



Xingtai-Servo
兴泰伺服



CE

**Professional
Servo System Provider**

NingBo XingTai Technology Co., Ltd.



Company Profile

We NingBo XingTai Technology Co.,Ltd (XingTai Servo) are leading professional servo system solution providers for injection molding machine in China , we Concentrate on the research & development, production and sales of high performance servo drive and motors from 2002,We have strong and professional R&D expert as well as technical and sales service teams which are almost 50% of the total employee.

XingTai Servo independently R&D and produce XT-50--XT-690 series servo drives and its matched servo motors for injection molding machines,which could energy conservation up to 50%. XingTai servo have obtained 3 national invention patents, 16 national utility model patents, 1 appearance design patent; On the market feedback , the performance of our products are far ahead of domestic similar products and reaches the level of European top-class standards.

Our XT690 Series have passed CE certificate .Until Now ,XingTai Servo have exported to South Korea, Southeast Asia, Middle east , Africa, South America .etc more than 20 countries and are all well received by our both quality and service.



WORKSHOP



CATALOG

XingTai Servo Drive XT690 series	01
Code rules	02
Specification	02
Overall Dimension	03
Wiring Diagram	04
Wiring Introduction	05/06
Operation Panel	07
XingTai Servo Motor	08
Code rules	09
Specification	10
D10F Overall Dimension	11
D13F Overall Dimension	12
D10F Wiring Introduction	13
D13F Wiring Introduction	14
XingTai servo system	15/20



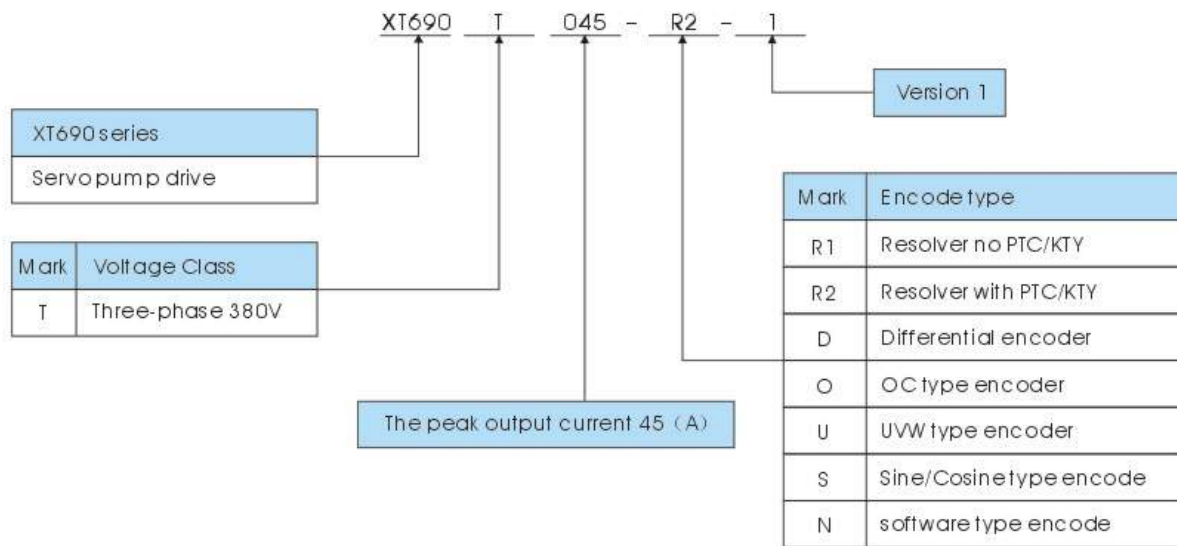
XT690 Series servo drives

XT690 Series AC Servo Drives use the newest DSP from America TI company as the core control system, adopt the advanced full digital motor control algorithm, completely realize the closed loop servo control of current loop, velocity loop and pressure loop by software.

The Servo Drives have the characteristics of high energy conservation, rapid dynamic response, high control precision and good self-adaptive ability, could be matched by Xingfai motor and various specification servo motors, widely applied in the application field which request fast-response precise rotary speed control and positioning control, especially in the injection molding machinery.

XT690 Servo Drives comply with the European low voltage directive (LVD) and EMC directive, and have passed CE certificate.

XT690 Series Servo Drives Code Rules

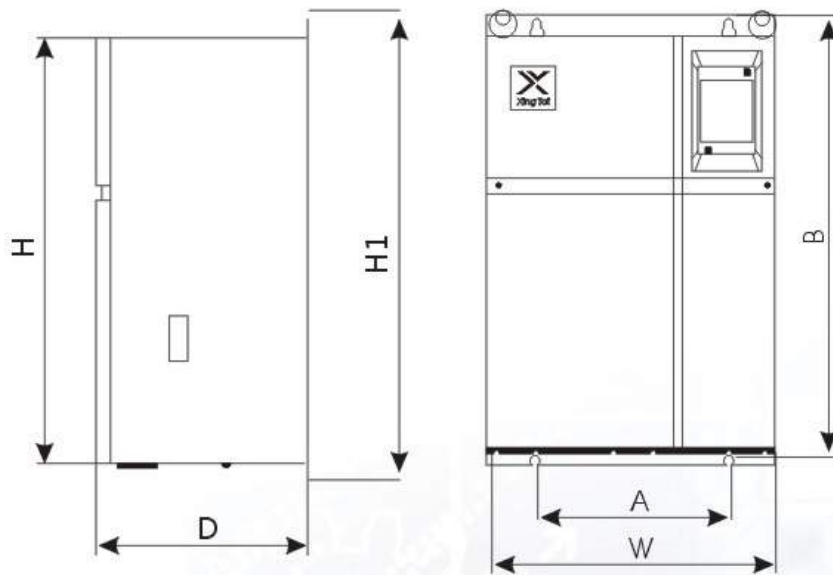


XT 690 Series Servo Drives Specification

Model No.	Power (KW)	Power Capacity (KVA)	Input Current (A)	Rated Output Current (A)	Pump	Adaptive Xingtai Motor Model No.	Motor rotate speed (Rpm)	Adaptive Motor Power (kw)
XT690T045	10	17	23	22	25	D1 005F20.3	2000	12
XT690T070	15	21	35	32	32cc/40cc	D1 007F20.3	2000	18.2
XT690T085	22	24	39	37.5	50cc	D1 008F20.3	2000	20.4
XT690T090	22	30	46	45.5	50cc	D1 010F20.3	2000	28.3
XT690T130	30	40	62	61	64cc	D1 010F20.3	2000	28.3
XT690T170	37	57	76	75	80cc	D1 013F20.3	2000	36.7
XT690T210	45	69	92	91	100cc	D1 315F18.3	1800	39
XT690T240	55	85	113	112	125cc	D1 320F18.3	1800	44
XT690T320	75	114	157	155	160cc	D1 330F18.3	1800	67
XT690T320	75	114	157	155	125+64cc	D1 330F20.3	2000	81.4

*Note: The adaptive motor and pumps suggested on the sheet are referring to 140kg pressure systems. For others please contact us for best suggestions.

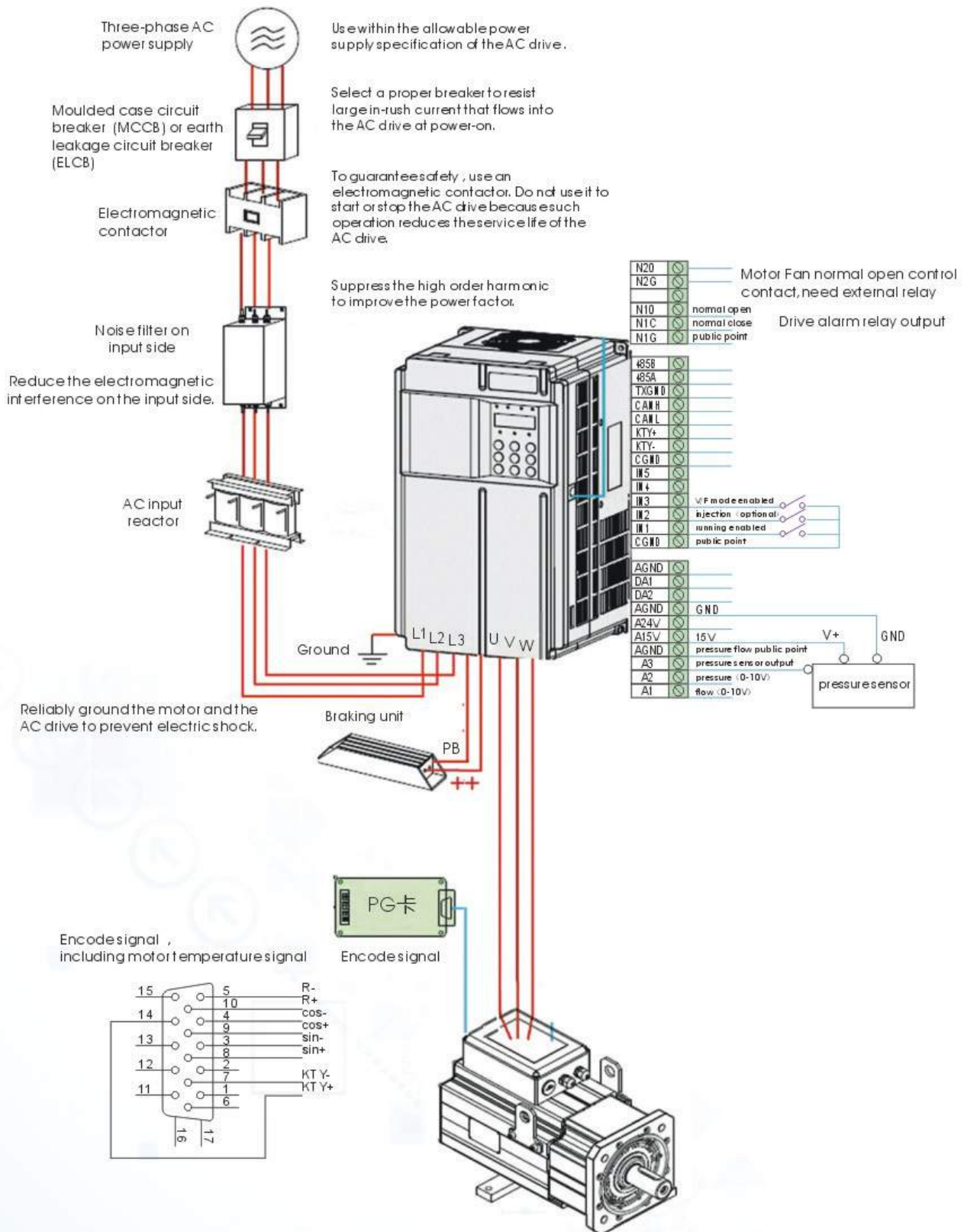
XT 690 Series Servo Drives Overall Diagram



Overall Dimension and Mounting hole size

Model No.	Mounting hole(mm)		Overall Dimension (mm)				Mounting hole Dia (mm)	weight (Kg)
	A	B	H	H1	W	D		
XT690T045								
XT690T070	170	380	355	398	220	200	Φ6	14
XT690T085								
XT690T090								
XT690T110	217	415	400	432	265	215	Φ6	19
XT690T130								
XT690T170	280	465	450	480	330	225	Φ6	23
XT690T210								
XT690T240								
XT690T320	260	580	545	595	400	270	Φ10	32

XT690 Series Servo Drives Wiring Diagram



Wiring introduction

I/O Control terminal and wiring

Item	Terminal Symbols	Terminal Definition	Description
Power	AV15 — AGND	+15V	Provide +15V power supply, output current 50mA, could supply power to pressure sensor.
	Av24 — AGND	+24V	Provide +24V power supply, Max output current 100mA, could supply power for current-converted-to-voltage board.
	In+24 — INGND	+24V	External Input voltage +24V, for exterior power supply when repairing, do not need during normal operation..
Analog Input	A1+ — A1-	Analog input terminal 1 (Default flow given signal)	1. Input range: $\pm 10V$, resolution 12, correction accuracy 0.1% 2. Input impedance 100K Ω , A1+ connect flow given signal, A1- connect to AGND terminal.
	A2+ — A2-	Analog input terminal 2 (Default pressure signal)	1. Input range: $\pm 10V$, resolution 12, correction accuracy 0.1% 2. Input impedance 100K Ω , A2+ connect pressure given signal, A2- connect to AGND terminal.
	A3+ — A3-	Analog input terminal 3 (Default pressure sensor input terminal)	1. Input range: $\pm 10V$, resolution 12, correction accuracy 0.1% 2. Input impedance 100K Ω , A3+ connect the feedback signal of pressure sensor, A3- connect to AGND Terminal
Digital Input	IN1+ — INGND IN2+ — INGND IN3+ — INGND	Digital input ports	1. IN1+ — INGND Run function 2. IN2+ — INGND Injection function (optional) 3. IN3+ — INGND Alarm Clear
Analog output	DA1 — AGND	Analog output terminal 1	Output range: 0~10V/20mA, resolution 12, correction accuracy 0.5%.
	DA2 — AGND	Analog output terminal 2	Output range: 0~10V/20mA, resolution 12, correction accuracy 0.5%.
Relay Output	N1C — N1G	Normal closed terminal	Contact drive capability AC125V 1A DC30V 2A
	N2C — N2G		
	N1O — N1G	Normal open terminal	

Main loop terminal and wiring

Terminal Symbols	Terminal Definition	Description
R、S、T (L1、L2、L3)	Three-phase power input terminal	connection point for AC three-phase input power supply
(++)、(---)	DC bus positive and negative terminals	connection point for DC bus input
(++)、(PB)	Brake resistance connection terminal	connection point for Brake resistance
U、V、W	Driver output terminal	connect the three-phase servo motor in sequential order
	Earth terminal	Earth terminal

Encode interface function description

No.	Definition	Description
10	R+	Rotating transformer excitation signal
5	R-	
8	Sin+	Rotating transformer SIN feedback signal
3	Sin-	
9	Cos+	Rotating transformer COS feedback signal
4	Cos-	
14	KTY+	Motor overheat protector KTY84 sensor, supporting KTY84-1.30 KTY84-1.50
7	KTY-	

Note : XT690 Series Servo Driver matched Encode Signal Wires Definition (FYI)

Signal Definition	R+	R-	SIN+	SIN-	COS+	COS-	KTY+	KTY-
Signal wire color	white	green	blue	yellow	gray	red	Light blue	brown
Corresponding Encode interface pin-out	10	5	8	3	9	4	14	7

Operation panel keys function description

KEY	Definition	Function
MENU/ESC	Programming/ESC	To enter or exit the programming state
ENTER/DATA	FUNCTION/DATA key	To enter next menu or confirm data
F/R	Running directionswitch key	Switch running direction
+	Increase key	Increasing Data or function code
-	Decrease key	Decreasing Data or function code
SHIFT	Shift Key	Under edit state, could select the digit to be modified when modifying parameters; Under other state, could select the displayed parameter.
JOG	Jog Key	Under the way of operation panel, Press this to jog.
RUN	Run Key	Start the AC drive in the operation panel control mode
STOP	Stop/Alarm Clear Key	Press this key to stop the machine or clear the alarm in the operation panel control mode.



XingTai Servo Motor

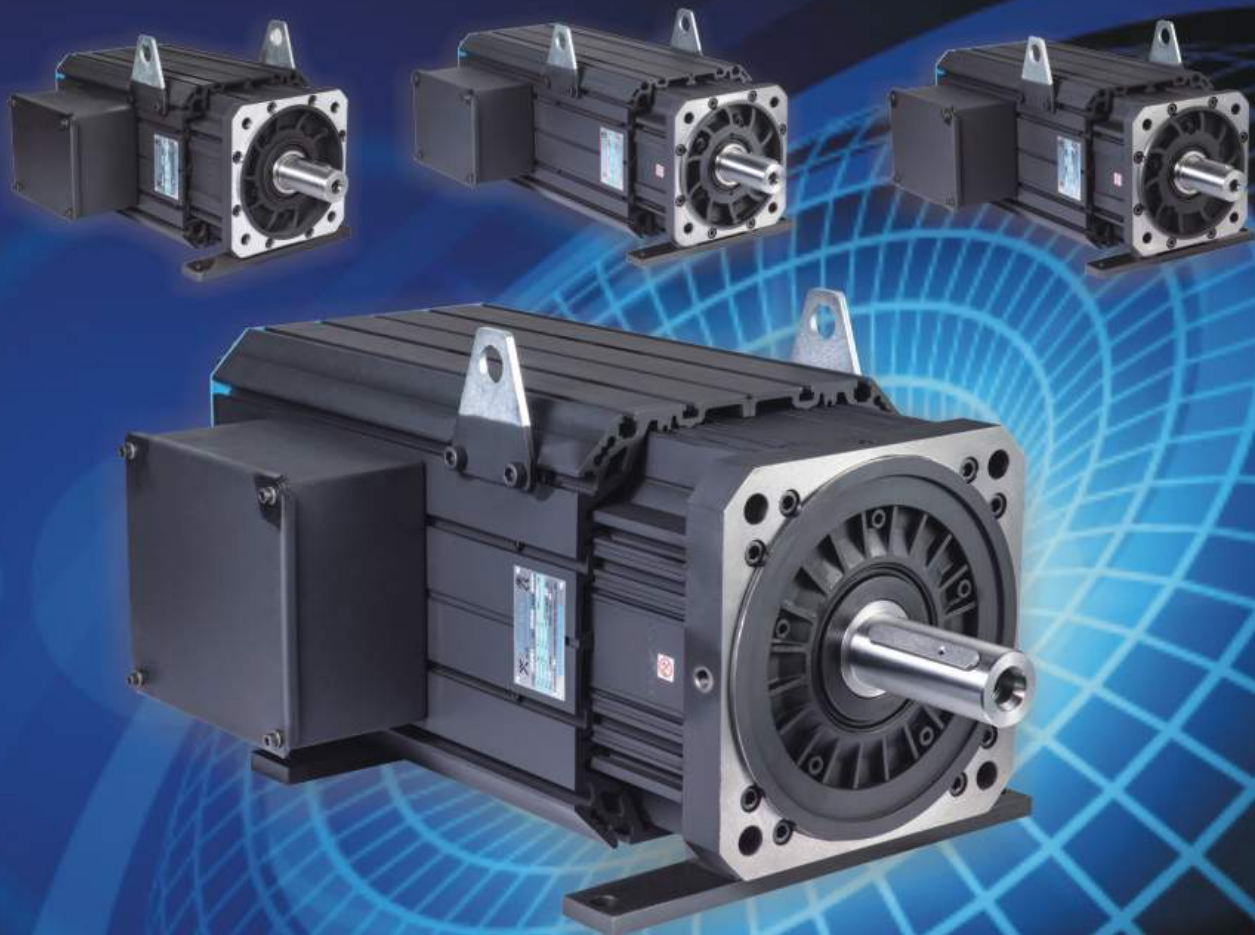
XingTai Servo Motor are RE Permanent magnet synchronization servo motor ,was conceived and designed as an advanced and homogeneous range of high performance servo actuators, in line with the evolving demands of the automation industry ,and is particularly suited for direct drive applications.

XingTai Servo Motor reach the highest torque/size and power/size ratios in the industry ,they are designed with Rotating transformer encoder, as standard feedback devices, optional or inductive encoders, custom designed for motor operation, which offer absolute resolution up to 8 million points/rev thus affording the best motion uniformity even at the lowest speed, or multifturn absolute encodes, all with serial Endat interface and electronic nameplate, with this features, the limits of mechanical transmissions are overcome and a vast range of applications can be transferred to direct drive technology.

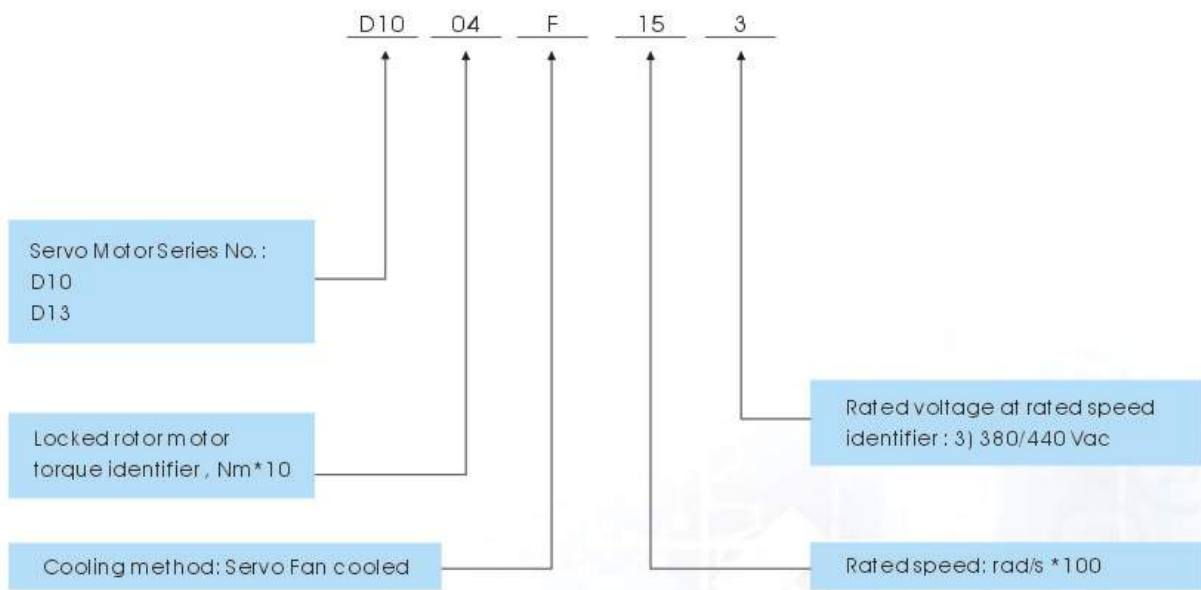
XingTai Servo Motor Designed for process lines and apply in sustained operation at high speed, forced cooling over frame with fan servo controlled by the motor , overall protection grade IP 54;

The advantage of combination of permanent magnet and Magnetic reluctance are:

1. 1.0% higher efficiency than induction motor;
2. wider speed range compared to general permanent magnet motor;
3. Slender structure make motor faster dynamic response , lower noise;
4. Special airduct design make the motor more outstanding cooling effect.



XingTai Servo Motor Code Rules

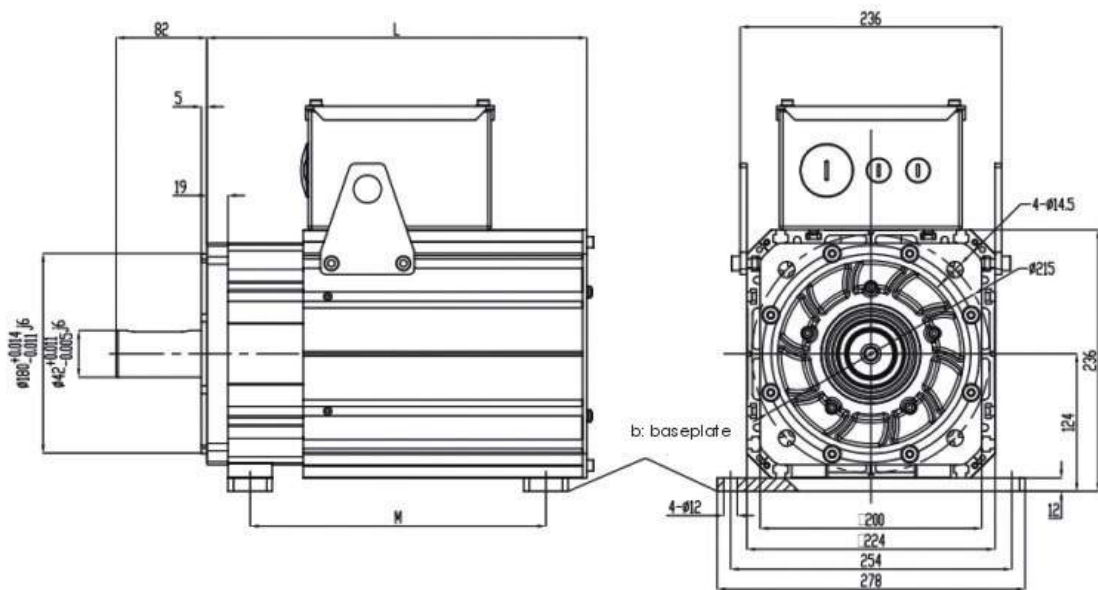


For example : D1004F.15.3 means D10 series motor ,40Nm,1500rpm,380Vac.

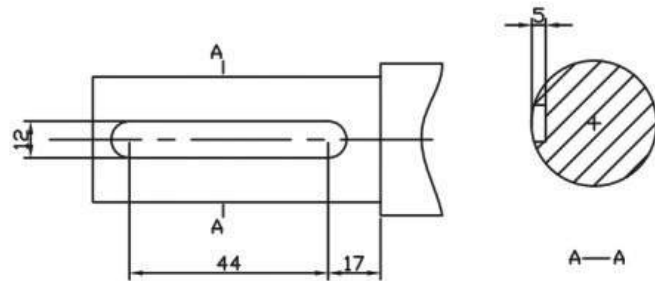
XingTai Servo Motor Specification

Model No.	Rated torque	Locked rotor torque	Rated speed	Rated current	Locked rotor current	Rated power	Torque constant	Back EMF constant	Rated frequency	Line resistance	Line inductance	Rated voltage	Rotary inertia
	Nm	Nm	Rpm	Arms	Arms	KW	Nm/Arms	V/KRPM	Hz	Ohm	mH	V	Kgm ² 10 ⁻³
D10F Series Servo Motor Specification													
D1004F.15.3	38	39	1500	11.6	12	6	3.32	200.7	100	1.67	16.33	350	6
D1004F.17.3	38.9	40.4	1700	15.2	15.8	7.6	2.81	169.9	113.4	1.19	16	381	6
D1004F.20.3	42	44	2000	18.8	19.6	8.7	2.37	143.3	133.4	0.85	8.33	321	6
D1005F.15.3	55	60.7	1500	16.6	20.2	8.6	3.31	200.1	100	0.97	14.6	300	6.1
D1005F.17.3	57	59.5	1700	20.4	23.3	10	2.81	169.9	113.4	0.72	10.6	336	6.1
D1005F.20.3	58	60.7	2000	24.3	25.7	12	2.6	157.2	133.4	0.6	9	364	6.1
D1007F.15.3	74	81.6	1500	23.9	26.5	11.6	3.37	203.8	100	0.665	11.4	329	9
D1007F.17.3	80	83	1700	28.2	31.8	14	2.85	172.3	113.4	0.48	8.09	341	9
D1007F.20.3	87	92	2000	36.7	38.3	18.2	2.53	153	133.4	0.356	4.74	341	9
D1008F.15.3	103	106.1	1500	33.2	34.6	16.4	3.38	204.4	100	0.473	9.05	370	9.8
D1008F.17.3	96.2	99.6	1700	35.1	36.8	17.6	2.98	180.2	113.4	0.417	7.04	370	9.8
D1008F.20.3	95.6	99.6	2000	40.1	42.5	20.4	2.58	156	133.4	0.314	5.29	370	9.8
D1010F.15.3	128	130.2	1500	41	42.9	20	3.3	199.5	100	0.338	7.38	360	12
D1010F.18.3	122	126.6	1800	44	48.7	23	2.87	173.5	120	0.273	5.42	312	12
D1010F.20.3	135	139	2000	60.5	61.8	28.3	2.37	143.3	133.4	0.181	2.78	321	12
D1013F.15.3	186	190	1500	61	63.8	29	3.26	197.1	100	0.249	3.7	370	15
D1013F.17.3	164.1	169.5	1700	55.4	58.5	28.7	3.19	192.9	113.4	0.236	5.03	380	15
D1013F.20.3	175	185	2000	73.7	77.3	36.7	2.53	153	133.4	0.144	2.37	340	15
D1015F.15.3	220	225	1500	72.73	80.93	37	3.096	187.2	100	0.180	4.029	370	19
D1015F.17.3	179.4	183.2	1700	65.24	67.38	33.5	3.03	182.9	113.4	0.229	3.737	380	14
D1015F.20.3	215	223	2000	96	106.8	49	2.322	140.4	133.4	0.103	2.266	371	19
D13F Series Servo Motor Specification													
D1315F.15.3	196	198	1500	71.48	72.51	31	3.015	182.3	100	0.169	6.458	378	27
D1315F.17.3	195.3	198.6	1700	72.91	82.37	35.9	2.98	180.2	113.4	0.132	3.695	370	26.4
D1315F.18.3	195	199	1800	78.81	80.31	39	2.75	166.3	120	0.113	3.148	370	26.4
D1315F.20.3	191	196	1500	97.76	100.2	43	2.154	130.2	133	0.089	3.295	380	27
D1320F.15.3	210	210	1500	62	62	33	3.43	207.4	100	0.098	4.46	369	36
D1320F.17.3	229	236	1700	92.6	98.3	39.4	2.94	177.8	113.4	0.107	4.5	377	36
D1320F.18.3	232	240	1800	96.46	99.8	44	2.64	159.6	120	0.085	3.647	379	36
D1320F.20.3	269	286	2000	120.7	127.8	56.3	2.37	143.3	133.4	0.068	2.13	347	36
D1330F.15.3	380	416	1500	106	117	60	3.56	215.2	100	0.082	3.19	380	49
D1330F.17.3	349	363	1700	145	153.4	62	2.89	174.7	113.4	0.06	2.9	368	49
D1330F.18.3	357.0	370.0	1800	146.5	151.8	67.0	2.68	162.0	113.4	0.050	2.46	379	49
D1330F.20.3	389.0	417.0	2000	155.3	165.6	81.4	2.67	161.4	133.4	0.046	1.80	386	49
D1340F.15.3	450.0	530.0	1500	130.0	158.0	70.0	3.56	215.2	100	0.058	2.40	347	63
D1340F.18.3	481.0	499.0	1800	196.0	203.3	91.0	2.71	163.8	113.4	0.035	1.864	379	63
D1340F.20.3	511.0	550.0	2000	230.0	246.0	107.0	2.37	143.3	133.4	0.026	1.060	341	63

D10F Series Servo Motor Dimension

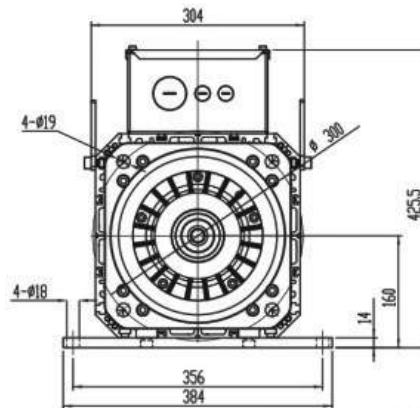
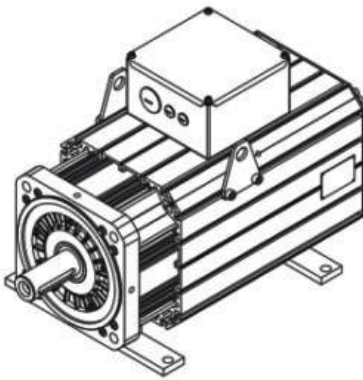
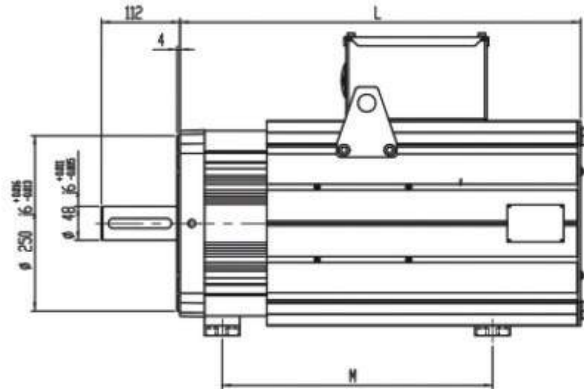
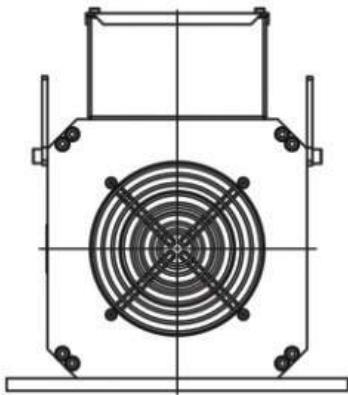


Remark:	
K:	With keyway (key: 12*8*56)
B:	baseplate

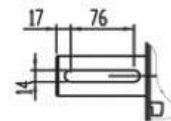


Code	M (mm)	L (mm)
D1004F	267	344
D1005F	285	379
D1007F	312	416
D1008F	354	457
D1010F	396	488
D1013F	471	559

D13F Series Servo Motor Dimension

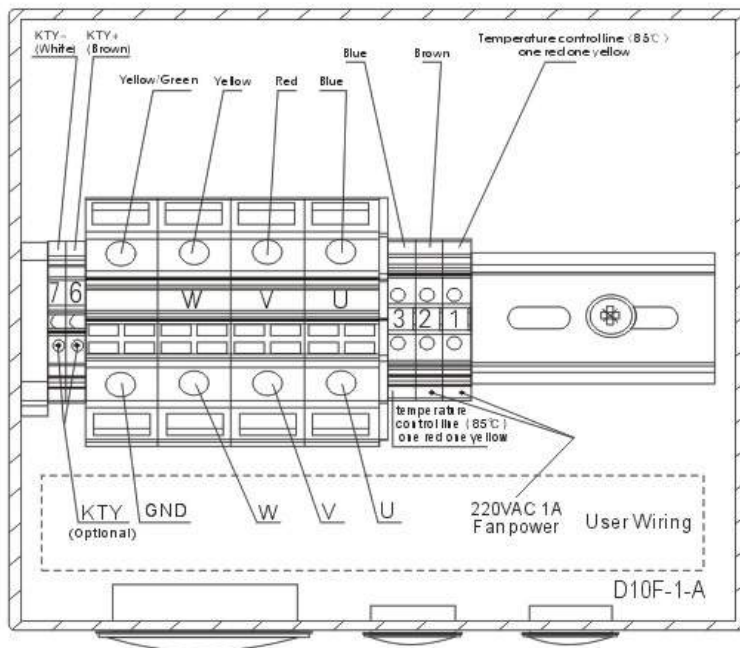


Remark:	
K:	with keyway (key : 1.4*9*90)
B:	standard baseplate



Code	M (mm)	L (mm)
D1315F	262	470
D1320F	370	577
D1330F	476	684
D1340F	583	791

D10F Ventilated motor wiring terminal diagram:



Please be in kind prevail

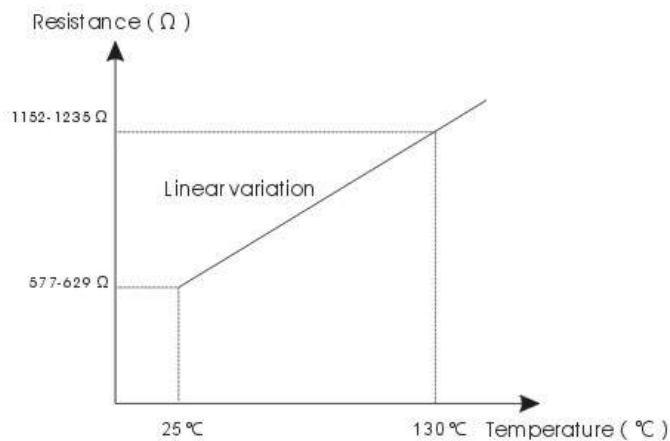
Signal Aerial Socket (Resolver)

4	Sin -	Yellow
5	Coe +	Red
6	Coe -	Black
7	Resex +	Red/White
8	KTY +	Brown
9	KTY -	White
10	Resex -	Yellow/White
14	Sin +	Blue
16	PTC +	Blue (thin)
17	PTC -	Blue (thin)

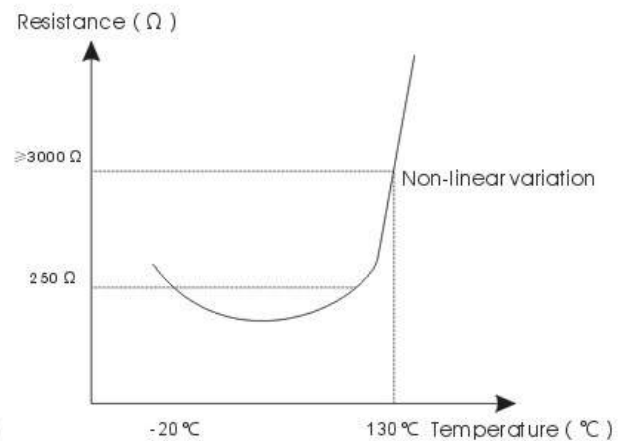
PCB board (resolver)

1	Resex +	Red/White
2	Resex -	Yellow/White
3	Sin +	Blue
4	Sin -	Yellow
5	Coe +	Red
6	Coe -	Black
15	PTC +	Blue (thin)
16	PTC -	Blue (thin)

Temperature protect KTY/PTC (Temperature-Resistance Graph):

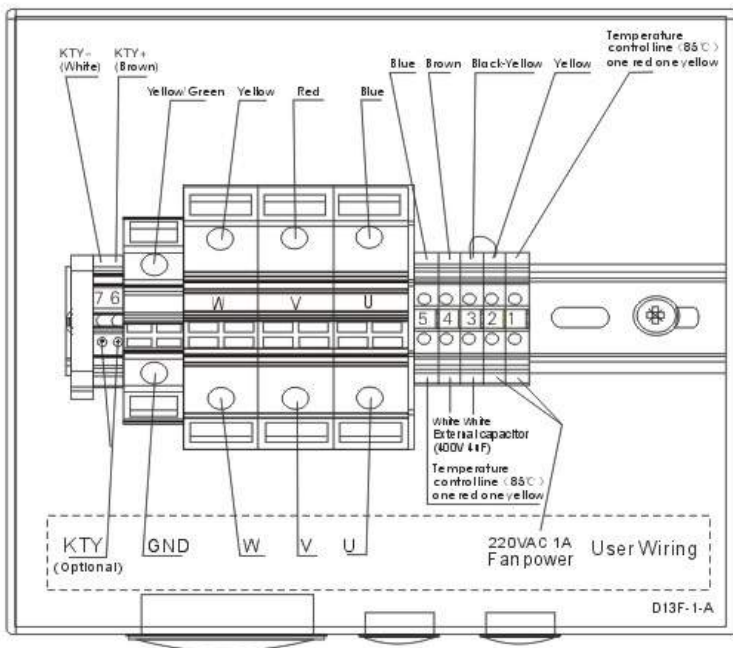


KTY84-130 Thermistor Graph



PTC-130 Thermistor Graph

D13F Ventilated motor wiring terminal diagram:



Please be in kind prevail

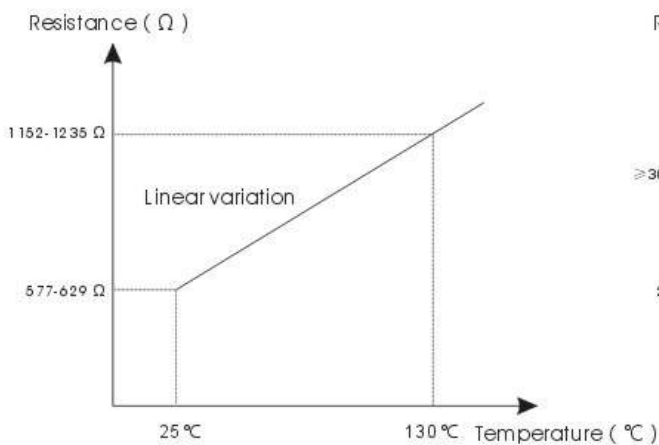
Signal Aerial Socket (Resolver)

4	Sin -	Yellow
5	Cos +	Red
6	Cos -	Black
7	Resex +	Red/White
8	KTY +	Brown
9	KTY -	White
10	Resex -	Yellow/White
14	Sin +	Blue
16	PTC +	Blue (thin)
17	PTC -	Blue (thin)

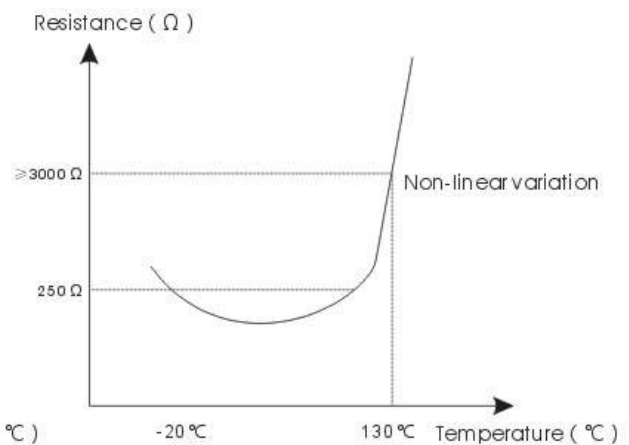
PCB board (resolver)

1	Resex +	Red/White
2	Resex -	Yellow/White
3	Sin +	Blue
4	Sin -	Yellow
5	Cos +	Red
6	Cos -	Black
15	PTC +	Blue (thin)
16	PTC -	Blue (thin)

Temperature protect KTY/PTC (Temperature-Resistance Graph):



KTY84-130 Thermistor Graph



PTC-130 Thermistor Graph

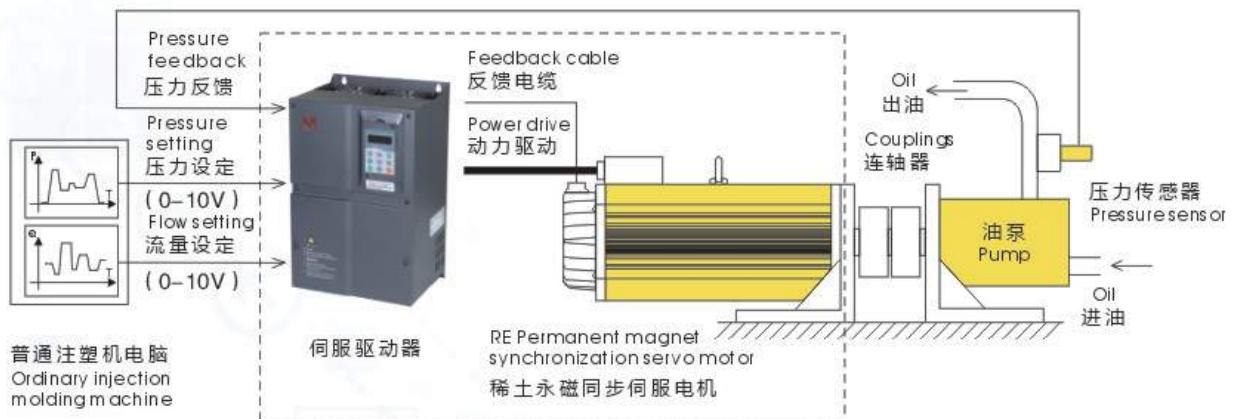
Professional servo system for injection molding machine



Supporting of hydraulic system



Flow diagram



Main hydraulic index

1. The fastest rate of pressure rise 30ms
2. The fastest rate of the flow rise 30ms
3. Pressure fluctuation $\pm 0.2\text{Bar}$

Servo index

1. The position control precision 0.036
2. The speed stability 0.1%
3. The minimum stable speed $\pm 0.2\text{Bar}$

Single servo system

Complete portfolio of servo-hydraulic system products provide servo systems of up to 45KW to meet the supporting requirements of plastic injection molding machine of below 400T.

Multi servo system



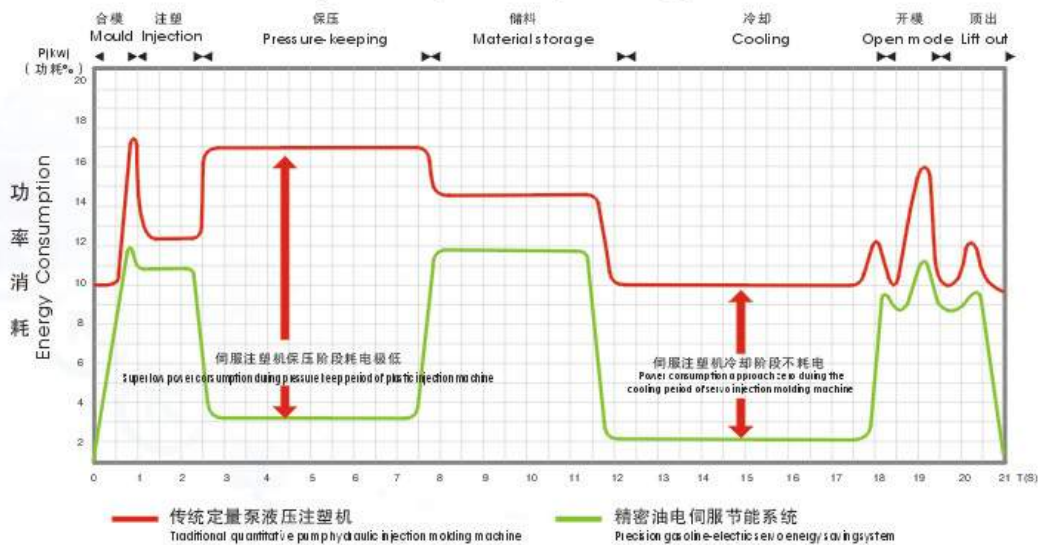
High energy saving, high performance, high productivity

High energy saving

1. Saving the waste at high pressure section of traditional technology.
2. Improving the motor efficiency :
XingTai Servo Motor is high efficiency motor , under the average condition on injection , the efficiency of XingTai Servo Motor is 10 % higher than traditional three-phase asynchronous motor.
3. Saving the consumption of the hydraulic cooling system.

射出成型过程的功率消耗曲线

the power consumption curve of Injection molding process



High-performance

1.High precision

High position repeat precision:

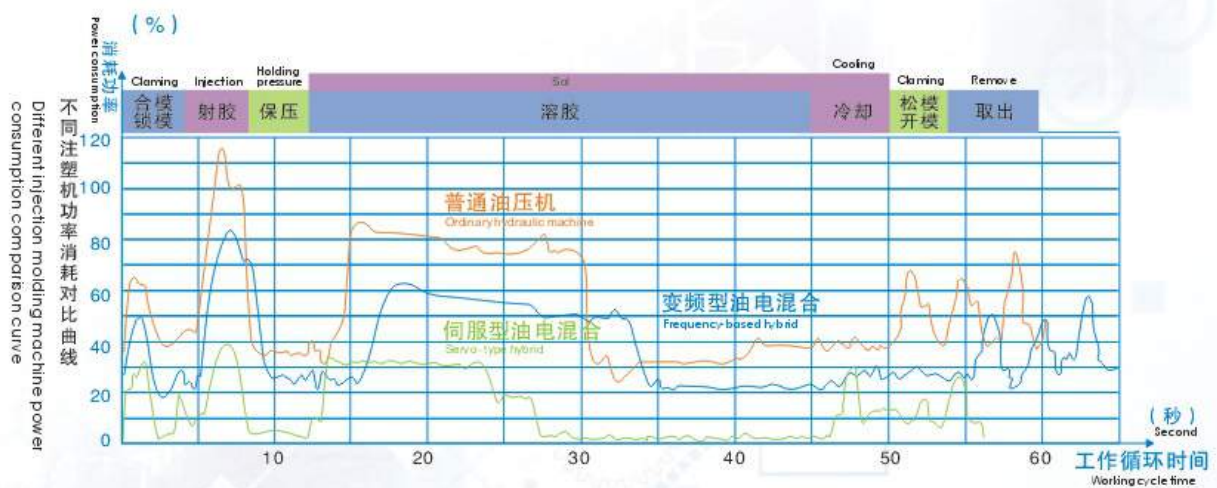
Xingtai Servo high anti-disturbance capability and high response ensure the repeat precision of clamping and injection at +0.1mm;with high response computer,multistage speed injection point deviation could be 0.1mm

High pressure control precision:

Xingtai Servo high response ,the pressure of pressure closed-loop control mode system is rather stable,pressure fluctuation less than +0.2bar,improving the quality of molding plastic products;xingtai servo suited to use on two board machines and other precision injection molding machine.

2.Quality assurance

Xingtai Servo specialized in the filed of injecting molding machine for many years with strong service team,to meet customer`s demand during the daily service.



High productivity

1.High efficient:

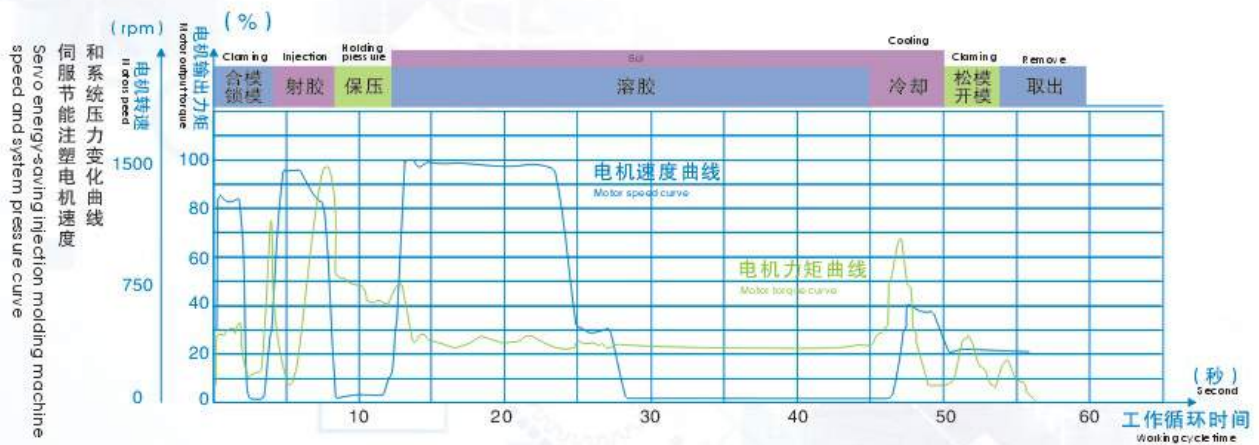
XingTai Servo system use the slender structure motor,with the most advanced high-speed DSP computing device,realized the magnetic field oriented vector control strategy.

2.High speed:

XingTai Servo motor speed rise under constant power,increase the pump displacement when keeping pump low speed and high pressure.

3.High response:

XingTai Servo with high response ,the pressure rise and flow rise as fast as 30ms,improving the response speed of hydraulic system ,reducing the action transfer time ,speed up the complete machine running tempo.





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