR6X4
1L907	L520-6	6295K193	R8X6	6NSR6X1	LR6X6
1L897	L521-4	6295K212	RA6X4	4NSR6X1 1/2	R6X4
1L908	L521-6	6295K213	RA6X6	6NSR6X1 1/2	R6X6
1L898	L522-4	6295K222	R5X4	4NSR5X1 1/4	R5X4
1L909	L522-6	6295K223	R5X6	6NSR5X1 1/4	R5X6

FOR CROSS REFERENCE INFORMATION SEE PAGE OPPOSITE INSIDE BACK COVER

BRONZE BUSHINGS AND PRECISION TAPERED ROLLER BEARINGS

56-PC. BRONZE BUSHING REPAIR KIT

Dayton®



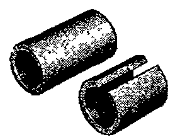
Kit contains 56 bronze bushings from 1/4" ID x 5/16" OD to 3/4" ID x 1" OD—a total of 9 assorted sizes. Self-lubricating type—ideally suited for motor bearings. In plastic box. Dayton brand.

No. 1X968. Shpg. wt. 2.3 lbs. List....$54.40.
Each..**$29.95**

BRONZE BUSHINGS AND STEEL SLEEVES

Dayton®

- **Ideal for motor and tool use**
- **Dayton brand**



Bushings are of self lubricating bronze construction. Sleeves are plated steel with 3/16" open slot for key way.

Sold in packages of three.

ID	OD	Length	Stock No.	List	Each Pkg. of 3	Shpg. Wt.
			BRONZE BUSHINGS			
1/4"	5/16"	3/4"	**2X355**	$3.20	**$1.60**	0.1
1/4	3/8	1	**2X380**	4.00	**1.76**	0.1
3/8	1/2	1	**1X871**	4.80	**2.24**	0.1
1/2	5/8	$1\frac{1}{8}$	**1X868**	5.60	**2.56**	0.1
1/2	11/16	$1\frac{1}{8}$	**1X866**	7.20	**3.20**	0.2
1/2	3/4	$1\frac{1}{8}$	**1X870**	7.60	**3.83**	0.2
5/8	3/4	1	**1X867**	7.60	**3.20**	0.1
5/8	3/4	$1\frac{1}{8}$	**1X869**	7.60	**3.20**	0.2
3/4	1	$1\frac{7}{8}$	**1X872**	16.80	**7.19**	0.5
			STEEL SLEEVES			
1/4	5/16	1	**6L100**	4.40	**3.39**	0.1
1/4	3/8	$1\frac{1}{16}$	**6L101**	4.40	**3.39**	0.1
5/16	3/8	$1\frac{1}{16}$	**6L102**	4.40	**3.39**	0.1
3/8	7/16	$1\frac{1}{16}$	**6L103**	4.40	**3.39**	0.1
3/8	1/2	1	**4X664**	4.40	**3.39**	0.1
1/2	5/8	$1\frac{1}{4}$	**2X773**	4.40	**3.38**	0.2
5/8	3/4	$1\frac{1}{4}$	**2X774**	4.40	**3.38**	0 2
3/4	1	$1\frac{1}{4}$	**2X775**	6.40	**5.34**	0.3
7/8	1	$1\frac{5}{16}$	**2X653**	6.40	**4.80**	0.2

BUSHING AND BEARING TOOLS

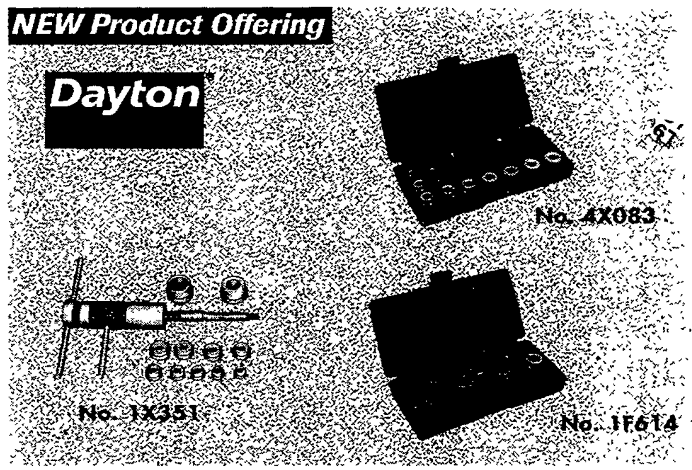
- **All parts hardened and plated**
- **Durable molded plastic carrying case included**

Bushing Driver Sets removes or inserts internal bushings and bearings in various equipment. Sizes marked on each adapter. No. 4X083 has 3 drivers and 16 adapters for 3/8 to $1\frac{1}{4}$" ID and 7/16 to $1\frac{3}{8}$" OD. No. 1F614 has 1 driver and 7 adapters for $1\frac{5}{16}$ to $1\frac{3}{4}$" ID and $1\frac{7}{16}$ to $1\frac{7}{8}$" OD.

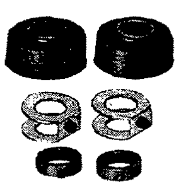
Bearing Tool Set No. 1X351 removes or inserts any sleeve motor bearing or bushing. Exerts pressure to eliminate broken bearings or end bells. Removes even frozen bushings without peening the bushing end, scratching, or marring. Has 9 adapters for 1/2 to 1" ID (in 1/16" increments) x $1\frac{1}{8}$" maximum OD.

Description	Stock No.	List	Each	Shpg. Wt.
Bushing Driver Set	**4X083**	$58.22	**$48.05**	3.5
Bushing Driver Set	**1F614**	62.65	**50.20**	6.0
Bearing Tool Set	**1X351**	66.79	**60.15**	3.8

For Retaining-1 Bearing Mount Compound, See Page 1674.



BLOWER BEARING KITS



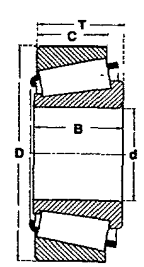
Dayton®

Kits include: 2 permanently lubricated and sealed, porous bronze, self-aligning sleeve bearings; 2 thrust washers; 2 locking collars and 2 rubber isolators. Available in 3/4" and 1" bore diameters. Dayton brand.

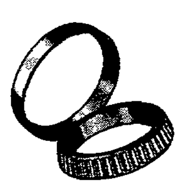
Stock No.	Bore Dia.	Isolator OD	Temp. Range	HP Limit	RPM Limit
2A757	3/4"	$1\frac{13}{16}$"	40-135°F	3/4	1000
2A758	1	$2\frac{1}{2}$	40-135	1	1000

Stock No.	List	Each	Shpg. Wt.
2A757	$14.55	**$11.74**	0.8
2A758	18.54	**15.07**	1.5

PRECISION TAPERED ROLLER BEARINGS



NTN



Tapered roller bearing cup and cone sets for use on gearmotors and reducers machine tools, pumps, compressors, agricultural equipment and machinery, lawn mowers, conveyor roll, golf carts, snow blowers and automobiles. Bearings are designed to carry maximum combination of radial and thrust loads simultaneously. Precision made to exacting standards from a single grade of case hardened steel which is heat treated to provide maximum useful life. NTN brand.

Set No.	Boring Width* T	NTN Cone No. No. 4T-	Cone Bore † d	Cone Width B	NTN Cup No. 4T-	Cup Dia. D	Cup Width C	Stock No.	List	Cup and Cone Set Each	Shpg Wt.
1	.5450"	LM11749	.6875"	.5750"	LM11710	1.5700"	.4200"	**1L071**	$14.00	**$7.30**	0.2
2	.6100	LM11949	.7500	.6550	LM11910	1.7810	.4750	**1L072**	12.00	**6.59**	0.3
3	.6900	M12649	.8437	.7200	M12610	1.9687	.5500	**1L073**	15.00	**8.27**	0.4
5	.7100	LM48548	1.3750	.7200	LM48510	2.5625	.5500	**1L074**	17.00	**9.34**	1.0
6	.6250	LM67048	1.2500	.6600	LM67010	2.3280	.4650	**1L075**	15.00	**8.32**	0.4
12	.6100	LM12749	.8653	.6550	LM12710	1.7810	.4750	**1L076**	14.00	**7.30**	0.3
13	.6250	L68149	1.3772	.6600	L68110	2.3280	.4700	**1L077**	16.00	**8.54**	0.4

(*) Width tolerance -0.010, +0.003". (†) Cone bore tolerance -0.000, +0.0005".