NISSEI®

CATALOG 1402

Development Concept Focusing on Production Site

TH-E

ELJECT

ELECTRIC VERTICAL INJECTION MOLDING MACHINES

TH-E ***SERIES***

TH20E2VEII

TH40E5VEII

TH70E5VEII

TH70E9VEII

TH-E NEW SERIES

The All-New Electric Vertical Injection Molding Machine (Single-Stage Type)

TH20E-2VEⅡ
(Equipped with options)

Single-Stage Vertical Injection Molding Machine Ideal for High-Cycle Thin Hoop Molding

Electric vertical injection molding machine TH-E Series is ideal for high-cycle thin hoop molding. It offers the advantages of energy-saving clean operation of electric type machines backed by Nissei's abundant experience in time-tested hydraulic type vertical machines.

Excellent Energy-Saving, High-Precision Control, and High-Cycle Molding Materialized

Considerations for operability and safety

Higher safety is materialized without compromising excellent operability.

- Front & sides transparent type safety doors (with interlocks), backside fixing cover, and two mold cooling circuits with return stop valves
- Stagnant material flow prevention function that effectively prevents mistakes during hoop change
- Mold center plate confirmation function
  ＊Mold side sensor needs to be prepared separately.
- High-sensitivity mold protection function that protects mold with "ultra high-speed reaction"
- Capability in equipping "mold mount assisting stand and pre roller," which improve workability for mold installation OPTION
- Mold positioning pin hole and positioning block OPTION
- Capability in equipping "runner shooter" and "conveyor," which may be required depending on mold size and positional relationship to a take-out robot OPTION

Thin-walled molding with a high-speed high-response injection unit

Moldable range has been expanded further, responding to the addressed needs from customers on the shop floors.

- Faster injection velocity
  Maximum injection velocity: 500mm/s (2VEⅡ and 5VEⅡ)
- A selection of Φ19 screw added to the 5VEII injection types (previously, ϕ22 and ϕ26 only) SELECT
- Newly-equipped hydraulic nozzle moving device that materializes a compact unit with high-precision nozzle touch

Increasing productivity by shortening the cycle

A variety of functions that permit high-cycle molding are equipped to materialize higher productivities.

- Simultaneous mold and nozzle movements that shorten the cycle for nozzle iteration molding
- Permission for a take-out robot to enter the mold opening (by insert robot) and ejector operation during mold open
  ＊Please be careful not to damage the take-out robot, mold, and insert robot.
- Mold clamping lock circuit release function during automatic run OPTION
  ＊Depending on the mold open stop time, it may cause clamp overload in some cases.
- Increased rear barrel heat capacity OPTION
- Anti-vibration mounting pads that support high-cycle molding OPTION

Selectable upper mold ejectors

Ejector specifications according to molding needs can be selected: air-driven type is ideal for high-cycle molding, and hydraulic-driven type is ideal for requiring stronger force. OPTION

Model			TH20E-VEⅡ	TH40E-VEⅡ	TH70E-VEⅡ
22 (Center injection ・single-stage・air type) one each for left & right	Ejector rod diameter	mm	20	20	20
	Ejector stroke	mm	28	28	28
	Ejector pitch	mm	230	230	300
	Ejector force	**kN**	**3**	**3**	**3**
23 (Center injection ・single-stage・ hydraulic type) one each for left & right	Ejector rod diameter	mm	20	20	20
	Ejector stroke	mm	28	28	28
	Ejector pitch	mm	230	230	300
	Ejector force	**kN**	**22**	**22**	**22**

＊Simultaneous motion with nozzle movement is not available for the hydraulic-drive type.

Considerations for interfacing and linking with an insert robot

Nissei proposes high-value-added optimum molding systems for clients as well as providing solutions for various needs, such as rationalizing production processes and opening up new possibilities for productions.

- Fully automatic run capability
- 8 terminals for each input and output, including standard I/O OPTION

Input Terminal
Clamping I/L, mold open I/L, cycle start, ejector forward start, insert robot error (cycle stop and immediate stop), insert robot automatic run, and system cover.

Output Terminal
Safety door closed, mold open limit, clamping complete, ejector backward limit, ejector forward complete, automatic, hoop release (mold position setting), and error stop.

An example of recommended hoop molding setup with TH-E Series

An example of TH20E hoop molding system
(machine: older type)

TH-E SERIES Performance Specifications

Model				TH20E		TH40E			TH70E				
Specification item			Unit	2VE II		5VE II			5VE II			9VE II	
Injection	Screw diameter		mm	16	19	19	22	26	19	22	26	28	32
	Injection capacity		cm^3	13	18	23	35	49	23	35	49	69	90
	Plasticizing capacity (PS)		kg/h	8	13	11	16	23	11	16	23	28	40
	Max. injection pressure		MPa	255	196	265	255	196	265	255	196	243	186
	Injection rate	Standard	cm^3/s	101	142	142	190	265	142	190	265	185	241
		High-velocity	cm^3/s										
		High-load	cm^3/s	70	99	99	133	185	99	133	185	148	193
	Injection velocity	Standard	mm/s	500		500			500			300	
		High-velocity	mm/s										
		High-load	mm/s	350		350			350			240	
	Screw speeds		rpm	0～400		0～350			0～350			0～300	
	Nozzle touch force		kN	12		12			12			12	
	Hopper capacity (optional)		L	10		10			10			15	
Clamping	Clamping force		**kN**	**196**		**392**			**686 (784)**			**686 (784)**	
	Clamping stroke		mm	200		240			250			250	
	Mold thickness (Min.～Max.)		mm	170～270		190～290			230～350			230～350	
	Max. daylight opening		mm	470		530			600			600	
	Tie bar clearance (H×V)		mm	310×310		360×360			420×420			420×420	
	Die plate dimensions (H×V)		mm	460×460		520×520			607×607			607×607	
	Min. mold dimensions (H×V)		mm	215×215		255×255			295×295			295×295	
	Ejector force		kN	10		17			20			20	
	Ejector stroke		mm	40		40			60			60	
Electrical & others	Heater band capacity		kW	2.96	3.37	4.48	4.96	5.73	4.48	4.96	5.73	6.23	
	Hydraulic oil quantity		L	9		9			9			9	
	Main breaker capacity		A	50		50			60			60	
	Machine dimensions (L×W×H)		m	1.50×1.37×2.89		1.59×1.42×3.41			1.82×1.52×3.64			1.82×1.52×4.02	
	Floor dimensions (L×W)		m	1.35×1.27		1.47×1.33			1.70×1.44			1.70×1.44	
	Machine weight		t	2.35		2.85			3.90			4.30	

- The clamping force of TH70E can be increased to 784kN (80tf) (optional).
- Actual plasticization capacity may vary, depending on the molding conditions and materials.
- Maximum injection pressures indicate the maximum outputs of the injection units, not the resin pressures.
- Maximum injection pressures are the highest values that can be set on the machines. These values may be limited, depending on the molding conditions.
- Maximum injection rates in the tables are the estimated values that were derived from a formula, and these are not guaranteed values when the maximum injection pressures are reached.
- Clamping forces may be reduced if molds smaller than indicated minimum mold sizes are used.
- Main breaker capacities include auxiliary outlet circuits, which are provided as standard equipment.
- Specifications are subject to change without notice due to continuous performance improvement.
- 1MPa ≒10.2kgf/cm^2 ≒10kgf/cm^2, 1kN ≒ 0.102tf ≒ 0.1tf

[Standard Specifications]

▼Clamping unit/mold

1 Mold protection (low-pressure clamping time monitor) and high-sensitivity mold protection (torque monitor)
2 Mold clamping halfway slowdown (three plate mold and angular pin mold mounting capability)
3 Ejector plate return confirmation (for circuit only)
4 Mold protection error reconfirmation circuit (motion selection when an error occurs)
5 Mold opening pause
6 Simultaneous mold and nozzle movement
7 Processing inside mold ・MIP
8 Middle plate confirmation input (for circuit only) and middle plate movement confirmation during mold open/close
9 Take-out robot entry timing selection (mold open limit/arbitrary position)
10 CPN3 (primary clamping→injection filling→specified injection position or specified injection pressure reached→secondary clamping)

▼Injection unit

1 Injection process control: 6-speed, 3-pressure, and 3-limit pressure
2 V-P changeover: 4 modes (position, VPV, injection pressure, and external input signal)
3 Holding pressure control: 4 modes (pressure, positioning, pressure→positioning, and positioning→pressure)
4 Over packing prevention circuit
5 Decompression/decompression before metering
6 Purging cover (with interlock)
7 Barrel heat radiation/burn prevention cover
8 3 back pressures and 3 metering speeds
9 Nozzle backward start timer/metering start timer
10 Hopper throat temperature control
11 Hydraulically driven nozzle movement
12 Automatic purging circuit
13 Screw cold start prevention (all-zone sequential type)
14 Nozzle & barrel temperature upper/lower limit alarm and nozzle & barrel temperature PID control
15 Simultaneous heating of nozzle and barrel
16 Stagnant material flow prevention function
17 Nozzle and barrel heater circuit SSR
18 Nozzle and barrel heat retention circuit (forced heat retention and heat retention when an error occurs)

▼Molding system control/production management

1 Full-automatic operation switch capability
2 TACT (12.1-inch LCD)
3 Shot counter/free shot counter
4 Production management counter／production lot management counter (signal output is optional)／cause-classified defective counter
5 Monitor data display
6 Statistic processing function
7 Monitor data pass/fall judgement function (with batch data entry of the condition)
8 Selection of unit setting (injection pressure, injection velocity, injection position, metering speed, temperature, clamping force, and back pressure)
9 Take-out robot interface (8 terminals for each input and output)
10 Barrel heat up (calendar timer)
11 Molding condition and image data set management ("jpeg" or "bmp")
12 Molding condition internal memory (up to 300 conditions)
13 Built-in LAN connector (10/100 BASE-TX)
14 USB port (x1)
15 Saving data to an external USB drive
16 Connection to PC
17 Display of injection velocity and pressure waveform
18 Operation history display (1,000 items)
19 Multilingual display capability (English, Japanese, Chinese, Spanish, Korean, and Thai)
20 Hour meter (molding machine total operation time display)／clock function／calculator function
21 Servomotor load monitor
22 Ladder programming function (4 I/O signals programmable)
23 Signal recorder
24 Alarm (notification) function
25 Display of error ／emergency power shutdown／cycle alarm

▼Cooling

1 Cooling water distribution valves: material feeding port x1 and mold x2 (with return stop valve)

▼Operation safety

1 Alarm lamp／alarm buzzer／clamping alarm buzzer
2 Emergency stop button
3 High-pressure clamping and nozzle touch release confirmation when turning off the operation power
4 Mold clamping safety device (mechanical/electrical)
5 Front and sides door type transparent safety cover (with interlocks)
6 Backside fixing cover

▼Power

1 AC outlet

▼Maintenance, installation, and others

1 Automatic centralized greasing unit (toggle and injection sliding parts)
2 Automatic centralized lubrication unit (tie bar bush and injection unit sliding parts)

[Optional Specifications]

▼Clamping unit/mold

1 Daylight extension
2 Locating ring diameter change （center injection）
3 Locating ring attachment (non-fixed type or fixed type)*
4 Mold positioning pin/block
5 Mold automatic clamp (hydraulic/air/magnetic)
6 Mold installation assist (SAT Clamp and Easy Clamp)
7 Mold mounting stand (consultation required)
8 Additional mold mounting bolt hole*
9 Insulation plate
10 Mold close pause
11 Upper mold ejector (hydraulic/air)
12 Ejector plate return confirmation (for metal interface box)
13 Mold temperature control (without thermocouple)
14 Mold temperature upper/lower limit alarm
15 Mold heater disconnection alarm (monitoring of the heater's electrical current)

▼Injection unit

1 Special-purpose nozzle, screw, screw tip, barrel, and barrel head (consultation required)
2 Nozzle and barrel heater disconnection alarm (monitoring of electrical current)
3 Large-capacity rear barrel heater
4 Air type shutoff nozzle*/spring shutoff nozzle
5 Hopper／hopper slider

▼Molding system control/production management

1 Air blow
2 Hydraulic core pull/air type core pull (consultation required)
3 Runner ejection shooter (consultation required)
4 Insert robot interface (consultation required, 8 terminals for each input and output)
5 AC outlet and electrical current to the mold heater (calendar timer)
6 USB flash drive
7 SPC function (molding machine process management by statistical method)

▼Cooling

1 Cooling water filter (Y strainer)
2 Additional cooling water circuit
3 Cooling water circuit (with flow checker)
4 Cooling circuit/return stop valve (standard for mold circuit)

▼Operation safety

1 Alarm bell
2 Alarm lamp with a stand
3 Rotating beacon (Patlite) or layered indicator lamp (signal tower)
4 Password protection of mold data
5 Lateral opening type automatic safety door open/close
6 Two-hand activated push-button switch

▼Power

1 Main power breaker or main power leakage breaker
2 Additional auxiliary AC outlet

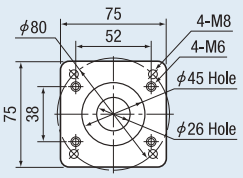
▼Maintenance, installation, and others

1 Custom paint （contact us to specify the area to be painted）*
2 Mounting pad
3 Tools
4 Hydraulic oil (20L) ＊

＊This is a hydraulically driven nozzle movement. Customers must arrange the hydraulic oil, or it can be purchased from Nissei.

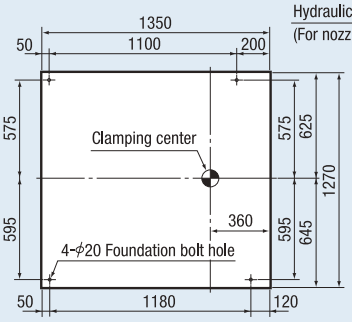
Delivery time for * specifications may take longer. Please contact us for more details.

EXTERNAL VIEW

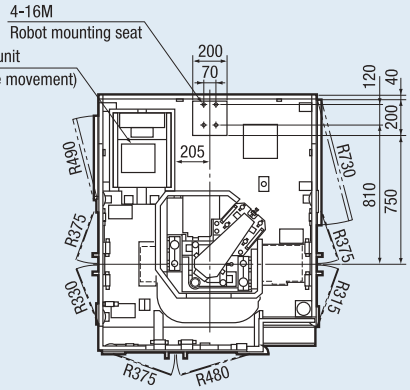


Hopper fixation diagram (View A)

* In order to prevent material clogging and ensure stable plasticization, please use the shortest possible pipe to the hopper mounting section when a glass tube hopper (auxiliary equipment) is being used.



Foundation diagram



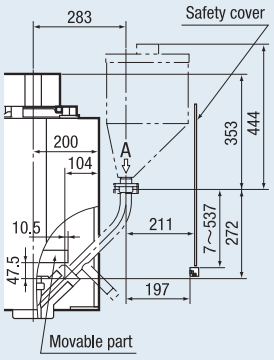
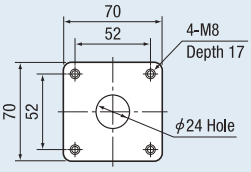
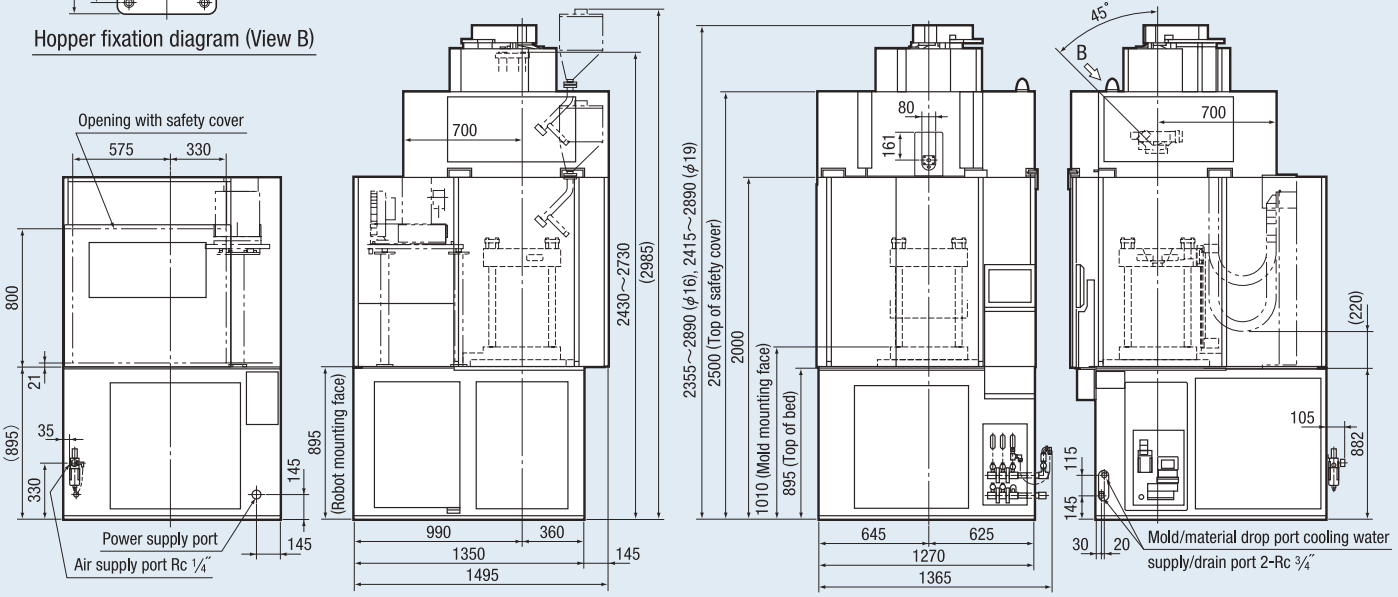


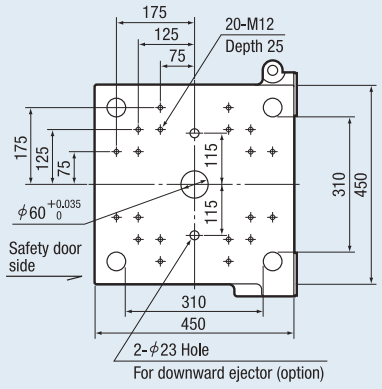
Diagram of hopper installation sections



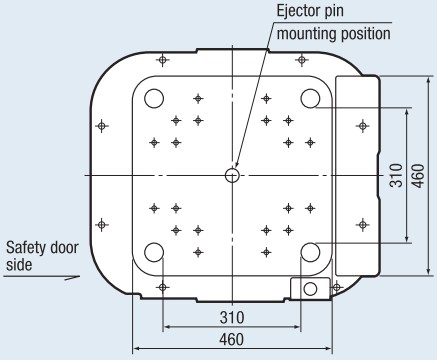
Hopper fixation diagram (View B)



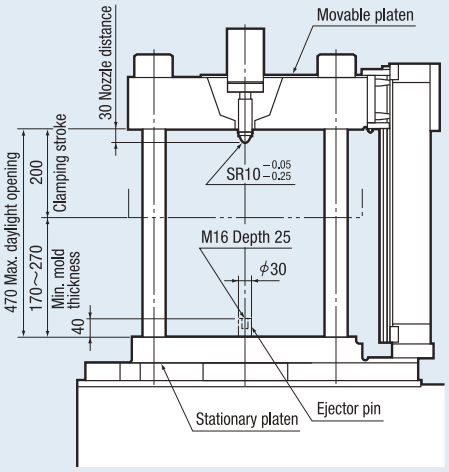
MOLD ATTACHMENT DIAGRAM



Movable platen

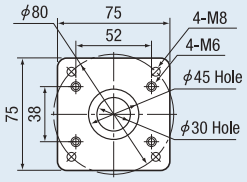


Stationary platen



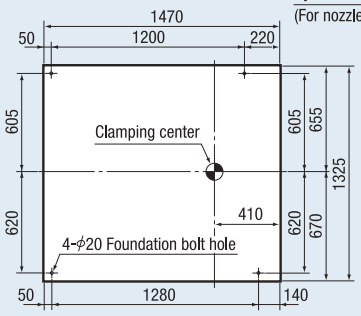
* The minimum mold dimensions of 215mm (H) × 215mm (V) are required in order to endure the maximum clamping force.

EXTERNAL VIEW

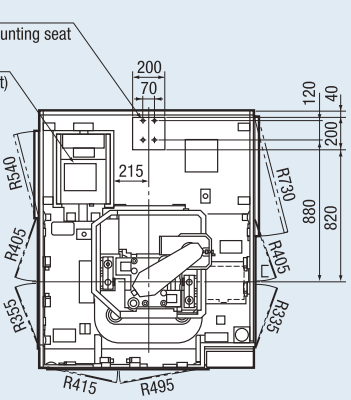


Hopper fixation diagram (View A)

* In order to prevent material clogging and ensure stable plasticization, please use the shortest possible pipe to the hopper mounting section when a glass tube hopper (auxiliary equipment) is being used.



Foundation diagram



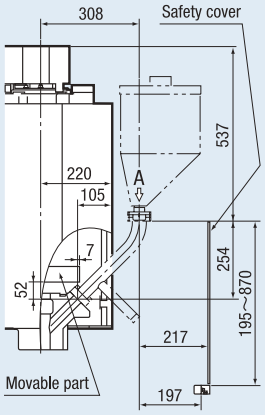
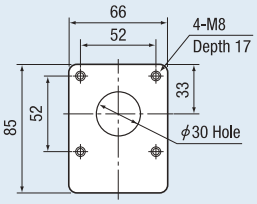
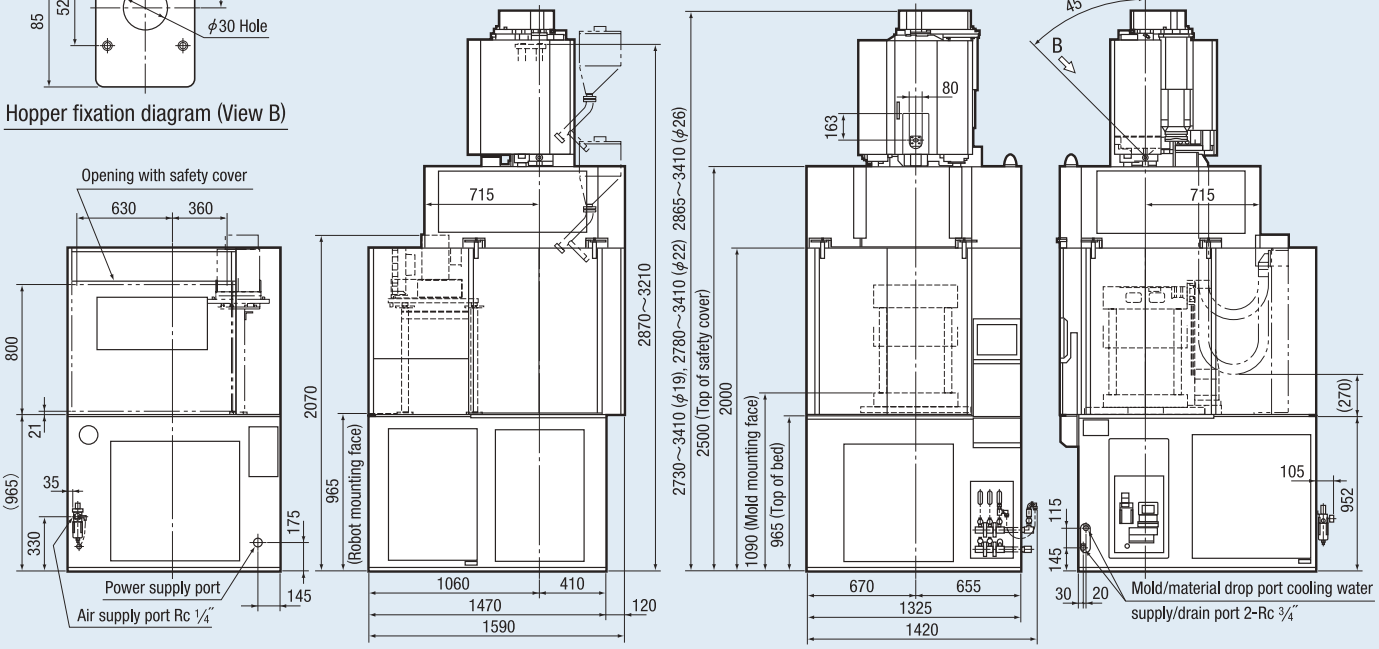


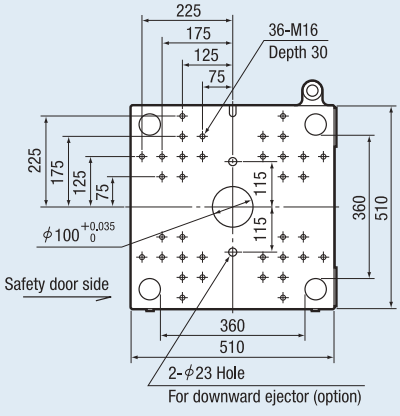
Diagram of hopper installation sections



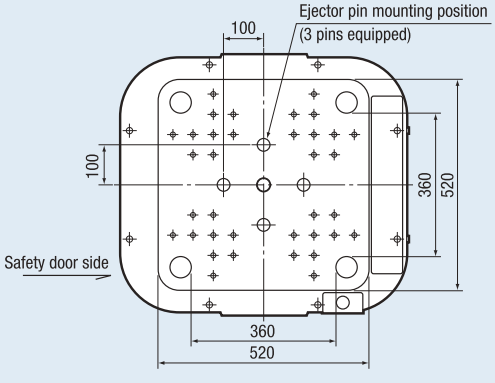
Hopper fixation diagram (View B)



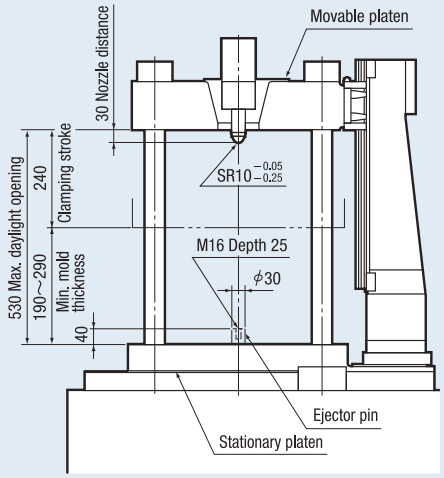
MOLD ATTACHMENT DIAGRAM



Movable platen

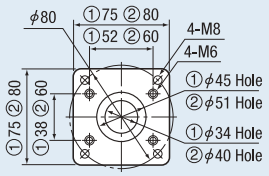


Stationary platen



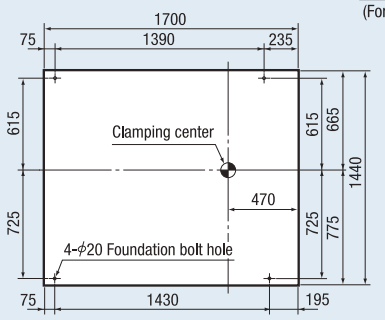
* The minimum mold dimensions of 255mm (H) × 255mm (V) are required in order to endure the maximum clamping force.

EXTERNAL VIEW

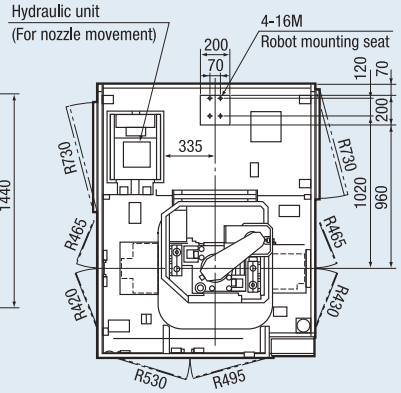


Hopper fixation diagram (View A)

＊In order to prevent material clogging and ensure stable plasticization, please use the shortest possible pipe to the hopper mounting section when a glass tube hopper (auxiliary equipment) is being used.



Foundation diagram



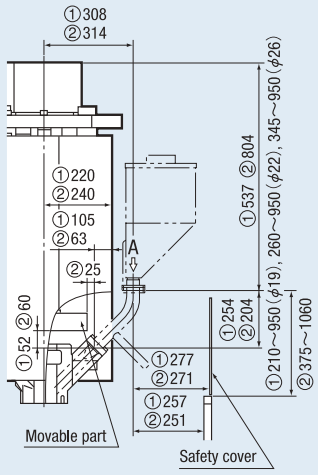
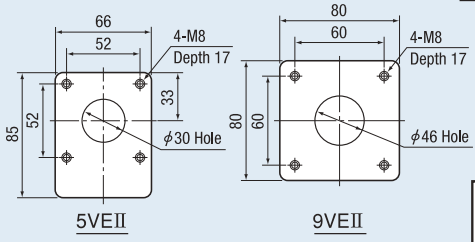
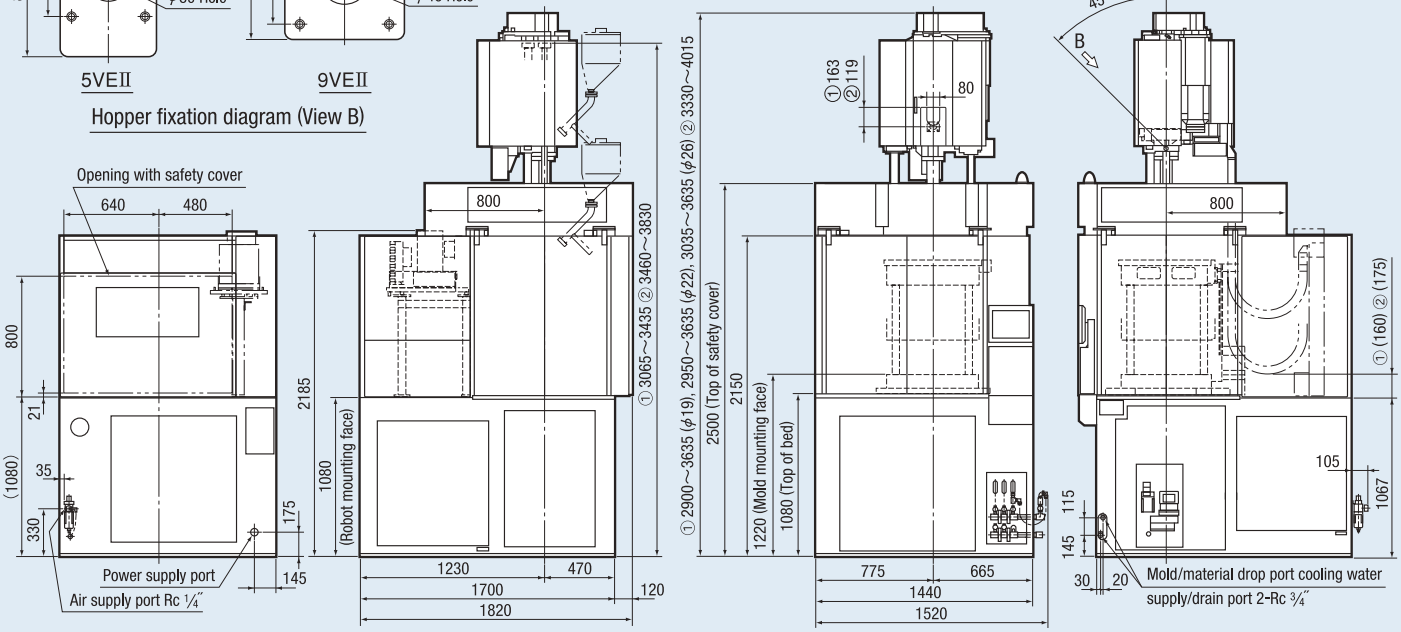


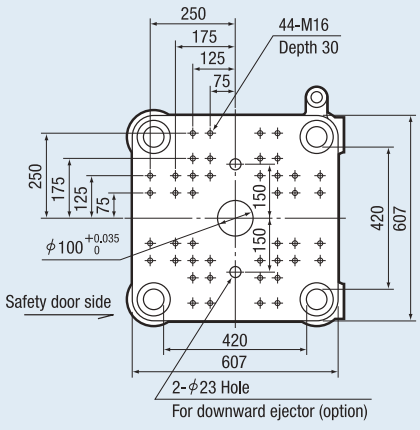
Diagram of hopper installation sections



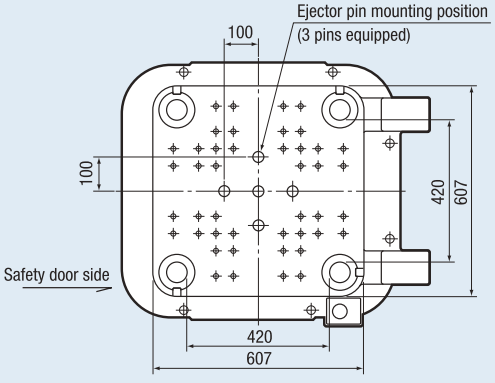
Hopper fixation diagram (View B)



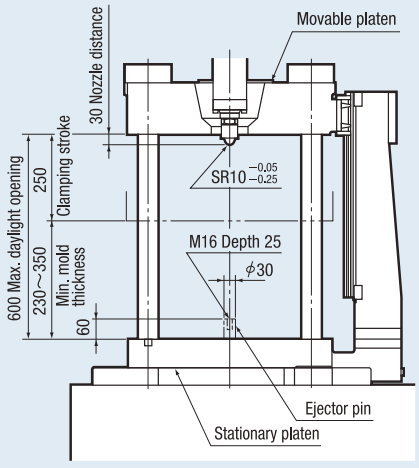
MOLD ATTACHMENT DIAGRAM



Movable platen



Stationary platen



＊The minimum mold dimensions of 295mm (H)×295mm (V) are required in order to endure the maximum clamping force.

NISSEI PLASTIC INDUSTRIAL CO., LTD.

HEAD OFFICE & FACTORY:
2110 Minamijo, Sakaki-machi, Hanishina-gun, Nagano-ken 389-0693, Japan
[Export Department]
TEL: +81-268-81-1070, 1072 FAX: +81-268-81-1098, 1099
E-mail: exp@nisseijushi.co.jp
[URL] http://www.nisseijushi.co.jp/en/

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Taiwan	: Taipei
Korea	: Seoul
Vietnam	: Ho Chi Minh City, Hanoi
India	: Gurgaon

● Due to continuous performance improvement, specifications and designs are subject to change without notice.

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