Sodick

Horizontal
Injection Moulding Machine

Horizontal
Injection Moulding Machine vol.4

V- LINE® creates the value of the next generation

V-LINE®
creates the value of the next generation

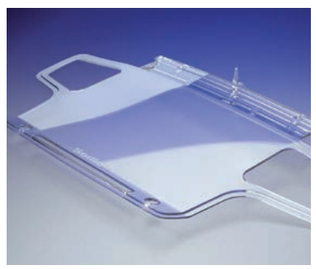
Sodick concentrated on the development of the precision injection moulding machine featuring the "V-LINE® & electric hybrid direct pressure mould clamping," and has practiced impressive "stable moulding" and "high quality."
Sodick's lineup of horizontal type precision injection moulding machines from 3 tons to 450 tons contribute to the product development of customers who are pursuing the development and manufacturing of high-value added products in a wide range of fields, such as precision, electronics, optics, and medical equipment, etc.

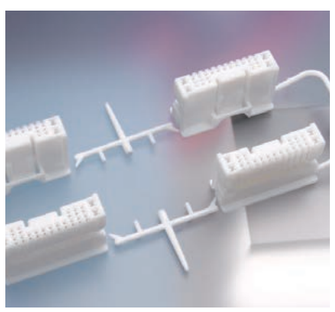
MS100

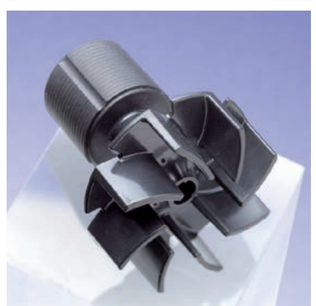
LP20EH3

GL150-HSP

TR450EH3







Product Lineup

eV-LINE
Electric Injection
Moulding Machine

	Standard
Small Size Machine	mm03
Medium Size Machine	MS50
	MS100
	MS200

V-LINE®
Electric Hybrid Injection Moulding Machine

	Standard	High-response Injection	High Speed / High Pressure	Thermosetting
Small Size Machine	TR10EH3	LP10EH3		
	TR20EH3	LP20EH3		
Medium Size Machine	GL30	GL30-LP		GL30-LS / LSR
	GL60	GL60-LP	GL60-HSP	GL60-LSR
	GL100		GL100-HSP	GL100-LSR
	GL150		GL150-HSP	GL150-LSR
	GL200		GL200-HSP	
	TR220EH3			
	TR300EH3			
	TR350EH3			
	TR450EH3			

Electric Machine

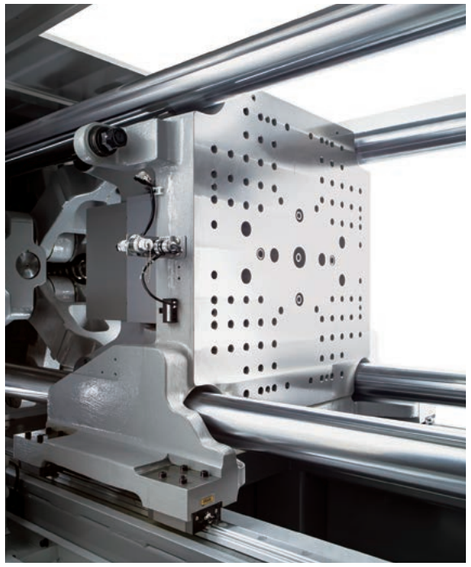
eV-LINE Electric Injection Moulding Machine

MS50 MS100 MS200

The electrified "eV-LINE" and new mould clamping mechanism developed based on the high accuracy and stable moulding by the V-LINE®, realizes improvement in productivity by the high cycle and energy savings.

Electrification of V-LINE®

A servo motor was adopted for the plasticization and injection unit of the accurate and highly repeatable V-LINE® method. The improved accuracy of each position by controlling the measurement values and injection position information by a closed loop function, realizes highly stable repeatability of the plasticization, measurements and injection. A suitable unit for moulded products can be selected from a unit focused on speed or a unit focused on pressure for the injection unit equipped with a plunger diameter of φ40mm or φ50mm.



Electrification of mould clamping operation

Adoption of a clamping unit by a servo motor drive and unique toggle link mechanism realized a reduction of the mould open/close cycle time. The movable platen supported by a linear guide arranged on the long span realizes stability of the mould position.
The electrification of these devices also greatly contributed to reduced power consumption and improved operating noise suppression.

Operation panel focused on intuition

A new operation panel equipped with selector type switches was developed only for the "MS Series." This panel further enables intuitive operability, such as operating switches in the direction each unit is to be moved, which realizes moulding with easy operation.

eV-LINE Electric Injection Moulding Machine for Very Small Products

mm03

All-electric model suitable for performing precision and stable moulding of small products, realized by the V-LINE® and direct pressure mould clamping.
Expands the moulding potentiality of small items, which also contributes to improvements in on-site capabilities.

Electrification of V-LINE®

A servo motor was adopted for the plasticization and injection unit of the accurate and highly repeatable V-LINE® method. The improved accuracy of each position by controlling the measurement values and injection position information by a closed loop function, realizes highly stable repeatability of the plasticization, measurements and injection.

Space-saving Design

This is a space-saving model of Sodick's moulding machine which only requires minimum space. Since the number of machines can be increased, it is suitable for vertical startup with few cavity moulds of initial lots.

Tie-bar-less & Wide Platen

The adoption of a parallel link mould clamping mechanism, realized tie-bar-less. The improved workability around the mould, contributes to reductions in the setup time. Adoption of a wide platen enables free layout of the mould accessories.

Electric Hybrid Machine

V-LINE® High-Cycle Compact Precision Injection Moulding Machine

TR10EH3
TR20EH3

Expanded the range of moulding items in response to the precision moulding for even smaller items.

"Electric Hybrid Direct Pressure Mould Clamping Mechanism"

The main point of high cycle moulding is to shorten the dry cycle time. This model is equipped with Sodick's new "Electric Hybrid Direct Pressure Mould Clamping Mechanism," which realizes high-speed operation, positioning and orientation accuracy.

"Optimization" accelerates "High Cycle"

This machine was developed with direct pressure mould clamping useful for pressure moulding, aiming for the world's fastest direct pressure mould clamping machine.
The optimization of the mould open/close and mould clamping mechanism by the reduced weight, low inertia and reduced volume of hydraulic fluid, and the optimization of the operation sequence by standardization of simultaneous operations, realized a reduction of the dry cycle time by 50%* (compared with Sodick's existing product), and a reduction of the moulding cycle time.

*: Sodick's research

V-LINE® Injection Moulding Machine for High Value-Added Products

GL30 GL60 GL100
GL150 GL200

V–LINE®'s global standard model contributes to high value-added moulding in extensive fields, including precision, electronics, optics and medical equipments.

Three evolved categories

Newly developed total servo drive system

Pump drive is driven by an electric servo motor for the mould clamping and the plasticization process. Further improved operation accuracy and energy savings.

Enhancement of traceability function

The process monitoring data of the high precision V-LINE® moulding machine allows for quality determination of actual moulding only, which contributes to a reduction of the visual inspection process. The monitoring of waveform data was added as an additional acceptance criterion.
In addition, a function to save each shot in a waveform data image was added to the data logging function, so that it can be used to trace the data of moulded products. This function can be used for the traceability of moulded products.

Improvement in usability

Pursued "Usability," such as ease of use, safety and maintenance.

- Improved operability by the high mounted operation panel with a maximum 90 º swivel. Adopted a large-size window for the safety door to improve the visibility of the mould while moulding, and the moulded item.
- This model can be used as a safe and secure global standard moulding machine, which complies with the safety standards of each country.
- The adoption of a highly efficient filter, reduced the replacement frequency of the hydraulic fluid. The replacement period of the hydraulic fluid is now five years.

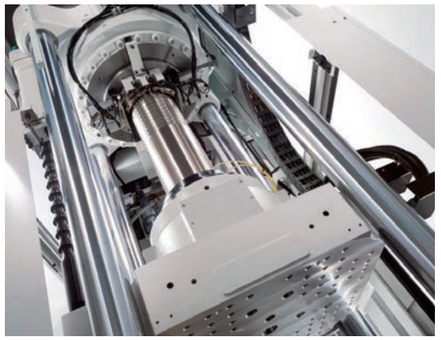
V-LINE® Injection Moulding Machine for Medium Sized High-Value Added Products

TR220EH3
TR300EH3
TR350EH3 / TR450EH3

Precise and stable moulding by the V-LINE® and direct pressure mould clamping realizes the creation of further added value of medium and large-sized moulded products.

Contributes to highly difficult moulding

The target components of the medium and large-sized injection moulding machine equipped with the V-LINE® and direct pressure mould clamping are large size lenses and mechanical components for automobiles, and realizes high yields in thick and deep medium-sized moulded products with complicated design shapes.



V-LINE® High Response Injection Moulding Machine for High-Value Added Products

LP10EH3 LP20EH3
GL30-LP GL60-LP

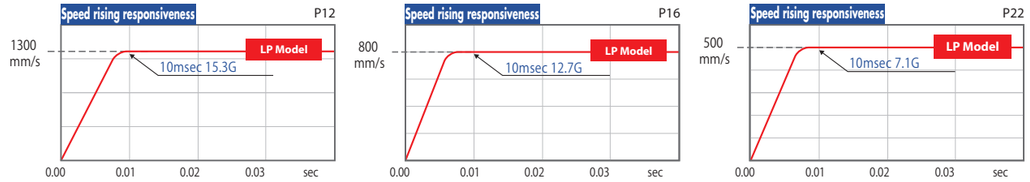
Released the "LP Model" as the successor to the LD Model for small precision moulding machines.
It supports wider range of moulding items and widens utilization.
The injection response speed achieved the highest performance in the industry.
(The LP models are also applicable to some upright injection moulding machines)

Injection characteristics

Achieves amazing acceleration and maximum injection speed

* Excluding the GL60-LP

Plunger Diameter		P12*	P16*	P22
Max. Injection Speed	mm/sec.	1300	800	500
Max. Injection Pressure	MPa	288	262	260
Injection Rate	cm^3/s	146	160	189
Injection Acceleration	G	15.3	12.7	7.1
Speed Rising Time	msec.	10	10	10
Speed Falling Time	msec.	5	5	5



Moulding range expanded by LP injection

Further improvement in stable moulding repeatability
Prevention of contamination and discoloration of resin

Allows for injection at the low speeds required for actual moulding, and suppresses the generation of shearing heat.

Improvement in the fillability for product shapes with a high degree of difficulty, such as small precision items, complicated and thin-wall thicknesses

The filling can be performed in an extremely short time, as the filling can be completed before the solidification of the resin.

V-LINE® High-Speed, High-Pressure Injection Moulding Machine for High Value-Added Products

GL60-HSP　GL100-HSP
GL150-HSP　GL200-HSP

Ultra-high-speed hydraulic servo system control improves injection speed following capability and injection pressure falling responsiveness after V-P switch.
This is suitable for moulding thin-walled light guide plates for backlights of smart phones, etc.

Pursued "Upsizing" & "Thin-wall thickness": Realized highly difficult moulding

● Highest level of injection acceleration in industry

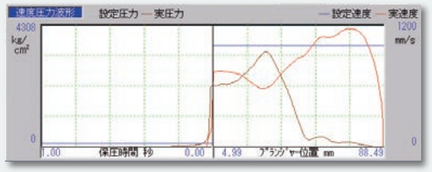
V-LINE® High Speed / High Pressure Model

Plunger Diameter		P22	P28	P32	P40
Max. Injection Speed	mm/sec.	1500	1500	1000	1000
Max. Injection Pressure	MPa	343	343	294	343
Injection Rate	cm^3/s	569	923	803	1256
Injection Acceleration	G	15.3	21.8	14.5	10.2
Speed Rising Time	msec.	10	10	10	10
Speed Falling Time	msec.	5	5	5	5

V-LINE® Model only for Ultra Thin-walled Light Guide Plates

Plunger Diameter		P28
Max. Injection Speed	mm/sec.	1000
Max. Injection Pressure	MPa	420
Injection Rate	cm^3/s	615
Injection Acceleration	G	21.8
Speed Rising Time	msec.	10
Speed Falling Time	msec.	5

Waveform of injection pressure



- Overwhelming injection acceleration of 21.8G
- High-tracking capability of injection speed and excellent injection pressure falling responsiveness after V-P switching

V-LINE® Horizontal Injection Moulding Machine for Thermosetting

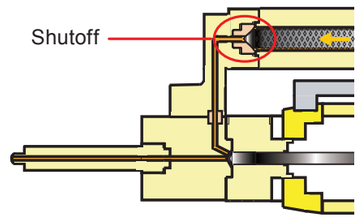
GL30-LS/LSR　GL60-LSR
GL100-LSR　GL150-LSR

Sodick offers a thermosetting injection moulding machine which evolved from the V-LINE®, a fully proven thermoplastic moulding machine.
(The LSR models are also applicable to some upright injection moulding machines)

Contact Sodick for the specification.

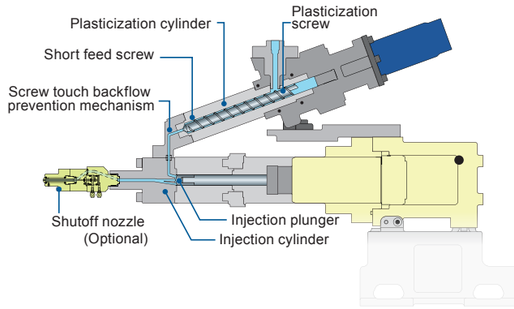
Flow path shutoff

- The mixing cylinder and injection cylinder are designed independently, and the flow path is shut down by the mixing screw except during measurement. Therefore, the residual pressure of the material while the material is being supplied accumulates in the mixing cylinder.
- A dynamic mixer method has been adopted so that an extensive range of viscosities from a low viscosity (2 - 3Pa·s) to a high viscosity (2000 Pa·s or more) can be handled.



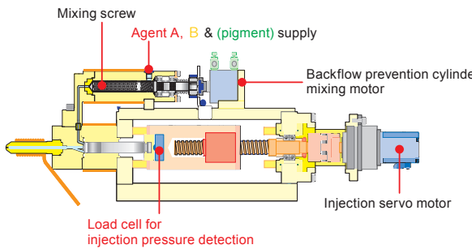
Hydraulic Pressure LSD Specification: For High Viscosity Material

100Pa·s-2000Pa·s



Electric Servo Specification: For Low Viscosity Material

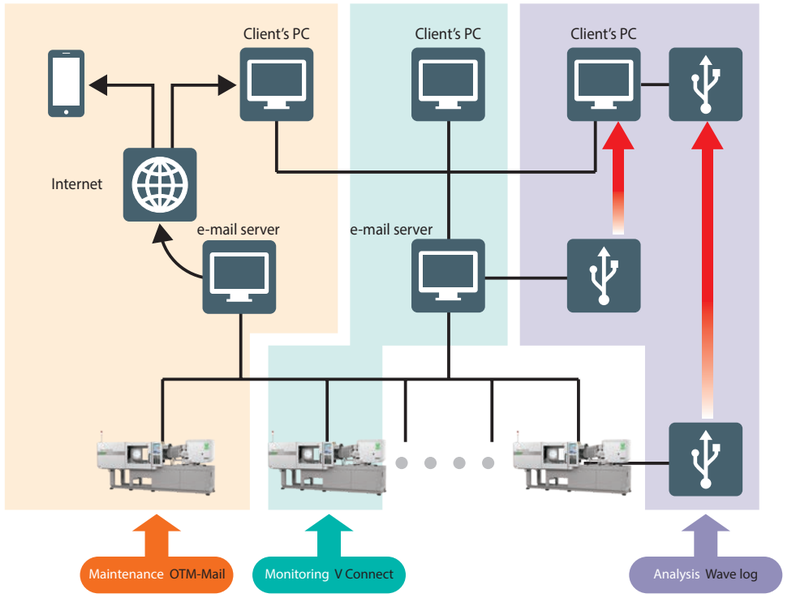
Less than 100 Pa·s



Sodick IoT-IMM

Sodick quickly responded to Internet technology.
By connecting multiple machines to a network environment and utilizing various information and data collected from those machines, we provide IoT (Internet of Things), including (1) monitoring, (2) maintenance, (3) control, and (4) analysis.

Sodick IoT-IMM System Conceptual Diagram



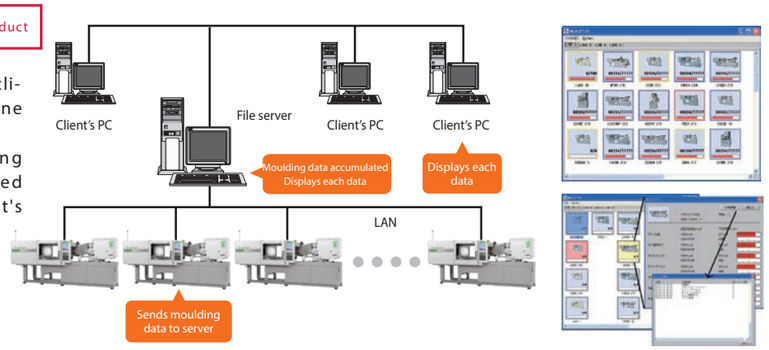
Online Function

V Connect

Optional product

The V Connect is installed in the client PC and the moulding machine is connected online.
This function is for displaying the following data of connected moulding machines on the client's PC.

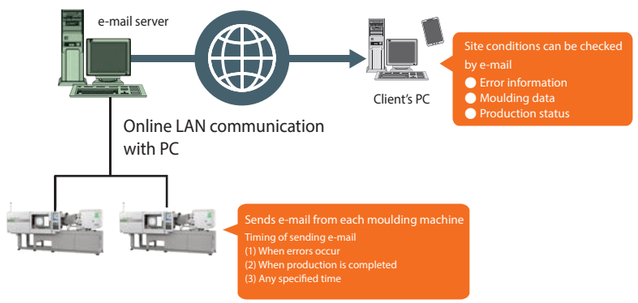
- Operating status
- Shot data
- Waveform data
- Moulding conditions
- Moulding conditions change history / error history



OTM-Mail

Optional product

The e-mail server is connected to the moulding machine via online.
This function is for transmitting e-mails to terminals, such as smart phones and PCs from the moulding machines via this e-mail server.



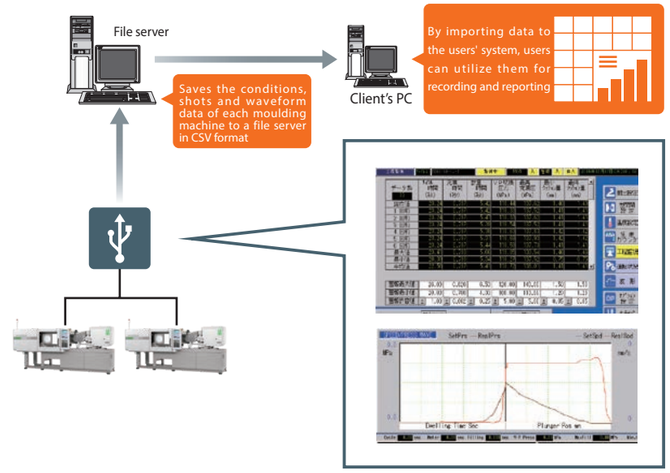
Offline Function

Wave Log

This function is for collecting the following various data as CSV data.

- Shot data
- Waveform data
- Moulding conditions

Standardly, the USB memory is directly connected to the moulding machine to collect the data.
The data can be controlled by connecting the USB memory to the client's PC and downloading the data into common spreadsheet software.

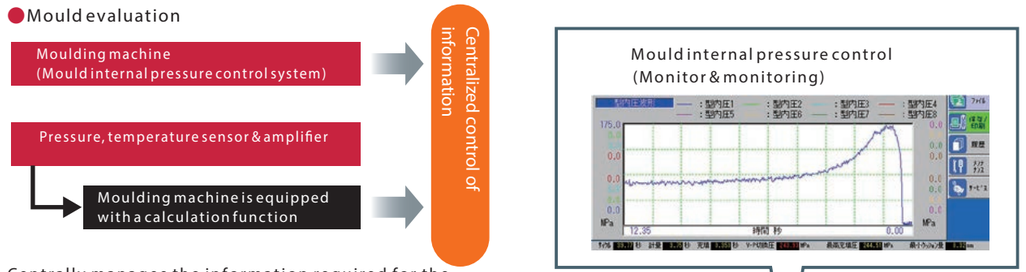


SSM Sodick Scientific Moulding

Optional product

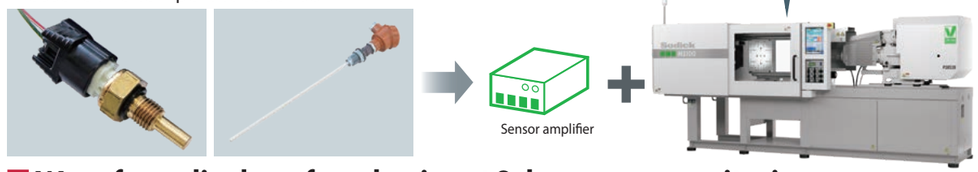
By quantifying behaviors of the resin in the mould, utilize the data for the following purposes:

- Setting of optimal moulding conditions
- Automatic sorting of defective products
- Quality control
- Mould evaluation

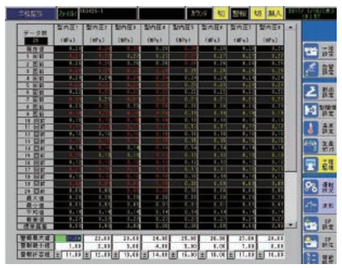


Centrally manages the information required for the calculations set for the sensor amplifiers of each sensor of the mould included in the moulding machine.

Pressure and temperature sensor



Waveform display of analog input 8ch, process monitoring and alarm setting are possible



Specification List

		eV-LINE Electric Machine											
		Small Size Machine	Medium Size Machine										
		mm03	MS50				MS100						
Clamping Unit	Mould Open / Close System	AC Servo Motor Control	AC Servo Motor Control				AC Servo Motor Control						
	Clamping System	Direct Pressure	Double Toggle				Double Toggle						
	Max. Clamping Force kN	29.4	490				980						
	Tie-bar Interval (W x L) mm	Tie-bar-less	360 x 360				460 x 420						
	Platen Dimension mm	275 x 250	500 x 500				640 x 610						
	Open Daylight mm	310	600				800						
	Min./Max. Mould Thickness mm	130	150 / 350				200 / 450						
	Mould Open / Close Force kN	1.5 / 3.1	——				——						
	Ejecting System	AC Servo Motor Control	AC Servo Motor Control				AC Servo Motor Control						
	Ejector Ejecting Force / Ejection Retention Force kN	2.1	20 / 9.3				20 / 9.3						
	Ejector Stroke mm	30	80				80						
Plasticization Injection Unit	Plasticization & Injection System	Screw Pre-plasticizing	Screw Pre-plasticizing				Screw Pre-plasticizing						
	Screw Diameter mm	14	22		25		28		28		32		40
	Plunger Diameter mm	10	22		28		28		40				
	Max. Injection Pressure MPa	180	220	285	175	235	215	285	160	215			
	Theoretical Injection Volume cm^3	3.1	53.2		98.5		98.5		251.3				
	Injection Rate cm^3/s	18.8	171	133	216	154	246	185	339	251			
	Plunger Stroke mm	40	140		160		160		200				
	Max. Injection Speed mm/s	240	450	350	350	250	400	300	270	200			
	Plasticizing Capacity kg/h	3.5	16	9	23	13	42	24	42	24	53	30	96	62
	Max. Screw Revolution min^{-1}	300	400	200	400	200	400	200	400	200	400	200	400	200
	Rated Screw Torque N·m	40	100	130	100	130	150	210	150	210	150	210	221	315
	Number of Temperature Control Zone	6	6			7			7			7		
	Heater Capacity kW	4.7	6.2	6.2	7.1	9.1			9.1	9.6	12.1	15.0		
	Nozzle Pressing Force kN	3.8	6.8			15.7			15.7			19.6		
	Unit Traveling Stroke mm	150	280						320					
Electric/Hydraulic Pressure	For Hydraulic Pump Motor Capacity kW	——	——						——					
	Hydraulic Circuit Pressure MPa	——	——						——					
	Tank Capacity ℓ	——	——						——					
	Motor Capacity for AC Servo kW	8.1	——						——					
Machine Dimension / Weight	Machine Dimensions (LxWxH) mm	2000 x 591 x 1630	3725 x 1155 x 1647						4240 x 1215 x 1688		4240 x 1215 x 1748		4474 x 1215 x 1765	
	Machine Weight kg	800	2900		3000				4000		4100		4300	

		Medium Size Machine			
		MS200			
Clamping Unit	Mould Open / Close System	AC Servo Motor Control			
	Clamping System	Double Toggle			
	Max. Clamping Force kN	1960			
	Tie-bar Interval (W x L) mm	560 x 560			
	Platen Dimension mm	720 x 720			
	Open Daylight mm	1000			
	Min./Max. Mould Thickness mm	250 / 550			
	Mould Open / Close Force kN	——			
	Ejecting System	AC Servo Motor Control			
	Ejector Ejecting Force / Ejection Retention Force kN	37.0 / 18.5			
	Ejector Stroke mm	120			
Plasticization Injection Unit	Plasticization & Injection System	Screw Pre-plasticizing			
	Screw Diameter mm	40		50	
	Plunger Diameter mm	40		50	
	Max. Injection Pressure MPa	200	275	200	
	Theoretical Injection Volume cm^3	251.3		392.7	
	Injection Rate cm^3/s	377	251	393	
	Plunger Stroke mm	200		200	
	Max. Injection Speed mm/s	300	200	200	
	Plasticizing Capacity kg/h	96	62	100	
	Max. Screw Revolution min^{-1}	400	200	200	
	Rated Screw Torque N·m	221	315	700	
	Number of Temperature Control Zone	7		7	
	Heater Capacity kW	15.0	16.8	19.1	
	Nozzle Pressing Force kN	19.6		25.4	
	Unit Traveling Stroke mm	365			
Electric/Hydraulic Pressure	For Hydraulic Pump Motor Capacity kW	——			
	Hydraulic Circuit Pressure MPa	——			
	Tank Capacity ℓ	——			
	Motor Capacity for AC Servo kW	——			
Machine Dimension / Weight	Machine Dimensions (LxWxH) mm	5353 x 1445 x 1918		5428 x 1445 x 1918	
	Machine Weight kg	8000	8200	8400	

		V-LINE® Electric Hybrid Machine			
		Small Size Machine			
		TR10EH3		TR20EH3	
Clamping Unit	Mould Open / Close System	AC Servo Motor Control		AC Servo Motor Control	
	Clamping System	Direct Pressure		Direct Pressure	
	Max. Clamping Force kN	98		196	
	Tie-bar Interval (W x L) mm	170 x 170		310 x 260	
	Platen Dimension mm	300 x 315		430 x 360	
	Open Daylight (Min. Mould Thickness + Max. Mould Opening Stroke) mm	300		400	
	Min./Max. Mould Thickness mm	120		150	
	Mould Open / Close Force kN	1.5 / 3.1		6.6 / 13.2	
	Ejecting System	AC Servo Motor Control		AC Servo Motor Control	
	Ejector Ejecting Force / Ejection Retention Force kN	1.47 / 0.88		7.3 / 4.3	
	Ejector Stroke mm	30		50	
Plasticization Injection Unit	Plasticization & Injection System	Screw Pre-plasticizing		Screw Pre-plasticizing	
	Screw Diameter mm	14	18	14	18
	Plunger Diameter mm	12		12	16
	Max. Injection Pressure MPa	197		288	262
	Theoretical Injection Volume cm^3	4.5		4.5	14
	Injection Rate cm^3/s	56		56	100
	Plunger Stroke mm	40		40	70
	Max. Injection Speed mm/s	500		500	
	Plasticizing Capacity kg/h	3.3	6.5	3.5	6.5
	Max. Screw Revolution min^{-1}	370		370	
	Rated Screw Torque N·m	59	78	59	98
	Number of Temperature Control Zone	5		5	
	Heater Capacity kW	4.9		4.6	5.0
	Nozzle Pressing Force kN	4.9		4.9	
	Unit Traveling Stroke mm	120		230	
Electric/Hydraulic Pressure	For Hydraulic Pump Motor Capacity kW	3.7		4.4	
	Hydraulic Circuit Pressure MPa	MAX.12.7		MAX.17.6	
	Tank Capacity ℓ	47.14		60	
	Motor Capacity for AC Servo kW	0.8		3.9	
Machine Dimension / Weight	Machine Dimensions (LxWxH) mm	2000 x 650 x 1495		2629 x 925 x 1681	
	Machine Weight kg	1000		2100	

- The specifications are subject to change without prior notice due to ongoing research.
- Maximum injection pressure, injection rate, and maximum injection speed are calculated values. These are subject to constraints of moulding conditions and cycles.

Specification List

		V-LINE® Electric Hybrid Machine								
		Medium Size Machine								
		GL30			GL60			GL100		
Clamping Unit	Mould Open / Close System	AC Servo Motor Control			AC Servo Motor Control			AC Servo Motor Control		
	Clamping System	Direct Pressure Locking Type			Direct Pressure Locking Type			Direct Pressure Locking Type		
	Max. Clamping Force kN	294 [392]*			588			980		
	Tie-bar Interval (W x L) mm	310 x 310			360 x 320			460 x 420		
	Platen Dimension mm	440 x 440			520 x 460			640 x 610		
	Open Daylight (Min. Mould Thickness + Max. Mould Opening Stroke) mm	550			650			800		
	Min./Max. Mould Thickness mm	150 / 360			200 / 390			250 / 550		
	Mould Open / Close Force kN	6.8 / 13.6			9.9 / 19.8			9.9 / 19.8		
	Ejecting System	AC Servo Motor Control			AC Servo Motor Control			AC Servo Motor Control		
	Ejector Ejecting Force / Ejection Retention Force kN	9.8 / 5.8			13.7 / 7.8			21.5 / 12.7		
	Ejector Stroke mm	50			80			100		
Plasticization Injection Unit	Plasticization & Injection System	Screw Pre-plasticizing			Screw Pre-plasticizing			Screw Pre-plasticizing		
	Screw Diameter mm	14	18	22	22	25	28	28	32	40
	Plunger Diameter mm	12	16	22	22	25	28	28	32	40
	Max. Injection Pressure MPa	288	262	260	260	240		240	220	210
	Theoretical Injection Volume cm^3	4.5	14	27	27	49	83	83	108	251
	Injection Rate cm^3/s	57	101	190	190	245	308	308	322	377
	Plunger Stroke mm	40	70		70	100	135	135		200
	Max. Injection Speed mm/s	500			500			500	400	300
	Plasticizing Capacity kg/h	4	7	14	10.5	20	30	30	40	44
	Max. Screw Revolution min^{-1}	400			400		300	300		240
	Rated Screw Torque N·m	59	98	147	147	202	235	235	331	411
	Number of Temperature Control Zone	5			5	6	7	7		
	Heater Capacity kW	4.7	5.1	6.2	6.2	6.7	10.3	10.3	11.0	17.3
	Nozzle Pressing Force kN	4.9			6.8		15.7	15.7		19.6
	Unit Traveling Stroke mm	280			320			400		
Electric/Hydraulic Pressure	For Hydraulic Pump Motor Capacity kW	3.0			3.0	4.4		4.4		6.0
	Hydraulic Circuit Pressure MPa	15			15			15		
	Tank Capacity ℓ	68			68	90		90		
	Motor Capacity for AC Servo kW	2.9			4.2			4.2		
Machine Dimension / Weight	Machine Dimensions (LxWxH) mm	3150 x 1030 x 1679			3685 x 1094 x 1679			4030 x 1196 x 1792		
	Machine Weight kg	2000			2700	2800		3100		3300

*: Mould clamping force [392kN] is an optional specification.

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V-LINE® Electric Hybrid Machine										
Medium Size Machine										
GL150			GL200			TR220EH3				
AC Servo Motor Control			AC Servo Motor Control			AC Servo Motor Control			Mould Open / Close System	Clamping Unit
Direct Pressure Locking Type			Direct Pressure Locking Type			Direct Pressure Locking Type			Clamping System	
1472			1960			2156			Max. Clamping Force kN	
560 x 520			560 x 560			660 x 610			Tie-bar Interval (W x L) mm	
720 x 680			680 x 680			780 x 730			Platen Dimension mm	
900			950			950			Open Daylight (Min. Mould Thickness + Max. Mould Opening Stroke) mm	
250 / 600			300 / 650			300 /650			Min./Max. Mould Thickness mm	
14.2 / 28.5			14.2 / 28.5			18.8 / 37.6			Mould Open / Close Force kN	
AC Servo Motor Control			AC Servo Motor Control			AC Servo Motor Control			Ejecting System	
28.8 / 17.6			28.8 / 17.6			36.1 / 21.6			Ejector Ejecting Force / Ejection Retention Force kN	
120			120			120			Ejector Stroke mm	
Screw Pre-plasticizing			Screw Pre-plasticizing			Screw Pre-plasticizing			Plasticization & Injection System	Plasticization Injection Unit
28	32	40	28	32	40	50			Screw Diameter mm	
28	32	40	28	32	40	50			Plunger Diameter mm	
240	220	210	240	220	210	219.5			Max. Injection Pressure MPa	
83	108	251	83	108	251	392			Theoretical Injection Volume cm^3	
308	322	377	308	322	377	589			Injection Rate cm^3/s	
135		200	135		200	200			Plunger Stroke mm	
500	400	300	500	400	300	300			Max. Injection Speed mm/s	
30	40	44	30	40	44	100			Plasticizing Capacity kg/h	
300		240	300		240	200			Max. Screw Revolution min^{-1}	
235	310	411	235	310	411	705			Rated Screw Torque N·m	
7			7			7			Number of Temperature Control Zone	
10.3	11.0	17.3	10.3	11.0	17.3	21.2			Heater Capacity kW	
15.7		19.6	15.7		19.6	25.4			Nozzle Pressing Force kN	
365			365			540			Unit Traveling Stroke mm	
4.4		6.0	4.4		6.0	7.5			For Hydraulic Pump Motor Capacity kW	Electric/Hydraulic Pressure
MAX.15			MAX.15			MAX.18.5			Hydraulic Circuit Pressure MPa	
90			90			169.4			Tank Capacity ℓ	
6.4			6.4			9.0			Motor Capacity for AC Servo kW	
4400 x 1378 x 1878			4505 x 1360 x 1990			5261 x 1641 x 1915			Machine Dimensions (LxWxH) mm	Machine Dimension / Weight
5000		5100	5800		5900	8000			Machine Weight kg	

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Specification List

		V-LINE® Electric Hybrid Machine								
		Medium Size Machine								
		TR300EH3		TR350EH3			TR450EH3			
Clamping Unit	Mould Open / Close System	AC Servo Motor Control		AC Servo Motor Control			AC Servo Motor Control			
	Clamping System	Direct Pressure Locking Type		Direct Pressure Locking Type			Direct Pressure Locking Type			
	Max. Clamping Force kN	2940		3430			4470			
	Tie-bar Interval (W x L) mm	730 x 660		820 x 820			820 x 820			
	Platen Dimension mm	940 x 870		1140 x 1140			1140 x 1140			
	Open Daylight (Min. Mould Thickness + Max. Mould Opening Stroke) mm	1200		1350			1350			
	Min./Max. Mould Thickness mm	300 / 700		450 / 950			450 / 950			
	Mould Open / Close Force kN	24.7 / 49.4		20.2 / 48.4(assist 294)			20.2 / 48.4(assist 294)			
	Ejecting System	AC Servo Motor Control		AC Servo Motor Control			AC Servo Motor Control			
	Ejector Ejecting Force / Ejection Retention Force kN	36.1 / 21.6		40.6 / 21.7			40.6 / 21.7			
	Ejector Stroke mm	150		150			150			
Plasticization Injection Unit	Plasticization & Injection System	Screw Pre-plasticizing		Screw Pre-plasticizing			Screw Pre-plasticizing			
	Screw Diameter mm	50	50L	50	50L	66	50	50L	66	
	Plunger Diameter mm	50	60	50	60	60L	50	60	60L	
	Max. Injection Pressure MPa	219.5	166.6	219.5	166.6	197	219.5	166.6	197	
	Theoretical Injection Volume cm^3	392	621	392	621	1017	392	621	1017	
	Injection Rate cm^3/s	589	847	589	847	565	589	847	565	
	Plunger Stroke mm	200	220	200	220	360	200	220	360	
	Max. Injection Speed mm/s	300		300		200	300		200	
	Plasticizing Capacity kg/h	100	110	100	110	190	100	110	190	
	Max. Screw Revolution min^{-1}	200		200			200			
	Rated Screw Torque N·m	705		705		1400	705		1400	
	Number of Temperature Control Zone	7	8	7	8	10	7	8	10	
	Heater Capacity kW	21.2	24.8	21.2	24.8	34.4	21.2	24.8	34.4	
	Nozzle Pressing Force kN	25.4		25.4			25.4			
	Unit Traveling Stroke mm	540		540			540			
Electric/Hydraulic Pressure	For Hydraulic Pump Motor Capacity kW	7.5		7.5		15(7.5x2)	7.5		15(7.5x2)	
	Hydraulic Circuit Pressure MPa	MAX.18.5		MAX.18.5			MAX.18.5			
	Tank Capacity ℓ	169.4		169.4			169.4			
	Motor Capacity for AC Servo kW	14.0		9.0			9.0			
Machine Dimension / Weight	Machine Dimensions (LxWxH) mm	5863 x 1660 x 1988	6000 x 1660 x 1988	5940 x 1760 x 2246	6030 x 1760 x 2246	6575 x 1760 x 2246	5940 x 1760 x 2246	6030 x 1760 x 2246	6575 x 1760 x 2246	
	Machine Weight kg	10000		15000		16000	15000		16000	

High-response Injection Model									
LP10EH3		LP20EH3		GL30-LP			GL60-LP		
AC Servo Motor Control		AC Servo Motor Control		AC Servo Motor Control			AC Servo Motor Control	Mould Open / Close System	Clamping Unit
Direct Pressure		Direct Pressure		Direct Pressure Locking Type			Direct Pressure Locking Type	Clamping System	
98		196		294〔392〕			588	Max. Clamping Force kN	
170 x 170		310 x 260		310 x 310			360 x 320	Tie-bar Interval (W x L) mm	
300 x 315		430 x 360		440 x 440			520 x 460	Platen Dimension mm	
300		400		550			650	Open Daylight (Min. Mould Thickness + Max. Mould Opening Stroke) mm	
120		150		150			200 / 390	Min./Max. Mould Thickness mm	
1.5 / 3.1		6.6 / 13.2		6.8 / 13.6			9.9 / 19.8	Mould Open / Close Force kN	
AC Servo Motor Control		AC Servo Motor Control		AC Servo Motor Control			AC Servo Motor Control	Ejecting System	
1.47 / 0.88		7.3 / 4.3		9.8 / 5.8			13.7 / 7.8	Ejector Ejecting Force / Ejection Retention Force kN	
30		50		50			80	Ejector Stroke mm	
Screw Pre-plasticizing		Screw Pre-plasticizing		Screw Pre-plasticizing			Screw Pre-plasticizing	Plasticization & Injection System	Plasticization Injection Unit
14	18	14	18	14	18	22	22	Screw Diameter mm	
8	12	12	16	12	16	22	22	Plunger Diameter mm	
197	288	288	262	288	262	260	260	Max. Injection Pressure MPa	
2	4.5	4.5	14	4.5	14	27	27	Theoretical Injection Volume cm^3	
75	146	146	160	146	160	190	190	Injection Rate cm^3/s	
40		40	70	40	70		70	Plunger Stroke mm	
1500	1300	1300	800	1300	800	500	500	Max. Injection Speed mm/s	
3.3	6.5	3.5	6.5	4.0	7.0	14.0	14	Plasticizing Capacity kg/h	
370		370		400			400	Max. Screw Revolution min^{-1}	
59	78	59	98	59	98	147	147	Rated Screw Torque N·m	
5		6		6			6	Number of Temperature Control Zone	
5.0		4.8	5.4	4.9	5.5	6.5	6.5	Heater Capacity kW	
4.9		4.9		4.9			6.8	Nozzle Pressing Force kN	
120		230		280			320	Unit Traveling Stroke mm	
3.7		4.4		3.0			3.0	For Hydraulic Pump Motor Capacity kW	Electric/Hydraulic Pressure
MAX.12.7		MAX.17.6		15			15	Hydraulic Circuit Pressure MPa	
47.14		60		68			68	Tank Capacity ℓ	
0.8		3.9		2.9			4.2	Motor Capacity for AC Servo kW	
2000 x 650 x 1504		2629 x 925 x 1681		3150 x 1030 x 1679			3685 x 1094 x 1679	Machine Dimensions (LxWxH) mm	Machine Dimension / Weight
1000		2100		2000			2700	Machine Weight kg	

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Specification List

			High Speed / High Pressure Model					
			GL60-HSP	GL100-HSP	GL150-HSP		GL200-HSP	
Clamping Unit	Mould Open / Close System		AC Servo Motor Control	AC Servo Motor Control	AC Servo Motor Control		AC Servo Motor Control	
	Clamping System		Direct Pressure Locking Type	Direct Pressure Locking Type	Direct Pressure Locking Type		Direct Pressure Locking Type	
	Max. Clamping Force	kN	588	980	1472		1960	
	Tie-bar Interval (W x L)	mm	360 x 320	460 x 420	560 x 520		560 x 560	
	Platen Dimension	mm	520 x 460	640 x 610	720 x 680		680 x 680	
	Open Daylight (Min. Mould Thickness + Max. Mould Opening Stroke)	mm	650	800	900		950	
	Min./Max. Mould Thickness	mm	200 / 390	250 / 550	250 / 600		300/ 650	
	Mould Open / Close Force	kN	9.9 / 19.8	9.9 / 19.8	14.2 / 28.5		14.2 / 28.5	
	Ejecting System		AC Servo Motor Control	AC Servo Motor Control	AC Servo Motor Control		AC Servo Motor Control	
	Ejector Ejecting Force / Ejection Retention Force	kN	13.7 / 7.8	21.5 / 12.7	28.8 / 17.6		28.8 / 17.6	
	Ejector Stroke	mm	80	100	120		120	
Plasticization Injection Unit	Plasticization & Injection System		Screw Pre-plasticizing	Screw Pre-plasticizing	Screw Pre-plasticizing		Screw Pre-plasticizing	
	Screw Diameter	mm	22	28	28		28	
	Plunger Diameter	mm	22	28	28		28	
	Max. Injection Pressure	MPa	343	343	343	420	343	420
	Theoretical Injection Volume	cm^3	27	83	83	61.5	83	61.5
	Injection Rate	cm^3/s	570	923	932	615	923	615
	Plunger Stroke	mm	70	135	135	100	135	100
	Max. Injection Speed	mm/s	1500	1500	1500	1000	1500	1000
	Plasticizing Capacity	kg/h	14	30	30		30	
	Max. Screw Revolution	min^{-1}	400	300	300		300	
	Rated Screw Torque	N·m	147	235	235		235	
	Number of Temperature Control Zone		5	7	7		7	
	Heater Capacity	kW	5.7	10.3	10.3	10.5	10.3	10.5
	Nozzle Pressing Force	kN	6.8	15.7	15.7		15.7	
	Unit Traveling Stroke	mm	320	400	365		365	
Electric/Hydraulic Pressure	For Hydraulic Pump Motor Capacity	kW	4.4	4.4	4.4 (Comp Spec: 6.0)		4.4 (Comp Spec: 6.0)	
	Hydraulic Circuit Pressure	MPa	MAX. 19	MAX. 19	MAX. 19		MAX. 19	
	Tank Capacity	ℓ	90	90	90		90	
	Motor Capacity for AC Servo	kW	4.2	4.2	6.4		6.4	
Machine Dimension / Weight	Machine Dimensions (LxWxH)	mm	4151x1094x1679	4714x1196x1792	5170x1378x1878		5275x1360x1990	
	Machine Weight	kg	2800	3400	5300		5900	

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Components List for eV-LINE Electric Machine (MS Series)

Major Standard Components	Plasticization Injection Unit	Wear and Corrosion Resistance (Type-N)
		High Temperature Heater (Plasticization, Injection), Nozzle Temperature Control Heater (60 to 420 °C)
		Purge Cover (with Interlock)
		Synchronous Heater TEMP Increase Function & Faulty Heater TEMP Increase (Heater Disconnection) Alarm Package
		Under-hopper Independent Temperature Control Unit
		Injection Setting Unit Selection Package (% or SI)
		Pressure Retention Unit Selection Package (0.1s, 0.01s or 0.001s)
		Injection Ejection Synchronized Multiple Tasks Package (Gate Cut System)
		Injection Response Change (Injection 5, Pressure Retention 4)
		PDT Setting (Pressure Drop Time)
		IPPUK Moulding
		Measurement and Mould Open Synchronous Multi-function (when Valve Gate Used)
		Plunger Retention Function after Measurement
		Check Valve for Holding Nozzle Touch Pressure
		Load Cell for Injection
		Injection Specifications (Pressure/Speed) Selection
		Plasticization Specifications (Torque/Rotation) Selection
	Mould Clamping Ejection Unit	Vibration-isolating Level Pads
		Ejector Ejecting Synchronized Function While the Mould is Open
		CR Setting Function (Mould Clamping Depressurization after Pressure Retention)
		Automatic Lubrication Unit
	Control Units and Others	Ground-fault Interrupter (200 mA)
		Carbide Generation Prevention Function (Alarm & Automatic Heat Retention Switching)
		Traverse Pick-up Unit Connection Circuit
		Wave Log
		Condition Change Disable Password
		Case Counter (Signal Output is Optional)
		Resin Stagnation Alarm (Compulsive Purge Function)
Optional Product	Plasticization Injection Unit	Injection Unit Forward/Backward Speed Variable Specification
		Cylinder Heat Retention Cover
		ZJ Heater and ZH Heater Temperature Control Unit
		450 °C heater (Injection & Plasticization Units)
	Mould Clamping Ejection Unit	Insulating Plate Thickness Options (5 or 10 mm) Heat Resistance Options (200 or 400 °C)
		Mould Ejector Plate Return Confirmation Connection Circuit & Metal Connector *1
		Mould Slide Return Confirmation Connection Circuit & Metal Connector *1
		Falling Sensor & Camera Monitoring System Connection Circuit (Terminal Block)
		Platen Adaptor (Movable Platen) / 40mm Extendable Ejector Rod
		Pickup During Mould Opening (During Mould Opening, Mould Opening Limit Signal Output)
		Vacuum Draw Connection Circuit, Vacuum Draw Drive Unit, Vacuum Draw System
		Specification with Motor Brake for Mould Open/Close
		Locating Ring Adapter
		Increased Mould Open/Close Motor Capacity for High Cycle (MS100/MS200)
		Mould Clamping Tie-bar Sensor

Optional Product	Control Units and Others	Tricolor Signal Light
		External Receptacles[*2] A 200V30A①/200V20A③/100V10A②
		External Receptacles[*2] ES (-B[*3]) 200V30A①/200V20A①
		External Receptacles[*2] EL (-B[*3]) 200V30A①/200V20A④
		External Receptacles N 100V10A①
		Power Strip Type Receptacle (3m) 200V 30A (2) / 200V 20A (2) Note: Connect to 30A Receptacle
		Ground-fault Interrupter for External Receptacles (30 mA)
		Case Counter Package (Case Changing Signal & Production Complete Signal Terminals)
		Automatic Alarm & Counter ON Package
		Stop Timer Unit dedicated for Hydraulic Motor after Error Stop
		Color (Overall/for Safety Door Only) Selection
		Auxiliary Units 1.2.3 Abnormal Tri-input Stop Signal
		Water Unavailable, Air Unavailable Alarms
		V Connect
		SMDL (USB Flight Recorder)
		Logic I/O
		Mould Internal Pressure Control Function (8 Channels)
	Auxiliary Units	Mould Cooling Water Manifold (Select from 4/8 Channels)
		Reverse Chute Connection Circuit
		Conveyor Start Position Contact Signal Connection Circuit (Forward and Reverse Rotation Commands)
		Product Falling Chute
		Core Rotation Signal Terminal Block
		Core Rotation Power Unit
		Pick-up Unit Base
		Mould Heater Temperature Control Connection Circuit (2/4kW x 2/3/4 Circuit) Selection with Current Detection and Disconnection Alarm
		Mould (Hot Runner) Temperature Monitoring Thermocouple Connection Circuit
		Hot Runner Temperature Control Connection Circuit (2 kW/2 Circuits)
		Mould Thermocouple (Non-grounded Type) Select from ϕ 2.3/4.8 x 2000/3000 mm
		Mould Thermocouple Holder (Select from ϕ2.3/ϕ4.8)
		Hot Runner Valve Gate Signal (1 Contact Output)
		Air Ejector Connection Circuit (Select from 1/2 Channels) (Terminal Block)
		Hydraulic Core Tractor Connection Circuit & Drive Unit (Solenoid Valve) (Select from 1/2 Channels)
		Pneumatic Core Tractor Connection Circuit & Drive Unit (Solenoid Valve) (Select from 1/2 Channels)
		Machine Body Height Increase (100 mm)
	Special Support	Wear and Corrosion Resistance (Type-S)
		Optical Lens Specifications (Type 5)
		Specification for Safety Standards of All Countries[*4] (GB (China / KCS (Korea))
	Procurement Items from Other Vendors	Mould Clamp (8 Pieces/Set)
		Hopper (Select from 7/20/40ℓ) (Rotary)
		Additional Ejector Rod
		Cable for Data Logging
		Grease Cartridge LHL-X100-7 (700 cc)

■ Contact Sodick for the mm03 components.

*1: Terminal block is selectable *2: Receptacles made by American Denki Co., Ltd. are selectable
*3: (-B) (interlocking/non-interlocking batch switching type) *4: JIMS (Japan) specification is standard

Components List for V-LINE® Electric Hybrid Machine (EH3 Series, GL Series)

			TR10EH3 / TR20EH3		GL		TR220EH3-TR450EH3	
			STD	OP	STD	OP	STD	OP
Standard	Plasticization Injection Unit	Wear and Corrosion Resistance (Type 1)	●		●*1		●	
		High Temperature Heater (Plasticization, Injection), Nozzle Temperature Control Heater (60 to 420 °C)	●		●		●	
		Accumulator	●		●		●	
		Purge Cover (with Interlock)	●		●		●	
		Synchronous Heater TEMP Increase Function & Faulty Heater TEMP Increase (Heater Disconnection) Alarm Package	●		●		●	
		Under-hopper Independent Temperature Control Unit	●		●		●	
		Injection Setting Unit Selection Package (% or SI)	●		●		●	
		Pressure Retention Unit Selection Package (0.1s, 0.01s or 0.001s)	●		●		●	
		Injection Ejection Synchronized Multiple Tasks Package (Gate Cut System)	●		●		●	
		Injection Response Change (Injection 5, Pressure Retention 4)	●		●		●	
		PDT Setting (Pressure Drop Time)	●		●		●	
		IPPUK Moulding	●		●		●	
		Plunger Retention Function after Measurement	●		●		●	
	Mould Clamping Ejection Unit	Vibration-isolating Level Pads	●		●		●	
		Ejector Ejecting synchronized Function While the Mould is Open	●		●		●	
		CR Setting Function (Mould Clamping Depressurization after Pressure Retention)	●		●		●	
	Control Units and Others	Ground-fault Interrupter (200mA)	●		●		●	
		External Receptacles 200V20A× ② ,100V10A× ①	●*2		●*3		●	
		Data Logging Inter face Unit	●		●		●	
		Carbide Generation Prevention Function (Alarm & Automatic Heat Retention Switching)	●		●		●	
		Traverse Pick-up Unit Connection Circuit	●		●		●	
		Icon Display	●		●		●	
		Wave Log	●		●		●	
		Condition Change Disable Password	●		●		●	
		Case Counter (Signal Output is Optional)	●		●		●	
		Resin Stagnation Alarm (Compulsive Purge Function)	●		●		●	
Optional	Plasticization Injection Unit	Injection Unit Forward/Backward Speed Variable Specification		●		●		
		Injection and Mould Clamping Synchronizing Multi-function (Injection Inter- locked with Mould Clamping)		●		●		●
		Measurement and Mould Open Synchronous Multi-function (When Valve Gate Used)		●		●		
		Cylinder Heat Retention Cover		●		●		●
		ZJ Heater and ZH Heater Temperature Control Unit		●		●		●*4
		LCP Nozzle		●		●*5		
		Backflow Prevention Compulsive Back		●		●		
	Mould Clamping Ejection Unit	Automatic Lubrication Unit				●	●	
		Insulating Plate Thickness Options (5 or 10 mm) Heat Resistance Options (200 or 400 °C)		●		●		●
		Mould Ejector Plate Return Confirmation Connection Circuit & Metal Connector		●		●*6		●
		Mould Slide Return Confirmation Connection Circuit & Metal Connector		●		●*6		●
		Falling Sensor & Camera Monitoring System Connection Circuit (Terminal Block)		●		●		●
		Platen Adaptor (Movable Platen) / 40mm Extendable Ejector Rod				●		●*7
		Pickup During Mould Opening (During Mould Opening, Mould Opening Limit Signal Output)		●		●		●
		Vacuum Draw Connection Circuit, Vacuum Draw Drive Unit, Vacuum Draw System		●		●		●
		Specification with Motor Brake for Mould Open/Close				●		●
		Hydraulic Core Tractor Drive Unit for Mould Open Drive (Select from 2/4 Channels)				●*8		●
		Locating Ring Adapter		●		●		●

*1: GL Series is a type-N *2: External receptacle A *3: GL Series has no 100V 10A x (1)
*4: P60LS66 is a standard specification *5: GL30/GL60 *6: Terminal block of GL Series is selectable
*7: 50 mm specification for TR220EH3 only *8: Not available for GL30

			TR10EH3 / TR20EH3		GL		TR220EH3-TR450EH3	
			STD	OP	STD	OP	STD	OP
Optional	Control Units and Others	Tricolor Signal Light		●		●		●
		External Receptacles*9A 200V30A ① /200V20A ③ /100V10A ②	●		●		●	
		External Receptacles*9B 200V30A ① /200V20A ③ /100V10A ② (Interlocking/Non-interlocking Batch Switching Type)		●				●
		External Receptacles*9C 200V60A ① /200V30A ① /100V10A ②						●
		External Receptacles*9D 200V60A ① /200V30A ① /100V10A ② (Interlocking/Non-interlocking Batch Switching Type)						●
		External Receptacles*9ES (-B*10) 200V30A ① /200V20A ①				●		
		External Receptacles*9EL (-B*10) 200V30A ① /200V20A ④				●		
		External Receptacles N 100V10A ①				●		
		Power Strip Type Receptacle (3m) 200V30A (2) /200V20A (2) Note: Connect to 30A Receptacle		●		●		●
		Ground-fault Interrupter for External Receptacles (30mA)		●		●		●
		Case Counter Package (Case Changing Signal & Production Complete Signal Terminals)		●		●		●
		Automatic Alarm & Counter ON Package		●		●		●
		Stop Timer Unit dedicated for Hydraulic Motor after Error Stop		●		●		●
		Condition Change Disable Key		●				●
		Color (Overall/for Safety Door Only) Selection		●		●		●
		Auxiliary Units 1.2.3 Abnormal Tri-input Stop Signal		●		●		●
		Water Unavailable, Air Unavailable Alarms		●		●		●
		V Connect		●		●		●
		SMDL (USB Flight Recorder)		●		●		●
		Power Display Screen		●				●
		Logic I/O		●		●		●
		Mould Internal Pressure Control Function (8 Channels)		●		●		●
	Auxiliary Units	Mould Cooling Water Manifold (Select from 4/8 Channels)		●		●		●
		Reverse Chute Connection Circuit		●		●		●
		Reverse Chute Unit (with Connection Circuit, Device, Unit)		●		●		
		Conveyor Start Position Contact Signal Connection Circuit (Forward and Reverse Rotation Commands)		●		●		●
		Product Falling Chute		●		●		●
		Core Rotation Signal Terminal Block		●		●		●
		Core Rotation Power Unit		●		●		●
		Pick-up Unit Base		●		●		●*11
		Mould Heater Temperature Control Connection Circuit (2/4 kW x 2/3/4 Circuit) Selection with Current Detection and Disconnection AlarmWith Current Detection and Disconnection Alarm		●		●		●
		Mould (Hot Runner) Temperature Monitoring Thermocouple Connection Circuit		●		●		●
		Hot Runner Temperature Control Connection Circuit (2 kW/2 Circuits)		●		●		●
		Mould Thermocouple (Non-grounded Type) Select from ϕ 2.3/4.8 x 2,000/3,000 mm		●		●		●
		Mould Thermocouple Holder (Select from ϕ 2.3/ ϕ 4.8)		●		●		●
		Hot Runner Valve Gate Signal (1 Contact Output)		●		●		●
		Air Ejector Connection Circuit (Select from 1/2 Channels) (Terminal Block)		●		●		●
		Static Neutralization System		●				
		Hydraulic Core Tractor Connection Circuit & Drive Unit (Solenoid Valve) (Select from 1/2 Channels)		●		●		●
		Pneumatic Core Tractor Connection Circuit & Drive Unit (Solenoid Valve) (Select from 1/2 Channels)		●		●		●
		Machine Body Height Increase (100mm)		●		●		●
		RJG Interface		●		●		●
	Special Support	High Wear and Corrosion Resistance (Type 2)		●		●*12		●
		Super High Wear and Corrosion Resistance (Type 3)		●				●
		Optical Lens Specifications (Type 5)		●		●		●
		Check Valve for Holding Nozzle Touch Pressure				●		
		Specification for Safety Standards of All Countries*13 (GB (China / KCS (Korea) / USA)		●		●		●
	Procurement Items from Other Venders	Mould Clamp (8 Pieces/Set)		●		●		●
		Hydraulic Fluid (S3VE46 and S4ME46)		●		●		●
		Hopper (Select from 7/20/40l) (Rotary)		●		●		●
		Cable for Data Logging		●		●		●

*9: Receptacles made by American Denki Co., Ltd. are selectable *10: (- B) (Interlocking/non-interlocking batch switching type) *11: TR220EH3 only
*12: GL Series is a type-N *13: JIMS (Japan) specification is standard

Horizontal Injection Moulding Machine

Sodick

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