

Energy Saving Hydraulic PLAIMM

TB series



WOJIN
PLAIMM




Energy Saving Hydraulic PLAImm TB series

TB series is the newly launched energy saving hydraulic type injection molding machine from WOOJIN PLAImm equipped with servo pump system for optimum performance.

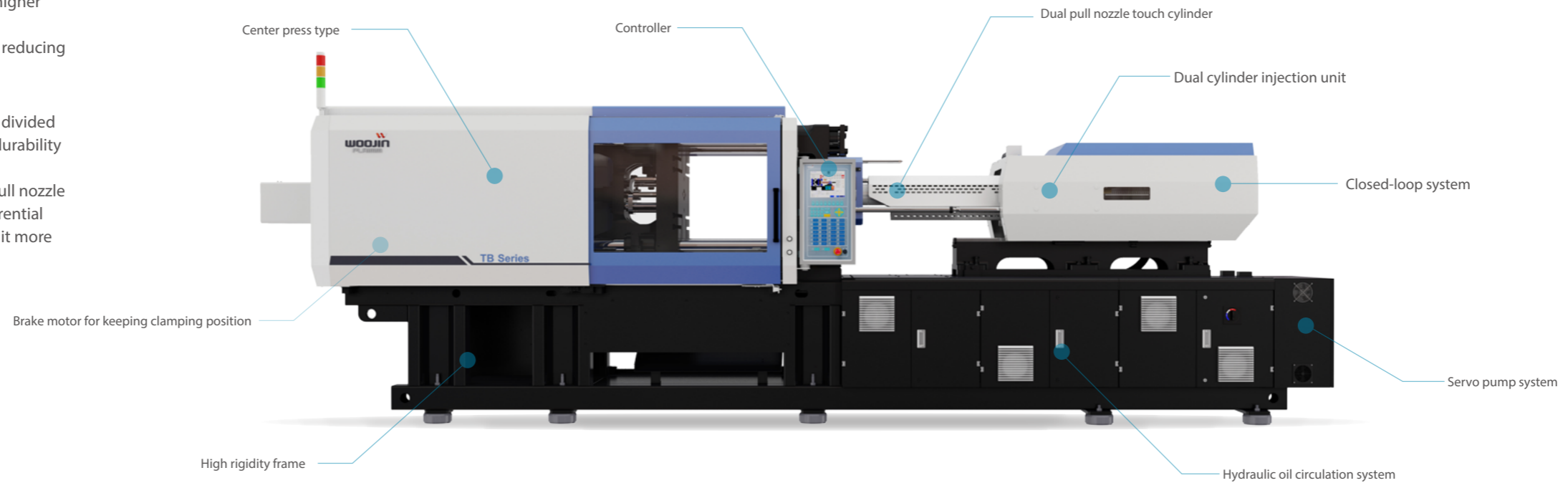
- Center-press platen and brake motor in clamping unit has increased the accuracy & reproducibility.
- Newly designed high-rigidity frame.
- Main parts have new minimized and optimized design which made it possible to apply higher clamping force.
- It assists in stabilizing the machine and reducing the noise during operation.

Oil circulation and oil cooling & filtering is divided separately maximizing the efficiency and durability of the machine.

The injection unit is equipped with dual pull nozzle touch cylinder, Proportional/Integral/Differential valves & the low friction mechanism make it more precise & long-lasting.

 Energy consumption 60~80% savings	 Cooling water consumption 25% savings	 Hydraulic oil consumption 15% savings
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*Savings under standard conditions.

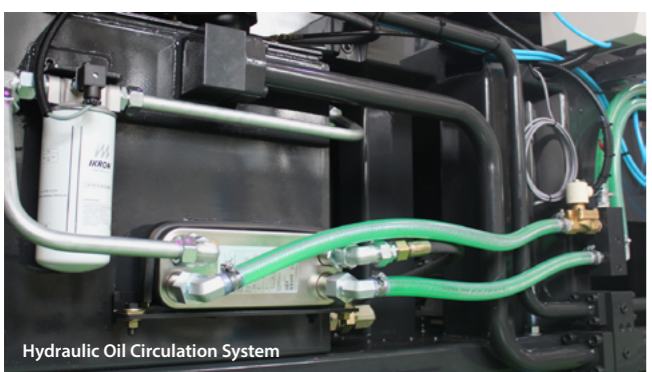
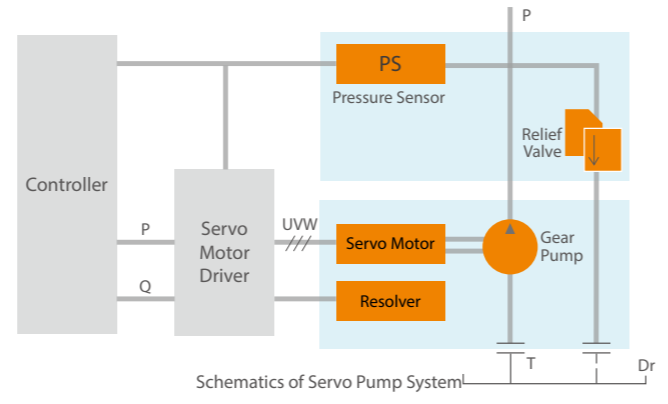


Model / Clamping Force	Tie-Bar Clearance (HxV)	Injection Unit [Screw Diameter in mm]																
		25	28	30	35	40	45	50	55	60	65	70	75	80	90	100	105	115
TB 90S	360 x 360	O	A	B														
TB 120S	410 x 410		O	A	B													
TB 160S	460 x 460				O	A	B											
TB 200S	510 x 510					O	A	B										
TB 240S	560 x 560						O	A	B									
TB 280S	610 x 610							O	A	B								
TB 380S	710 x 710										O	A	B					
TB 480S	830 x 830											O	A		B			
TB 580S	910 x 910												O		A	B		
TB 680S	1020 x 1020													O	A	B		
TB 880S	1110 x 1110															O	A	B

Clamping unit

1.Servo Pump System

It saves the energy consumption up to 80%. It prevents high temperature in hydraulic oil. Thus, saving the oil cooling up to 25%. It also reduces the noise during machine operation.



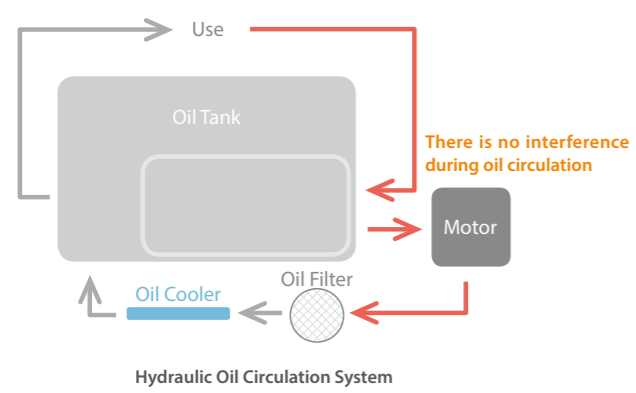
2.Hydraulic Oil Circulation System

- Oil-leakage protection
- Increase durability
- Better injection reproducibility
- Reduce cooling & filtering time

Hydraulic oil rotation and oil cooling/filtering operate separately maintaining constant conditions. It helps to improve reproducibility and prevent the damages from excessive high temperature or pressure.

In comparison, the normal oil rotation mechanism can bring the contaminated oil back in the tank through oil cooling/filtering and in the process, the filter can be blocked which can further lead to excessively high temperature or oil leakage issues.

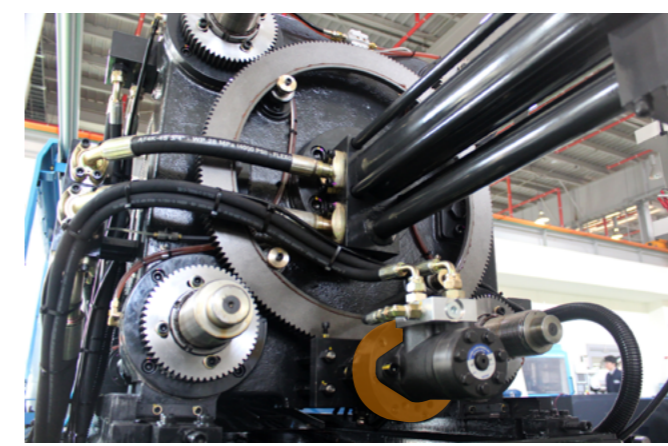
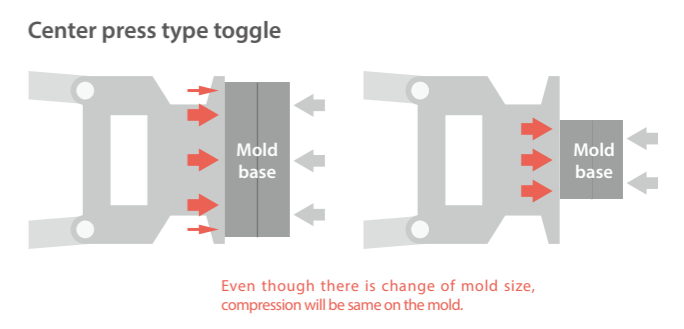
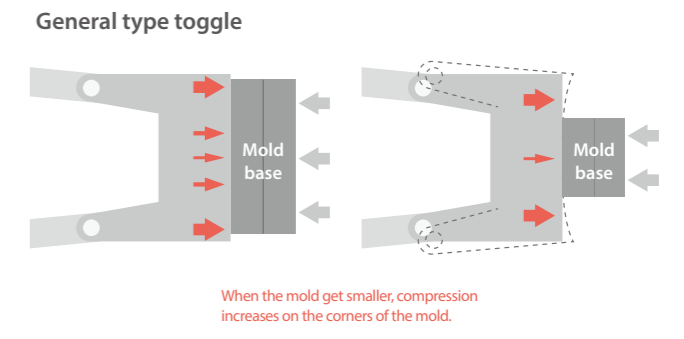
However the newly designed oil tank & rotation mechanism separates the oil rotation from oil cooling/filtering through an installed pump which makes sure that the contaminated oil and the filtered clean oil have no contact with each other during the machine operation.



3.Center-Press Toggle System

- Improve stability in molding
- Minimize platen's damage
- Higher speed and stable platen's movement

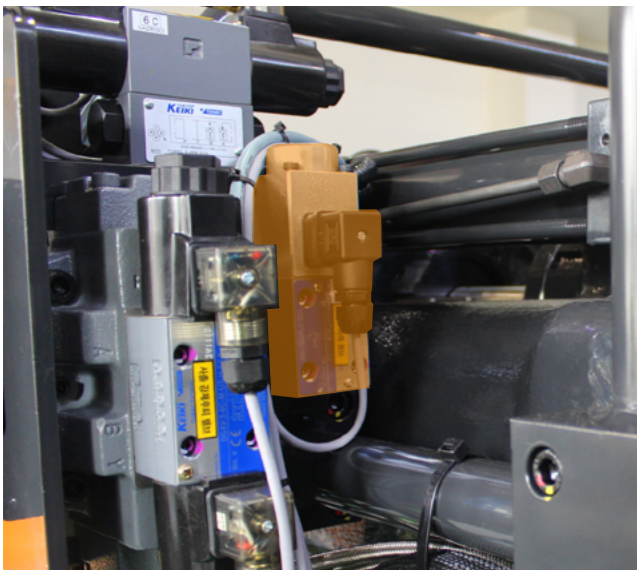
Center-press toggle system designed to apply equal force on mold during clamping and preventing platen's damage. Tie-bar bush provided to decrease friction and retain stability during clamp movements.



4.Brake Motor for Keeping Clamping Position

The brake motor is installed in clamping unit to maintain the same clamping force & position even after long and repeated usage during clamp movements.

Injection unit



Closed-Loop Controlling System

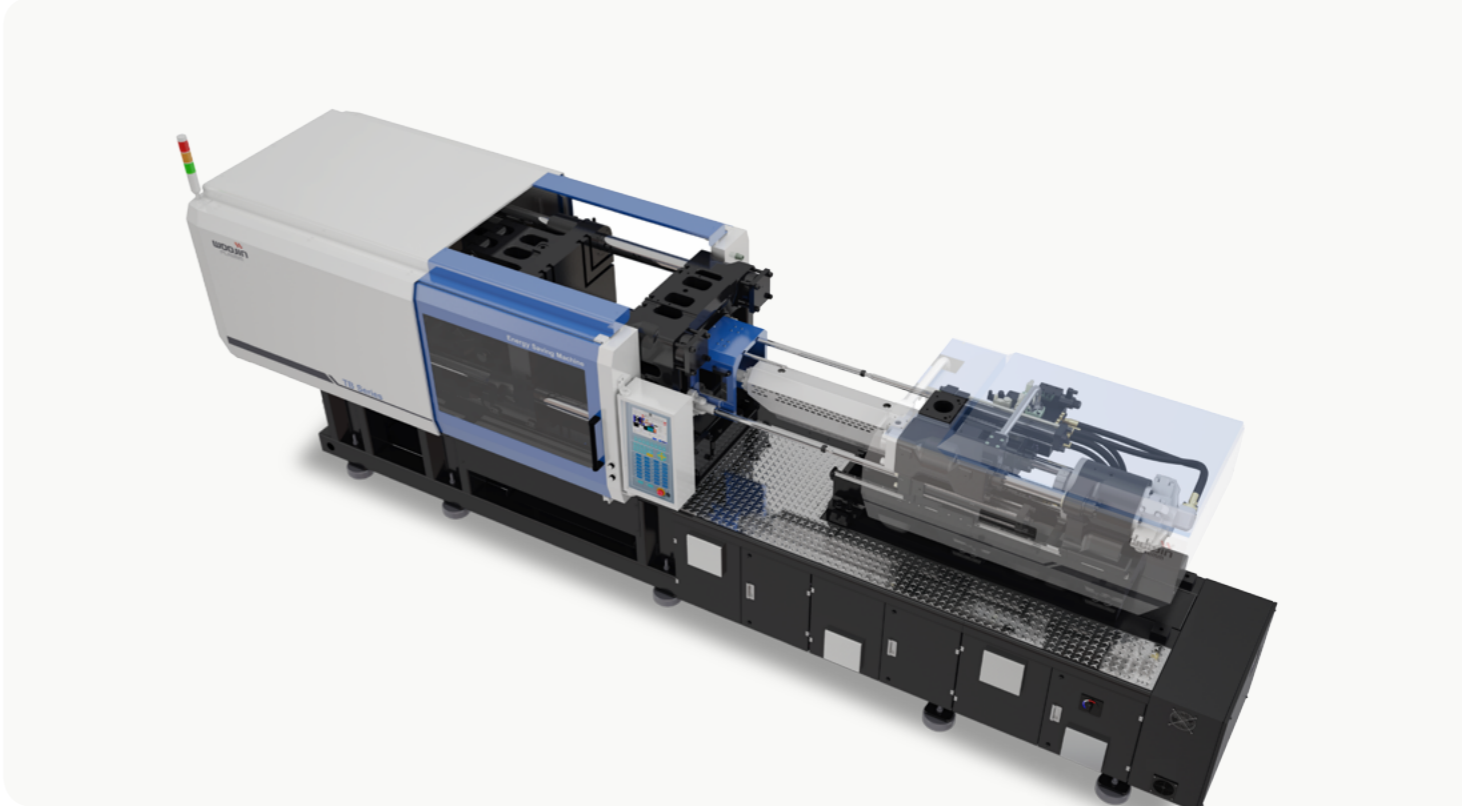
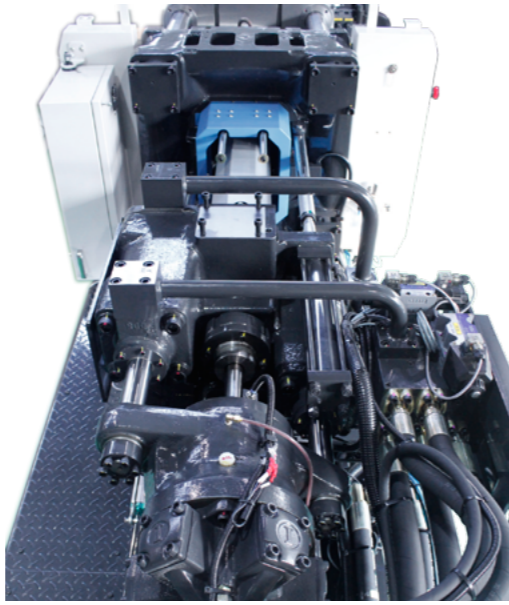
1. Closed-Loop System

Enhance controlling injection back pressure by system optimization. The closed-loop injection optimization system helps to regulate the values inserted in the controller should be exactly same as the real position. It makes sure that there is absolutely no deviation between the selected parameter by a user and the actual position of the machine.

2. Dual Cylinder Injection Unit

- Faster reaction time of injection
- Advance in balance of injection
- More Stability in molding
- Minimize and cushion the impact

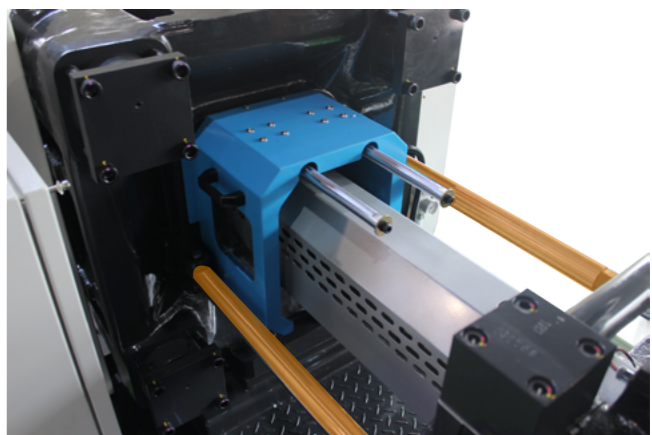
The dual cylinder injection unit is designed to have a better balance and increased stability. It has high responsiveness and minimizes molding error & machine's shock.



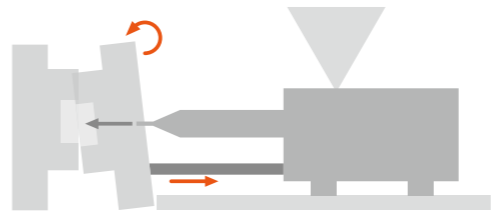
3. Dual Pull Nozzle Touch Cylinder

The dual pull nozzle touch cylinders are equipped on both sides in injection unit providing more stability and improved precision.

In comparison, the single pull nozzle touch cylinder concentrates the force on the bottom of the fixed platen, making it to bend or damage after long usage of the machine.



Dual Pull Nozzle Touch Cylinder



Single Pull Nozzle Touch Cylinder

Controller(ES600)

A new type of high performance control system ES600 maintains optimum machine condition at all times to produce high quality mold products thanks to the harmony between the multi-functional, high performance electronic control technology and the machine characteristics, which enables precision molding and provides stable system performance.

ES600 displays are in the form of graphs and pictures to facilitate user interface. The feed back control feature provides accurate operations based on configured conditions.



Controller technical data

Standard 10.4" TFT Color LCD

RS232(Mold Data, Fix Data, Sequence)/ CAN Comm.

Supports multiple languages (3 languages)

Temp Input: K or J Type

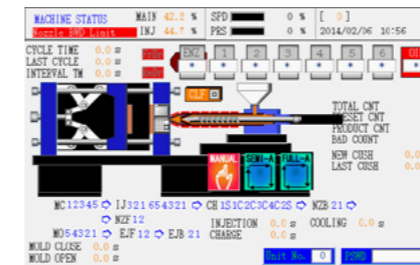
Supports CF memory (up to 512MB)
: Mold Data, Shot Data, Screen Capture

Characteristics of ES600

- Multi-stage, precision control of each moving unit
- Simplified control using sensors on moving units
- Heating Cylinder zones: Default 7 Zones, Oil Temp 1 Zone
- Stores up to 100 Internal Mold Data sets
- Uses CF memory for External Mold Data
- Equipped with Robot Interface by default
- Can store Shot Data
- Displays Injection Speed and Pressure in graphic formats

Applications

There are total of 21 functions such as machine status, clamping, injection & holding pressure, charging etc. displayed on a wide 10.4" screen in English, Chinese & Korean languages for user convenience with below 1ms of scan time.



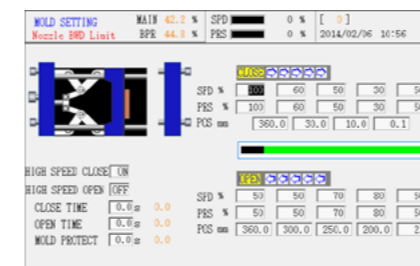
Machine Status



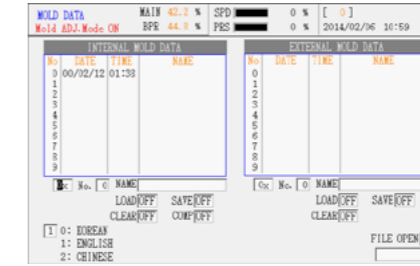
Temperature



Ejector & Robot



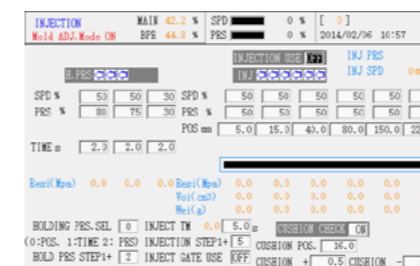
Clamping



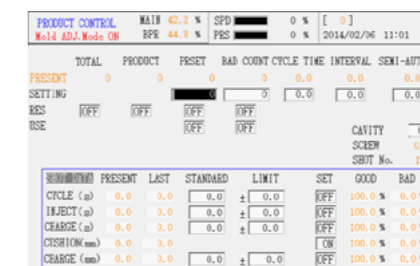
Mold Data



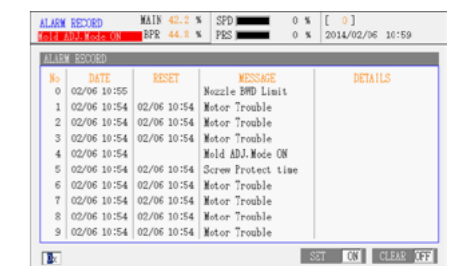
Setting Record



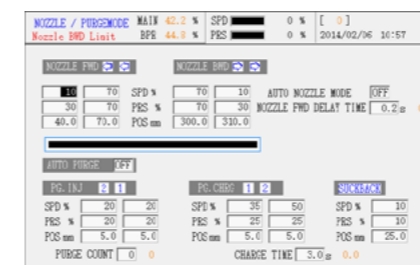
Injection & Holding Pressure



Product Control



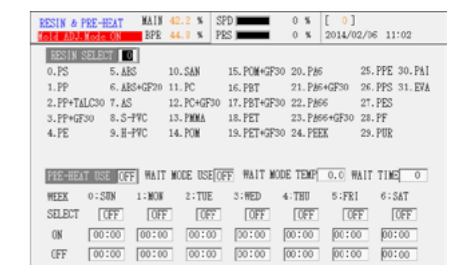
Alarm Record



Nozzle & Material Change



Shot Data



Resin Type & Weekly Pre-heating

Specification

	TB 90S	TB 120S	TB 160S	TB 200S	TB 240S
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Injection Unit

Screw & Barrel Type	O	A	B	O	A	B	O	A	B	O	A	B	O	A	B
Screw Diameter mm	25	28	30	28	30	35	35	40	45	40	45	50	45	50	55
Injection Pressure kg/cm ²	3120	3000	2613	3000	2613	1920	3000	2297	1815	2297	1815	1470	2613	2117	1749
MPa	306	294	256	294	256	188	294	225	178	225	178	144	256	208	172
Theoretical Injection Volume cm ³	98	123	141	123	141	192	212	276	350	276	350	432	413	510	618
Shot Weight (PS) g	90	113	130	113	130	177	195	255	322	255	322	398	381	470	569
Injection Rate cm ³ /s	62	60	69	60	69	94	105	137	173	137	169	209	147	182	220
Screw Stroke mm	140	140	140	200	200	200	220	220	220	220	220	220	260	260	260
Injection Speed mm/s	126	97	97	97	97	97	109	109	109	109	109	109	93	93	93
Plasticizing Capacity (PS) kg/h	26	35	42	35	42	63	68	97	132	97	132	175	101	134	173
Screw Rotation rpm	246	246	246	246	246	246	264	264	264	264	264	264	202	202	202

Clamping Unit

Clamping Force ton(kN)	90 (882)	120 (1176)	160 (1568)	200 (1960)	240 (2352)
Distance Between Tie-Bar (HxV) mm	360 x 360	410 x 410	460 x 460	510 x 510	560 x 560
Platen Size (HxV) mm	570 x 570	630 x 630	680 x 680	750 x 750	820 x 820
Opening Stroke mm	330	370	405	460	520
Daylight mm	680	770	855	960	1120
Min. Mold Height mm	140	150	180	180	200
Max. Mold Height mm	350	400	450	500	600
Ejector Force ton(kN)	3.4 (33.6)	3.4 (33.7)	4.2 (40.7)	4.2 (40.7)	5.8 (56.9)
Ejector Stroke mm	80	100	120	140	150

General

Total Heat Capacity kW	6.4	6.4	9.2	11.1	13.2
Electric Motor Power Capacity kW	12.0	12.0	28.3	28.3	36.7
Total Electric Power Capacity kW	18.4	18.4	37.5	39.4	49.9
Total Oil Reservoir Capacity ℓ	200	200	270	270	330
Machine Weight ton	2.7	4.5	5.6	6.9	10.3
Machine Dimension (LxWxH) m	4.9 x 1.3 x 1.6	5.1 x 1.3 x 1.6	5.7 x 1.4 x 1.7	6.0 x 1.5 x 1.8	6.7 x 1.5 x 1.9
Cooling Water Requirement ℓ /min	50	50	50	50	50

	TB 280S	TB 380S	TB 480S	TB 580S	TB 680S	TB 880S
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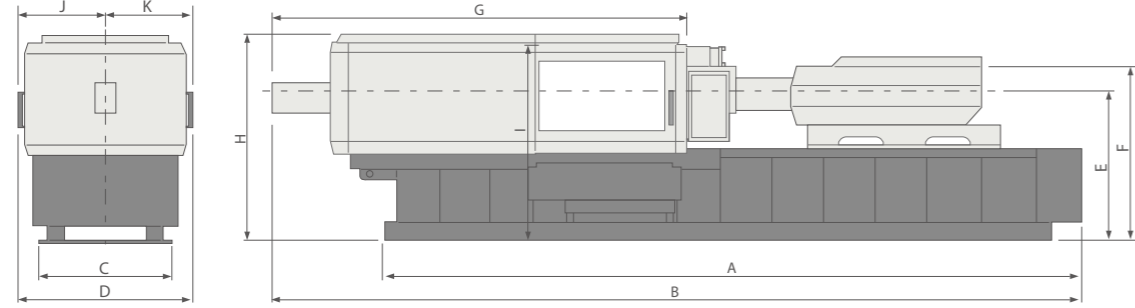
O	A	B	O	A	B	O	A	B	O	A	B	O	A	B	O	A	B
50	55	60	65	70	75	65	70	80	70	80	90	80	90	105	95	105	115
2394	1979	1663	2020	1741	1517	2164	1866	1524	2351	1800	1422	2194	1733	1274	2269	1858	1549
235	194	163	198	171	149	212	183	149	231	177	139	215	170	125	223	182	152
550	665	792	1062	1231	1414	1278	1482	1935	1693	2212	2799	2488	3149	4286	4111	5022	6024
507	613	730	978	1135	1303	1177	1365	1783	1560	2038	2579	2293	2902	3950	3788	4628	5551
197	238	284	283	328	377	283	328	429	474	620	784	624	790	1075	763	932	1118
280	280	280	320	320	320	385	385	385	440	440	440	495	495	495	580	580	580
100	100	100	85	85	85	85	85	85	123	123	123	124	124	124	108	108	108
132	170	214	189	230	276	189	230	328	293	371	449	370	447	618	478	595	695
199	199	199	141	141	141	141	141	141	180	160	141	159	141	129	130	124	114

280 (2744)	380 (3724)	480 (4074)	580 (5684)	680 (6664)	880 (8624)
610 x 610	710 x 710	830 x 830	910 x 910	1020 x 1020	1110 x 1110
900 x 900	990 x 990	1220 x 1220	1340 x 1340	1500 x 1500	1630 x 1630
570	700	780	850	950	1200
1220	1450	1580	1800	2050	2400
250	300	350	400	450	500
650	750	800	950	1100	1200
5.8 (56.9)	8.8 (86.2)	13.7 (134.7)	15.2 (149.0)	21.2 (208.1)	24.7 (242.1)
170	200	200	225	255	255

15.5	24.3	24.3	28.2	35.4	48.8
36.7	56.3	56.3	93.0 (36.7 + 56.3)	112.6 (56.3 + 56.3)	129.7 (56.3 + 36.7 + 36.7)
52.2	80.6	80.6	121.2	148.0	178.5
385	535	535	900	1100	1300
12.2	16.8	16.8	33.0	43.0	55.0
7.3 x 1.6 x 1.9	8.1 x 1.8 x 2.1	9.0 x 2.0 x 2.1	10.2 x 2.3 x 2.2	10.8 x 2.6 x 2.5	13.0 x 2.6 x 2.6
70	70	70	70	100	100

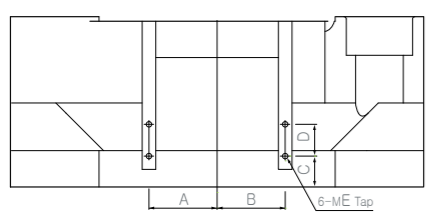
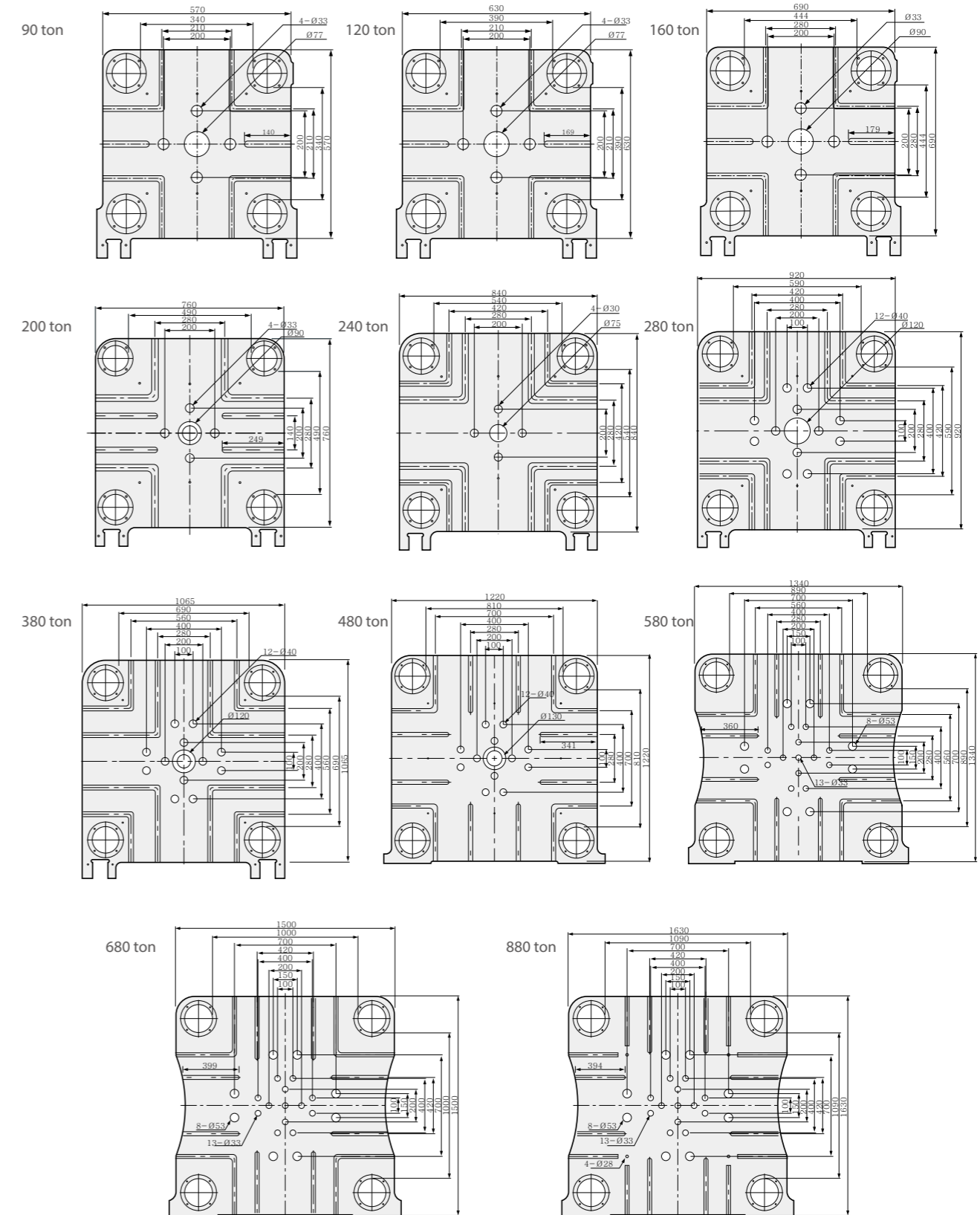
1. Theoretical Injection Volume : Screw Diameter x Screw Stroke.
2. Minimum mold size must be over 60% of distance between tie-bar.
3. This data based upon the 60Hz electricity frequency.
4. Specifications can be changed for improvement without prior notice.

Machine Dimension

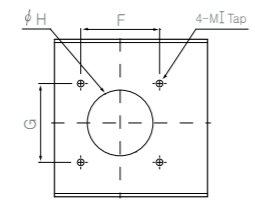


	A	B	C	D	E	F	G	H	I	J	K
TB 90S	4200	4850	860	1284	1190	1385	2160	1570	1475	608	588
TB 120S	4425	5107	910	1334	1205	1400	2352	1617	1530	667	667
TB 160S	4955	5698	940	1384	1225	1503	2613	1676	7585	702	682
TB 200S	5025	5942	980	1474	1275	1478	2862	1760	1665	747	727
TB 240S	5710	6634	1084	1518	1348	1578	3274	1870	1778	769	749
TB 280S	6135	7252	1170	1604	1360	1610	3602	1927	1825	812	792
TB 380S	6895	8119	1340	1740	1375	1620	4244	2032	1920	880	860
TB 480S	7790	9023	1440	2004	1373	1618	4738	2105	1993	1069	935
TB 580S	8885	10159	1580	2324	1480	1650	5430	2212	2160	1235	1089

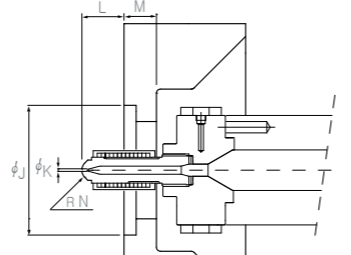
Platen Dimension



자동취출기 설치도



Hopper 설치도



Nozzle 제원

	A	B	C	D	E	F	G	ØH	I	ØJ	ØK	L	M	N
TB 90S	90	90	57	40	12	100	100	85	12	100	2.5	100	25	9.5
TB 120S	105	105	47	40	12	100	100	85	12	100	2.5	100	30	9.5
TB 160S	125	125	62	70	14	120	120	95	12	100	2.5	100	30	9.5
TB 200S	150	150	62	70	14	120	120	95	12	100	3.0	50	30	12.5
TB 240S	150	150	70	70	14	120	120	100	12	120	3.0	50	40	12.5
TB 280S	150	150	68	70	14	120	120	100	12	120	3.5	50	40	12.5
TB 380S	190	190	67	100	20	127	127	90	12	120	3.5	50	45	12.5
TB 480S	210	210	67	100	20	127	127	68	12	120	4.0	50	40	19.0
TB 580S	210	210	67	150	20	165	165	78	12	200	5.0	50	60	19.0
TB 680S	280	280	84	230	20	165	165	88	12	200	5.0	50	60	19.0

Option Lists

S : Standard
O : Option

INJECTION UNIT		CLAMPING UNIT		GENERAL	
Standard					
Injection process control stage (Speed / Pressure)	6	Mold opening speed & pressure control stage	5	Molding data memory capacity (Internal / External)	1000/usb
Holding process control stage (Speed / Pressure)	3	Mold closing speed & pressure control stage	5	Alarm history display & saving	S
Charging process control stage (Speed / Pressure)	4	Ejector speed & pressure control stage	2	Record of value changing	S
Back pressure control stage	4	Clamping position display	S	Statistical function	S
Suck back control (Before)	1	Automatic mold height adjustment	S	I/O circuit display	S
Suck back control (After)	1	Ejector position display	S	Multi language display - Korean / English / Chinese	S
Injection position display	S	Hydraulic core puller 1 stage	S	Robot interlock circuit	S
Injection speed graph display	S	Air blow off unit	S	Hydraulic oil level alarm	S
Back pressure closed-loop	S	Safety device(Electric / Hydraulic)	S	Hydraulic oil temperature over alarm	S
Cushion amount display & alarm	S			Hydraulic oil heating control device	S
Screw RPM display	S			Reserved injection mold number and alarm	S
Auto purge circuit	S			Hopper throat temperature control device	S
Screw cold start prevention device	S			Automatic lubricating device	S
Pre-heating timer (weekly)	S			Shot data file saving (External)	S
Heater temperature abnormal display	S			Product chute	S
Cylinder temperature keeping mode	S			Leveling pads	S
Valve gate 1 stage	S			Maintenance tools	S
				Spare parts	S
				Electrical outlet (5 socket)-2set	S

Option					
Injection pressure graph display	O	Unscrewing device	O	Robot interlock interface (Euromap 12 / SPI)	O
Shut-off Nozzle (Hydraulic type, Spring type, Air pressure type.)	O	Daylight extension	O	Hopper moving device	O
Screw & Barrel (Anti-wear or Anti-wear/corrosion)	O			Auto safety door open / close device	O
SB screw	O			Hydraulic oil cleaner	O
				Lubricating oil recycling device	O
				Auto clamps(QDC)	O
				Insulation plate for mold	O
				Electricity (220V, 380V, 440V, 480V)	O
				Electrical outlet (5socket)-addition 2set	O

Global Network

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