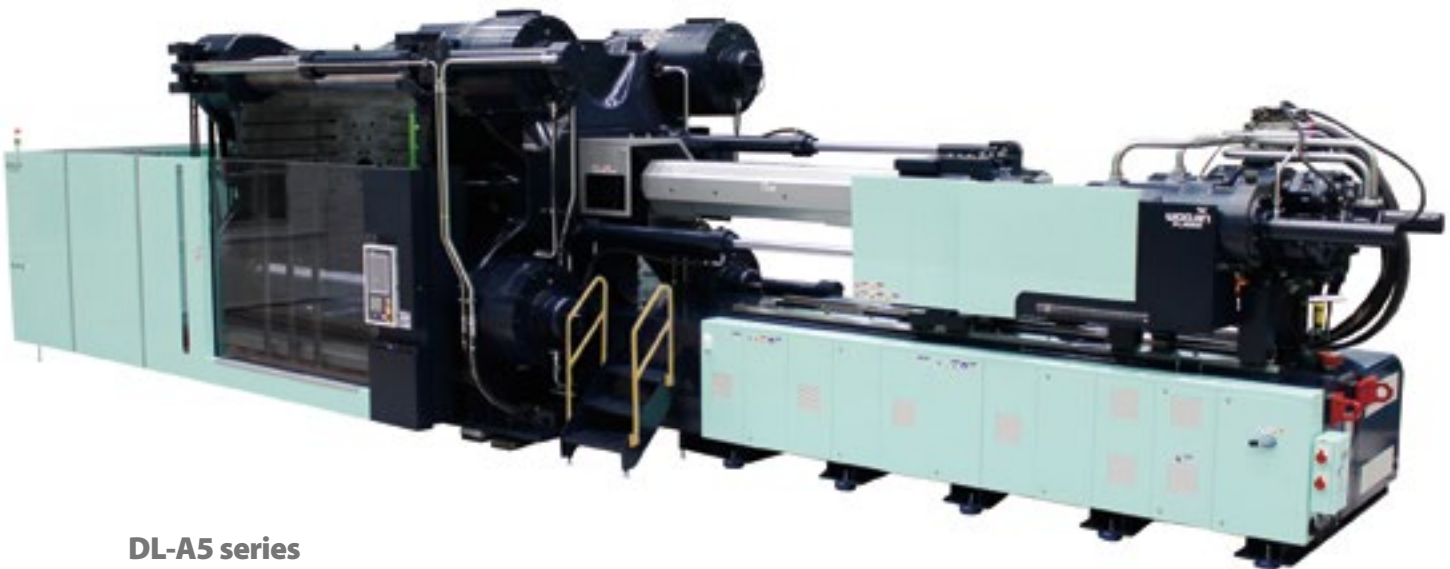


DL | A5 SERIES



DL-A5 series

Premium two platen PLAIMM

English Version

v. 2017. 1/2

DL A5 series

Improved hydraulic and mechanical design for greater energy efficiency and precision control.

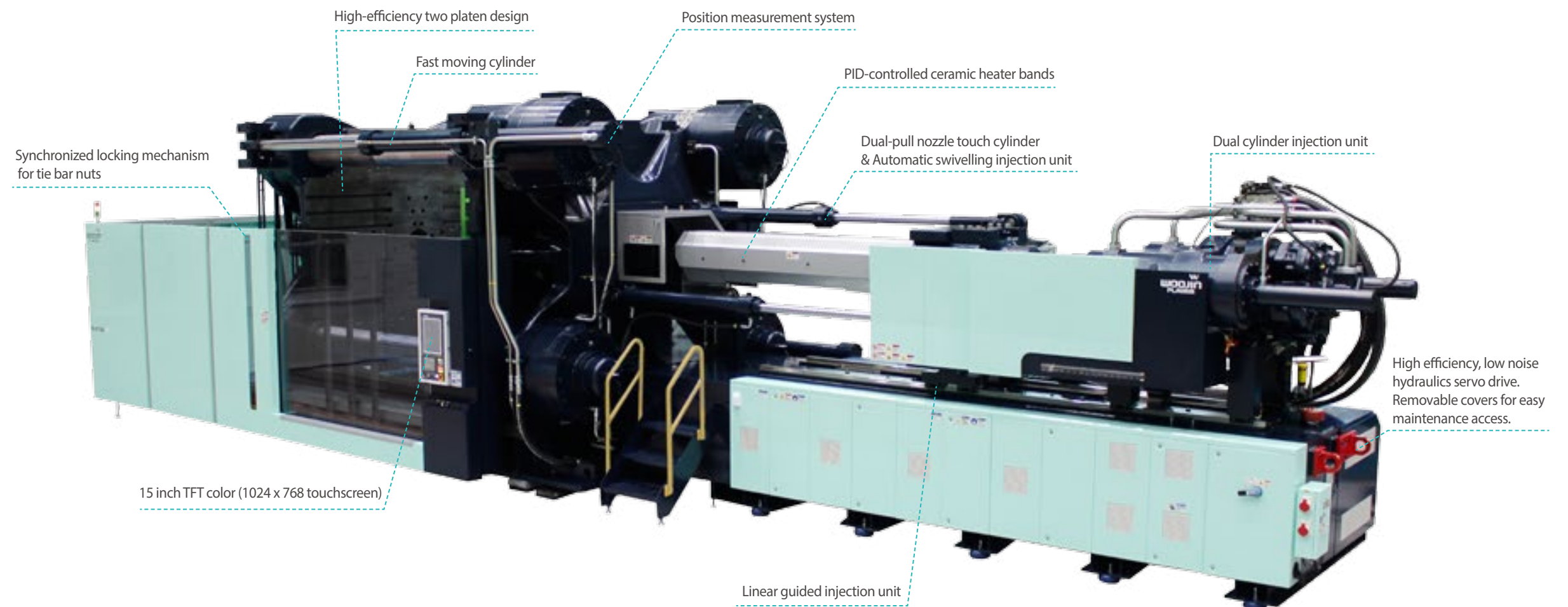
DL-A5 series is the Austrian-engineered, 5th generation two-platen series of Woojin plastic injection molding machines. The compact design saves space without compromising ease of maintenance. The two stage clamping design allows high performance and high speed operation with smooth and precise movement.

Clamping unit

- Compact and high energy efficiency design
- High precise position control
- Excellent platen parallelism

Injection unit

- Direct drive for plasticizing screw
- Greatest repeatability via servo hydraulics
- Back pressure control with servo valve
- Automatic swivelling injection up to unit -IH11900
- Short footprint design



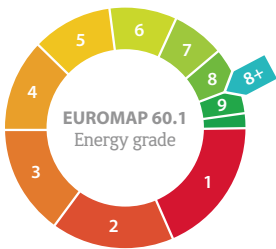
Please scan
the QR code!

Dynamic, efficient clamping unit

Efficient two platen direct locking system

With faster mold opening and closing
With improved mechanical durability.

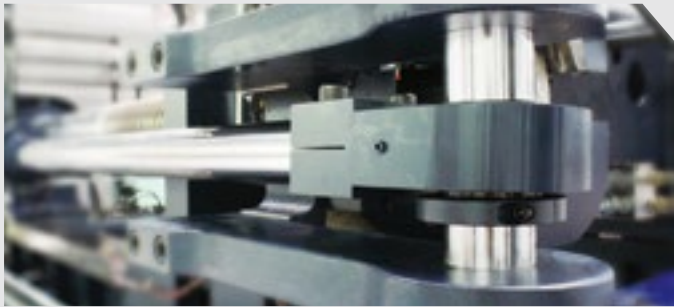
The optimized tie bar position sensors and half nut control system enable greater speed and precision control of the mold.



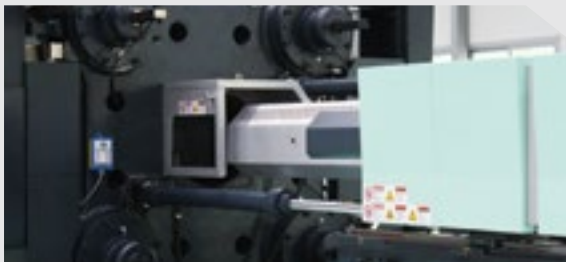
Sample Production Results	
Model	DL650A5
Product	Door trim
Weight	840g
Electric consumption (Kwh)	0.33
Kwh/Kg	0.39
Grade (EUROMAP 60.1)	8



- **Rigid and efficient platen design**
 - Two platen system for space efficiency.
 - T slot design for convenient mold mounting.
 - Wide space between tie-bars.
 - High-rigidity platen.
 - In-house die casting and quality control.



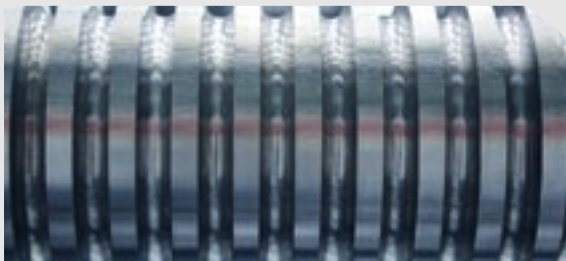
- **Fast moving cylinder**
 - High speed moving cylinder for fast motion.



- **Position measurement system**
 - Tie bar position controlled by stroke transducer.



- **Efficient direct locking system**
 - Double acting half nut design for reduced cycle time - fast locking and unlocking.



- **Tie bar design**
 - FEM design for optimized force distribution.

Automatic tie bar retraction

Maximizes available space
Ideal for installing large molds.

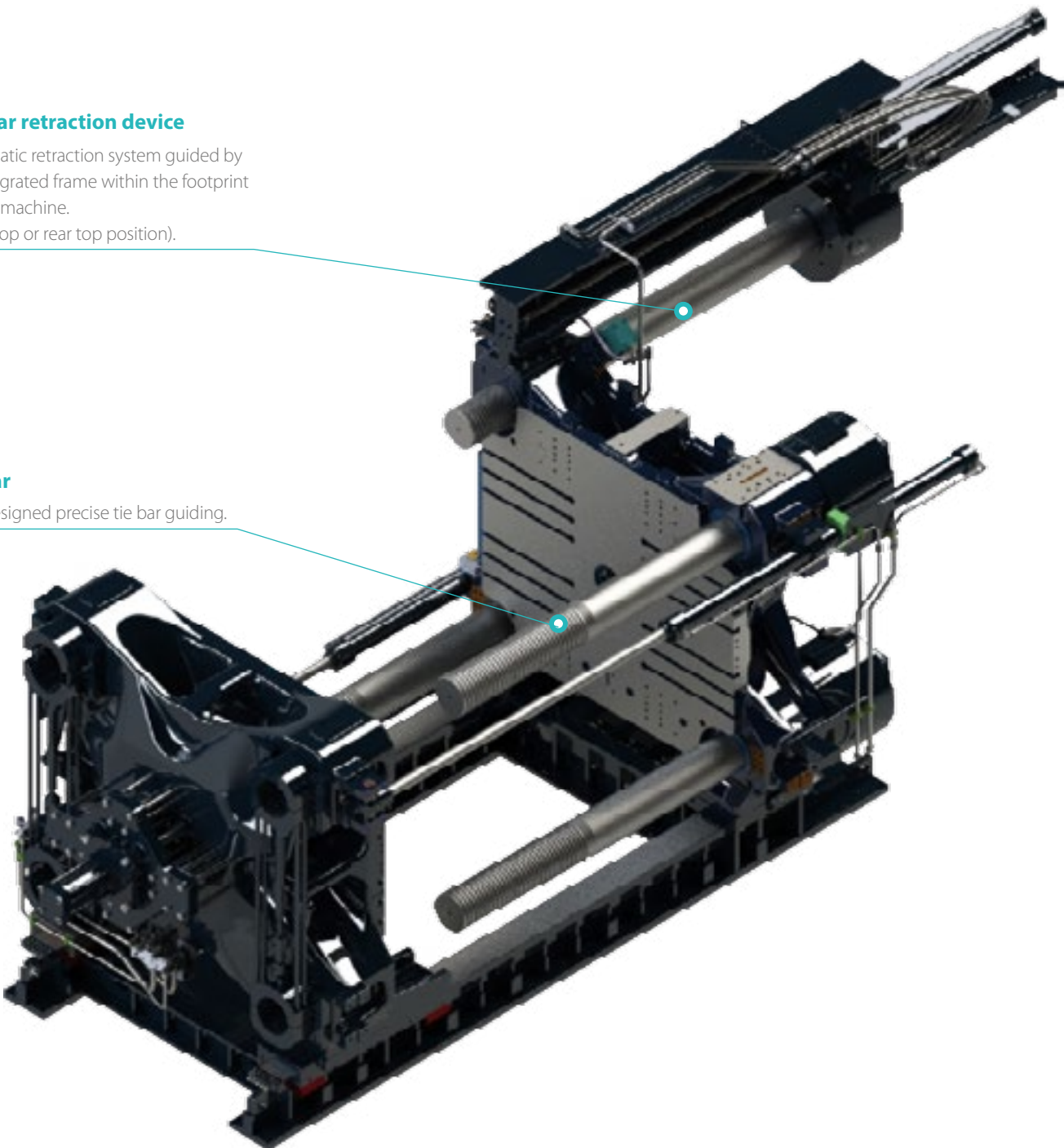
A tie bar retraction system allows easier mold installation direct sideways.
(for e.g. hall height or oversized molds.)

Tie bar retraction device

Automatic retraction system guided by an integrated frame within the footprint of the machine.
(front top or rear top position).

Tie bar

FEM designed precise tie bar guiding.



Smart injection unit

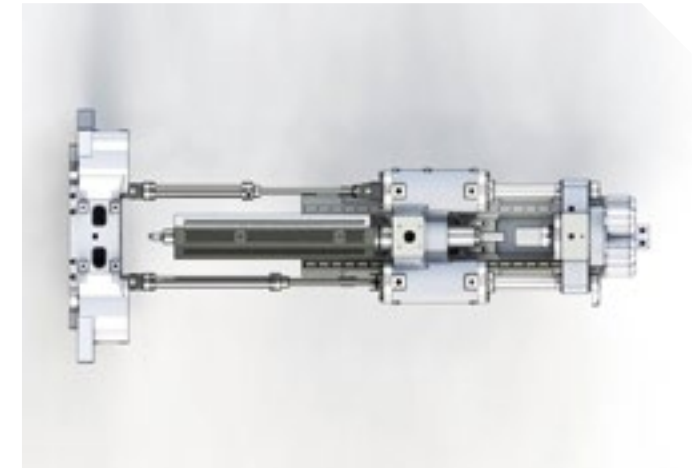
High rigidity dual cylinder injection unit

Powerful dual cylinders
Automatic swivelling injection unit.

Compact designed dual cylinder for high performance injection process.
Automatic swivelling injection unit for convenient removal of the screw for scheduled cleaning.



• **Dual cylinder injection unit**



• **Dual-pull nozzle touch cylinders**

Dual-pull cylinders provide straight-on nozzle touch to the mold.



• **Electric cabine**

The smart design of the cabine in combination with the filter ventilation system protects the electric and electronic system from any stray material, fluids or particles.



• **PID-controlled heating bands**

Easy handling PID controller for nozzle and barrel heater zones for accurate melt temperature.



• **Automatic swivelling injection unit**

With a simple procedure the injection unit can be swivelled for easy access, reducing the time required for screw and barrel maintenance.
(Implemented on IH 2800 to IH 11900 machines.)



• **Low operating noise**

Sound-absorbing sectional covers protect the servomotors and can be easily removed by a single person for routine maintenance inspections and service to machine hydraulics.



• **Linear guided injection unit**

Linear guides provide stable, low-friction rails to support precision control of the screw.

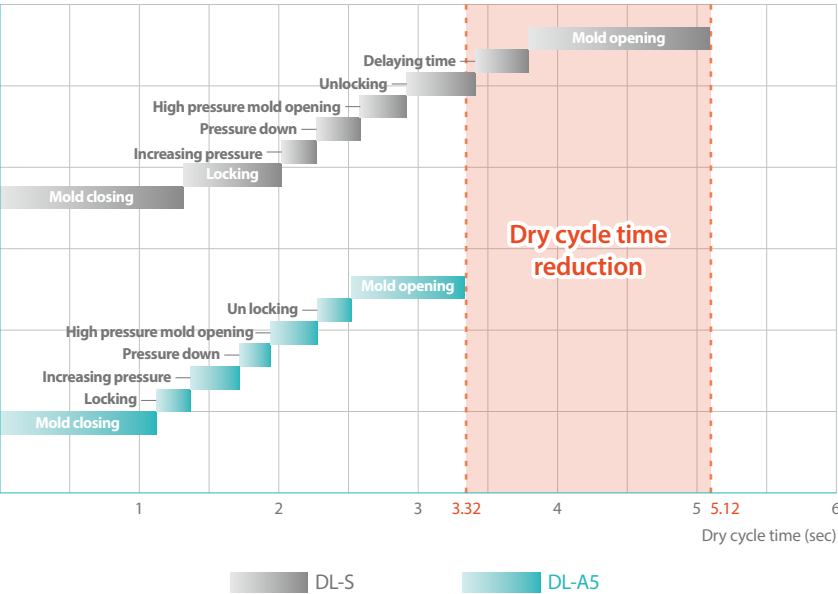
Efficient hydraulic system

Energy efficient servo pump system

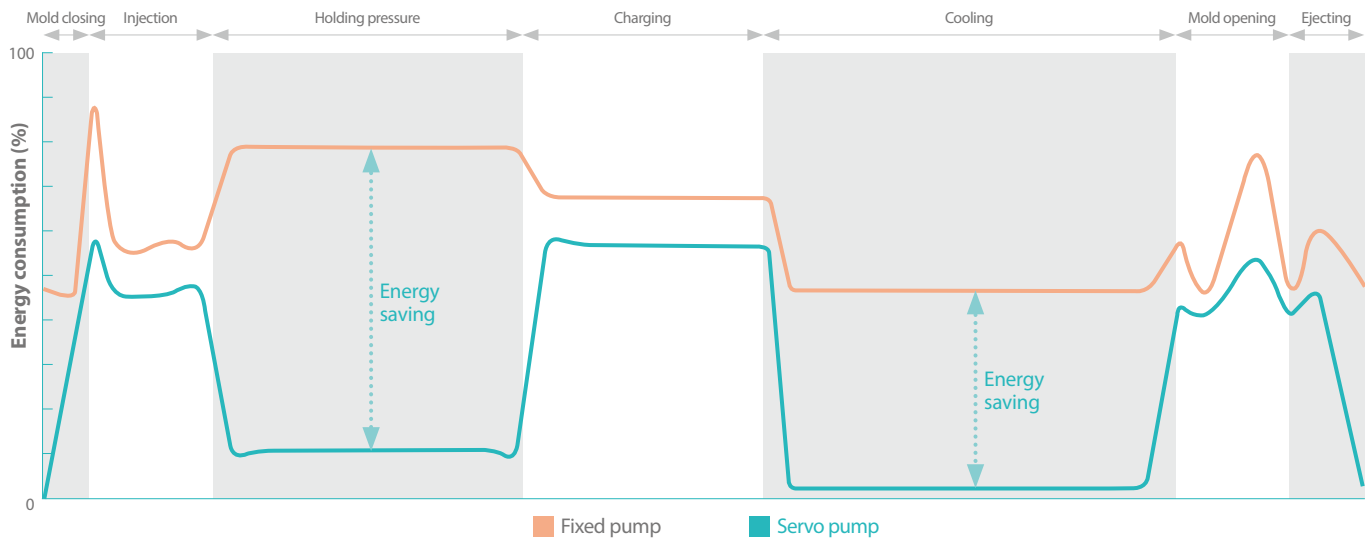
Independent hydraulic drive circulates, cools, and filters oil.
The energy efficient hydraulic drive reduces stress and increases life time of hydraulic oil.

- The efficient servo pump system operates with low ambient noise.
- An independent oil conditioning circuit ensures a clean supply of oil.
- Improved efficiency and performance of the hydraulic system results in significant reduction of dry cycle time.

DL-S vs DL-A5
Dry cycle time comparison



Energy Saving Rate



Air breather
Easy access to air filter system on hydraulic tank.



Anticorrosion coated hydraulic manifold



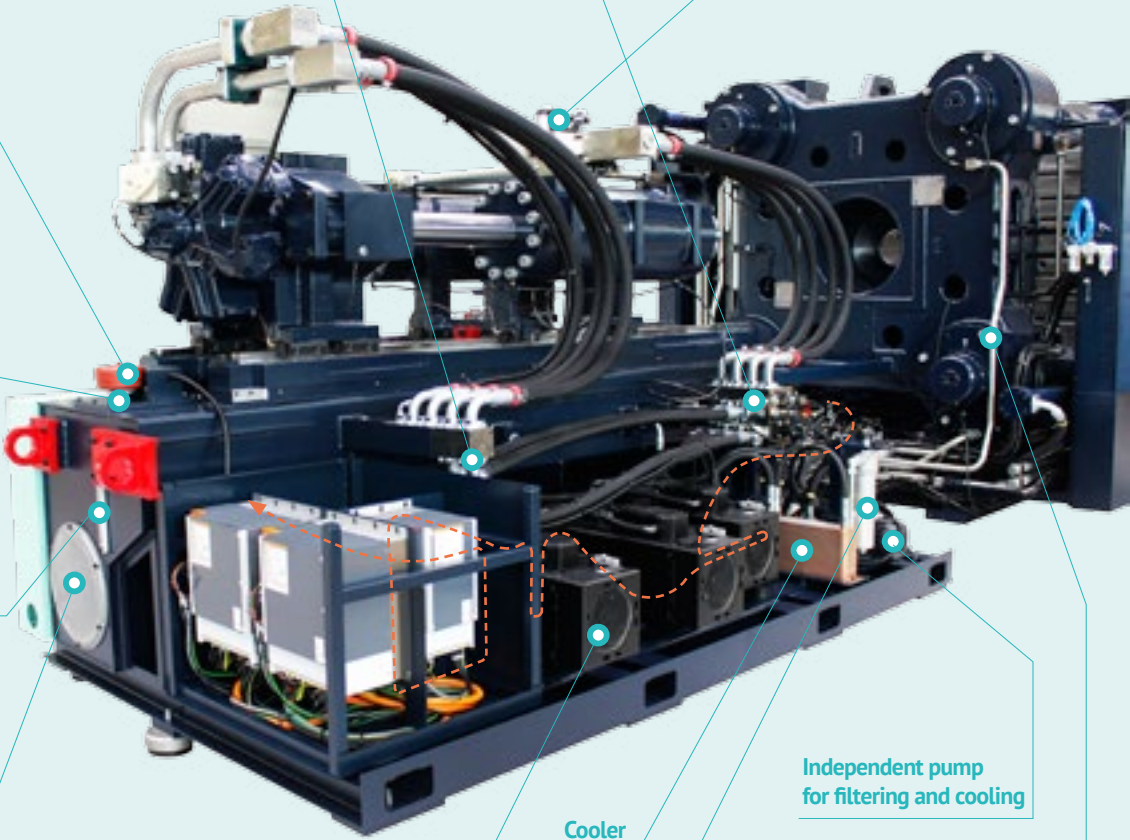
Closed loop back pressure control
A proportional valve control circuit uses pressure sensor feedback to provide responsive precision control of back pressure as material is plasticized.

Temperature and tank level sensor
Alerts the operator if oil level is too low and also monitors oil temperature.



Oil temperature and level gauge
Easy check of oil level and temperature.

Anticorrosion coating inside oil tank



Main servomotor

Cooler

Filter

Independent pump for filtering and cooling

Seamless piping
Bolt-on flanged seamless pipe resists corrosion and is easy to change.

User-friendly controller

PP580



Functions

- Various core drives
- Production data storage
- Production data analysis
- Molding condition alterations and changes or alert details storage
- Injection speed graph display
- Robot interface circuit
- Automatic control of motor and heater for unmanned operation

- Rotation injection for large volume of injection
- Weekday heater time switch
- Heat insulation mode for cylinder to prevent carbonization of resin carbide
- System monitoring : communication state, module operation state, etc.
- Internal mold data storage : Up to 1,000 data files.

Intuitive design

15 inch TFT color monitor attached to the controller is easy to control and manage the information.

Central monitoring program interface

Compatible interface program is equipped in the system which is available to manage automation robot and auxiliary devices.

Remote monitoring

With VNC servo function it can monitor the machine in real time anytime and anywhere.

System features

- OS : VxWorks real time operating system
- Screen : 15 inches TFT color (1024 x 768 touch screen)
- Based on PC control system and excellent expandability : Available to expand by using PCI slot.
- Easy for various accessing :

USB interface

It can store various mold data and parameters.

Multilingual support

Available to select various kinds of languages.

Central Monitoring System program (Option)

CMS can access up to 250 injection molding machines at the same time to facilitate the data transmission and management. Such injection related data will be converted into excel files for easier data management and retrieval.

- Ethernet 10/100Mbps, CAN Bus port, USB port, Serial interface, etc.
- Processing time Max. 0.4ms : Prompt responsibility and increased reproducibility.
- Energy consumption monitoring function and CMS system set up.

- Light speed network is available thanks to Max. 1Gbps grade Ethernet support.
- High expandability due to RS232 communication support.
- Mega volume 2GB CF card for enough data space.
- Waterproof : Front (IP65), Back (IP20)

- External mold data storage system: USB memory storage.
- Screen save function : convert the current display into a hard copy to store the data in USB memory
- Injection speed, holding pressure closed-loop
- Back pressure closed-loop
- Injection pressure graph display

Applications

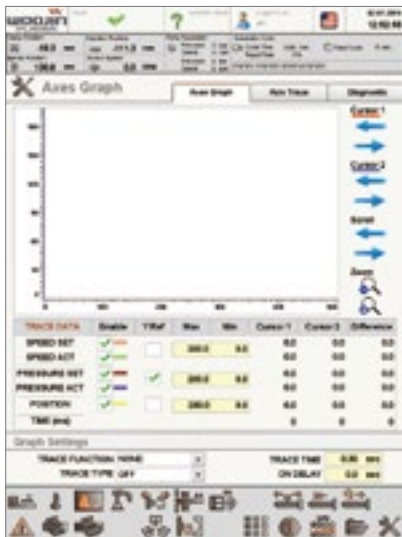
Alarm function

It can record various error information in real time and show on the screen. Also all the recorded information can be printed out.



Graph display

The user can find out production status easily through graph on the monitor such as injection speed and pressure, and detailed information about charging stage as well.



Quality management

Selective data storage and management for quality assurance under maximum 7 categories and 2,000 process information.



Mold setting information

Up to 1,000 mold data can be stored in the controller and USB memory. The mold data can easily retrieved and used from controller for convenient molding information setting.



Production management

The user can set up targeted production amount and time. Also user can check the total production amount, current production amount, total production time, and remain-ing production time through monitor.



Energy consumption display (Option)

The total production time, energy consumption amount can be displayed on the monitor so that the user can find out cycle time and electric consumption amount easily.





Combinations clamping unit / injection unit

Standard

Option

[illegible]

Specification

	DL450A5	DL550A5	DL650A5	DL850A5	DL1050A5	DL1300A5
	IH 2800	IH 4200	IH 5900	IH 8800	IH 8800	IH 11900

Injection Unit

Screw & Barrel type		O	A	B	O	A	B	O	A	B	O	A	B	O	A	B	A	B
Screw diameter	mm	65	70	80	70	80	90	80	90	105	95	105	115	95	105	115	115	125
Injection pressure	kg/cm ²	2191	1889	1446	2465	1887	1491	2386	1885	1385	2145	1756	1464	2145	1756	1464	1809	1531
	MPa	215	185	142	242	185	146	234	185	136	210	172	144	210	172	144	177	150
Theoretical injection volume	cm ³	1278	1482	1935	1693	2212	2799	2488	3149	4286	4111	5022	6024	4111	5022	6024	6544	7731
Shot weight (PS)	g	1177	1365	1783	1560	2038	2579	2293	2902	3950	3788	4628	5551	3788	4628	5551	6030	7124
Injection rate	cm ³ /s	407	472	617	461	602	762	603	763	1039	852	1041	1248	852	1041	1248	1249	1475
Screw stroke	mm	385	385	385	440	440	440	495	495	495	580	580	580	580	580	580	630	630
Injection speed	mm/s	123	123	123	120	120	120	120	120	120	120	120	120	120	120	120	120	120
Plasticizing capacity (PS)	kg/h	181	222	313	203	287	389	260	354	525	340	438	547	340	438	547	503	618
Screw rotation speed	rpm	180	180	180	165	165	165	150	150	150	125	125	125	125	125	125	115	115

Clamping Unit

Clamping force	ton(kN)	450 (4413)	550 (5394)	650 (6374)	850 (8336)	1050 (10297)	1300 (12749)
Mold opening force	ton(kN)	31 (304)	38 (373)	45 (441)	58 (569)	74 (726)	89 (873)
Distance between tie-bar (H X V)	mm	860 x 810	915 x 915	1010 x 1010	1110 x 1110	1410 x 1110	1410 x 1410
Platen dimension (H X V)	mm	1240 x 1190	1330 x 1330	1460 x 1460	1610 x 1610	1950 x 1650	1950 x 1950
Daylight	mm	1450	1600	1800	2300	2400	2500
Min. mold height	mm	350	400	450	500	600	700
Max. mold height	mm	800	950	1100	1200	1200	1200
Ejector force	ton(kN)	11.1 (109)	16.6 (163)	19.8 (194)	26.9 (264)	26.9 (264)	34.4 (337)
Ejector stroke	mm	200	220	250	250	250	300
Dry cycle time	sec	3.3	3.3	3.3	4.0	4.4	5.0

Generals

Total heater capacity	kW	18.5	20.7	24.2	23.0	26.8	30.6	29.4	33.6	39.3	39.7	44.6	49.6	39.7	44.6	49.6	54.6	58.1
Motor capacity	kW	52.0			73.0			73.0			94.0			94.0			120.0	
Total electric power capacity	kW	70.5	72.7	76.2	96.0	99.8	103.6	102.4	106.6	112.3	133.7	138.6	143.6	133.7	138.6	143.6	174.6	178.1
Hydraulic oil tank capacity	ℓ	800			1100			1100			1400			1400			1700	
Machine weight	ton	19.0			26.0			32.0			41.0			52.0			66.0	
Machine dimension (L X W X H)	m	7.3 x 2.3 x 2.2			7.5 x 2.6 x 2.2			7.7 x 2.7 x 2.4			9.4 x 3.0 x 2.5			9.8 x 3.3 x 2.5			10.7 x 3.3 x 2.9	
Cooling water consumption	ℓ/min	130			130			130			180			180			180	

1. Theoretical injection volume : screw cross section area 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.

DL1700A5	DL1800A5	DL2000A5	DL2300A5	DL2500A5	DL2700A5	DL3000A5	DL3300A5
IH 11900	IH 15300	IH 15300	IH 21500	IH 21500	IH 33000	IH 33000	IH 66500

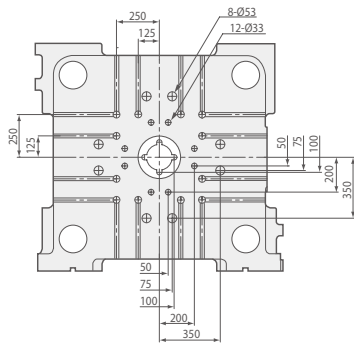
A	B	A	B	A	B	A	B	A	B	A	B	A	B	C
115	125	125	140	125	140	140	160	140	160	160	180	160	180	200
1809	1531	1743	1389	1743	1389	1816	1391	1816	1391	2133	1686	2133	1686	2157
177	150	170	136	200	136	178	136	178	136	209	165	209	165	171
6544	7731	8406	10545	8406	10545	11853	15482	11853	15482	16085	20358	16085	20358	31416
6030	7124	7746	9717	7746	9717	10923	14266	10923	14266	14822	18759	14822	18759	28950
1249	1475	1296	1626	1296	1626	1537	2007	1537	2007	1719	2176	1719	2176	2406
630	630	685	685	685	685	770	770	770	770	800	800	800	800	1000
120	120	106	106	106	106	100	100	100	100	85	85	85	85	77
503	618	565	749	565	749	802	1145	802	1145	1022	1398	1022	1398	1326
115	115	105	105	105	105	95	95	95	95	85	85	85	85	60

1700 (16670)	1800 (17652)	2000 (19613)	2300 (22553)	2500 (24517)	2700 (26476)	3000 (29420)	3300 (32360)
119 (1167)	124 (1216)	138 (1353)	161 (1578)	166 (1628)	189 (1853)	200 (1961)	231 (2265)
1810 x 1610	1810 x 1610	2020 x 1610	2020 x 1610	2180 x 1760	2180 x 1760	2260 x 1810	2260 x 1810
2450 x 2180	2450 x 2180	2670 x 2260	2670 x 2260	3030 x 2610	3030 x 2610	3110 x 2660	3110 x 2660
3200	3200	3600	3600	3900	3900	4000	4000
700	700	800	800	900	900	1100	1100
1600	1600	1700	1700	2000	2000	2000	2000
44.5 (436)	44.5 (436)	44.5 (436)	44.5 (436)	67.8 (665)	67.8 (665)	68.7 (674)	68.7 (674)
300	300	300	300	350	350	350	350
5.8	5.8	5.8	5.8	8.2	8.2	8.2	8.2

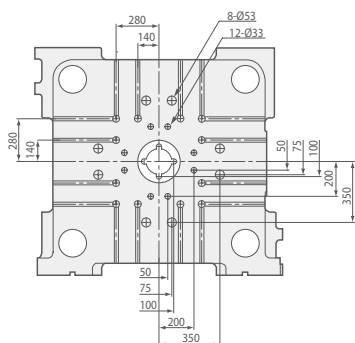
54.6	58.1	61.9	71.1	61.9	71.1	78.4	91.1	78.4	91.1	106.3	123.4	106.3	123.4	157.0	178.0	215.0
120.0		120.0		120.0		141.0		141.0		188.0		188.0		235.0		
174.6	178.1	181.9	191.1	181.9	181.9	219.4	232.1	219.4	232.1	294.3	311.4	294.3	311.4	392.0	413.0	450.0
1700		1700		1700		2000		2000		2600		2600		3200		
92.0		95.0		110.0		115.0		130.0		135.0		150.0		160.0		
11.6 x 3.8 x 3.3		12.3 x 3.8 x 3.3		12.5 x 4.2 x 3.4		13.5 x 4.2 x 3.4		14.6 x 4.4 x 3.7		14.6 x 4.4 x 3.7		15.0 x 4.7 x 3.9		15.8 x 4.7 X 3.9		
180		180		180		180		240		240		240		240		

Platen dimensions

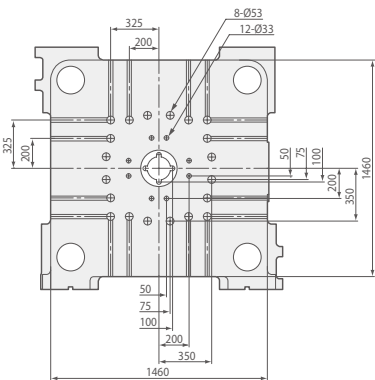
450 ton



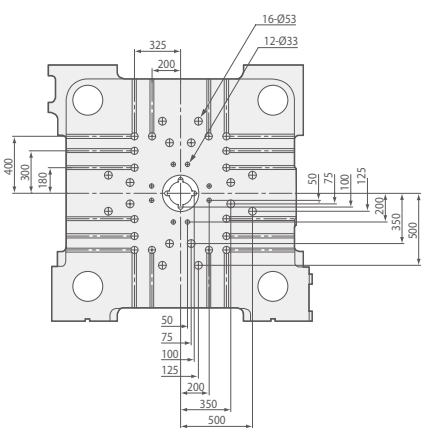
550 ton



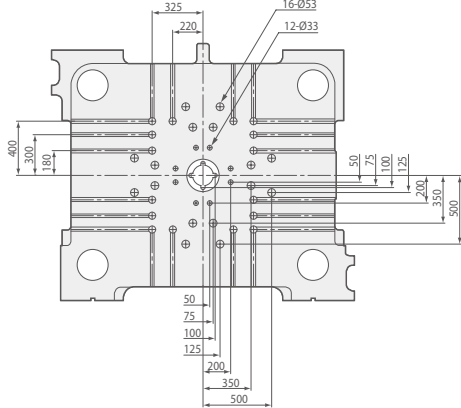
650 ton



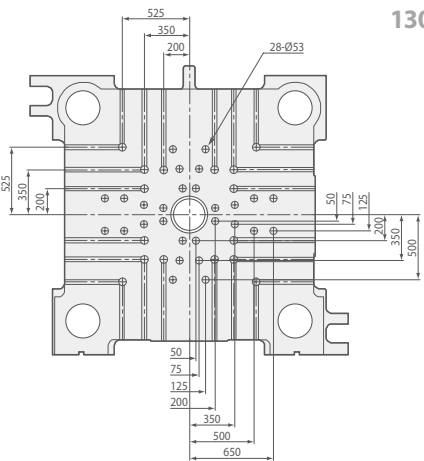
850 ton



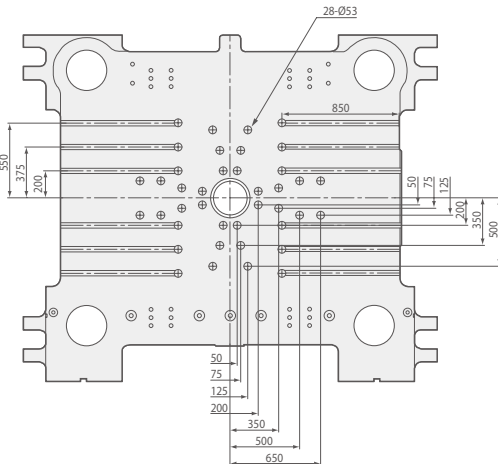
1050 ton



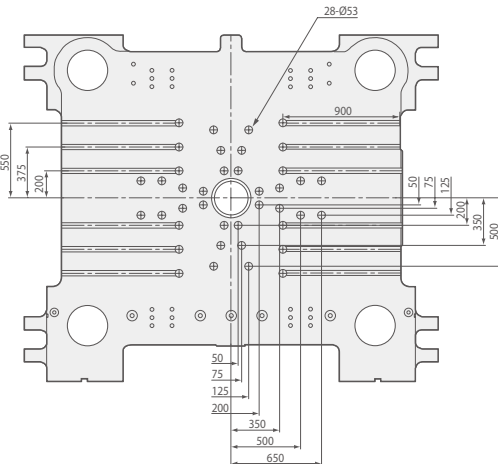
1300 ton



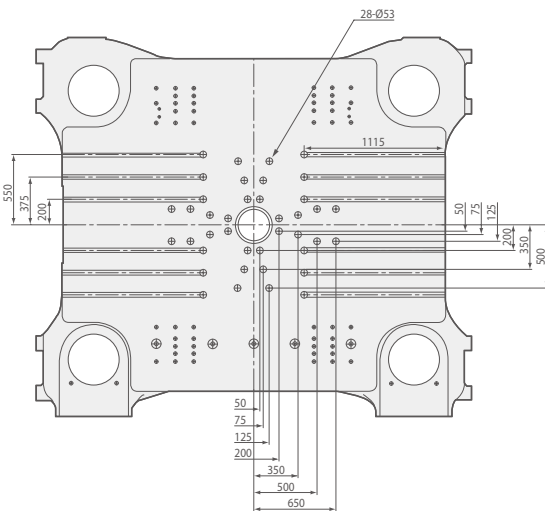
1700 ton /
1800 ton



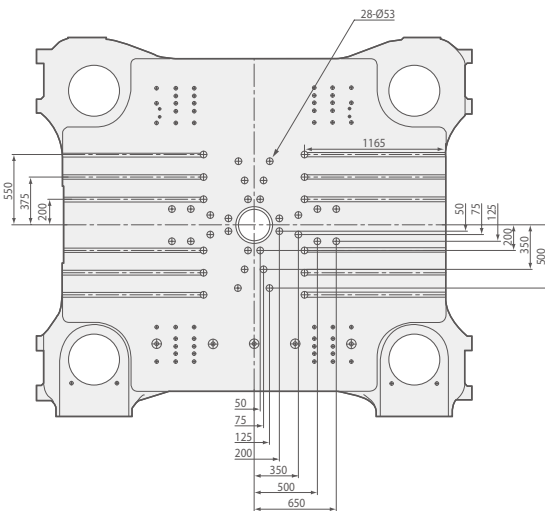
2000 ton /
2300 ton



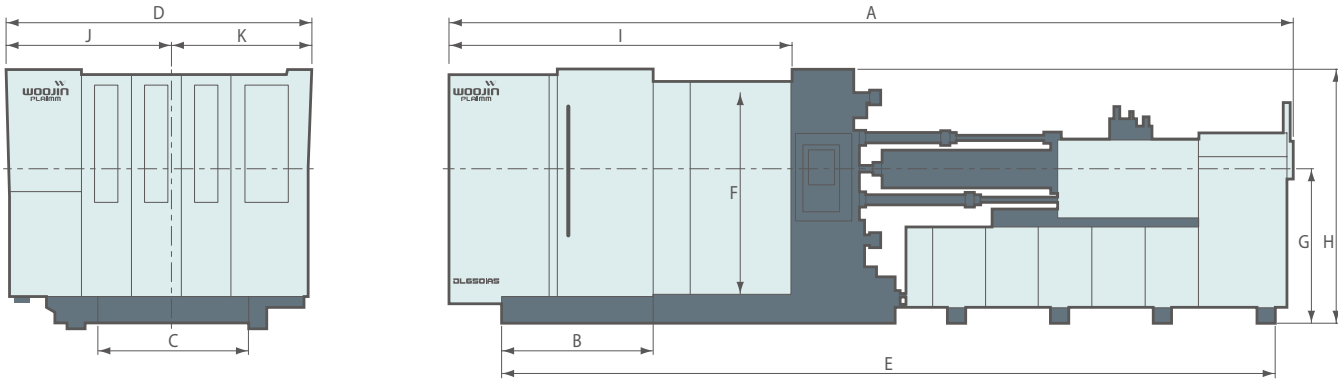
2500 ton /
2700 ton



3000 ton /
3300 ton



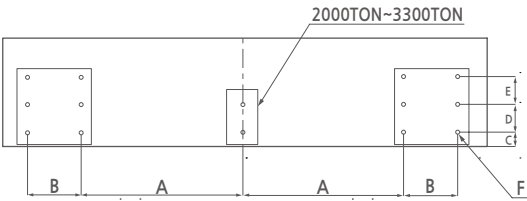
Machine dimensions



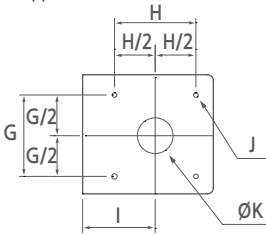
Unit : mm

	A	B	C	D	E	F	G	H	I	J	K
DL450A5	7293	2260	1280	2340	6660	1960	1410	2193	2893	1225	1115
DL550A5	7469	2480	1330	2607	6830	2028	1410	2222	3009	1339	1208
DL650A5	7757	2740	1430	2707	7315	2130	1450	2388	3334	1449	1258
DL850A5	9429	3340	1610	2957	8741	2240	1490	2497	3919	1539	1418
DL1050A5	9815	3500	1910	3299	8900	2260	1490	2483	4305	1689	1610
DL1300A5	10760	3910	1890	3345	9605	2656	1706	2901	4513	1700	1645
DL1700A5	11636	4695	2335	3898	10509	3028	1950	3310	5330	1996.5	1901.5
DL1800A5	12387	4695	2335	3898	11506	3028	1950	3310	5330	1996.5	1901.5
DL2000A5	12531	4860	2720	4233	11679	3070	1950	3364	5608	2184	2039
DL2300A5	13529	4860	2720	4233	12536	3070	1950	3364	5608	2184	2039
DL2500A5	14680	5330	2900	4423	12996	3344	2116	3717	6767	2294	2129
DL2700A5	14680	5330	2900	4423	12996	3344	2116	3717	6767	2294	2129
DL3000A5	14920	6050	3010	4688	13920	3505	2240	3900	6442	2354	2334
DL3300A5	14920	6050	3010	4688	13920	3505	2240	3900	6442	2354	2334

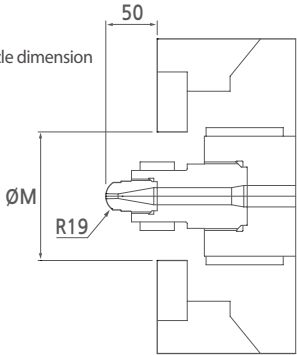
▼Automation (robot) installation



▼ Hopper installation installation



▼ Nozzle dimension



Unit : mm

	Automation (robot) installation						Hopper installation drawing					Nozzle dimension
	A	B	C	D	E	F	G	H	I	J	ØK	ØM
DL450A5	210		105	185		4-M20	165	165	120	4-M12	68	100
DL550A5	195		105	245		4-M20	165	165	130	4-M12	78	100
DL650A5	235		110	265		4-M24	165	165	140	4-M12	88	100
DL850A5	235		115	330		4-M24	165	165	170	4-M12	103	100
DL1050A5	335		125	375		4-M30	165	165	170	4-M12	103	100
DL1300A5	560	280	70	140	140	12-M24	280	200	190	4-M16	113	120
DL1700A5	840	280	70	140	140	12-M24	280	200	190	4-M16	113	120
DL1800A5	840	280	70	140	140	12-M24	280	200	112	4-M16	123	120
DL2000A5	500		140	575		6-M24	280	200	112	4-M16	123	120
DL2300A5	500		140	575		6-M24	280	200	132	4-M16	138	120
DL2500A5	625		155	600		6-M36	280	200	132	4-M16	138	120
DL2700A5	625		155	600		6-M36	280	200	172	4-M16	158	120
DL3000A5	625		150	630		6-M36	280	200	172	4-M16	158	120
DL3300A5	625		150	630		6-M36	280	200	172	4-M16	158	120

Option lists

S : Standard O : Option X : Not applicable

Injection unit	Up to IH15900	Up to IH 66500	Clamping unit	450~ 850	1050~ 3300	General	450~ 850	1050~ 3300
Standard								
01 Suck-back control (Before charging)	S	S	01 Hydraulic core puller (1 stage)	S	S	01 Alarm history display & saving	S	S
02 Suck-back control (After charging)	S	S	02 Air blow off unit	S	S	02 History of changes to setting values	S	S
03 Injection speed graph display	S	S	03 Safety foot board inside of machine	X	S	03 Statistical process control (SPC)	S	S
04 Cushion amount display & alarm	S	S	04 Mould Spring	S	S	04 Input / Output circuit display	S	S
05 Screw RPM display	S	S	05 Automatic safety door	S	S	05 Multi language display	S	S
06 Auto purge circuit	S	S				06 Robot interlock circuit	S	S
07 Screw cold start prevention timer	S	S				07 Hydraulic oil level check & alarm	S	S
08 Heater pre-heating timer (Weekly)	S	S				08 Abnormal hydraulic oil temperature alarm	S	S
09 Heater temperature display and alerts	S	S				09 Automatics grease feeder (clamping)	S	S
10 PID heater temperature control	S	S				10 Available external backup of shot data	S	S
11 Barrel temperature regulation	S	S				11 Auto safety door open & close device	S	S
12 Valve gate (1 stage)	S	S				12 Hydraulic oil filter	S	S
13 Injection pressure graph display	S	S				13 Edge sensor for door	S	S
14 Closed-loop back pressure control	S	S				14 Beam sensor in clamping unit	X	S
15 Singel flight screw	S	O				15 Anchor bolts	S	S
16 SB screw *	O	S				16 3 stage alarm lamp	S	S
17 Automatic swivelling injection unit	S	X				17 Maintenance tools	S	S
18 Automatic nozzle forward · backward Standard on injection unit starting from IH 8800						18 Spare parts	S	S
						19 Electrical outlet (5 socket)-2 set	S	S
01 Mold opening control stage (Speed/Pressure)	10 stage		01 Injection process control stage (Speed/Pressure)	5 stage		01 Molding data memory capacity (Internal)	1000 ea	
02 Mold closing control stage (Speed/Pressure)	5 stage		02 Holding process control stage (Speed/Pressure)	5 stage		02 Molding data memory capacity (External)	4G USB	
03 Ejector control stage (Speed/Pressure)	3 stage		03 Charging process control stage (Speed/Pressure)	3 stage				
04 Back pressure control stage	3 stage							
Option								
01 Charging on the fly (Mold opening during charging)	O	O	01 Core on the fly / Ejecting on the fly (Mold opening during operation / Ejection)	O	O	01 Robot interlock interface (Euromap 67/SPI, Euromap 12/SPI)	O	O
02 Shut-off nozzle (Hydraulic)	O	O	02 Rotating core for cap	O	O	02 Hydraulic oil temperature control device	O	O
03 Hopper footboard & ladder	O	O	03 Injection Valve gate (Hydraulic, Pneumatic)	O	O	03 Eliminating device for precipitate of oil cooler	O	O
04 Hopper moving device	O	O	04 Automatic tie bar retraction (2000~3300 ton)			04 Hopper throat temperature control device	O	O
05 Antiwear screw & barrel	O	O	05 Ejector check valve	O	O	05 Hydraulic mold mounting (Quick Die Changer)	O	O
06 Antiwear & corrosion screw & barrel	O	O				06 Insulated heater cover	O	O
07 Automatics grease feeder (injection)	O	O				07 Electrical outlet (5 socket)-additional set	O	O
						08 Provide anchor bolts in clamping unit	O	O

* Double flight screw

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