

# Sinto Global Network

24 Companies in 12 countries worldwide



## America

Sinto America, Inc.  
Roberts Sinto Corporation  
Finishing Associates, Inc.  
SandMold Systems, Inc.  
National Peening Inc.  
Technical Metal Finishing Inc.

## Mexico

Roberts Sinto De Mexico, S.De R.L.De C.V.

## Brazil

Sinto Brasil Produtos Limitada

## Germany

Heinrich Wagner Sinto  
Maschinenfabrik GmbH

## Austria

Chemisch Thermische  
Prozesstechnik GmbH

## China

Qingdao Sinto Machinery Co., Ltd.  
Qingdao Brator Abrasives Co., Ltd.  
Wuxi Tai Sintong Machinery Co., Ltd.  
Sintokogio (Kunshan) Co., Ltd.  
Zhejiang Sinto Abrasive Co., Ltd.  
Guangzhou Xin Zhongtong Machinery Co., Ltd.

## Korea

Korea Sinto Co., Ltd.

## Japan

SINTOKOGIO, LTD.

## Taiwan

Taiwan Sintong Machinery Co., Ltd.  
Taiwanabrator Co., Ltd.

## India

Sinto Bharat Manufacturing Pvt. Ltd.

## Thailand

Thai Sintokogio Co., Ltd.  
Siembrator Co., Ltd.

## Indonesia

P.T. Sinto Indonesia

### SINTOKOGIO, LTD.

1-11-11, Nishiki,  
Naka-ku, Nagoya 460-0003, Japan  
T e l (052) - 582 - 9211  
F a x (052) - 586 - 2279  
E-Mail webmaster@sinto.co.jp  
HP http://www.sinto.co.jp

### Chemisch Thermische Prozesstechnik GmbH

Schmidstrasse, 10, 8042  
Graz, Austria  
T e l (43) - 316 - 4101  
F a x (43) - 316 - 4101 - 80  
HP http://www.cp-airpollutioncontrol.com/en/homepage/

### SandMold Systems, Inc.

313 W. State Street, P.O. Box 488  
Newaygo, MI 49337, U.S.A.  
T e l (1) - 231 - 652 - 1623  
F a x (1) - 231 - 652 - 1629  
E-Mail smssales@smssandmold.com  
HP http://www.smssandmold.com

### Roberts Sinto De Mexico, S.De R.L.De C.V.

Michoacán #1013  
Col. Nuevo Repueblo Monterrey,  
N.L. 64700, Mexico  
T e l (52) - 81 - 8190 - 1818  
F a x (52) - 81 - 8190 - 1818  
E-Mail info@robertsinto.com  
HP http://www.sinto.mx

### Qingdao Brator Abrasives Co., Ltd.

Wutaishan Road No.811  
Qingdao Economic & Technical  
Development Zone, China  
T e l (86) - 532 - 8689 - 3875  
F a x (86) - 532 - 8689 - 4061  
E-Mail qbrator@bdchina.com  
HP http://www.qbrator.com

### Zhejiang Sinto Abrasive Co., Ltd.

P.C.314200 No. 2511 Xinkai Road,  
Pinghu Economic Development Zone,  
Zhejiang, China  
T e l (86) - 573 - 89170123  
F a x (86) - 573 - 89170120  
HP http://www.sinto-zb.com/

### Taiwanabrator Co., Ltd.

No.586, Sec.2, Chung Shan S. Rd.,  
Ta Yuan Hsiang, Tao Yuan Hsien 337,  
Taiwan, R.O.C.  
T e l (886) - 3 - 381 - 3812  
F a x (886) - 3 - 381 - 8329  
E-Mail tbs@tshot.com.tw  
HP http://www.tshot.com.tw

### Korea Sinto Co., Ltd.

13, Nongong-ro 91-gil, Nongong-eup,  
Dalseong-gun, Daegu, Korea  
T e l (82) - 53 - 615 - 4901  
F a x (82) - 53 - 615 - 2110  
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HP http://www.koreasinto.com

### Heinrich Wagner Sinto Maschinenfabrik GmbH

Bahnhofstr. 101  
D-57334 Bad Laasphe, Germany  
T e l (49) - 2752 - 9070  
F a x (49) - 2752 - 907280  
E-Mail info@wagner-sinto.de  
HP http://www.wagner-sinto.de

### Sinto America, Inc./Roberts Sinto Corporation

3001 West Main Street P.O.Box 40760  
Lansing, MI 48901-7960, U.S.A  
T e l (1) - 517 - 371 - 2460  
F a x (1) - 517 - 371 - 4930  
E-Mail info@robertsinto.com  
HP http://www.robertsinto.com

### National Peening, Inc.

1902 Weing Street Statesville,  
NC 28677, U.S.A.  
T e l (1) - 704 - 872 - 0113  
F a x (1) - 704 - 872 - 0114  
HP http://www.nationalpeening.com

### Sinto Brasil Produtos Limitada

Rua Costa Barros, 3021,  
Jardim Guairaca, CEP 03210-001  
Sao Paulo, SP, Brazil  
T e l (55) - 11 - 3321 - 9500  
F a x (55) - 11 - 3321 - 9616  
E-Mail fale@sinto.com.br  
HP http://www.sinto.com.br

### Wuxi Tai Sintong Machinery Co., Ltd.

5th Factory, No.77, Jinma road,  
Hongshan Industrial Park,  
Wuxi City, China  
T e l (86) - 510 - 8562 - 6650  
F a x (86) - 510 - 8562 - 8108

### Guangzhou Xin Zhongtong Machinery Co., Ltd.

No.3, Jinsha Road, Nansha District,  
Guangzhou, China  
T e l (86) - 20 - 3905 - 1865  
F a x (86) - 20 - 3905 - 1789

### Thai Sintokogio Co., Ltd.

Rojana industrial park 2  
44 Moo 4 Banchang, U-Thai,  
Ayutthaya 13210  
T e l (66) - 35 - 200 - 710  
F a x (66) - 35 - 200 - 719  
E-Mail sales@thaisinto.co.th  
HP http://www.thaisinto.co.th/

### PT. Sinto Indonesia

Kawasan Industri Greenland Jl.Greenland  
Boulevard Blok AF No. 11 Kota Deltamas,  
Bekasi 17530 Indonesia  
T e l (62) - 21 - 899 - 73252  
F a x (62) - 21 - 899 - 73253

### Finishing Associates Inc.

340 Constance Drive Unit 283  
Warminster, PA 18974, U.S.A.  
T e l (1) - 267 - 803 - 2851  
F a x (1) - 267 - 803 - 2852  
E-Mail fasalesdesk@finishingassoc.com  
HP http://www.finishingassociates.com

### Technical Metal Finishing Inc.

29 Capital Drive, Wallingford,  
Connecticut, 06492, U.S.A.  
T e l (1) - 203 - 284 - 7825  
F a x (1) - 203 - 284 - 7826  
HP http://www.tmfshotpeening.com

### Qingdao Sinto Machinery Co., Ltd.

55 Xingdong Road, Jiulong town,  
Jiaozhou City, Qingdao, Shandong  
Province, China  
T e l (86) - 532 - 8182 - 7898  
F a x (86) - 532 - 8182 - 7900  
E-Mail sinto@sinto.cn  
HP http://www.sinto.cn

### Sintokogio (Kunshan) Co., Ltd.

88 Baifu Road, Kunshan Economic  
Development Zone, Baifu Office  
Park B-F2, China  
T e l (86) - 512 - 5500 - 0696  
F a x (86) - 512 - 5516 - 3163  
HP http://www.sinto-csk.cn/EN

### Taiwan Sintong Machinery Co., Ltd.

415 Hwa Cheong Road Hsin  
Chuang City, Taipei Hsien,  
Taiwan, R.O.C.  
T e l (886) - 2 - 8521 - 5837  
F a x (886) - 2 - 8522 - 1774  
E-Mail sinto@ms26.hinet.net  
HP http://www.tw.sinto.cc.tw

### Siembrator Co., Ltd.

27/9 Moo 5, Phaholyothin Road,  
Klong No.1 Klongluang,  
Patumthani Province 12120, Thailand  
T e l (66) - 2 - 285 - 3086  
F a x (66) - 2 - 285 - 3084  
E-Mail jirat@siembrator.com  
HP http://www.siembrator.com

### Sinto Bharat Manufacturing Pvt. Ltd.

204, G.S.T Road NH-45,  
Kolambakkam Village, Madurantagam Taluk,  
Kancheepuram District, Tamilnadu-603308  
T e l (91) - 44 - 2756 - 5125  
E-Mail marketing@sintobharat.com  
HP http://www.sintobharat.com



New Harmony >> New Solutions™

www.sinto.com

## FOUNDRY TECHNOLOGY Horizontal Parting Flaskless Molding Machine



Sinto products are designed with attention for safety and environmental quality concerns.

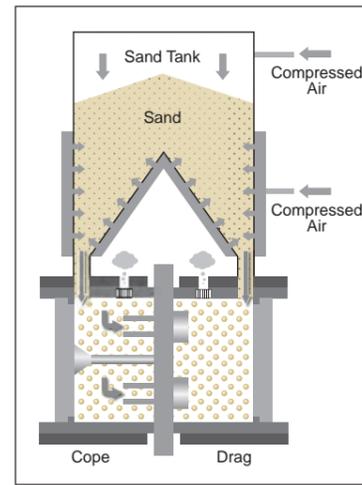
Before using Sinto equipment, please read and understand the supplied Operation Manual and operate the equipment properly.

### SINTOKOGIO, LTD.

1-11-11, Nishiki,  
Naka-ku, Nagoya 460-0003, Japan  
Tel +81 52 582 9211 Fax +81 52 586 2279  
www.sinto.com

# Aeration sand filling makes mold difference.

“Good castings depend on good molds” is the common saying among professional foundrymen worldwide for quite a long time. This saying carries more stringent and profound meaning today, because the requirements for the cast products are getting more and more severe. In fact, high quality molds in dimensions, hardness and strength are critical and indispensable for the production of high quality castings. Under this circumstance, we, Sinto adhered to “Uniform mold sand filling” as one of the basics for the mass production of superior quality molds. This concept has been materialized by “Aeration Sand Filling” system. Aeration air at comparatively low pressure range fluidizes sand in sand tank and delivers it uniformly to every cavity and corner of pattern. The new molding machine series has been developed by combining the aeration sand filling with the most advanced molding technology.



## Aeration Sand Filling Technology

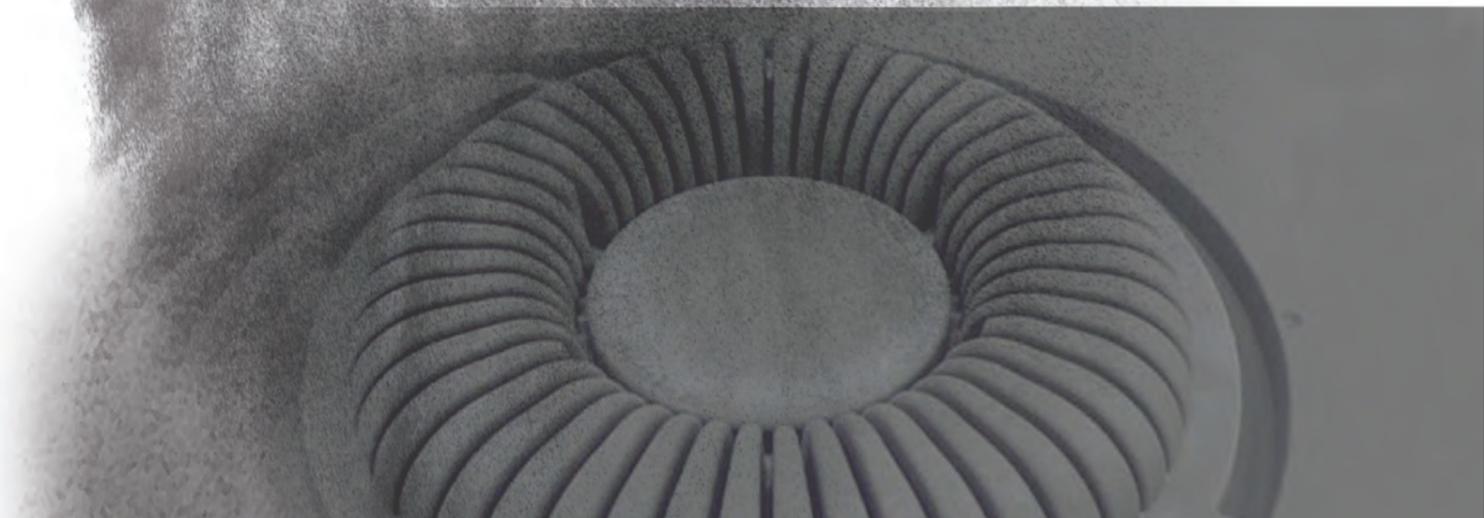
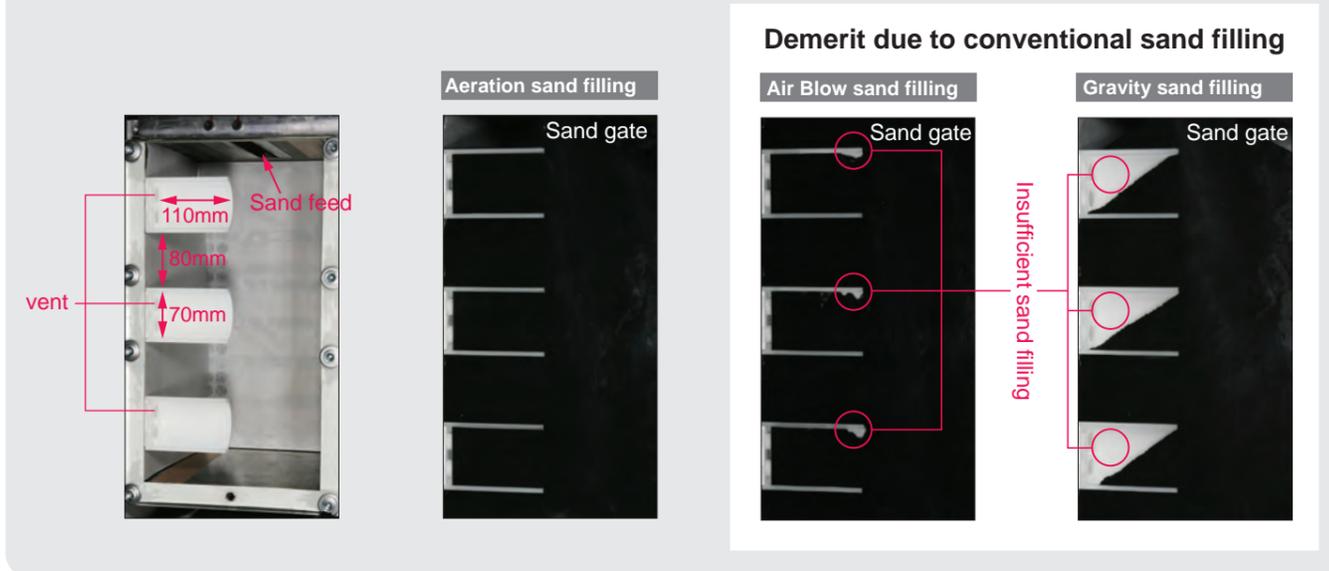
Low pressure air fluidizes the sand to fill the complicated edges and pockets in the pattern with sand.

### Feature

**Primary sand filling that is ideal for the production of molds with superior accuracy and uniformly high strength**

- Achieves uniform sand filling density.
- Uniform sand filling is realized without causing bridging at the complicated pattern profiles and throat of narrow pockets.
- Air consumption is reduced by as much as 70% compared to blow system. (compared to Sinto conventional flaskless models)
- Low noise FCMX·FBOX···75 dB(A) FDNX···72 dB(A)

### □ Sand filling demo as observed by Sinto sand filling verification test device



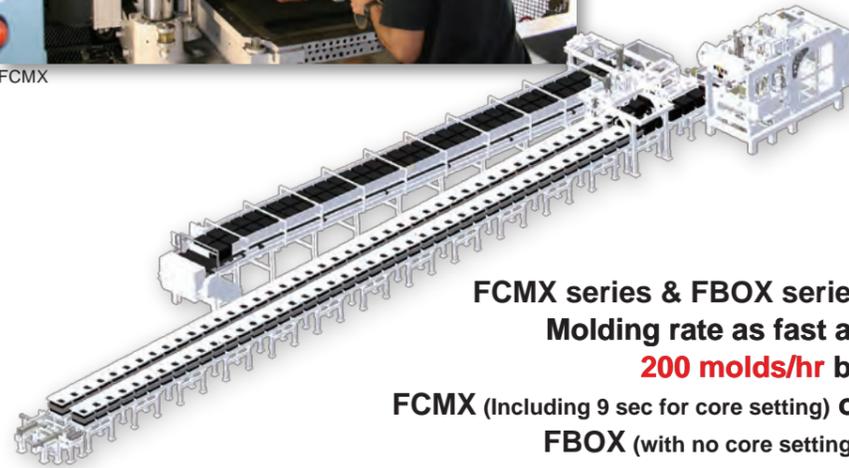
# Point 1

High speed production with core setting flexibility

High-speed type



FCMX



FCMX series & FBOX series  
Molding rate as fast as  
**200 molds/hr** by  
FCMX (Including 9 sec for core setting) OR  
FBOX (with no core setting).

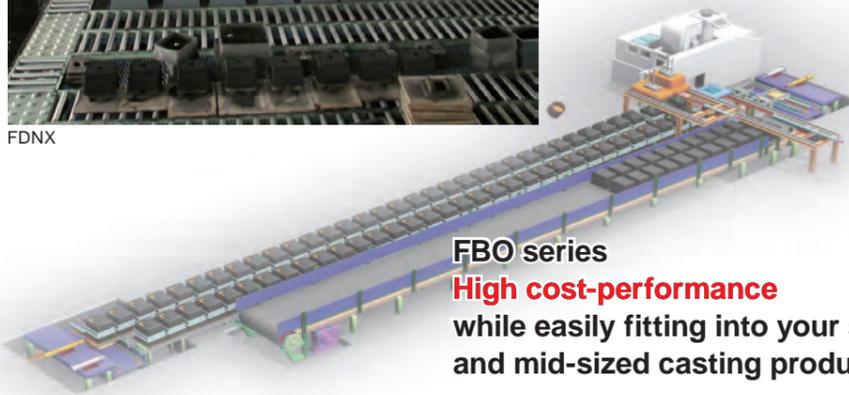
# Point 2

Entry and standard model for small or medium volume production with high cost-performance

Entry & Standard type



FDNX



FBO series  
**High cost-performance**  
while easily fitting into your small  
and mid-sized casting production.

FDNX series  
**Easy set-up.**  
**Easy maintenance.**  
Start up and training  
program is available  
upon request.

# Point 3

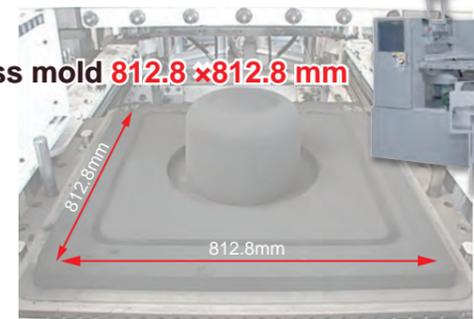
Large molds with lower cost system

Standard type



FBO

FBO series  
Largest Flaskless mold **812.8 x 812.8 mm**



## Line-up to answer the various needs of casting

Type	High-speed type	High-speed type	Entry type	Standard type
Molding Method	Aeration + Squeeze	Aeration + Squeeze	Aeration + Squeeze	Top Blow + Squeeze Nseries Aeration + Squeeze
Model	FCMX-I · II · III  pages 7 & 8	FBOX-II · III · IV  pages 9 & 10	FDNX-0 · I  pages 11 & 12	FBO-II · III · IV · V FBO-III · III · IVN  pages 13 & 14
Features	High speed 2-station Highly accurate pattern draw & molding closing	High speed single-station Highly accurate pattern draw & molding closing	Single-station Ideal for switching from manual to automatic molding in a day	Single-station Application to a wide variety of mold dimensions
Mold size (mm)	Min 500x400 - Max 700x600	Min 450x350 - Max 700x600	450x350 · 500x400	Min 400x300 - Max 812.8x812.8 (FBO-V)
Molding Rate (Max)	Up to <b>200</b> molds/hr including 9 seconds of core setting time	Up to <b>200</b> molds/hr with no core setting	Up to <b>100</b> molds/hr with no core setting	Up to <b>150</b> molds/hr with no core setting

Remarks: The above specifications and dimensions are subject to change without notice.

# “Mold Quality” and “Productivity” Enhanced by Sinto Technology.

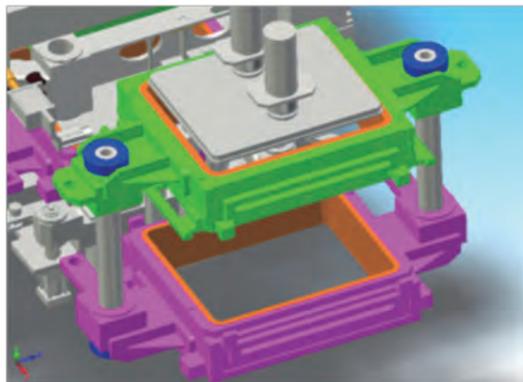
By combining cutting edge mold making technology with Aeration Sand Filling, Sinto achieves a combination of mold quality and productivity. We are upgrading mold making technology to the next level.



## Improvement of Pattern Draw Accuracy

- Due to advanced pattern draw accuracy, Sinto's new molding machines succeeded in improving mold quality as well as minimizing the pattern draft angle.
- Casting reject ratio is reduced.

## ● Centered Supporting Mechanism with Double Guides (FCMX)



- Pattern draw accuracy: Pattern draft angle reduced by 1/2 compared to conventional model
- Mold matching accuracy: Conventional model  $\pm 0.3$  mm  $\rightarrow$  FCMX  $\pm 0.1$  mm or less

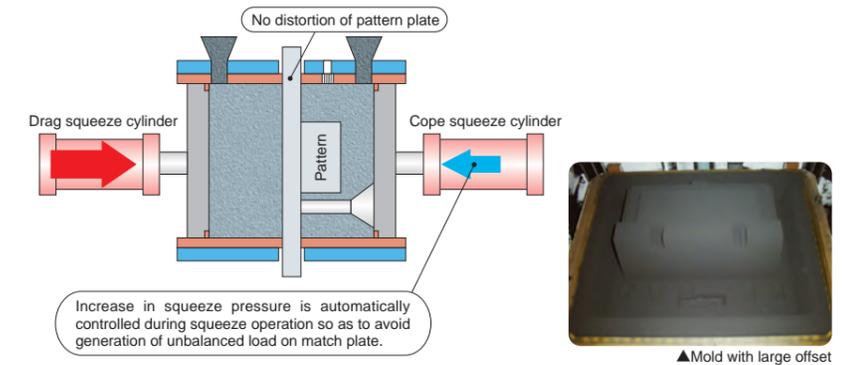
Pattern draw and pattern transferability are achieved by protecting the pattern distortion from unbalanced squeeze pressures. (FCMX·FBOX)

● Squeeze pressure balance control  
The pattern is well protected from adverse effect of offset load. The pressure difference between cope and drag during the squeeze process is constantly monitored and automatically controlled within the setup range of pressure difference.

- No distortion occurs even with existing thin matchplates as well as those with large offset. FCMX and FBOX series possess superior pattern draw and highly accurate pattern transferability.



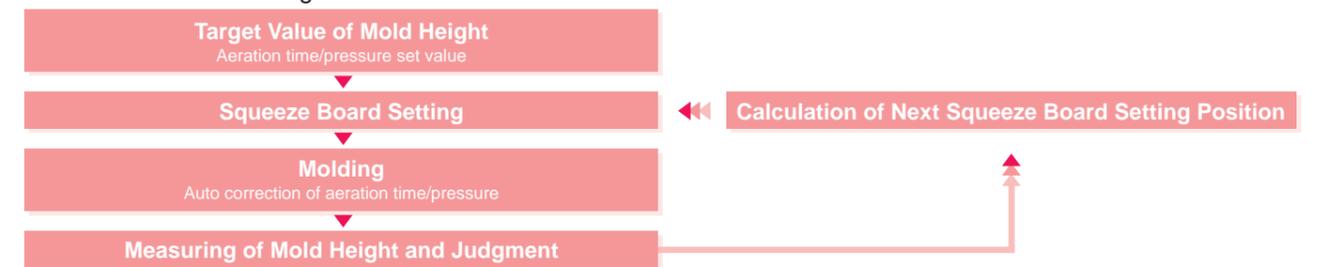
- Squeeze pressure balance control regulates the difference in cope and drag squeezing speeds and forces. This gives you the ability to run pattern plates with vastly different cope vs. drag profiles or thinner plates which may be deformed by squeeze force imbalances.



Reduces volume of molding sand. Flexibly meet with variations of compactability. (FCMX·FBOX)

● Mold height feedback control  
After molding, height of mold is measured and the sand feeding volume for the next mold is optimized by feedback control. This maintains a constant mold height. Sinto's Aeration system minimizes sand requirement, improves mold quality and accommodates variation of compactability.

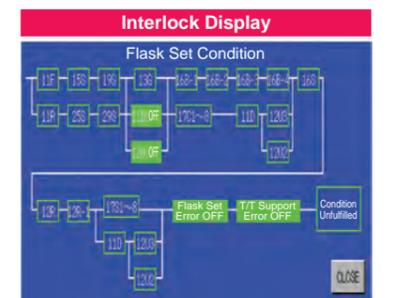
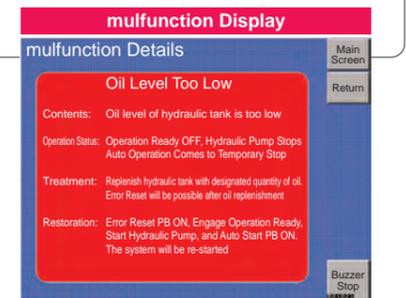
## ● Flow Chart of Mold Height Feedback Control



## For Better Use of High Functions

● Molding monitor and other various software

- Easy Maintenance (FCMX)**
  - Accuracy of mold closing process is maintained over a long period.
  - Maintenance of the molding flask is simplified thanks to the flask unit construction and it has become easier to remove flasks from the machine.
  - Porous aeration filter reduces the frequency of filter cleaning.
- Display Function**
  - Improved error detection and greater feedback.
  - Explanations are indicated so that anyone can easily restore the proper condition of the machine.
  - The cause of machine stoppage is easily detected by interlock display.
- Aeration Auto Correcting Function (FCMX·FBOX)**
  - In case of minor irregularities in the aeration system, the machine performs small molding condition adjustments automatically so that the operation and efficiency are not affected.
- Diagnosing of molding machine by Molding Analysis Monitor (FCMX·FBOX)** (Aeration pressure monitor is a standard accessory. Other monitors are optional.)
  - Data, such as motion of actuators and variation of pneumatic and hydraulic pressure are collected, stored and displayed on monitor and utilized for diagnosing the operating condition of molding machine.



# Horizontal Parting Flaskless Molding Machine

# FCMX<sup>series</sup>

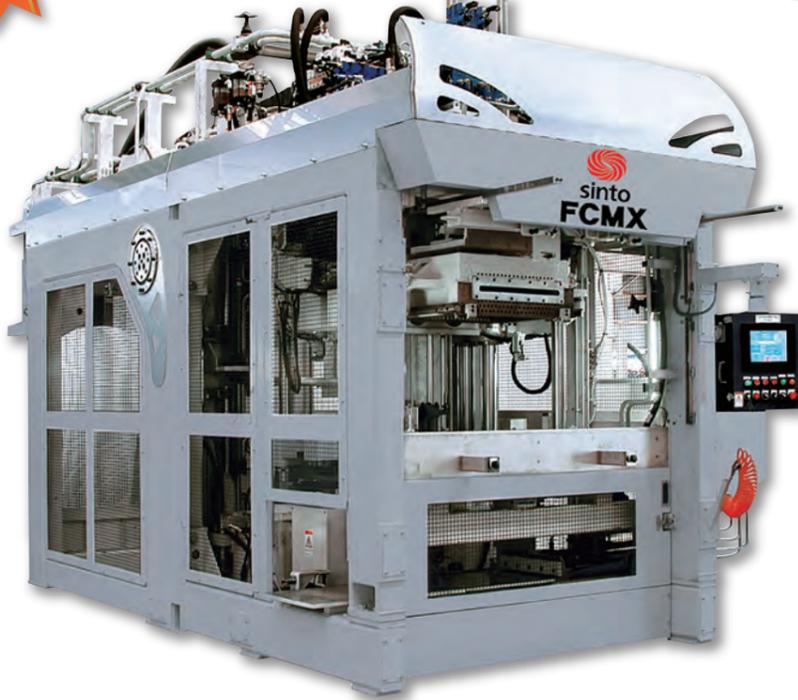
High speed with core setting time & Spacious working space

Molding Rate (MAX): **200** molds/hr

\*Including 9 sec for core setting  
FCMX-I and II

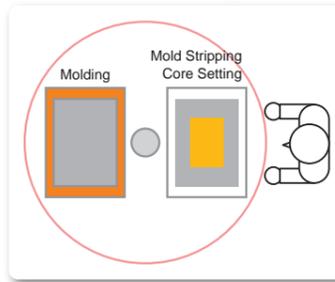


- Award of Japan**
- 27th President's Award for Outstanding Energy Saving Machinery by Japan Machinery Federation 2006
  - Toyota Award 2007 by Japan Foundry Engineering Society
  - Included in the category of preferential taxation for energy saving machines by Ministry of Economy, Trade & Industry
  - Okochi Memorial Production Award by Okochi Memorial Foundation



With aeration sand filling system

2-Station design



- Excellent mold strength and accuracy have been realized with the use of "Aeration Sand Filling" and "Centered Supporting Mechanism".
- The "squeeze pressure balance control" ensures stable molding by improving the pattern transferability and preventing pattern distortion.
- The "mold height feedback control" reduces the sand consumption and compensates for compactability variations.
- Environment-friendly and energy-saving. The noise level is as low as 75 dB (A).



## Centered Supporting Mechanism with Double Guides

FCMX, without pins and bushes, achieves highly precise pattern draw and mold matching by supporting cope and drag flasks with robust guiding.

Spacious working space allowing core setting by 2 operators



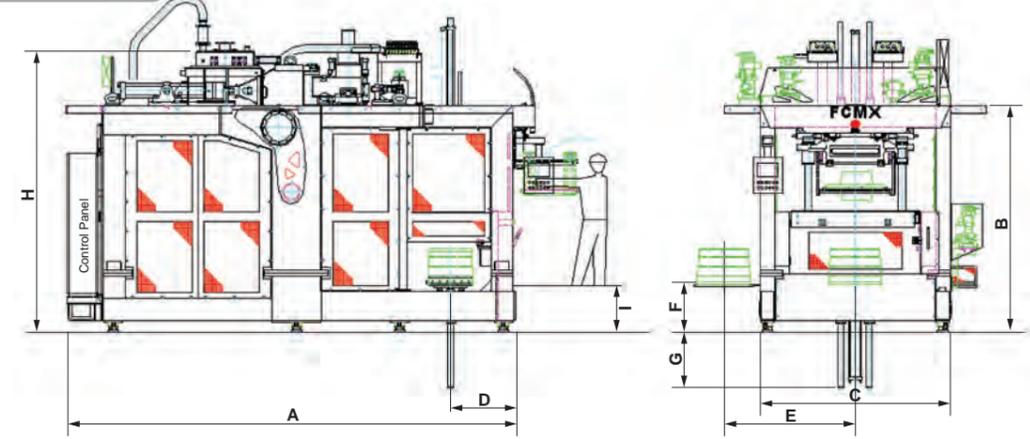
Core setting

Easy pattern change



Matchplate is taken out quite easily by shifting to Pattern Change mode.

Machine Dimensions(mm)



Model No.	A	B	C	D	E	F	G	H	I
FCMX-I	4,870	2,640	2,100	610	1,450	505	570	3,196	300
FCMX-II	5,100	2,640	2,200	655	1,550	505	610	3,268	300
FCMX-III	6,140	3,100	2,640	890	1,800	655	735	3,850	640

## Specifications

Model No.		FCMX-I	FCMX-II	FCMX-III
Mold Size	Width x Length (mm)	500x400 508x406 (20"x16") 520x420	550x450 610x508 (24"x20")	700x600
	Height (mm)	Cope:130-200 Drag:130-200 Optionally set	Cope:130-200 Drag:130-200 Optionally set	Cope:180-250 Drag:180-250 Optionally set
Molding System		Aeration Sand Filling + Squeeze		
Molding Rate (Max) *1 (Including 9 sec for core setting)		200 molds/hr (18 sec/mold)	200 molds/hr (18 sec/mold)	171 molds/hr (21 sec/mold)
Squeeze Surface Pressure (Max)		1.0 MPa. 4 selectable stages		
Aeration Pressure		0.05-0.18 MPa		
Power System		Air & Oil (30 kW-Water cooled)	Air & Oil (37 kW-Water cooled)	Air & Oil (30 kW+30 kW-Water cooled)
Air Consumption		0.6 m <sup>3</sup> (N)/mold	0.7 m <sup>3</sup> (N)/mold	1.5 m <sup>3</sup> (N)/mold
Operating Air Pressure		0.5~0.55 MPa		
Weight of Mold (Min-Max)		78 kg-131 kg	97 kg-186 kg	226 kg-315 kg

\*1) Molding speed shown above stands for the fastest case with the mold thickness setting of Thick/Thick.

Remarks

1) CE version is also available as an option.

2) The above specifications and dimensions are subject to change without notice.

## Option



● **Automatic pattern changer**  
Automatic changeover of the master plate reduces replacement cycle time eliminating required man-hours. (Includes one master plate)



● **Magnet type sprue cup**  
Sprue change can be done with a single press of a button reducing man-hours required for sprue attachment.



● **Aeration tank nozzle (UHPE)**  
UHPE nozzle reduces nozzle wear achieving less maintenance and longer life.



● **Molding analysis monitor software**  
Operation status data is collected during molding and graphed for easier traceability. (Recommended PC: Molding analysis monitor PC)



● **Molding analysis monitor PC**  
This custom PC is recommended for use with the molding analysis monitor software.

● **Cold climate specifications (Hydraulic unit heater)**  
Reduces heating time for hydraulic unit operating oil.

● **Hot climate specifications (Operation panel air conditioner)**  
Prevents overheating inside the operation panel.

● **Receiver tank**  
Stable supply of compressed air.

● **Recommended spare parts**  
These are the spare parts we recommend keeping on hand as well as the consumables required for the first year of operation.

# Horizontal Parting Flaskless Molding Machine

# FBOX series



**Award of Japan**  
 · Okochi Memorial Production Award by  
 Okochi Memorial Foundation

High speed & Wide working space

**Molding Rate (MAX): 200 molds/hr**

\*Excluding core setting time

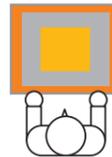
FBOX-II and III



With aeration sand filling system

Single station design

Molding → Core Setting → Mold Stripping



- Excellent mold strength and accuracy have been realized with the use of "Aeration Sand Filling" and "Accurate Drawing Mechanism".
- The "squeeze pressure balance control" ensures stable molding by improving the pattern transferability and preventing pattern distortion.
- The "mold height feedback control" reduces the sand consumption and compensates for compactability variations.
- Environment-friendly and energy-saving. The noise level is as low as 75 dB (A).



Proportional valve setting screen

## ● Easy Maintenance and Less Downtime

### User friendly function (Operating touch panel)

Can easily change proportional valve speed or pressure setting values on the touch panel. Many functions useful for preventive maintenance are also available including warnings for part wear, notifications for locations needing inspection or inspection periods, and calibrating maintenance of molding machines.

### Spacious working space for core setting



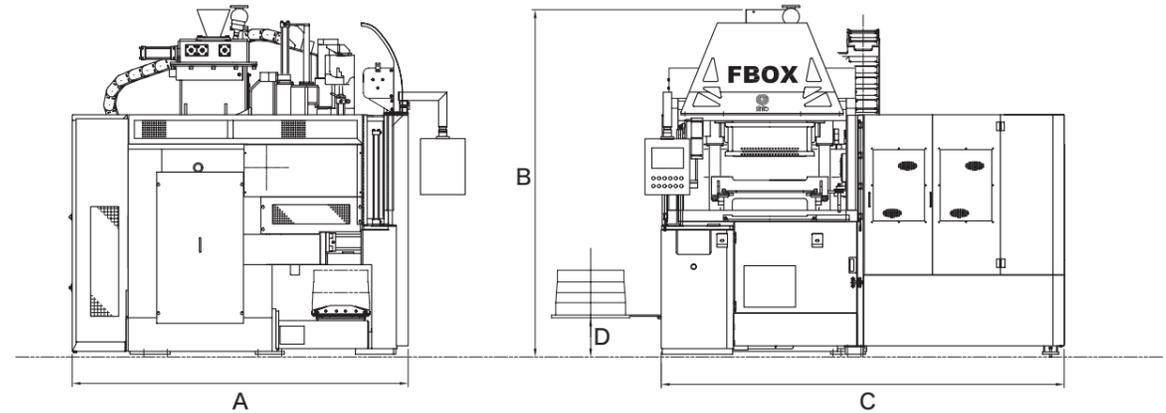
FBOX-III

### Easy gate stick setting



Screw type

### Machine Dimensions(mm)



Model No.	A	B	C	D
FBOX-II	2,974	2,996	3,425	375
FBOX-III	3,049	3,101	3,496	375
FBOX-IV	4,275	3,781	4,665	550

## ■ Specifications

Model No.	FBOX-II	FBOX-III	FBOX-IV
Mold Size	Width x Length (mm) 450x350 483x356 (19"x14") 500x400 520x420 550x450	600x500 610x508 (24"x20")	700x600
	Height (mm) Cope:130-200 Drag:130-200 Optionally set	Cope:130-200 Drag:130-200 Optionally set	Cope:180-250 Drag:180-250 Optionally set
Molding System	Aeration Sand Filling + Squeeze		
Molding Rate (Max) *1) *2) (Excluding core setting time)	200 molds/hr (18 sec/mold)	200 molds/hr (18 sec/mold)	171 molds/hr (21 sec/mold)
Squeeze Surface Pressure (Max)	1.0 MPa. 4 selectable stages		
Aeration Pressure	0.05-0.18 MPa		
Power System	Air & Oil (30 kW-Water cooled)	Air & Oil (37 kW-Water cooled)	Air & Oil (30 kW+30 kW-Water cooled)
Air Consumption	0.6 m <sup>3</sup> (N)/mold	0.7 m <sup>3</sup> (N)/mold	1.5 m <sup>3</sup> (N)/mold
Operating Air Pressure	0.5-0.55 MPa		
Weight of Mold (Min-Max)	61 kg-148 kg	117 kg-186 kg	226 kg-315 kg

\*1) Molding speed shown above stands for the fastest case with the mold thickness setting of Thick/Thick.

\*2) Total molding rate including 9 seconds for core setting (MAX) : FBOX-II·III···133 molds/hr IV···120 molds/hr

Remarks

1) CE version is also available as an option.

2) The above specifications and dimensions are subject to change without notice.

## ● Option



- **Pattern plate preheater**  
A heater attached above match plate prevents sand sticking to match plate by minimizing temperature difference between plate and sand.
- **Pattern changing area safety light curtain**  
Door on the pattern changing area can be changed from the conventional type to light curtain type. This option reduces man-hour for pattern changing and makes pattern cleaning easier.
- **Molding analysis monitor software**  
Operation status data is collected during molding and graphed for easier traceability. (Recommended PC: Molding analysis monitor PC)
- **Molding analysis monitor PC**  
This custom PC is recommended for use with the molding analysis monitor software.
- **Chiller setter**  
Automatically sets the drag chiller.
- **Core setter**  
Automates setting of cores.
- **Cold climate specifications (Hydraulic unit heater)**  
Reduces heating time for hydraulic unit operating oil.
- **Hot climate specifications (Operation panel air conditioner)**  
Prevents overheating inside the operation panel.
- **Receiver tank**  
Stable supply of compressed air.
- **Recommended spare parts**  
These are the spare parts we recommend keeping on hand as well as the consumables required for the first year of operation.

# Horizontal Parting Flaskless Molding Machine

# FDNX<sup>series</sup>

Entry model  
Simple and affordable

Molding Rate (MAX): **100** molds/hr

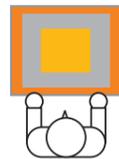
\*Excluding core setting time  
FDNX-0



With aeration sand filling system

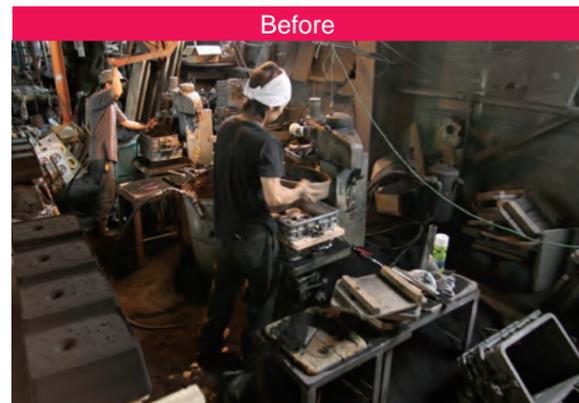
Single station design

Molding → Core Setting → Mold Stripping



- Aeration sand filling technology for producing high quality castings.
- Ready to use by just connecting power (100V AC-240V AC), compressed air, and sand supply.
- Low-noise working environment of 72dB(A).
- Ideal for switching from manual molding to automatic molding.

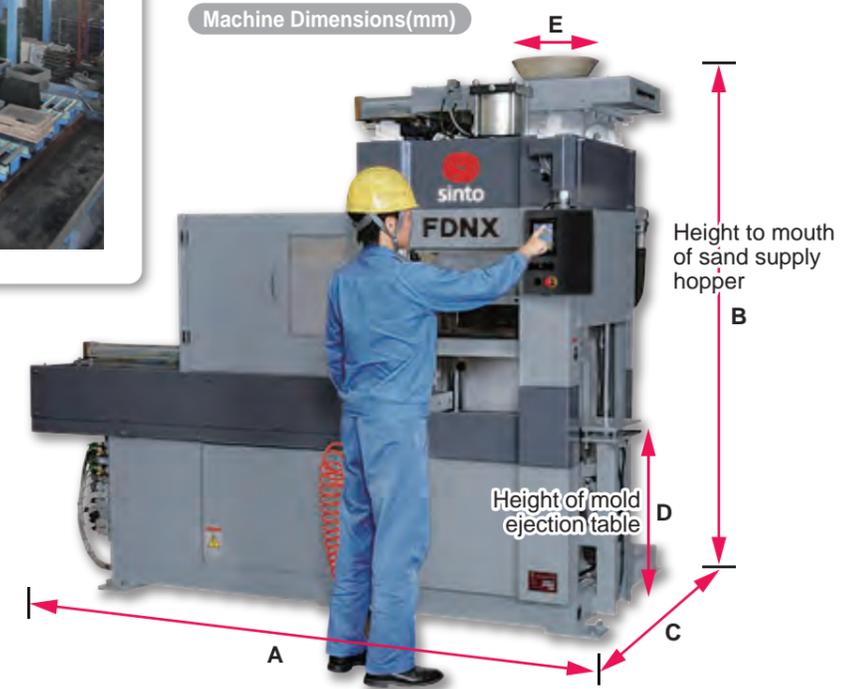
\*Startup and training package is available upon request.



Dozens of jolt-squeezers making molds manually



A couple of automatic molding machines producing same number of molds



Model No.	A	B	C	D	E
FDNX-0	2,608	2,365	1,772	820	395
FDNX-I	2,781	2,690	2,050	940	395

## Specifications

Model No.		FDNX-0	FDNX-I
Mold Size	Width x Length (mm)	450x350	500x400
	Height (mm)	Cope:150 Drag:150	Cope:180 Drag:180
Molding System		Aeration Sand Filling + Squeeze	
Molding Rate (Max) *1) *2) *3) (Excluding core setting time)		100 molds/h (36 sec/mold)	90 molds/hr (40 sec/mold)
Squeeze Surface Pressure (Max)		0.7 MPa. 4 selectable stage	
Aeration Pressure		0.05-0.18 MPa	
Power System		Air & Air on Oil	
Air Consumption		1.0 m <sup>3</sup> (N)/mold	1.5 m <sup>3</sup> (N)/mold
Operating Air Pressure		0.56±0.04 MPa	
Weight of Mold		71 kg	108 kg

\*1) Molding speed may vary depending on ambient temperature, compressed air source pressure and squeeze pressure.

\*2) Total molding rate including 9 seconds for core setting (MAX) : FDNX-0...80 molds/hr FDNX-I...78 molds/hr

\*3) Molding rate of CE version models : 90 molds/hr (FDNX-0), 80 molds/hr (FDNX-I)

Remarks

1) CE version is also available as an option.

2) The above specifications and dimensions are subject to change without notice.

## Option

● **Mold width x length option**  
508x406(mm)(20"x16") for FDNX-I

● **Mold height option**  
Cope:120 Drag:120(mm) for FDNX-0  
Cope:150 Drag:150(mm) for FDNX-I

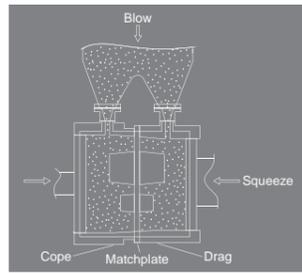
● **Receiver tank**  
Stable supply of compressed air.

● **Recommended spare parts**  
These are the spare parts we recommend keeping on hand as well as the consumables required for the first year of operation.

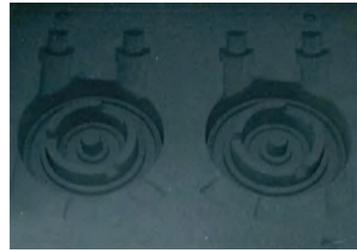
# Simple mechanism, Standard model with easy setup & easy operation

Application to a wide variety of mold dimensions.

## Top Blow System



- Unique mechanism of blow pressure control realizes uniform sand filling density.
- Most of matchplates used for conventional manual machines are applicable with no large modification.
- Compact size allows to use existing floor space efficiently.
- Safe and operator friendly posture for core setting with drag mold shuttle mechanism.



## Horizontal Parting Flaskless Molding Machine

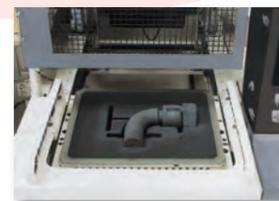
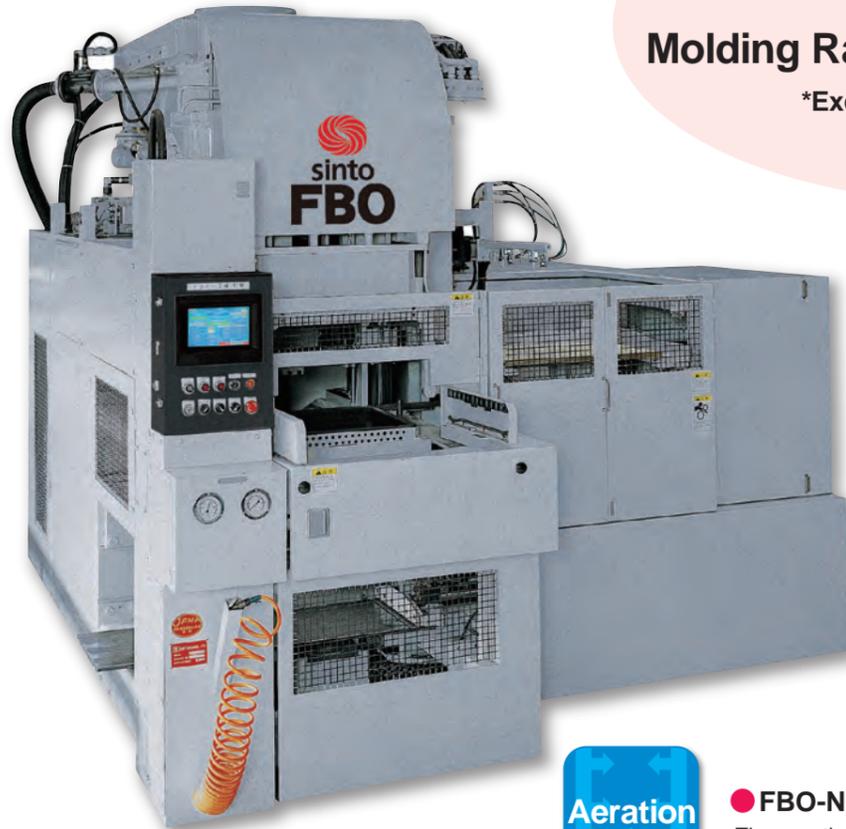
**FBO** series (Blow) • **FBO-N** series (Aeration)

Easy core setting & Easy operation

Molding Rate (MAX): **150** molds/hr

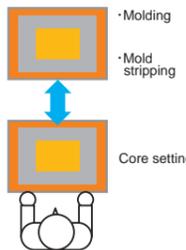
\*Excluding core setting time

FBO-II • FBO-IIN



Drag mold slides out

Single station design



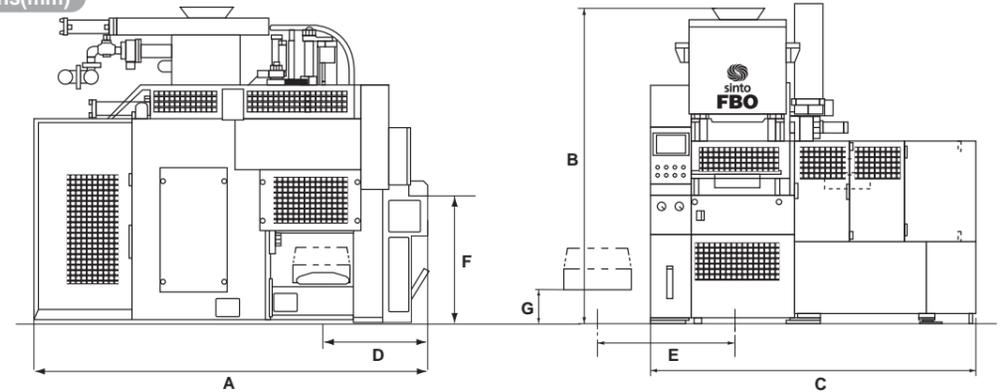
With aeration sand filling system

## FBO-N series (Aeration sand filling)

The aeration sand filling system has been adopted instead of the blowing system to ensure uniform sand filling density while maintaining excellent features of the FBO series. FBO-N series is superior in flexibility, operability, and production stability.

- Top blow system of FBO does not require severe control of molding sand. The machine accepts tough property of sand with a high compactability value.
- Blow pressure control system realized uniform sand filling density in a mold. FBO is tolerable and less sensitive for a wider property range of molding sand, and is possible to offer a compatibility of easy sand control and high accuracy of mold to customers.
- Automatic drag shuttle mechanism allows safe and easy core setting in a comfortable posture.

## Machine Dimensions(mm)



Model No.	A	B	C	D	E	F	G
FBO-II (N)	3,515	2,810(2,855)	2,890	945	1,190	1,140	375
FBO-III (N)	3,630	2,987(3,182)	3,185	1,050	1,375	1,140	375
FBO-IV (N)	5,035	4,477	4,225	1,450	1,700	1,585	550
FBO-V	5,825	5,397	4,542	1,625	1,850	1,900	600
FBO-V(812.8x812.8)	5,905	5,447	4,542	1,725	1,850	1,900	600

\*Aeration type in parentheses (B dimensions for FBO-IV N depend on the size of the flask)

## Specifications

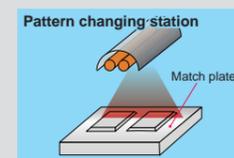
Model No.	FBO-II (N)	FBO-III (N)	FBO-IV (N)	FBO-V
Mold Size				
Width x Length (mm)	400x300 430x310 450x350 483x356 (19"x14")	500x400 508x406 (20"x16") 520x420 550x450	600x500 609.6x508 (24"x20") 660.4x508 (26"x20") *4)	700x600 711.2x508 (28"x20") 711.2x609.6 (28"x24") 711.2x660.4 (28"x26")
Height (mm)	Cope:130-200 Drag:130-200 (400x300, 430x310 Cope:100-150 Drag:100-150) 3-steps optionally set		Cope:180-250 Drag:180-250 3-steps optionally set	Cope:230-300 Drag:230-300 3-steps optionally set
Molding System	Top blow + Squeeze (FBO-N series:Aeration Sand Filling + Squeeze)			
Molding Rate (Max) (Excluding core setting time)	150 molds/hr *1) (24 sec/mold)	133 molds/hr *1) (27 sec/mold)	100 molds/hr *2) (36 sec/mold)	90 molds/hr *3) (40 sec/mold)
Squeeze Surface Pressure (Max)	1.0 MPa. 4 selectable stages			
Power System	Air & Oil (15 kW - Water cooled)		Air & Oil (30 kW - Water cooled)	Air & Oil (52 kW - Water cooled)
Air Consumption	1.0 m <sup>3</sup> (N)/mold	1.2 m <sup>3</sup> (N)/mold	2.5 m <sup>3</sup> (N)/mold	3.5 m <sup>3</sup> (N)/mold
Operating Air Pressure	0.5-0.55 MPa			
Weight of Mold (Min-Max)	36 kg-148 kg	117 kg-201 kg	227 kg-352 kg	321 kg-557 kg

\*1) Molding speed given here stands for fastest case with maximum setting of mold thickness and without core. If cores are set, the cycle time is prolonged for 4 sec. for drag shuttling + core setting time.  
\*2) Molding speed given here stands for fastest case with maximum setting of mold thickness and without core. If cores are set, the cycle time is prolonged for 5 sec. for drag shuttling + core setting time.  
\*3) Molding speed given here stands for fastest case with maximum setting of mold thickness and without core. If cores are set, the cycle time is prolonged for 6 sec. for drag shuttling + core setting time.  
\*4) Available with mold height of 180-250mm (both cope and drag), with molding rate of 120 molds/hr.

## Remarks

- CE version is also available as an option.
- The above specifications and dimensions are subject to change without notice.

## Option



**Pattern plate preheater**  
A heater attached above the match plate prevents sand sticking to match plate by minimizing temperature difference between plate and sand.



**Core setter**  
Automates setting of cores.

**Cold climate specifications (Hydraulic unit heater)**  
Reduces heating time for hydraulic unit operating oil.

**Hot climate specifications (Operation panel air conditioner)**  
Prevents overheating inside the operation panel.

**Drag air blow-off**  
Blows drag when drag is sliding. Prevents sand inclusion and improves casting quality.

**Receiver tank**  
Stable supply of compressed air.

**Recommended spare parts**  
These are the spare parts we recommend keeping on hand as well as the consumables required for the first year of operation.

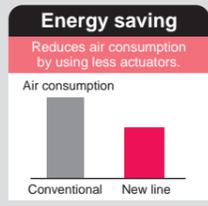
# We offer the best foundry system including process selection, according to the customer's products, production volume and production system.

## Automatic Line for FDNX series

Suitable molding machines : **FDNX**

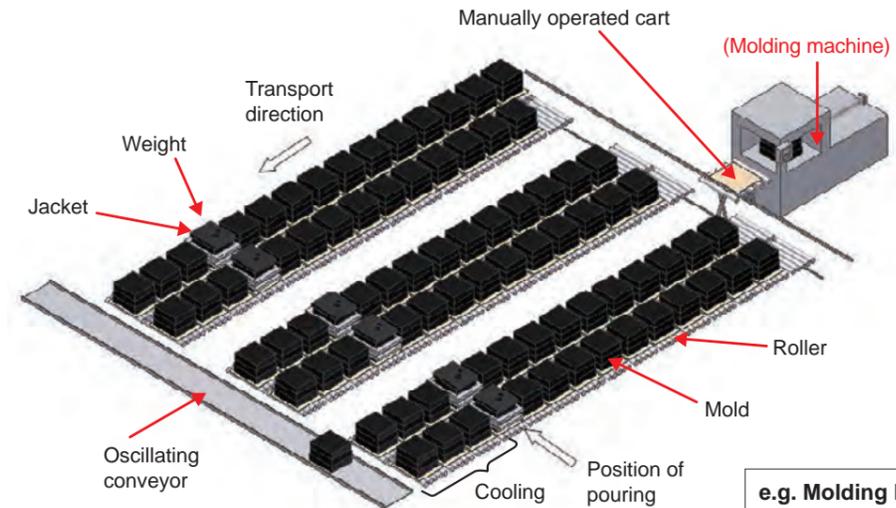


e.g. Molding Machine: FDNX-0  
**Molding Rate: 100 molds/hr. (36 sec/mold)**  
 Mold size(mm): 450x350  
 Mold height(mm): 150  
 Mold car size(mm): 600x550  
 Primary cooling time: Approx. 18-30 min(30-50 molds)  
 Secondary cooling time: 13.8 min(23 molds) \*Option  
 Required volume of sand: Approx. 7.1 tons/hr.  
 Production capacity: Approx. 192 ton/month(Assumption)



## Manual Line (with Roller)

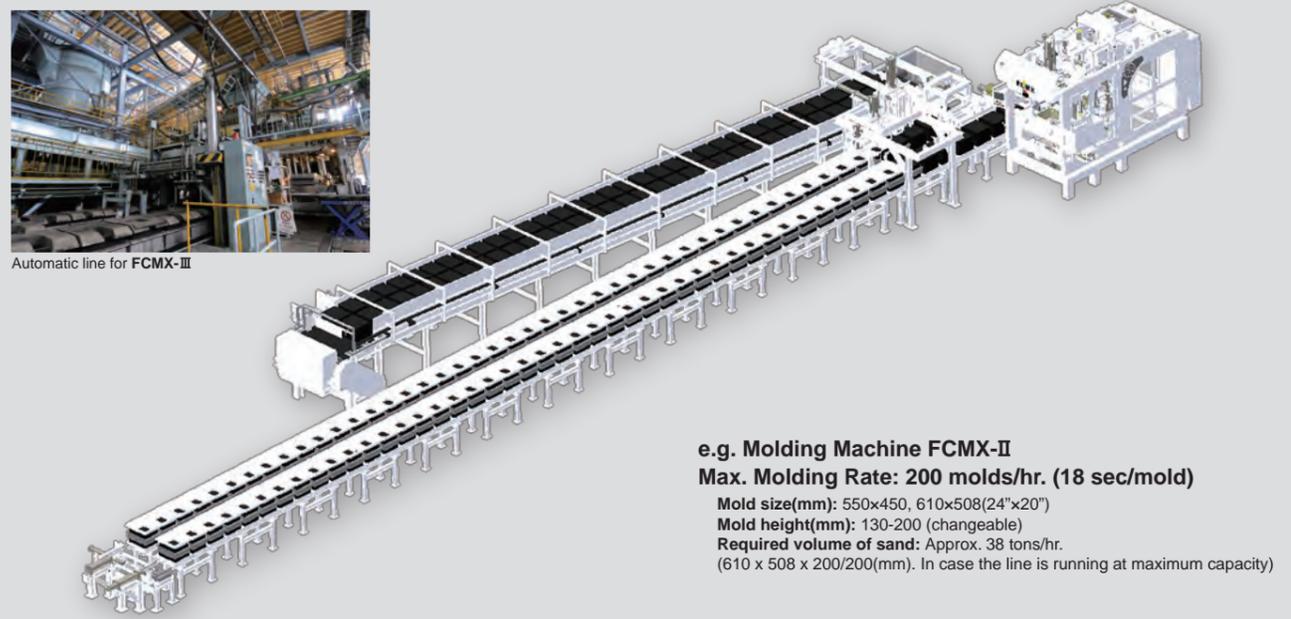
Suitable molding machines : **FDNX**



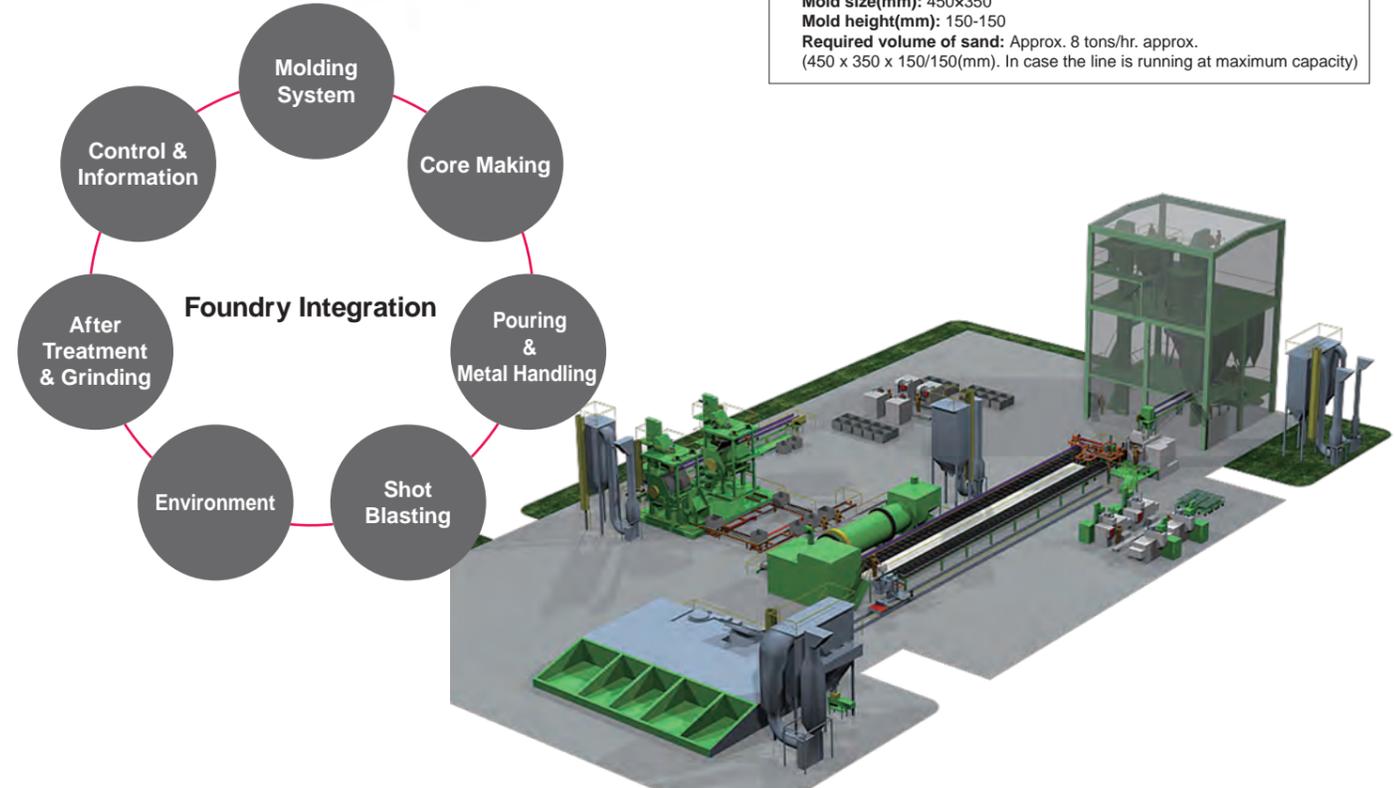
e.g. Molding Machine FDNX-0  
**Max. Molding Rate: 100 molds/hr. (36 sec/mold)**  
 Mold size(mm): 450x350  
 Mold height(mm): 150-150  
 Required volume of sand: Approx. 8 tons/hr. approx.  
 (450 x 350 x 150/150(mm). In case the line is running at maximum capacity)

## Automatic Line (with Pusher/Cushion Cylinders)

Suitable molding machines : **FCMX FBOX FBO(N)**



e.g. Molding Machine FCMX-II  
**Max. Molding Rate: 200 molds/hr. (18 sec/mold)**  
 Mold size(mm): 550x450, 610x508(24"x20")  
 Mold height(mm): 130-200 (changeable)  
 Required volume of sand: Approx. 38 tons/hr.  
 (610 x 508 x 200/200(mm). In case the line is running at maximum capacity)



# For the purpose of continuous production of high quality casting and reassuring customer's production operations... Sinto supports customer's sustained manufacturing by attentive services.

World-wide support from support centers in Japan and Germany, along with overseas support branches.



This service may not be available depending on your internet access environment. In such case, availability of this service shall be reviewed respectively.



## Maintenance and monitoring Support To Keep Equipment at Best Condition

This is a program to keep operation of equipment at its best condition. There are several functions and services available, such as diagnosis by "mechanical doctors", operation data analysis, and parts replacement timing announcement.



Daily inspection support with hand-held terminals



Equipment diagnosis by "mechanical doctors"

Maintenance Detail Screen	
Inspection of aeration nozzle	
The day to announce	2013 / 05 / 31
The number of cycle to announce	30000
Remaining number	29989
Reset	

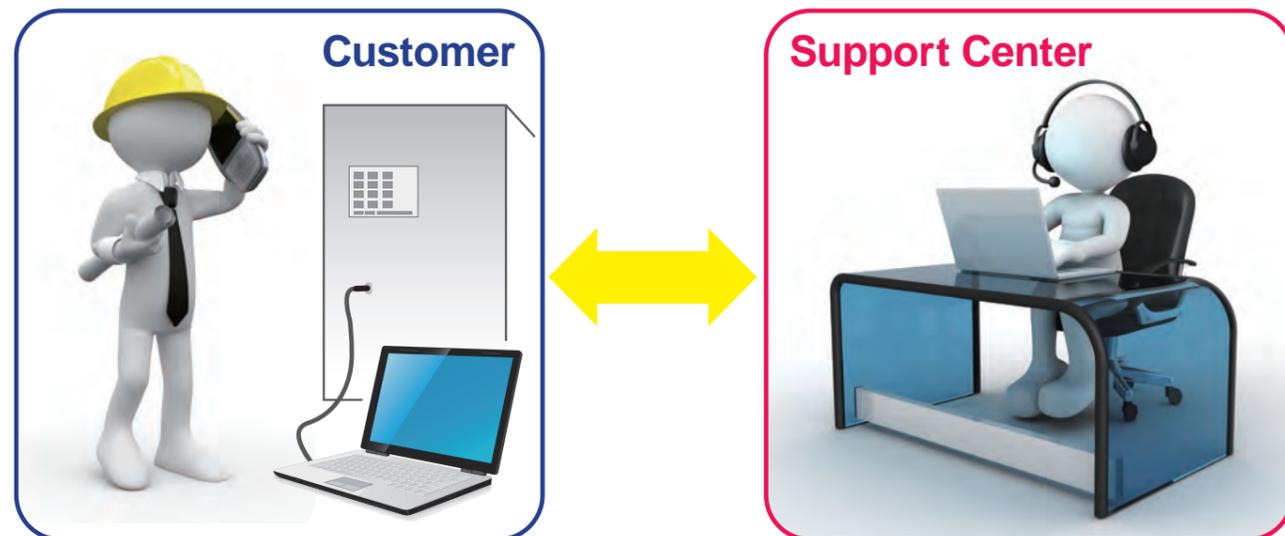
Consumable part replacement information

Replacement history screen		
Inspection of aeration nozzle		
2013 / 4 / 26		14034
2013 / 3 / 29		14375
2013 / 2 / 28		13938
0 / 0 / 0		0
0 / 0 / 0		0
0 / 0 / 0		0
0 / 0 / 0		0
0 / 0 / 0		0
0 / 0 / 0		0
0 / 0 / 0		0

## Remote Support

Quick Recovery Assistance at time of machine problem

This program includes support from engineers knowledgeable about equipment for temporary action and recovery in case of emergent machine troubles during production.



A program which advises more effective operation improvements for is available, by collecting operation information automatically and by analyzing such data.

## Quick parts supply

Avoid downtime of Manufacturing

Critical parts and consumables, which immediately lead to a line stop or failure when not available shall be kept as spares in stock at the customer's facility and also at an overseas site close to the customer to permit immediate delivery.

