

VH

Vertical Type Injection Molding Machine



series



Insert Molding



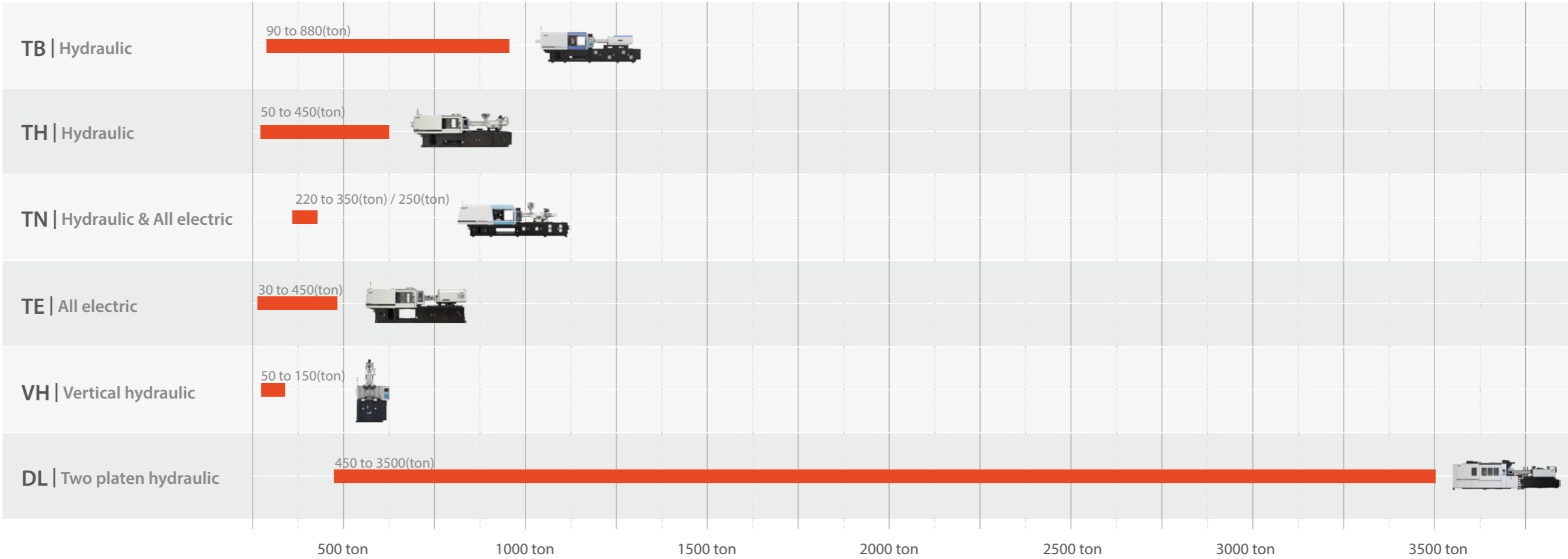
Automation
Optimization



Minimize the spaced
required for installation

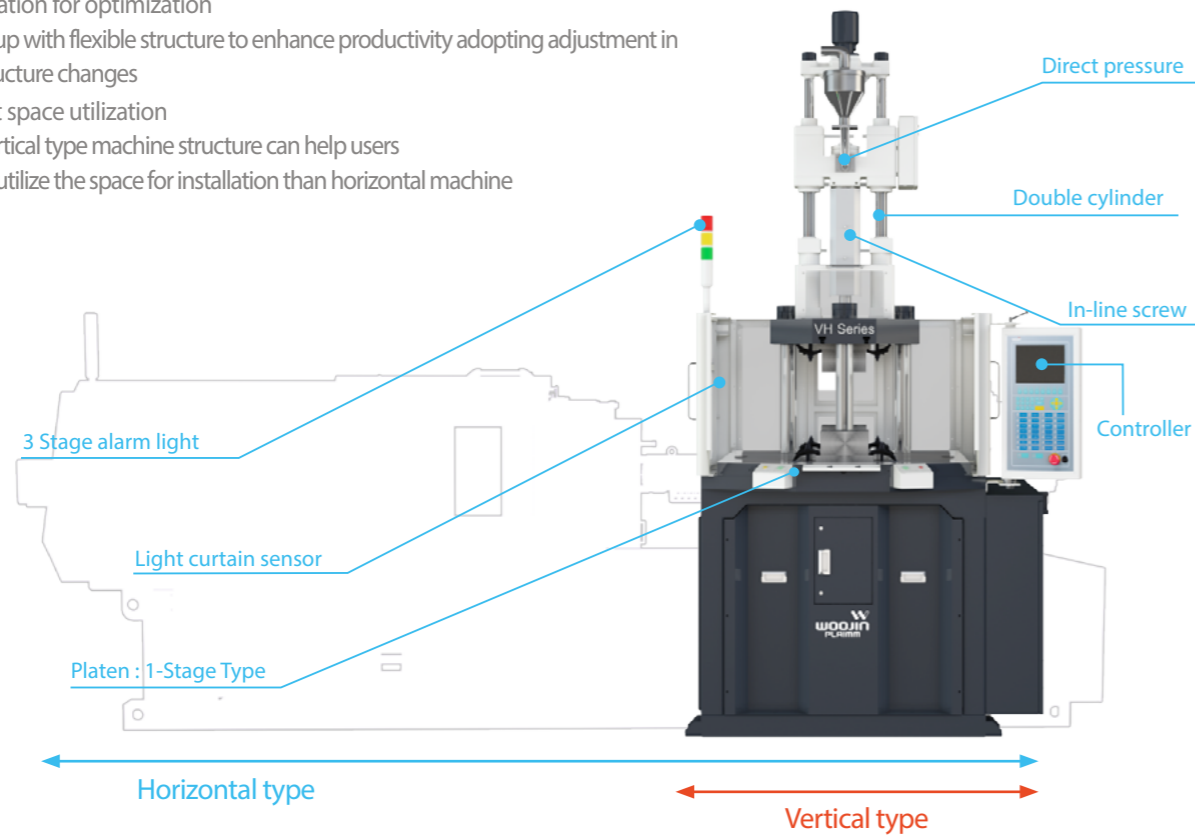
W
WOOJIN
PLAIMM

Machine series



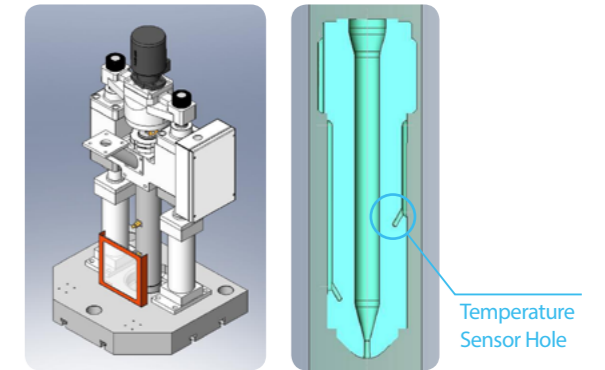
VH series

- Insert molding solution
Outstanding performance in integrating metal and film other than plastics
- Automation for optimization
Came up with flexible structure to enhance productivity adopting adjustment in the structure changes
- Brilliant space utilization
The vertical type machine structure can help users better utilize the space for installation than horizontal machine



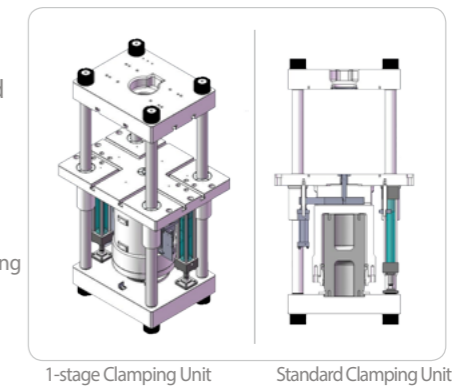
Standard Injection Unit Structure

- Apply various injection units: wide variety of injection units can be applied depending on the features of molded products
- Control for more precise molding and remote control the back pressure
- Basic application of double injection cylinder and in-line screw
- Control auto-tuning of synchronized heating in each barrel zone
Considering the features of each vertical barrel structure that the temperature goes up at different rate, each zone can be controlled in synchronization.
- Separate temperature control in upper end of the nozzle
Separately controls the temperature at the upper end of the nozzle for stable molding even for the resins not sensitive to temperature changes.
- Multi-stage control of injection/back pressure



Single Stage Hydraulic Clamping Unit

- Center hydraulic clamping unit helps maintain consistent mold clamping bearing to prevent distortion and high quality injection mold products despite lower clamping force.
- Enhanced user convenience setting the mold clamping force as needed to apply further pressure for clamping
- Light curtains sensor
Effectively prevent industrial accidents adopting light curtains sensor methods using safety lock module for user safety



VH series _ Clamping / Injection Matrix

Model	Clamping force	Tie-bar distance(HxV)	Unit No.	Injection unit [Screw diameter in mm]						
				22	25	28	32	36	40	45
VH50/VH50S	490kN	410x300	IH 1.4V	O	A	B				
VH75/VH75S	735kN	460x340	IH 2.0V		O	A	B			
VH100/VH100S	981kN	520x380	IH 2.8V			O	A	B		
VH50R*/VH50RS	490kN	Ø880	IH 1.4V	O	A	B				
VH75R/VH75RS	735kN	Ø1000	IH 2.0V		O	A	B			
VH100R/VH100RS	981kN	Ø1100	IH 2.8V			O	A	B		
VH120R/VH120RS	1177kN	Ø1240	IH 3.9V				O	A	B	
VH150R/VH150RS	1471kN	Ø1350	IH 4.7V					O	A	B

*R: Rotary table

VH-R series

Application of Basic VH Features

Use high performance servo motor and precision gear at the revolving table to realize accurate position control and high speed rotation
Reduce the cycle time with simultaneous ejector operation during clamping closure

Injection Unit

Turn Table Clamping Unit

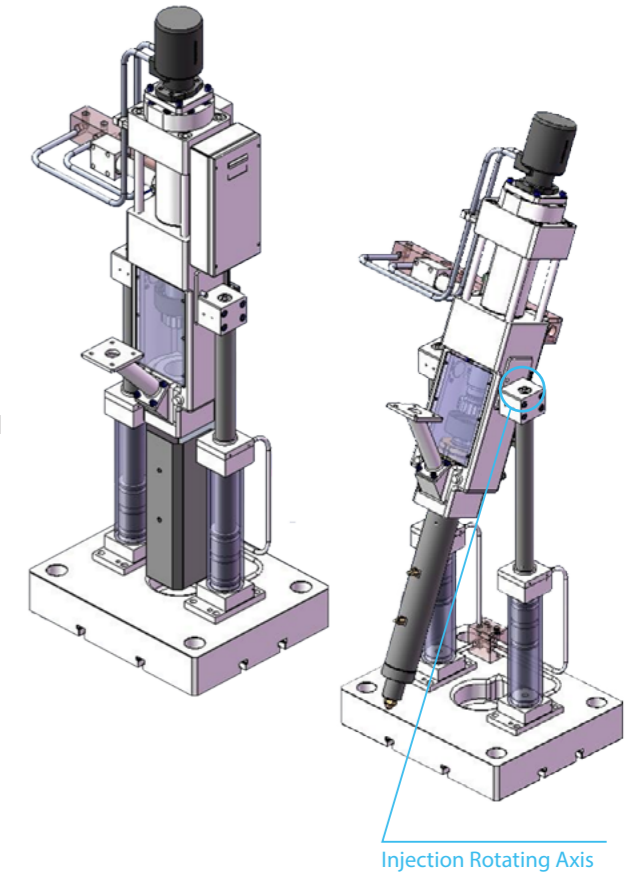
Servo Motor (Optional)



Injection Unit

High Speed Injection Unit (optional)

- It enhances the product precision maintaining the stability adopting structure innovation which is rapid in response during high speed injection operation with in-line type structure in its high rigidity integration structure.
- It minimizes the position variation by adopting single type injection structure and minimizing the weight of injection unit for rapid response and precision control.
- It can control high speed injection with ACC servo valve. (Injection speed at 700mm/sec or above)
- Cylinder at nozzle touch section
- Stable nozzle touch with highly rigid nozzle touch cylinder load
- Better working condition when replacing the upright vertical injection cylinder screw as the injection unit can turn toward the nozzle touch cylinder



Energy Saving Solution (Optional)

Ultra precision safety control

- Excellent representation of the system with feed-back control and servo pump system's closed-loop control by using AC servo motor (within 0.1%)
- High responsiveness with AC servo motor's hydraulic drive : 70ms
- Precise clamping mold protection with low speed precision location control

Energy saving and low noise level

- Controlling the number of servo pump system rotation with the AC Servo motor helps save energy and reduces noise (max 60% energy saving comparing to the general hydraulic drive types)

Saving coolants and oil

- Prevent the temperature rise of the oil controlling the rotation number by AC Servo Motor
- Save up to 25% of the coolant consumption
- Save up to 15% of hydraulic fluid



Clamping Unit

2-stage high speed turn table clamping type (RS series)

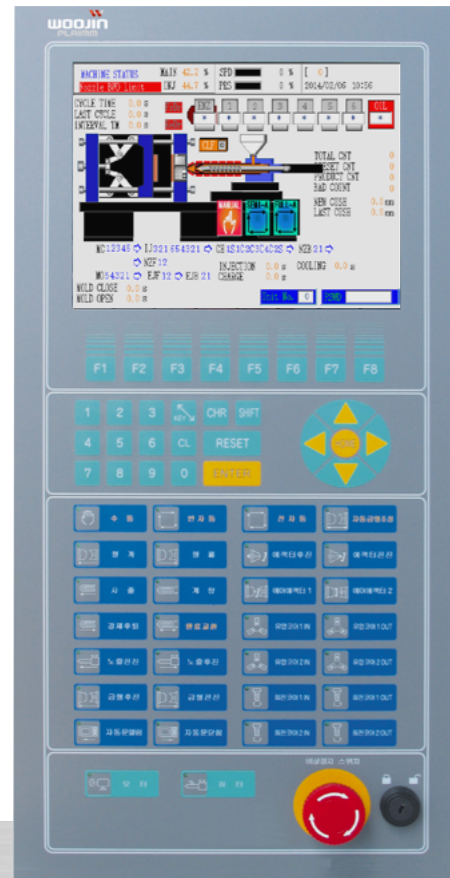
- Enhance the location precision and high cycle with servo driver's electronic signal control using the precision control method which decides the acceleration and deceleration and the position
- Simultaneous operation of ejector (R Series)
During clamping closure, it helps reduce the cycle time with simultaneous operation of ejector and further to enhance the productivity

1 Precision Gear 2 Decelerator 3 Revolving Table



Controller (ES600)

Installs multi-stage speed and pressure controls and precision position sensors for rapid response and designed user friendly monitor to enhance user convenience and practicality



Functions

- Indicate the real time temperature changes on a graph
- Monitor the input and output
- Various core operation
- Production data storage
- Storage of molding condition changes and alert data
- Heater initiated pre-heating
- Indicate injection speed/pressure graph (Optional)
- Robot's interface circuit
- Rotation injection to raise injection capacity
- Molding data's internal storage : 100
- Molding data's external storage : CF memory card (512MB)use

System Features

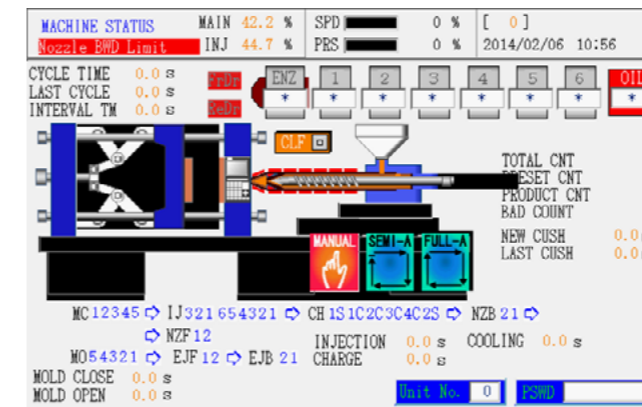
- Program System:Stored program system
- Memory Device:Flash-Rom
- Scan Time: 1ms
- Program Steps:5,000
- Analogue Output:4Channel + 4Channel
- A/D Converter:4CH(Position) + 2CH(Analogue)
- High Speed Counter:2CH + RPM
- Input:48 Point + Possible 32 Expansion (Optional)
- Output:48 Point + Possible 32 Expansion (Optional)

Technical Data

- Stored Program Control
 - Internal Process Time Less than 1ms
 - RS232 (Molding Resource, Fix Date, Sequence)
 - PID Type Cylinder Temperature Control
 - Temperature Input:K, J type
 - CF Memory : Molding Source (500) Display Storage Short Data (1,000)
- Multi-Language Support (3 Languages) : Korean, Chinese, English
- 10.4inch TFT Color LCD (640X480)

Process Management

Snapshot of process management



It is designed to monitor the product operation in a single page report.

Alarm Function

Wide range of error management

No	DATE	RESET	MESSAGE	DETAILS
0	02/06 10:55		Nozzle BWD Limit	
1	02/06 10:54	02/06 10:54	Motor Trouble	
2	02/06 10:54	02/06 10:54	Motor Trouble	
3	02/06 10:54	02/06 10:54	Motor Trouble	
4	02/06 10:54	02/06 10:54	Mold ADJ.Mode ON	
5	02/06 10:54	02/06 10:54	Screw Protect time	
6	02/06 10:54	02/06 10:54	Motor Trouble	
7	02/06 10:54	02/06 10:54	Motor Trouble	
8	02/06 10:54	02/06 10:54	Motor Trouble	
9	02/06 10:54	02/06 10:54	Motor Trouble	

It provides all the information on possible errors during operation for accurate maintenance.

Shot Data

Molding condition and time log storage (Per Cycle)

PRODUCT CONTROL	MAIN 42.2 %	SPD 0 %	[0]				
Mold ADJ.Mode ON	BPR 44.8 %	PRS 0 %	2014/02/06 11:01				
TOTAL	PRODUCT	PRESET	BAD COUNT	CYCLE TIME	INTERVAL	SEMI-AUTO	
PRESENT 0	0	0	0	0.0	0.0	0.0	
SETTING							
RES OFF	OFF	OFF	OFF				
USE		OFF	OFF				
				CAVITY			
				SCREW	0.0		
				SHOT No.	176		
SHOT DATA	PRESENT	LAST	STANDARD	LIMIT	SET	GOOD	BAD
CYCLE (s)	0.0	0.0	0.0	± 0.0	OFF	100.0 %	0.0 %
INJECT (s)	0.0	0.0	0.0	± 0.0	OFF	100.0 %	0.0 %
CHARGE (s)	0.0	0.0	0.0	± 0.0	OFF	100.0 %	0.0 %
CUSHION (mm)	0.0	0.0			ON	100.0 %	0.0 %
CHARGE (mm)	0.0	0.0	0.0	± 0.0	OFF	100.0 %	0.0 %

Automatic Saving of a total of 100 Data made of 10 Sets of sub data. Indicates heater temperature of each zone at every short phase, each shot process, Injection, charging time, cushion position, charging finish position.

Injection&Metering

Set the various injection step

INJECTION	MAIN 42.2 %	SPD 0 %	[0]							
Mold ADJ.Mode ON	BPR 44.8 %	PRS 0 %	2014/02/06 10:57							
H. PRS										
INJ			INJ SPD 0 mm/s							
SPD %	50	50	30	SPD %	50	50	50	50	50	100
PRS %	80	75	30	PRS %	50	50	50	50	50	80
				POS mm	5.0	15.0	40.0	80.0	150.0	220.0
TIME s	2.0	2.0	2.0							
Resi(Mpa)	0.0	0.0	0.0	Resi(Mpa)	0.0	0.0	0.0	0.0	0.0	0.0
				Vol(cm3)	0.0	0.0	0.0	0.0	0.0	0.0
				Wei(g)	0.0	0.0	0.0	0.0	0.0	0.0
HOLDING PRS.SEL	0	INJECT TM	0.0	5.0s	CUSHION CHECK	ON				
(0:POS. 1:TIME 2:PRS)	INJECTION STEP1+	5	CUSHION POS.	16.0						
HOLD PRS STEP1+	2	INJECT GATE USE	OFF	CUSHION +	0.5	CUSHION -	0.5			

Injection 6 Stages, Back Pressure 3 Stages, charging 4 Stages, Back Pressure 4 Stages, Spill Prevention Stages. Sensor the defects by setting the max and min levels and standard charging system for Injection products

Controller (GTB)

The high performance precision controller enables high speed high precision injection for closed-loop type (option) to guarantee the maximum safety and precision during operation.



Storing & Printing

Other than an internal storage device, users can easily store the molding and other relevant information and data in USB and print out as they want.

Multilingual Operation

Foreign languages such as English, Russian, Czech, Polish, Spanish and others are supported for easy manipulation of the machine in other parts of the world.

Setting Log

Users can store the changes they made hourly and print out the log of setting changes.

Central Monitoring System (Optional)

Central Monitoring Computer can have access to maximum 200 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.

System Features

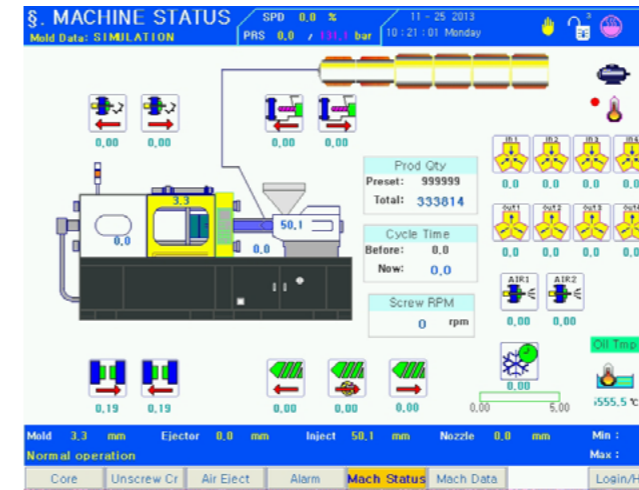
- INTEL Celeron 600MHz 32bit Microprocessor
- 128MB SDRAM 128KB Cache Memory
- 1ms or Less System Internal Precession Time
- 10.4 inch TFT Color LCD (800*600)
- PID type Cylinder Temp Control
- Input/output Module Type
- USB Printer Port

Position Transducer

- Digital Sensor
- Effective positioning capabilities allow it to adjust the position and measure without having to reposition the machine all over again.
- Can be used semi-permanently for literally unlimited amount of time (over 100 Million Cycle)
- Excellent analysis of output signal
- Easy to use and install

Process Management

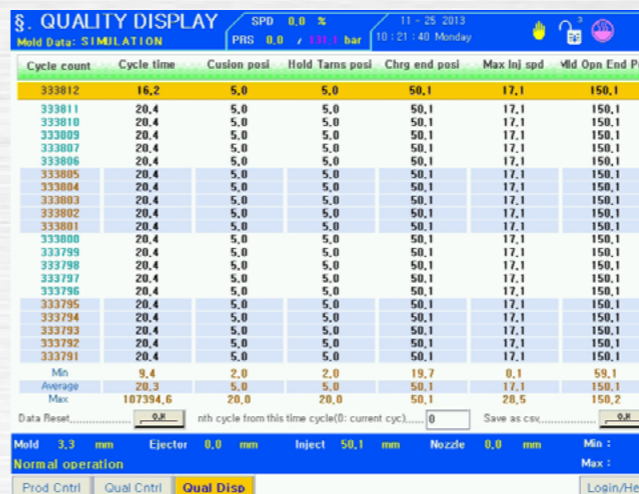
The Snapshot of Process Management



It offers a snapshot of the entire monitoring of equipments in operation.

Quality Management

Accurate product management



Selective data storage and management for quality assurance under maximum 6 categories and trace back to 1,000 processes conducted in the past.

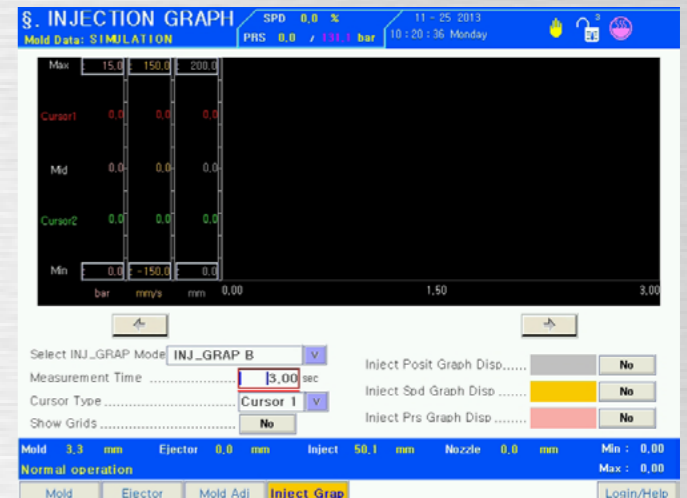
Alarm Function

Wide range of management on errors and glitches

All the information is provided on possible errors and glitches during operation for accurate maintenance and repair.

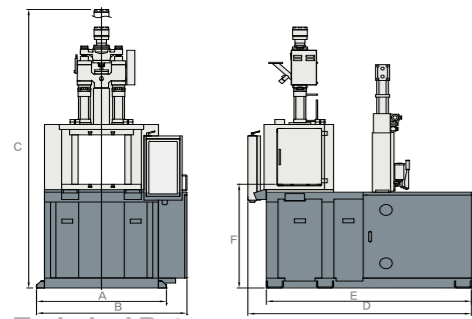
Graph Display

Convenient data visualization service



Detailed data on measured areas that a user may want are displayed in graph.

VH-S series | Machine Dimensions



Unit : mm

	A	B	C	D	E	F	G	H	I	J
VH50	1140	1320	3059	1962	1800	1050	410	300	200	140
VH75	1340	1370	3289	2250	2100	1160	460	340	225	150
VH100	1540	1570	3632	2480	2350	1280	520	380	250	200

Technical Data

Injection Unit	VH 50			VH 75			VH 100			
	IH 1.4V			IH 2.0V			IH 2.8V			
Screw type	O	A	B	O	A	B	O	A	B	
Screw diameter	mm	22	25	28	25	28	32	28	32	36
Injection pressure	kg/cm ²	3487	2700	2152	2923	2330	1784	2847	2180	1722
	MPa	342	265	211	287	228	175	279	214	169
Theoretical injection volume	cm ³	46	59	74	69	86	113	99	129	163
Injection weight (PS)	g	42	54	68	63	78	104	91	119	150
Injection rate	cm ³ /s	42	54	67	54	68	88	62	80	102
Screw stroke	mm	120	120	120	140	140	140	160	160	160
Injection speed	mm/s	108	108	108	110	110	110	100	100	100
Plasticizing capacity (PS)	kg/h	14	20	26	20	26	38	26	38	51
Screw rotation	rpm	220	220	220	220	220	220	220	220	220

Clamping Unit

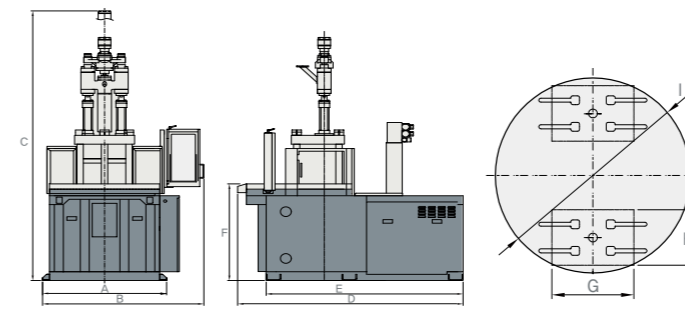
Clamping force	ton(kN)	50 (490)	75 (735)	100 (981)
Tie bar distance	mm	410 x 300	460 x 340	520 x 380
Daylight	mm	250	280	300
Min mold height	mm	200	200	250
Max daylight	mm	450	480	550
Ejector force	ton(kN)	2.5 (25)	2.7 (26)	4.3 (42)
Ejector stroke	mm	50	60	60

Generals

Heater capacity	kW	4.5	5.5	6
Motor capacity	kW	11	15	15
Total electric power capacity	kW	15.5	20.5	20.5
Total oil reservoir capacity	ℓ	220	250	300
Machine weight	ton	3.5	4	4.5
Machine dimension(LxWxH)	m	2.0 x 1.3 x 3.1	2.4 x 1.6 x 3.3	2.5 x 1.7 x 3.6
Cooling water requirement	ℓ/min	40	40	40

1. Theoretical Injection Capacity: cross-section of a screw X screw stroke.
2. Min. mold clamp size should be 60% or above the tie bar distance.
3. The specification is based on the standard 60Hz data and specification.
4. Due to continuous improvements, specifications are subject to change without notice.

VH-RS series | Machine Dimensions



Technical Data

Unit : mm

Injection Unit	VH 50RS			VH 75RS			VH 100RS			VH 120RS			VH 150RS			
	IH 1.4V			IH 2.0V			IH 2.8V			IH 3.9V			IH 4.7V			
Screw type	O	A	B	O	A	B	O	A	B	O	A	B	O	A	B	
Screw diameter	mm	22	25	28	25	28	32	28	32	36	32	36	40	36	40	45
Injection pressure	kg/cm ²	3487	2700	2152	2923	2330	1784	2847	2180	1722	2631	2079	1684	2316	1876	1482
	MPa	342	265	211	287	228	175	279	214	169	258	204	165	227	184	145
Theoretical injection volume	cm ³	46	59	74	69	86	113	99	129	163	145	183	226	204	251	318
Injection weight (PS)	g	42	54	68	63	78	104	91	119	150	133	169	208	188	232	293
Injection rate	cm ³ /s	42	54	67	54	68	88	62	80	102	80	102	126	112	138	175
Screw stroke	mm	120	120	120	140	140	140	160	160	160	180	180	180	200	200	200
Injection speed	mm/s	108	108	108	110	110	110	100	100	100	100	100	100	110	110	110
Plasticizing capacity (PS)	kg/h	14	20	26	20	26	38	26	38	51	34	47	62	47	62	85
Screw rotation	rpm	220	220	200	220	220	220	220	220	220	200	200	200	200	200	200

Clamping Unit

Clamping force	ton(kN)	50 (490)	75 (735)	100 (981)	120 (1177)	150 (1471)
Table length	mm	φ 880	φ 1000	φ 1100	φ 1240	φ 1350
Daylight	mm	250	280	300	350	350
Min mold height	mm	200	200	250	250	300
Max daylight	mm	450	480	550	600	650
Ejector force	ton(kN)	2.7 (26)	2.7 (26)	4.3 (42)	4.3 (42)	4.3 (42)
Ejector stroke	mm	60	60	80	80	80

Generals

Heater capacity	kW	4.5	5.0	6	7.3	9.2
Motor capacity	kW	13.9	13.9	19.5	19.5	25.8
Total electric power capacity	kW	18.4	19.4	25.5	26.8	35
Total oil reservoir capacity	ℓ	180	200	236	290	368
Machine weight	ton	3.5	4.2	5.5	7.3	8.2
Machine dimension(LxWxH)	m	2.3 x 1.5 x 2.7	2.4 x 1.7 x 3.3	2.6 x 1.9 x 3.6	2.6 x 1.9 x 3.6	2.6 x 1.8 x 4.1
Cooling water requirement	ℓ/min	20	20	40	40	40

1. Theoretical Injection Capacity: cross-section of a screw X screw stroke.
2. Min. mold clamp size should be 60% or above the tie bar distance.
3. The specification is based on the standard 60Hz data and specification.
4. Due to continuous improvements, specifications are subject to change without notice.

Feature List

S : Standard O : Option X : Not Applicable

Injection Unit

VH	VH-R
50~ 100	50~ 150

	VH	VH-R
1. Injection process control stage (Speed/Pressure)	6	6
2. Holding process control stage (Speed/Pressure)	3	3
3. Charging process control stage (Speed/Pressure)	4	4
4. Back pressure control stage	4	4
5. Suck-back control(before injection)	S	S
6. Suck-back control(after injection)	S	S
7. Injection position display	S	S
8. Injection speed graphic display	S	S
9. Injection pressure graphic display	O	O
10. Cushion amount display & alarm	S	S
11. Screw RPM display	S	S
12. Auto purge circuit	S	S
13. Alarm of over charging time.	S	S
14. Screw cold start prevention device	S	S
15. Heater pre-heating timer(for weekly)	S	S
16. Heater temperature abnormal display & alarm	S	S
17. PID heater temperature control	S	S
18. Cylinder temperature keeping mode	S	S
19. Shut-off nozzle(Hydraulic type)	O	O
20. Valve gate 1 stage	O	O
21. Hydraulic torque motor	O	O
22. Antiwear and anticorrosion screw & barrel	O	O
23. Double barrier mixing screw (SB screw)	O	O

Clamping Unit

	VH	VH-R
1. Mold open & close speed control stage	S	S
2. Mold open & close pressure control stage	S	S
3. Clamping position display	S	S
4. Ejector position display	S	S
5. Hydraulic core puller (1 stage)	S	S
6. Core moving during mold opening	O	O
7. Ejecting during mold opening	X	S
8. Unscrewing device	O	X
9. Air blow off unit	S	S
10. Safety device (hydraulic)	S	S
11. Safety device (electricity)	S	S
12. Working footboard	S	S
13. Daylight extention	O	O

Generals

VH	VH-R
50~ 100	50~ 150

	VH	VH-R
1. Molding data memory capacity (Internal / External)	1000/CF	1000/CF
2. Alarm history display & saving	S	S
3. Record of setting - value changing	S	S
4. Statistical function	S	S
5. I/O circuit display	S	S
6. Multi language display (English,Chinese,Portuguish/Czech)	S	S
7. Robot interlock circuit	S	S
8. Robot interlock interface (Euromap 12/SPI)	O	O
9. Hydraulic oil level alarm	O	O
10. Hydraulic oil temperature over alarm	S	S
11. Water sol valve for oil cooler	O	O
12. Hydraulic oil temperautre control device	O	O
13. Alarm of the reserved injection molding number	S	S
14. Hopper throat temperature control device	O	O
15. Auto grease for clamping unit	O	O
16. Shot data file saving	S	S
17. Molding data print & file saving	S	S
18. Hydraulic oil cleaner	O	O
19. Auto clamps (Quick Die Changer)	O	O
20. Recycling device for lubricator	O	O
21. Product drop confirmation device	S	S
22. Leveling pads	S	S
23. 3 stage alarm lamp	S	S
24. Maintenance tools	S	S
25. Spare parts	S	S

* Specifications can be changed for improved development without prior notice.

Global Network

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