

High-performance, high-reliability and high-productivity  
electric injection molding machine

# FANUC

## ROBOSHOT $\alpha$ -SiB series



FANUC standard CNC and servo system installed  
Electric injection molding machine achieves high quality, high

# **FANUC ROBOSHOT $\alpha$ -SiB series**



**ROBOSHOT  $\alpha$ -S50iB**



**ROBOSHOT  $\alpha$ -S100iB**



**ROBOSHOT  $\alpha$ -S150iB**

reliability and high productivity



## High-Performance of Molding

FANUC standard CNC achieves superior molding repeatability  
High-rigidity and low-friction mechanism achieve precision molding  
Additional servo axis control and second injection unit achieves extra value in molding

## Minimizing Downtime

FANUC standard servo system achieves high-reliability and lower energy consumption  
High-precision AI protection minimizes downtime  
Network capability to support molding plant IoT

## Ease of Use

21.5' large display unit achieves superior operability  
Conformity to safety standards supports molding plant globalization  
Robot system to promote automation of molding plant



Vertical second injection unit  
**ROBOSHOT SI-20A**



Horizontal second injection unit  
**ROBOSHOT SI-300HA**



Production and quality information management tool  
**ROBOSHOT-LINKi2**



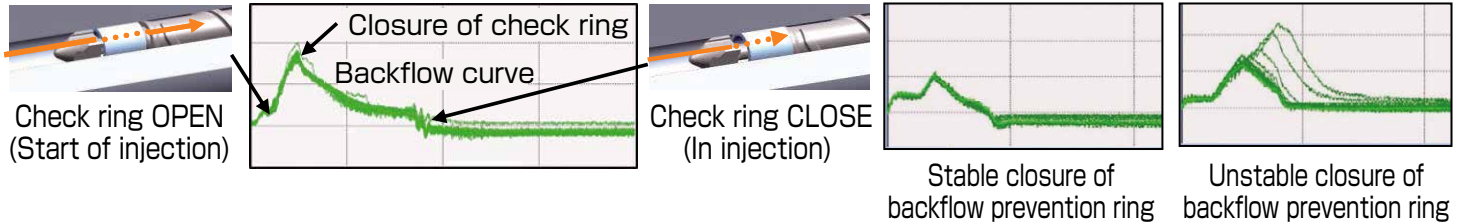
Simple Startup of Robot system  
**ROBOSHOT-QSSR**

# High-Performance of Molding

## FANUC standard CNC achieves superior molding repeatability

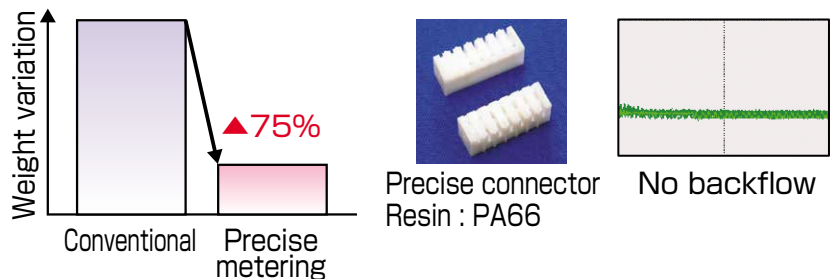
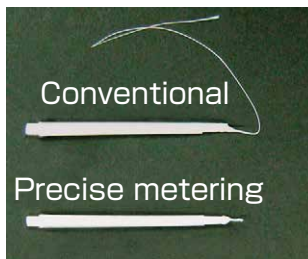
### Backflow monitor

- Detects backflow precisely at injection start, Displays injection repeatability in graph
- Enables to decide replacing time of check ring and verifying stability of precise metering control



### Precise metering

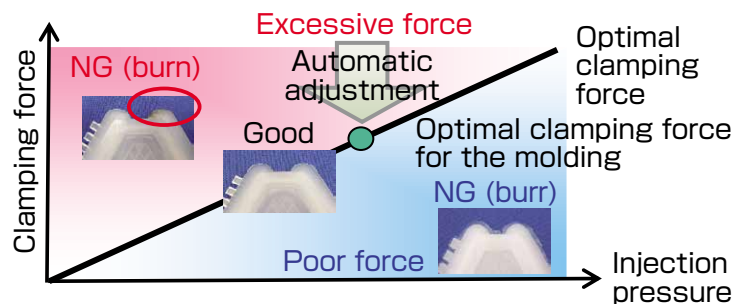
- Controls screw movement during metering optimally, Prevents string and silver streaking
- Eliminates backflow of resin, Stabilizes injection volume and reduces weight variation of molded products



## Control technology achieves high-quality and stable molding

### Precision clamping force control

- Adjusts clamping force automatically to be optimal for the molding by clamping force sensor
- Prevents molding defects such as burn and burr, Reduces frequency of mold maintenance

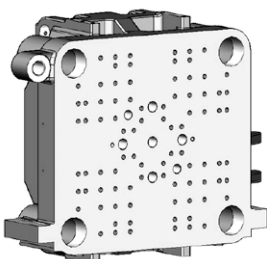


## High-rigidity and low-friction mechanism achieves precision molding

### Clamping unit

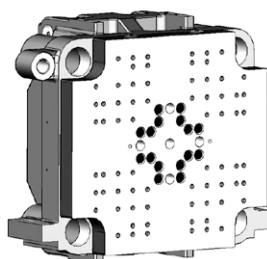
- Selectable two types of moving platen
- Low-friction linear guided support\*

[Single platen]  
Expands mold area



Magnetic clamping system  
Three plates mold etc.

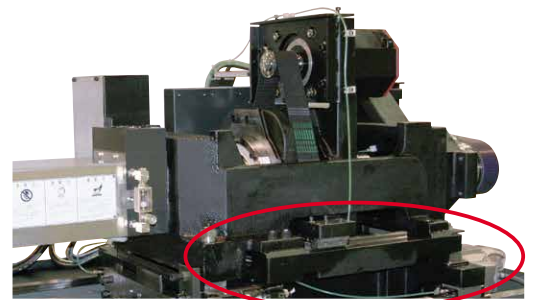
[Double platen]  
Pursuits high rigidity



Multi cavities  
Thin wall molding etc.

### Injection unit

- Adopts low-friction linear guides, Achieves smooth injection and metering motion



Low-friction linear guides

Standard for  $\alpha$ -S50iB/ $\alpha$ -S100iB/ $\alpha$ -S130iB

\*Optional. Available options differ in region and model.

## Additional servo axis control and second injection unit achieves extra value in molding (Option)

### Second injection unit

- FANUC standard CNC achieves accuracy and repeatability as same level as ROBOSHOT
- Integrated control into ROBOSHOT operation screen  
(Second injection unit, Rotary table, Integrated hot runner controller)\*

#### [Vertical second injection unit]

##### ROBOSHOT SI-20A\*<sup>1</sup>



Mechanical unit      Control unit

\*<sup>1</sup> Available for models with ROBOSHOT S-2000iB series or later and clamping force of 50 tons or more

#### [Horizontal second injection unit]

##### ROBOSHOT SI-300HA\*<sup>2</sup>



Built-in control unit

\*<sup>2</sup> Available for models with ROBOSHOT  $\alpha$ -SiA series or later and clamping force of 100 tons or more

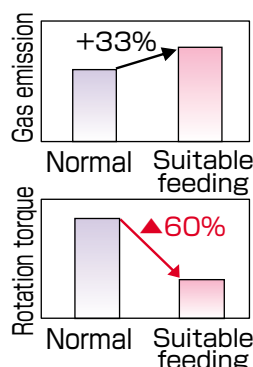
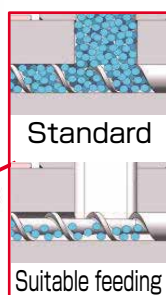
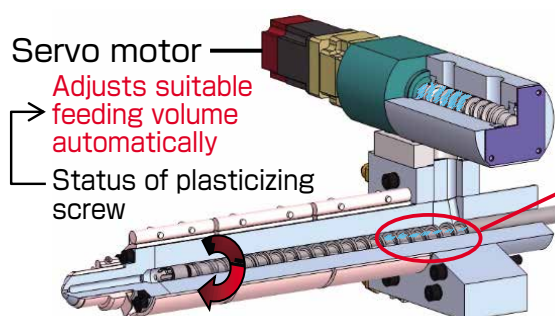
Item			SI-20A					SI-300HA			
Injection unit	Screw diameter	mm	14	16	18	20	22	26	28	32	36
	Maximum injection volume	cm <sup>3</sup>	9	11	14	24	29	50	58	103	147
	Maximum injection pressure (High pressure filling mode)	MPa	--	--	--	--	--	340	320	270	220
	Maximum injection pressure	MPa	200	180	140	130	120	260	240	220	190
	Maximum pack pressure	MPa	180	160	120	110	100	260	220	200	170
	Maximum injection speed	mm/s	300					330			
	Maximum screw rotation speed	min <sup>-1</sup>	250					450			

Note : Molding conditions may be restricted depending on the screw diameters. For details, see the attached specification list.

### Additional axis control advances ROBOSHOT further\*

#### [Suitable feeding device]

- Achieves optimal amount of resin supply by feedback control, Achieves long term molding repeatability



#### Promotes gas ventilation

- Reduces residue on mold surface
- Prevents wearing of screw and cylinder

#### Reduces shear heating

- Prevents molding defects such as burn

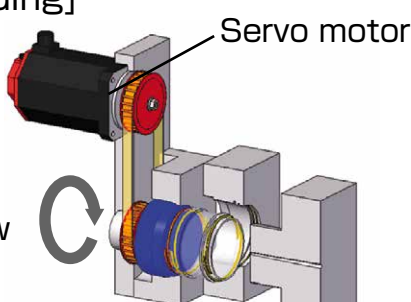
### Additional axis control achieves versatile applications\*

- High-speed and accurate positioning by FANUC servo technology
- No additional control equipment required, Integrated into ROBOSHOT operation

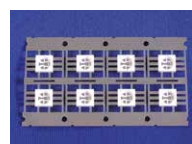
#### [Unscrewing molding]



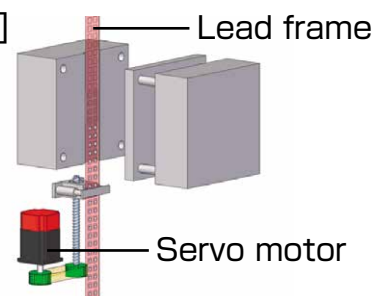
Container with screw  
Resin : PS



#### [Hoop molding]



LED parts  
Resin : LCP

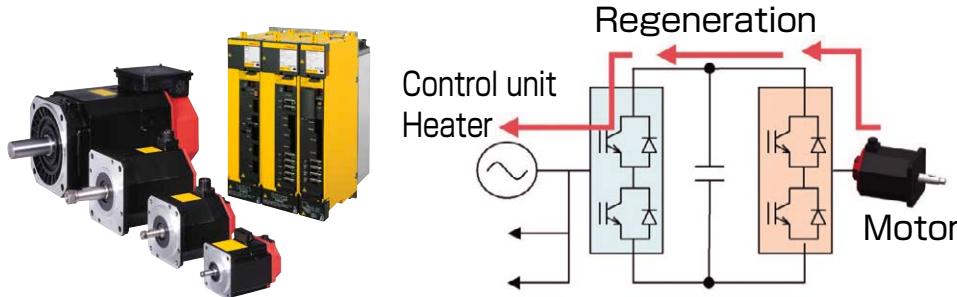


\*Only additional servo system will be offered

# Minimizing Downtime

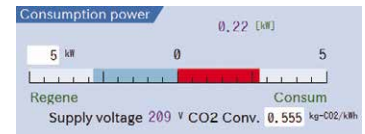
## FANUC standard servo system achieves high-reliability and lower energy consumption

- High-efficiency servo system reuses regenerated power during deceleration of motors, Excellent energy saving performance
- Displays consumption power and regenerated power on operation screen
- Monitors power consumption including auxiliary equipment\*

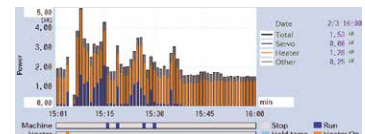


High-performance servo motors and servo amplifiers  $\alpha$ i series

Energy saving by power source regeneration



Real-time display of consumption power and regenerated power



Consumption power history and machine status can be displayed.

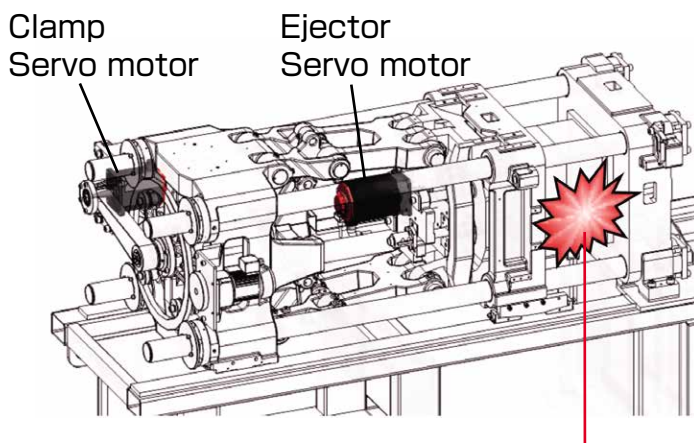
Consumption power monitor screen

\*:Optional. Available options differ with region and model.

## High-precision AI protection minimizes downtime

### AI mold protection

- Detects remaining molded products during mold closing or abnormal sliding core motion during mold opening with high-accuracy
- Interrupts motion immediately after abnormal status detected, Protects mold and ejector pin from damage
- The load deviation during mold closing and opening can be detected, automatic setting of monitoring width is available



Experimental example of AI mold protection by paper cup



AI mold protection ON



AI mold protection OFF

### 1.Realtime monitoring

Monitors load of servo motors in every cycle

### 2.Problem detection

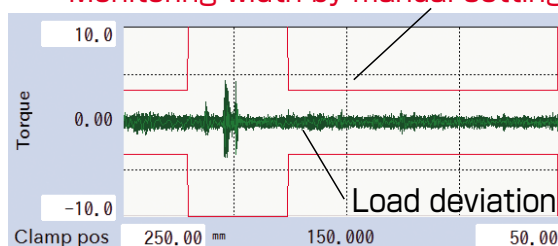
Detects load deviation precisely caused by remaining molded products etc.

### 3.Protection

Interrupts clamp and ejector motion immediately

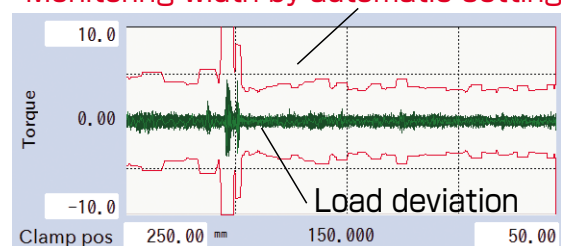
### [Manual setting of monitoring width]

#### Monitoring width by manual setting



### [Automatic setting of monitoring width]

#### Monitoring width by automatic setting



6 Depends on the experience of the operator

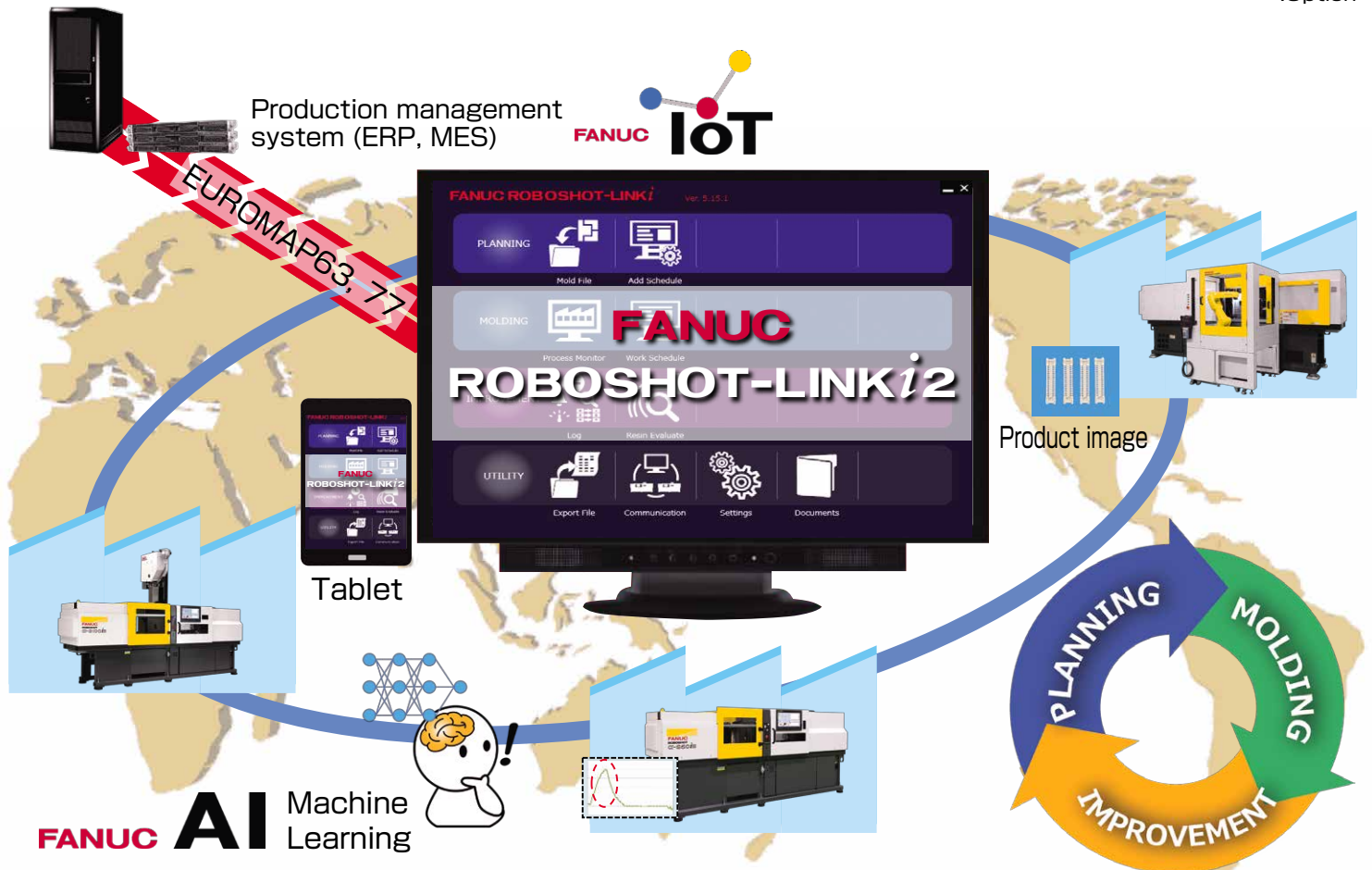
Optimal setting with easy operation

# Network capability to support molding plant IoT

## ROBOSHOT-LINKi2\*

- Production and quality information management tool supports larger-scale and globalization of molding plant
- Supports Web browsers and can be displayed on various devices such as PC and tablet
- Supports communication standards (EUROMAP63, EUROMAP77) for production management system (ERP, MES)
- Display on ROBOSHOT screen ( $\alpha$ -SiB series)

\*:Option



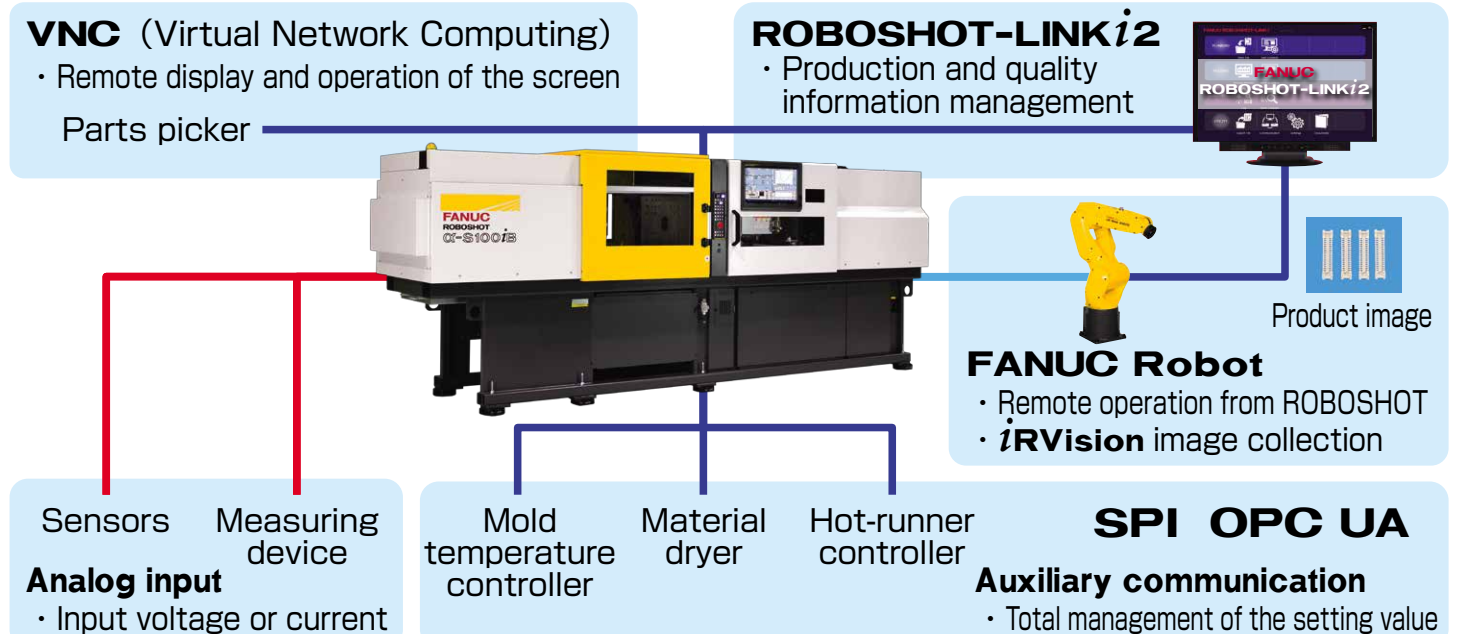
## IoT of molding cell (Network between injection molding machine and peripheral devices, VNC)

### VNC (Virtual Network Computing)

- Remote display and operation of the screen
- Parts picker

### ROBOSHOT-LINKi2

- Production and quality information management



# Ease of Use

## 21.5' large display unit achieves superior operability

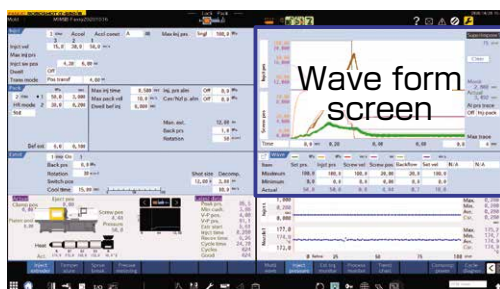
### FANUC PANEL *i*H Pro with the latest 21.5 inch display unit

- Achieves doubled display area by full HD high-definition display screen
- Intuitive operation by swiping and multi-touch

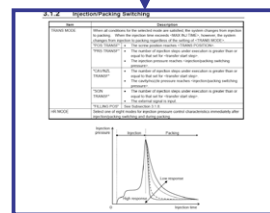
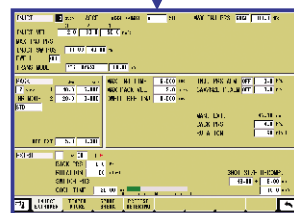


### Divided screen

- Selectable from various screens
- The horizontally arranged two screens provide easy sight line motion, superior visibility and operability.



### Easy switching



### Full screen

- **ROBOSHOT-LINK*i*2** displayed in full screen



Easy switching



## Conformity to safety standards supports molding plant globalization

Conform to ISO 20430, the international safety standard for injection molding machines

- Fully enclosed cover style inhibits operator from contacting moving part and high temperature part with high-level safety
- Electromagnetic lock is installed on the safety door as standard equipment
- Cylinder heat encover with improved safety



ISO20430 (International safety standard for injection molding machines)

### Multiple languages support

Japanese / English / Chinese simplified / Chinese traditional / Korean / Thai / Vietnamese Indonesian / German / French / Italian / Spanish (Mexican) / Portuguese / Czech / Finnish Dutch / Hungarian / Polish / Danish / Russian / Turkish / Swedish

Safety requirements differ in region

Please confirm the latest safety requirements of the region where ROBOSHOT is installed.

## Robot system to promote automation of molding plant

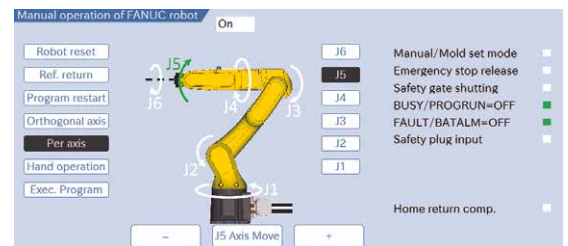
Easy connection between ROBOSHOT and FANUC Robot by FL-net

- ROBOSHOT ( $\alpha$ -SiB series) and FANUC Robot can be connected by single Ethernet cable
- Remote operation of FANUC robot on ROBOSHOT screen is available



$\alpha$ -SiB series

FL-net



Robot operation screen of ROBOSHOT

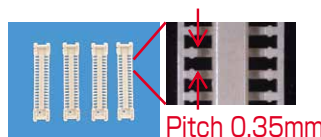
### ROBOSHOT-QSSR (Quick and Simple Startup of Robotization)

- Package product of fundamental elements of Robot system to start automatization
- Compact design, Easy installation, Easy setting and Easy operation



#### [ROBOSHOT-QSSR/M-1iA]

Automatic inspection and alignment process by delta robot



Precise connector  
Resin : LCP

#### [ROBOSHOT-QSSR/LR Mate]

Automatic insert and taking out process by LR Mate



Water pump rotor  
Resin : Phenol

# Application to a range of molding fields

## Precision lens

### Moving platen support by linear guides\*

- Prevents sink marks and warpage, Achieves uniform thickness distribution

### Screw and cylinder for lens molding

- Optimized screw design and surface treatment achieves high-quality molding



Camera lens for smart phone  
Resin : COC

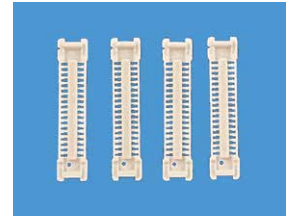
## Precision connector

### Precise metering

- Reduces weight variation and eliminates stringy, Achieves long term molding repeatability

### Nozzle for Liquid Crystal Polymer\*

- Optimized nozzle and temperature control for LCP achieves high-quality molding, Prevents resin carbonization



Precise fine-pitch connector  
Resin : LCP

## Automotive parts

### Single platen

- Expanded mold installation area, Supports magnetic clamping system

### Hot runner controller (Built-in)\*

- Integrated into ROBOSHOT operation, Achieves precise temperature control



Automotive connector  
Resin : PBT

## Medical parts

### Medical package\*

- Package options suitable for medical parts molding

### Suitable feeding device\*

- Prevents burn and carbonization, Suitable for molding with transparent resin



Syringe  
Resin : COP

## Multi-components molding

### Second injection unit\*

- FANUC CNC installed, operation from ROBOSHOT screen

### Additional servo axis control\*

- Integrated into ROBOSHOT operation, Achieves high-speed and accurate positioning of rotary table



Automotive interior part  
Resin : ABS+PP

## Various molding materials

### Screw and cylinder suitable for various molding materials

- Standard machine equipped with dedicated screw and cylinder enables various moldings

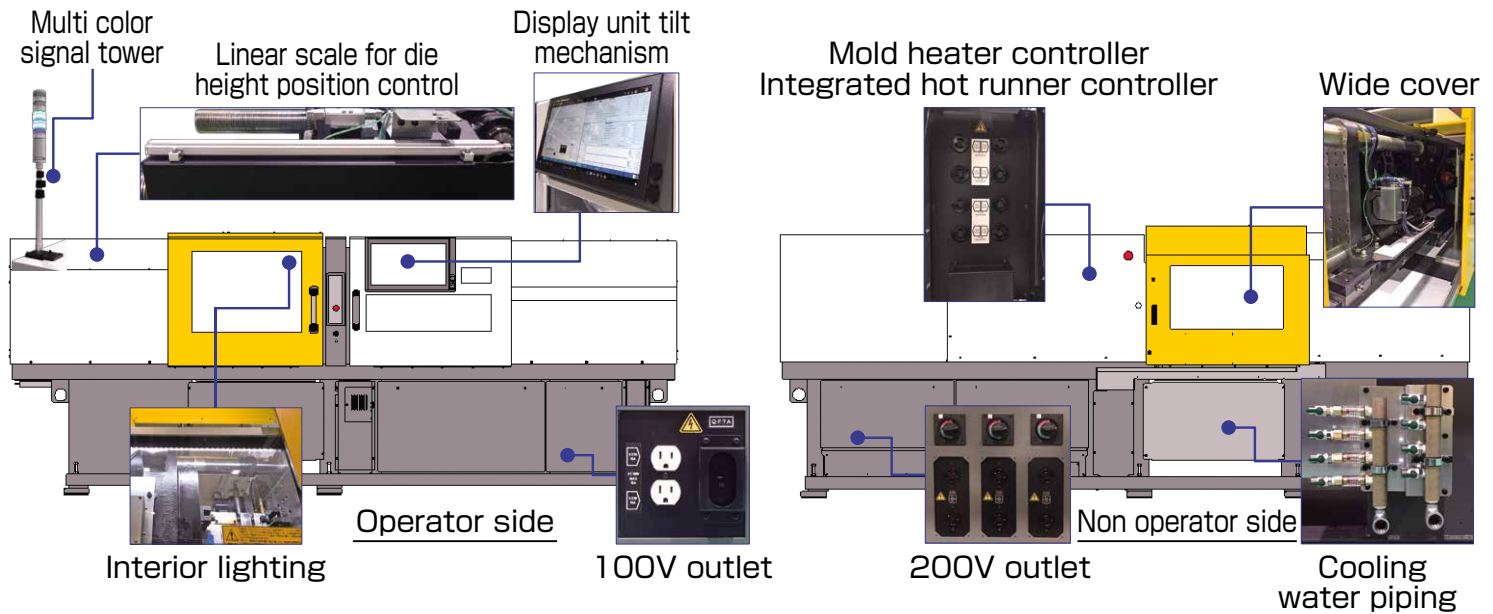
### Various molding materials are available

- Silicone, MIM, CIM, Thermoset resin, carbon fiber reinforced resin, etc.



Pedal arm  
Resin : CFRTP+CFRTP Sheet

# Options



## ROBOSHOT $\alpha$ -S150iB Medical package

[Tiebarbushless clamping specification]

[Options for medical parts molding]  
(Individual order is available)

Tiebarbushless design  
Reinforced bearing  
Linear guide  
Reinforced base frame



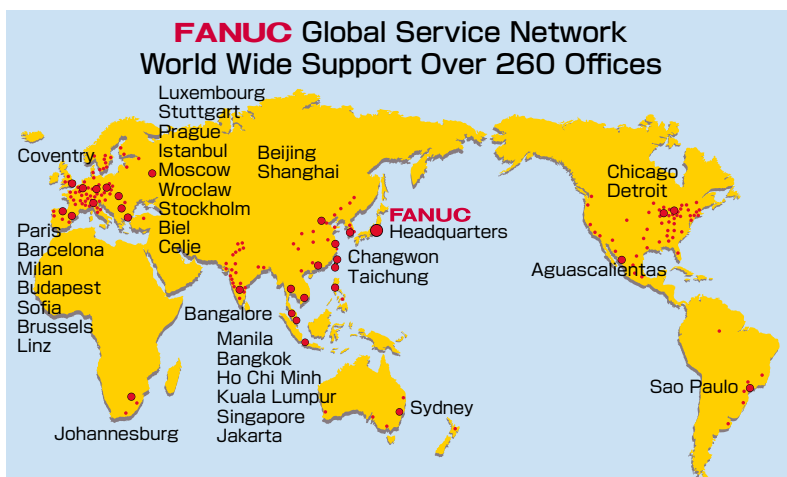
- ① White painted cover or Stainless cover
- ② Plated platen
- ③ Anti-rust linear guide
- ④ Food grease
- ⑤ High rigidity mount

Optional. Available options differ with region and model.  
Refer to the attached "specification list" for the details on the options.

# Maintenance and customer support

## Worldwide customer service and support

FANUC operates customer service and support system anywhere in the world through subsidiaries, affiliates and distributor partners. FANUC provides the highest quality service with the quickest response at the location nearest you.



## FANUC ACADEMY

FANUC ACADEMY operates training programs on FANUC ROBOSHOT which focus on practical operations and molding know how and maintenance.



Inquiries : Oshinomura, Yamanashi,  
Japan 401-0597  
Phone: 81-555-84-6030  
FAX: 81-555-84-5540

# Specifications

Clamping unit	Item	Unit	α-S50iB					α-S100iB					α-S130iB					
	Tonnage	kN	500 (50tonf)					1000 (100tonf)					1300 (130tonf)					
	Maximum and minimum die height	mm	350/150					450/150					---					
	Double platen Single platen	mm	410/210					520/220					570/200					
	Clamping stroke	mm	250					350					400					
	Tie bar spacing (H × V)	mm	360×320					460×410					530×530					
Injection unit	Platen size (H × V)	mm	500×470					660×610					730×730					
	Ejector point / Ejector force / Ejector stroke	point/kN/mm	5 / 20 (2.0tonf) / 70					5 / 25 (2.5tonf) / 100					5 / 25 (2.5tonf) / 100					
	Screw diameter	mm	20	22	26	28	32	22	26	28	32	36	40	26	28	32	36	40
	Maximum injection volume	cm <sup>3</sup>	24	29	50	58	76	29	50	58	103	147	181	50	58	103	147	181
	Injection specification	---						200mm/s					200mm/s					
	Maximum injection pressure (High pressure filling mode)	MPa	---	---	---	---	---	340	340	320	270	220	---	340	320	270	220	---
	Maximum injection pressure	MPa	---	---	---	---	---	290	290	270	250	190	160	290	270	250	190	160
	Maximum pack pressure	MPa	---	---	---	---	---	290	290	270	250	190	160	290	270	250	190	160
	Maximum injection speed	mm/s	---					200					200					
	Maximum screw rotation speed	min <sup>-1</sup>	---					300					300					
	Injection specification	---	350mm/s					350mm/s					350mm/s					
	Maximum injection pressure (High pressure filling mode)	MPa	360	340	290	250	190	340	340	320	270	220	---	340	320	270	220	---
	Maximum injection pressure	MPa	310	290	240	220	180	290	290	270	250	190	160	290	270	250	190	160
	Maximum pack pressure	MPa	310	290	240	220	180	290	290	270	250	190	160	290	270	250	190	160
	Maximum injection speed	mm/s	350					350					350					
	Maximum screw rotation speed	min <sup>-1</sup>	450					450					450					
	Injection specification	---	550mm/s					550mm/s					550mm/s					
Maximum injection pressure (High pressure filling mode)	MPa	330	---	---	---	---	340	---	---	---	---	---	---	---	---	---	---	
Maximum injection pressure	MPa	310	280	200	170	---	290	260	220	170	---	---	260	220	170	---	---	
Maximum pack pressure	MPa	310	280	200	170	---	290	260	220	170	---	---	260	220	170	---	---	
Maximum injection speed	mm/s	550					550					550						
Maximum screw rotation speed	min <sup>-1</sup>	450					450					450						

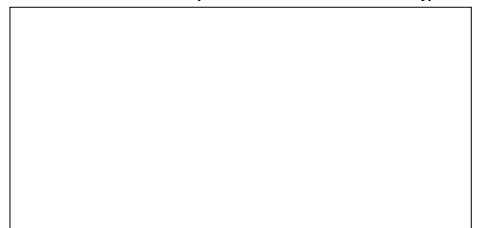
Item		Unit	α-S150iB										α-S220iB									
Clamping unit	Tonnage	kN	1500 (150tonf)										2200 (220tonf)									
	Maximum and minimum die height	mm	500/200										---									
	Double platen Single platen	mm	575/275										650/250									
	Clamping stroke	mm	440										550									
	Tie bar spacing (H × V)	mm	560×510										650×650									
	Platen size (H × V)	mm	800×750										900×900									
Injection unit	Ejector point / Ejector force / Ejector stroke	point/kN/mm	5 / 35 (3.5tonf) / 150										13 / 35 (3.5tonf) / 150									
	Screw diameter	mm	22	26	28	32	36	40	32	36	40	44	48	52	32	36	40	44	48	52		
	Maximum injection volume	cm <sup>3</sup>	29	50	58	103	147	181	121	153	188	268	318	442	121	153	188	268	318	442		
	Injection specification	---											200mm/s									
	Maximum injection pressure	MPa	---	---	---	---	---	---	310	310	260	220	190	160	310	310	260	220	190	160		
	Maximum pack pressure	MPa	---	---	---	---	---	---	310	310	260	220	190	160	310	310	260	220	190	160		
	Maximum injection speed	mm/s	---										200									
	Maximum screw rotation speed	min <sup>-1</sup>	---										300									
	Injection specification	---	350mm/s (Small capacity)										350mm/s									
	Maximum injection pressure (High pressure filling mode)	MPa	340	340	320	270	220	---	380	345	---	---	---	---	380	345	---	---	---	---		
	Maximum injection pressure	MPa	290	290	270	250	190	160	310	310	280	240	190	160	310	310	280	240	190	160		
	Maximum pack pressure	MPa	290	290	270	250	190	160	310	310	280	240	190	160	310	310	280	240	190	160		
	Maximum injection speed	mm/s	350										350									
	Maximum screw rotation speed	min <sup>-1</sup>	450										400									
	Injection specification	---	550mm/s (Small capacity)																			
	Maximum injection pressure (High pressure filling mode)	MPa	340	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
	Maximum injection pressure	MPa	290	260	220	170	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
	Maximum pack pressure	MPa	290	260	220	170	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
	Maximum injection speed	mm/s	550										---									
	Maximum screw rotation speed	min <sup>-1</sup>	450										---									

Note: When high pressure filling mode is used, a special cylinder is needed.  
Maximum injection pressure and maximum pack pressure are the maximum values that can be set. Maximum injection pressure is the values when the wear-resistant and anti-corrosion cylinder is installed. Maximum injection pressure and maximum pack pressure may vary depends on the installed screw and cylinder specifications.  
Molding conditions may be restricted depending on the screw diameter.  
For details, see a separate list of specifications.

## FANUC CORPORATION

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