COMPACT PRECISION ALL ELECTRIC INJECTION MOLDING MACHINE

NIIGATA

PRECISION ALL ELECTRIC INJECTION MOLDING MACHINE

MD-S7000

NIIGATA MACHINE TECHNO CO., LTD.

Compact Precision All Electric Injection Molding Machine

Tough Com Machine

Less-load & High-precision Clamping Device

M Support System for Effective Clamping (PATENT)

Ultralow-speed & High-precision Injection with Sufficient High Pressure

Hyperslow & High-performance Pressure Feedback Control

Compact Machine for Limited Space

Space Saving & Low-height Machine

Niigata Hiper Navi

Appropriate Pressure Transmission

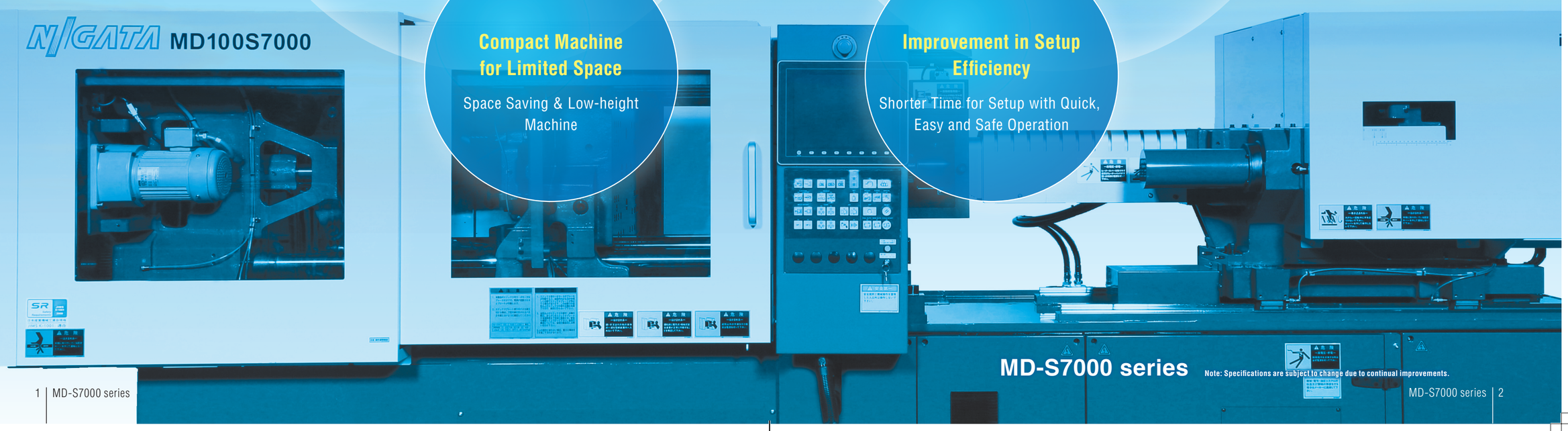
Reduction of Short Shot & Flash by BPF® (Balance Pressure Filling)

User-friendly Operation Screen

Reduced Number of Switching with New operation concept

Improvement in Setup Efficiency

Shorter Time for Setup with Quick, Easy and Safe Operation



MD-S7000 series

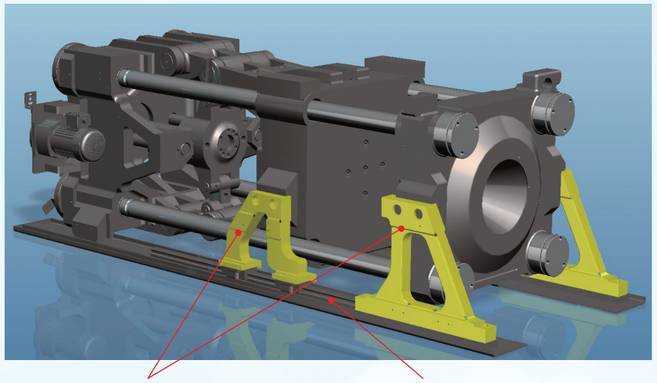
Note: Specifications are subject to change due to continual improvements.

Effective Clamping

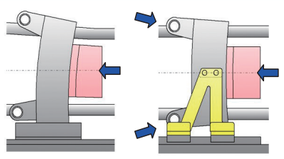
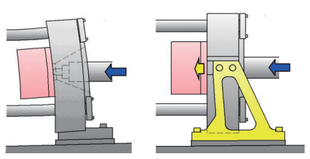
» M Support System (PATENT)

Enabling “Effective Clamping” cutting edge mechanism !

“M Support System” has been developed to enable “Effective Clamping” It is the new structure of adopting platen support which is attached to the fixed-movable platen to create looseness at the lower part of platen by supporting it from the center of its height at both sides. This will promote the even deformation of platen during clamping force load and prevent platen deflection. Furthermore, low-friction Linear Guide is adapted for supports, which is conventionally substituted by roller and wear plate. With this invention, even our basic line can handle the formed products requiring true platen parallelism.

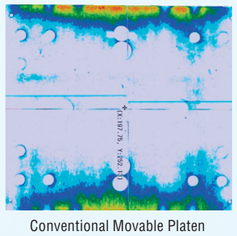


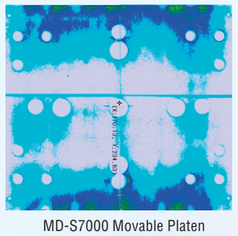
» Structure of M Support System

Movable Platen	Fixed Platen
	
No tilt with even deformation	Slightly pushed forward but no tilt

By supporting the center of platen height at both sides, the looseness at the lower part of platen can be created. This will promote the even deformation of platen during clamping force load and prevent platen from tilting.

» Pressure Distribution between Movable Platen and Mold

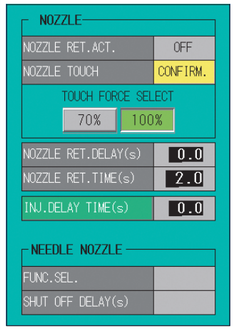

Conventional Movable Platen


MD-S7000 Movable Platen

The below figure is the example of pressure distribution on movable platen during clamping force load. As for conventional model, the pressure is concentrated on the lower and upper part of platen, so that only small load exists at the center. As for MD-S7000, the clamping force pressure is evenly distributed to the platen of full surface.

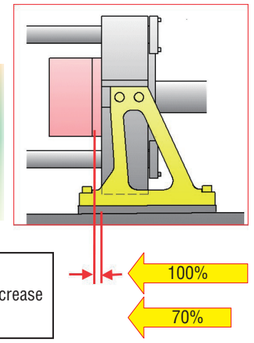
High Precision Clamping Device

» Improvement in Tilt Prevention of Fixed Platen



Two-Stage Switching of nozzle touch force

You can select nozzle touch force from 100% (20kN) or 70% (14kN).

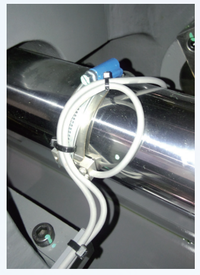


You can select nozzle touch force from “100%” or “70%” With appropriate touch force, the tilt of fixed platen can be reduced by 30%.

This is effective for protection of mold and life extension of sprue bush.

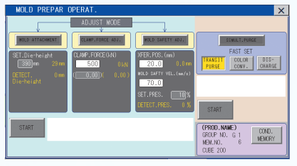
» Accurate Clamping Force Adjustment


High-precision encoder


High-precision Tie-bar sensor


High-precision Linear guide

Mold setting screen

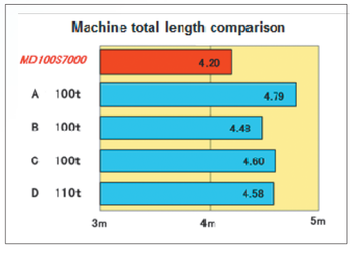


With the MD-S7000, setup of the mold can be done in high speed and with high precision. In addition, clamping force can be adjusted accurately, and precision of low pressure mold protection has been improved so that successive and stable precision molding can be achieved.

» Industry-leading Compact Machine

Save space with compact body !

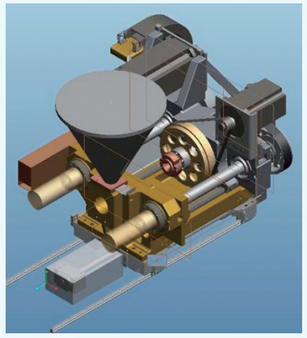
NIIGATA has a distinctive injection unit structure to minimize machine installation area, which is reputed to be the greatest space saver of all. We can proudly introduce our product to the customer who can not spare enough space for large machineries. Now, you can utilize your space to the fullest! What’s more, the height of machine is lowered from our conventional model and also the operability is improved.



Injection Unit

» G Screw System and Injection Unit Module

Wide selection of Injection ability !



Series (3 Series)	Unit (10 Unit)		Speed	Model (3 Model)	Screw (6 Screw)					
MD55S7000	i 1.0	LP	250	S12	φ18	φ25	φ30			
		STD	350		280	200	140			
		HIGH SPEED	500							
	i 1.7a	STD	300			φ25	φ30			
						280	200			
MD110S7000	i 1.7b	STD	300	S16		φ25	φ30	φ35		
						280	200	150		
	i 2.7	LP	230			φ25	φ30	φ35	φ40	
		STD	300			280	270	200	155	
		HIGH SPEED	500							
MD150S7000	i 4.0	LP	200	S18			φ30	φ35	φ40	φ45
		STD	300				270	260	200	155

Maximum Inj Pressure

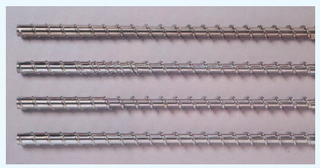
Speed : mm/s
Pressure : MPa

Specifications of screws are standardized for several types of injection unit. Molding for different injection unit can be done under the same molding conditions.

» Variety of Screw Options

Select the most appropriate screw !

We propose the best suited screw from our wide selection depending on the intended use taking advantage of the know-how cultivated throughout our history.



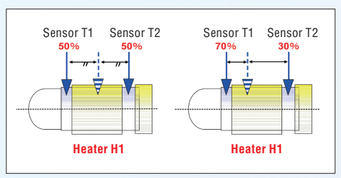
Application \ Material	Plating	Anti-wearing screw cilinder	Super Anti-wearing screw cilinder	High temperature heater	Special surface treatment	Super Anti-corrosion screw cilinder
General purpose NHP screw	●	○	○	○		
High mixing NSS screw	○	○	○	○		
Screw for crystaline resin, such as PA	○	○	○	○		
Screw exclusively for connectors		○	○	○		
Screw exclusively for optical products					○	
Screw exclusively for Fluorine resin						○
Screw for Resin temperature stability	○					

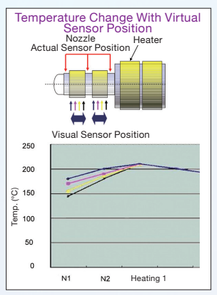
●:Standard ○:Option

» Group Temperature Control (PATENT)

Advanced temperature control system !

As for nozzle temperature control, the well-received “Group Temperature Control“ is adapted as a standard feature. This ground-breaking temperature control system monitors 2 heaters by 3 sensors. By shifting weighted values among sensors, it can change sensor position virtually and change temperature slope freely. This system has the enormous effect on preventing the problem of stringiness, drooling, nozzle freezing and material burn. Another standard feature is “Cylinder Follow-up temperature Control” for nozzle which prevents resin burning within the nozzle.

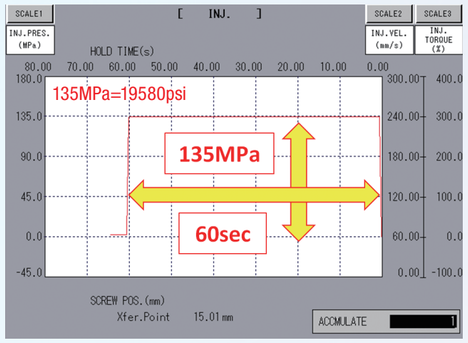




Tough Injection

» Unmatched Powerful Injection

Industry-leading, the most powerful machine !



Standard Spec. 135MPa x 45 ~ 60 sec

LP Spec. over 80 ~ 100 sec

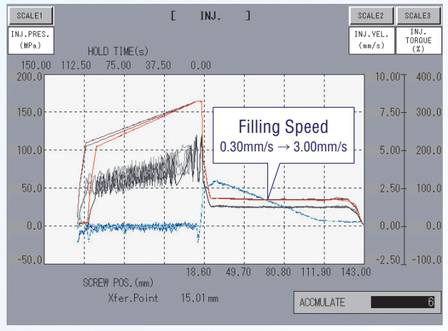
Pressure Holding Capacity (with A cylinder)

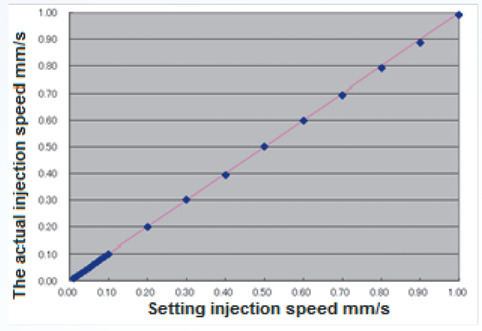
※This shows the maximum capacity of the machine.This does not guarantee the pressure Holding time during continuous molding cycle.

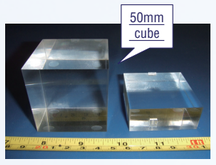
As well as our conventional series, MD-S7000 can maintain a long pressure holding time. Electrical machinery is considered to not-do well on long holding pressure but our one of a kind NIIGATA technology based on the concept of “Taking in the advantage of hydraulic to electrical machinery” sweeps aside this rumor. Now our electrical machine can form thick lens without difficulty, which is once believed to be impossible. In addition, it keeps down the energy consumption rate during pressure hold..Extremely energy efficient !

» Ultra-low Speed Injection Control

Industry-leading highly precise speed control of 0.01mm/s !





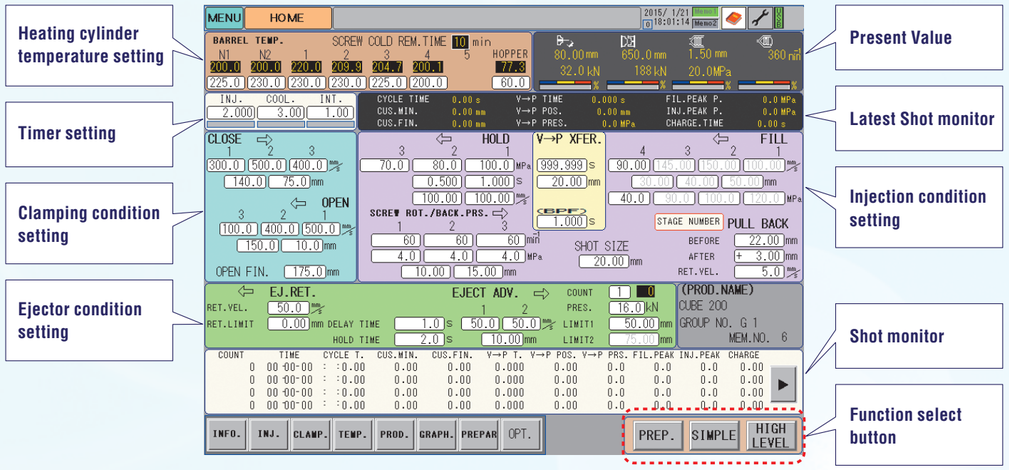


Ultralow speed injection of 0.01mm/s can be achieved with high-resolution encoder of 18bit / rev (262144 PLS) mounted on our machine. Our machine delivers superior performance in thick-walled molding with outstanding stability and repeatability in low speed.

Improvement of Mold Setup

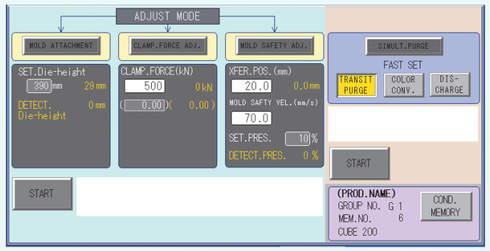
» Niigata Hiper Navi

Operation support : Setting screens and monitors are displayed in a single screen to reduce the number of screen switching !



Simplified setup device : Setup for the molding is simplified and minimized with Niigata Hiper Navi

Preparation screen



MOLD ATTACHMENT — Input of mold height and clamping force is not required. (This is also applicable for the mold with spring.)

CLAMP.FORCE ADJ. — Clamping force can be adjusted with a single touch of this button. (Visualization of clamping force.)

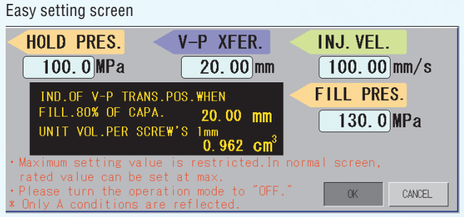
MOLD SAFETY ADJ. — Optimum setting value is calculated automatically.

SIMULT.PURGE — During the process of purging, either clamping force adjustment or low pressure mold protection can be operated without stopping purging.

Simple setup for the mold ····· Once you press “Start “ button in this screen, operation of the machine will start.

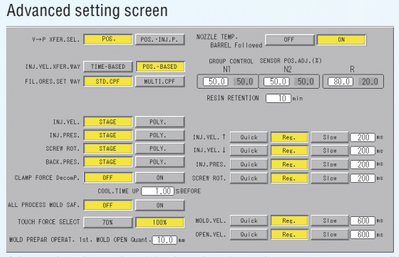
Easy setting function

Easy setting screen



Basic setting for molding can be done easily along the operation procedure.

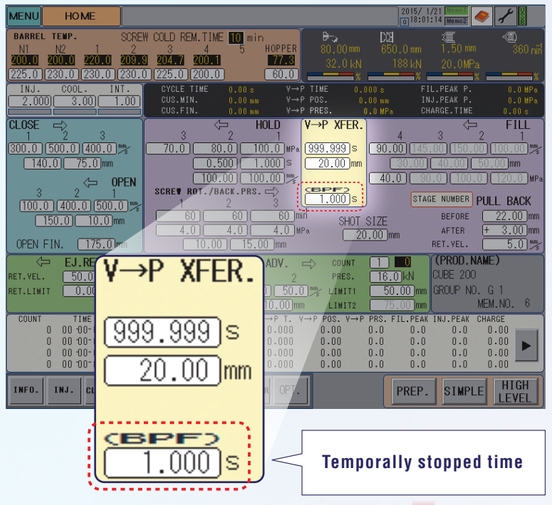
Advanced setting screen

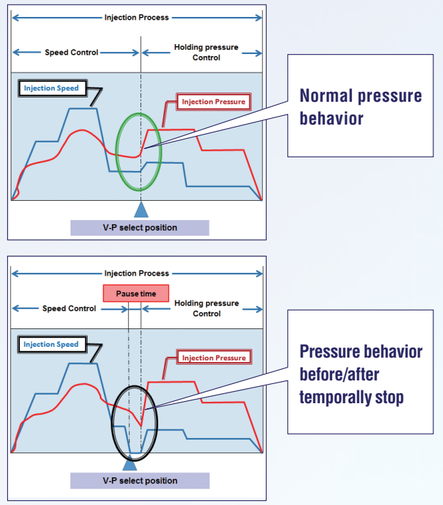


Advanced setting such as injection, clamping and temperature are consolidated in one list screen.

High Quality Stable Molding

»Natural Flow Filling by BPF® Control





During injection process, screw is temporally stopped so that the gate balance can be kept and the material is naturally filled along the gate. This is also effective for the release of gas.

• Multi-cavity molding

BPF®is effective for uneven thickness molding.

• Thick-walled molding

BPF®can improve the quality in the gate sealing and formation of skin layer. This is effective for the transcription with high precision and reduction of mold release resistance.

»CPF Control

CPF (Constant Pressure Filling) is a function that automatically slows down the filling speed by controlling maximum filling pressure. CPF can release the peak pressure at the completion of filling process, and the machine will smoothly shift to pressure holding process. You will find that CPF is an advanced technique of NIIGATA and is effective in reducing or preventing the occurrence of molding failure.

»Additional Functions

Pre-releasing of clamping force

Before completion of cooling, clamping force can be released.

Low pressure clamping force holding

Low pressure clamping force can be held. If necessary, you can switch to high pressure clamping force.

Local password setting

You can put restriction on the screen operation by setting a password for each operator.

Maintenance

» Visualization of Running Cost

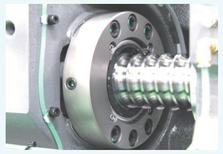
ELECTRICITY MONI.	HEATER	MOTOR	TOTAL
INSTANT.VALUE(kW)	1.005	0.466	1.471
INTEG.POWER CONS.(kWh) RESET 2014/11/17～	0.256	0.098	0.354
ELEC.ENERGY MEAS.(kWh) START TIME(min) 5	0.589	0.369	0.858

Equipped with power consumption monitor as a standard feature!

This monitor screen can display power consumption.

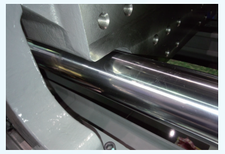
» Reduction of Running Cost

Keep the machine clean with less use of grease !



Sealed Ball screw

High precision linear guide

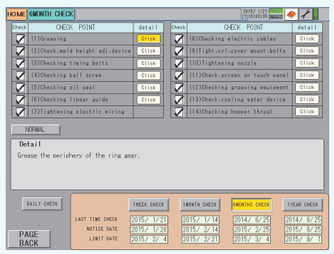


Bush-less Tie-bar

By adapting sealed ball screw, high-precision linear guide and bush-less design, consumption of grease can be significantly reduced.

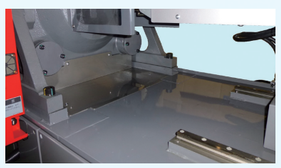
(Grease consumption can be reduced by 40% compared with MD100X.)

» Improvement of Maintenance Property



Equipped with maintenance support function as a standard feature!

This function will inform you the schedule of periodical inspection for each part of the machine.



Oil fence (Injection side)

Oil fence prevents grease dripping and scattering of pellet. Space under the fixed platen is wide so that cleaning can be done easily.

Oil pan (Clamping side)

Oil pan can be pulled out for easy cleaning.

Toggle side cover

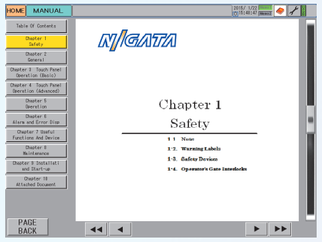
By visualizing clamping mechanism through the side cover, visual check can be done without stopping the operation.

Meet the Demand

» Enhanced Man-Machine Interface

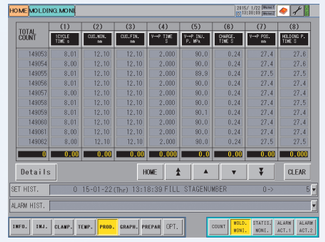
Large-capacity memory and Introduction of new functions !

Instruction manual screen



You can check with the instruction manual in the operation screen.

Shot monitor Screen

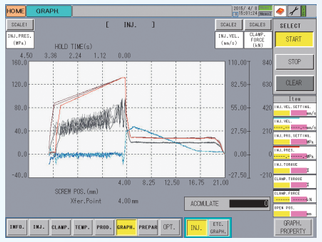


Sufficient memory capacity is secured. (10,000 shots)

Event record Screen

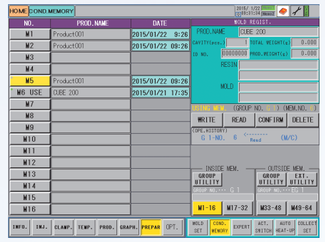
Sufficient memory capacity is secured.

Graphical monitor screen



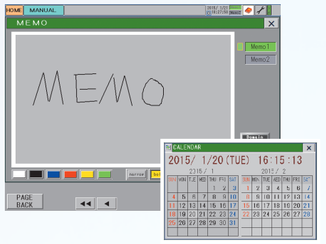
This graphical monitor screen can display up to 8 waveforms. Overwriting and setting comparison are also available.

Condition memory screen



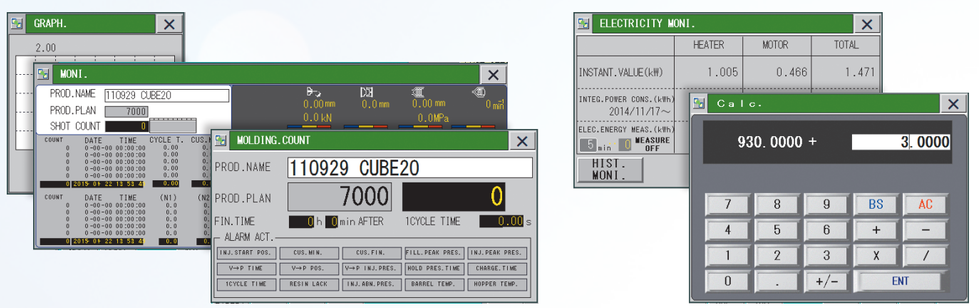
Number of molding conditions recordable is 384 in built-in memory and 384 in commercial-release USB memory respectively.

Convenient functions



Notepad, as an example.
Hand writing is available. You can leave a message or notes etc.

Direct Display of Convenient Functions



Waveform Monitor, Shot monitor, Molding counter, Power consumption monitor, Calculator; you can access these functions directly through function key at the bottom of display.

NIIGATA MACHINE TECHNO CO., LTD.

JAPAN **NIIGATA MACHINE TECHNO CO., LTD.**
1300 Okayama Higashi-ku Niigata-City
Niigata-pref, Japan
TEL:+81-25-274-5121 FAX:+81-25-271-5827

SHANGHAI **NIIGATA MACHINE TECHNO (SHANGHAI) CO., LTD.**
1F-1A, No.2, 1245 Zhong Shan Road West,
Changning District, Shanghai 200051, China
TEL:+86-21-6115-6925 FAX:+86-21-6115-6926

DONGGUAN **NIIGATA MACHINE TECHNO (SHANGHAI) CO., LTD**
DONGGUAN BRANCH
Room 1402, Zheguan Business Center,
No. 286, South Changqing Road, Changan Town,
Dongguan City, Guangdong 523850, China
TEL:+86-769-8275-1918 FAX:+86-769-8275-1928

THAILAND **NIIGATA MACHINE TECHNO (THAILAND) CO., LTD.**
42 Tower, Unit 1003, 10th Fl., 65 Soi Sukhumvit 42,
Sukhumvit Road, Prakhanong, Klongtoey,
Bangkok 10110, Thailand
TEL:+66-2-012-4272 FAX:+66-2-012-4273

U.S.A **NIIGATA MACHINE TECHNO USA, INC.**
1501 Landmeier Road,
Elk Grove Village, IL 60007, U.S.A.
TEL:+1-630-283-5880

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