MD-S8000

PRECISION ALL ELECTRIC
INJECTION MOLDING MACHINE

MD-S8000

LRQA CERTIFIED ISO 9001
UKAS MANAGEMENT SYSTEMS 0001

2311-500

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NIIGATA

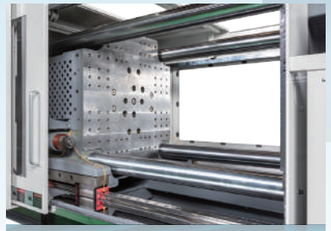
NIIGATA MACHINERY CO., LTD.

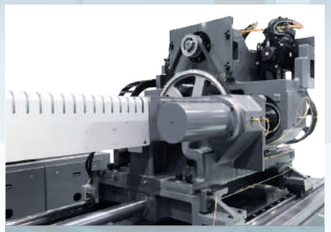
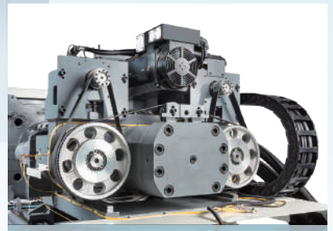
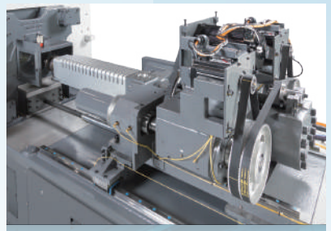
Sustainable Growth, Higher Productivity, Energy Efficiency, ENSURED

NEW MODEL

MD-S8000

PRECISION ALL ELECTRIC INJECTION MOLDING MACHINE



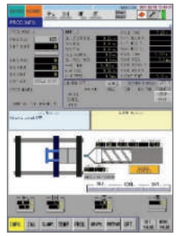
15” TOUCH SCREEN

15” High resolution touch screen supports your smart operation with clear view and highly responsive touch interaction. Molding data or graphs can be displayed while you work on the injection setting. HOME screen is an integrated screen with setting entry fields and molding data. Individual windows such as graph, molding data and electricity consumption can be displayed by pressing function keys beside display and these windows can be overlapped on the screen.

Graph with injection setting

HOME screen

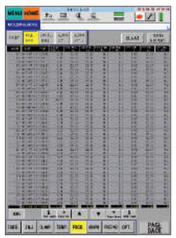
Overlap windows



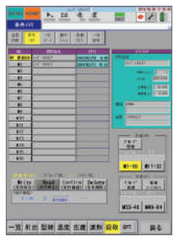
Production status

EXTENSIVE DATA CAPACITY

Molding data can be saved up to 10,000 logs and exported in CSV file to USB drive. 384 Molding conditions can be saved each in internal drive and external USB drive. Molding condition data is available to view during automatic machine operation. History log holds up to 1,000 data each for injection setting, clamping setting, temperature setting and abnormal event. Graph screen displays up to 8 waveforms.

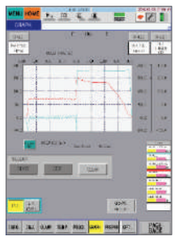


Shot data



Condition memory

Profile of Injection



Waveforms

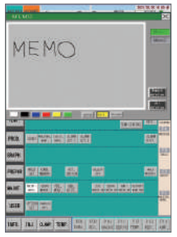
PRACTICAL FEATURES

Niigata Hiper Navi provides integrated information and easy access to desired setting screens. User’s manual is available in PDF. Parts drawing, quality inspection and other documents needed for reference can be stored in PDF format and available to view anytime. Memo function allows to leave a message on screen.

Advanced window

Set-up window

PDF viewer



Memo reminder

CONNECTIVITY

MD-Monitor

MD-Monitor is a network software that allows remote access from Windows PC to get various data from the machine. The data can be exported as CSV file.

Molding data | Molding conditions | Machine status | Graphs | Alarm history | Production count

Shot Data

Connection Manager

Status Monitor

Factory View

Factory View shows machine layout on factory floor with status icon.

Machine layout on floor

Machine icons

VNC Server

Remote access to machine screen directly from PC or tablet through VNC connection.

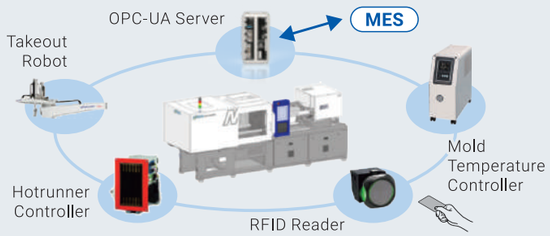
Message Board

Message Board receives message from connected PC.

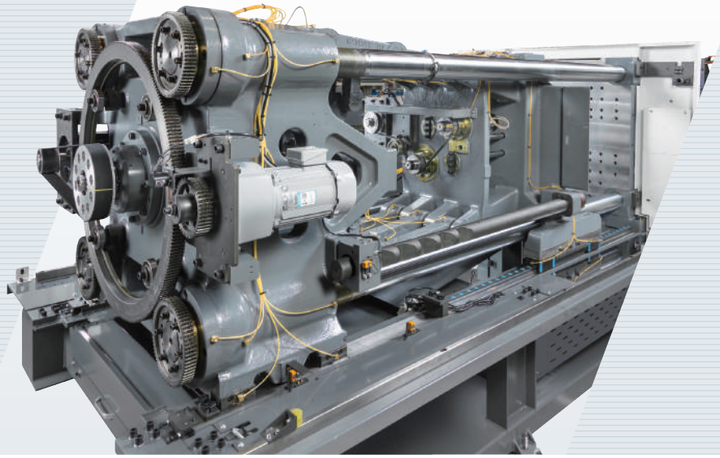
OPTION

OPC-UA server is an optional device to provide Euromap 77 communications.

For connection with peripheral equipment, additional program based on RS-422, RS-485 and Ethernet protocols are available as optional features.

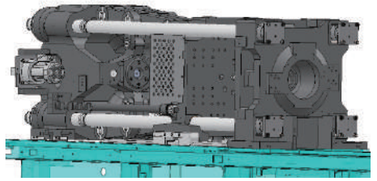


MD-CLAMP



ENHANCED CLAMP CAPABILITY
LARGE PLATEN

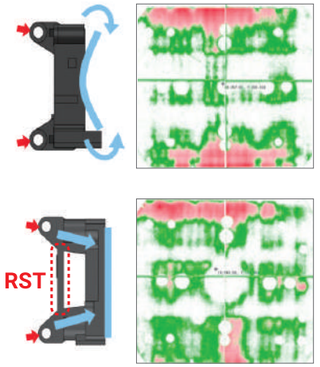
MD-S8000 is capable of larger mold than previous model; larger platen size, extended mold open stroke.



		MD110S8000	MD110S7000 (former model)
Tie Bar Distance	mm	470 x 470	460 x 410
	in	18.50 x 18.50	18.11 x 16.14
Platen Size	mm	690 x 690	610 x 610
	in	27.17 x 27.17	24.02 x 24.02
Mold Opening Stroke	mm	360	350
	in	14.17	13.78
Mold Height (Max/Min)	mm	150/480	200/450
	in	5.91/18.90	7.87/17.72

HIGH RIGIDITY
RST (Rear Side Tension) DESIGN

Toggle link joint parts at upper and lower part of movable platen are connected. Even distribution by center-press structure. Mold deformation is minimized thus precision molding is possible.

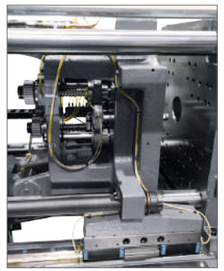


Pressure distribution of S7000

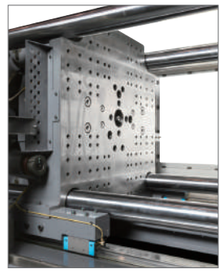
Pressure distribution of S8000

PRECISE LINEAR MOTION
LINEAR GUIDE

Straightness of platen open/close motion and parallelism maintained. Extended mold life by improved accuracy of mold protection performance. Clean tie bar area by eliminating tie bar bush.



Liner guide under movable platen

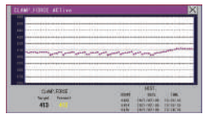


Bush-less tie bar

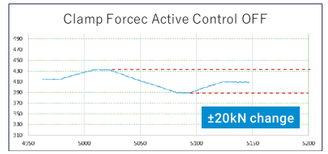
ACCURATE CLAMP FORCE
TIE BAR SENSOR

Accurate Clamp Force Setting
By using tie bar sensor, clamp force is applied accurately.

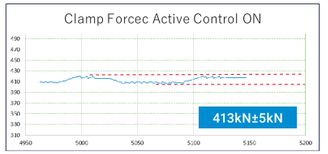
Clamp Force Active Control
Automatic adjustment of clamping force within 3% fluctuation.
It controls the clamping force change caused by temperature change.



Clamp force monitoring



Shot number →



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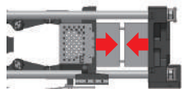
Tie bar sensor

SENSITIVE TO MOLD
MOLD PROTECTION

Accurate Low Pressure Mold Protection
Effective for object detection near parting line.



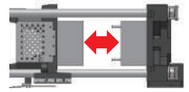
Tie bar sensor detects slight change in resistance.

Accurate Low Pressure Mold Protection

Conventional low pressure mold protection

Detection test (cable tie)

All Processes Mold Protection
Effective for object detection during mold close.



Mold guide bush,angular pin, slide core malfunction are detected effectively.

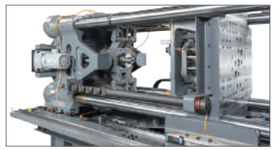
Only small dent made before machine stops.

Monitored area of mold protection device

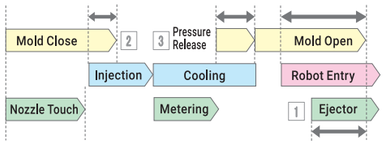
	Acculate Low Pressure Mold Protection	All Processes Mold Protection
Mold open - parting line	———	GOOD
Near parting line	VERY GOOD	GOOD

HIGH EFFICIENCY
SHORTENED CYCLE TIME

Shorter dry cycle time
Faster mold open/close motion by new toggle mechanism. Reduced by 10% compared to former model (e.g., MD55S8000).



Simultaneous motions
1. Eject during mold open.
2. Low pressure clamp hold.
3. Clamp force release before cooling complete.



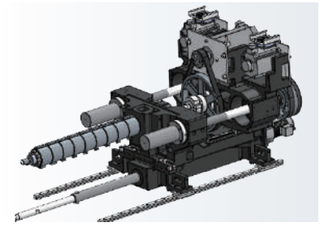
High speed mode
【FAST SET】 function changes the setting for cycle time reduction.

MD110S8000	OFF	ON	Difference
Cycle time	6.888s	6.496s	-0.392s
Mold close	0.896s	0.776s	-0.120s
Mold open	0.964s	0.692s	-0.272s

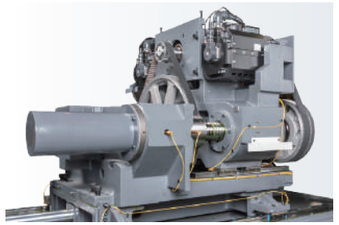
MD-INJECTION

COMPACT, HIGH STABILITY

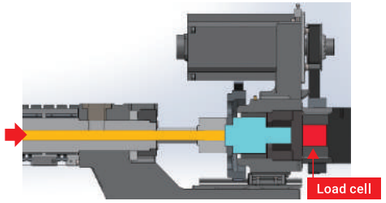
2 Axes Structure



Compact injection unit



Linear guides for injection unit and feed slides

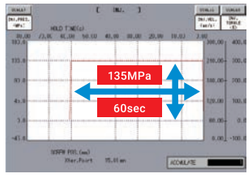


Accurate injection pressure detection by load cell placed parallel to screw axis

STRONG INJECTION

LONG HOLDING TIME

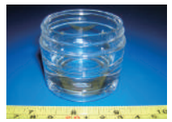
NIIGATA's standard injection unit provides superior performance for long holding pressure although LP spec is available as an option. It was engineered by Niigata's control technology under the concept "electric injection machine should be capable enough to handle all applications that hydraulic machine can do". Effective for thick-walled lens and gears while keeping energy consumption low.



Standard Spec
▶ Holding Time (55t – 150t); 45 - 60 sec at 135MPa
▶ Holding Time (200t- 385t); 70 sec at 135MPa (with standard screw)

OPTION LP Spec
▶ Holding Time; 80 sec or longer

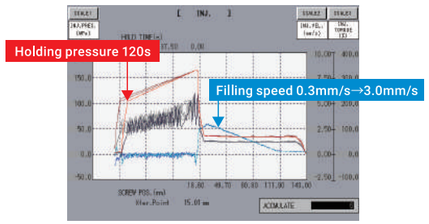
* The maximum holding time may be different during actual operation. Above is the maximum capacity of machine.

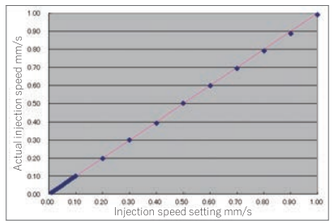


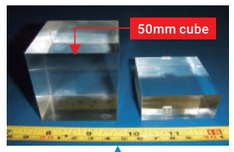
EXTREMELY SLOW INJECTION SPEED

0.01 mm/sec

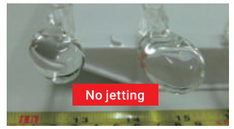
Precise injection speed control by 0.01mm/sec.
High resolution encoder of 22 bit/rev (4194304 pls) enables extremely slow injection of 0.01 mm/sec.
Stable low speed and repeatability are effective for thick-walled molding.

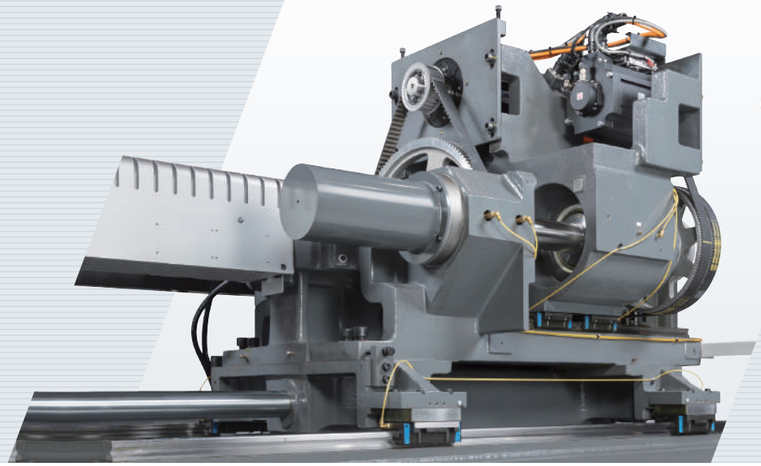






Provided by Sumitomo Chemical



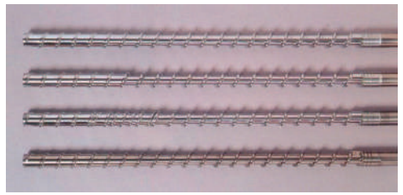


PRECISE & STRONG

SCREW VARIATION

SELECTABLE SCREW DESIGN

Wear-resistant screw and barrel as standard spec.
Selectable screw designs for various usage and material.



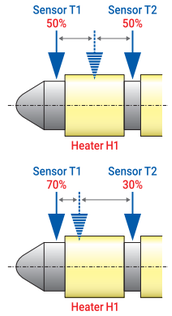
Purpose/resin \ Material	Chrome plating	Wear resistant	Wear/ corrosion resistant	Super wear/ corrosion resistant	High temperature	Special surface treatment	Super corrosion resistant
General purpose NHP screw	●	●	●	●	●		
High mixing NSS screw	●		●	●	●		
Crystaline resin (PA)	●		●	●	●		
Screw for connectors			●	●	●		
Screw for optical products						●	
Screw for fluorine resin							●
Screw for stable resin temperature	●						

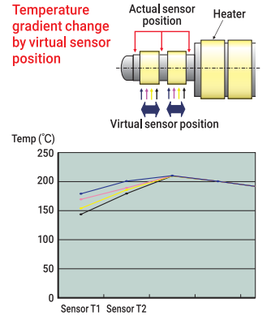
● Standard ● Option

NOZZLE TEMPERATURE CONTROL

GROUP CONTROL

NIIGATA's original temperature control delivers subtle temperature setting using 2 heaters and 3 sensors. Sensor positions can be virtually changed by weighting sensor. Stable control of temperature gradient of nozzle and nozzle tip. Optimized temperature of resin inside nozzle prevents cobwebbing, drooling and clogging.

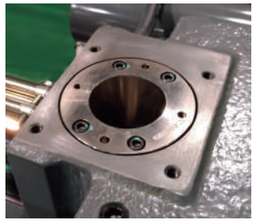




PLATED FEED THROAT BUSH

RUST & CONTAMINATION PREVENTION

Plated bush of hopper inlet prevents rusting and rust contamination.
Must-have for translucent optical parts molding.
Prevents corrosion caused by fluororesin.

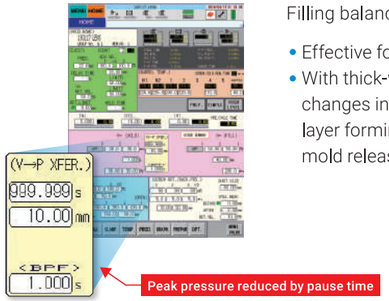


MD-CONTROLLER

VERSATILE & PRODUCTIVE

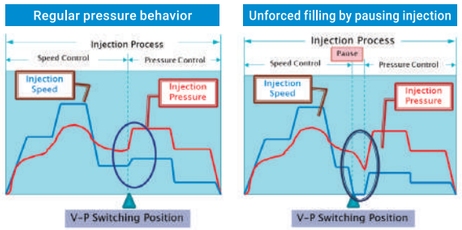
BPF CONTROL

UNFORCED FILLING



Filling balance is improved by pausing injection that enables unforced filling and gas dispersion.

- Effective for multi-cavity mold, thick-walled and thin-walled mixed parts.
- With thick-walled parts, due to changes in gate sealing and skin layer forming, surface quality and mold release are improved.

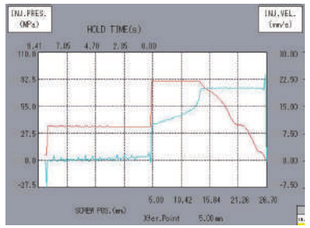


CPF CONTROL

PEAK PRESSURE CONTROL

CPF (Constant Pressure Filling) Control

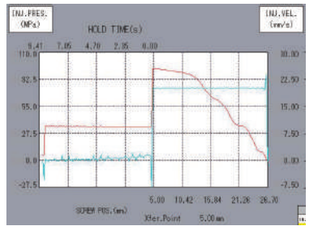
- Injection speed decreases as filling progresses.
- Pressure maintained when filling pressure reaches to the setting value.



- ▶ No peak pressure
- ▶ Residual stress reduced
- ▶ Burr, gas burn, deformation improved

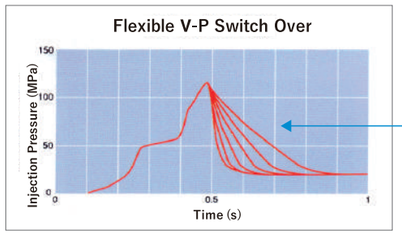
Conventional Control

- Filling speed maintained.
- Pressure increases as filling progresses.
- Peak pressure when filling completed.



- ▶ Peak pressure arises
- ▶ Residual stress
- ▶ Burr, gas burn, deformation

FLEXIBLE V/P SWITCHOVER



- Pressure response at the time of shifting from filling process to holding pressure process can be configured.
- Reduced internal stress inside molded product improves warping and burr.

Steep pressure decrease response
▶ For thin wall, multiple small cavities

Gradual pressure decrease response
▶ For thick wall, sink mark prevention

INJECTION SPEED VECTOR CONTROL

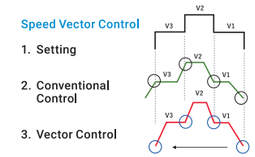
Selectable deceleration method for injection speed. Accurate speed switch is possible even with high speed injection.

Conventional control (time oriented)

Acceleration – starts from switch position
Deceleration – starts from switch position

Vector Control (position oriented)

Acceleration – starts from switch position
Deceleration – completes by switch position

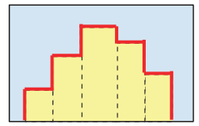


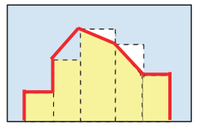
STEP CONTROL/POLYLINE CONTROL

Individual setting for injection speed, pressure, back pressure, screw rotation. Speed change, pressure change method can be selected.

STEP CONTROL

- Speed, pressure control by stage
- Steep change of speed, pressure
- For thin wall, multi-cavity mold





POLYLINE CONTROL

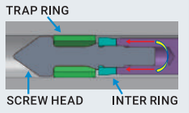
- Speed, pressure change in slope
- Gradual change of speed, pressure
- For flow mark, jetting improvement

REVERSE SEAL

Screw rotation is reversed when metering is completed. Due to resin pressure difference in front and back of the trap ting, the trap ring is moved to the the inter ring then stops the resin flow. Stable parts weight is maintained by minimizing variation of keeping seal timing.

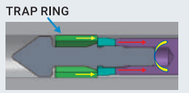
Metering

Trap ring is in front during plasticization.



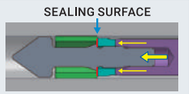
Reverse seal

Trap ring moved to back. Resin flow reversed.



Injection

Screw and inter ring moved forward.



OTHER FEATURES

LOW PRESSURE CLAMP FORCE HOLDING

2-Stage clamp force setting. Switching from low to high pressure clamp force setting is effective for gas release and cycle time reduction.

PRE-RELEASE OF CLAMP FORCE

Clamp force can be depressurized before cooling completes. Effective for reducing residual force and cycle time.

SCREW ROTATION TORQUE MONITORING

Resin plasticizing state checked by monitoring motor torque during metering.

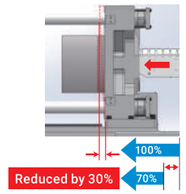
EJECTOR TORQUE MONITORING

- Monitors servo torque of ejector
- Prevents over pack, short shot
- Protects ejector pins

SELECTABLE NOZZLE TOUCH FORCE

100% or 70%

- Prevents movable platen tilting by appropriate nozzle touch force
- Protects mold and sprue bush



MD-SERVO SYSTEM

FAST & ACCURATE

NIIGATA SERVO CONTROL SYSTEM

NIIGATA Pressure Feedback Control combined with MITSUBISHI servo system MR-J4 delivers accurate control of injection pressure.

- Fast time control of 1/1000 sec.
- Long time holding pressure by original control technology.
- Direct communication between digital load cell and servo amplifier for high responsiveness.

ADVANCED ALL DIGITAL SERVO SYSTEM MR-J4

Servo scan time: 55μs

The least scan time by the latest CPU

Optical servo network system

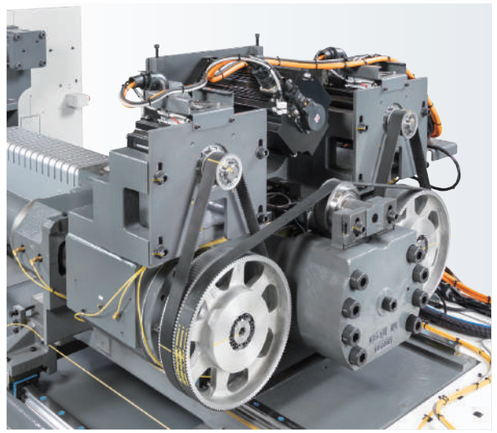
Optical cable between servo amp avoids noise interference. Uninterrupted network.

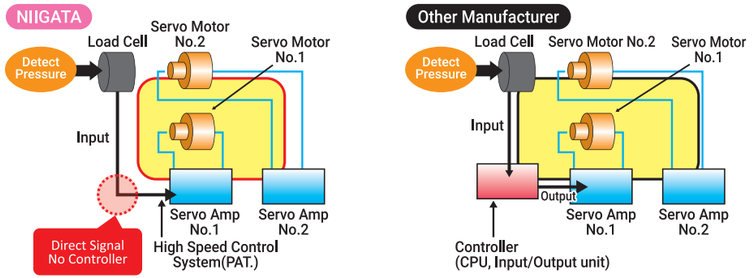
High resolution encoder: 4194304 pla/rev.

Accurate positioning and smooth motion.

Pressure Feedback Control (PAT.)

High responsivity and accuracy of pressure control by NIIGATA's original pressure control.

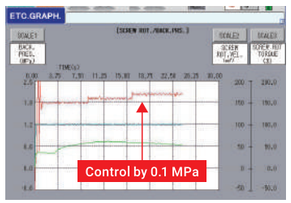




DIGITAL LOAD CELL

HIGH RESPONSIVE PRESSURE CONTROL

- High noise resistance
  Accurate control of injection pressure and back pressure
- Accurate pressure control
  Precise pressure control by 0.1MPa
- High responsivity pressure control (active pressure control)
  Forward rotation of servo motor when pressure increase (screw forward motion)
  Reverse rotation of servo motor when pressure decrease (screw retract motion)



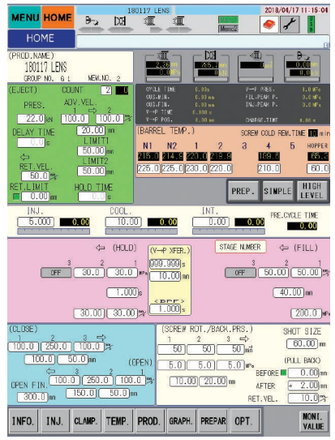
MD-SET UP

OPERATOR FRIENDLINESS & PRACTICAL

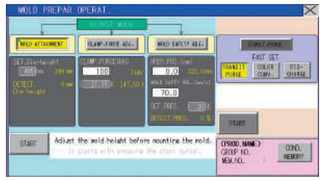
NIIGATA HIPER NAVI

INTEGRATED INFORMATION

All basic settings and data at a glance



REDUCED SET UP TIME



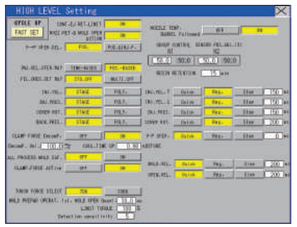
Mold preparation

MOLD ATTACHMENT	No need to enter mold height and clamp force (for molds with spring too)
CLAMP FORCE ADJ	Accurate adjustment of clamp force
MOLD SAFETY ADJ	Automatic detection of pressure for mold protection
SIMULT PURGE	Purge during clamp force adjustment and low pressure mold protection setting

CONDITION SETTING/ADVANCED SETTING

Condition setting

Follow simple steps for basic molding setting.



Advanced setting

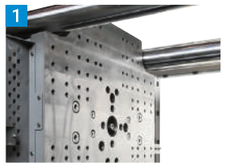
Detailed setting of injection, clamp, temperature.

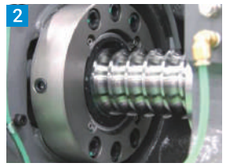
MD-MAINTENANCE

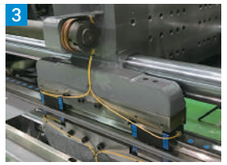
EFFICIENT & VISIBLE

REDUCED OPERATING COST

Efficient grease supply







1. Movable platen without tie bar bush
2. High sealed ball screw
3. High precision linear guide

Reduced heat dissipation

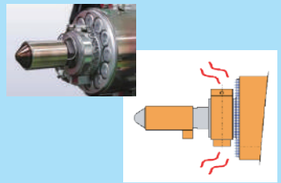
Double layered barrel insulation cover

Heat dissipation reduced by 60%

Stable temperature of barrel end → stable molding

Small dissipation

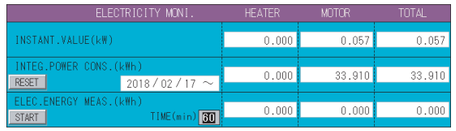
Radiation surface area reduced by embedding bolts
(For injection unit i1.0 – i4.0 only)



VISUALIZING OPERATING COST *ENERGY CONSUMPTION*

Electricity consumption displayed.

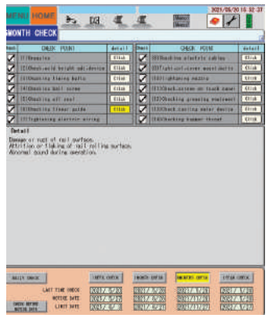
- Electricity consumption of motor and heater
- Electricity consumption per shot



HIGH RELIABILITY AND EASE OF MAINTENANCE

Maintenance/inspection reminder

Periodical notice of inspection.



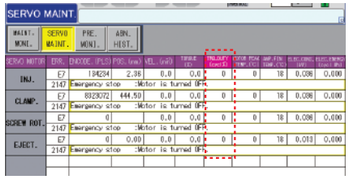
Full automatic grease supply device

Grease supply to all components.

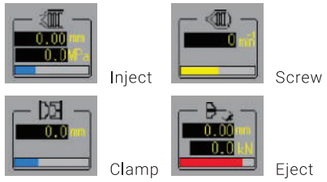
Effective load ratio of servo motor

Maximum motor load and motor load during continuous operation can be checked.

Effective load ratio



Duties of each axis



Standard Equipment

General	1. Operation mode (adjust, manual, semi-auto, full-auto, purge) 2. Automatic lubrication 3. Emergency stop button with lock 4. Sourcing type control circuit (PNP) 5. ANSI/PLASTICS B151.1-2017 Safety Requirements for Injection Molding Machines 6. Stack lights with buzzer (green/yellow/red) 7. No fuse breaker for main power switch
Injection	1. Wear-resistant screw complete 2. Multi-stage injection control 1) Filling injection speed control (up to 10 speeds) 2) Holding pressure control (up to 10 pressures) 3. Low friction injection mechanism (linear guides) 4. BPF (Balance Pressure Filling) Control 5. CPF (Constant Pressure Filling) Control 6. Screw rotation torque monitoring device 7. Sealed ball screw 8. Plated hopper bush 9. Multistage charging control (3 speeds, 3 back pressures) 10. Automatic purge (4 modes) 11. Nozzle temperature group control 12. Barrel temperature group control (i6.5 and larger) 13. Cylinder follow-up temperature control for nozzle zone 14. PID fuzzy controlled temperature regulation of heating cylinder 15. Cold screw starting prevention 16. Reverse seal 17. Injection unit swivel device 18. Double-layer structure cylinder heater cover 19. Charging under no back pressure in manual mode 20. Hopper base temperature control 21. Purge guard (with interlock) 22. Selectable nozzle touch force (2 stages) 23. Nozzle retract (retract time setting) 24. Delay timer (injection, charge, nozzle retract) 25. Digital load cell device (accurate detection of injection pressure, back pressure) 26. Load cell zero point automatic adjustment function
Clamp	1. High rigid precise mold platens (Center-press structure, RST design) 2. Movable platen support with linear guide system 3. Multi-stage speed control device (up to 6 speeds) 4. Simple set up device 1) Mold setting mode 2) Clamping force adjusting mode 3) Low pressure mold protection adjusting mode 5. Automatic clamping force setting 6. Mold height adjust device with encoder 7. Mold Clamp Force Active Control 8. Clamping force monitor 9. Accurate Low Pressure Mold Protection 10. All Processes Mold Protection 11. Ejector advance position holding timer 12. Ejector advance speed switching (2 speeds) 13. Ejector motor with brake 14. Ejector torque monitoring device 15. Mold closing safety device on operator side (mechanical, electrical) 16. Mold closing safety device on anti-operator side (electrical) 17. Hole processing of mounting hole for take-out robot (Niigata's standard position) 18. Delay timer for ejector 19. Pre-releasing of clamping force 20. Low pressure clamping force holding 21. Mold ejector plate return confirmation circuit 22. Interface for hydraulic core puller
Control	1. 15" Touch screen 2. NHN (Niigata Hiper Navi) Opration support, simple setup device, easy setting function 3. Simultaneous operation 1) Mold open during charging 2) Ejector on the fly 3) Nozzle advance during mold close 4) Injection start during mold close 5) Output signal of take-out robot entry during mold open 4. Servo motor with high resolution encoder 5. Expert function (setting conversion from other machine) 6. Calendar timer for heater start-up 7. Multiple language function (Japanese, English, Chinese, Spanish, Korean)

Control	8. Molding condition recording (384 in internal memory, 384 in external memory) 9. Recording of trial molding condition (10 conditions) 10. Motion/No Motion selector switch 11. Operation selector switch during alarm activation 12. Alarm buzzer 13. USB memory interface 14. Event record (injection/temperature/clamp/alarm/abnormal history/1,000 records each) 15. Instruction manual display 16. Convenient functions (notepad, calculator, etc.) 17. Maintenance information 18. Local password 19. Output of external signal 20. No good product signal 21. Free programmable input/output 22. PC interface (MD-Monitor) 23. VNC server function 24. Euromap 67 take-out robot interface
Alarm Counters Monitors	1. Alarm device 1) V-P switchover abnormal alarm 2) Charging time abnormal alarm 3) Cycle time abnormal alarm 4) Cylinder temperature abnormal alarm 5) Hopper base temperature abnormal alarm 6) Cussion position (minimum/complete) alarm 7) Peak pressure abnormal alarm (filling, injection) 8) Injection start position abnormal alarm 9) Screw position alarm (arrival time, injection pressure) 10) Clamp force alarm (Clamp fin, During injection, Injection fin) 11) Servo motor alarm (all servo axes) 12) Automatic lubrication alarm 13) Inverter alarm (nozzle, mold height adjustment) 14) Battery alarm 15) Temperature regulator preparation alarm 16) Heater break alarm 17) SSR alarm 18) Thermocouple break alarm 19) Injection abnormal pressure alarm 20) Clamping force abnormal (Over INJ. clamping force more than spec data) 21) Injection pressure alarm (Over INJ. pressure more than spec data) 22) Resin lack alarm 23) Clamping alarm 24) Injection unit alarm 25) Operator's gate alarm 26) Screw operation prohibition alarm 27) Low-pressure mold protection alarm 28) Resin retention monitoring alarm 29) Grease lubrication alarm 2. Counter device 1) Total shot counter (preset type) 2) Production shot counter (preset type) 3) Preparation shot counter (preset type) 4) Shot counter for external conveyer (preset type) 5) Reject shot counter (preset type) 6) Continuous reject shot counter (preset type) 3. Shot monitor (10,000 shots) 1) Alarms; Alarm device 1) - 10) 2) Power consumption in one cycle 3) Barrel temperature 4. Graphic monitor (Injection, mold open/close, ejector, screw rotation, overwriting, simultaneous display of 8 waveforms, data reading function) 5. Servo motor monitor 6. Statistical processing of monitoring data 7. History monitor (Temperature range inside control box, accumulated running distance of ball screw, shot count, other) 8. Ladder monitor 9. Power consumption monitoring device
Others	1. Mold cooling water manifold (6 circuits/55t-150t, 8 circuits/200t-385t) 2. Leveling pads 3. Special tools 4. Mold clamp

Optional Equipment

1. Wear/corrosion resistant screw complete	10. Core puller device (hydraulic/pneumatic)	19. Valve gate output signal
2. Special screw	11. Mold temperature regulator	20. Signal for hotrunner interface
3. Long open nozzle	12. Heat insulating board (thickness 5mm)	21. Interface for unscrewing device
4. Spring needle nozzle	13. ECS (Ejector Gate Cut)	22. Quick Servo Press (injection compression)
5. Air needle nozzle	14. Air jet	23. Intermediate stop of mold open/close
6. High temperature heating cylinder	15. Air ejector	24. Auto mold clamp device
7. Material hopper	16. Product sorting chute (good/reject)	25. RFID card reader function
8. Swing hopper	17. Interface circuit for product fall detector	26. OPC-UA server function
9. Flow molding control	18. Vacuuming signal	27. Transformer

MD-S8000 Series Specifications

	Item			Unit	MD55S8000				MD85S8000				MD110S8000				MD150S8000			
Injection Unit	Injection Capacity		*1	T·m	i1.0				i1.7				i2.7				i4.0			
	Screw Complete	Screw Type		—	YY(OP.)	Y(OP.)	A	B	YY(OP.)	Y	A	B	YY(OP.)	Y	A	B	YY(OP.)	Y	A	B
		Screw Diameter		mm	18	22	25	30	22	25	30	35	25	30	35	40	30	35	40	45
				in	0.71	0.87	0.98	1.18	0.87	0.98	1.18	1.38	0.98	1.18	1.38	1.57	1.18	1.38	1.57	1.77
	Screw Stroke			mm	85	85	100	120	85	100	120	140	100	120	140	160	120	140	160	180
				in	3.35	3.35	3.94	4.72	3.35	3.94	4.72	5.51	3.94	4.72	5.51	6.30	4.72	5.51	6.30	7.09
	Calculated Injection Volume		*2	cm^3	22	32	49	85	32	49	85	135	49	85	135	201	85	135	201	286
				cu-in	1.34	1.95	2.99	5.19	1.95	2.99	5.19	8.24	2.99	5.19	8.24	12.27	5.19	8.24	12.27	17.45
	Injection Weight (PS)		*3	g	20	30	45	78	30	45	78	124	45	78	124	185	78	124	185	263
				oz	0.71	1.06	1.59	2.75	1.06	1.59	2.75	4.37	1.59	2.75	4.37	6.53	2.75	4.37	6.53	9.28
	Max. Injection Pressure		*4	MPa	280	260	200	140	260	280	200	150	280	270	200	155	270	260	200	155
				psi	40610	37710	29010	20310	37710	40610	29010	21760	40610	39160	29010	22480	39160	37710	29010	22480
	Max. Holding Pressure		*4	MPa	280	235	180	125	235	260	180	135	260	245	180	135	245	235	180	140
				psi	40610	34080	26110	18130	34080	37710	26110	19580	37710	35530	26110	19580	35530	34080	26110	20310
	Standard Specification	Max. Injection Speed	*5	mm/s	350				300				300				300			
				in/s	13.78				11.81				11.81				11.81			
		Injection Rate		cm^3/s	89	133	172	247	114	147	212	289	147	212	289	377	212	289	377	477
				cu-in/s	5.43	8.12	10.50	15.07	6.96	8.97	12.94	17.64	8.97	12.94	17.64	23.01	12.94	17.64	23.01	29.11
	LP Specification	Max. Injection Speed	*5	mm/s	250				250				230				200			
				in/s	9.84				9.84				9.06				7.87			
		Injection Rate		cm^3/s	64	95	123	177	95	123	177	241	113	163	221	289	141	192	251	318
				cu-in/s	3.91	5.80	7.51	10.80	5.80	7.51	10.80	14.71	6.90	9.95	13.49	17.64	8.60	11.72	15.32	19.41
	Screw Rotating Speed			min^{-1}	360				360				360				360			
	Plasticizing Capacity (PS)		*6	kg/h	9	18	27	43	18	27	43	60	27	43	60	93	43	60	93	115
				oz/s	0.09	0.18	0.26	0.42	0.18	0.26	0.42	0.59	0.26	0.42	0.59	0.91	0.42	0.59	0.91	1.13
	Nozzle Stroke			mm	345				345				410				460			
				in	13.58				13.58				16.14				18.11			
	Nozzle Touch Force			kN	20 ／ 14				20 ／ 14				20 ／ 14				20 ／ 14			
				US ton	2.2 ／ 1.6				2.2 ／ 1.6				2.2 ／ 1.6				2.2 ／ 1.6			
	Temp. Zones	Nozzle/Heating Cylinder		—	1G + 4				1G + 4				1G + 4				1G + 4			
		Hopper Base		—	1				1				1				1			
	Heater Capacity			kW	2.8	5.0	5.0	8.0	5.0	5.0	8.0	10.7	5.0	8.0	10.7	12.1	8.0	10.7	12.1	14.1
Clamping Unit	Clamping System			—	Double Toggle				Double Toggle				Double Toggle				Double Toggle			
	Clamping Force			kN	500				750				1000				1300			
				US ton	56				84				112				146			
	Distance Between Tie Bars (H x V)			mm	370 × 370				420 × 420				470 × 470				520 × 520			
				in	14.57 × 14.57				16.54 × 16.54				18.50 × 18.50				20.47 × 20.47			
	Platen Size (H x V)			mm	545 × 545				615 × 615				690 × 690				770 × 770			
				in	21.46 × 21.46				24.21 × 24.21				27.17 × 27.17				30.31 × 30.31			
	Min. Mold Size (H x V)		*7	mm	250 × 250				280 × 280				315 × 315				350 × 350			
				in	9.84 × 9.84				11.02 × 11.02				12.40 × 12.40				13.78 × 13.78			
	Mold Opening Stroke			mm	270				320				360				420			
				in	10.63				12.60				14.17				16.54			
	Mold Height (Min./Max.)			mm	150 ／ 370				150 ／ 410				150 ／ 480				180 ／ 520			
				in	5.91 ／ 14.57				5.91 ／ 16.14				5.91 ／ 18.90				7.09 ／ 20.47			
	Open Daylight			mm	640				730				840				940			
				in	25.20				28.74				33.07				37.01			
	Ejector Stroke			mm	80				80				100				120			
				in	3.15				3.15				3.94				4.72			
	Ejector Force		*8	kN	20				20				30				34			
				US ton	2.2				2.2				3.4				3.8			
Others	Total Machine Power		*9	kVA	19				22				31				34			
	Power Source (Voltage × Frequency)		*10	—	AC220V(±10%)×60Hz				AC220V(±10%)×60Hz				AC220V(±10%)×60Hz				AC220V(±10%)×60Hz			
	Rated Current			A	50				58				81				88			
	Machine Dimensions	Length		m	3.85				4.09				4.63				5.03		5.04	5.15
				in	151.7				160.8				182.3				198.0		198.4	202.8
		Width		m	1.20				1.27				1.39				1.41			
				in	47.2				50.0				54.7				55.5			
		Height	*11	m	1.96				1.76				1.85				1.95			
				in	77.2				69.3				72.8				76.8			
	Machine Weight			ton	3.2				4.1				5.4				6.8			
				US-ton	3.5				4.5				6.0				7.5			
	Hopper Capacity (OP.)			L	15				15				45				45			
				gal	3.96				3.96				11.89				11.89			
	Cooling Water Consumption		*12	L/min	5				5				5				5			
				gal/minT	1.32				1.32				1.32				1.32			

Note: Above specification is subject to change due to continuous improvement. Items with "OP." are optional.
*1 Injection capacity is shown by "maximum injection pressure"×"calculated injection volume".
*2 Calculated injection volume is determined by multiplying screw cross sectional area and screw stroke.
*3 Injection weight is for polystyrene and 92% of calculated injection volume.
*4 Maximum injection pressure and maximum holding pressure may be limited by molding conditions.
*5 Maximum injection speed may not reach this value depending on the load.
*6 Plasticizing capacity is for polystyrene.
*7 Do not use a mold that is smaller than this size to prevent machine damage.
*8 Ejector force shown is theoretical value.
*9 Electric capacity shown doesn't include auxiliary equipment except hydraulic power unit.
In case power supply of auxiliary equipment is through the injection machine, the machine electric capacity needs to be increased.
*10 Voltage fluctuation should not exceed by 10% or lower by 10% of rated power.
Voltage should always be the rated value and fluctuation should be allowed only for a short time.
*11 Machine dimensions don't include leveling pads and signal tower lights.
*12 Water is used for cooling hopper base its pressure should be 0.5MPa or lower.

MD-S8000 Series Specifications

	Item			Unit	MD200S8000				MD245 S8000								MD310S8000				MD385S8000				MD500S8000		
Injection Unit	Injection Capacity		*1	T·m	i6.5				i6.5				i10				i10				i22				i32		
	Screw Complete	Screw Type		—	YY(OP.)	Y(OP.)	A	B	YY(OP.)	Y(OP.)	A	B	YY(OP.)	Y(OP.)	A	B	YY(OP.)	Y(OP.)	A	B	YY(OP.)	Y(OP.)	A	B	Y(OP.)	A	B
		Screw Diameter		mm	35	40	45	52	35	40	45	52	40	45	52	60	40	45	52	60	52	60	68	76	68	76	82
				in	1.38	1.57	1.77	2.05	1.38	1.57	1.77	2.05	1.57	1.77	2.05	2.36	1.57	1.77	2.05	2.36	2.05	2.36	2.68	2.99	2.68	2.99	3.23
	Screw Stroke			mm	205	205	205	205	205	205	205	205	240	240	240	240	240	240	240	240	305	305	305	305	350	350	350
				in	8.07	8.07	8.07	8.07	8.07	8.07	8.07	8.07	9.45	9.45	9.45	9.45	9.45	9.45	9.45	9.45	12.01	12.01	12.01	12.01	13.78	13.78	13.78
	Calculated Injection Volume		*2	cm^3	197	258	326	435	197	258	326	435	302	382	510	679	302	382	510	679	648	862	1108	1384	1271	1588	1848
				cu-in	12.02	15.74	19.89	26.55	12.02	15.74	19.89	26.55	18.43	23.31	31.12	41.44	18.43	23.31	31.12	41.44	39.54	52.60	67.61	84.46	77.56	96.91	112.77
	Injection Weight (PS)		*3	g	181	237	300	401	181	237	300	401	277	351	469	624	277	351	469	624	596	793	1019	1273	1169	1461	1700
				oz	6.38	8.36	10.58	14.14	6.38	8.36	10.58	14.14	9.77	12.38	16.54	22.01	9.77	12.38	16.54	22.01	21.02	27.97	35.94	44.90	41.24	51.54	59.97
	Max. Injection Pressure		*4	MPa	260	250	200	150	260	250	200	150	250	250	200	150	250	250	200	150	250	250	200	160	250	200	170
				psi	37710	36260	29010	21760	37710	36260	29010	21760	36260	36260	29010	21760	36260	36260	29010	21760	36260	36260	29010	23210	36260	29010	24660
	Max. Holding Pressure		*4	MPa	260	225	180	135	260	225	180	135	225	225	180	135	225	225	180	135	225	225	180	145	225	180	155
				psi	37710	32630	26110	19580	37710	32630	26110	19580	32630	32630	26110	19580	32630	32630	26110	19580	32630	32630	26110	21030	32630	26110	22480
	Standard Specification	Max. Injection Speed	*5	mm/s	300				300				230				230				—				160		
				in/s	11.81				11.81				9.06				9.06				—				6.30		
		Injection Rate		cm^3/s	289	377	477	637	289	377	477	637	289	366	488	650	289	366	488	650	—	—	—	—	581	726	845
				cu-in/s	17.64	23.01	29.11	38.87	17.64	23.01	29.11	38.87	17.64	22.33	29.78	39.67	17.64	22.33	29.78	39.67	—	—	—	—	35.45	44.30	51.56
	LP Specification	Max. Injection Speed	*5	mm/s	240				240				200				200				160				—		
				in/s	9.45				9.45				7.87				7.87				6.30				—		
		Injection Rate		cm^3/s	231	302	382	510	231	302	382	510	251	318	425	565	251	318	425	565	340	452	581	726	—	—	—
				cu-in/s	14.10	18.43	23.31	31.12	14.10	18.43	23.31	31.12	15.32	19.41	25.94	34.48	15.32	19.41	25.94	34.48	20.75	27.58	35.45	44.30	—	—	—
	Screw Rotating Speed			min^{-1}	400				400				400				400				240				200		
	Plasticizing Capacity (PS)		*6	kg/h	67	113	148	228	67	113	148	228	113	148	201	274	113	148	201	274	121	165	252	315	210	256	299
				oz/s	0.66	1.11	1.45	2.23	0.66	1.11	1.45	2.23	1.11	1.45	1.97	2.68	1.11	1.45	1.97	2.68	1.19	1.62	2.47	3.09	2.06	2.51	2.93
	Nozzle Stroke			mm	460				460				460				570				570				610		
				in	18.11				18.11				18.11				22.44				22.44				24.02		
	Nozzle Touch Force			kN	34 / 24				34 / 24				34 / 24				34 / 24				34 / 24				36		
				US ton	3.8 / 2.7				3.8 / 2.7				3.8 / 2.7				3.8 / 2.7				3.8 / 2.7				4.0		
	Temp. Zones	Nozzle/Heating Cylinder		—	1G + 2 + 1G				1G + 2 + 1G				1G + 2 + 1G				1G + 2 + 1G				1G + 2 + 1G				1G+3+1G		
		Hopper Base		—	1				1				1				1				1				1		
	Heater Capacity			kW	11.2	11.2	14.2	14.2	11.2	11.2	14.2	14.2	11.2	14.7	18.7	18.7	11.2	14.7	18.7	18.7	18.7	21.5	25.1	25.1	27.8	33.2	33.2
Clamping Unit	Clamping System			—	Double Toggle				Double Toggle				Double Toggle				Double Toggle				Double Toggle				Double Toggle		
	Clamping Force			kN	1800				2200				2200				2800				3500				4500		
				US ton	202				247				247				315				393				506		
	Distance Between Tie Bars (H x V)			mm	570 × 570				620 × 620				620 × 620				730 × 730				820 × 820				910 × 910		
				in	22.44 × 22.44				24.41 × 24.41				24.41 × 24.41				28.74 × 28.74				32.28 × 32.28				35.83 × 35.83		
	Platen Size (H x V)			mm	840 × 840				915 × 915				915 × 915				1040 × 1040				1170 × 1170				1290 × 1290		
				in	33.07 × 33.07				36.02 × 36.02				36.02 × 36.02				40.94 × 40.94				46.06 × 46.06				50.79 × 50.79		
	Min. Mold Size (H x V)		*7	mm	380 × 380				415 × 415				415 × 415				490 × 490				550 × 550				610 × 610		
				in	14.96 × 14.96				16.34 × 16.34				16.34 × 16.34				19.29 × 19.29				21.65 × 21.65				24.02 × 24.02		
	Mold Opening Stroke			mm	470				550				550				600				730				800		
				in	18.50				21.65				21.65				23.62				28.74				31.50		
	Mold Height (Min./Max.)			mm	200 / 650				220 × 700				220 × 700				280 / 750				320 / 810				350 / 910		
				in	7.87 / 7.87				8.66 × 27.56				8.66 × 27.56				11.02 / 29.53				12.60 / 31.89				13.78 / 35.83		
	Open Daylight			mm	1120				1250				1250				1350				1540				1710		
				in	44.09				49.21				49.21				53.15				60.63				67.32		
	Ejector Stroke			mm	150				150				150				160				160				180		
				in	5.91				5.91				5.91				6.30				6.30				7.09		
	Ejector Force		*8	kN	44				49				49				60				60				80		
				US ton	4.9				5.5				5.5				6.7				6.7				9.0		
Others	Total Machine Power		*9	kVA	51				51				51				51				60				90		
	Power Source (Voltage × Frequency)		*10	—	AC220V(±10%) ×60Hz				AC220V(±10%) ×60Hz				AC220V(±10%) ×60Hz				AC220V(±10%) ×60Hz				AC220V(±10%) ×60Hz				AC460/480V(±10%)×60Hz		
	Rated Current			A	134				134				134				134				157				113 (AC460V) / 108 (AC480V)		
	Machine Dimensions	Length		m	5.55				6.06				6.11				6.77				7.21				8.38		
				in	218.5				238.6				240.6				266.5				283.9				330.1		
		Width		m	1.52				1.72				1.72				1.99				2.08				2.26		
				in	59.8				67.7				67.7				78.3				81.9				88.8		
		Height	*11	m	1.96				2.04				2.04				2.09				2.15				2.24		
				in	77.2				80.3				80.3				82.3				84.6				88.1		
	Machine Weight			ton	8.9				11.6				12.7				15.0				19.1				28.1		
				US-ton	9.8				12.8				14.0				16.5				21.1				31.0		
	Hopper Capacity (OP.)			L	45				45				80				80				80				120		
				gal	11.89				11.89				21.13				21.13				21.13				31.70		
	Cooling Water Consumption		*12	L/min	7.5				7.5				7.5				7.5				7.5				10		
				gal/min	1.98				1.98				1.98				1.98				1.98				2.64		

Note: Above specification is subject to change due to continuous improvement. Items with "OP." are optional.
*1 Injection capacity is shown by "maximum injection pressure"×"calculated injection volume".
*2 Calculated injection volume is determined by multiplying screw cross sectional area and screw stroke.
*3 Injection weight is for polystyrene and 92% of calculated injection volume.
*4 Maximum injection pressure and maximum holding pressure may be limited by molding conditions.
*5 Maximum injection speed may not reach this value depending on the load.
*6 Plasticizing capacity is for polystyrene.
*7 Do not use a mold that is smaller than this size to prevent machine damage.
*8 Ejector force shown is theoretical value.
*9 Electric capacity shown doesn't include auxiliary equipment except hydraulic power unit.
In case power supply of auxiliary equipment is through the injection machine, the machine electric capacity needs to be increased.
*10 Voltage fluctuation should not exceed by 10% or lower by 10% of rated power.
Voltage should always be the rated value and fluctuation should be allowed only for a short time.
*11 Machine dimensions don't include leveling pads and signal tower lights.
*12 Water is used for cooling hopper base its pressure should be 0.5MPa or lower.