High-Reliability and High-Performance
Electric Injection Molding Machine

FANUC

ROBOSHOT α-*Si*B series

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

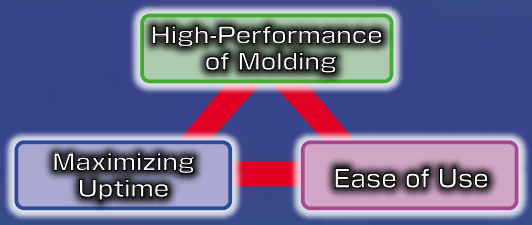
FANUC ROBOSHOT α-*i*B series

ROBOSHOT α-S50*i*B

ROBOSHOT α-S100*i*B

ROBOSHOT α-S150*i*B

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

Maximizing Uptime

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 inch 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

ROBOSHOT Robot package

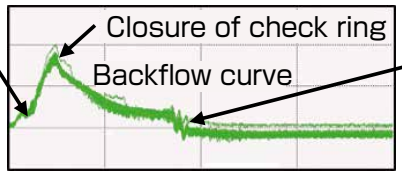
High-Performance of Molding

FANUC standard CNC achieves superior molding repeatability

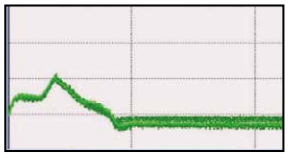
Backflow monitor

- 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

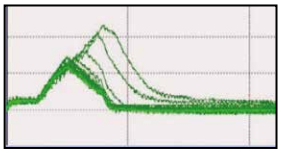
Check ring OPEN
(Start of injection)



Check ring CLOSE
(In injection)



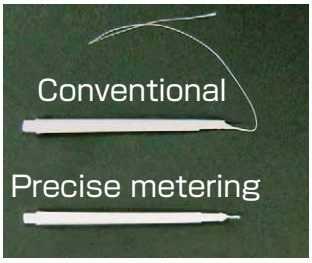
Stable closure of
backflow prevention ring



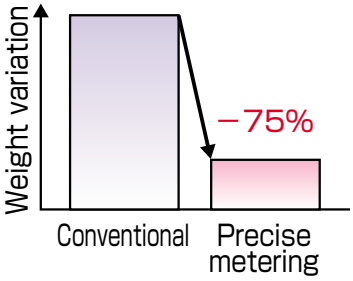
Unstable closure of
backflow prevention ring

Precise metering

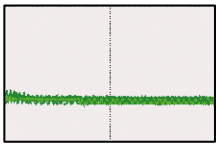
- Controls screw movement during metering optimally, Prevents string and silver streaking



- Eliminates backflow of resin, Stabilizes injection volume and reduces weight variation of molded products



Precise connector
Resin : PA66

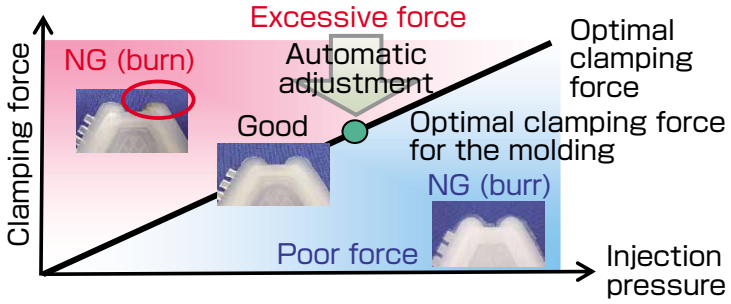


No backflow

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

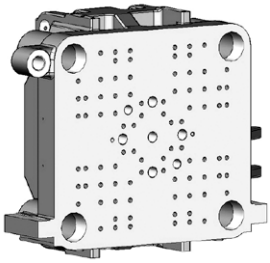


High-rigidity and low-friction mechanism achieves precision molding

Clamping unit

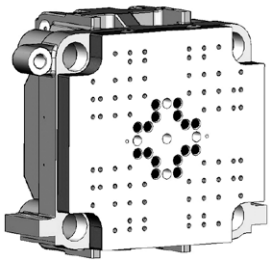
- Selectable two types of moving platen
- Low-friction linear guided support*

[Single platen]
Expands mold area



Magnetic clamping system
Three plates mold etc.

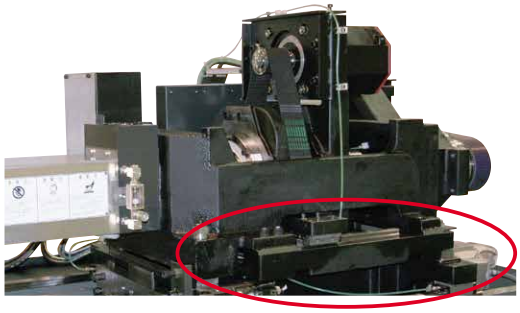
[Double platen]
Pursuits high rigidity



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 α-S50*i*B/α-S100*i*B/α-S130*i*B

*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 S*i*-20A*1

Mechanical unit　Control unit

*1 Available for models with ROBOSHOT S-2000*i*B series or later and clamping force of 50 tons or more

[Horizontal second injection unit]
ROBOSHOT S*i*-300HA*2

Built-in control unit

*2 Available for models with ROBOSHOT *α*-S*i*A series or later and clamping force of 100 tons or more

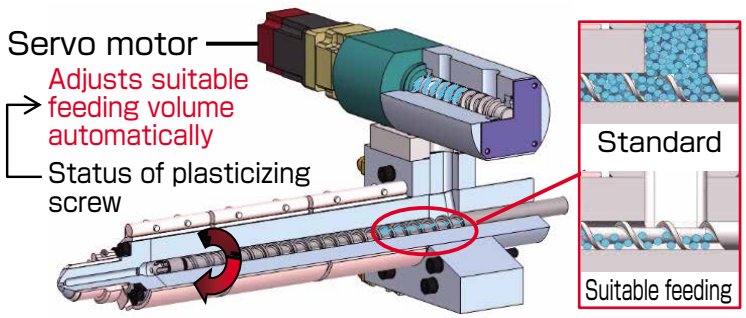
Item		Unit	S*i*-20A					S*i*-300HA			
Injection unit	Screw diameter	mm	14	16	18	20	22	26	28	32	36
	Maximum injection volume	cm³	9	11	19	24	29	50	58	103	147
	Maximum injection pressure (High pressure filling mode)	MPa	--	--	--	--	--	340	320	270	220
	Maximum injection pressure	MPa	200	180	140	130	120	260	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⁻¹	250					450			

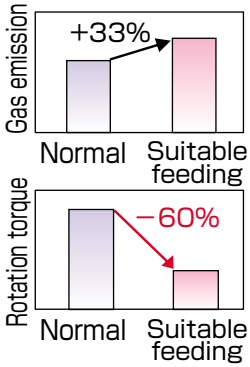
Note : Molding conditions may be restricted depending on the screw diameters. For details, see the attached specification list.

Additional servo 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

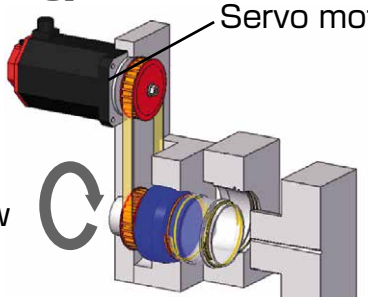
Reduces shear heating
- Prevents molding defects such as burn

Additional axis control achieves versatile applications*

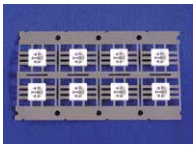
- High-speed and accurate positioning by FANUC servo technology
- No additional control equipment required, Integrated into ROBOSHOT operation

[Unscrewing molding]

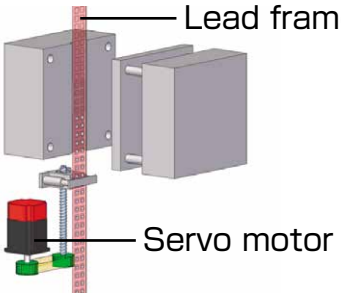
Container with screw
Resin : PS



[Hoop molding]



LED parts
Resin : LCP



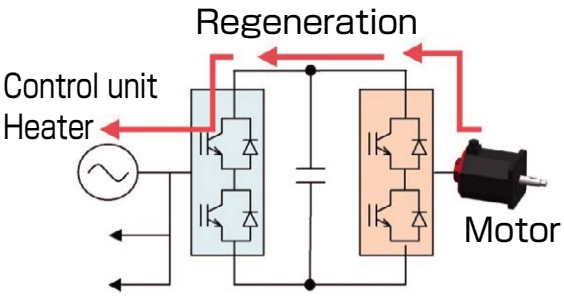
*Only additional servo system will be offered

Maximizing Uptime

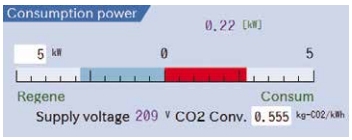
FANUC standard servo system achieves high-reliability and lower energy consumption

- 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*

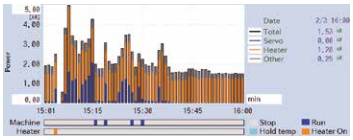
High-performance servo motors and servo amplifiers αi series



Energy saving by power source regeneration



Real-time display of consumption power and regenerated power



Consumption power history and machine status can be displayed.

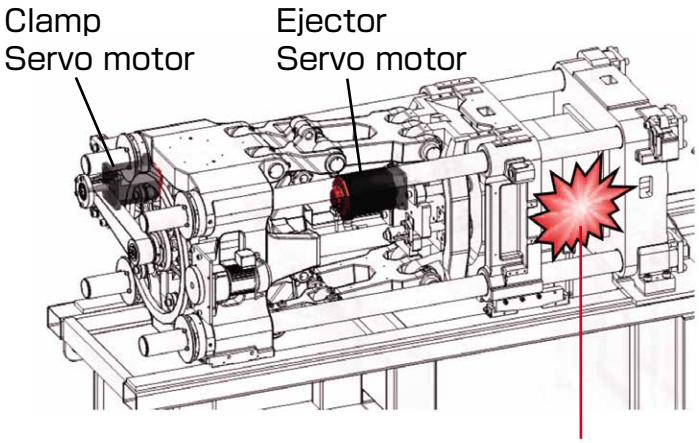
Consumption power monitor screen

*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

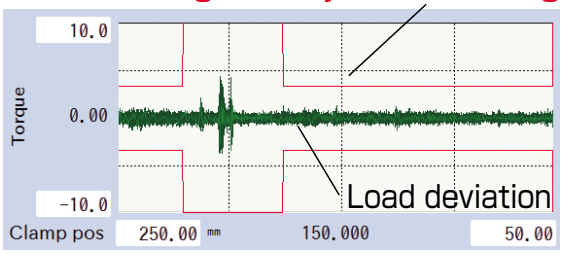
1.Realtime monitoring
Monitors load of servo motors in every cycle

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]

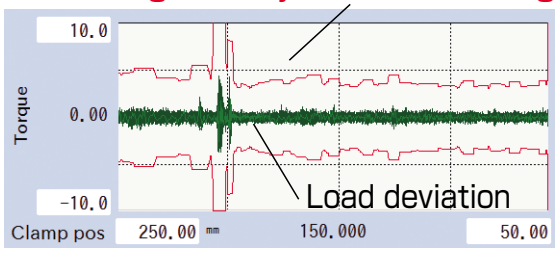
Monitoring width by manual setting



Depends on the experience of the operator

[Automatic setting of monitoring width]

Monitoring width by automatic setting



Optimal setting with easy operation

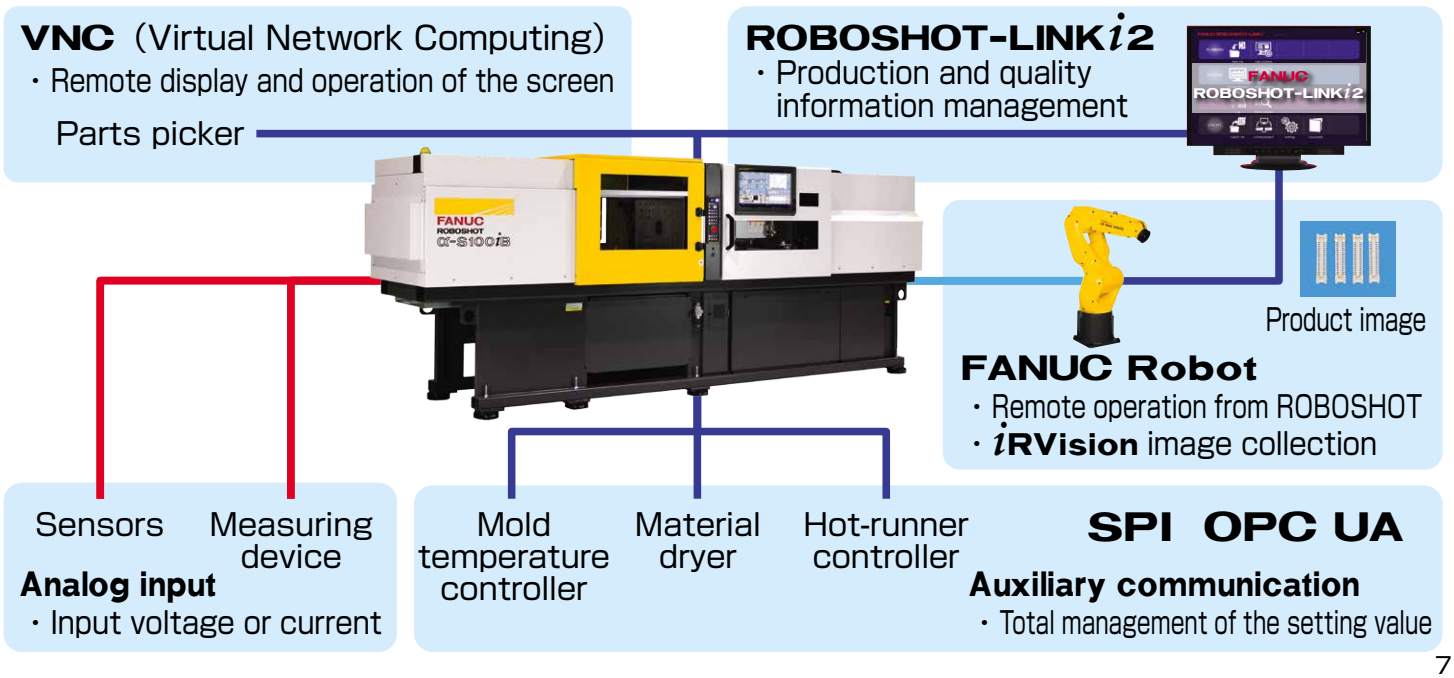
Network capability to support molding plant IoT

ROBOSHOT-LINK*i*2*

- 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 (*α*-S*i*B series)

*Option

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



Ease of Use

21.5 inch 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

Setting Area

Second screen Area

Status Monitoring Area (1)

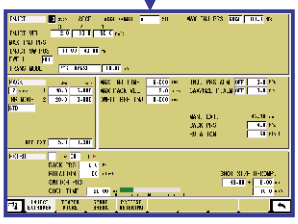
Status Monitoring Area (2)

Divided screen

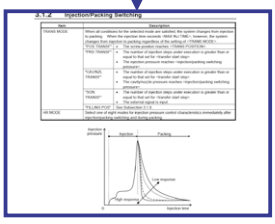
- Selectable from various screens
- The horizontally arranged two screens provide easy sight line motion, superior visibility and operability.

Wave form screen

Easy switching



Second injection unit screen



Operation manual

Peripheral device screen

Full screen

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

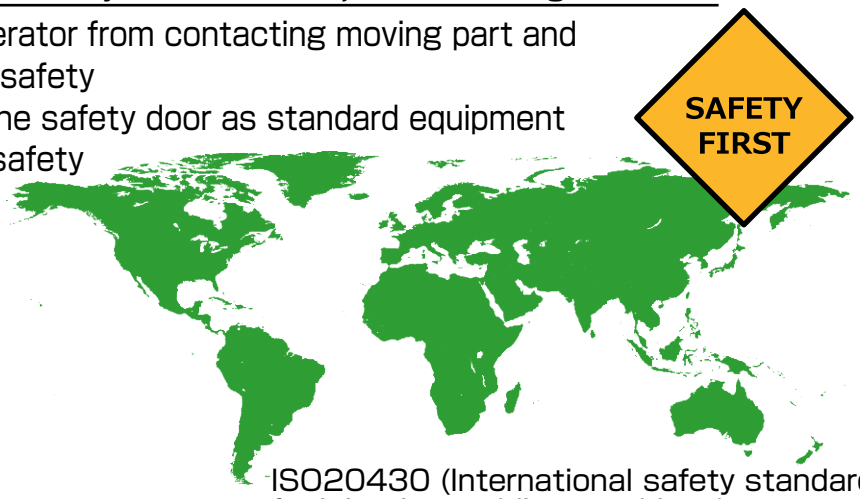
Easy switching

ROBOSHOT-LINK*i*2 screen

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 / Spanish (Mexican) / Portuguese / Czech
Finnish / Dutch / Hungarian / Danish / Polish / Turkish / Swedish

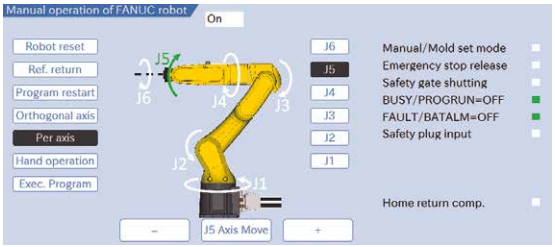
Safety requirements differ in region
Please confirm the latest safety requirements of the region where ROBOSHOT is installed.

Robot system to promote automation of molding plant

Easy connection between ROBOSHOT and FANUC Robot by FL-net

- ROBOSHOT (α-*i*B series) and FANUC Robot can be connected by single Ethernet cable
- Remote operation of FANUC robot on ROBOSHOT screen is available

α-*i*B series

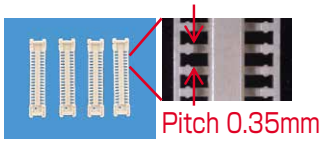


Robot operation screen of ROBOSHOT

ROBOSHOT Robot package

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

Automatic inspection and alignment process by delta robot



Precise connector
Resin : LCP

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 uniformed thickness distribution

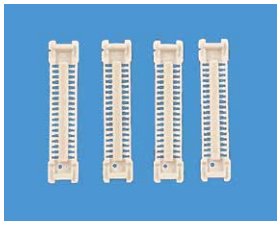
Screw and cylinder for lens molding
- Optimized screw design and surface treatment achieves high-quality molding

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(Vertical, Horizontal)*
- FANUC CNC installed, operation from ROBOSHOT screen

Additional servo axis control*
- Integrated into ROBOSHOT operation, Achieves high-speed and accurate positioning of rotary table

Waterproof connector
Resin : PBT+Silicone

Various molding materials

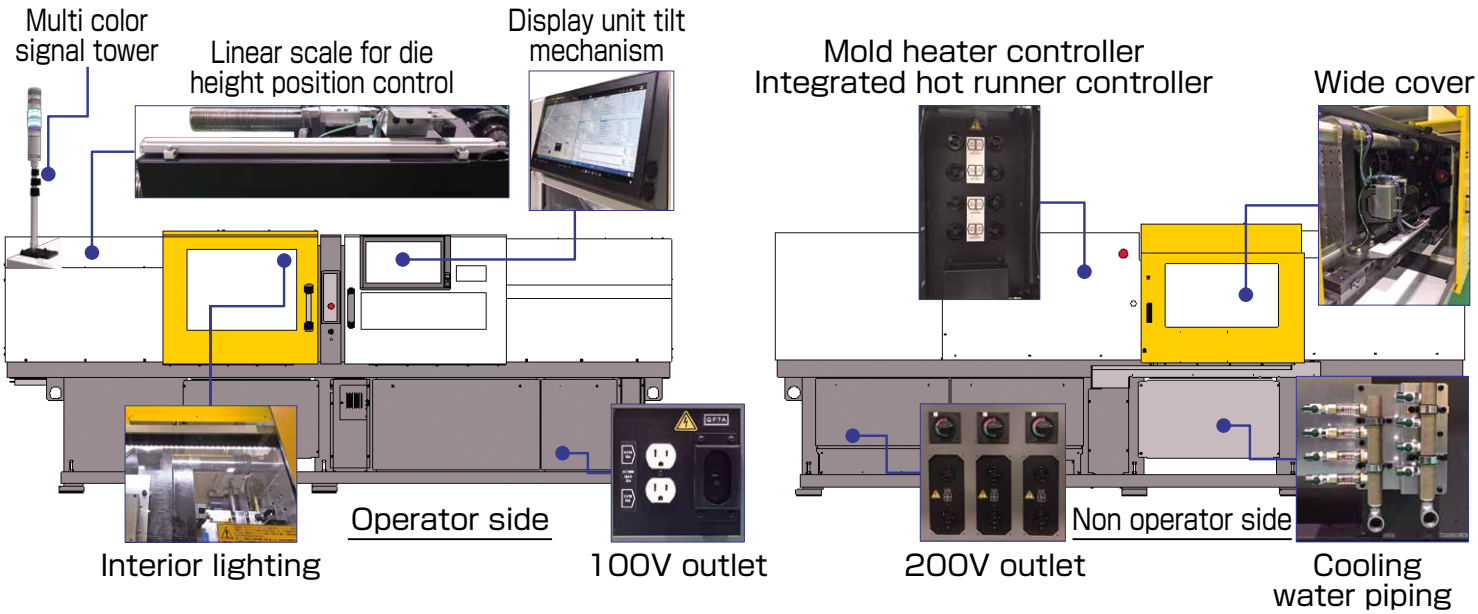
Screw and cylinder suitable for various molding materials
- Standard machine equipped with dedicated screw and cylinder enables various moldings

Various molding materials are available
- Silicone, MIM, CIM, Thermoset resin, carbon fiber reinforced resin, etc.

Endoscopic forceps
Resin : PP+Metal powder

*Optional, Available options differ with region and model.

Options



ROBOSHOT α-S150iB Medical package

[Tiebarbushless clamping specification]

Tiebarbushless design
Reinforced bearing
Linear guide
Reinforced base frame

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

(1) White painted cover or Stainless cover
(2) Plated platen
(3) Anti-rust linear guide
(4) Food grade 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.

Service & Support

Excellent Maintenance Services

FANUC service team delivers customer trust and confidence based on direction of service "Maximizing Uptime", "Global Service" and "Lifetime maintenance".

Service First

Conforming to the spirit of "Service First", FANUC provides lifetime maintenance to its products for as long as they are used by customers, through more than 270 service locations supporting more than 100 countries and regions throughout the world.

FANUC ACADEMY

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

Specifications

	Item	Unit	α-S15iB	α-S30iB		α-S50iB	
Clamping unit	Tonnage	kN	150 (15tonf)	300 (30tonf)	300 (30tonf) High precision clamp	500 (50tonf)	500 (50tonf) High precision clamp
	Maximum and minimum die height: Double platen	mm	260/130	330/150	330/150	350/150	350/150
	Maximum and minimum die height: Single platen	mm	---	---	---	410/210	---
	Clamping stroke	mm	160	230	230	250	250
	Tie bar spacing (H x V)	mm	260×235	310×290	310×290	360×320	360×320
	Platen size (H xV)	mm	355×340	440×420	440×420	500×470	500×470
	Ejector point / Ejector force / Ejector stroke	point/kN/mm	1 / 7(0.7tonf) / 50	1 / 8(0.8tonf) / 60	1 / 8(0.8tonf) / 60	5 / 20(2.0tonf) / 70	5 / 20(2.0tonf) / 70
Injection unit	Screw diameter	mm	14 16 18	14 16 18 20 22	14 16 18 20 22	18 20 22 26 28 32	14 16 18 20 22 26 28 32
	Maximum injection volume	cm³	9 11 19	9 11 19 24 29	9 11 19 24 29	19 24 29 50 58 76	9 11 19 24 29 50 58 76
	Injection specification	---		600mm/s	600mm/s	350mm/s	350mm/s
	Max. inj. prs.(High prs.mode)	MPa	--- --- ---	--- 330 300 --- ---	--- 330 300 --- ---	300 360 340 290 250 190	--- 330 300 360 340 290 250 190
	Max. inj. prs.(W/C)	MPa	--- --- ---	250 280 280 270 220	250 280 280 270 220	280 310 290 240 220 180	250 280 280 310 290 240 220 180
	Max. inj. prs.(General purpose)	MPa	--- --- ---	250 250 260 270 220	250 250 260 270 220	260 280 260 210 190 150	250 250 260 280 260 210 190 150
	Maximum injection speed	mm/s	---	600	600	350	350
	Maximum screw rotation speed	min⁻¹	---	450	450	450	450
	Injection specification	---	800mm/s			550mm/s	550mm/s
	Max. inj. prs.(High prs.mode)	Mpa	--- --- ---	--- --- --- --- ---	--- --- --- --- ---	300 330 --- --- --- ---	--- 330 300 330 --- --- --- ---
	Max. inj. prs.(W/C)	MPa	250 250 230	--- --- --- --- ---	--- --- --- --- ---	280 310 280 200 170 ---	--- 280 280 310 280 200 170 ---
	Max. inj. prs.(General purpose)	MPa	250 250 230	--- --- --- --- ---	--- --- --- --- ---	260 280 260 190 170 ---	--- 250 260 280 260 190 170 ---
	Maximum injection speed	mm/s	800	---	---	550 ---	--- 550 ---
	Maximum screw rotation speed	min⁻¹	450	---	---	450 ---	--- 450 ---

	Item	Unit	α-S100iB	α-S130iB	α-S150iB	α-S220iB
Clamping unit	Tonnage	kN	1000 (100tonf)	1300 (130tonf)	1500 (150tonf)	2200 (220tonf)
	Maximum and minimum die height: Double platen	mm	450/150	---	500/200	---
	Maximum and minimum die height: Single platen	mm	520/220	570/200	575/275	650/250
	Clamping stroke	mm	350	400	440	550
	Tie bar spacing (H x V)	mm	460×410	530×530	560×510	650×650
	Platen size (H xV)	mm	660×610	730×730	800×750	900×900
	Ejector point / Ejector force / Ejector stroke	point/kN/mm	5 / 25(2.5tonf) / 100	5 / 25(2.5tonf) / 100	5 / 35(3.5tonf) / 150	13 / 35(3.5tonf) / 150
Injection unit	Screw diameter	mm	22 26 28 32 36 40	26 28 32 36 40	22 26 28 32 36 40 44	32 36 40 44 48 52 56
	Maximum injection volume	cm³	29 50 58 103 147 181	50 58 103 147 181	29 50 58 103 147 181* 243	121 153 188 268 318 442 512
	Injection specification	---	200mm/s	200mm/s	350mm/s (Small capacity, High pressure)	200mm/s
	Max. inj. prs.(High prs.mode)	MPa	340 340 320 270 220 ---	340 320 270 220 ---	--- --- --- --- --- --- ---	--- --- --- --- --- --- ---
	Max. inj. prs.(W/C)	MPa	290 290 270 250 190 160	290 270 250 190 160	--- --- --- 290 260 210 170	310 310 260 220 190 160 310 310 260 220 190 160 ---
	Max. inj. prs.(General purpose)	MPa	260 260 240 220 190 160	260 240 220 190 160	--- --- --- 230 220 210 170	280 280 260 220 190 160 280 280 260 220 190 160 ---
	Maximum injection speed	mm/s	200	200	350	200 / 200
	Maximum screw rotation speed	min⁻¹	300	300	450 400	300 / 300
	Injection specification	---	350mm/s	350mm/s	350mm/s (Small capacity)	350mm/s / 350mm/s
	Max. inj. prs.(High prs.mode)	MPa	340 340 320 270 220 ---	340 320 270 220 ---	340 340 320 270 220 --- ---	380 345 --- --- --- --- 380 345 --- --- --- ---
	Max. inj. prs.(W/C)	MPa	290 290 270 250 190 160	290 270 250 190 160	290 290 270 250 190 160 ---	310 310 280 240 190 160 310 310 280 240 190 160 140
	Max. inj. prs.(General purpose)	MPa	260 260 240 220 190 160	260 240 220 190 160	260 260 240 220 190 160 ---	280 280 260 220 190 160 280 280 260 220 190 160 140
	Maximum injection speed	mm/s	350	350	350 ---	350 / 350
	Maximum screw rotation speed	min⁻¹	450	450	450 ---	400 / 400
	Injection specification	---	550mm/s	550mm/s	550mm/s (Small capacity)	
	Max. inj. prs.(High prs.mode)	MPa	340 --- --- --- --- ---	--- --- --- --- ---	340 --- --- --- --- --- ---	--- --- --- --- --- --- ---
	Max. inj. prs.(W/C)	MPa	290 260 220 170 --- ---	260 220 170 --- ---	290 260 220 170 --- --- ---	--- --- --- --- --- --- ---
	Max. inj. prs.(General purpose)	MPa	260 260 220 170 --- ---	260 220 170 --- ---	290 260 220 170 --- --- ---	--- --- --- --- --- --- ---
	Maximum injection speed	mm/s	550 --- ---	550 --- ---	550 --- --- ---	--- / ---
	Maximum screw rotation speed	min⁻¹	450 --- ---	450 --- ---	450 --- --- ---	--- / ---
	Injection specification	---	650mm/s	650mm/s	650mm/s (Small capacity)	
	Max. inj. prs.(W/C)	MPa	290 290 270 210 --- ---	290 270 210 --- ---	290 290 270 210 --- --- ---	--- --- --- --- --- --- ---
	Max. inj. prs.(General purpose)	MPa	260 260 240 210 --- ---	260 240 210 --- ---	260 260 240 210 --- --- ---	--- --- --- --- --- --- ---
	Maximum injection speed	mm/s	650 --- ---	650 --- ---	650 --- --- ---	--- / ---
	Maximum screw rotation speed	min⁻¹	450 --- ---	450 --- ---	450 --- --- ---	--- / ---

	Item	Unit	α-S250iB	α-S300iB
Clamping unit	Tonnage	kN	2500 (250tonf)	3000 (300tonf)
	Maximum and minimum die height: Double platen	mm	650/300	650/300
	Maximum and minimum die height: Single platen	mm	---	---
	Clamping stroke	mm	600	600
	Tie bar spacing (H x V)	mm	710×635	810×710
	Platen size (H xV)	mm	1030×960	1130×1030
	Ejector point / Ejector force / Ejector stroke	point/kN/mm	13 / 80(8.0tonf) / 200	13 / 80(8.0tonf) / 200
Injection unit	Screw diameter	mm	32 36 40 44 48 52 56	40 44 48 52 56 64 68 72 64 68 72 80
	Maximum injection volume	cm³	121 153 188 268 318 442 640	188 268 318 442 640 188 268 318 442 640 836 944 1059 901 1090 1303 1608
	Injection specification	---	350mm/s	350mm/s (Small capacity) 270mm/s 160mm/s (Large capacity)
	Max. inj. prs.(High prs.mode)	MPa	380 345 --- --- --- --- ---	--- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
	Max. inj. prs.(W/C)	MPa	310 310 280 240 190 160 140	280 240 190 160 140 280 280 270 240 225 175 155 135 220 200 185 150
	Max. inj. prs.(General purpose)	MPa	280 280 260 220 190 160 140	260 220 190 160 140 280 280 270 240 225 175 155 135 220 200 185 150
	Maximum injection speed	mm/s	350	350 270 160
	Maximum screw rotation speed	min⁻¹	400	400 400 300 400 300 200

	Item	Unit	α-S450iB
Clamping unit	Tonnage	kN	4500 (450tonf)
	Maximum and minimum die height: Double platen	mm	1000/350
	Maximum and minimum die height: Single platen	mm	---
	Clamping stroke	mm	900
	Tie bar spacing (H x V)	mm	920×920
	Platen size (H xV)	mm	1300×1300
	Ejector point / Ejector force / Ejector stroke	point/kN/mm	21 / 150(15.0tonf) / 250
Injection unit	Screw diameter	mm	40 44 48 52 56 48 52 56 64 68 72 64 68 72 80 68 72 80 90 100
	Maximum injection volume	cm³	188 268 318 442 640 318 442 640 836 944 1059 901 1090 1303 1608 1090 1303 1810 2290 2827
	Injection specification	---	350mm/s (Ultra small capacity) 270mm/s (Small capacity) 160mm/s 180mm/s (Large capacity)
	Max. inj. prs.(W/C)	MPa	280 240 190 160 140 270 240 225 175 155 135 220 200 185 150 280 280 250 200 160
	Max. inj. prs.(General purpose)	MPa	260 220 190 160 140 270 240 225 175 155 135 220 200 185 150 280 280 250 200 160
	Maximum injection speed	mm/s	350 270 160 180
	Maximum screw rotation speed	min⁻¹	400 400 300 400 300 200 200

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 pack pressure is equal to maximum injection pressure. 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.

∗ : When the injection speed 350mm/s (High pressure) specification with screw diameter of ϕ40 is selected, the maximum injection volume is 201cm³.