

High-performance, high-reliability and high-productivity electric injection molding machine, with FANUC standard CNC installed

# FANUC ROBOSHOT

$\alpha$ -S50*ia*/ $\alpha$ -S100*ia*/ $\alpha$ -S150*ia*



# FANUC standard CNC and servo system installed Electric injection molding machine achieves high quality, high **FANUC ROBOSHOT $\alpha$ -SiA series**

## High-Performance

FANUC Standard CNC

Highly-Rigid and Low-Friction Mechanism

Additional Servo Axis Control



## High-Reliability

Fully Enclosed Cover Style

Higher Operation Rate

Conformity to Safety Standards

## High-Productivity

Energy Saving

Cycle Time Shortening

**ROBOSHOT-LINK *i***

## High-Performance

FANUC standard CNC achieves superior molding repeatability  
Highly-rigid and low-friction mechanism achieve precision molding  
Additional servo axis control achieves extra value in molding

## High-Reliability

Fully enclosed cover style achieves both safety and accessibility  
High-precision AI protect function achieves higher operation rate  
Conformity to safety standards supports molding plant globalization

## High-Productivity

FANUC standard servo system saves energy consumption  
High-speed, high-precision and simultaneous motion shortens cycle time  
**ROBOSHOT-LINK*i*** manages product and quality information



$\alpha$ -S50*iA*



$\alpha$ -S100*iA*



$\alpha$ -S150*iA*

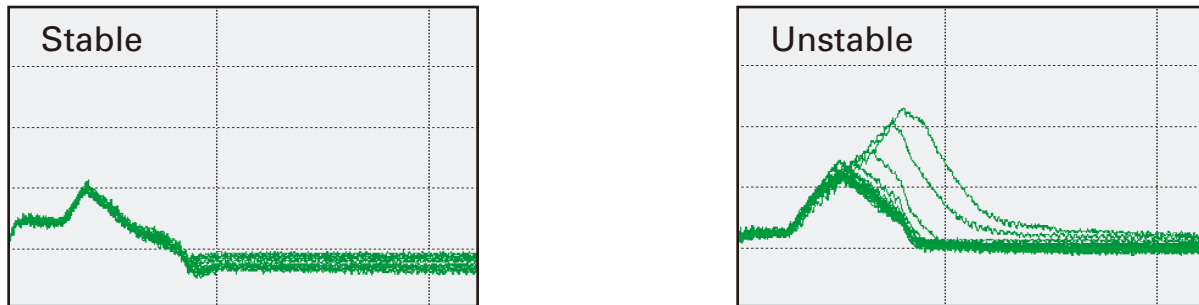
The outer view and operation differ in specifications.

# High-Performance

## FANUC standard CNC achieves superior molding repeatability

### Backflow monitor

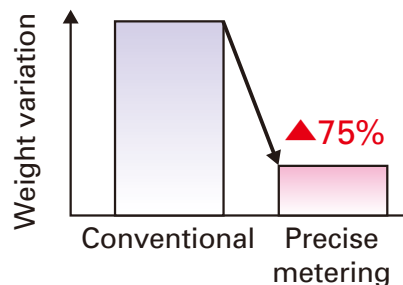
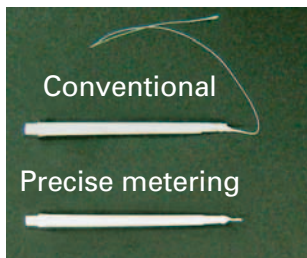
- Detects backflow precisely at injection start, Displays injection repeatability in graph



Backflow monitor screen

### 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



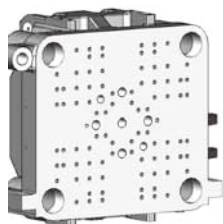
Precise connector  
Resin : PA66

## Highly-rigid and low-friction mechanism achieves precision molding

### Clamping unit

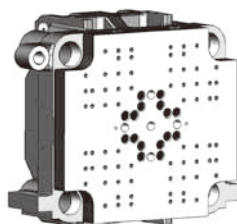
- Selectable two types of moving platen
- Low-friction linear guided support\*

[Single platen]  
Expands mold area



Magnetic clamping system  
Three plates mold etc.

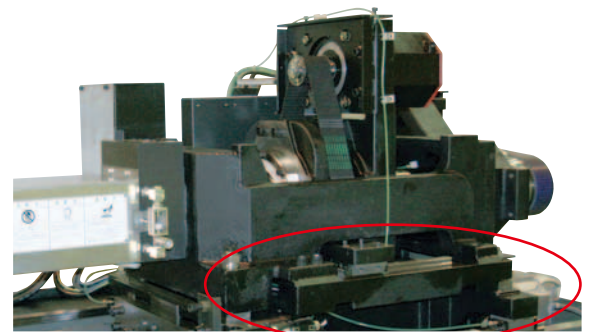
[Double platen]  
Pursuits high rigidity



Multi cavities  
Thin wall molding etc.

### Injection unit

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



Low-friction linear guides

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

**Additional servo axis control achieves extra value in molding (Option)**

Additional axis control advances ROBOSHOT further

[Suitable feeding device]

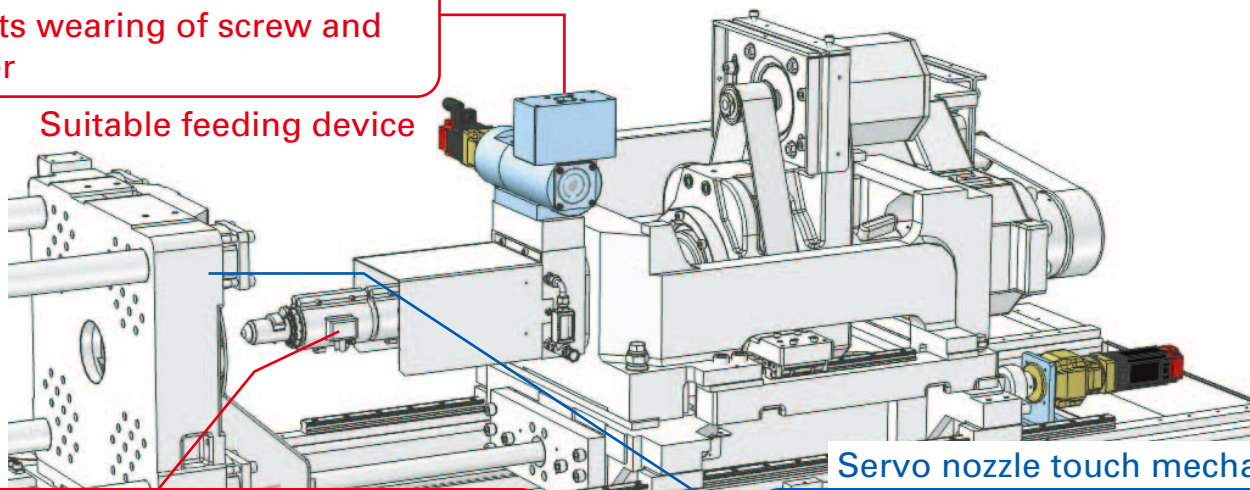
- Achieves optimal amount of resin supply by feedback control, Achieves long term molding repeatability

[Servo nozzle touch]

- Controls nozzle touch force during molding cycle optimally

Promotes gas ventilation

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



Reduces shear heating

- Prevents molding defects such as burn

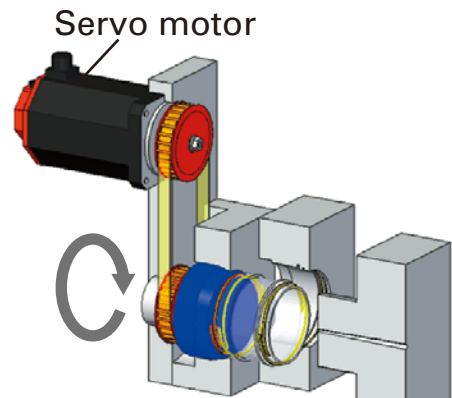
Superior platen parallelism

- Achieves precise molding and longer life of mold

Additional axis control achieves versatile applications

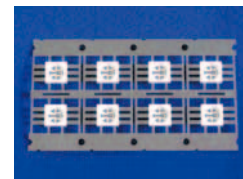
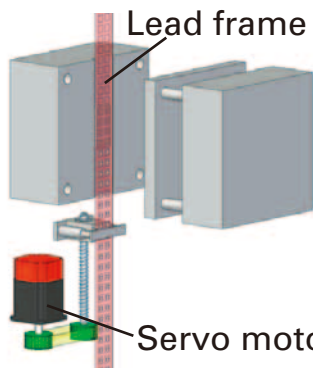
- High-speed and accuracy positioning by FANUC servo technology
- No additional control equipment required, Integrated into ROBOSHOT operation

[Unscrewing molding]



Container with screw  
Resin : PS

[Hoop molding]



LED parts  
Resin : LCP

\*Only additional servo system will be offered

# High-Reliability

## Fully enclosed cover style achieves both safety and accessibility

### High-level safety

- Fully enclosed cover style prevents contact with moving part and high temperature part with high-level safety
- Achieves compact machine dimensions



### Superior accessibility

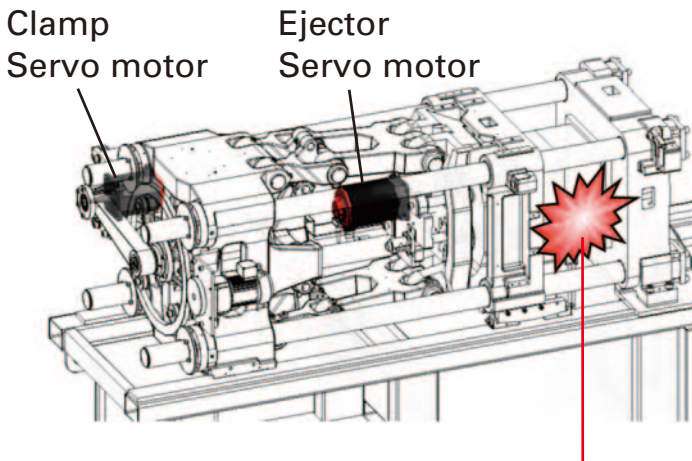
- Wide opened hopper maintenance area, Enhances accessibility



## High-precision AI protect function achieves higher operation rate

### 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



Experimental example of AI mold protection by using paper cup



AI mold protection ON



AI mold protection OFF

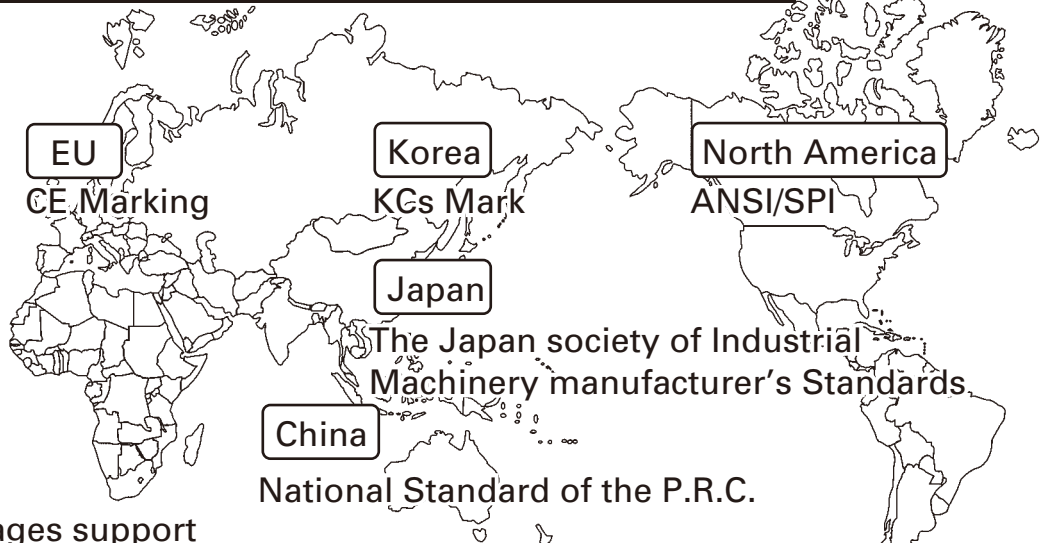
**1. Realtime monitoring**  
Monitors load of servo motors in every cycle

**2. Problem detection**  
Detects load deviation precisely caused by remaining molded products etc.

**3. Protection**  
Interrupts clamp and ejector motion immediately

# Conformity to safety standards supports molding plant globalization

## Regional safety standards and multiple languages support



### Multiple languages support

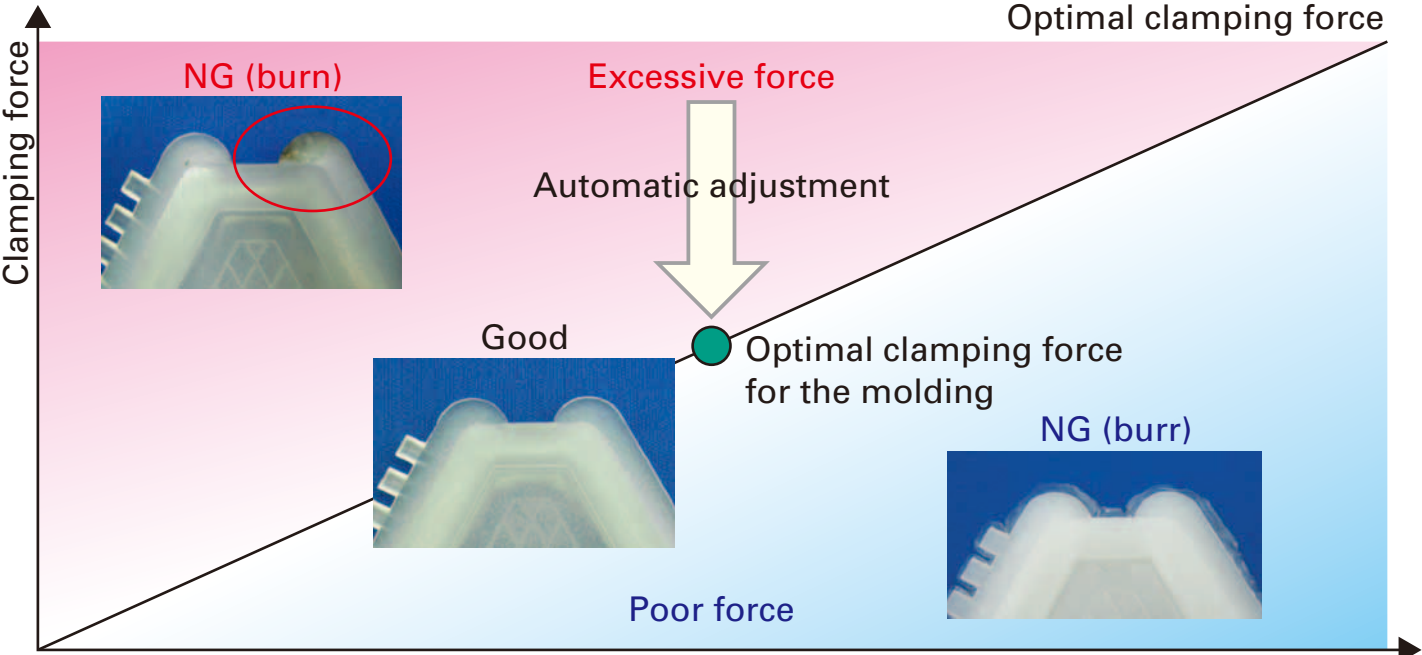
Japanese / English / Chinese simplified / Chinese traditional / Korean / Thai / German / French / Italian / Spanish (Mexican) / Portuguese / Czech / Finnish / Dutch

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

# Control technology achieves high-quality and stable molding

## Precise clamping force control\*

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

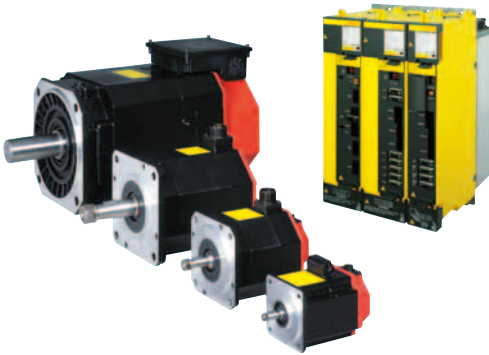


\*:Optional. Available options differ in region and model.

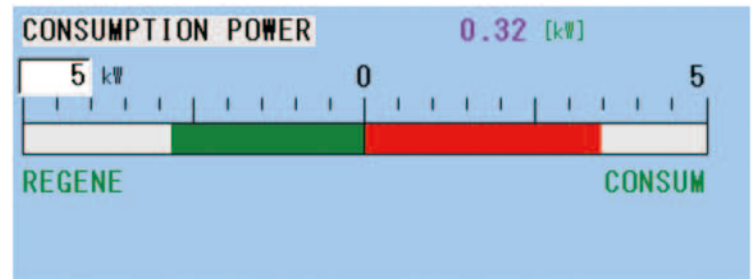
# High-Productivity

## FANUC standard servo system saves 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 equipments\*



High-performance servo motors and amplifiers **αi series**



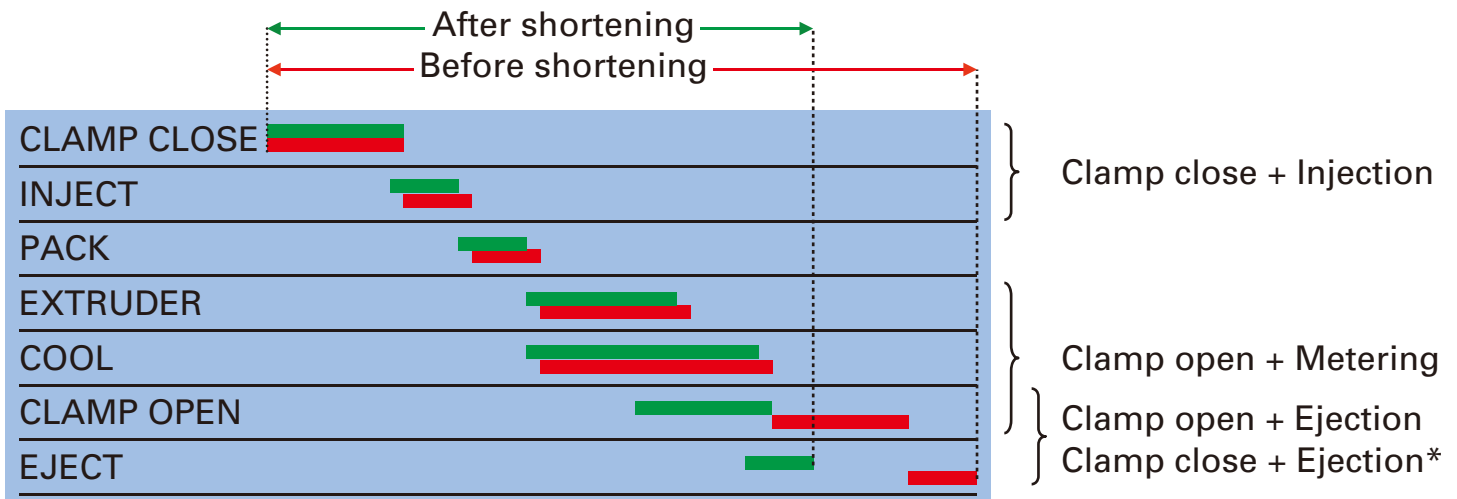
Consumption power monitor screen

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

## High-speed, high-precision and simultaneous motion shortens cycle time

### Cycle chart

- Displays duration and timing of each molding process clearly
- Shortens cycle time efficiently
- Displays comparison before and after shortening, Evaluates shortening result instantly



Cycle chart screen

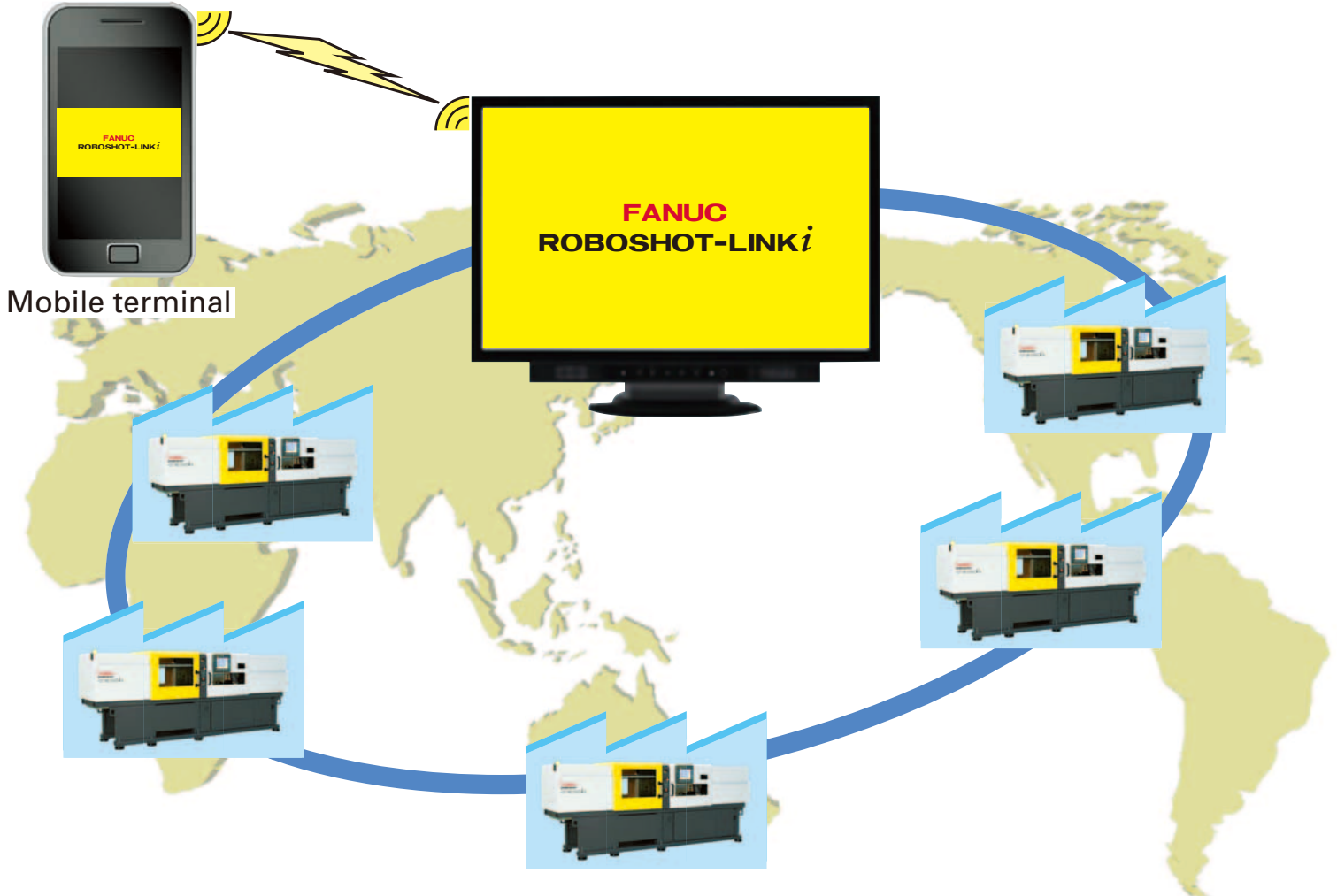
\*:Optional. Available options differ in region and model.



# ROBOSHOT-LINK*i*

**ROBOSHOT-LINK*i*** manages product and quality information (optional)

- Production and quality information management tool supports larger-scale and globalization of molding plant
- “Visualization” of ROBOSHOT data



## Product information management

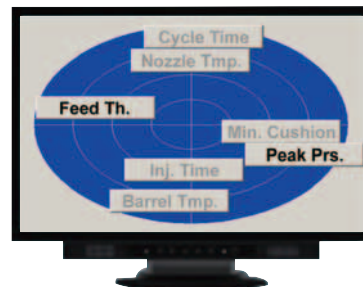
- Achieves lower cost and higher operation rate
- Monitors consumption power including auxiliary equipments



Visualization of production amount and operating rate

## Quality information management

- Achieves traceability and advanced quality
- Investigates cause of failure and molding repeatability



Visualization of cause of failure

# Application to a range of molding fields

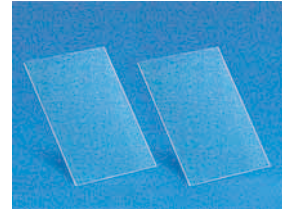
## Thin wall light guide panel

### Decompression control at injection to packing (8 modes)

- Prevents sink marks and warpage, Achieves uniformed thickness distribution

### High pressure resistance cylinder and High pressure filling mode\*

- Achieves thinner wall molding by injection with ultra high pressure



Light guide panel for cellular phone  
Resin : PC

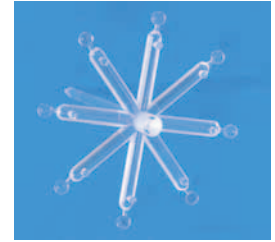
## Precise lens

### Moving platen support by linear guides\*

- Superior platen parallelism and straightness of clamp motion

### Screw and cylinder for lens molding

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



Camera lens for cellular phone  
Resin : COC

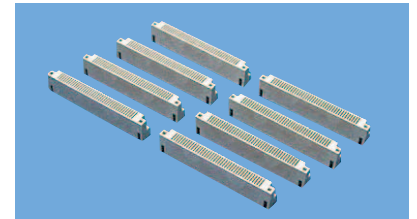
## Precise connector

### 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

### Fully enclosed cover style

- Clean and quiet, Ideal for molding in clean room

### Suitable feeding device\*

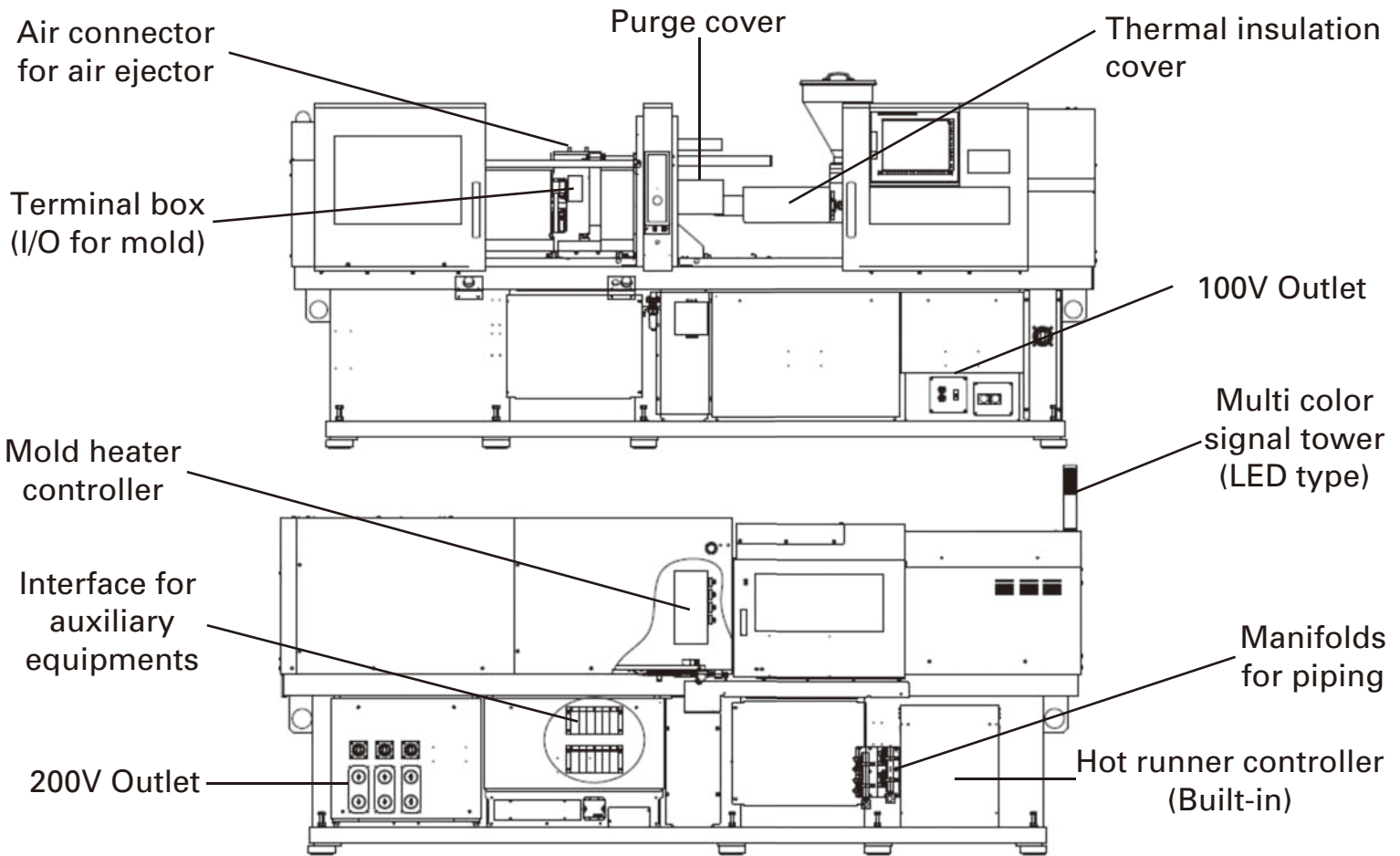
- Prevents burn and carbonization, Suitable for molding with transparent resin



Syringe  
Resin : COP

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

# Options

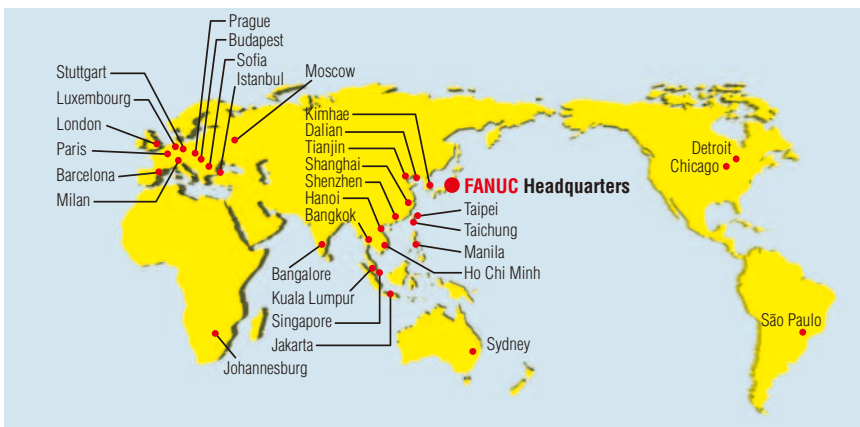


Optional. Available options differ in region and model. Refer to the "specification list" for details on the options.

# 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.



## Training

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



# Specifications

Item		Unit	$\alpha$ -S50iA					$\alpha$ -S100iA					$\alpha$ -S150iA						
Clamping unit	Tonnage	kN	500 (50tonf)					1000 (100tonf)					1500 (150tonf)						
	"Maximum and minimum die height"	Double platen	350/150					450/150					490/200						
		Single platen	410/210					520/220					575/275						
	Clamping stroke	mm	250					350					440						
	Tie bar spacing (H x V)	mm	360x320					460x410					560x510						
	Platen size (H x V)	mm	500x470					660x610					800x750						
Ejector point / Ejector force / Ejector stroke	point/kN/mm	5/20 (2.0tonf) /70					5 / 25 (2.5tonf) / 100					5 / 35 (3.5tonf) / 150							
Injection unit	Injection specification	---	Injection speed 330mm/s					Injection speed 330mm/s					Injection speed 330mm/s						
	Screw diameter	mm	20	22	26	28	32	22	26	28	32	36	40	32	36	40	44	48	52
	Maximum injection volume	cm <sup>3</sup>	24	29	50	58	76	29	50	58	103	147	181	121	153	188	268	318	442
	Maximum injection pressure (High pressure filling mode)	MPa	360	340	290	250	---	340	340	320	270	220	---	380	345	280	---	---	---
	Maximum injection pressure	MPa	280	260	210	190	150	260	260	240	220	190	160	280	280	260	220	190	160
	Maximum pack pressure	MPa	280	240	190	160	130	260	260	220	200	170	140	280	280	260	220	190	160
	Maximum injection speed	mm/s	330					330					330						
	Maximum screw rotation speed	min <sup>-1</sup>	450					450					400						
	Injection specification	---	Injection speed 500mm/s					Injection speed 500mm/s					Small capacity injection						
	Screw diameter	mm	20	22	26	28	---	22	26	28	32	36	---	22	26	28	32	36	40
	Maximum injection volume	cm <sup>3</sup>	24	29	50	58	---	29	50	58	103	147	---	29	50	58	103	147	181
	Maximum injection pressure (High pressure filling mode)	MPa	360	340	275	240	---	340	320	280	---	---	---	340	340	320	270	220	---
	Maximum injection pressure	MPa	280	260	210	190	---	260	260	240	220	170	---	260	260	240	220	190	160
	Maximum pack pressure	MPa	280	240	190	160	---	260	260	220	200	170	---	260	260	220	200	170	140
	Maximum injection speed	mm/s	500					500					330						
Maximum screw rotation speed	min <sup>-1</sup>	450					450					450							

Note: When high filling mode is used, a special cylinder is needed. Molding conditions may be restricted depending on the screw diameter.  
For details, see a separate list of specifications.

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