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

FANUC ROBOSHOT ©-SiA series



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

FANUC ROBOSHOT @-SIA series

Applying the latest CNC & servo technology

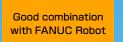


High-Performance of Molding

Precision and stable molding

Highly-Rigid and Low-Friction Mechanism

Additional Servo Axis Control







High-Sustainability

High-Reliability

Minimize Downtime

ROBOSHOT-LINKi

Ease of Use

Fully Enclosed Cover Style

Conformity to Safety Standards

Robot System











C-S15*i*A

W-\$30*i*A

C-S501A

CY-S1001A

C7-S1301A

high reliability and high productivity

High-Performance of Molding

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-Sustainability

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

High-precision AI protect function minimizes downtime

ROBOSHOT-LINK $m{i}$ manages product and quality information

Ease of Use

Fully enclosed cover style achieves both safety and accessibility Conformity to safety standards supports molding plant globalization Robot system with superior interoperability

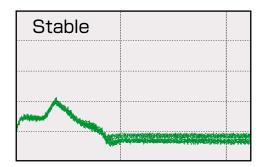


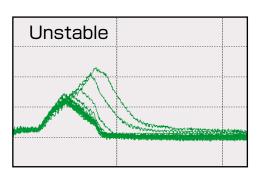
High-Performance of Molding

FANUC standard CNC achieves superior molding repeatability

Backflow monitor

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

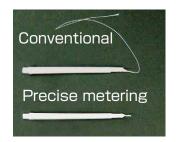




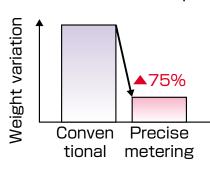
Backflow monitor screen

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*

[Double platen] Pursuits high rigidity



[Single platen]

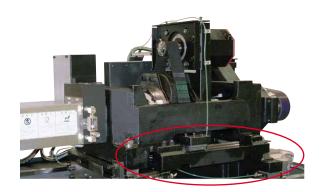
Magnetic clamping system Multi cavities Three plates mold etc.



Thin wall molding etc.

Injection unit

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



Low-friction linear guides

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

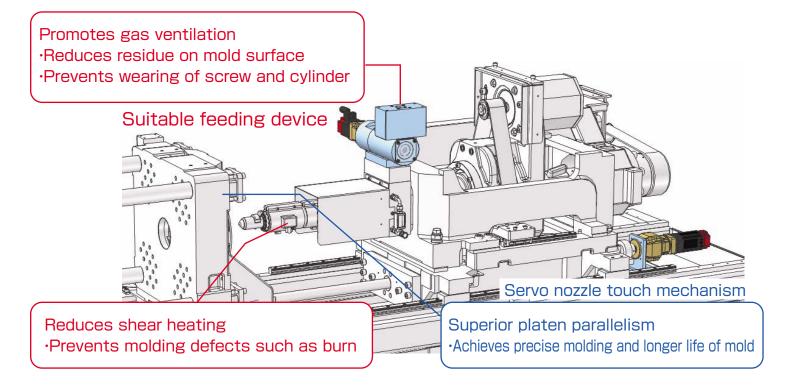
Additional servo axis control advances ROBOSHOT further

[Suitable feeding device]

· Achieves optimal amount of resin supply · Controls nozzle touch force during by feedback control, Achieves long term molding repeatability

[Servo nozzle touch]

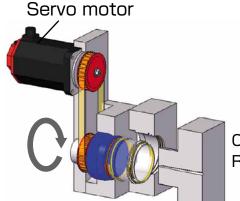
molding cycle optimally



Additional servo axis control achieves versatile applications*

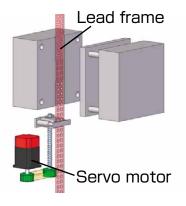
- · High-speed and accuracy positioning by FANUC servo technology
- · No additional control equipment required, Integrated into ROBOSHOT operation

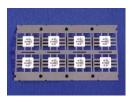




Container with screw Resin: PS

[Hoop molding]





LED parts Resin: LCP

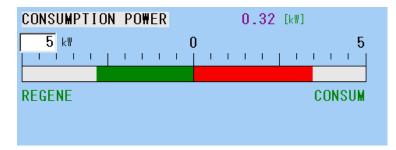
High-Sustainability

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 equipments*



High-performance servo motors and amplifiers αi series



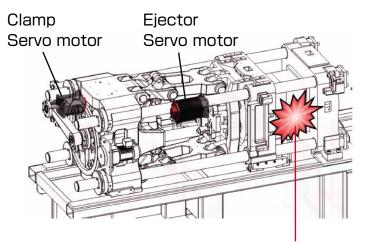
Consumption power monitor screen

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

High-precision AI protect function minimizes downtime

Al 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



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

2.Problem detection

Detects load deviation precisely caused by remaining molded products etc.

Experimental example of Al mold protection by using paper cup





Al mold protection Al mold protection ON OFF

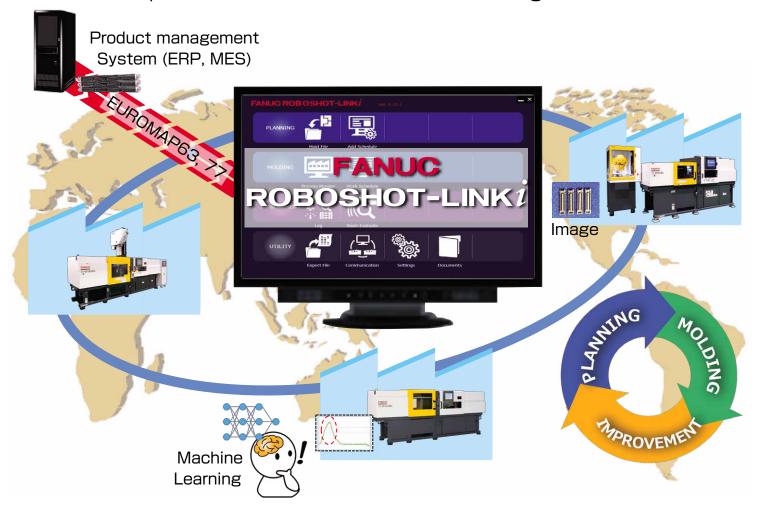
3.Protection

Interrupts clamp and ejector motion immediately

ROBOSHOT-LINK i

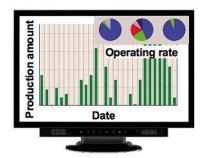
ROBOSHOT-LINK *i* manages product and quality information (Optional)

- Production and quality information management tool supports larger-scale and globalization of molding plant
- · Realization of traceability by molding image
- Interfaces available for EUROMAP 63 and EUROMAP 77
- · Realization of preventive maintenance on machine learning



Product information management

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



Visualization of production amount and operating time

Quality information management

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



Visualization of cause of failure

Ease of Use

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

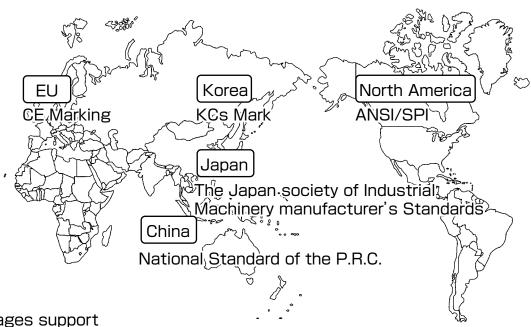
·Wide opened hopper maintenance area, Enhances accessibility





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 / Vietnamese Indonesian / German / French / Italian / Spanish (Mexican) / Portuguese / Czech / Finnish Dutch / Hungarian / Polish / Danish / Russian / Turkish / Swedish

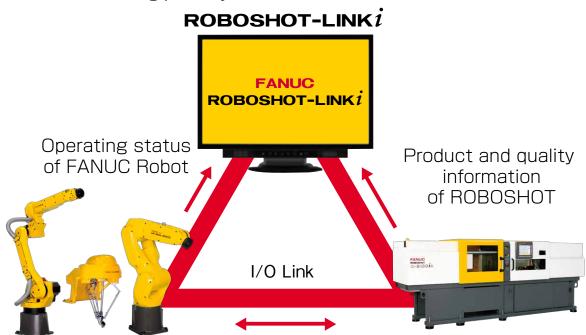
Safety requirements differ in region

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

Robot system with superior interoperability*

Superior interoperability

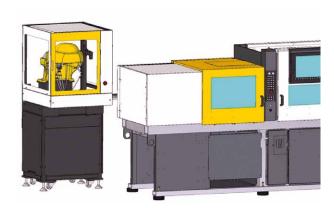
- ·Wire-saving connection by high speed and reliable I/O Link
- · Allows principle robot operation on ROBOSHOT screen
- \cdot " Visualization" of molding plant by ROBOSHOT-LINK i



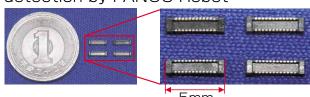
FANUC Robot Status signal Safety signal

Robot systemization example

[Automatized check · sort]
1.Precision and stable molding by
ROBOSHOT

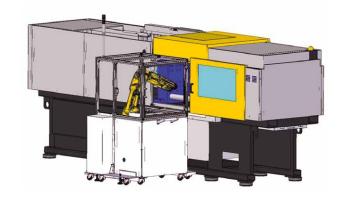


2.Automatic check and sort after parts detection by FANUC Robot



Precision connector Resin: LCP

[Automatized check · insert]
1.Precision insert of parts
by FANUC Robot



ROBOSHOT

2.Precision and stable molding by ROBOSHOT



Application to a range of molding fields

Thin wall light guide panel

Moving platen support by linear guides*

Screw and cylinder for lens molding

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

· Superior platen parallelism and straightness of clamp

· Optimized screw design and surface treatment achieves



Light guide panel for smartphone Resin: PC



Camera lens for smartphone Resin: COC



Precise fine-pitch connector



Resin: LCP

Precise connector

high-quality molding

Precise metering

Precise lens

motion

· 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

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

Automotive interior part Resin: ABS+PP

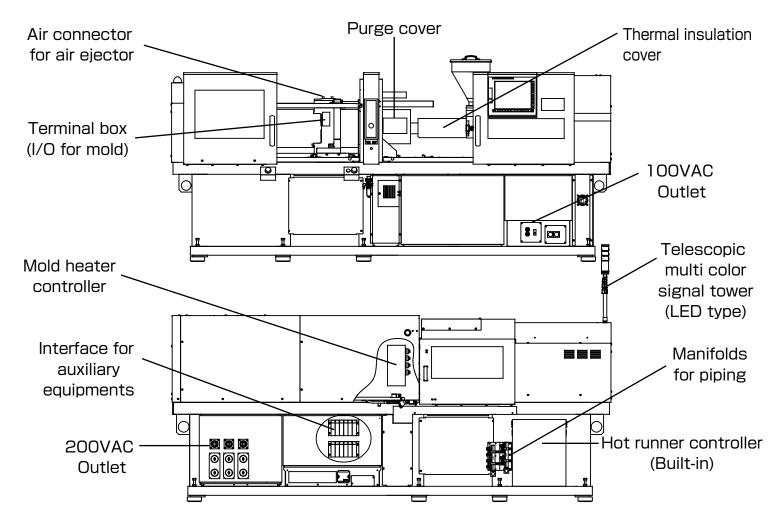
Two components molding

Second injection unit*

· FANUC CNC installed, operate from ROBOSHOT screen Additional servo axis control*

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

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.



FANUC ACADEMY

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



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Yamanashi, Japan 401-0597

Phone: 81-555-84-6030 Fax: 81-555-84-5540

Specifications

	Item	Unit	O.	·\$15	iA	07-S						30 <i>i</i> a						∞-s50 <i>i</i> A										
	Tonnage	kN	150	(15to	onf)	300 (30tonf					300 (30tonf) High precision clamp				500 (50tonf)					500 (50tonf) High precision clamp								
Clamping unit	Maximum and minimum Double platen mold height Single platen	mm	260/130 			330/150					330/150				350/150 410/210					350/150 								
	Clamping stroke	mm	160			230					230				250					250								
	Tie bar spacing (H × V)	mm	260×235			310×290					310×290				360×320					360×320								
	Platen size (H × V)	mm		5×3		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								
	Screw diameter	mm	14	16	18	14	16	18	20	22	14	16	18	20	22	20	22	26	28	32	14	16	18	20	22	26		32
	Maximum injection volume	cm³	9	11	19	9	11	19	24	29	9	11	19	24	29	24	29	50	58	76	9	11	19	24	29	50	58	76
	Injection specification		525mm/s			525mm/s					525mm/s					330mm/s					330mm/s							
	Maximum injection pressure (High pressure filling mode)	MPa						300					300			360		290	250				300		340		250	
	Maximum injection pressure	MPa	250		230	250			270					270	220	280		210	190	150	250	250	260	280	260	210	190	150
	Maximum pack pressure	MPa	250	230	190	250	250	260	250	200	250	250	260	250	200	280	240	190	160	130	250	250	260	280	240	190	160	130
Injection		mm/s		525		525					525				330					330								
unit	Maximum screw rotation speed	min ⁻¹		450		450							450					450			450							
	Injection specification		80	0mn	า/ร)mr	า/ร)mn	า/ร)mn			500mm/s							
	Maximum injection pressure (High pressure filling mode)	MPa						300				330				360	340	275	240				300		340	275	240	
	Maximum injection pressure	MPa	250		230	250		260		220				270	220	280	260	210	190			250	260	280	260	210	190	
	Maximum pack pressure	MPa	250	230	190	250	250	260	250	200	250	250	260	250	200	280	240	190	160	-		250	260	280	240	190	160	
	Maximum injection speed	mm/s		800		800					800				500					500 -								
	Maximum screw rotation speed	min ⁻¹		450				450				450				450												

	Item	Unit			07-S	61001	A			@:(=	\$13C	iA		Q7-S150 <i>İ</i> A													
	Tonnage	kN		100	00 (1	00to	nf)		,	1300	(130	tonf)		1500 (150tonf)												
Clamping	Maximum and minimum Double platen mold height Single platen	mm			450/ 520/				 570/200						500/200 575/275												
	Clamping stroke	mm			35	50			400					440													
unit	Tie bar spacing (H × V)	mm			460×	410			530×530					560×510													
	Platen size (H × V)	mm			660×	610			730×730					800×750													
	Ejector point / Ejector force / Ejector stroke	point/kN/mm	5	/ 25	(2.51	tonf)	/ 10	0	5 / 25 (2.5tonf) / 100					5 / 35 (3.5tonf) / 150													
	Screw diameter	mm	22	26	28	32	36	40	26	28	32	36	40	22	26	28	32	36	40	32	36	40	44	48	52		
	Maximum injection volume	cm³	29	50	58	103	147	181	50	58	103	147	181	29	50	58	103	147	181	121	153	188	268	318	442		
	Injection specification		200mm/s						200mm/s											200mm/s							
	Maximum injection pressure	MPa	260	260	240	220	190	160	260	240		190	160							280	280	260	220	190	160		
	Maximum pack pressure	MPa	260	260	220	200	170	140	260	220	200	170	140							280	280	220	190	160	130		
	Maximum injection speed	mm/s	200								200										200						
	Maximum screw rotation speed	min ⁻¹	300								300										300						
	Injection specification		330mm/s							33			capac	ity)	330mm/s												
	Maximum injection pressure (High pressure filling mode)	MPa	340	340	320	270	220		340	320		220		340	340		270	220		380	345	280					
	Maximum injection pressure	MPa	260	260	240	220	190	160	260	240		190	160	260	260		220	190	160	280	280	260	220	190	160		
	Maximum pack pressure	MPa	260	260	220	200	170	140	260	220	200	170	140	260	260	220	200	170	140	280	280	260	220	190	160		
Injection	Maximum injection speed	mm/s			33				330							330											
unit	Maximum screw rotation speed	min ⁻¹			45	0			450							45				400							
	Injection specification				500n	nm/s											nall d	apac	ity)								
	Maximum injection pressure (High pressure filling mode)	MPa	340	320	280									340	320	280											
	Maximum injection pressure	MPa	260	260	240	220	170				-			260	260	240	220	170									
	Maximum pack pressure	MPa	260	260	220	200	170				-			260	260	220	200	170									
	Maximum injection speed	mm/s			500											500							-				
	Maximum screw rotation speed	min ⁻¹			450											450											
	Injection specification			<u>0mm/</u>		ra hiç	gh sp	eed)									ra hi	gh sp	eed)								
	Maximum injection pressure	MPa	400	380	350	270					-			400	380	350											
	Maximum pack pressure	MPa	380		300	230								350		210											
	Maximum injection speed	mm/s		10										1200													
	Maximum screw rotation speed	min ⁻¹		45	50									450													

	ltem		©3-	-s220 <i>i</i>	A	0x-s250 i a								07-S300 <i>i</i> A						07-\$450				
	Tonnage	kN	2200) (220toi	nf)	2500 (250tonf)								3000 (300tonf)						450	00 (450tc	nf)	
	Maximum and minimum Double platen			650/300								650/300					1000/3			0/350				
Clamping	mold height Single platen	mm	(
unit	Clamping stroke	mm		600								600						900						
uiiit	Tie bar spacing (H × V)	mm	6	710×635									810:	×710			920×9							
	Platen size (H × V)	mm	9	1030×960								1130×1030						1300×1			0			
	Ejector point / Ejector force / Ejector stroke	point/kN/mm		(3.5tonf)) / 150		13/8	0 (8.	<u> 0tonf)</u>	/ 20				/ 80	(8.0	Otonf) / 2	00			(15	5.0tor		250
	Screw diameter	mm			48 52	26 2		32	36 40	44						52 56		68	56			72 80		100
	Maximum injection volume	cm³	121 153	188 268	318 442	50 5	8 103	121	153 188	268	318	442	188	268 3	18 4	42 64	0 836	944	640 8	36 9	944 10)59 181	0 2290	2827
	Injection specification		20	1200r	nm/s							240mm/s							180	mm/s	;			
	Maximum injection pressure (High pressure filling mode)								345 280												-			
	Maximum injection pressure	MPa	280 280																			80 25		
Injection	Maximum pack pressure	MPa	280 280	220 190	160 130	450 43	330	280	280 260	220	190	160	280	260 2	240 2	20 19	5 150	130		2	280 2	50 20		130
unit	Maximum injection speed	mm/s		200		12	00		3	240									18 20	-				
uiiit	Maximum screw rotation speed	min ⁻¹		300		45	50		400						400									
	Injection specification			30mm/s	3										270r	nm/s			240r	<u>nm/</u>	's (S	mall (capac	ity)
	Maximum injection pressure (High pressure filling mode)	MPa	380 345																	-	-			
	Maximum injection pressure	MPa	280 280													40 22			225 1					
	Maximum pack pressure	MPa	280 280	260 220	190 160								280			20 19	5		195 1			20	-	
	Maximum injection speed	mm/s		330			-						270					240						
	Maximum screw rotation speed	min ⁻¹		400			-						400 300					4	100	3	800			

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.

FANUC CORPORATION

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