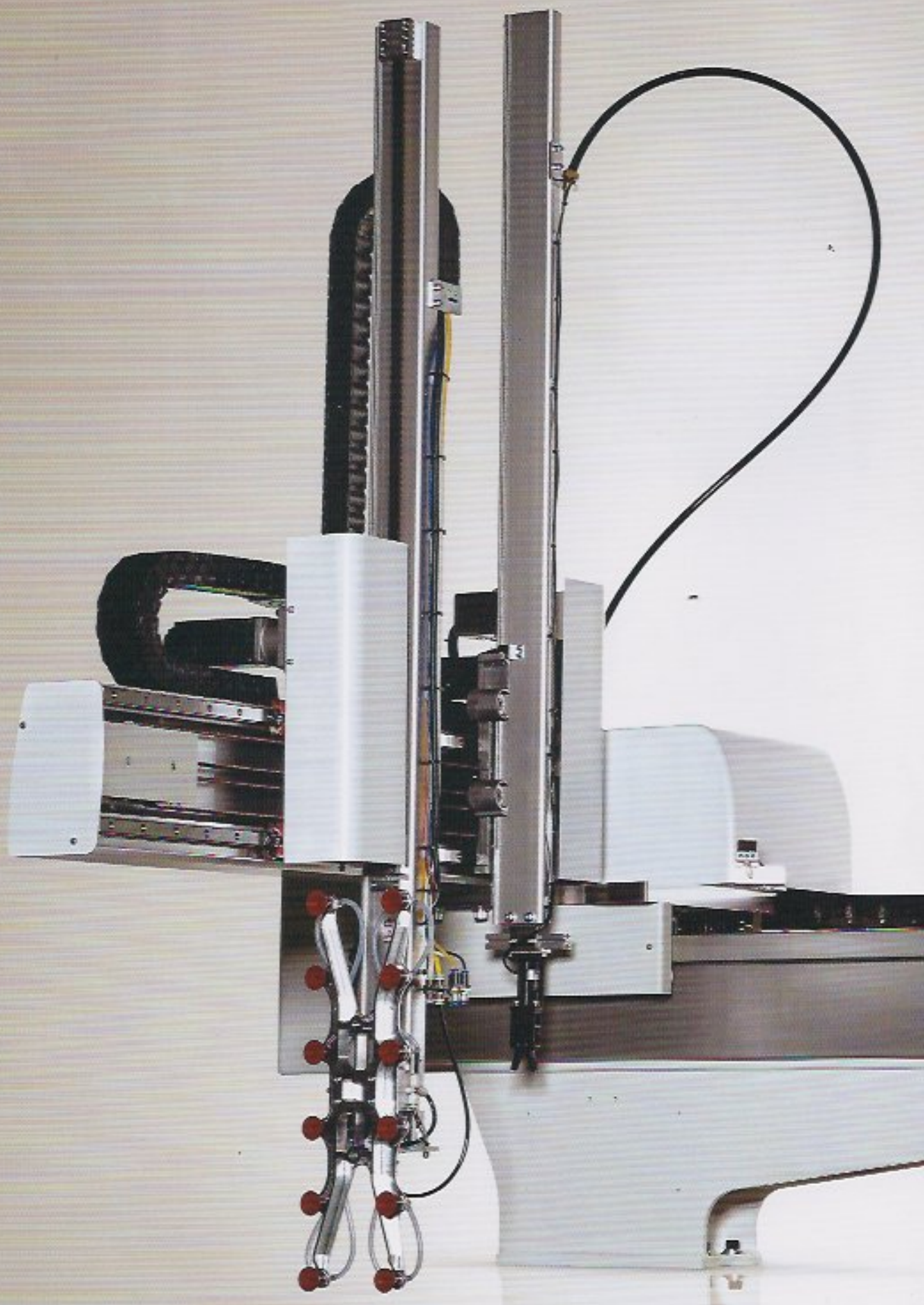




SC/SCII

SC SERIES 70 / 150 / 250 / 350 / 11350 / 11600

Heartful Technology
Yushin



SC CONCEPT

BENEFITS

ENERGY
CONSERVATION

Reduces Running Cost

VIBRATION
CONTROL

Improves Productivity

HIGH SPEED

Improves Productivity

SC-150 ***Yushin***

ENERGY CONSERVATION

Better Air Economy

Air Economizing Tool

ECO Vacuum PAT.

standard-
equipped

Saves Energy by Economizing Air Used During Suction Grip Take-out

ECO Vacuum is Yushin's proprietary compressed air economizing system. By monitoring suction pressure and shutting off the air supply as long as gripping power is maintained, it cuts air usage by as much as 75%. That efficiency translates into lower air compressor electricity bills and lower equipment costs over time.



BENEFITS

Annual Electricity Savings for One Compressor:

USD \$700*

Test Conditions

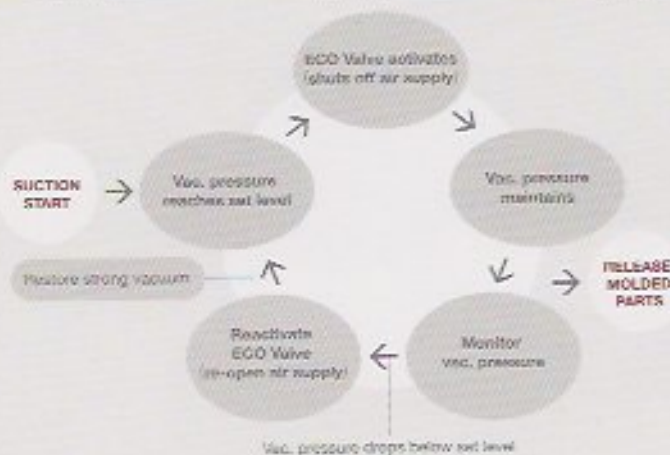
Daily Operating Time	24hrs
Molding Cycle	15sec. (When take-out interval (from part take-out to part release) is 25% of cycle, ECO Vacuum is active for 75% of every cycle)
Amount of Air Consumption (1 vac drop)	19NL/Cycle (Without ECO Vacuum) 4.75NL/Cycle (With ECO Vacuum)
Compressor Air Supply	2,300NL/min
Compressor Motor Electric Usage	16KW
Electricity Cost	16 cents/kWh*
Air Consumption Reduction Rate (Due to ECO Vacuum)	75%

*converted from JPY at JPY 90 = USD \$1

How ECO Vacuum Works

Monitors vacuum pressure while suction gripping molded parts so that compressed air is used only when needed.

Vacuum circuits close when vacuum pressure reaches a set level and hold suction while using less compressed air. ECO Vacuum reduces the volume of compressed air used from suction start through to part release. Without this feature, robots consume air continuously for suction-gripping during that interval.



Reduces Running Cost

Electricity Conservation Tool
ECO Mode PAT.

standard-
equipped

In ECO Mode, the robot automatically slows down its traverse speed to most efficiently suit the molding machine's next cycle start time.



BENEFITS

RESULT

Reduces Electricity Usage

(tests revealed up to 5% savings)

RESULT

Increased Longevity

Extends life of timing belts and guide rails.

Energy Conservation Tool
ECO Monitor PAT.

standard-
equipped

Displays the robot's usage of electricity and air in real-time to assist operators with energy-saving measures.



Reduces Running Cost

VIBRATION CONTROL

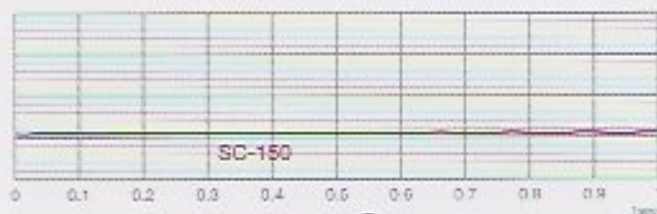
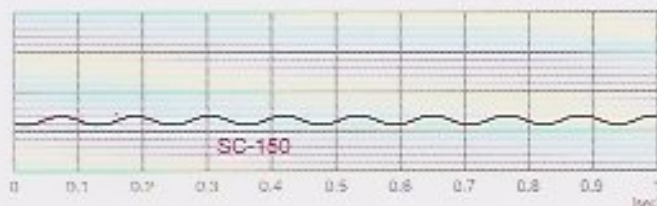
Shorter Settling Times

Design Optimization + Anti-vibration Controls

Design optimization employed for the SC Series accounts for factors such as natural oscillation and damping characteristics to reduce settling time*. Used together with other vibration-damping technology, it greatly improves the SC's vibration management.

*Settling Time

Settling Time is defined as the time interval required for oscillations to calm down to within a set value. Shorter settling time means the end-of-arm tool extremities used to take-out molded products cease any flutter sooner, and wait liners may be shortened.



The Design Optimization Process

STEP 1

Set the Optimization Area



Define the area to optimize (in blue above) and inputted points and load values.

Optimize →

STEP 2

Optimization Result 1



Stresses are low on blue areas. Trim optimization area to suit.

Optimize →

STEP 3

Optimization Result 2

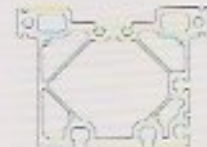


Over several rounds of optimizations, the topology (form) of the material changes.

Structural Analysis →

STEP 4

Final Version of Frame



Apply structural analyses to the optimized frame's cross section to decide the final, detailed shape for production.

BENEFITS

Shorter Timers (= Faster Take-out Times)

With greatly reduced settling times, each wait liner on the SC may be shortened, to allow for faster take-out times during molding.

Smooth, Stable Take-out

With superior vibration-damping and very little vibration during motion and stops, the SC takes out and manipulates parts smoothly. By capably handling even precision micro-molded parts, the SC helps raise your production efficiency.



Improves Productivity

HIGH SPEED

Optimized, Lighter Weight

Lighter Weight through Optimization Technology

Yushin R&D employed design optimization to enhance the shape and structure of many SC parts and components for lighter weight. The effort trimmed 16.0kg from the SC's moving components, 10.1% lighter than the previous SA series model. The SC also enjoys 10.4% faster speeds than the SA without a motor size increase. But the SC was not simply lightweighted. By employing design optimization, the SC was given "lighter weight through optimal design, while maintaining high rigidity."

Comparison With prior SA series Robot



10.1%
weight reduction*



10.4%
Faster Take-out
Times

* Comparison of weight of moving components of SCE-600D and SEI-600D

BENEFITS

Faster Take-out Times

Shorter take-out times translate directly into improved production output. Incorporating the concept of shortening timers to increase productivity, SC series robots help improve the efficiency of molding operations.



Improves Productivity

DESIGN OPTIMIZATION

Design Optimization is what Yushin calls the practice of applying CAE (Computer-Aided Engineering) to seek the most theoretically optimal form for a robot based on its mechanism and motions. This approach is used to design lighter weight and higher reliability into automobiles and aircraft. By incorporating design optimization, SC series robots enjoy greatly enhanced vibration control and faster speeds.



High-Speed Take-Out Robot HSA
Integrates design optimization to unleash world-class speed.

Example: Traverse Beam Frame



Measurement of Stress (on traverse frame)
Stress Energy = High (hot colors) to Low (cool colors)



Co-Research with Kyoto University

Yushin's design optimization began with research conducted in cooperation with Kyoto University. After successfully optimizing end-of-arm tools, Yushin employed the process with HSA, TSXA, YC, SXC and now SC robots.



JSPE Young Engineer Award Winner

In 2009, the Japan Society for Precision Engineering awarded their "Young Engineer Award" to Yushin engineers for groundbreaking work in their project, "Design Optimization of End-of-Arm-Tools for Injection-Molding Take-Out Robots."



E-touch Lite-SC Controller

Lead Through Teaching PAT.

standard-
equipped

The Lead Through Teaching software allows users to modify robot programs as easily as teaching motions. An operator can modify programs alone, just by using the robot's touchscreen controller, without needing an external computer or specialized programming knowledge. Therefore, users can perform program changes with much less time and expense.



New TFT LCD touchscreen (30,000 colors) for an even clearer display.

SD Memory Card



Teaching data may be backed up on SD memory card and easily transferred to another robot.

OTHER STANDARD EQUIPMENT

7.5in full-color touchscreen (TFT LCD display)	High-Cycle Motion
Corner Shock-Protectors	Wait on Traverse
Mold data memory (for approx. 300 molds)	Wait for Descend Order
Reject Circuit	Production Status Monitor
Initial Shots Discharge Motion	Multilingual Display (Japanese+1 other language standard)
Sampling Motion	ECO Mode
Under-Cut Motion	ECOMonitor

SC/SCII

Standard Specifications

Power source	Driving method	Control method	Air pressure	Wrist flip angle
Single phase AC200V/220V (50/60Hz)	Digital servo motor 3/5-axis	Micro computer control	0.49MPa Maximum air pressure 0.7MPa	90deg.

SC-70



Specifications

Model	Maximum power consumption	Traverse stroke (mm)	Kick stroke (mm)		Vertical stroke (mm)		Air Consumption (N/cycle)	Maximum payload (kg)	Clamping force (t)
			main arm	sub arm	main arm	sub arm			
SC-70S	S type 1.0kVA AC200V 5.0A	900 [1200]	470	—	[350] 650	—	1.7 (ECO Vacuum Specification)	3	30~100
SC-70D	D type 1.3kVA AC200V 6.5A	[1600]	430	430	[600] 700 [800]				

S type: Equipped with main arm only. D type: Equipped with main and sub arms. [] : Extended traverse stroke. Maximum payload includes the end of arm tool. Higher payloads possible depending on take-out settings and speeds.

SC-150/250



Specifications

Model	Maximum power consumption	Traverse stroke (mm)	Kick stroke (mm)		Vertical stroke (mm)		Air Consumption (N/cycle)	Maximum payload (kg)	Clamping force (t)
			main arm	sub arm	main arm	sub arm			
SC-150S	S type 1.5kVA AC200V 7.5A	1500 [1900]	578	—	900 [900]	—	2.3 (ECO Vacuum Specification)	6	100~250
SC-150D			518	518	950 [950]				
SC-250S	D type 1.8kVA AC200V 9.5A		725	—	900 [1000]	—	2.7 (ECO Vacuum Specification)	250~350	
SC-250D			888	888	950 [1050]				

S type: Equipped with main arm only. D type: Equipped with main and sub arms. [] : Extended traverse stroke. Maximum payload includes the end of arm tool. Higher payloads possible depending on take-out settings and speeds.

SC-350/II350/II600



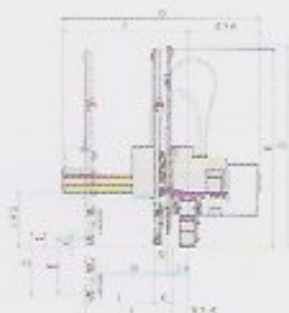
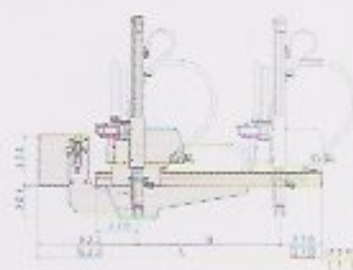
Specifications

Model	Maximum power consumption	Traverse stroke (mm)	Kick stroke (mm)		Vertical stroke (mm)		Air Consumption (N/cycle)	Maximum payload (kg)	Clamping force (t)
			main arm	sub arm	main arm	sub arm			
SC-350S	S type 1.8kVA AC200V 9.3A	1700 [1900] [2200]	1100	—	1100	—	4.2 (ECO Vacuum Specification)	12	350~450
SC-350D			940	940		1100			
SCII-350S			1100	—	1100	—	4.0 (ECO Vacuum Specification)		
SCII-350D	D type 2.4kVA AC200V 12.3A		940	940					
SCII-600S		1700 [1900] [2500]	1100	—	1300	—	4.4 (ECO Vacuum Specification)	450~650	
SCII-600D			940	940	1300				

S type: Equipped with main arm only. D type: Equipped with main and sub arms. [] : Extended traverse stroke. Maximum payload includes the end of arm tool. Higher payloads possible depending on take-out settings and speeds.

Dimensions (mm)

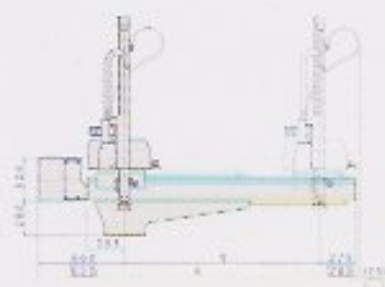
- () = Extended traverse stroke
- [] = S-Type Dimensions
- = for one-side models



Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
SC-70	1807 (2107) (2527)	900 (1050) (1460)	795	1221	1257	600	56	700	62	550	120 [10]	430 [470]	430	90	1281

Dimensions (mm)

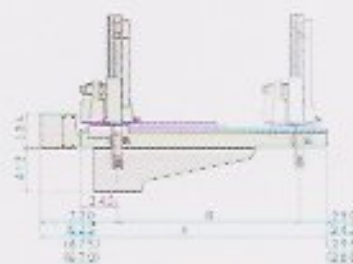
- () = Extended traverse stroke
- [] = S-Type Dimensions
- = for one-side models



Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
SC-150	2435 (2835)	1500 (1900)	1065	1681	1620	600		860		700	152 [122]	515 [570]	515		1670
SC-250			1220	1716	1724	600	298	950	271	850		666 [725]	560	150	1774

Dimensions (mm)

- () = Extended traverse stroke
- [] = S-Type Dimensions
- = for one-side models
- () = SC-350 Dimensions



Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SC-350	2670 (2870) (3170)	1700 (1900) (2200)			2106									
SCT-350			1585	2091	1226		394		304	1300	260 [160]	940 [1100]	940	170
SCE-600	2670 (2870) (3470)	1700 (1900) (2600)			1888	1300		1300						



HEADQUARTERS & FACTORY



18 Yushin America, Inc.



16 Yushin Automation Limited



5 Guangzhou Yushin Precision Equipment Co., Ltd.



7 Yushin Korea Co., Ltd.

HEADQUARTERS & FACTORY

Japan ● 11-260Kogahonmachi,Fushimi-ku,Kyoto

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| China | ⑥ Guangzhou Yushin Precision Equipment Co., Ltd. (Guangzhou) |
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| The Netherlands | ⑲ Polymac-Robotics B.V. (Ede) |
| Canada | ㉔ En-Plus, Inc. (Toronto) |



Safety information

- These products are intended solely as defined in the User safety rules. Always take great care when operating any robots.
- To improve visual clarity, these robots may be shown without the safety guards that are identified in the safety rules. Never operate the robots without of safety guards in place.
- Before using any product introduced in this literature, all operators must read and understand the instruction manual and other related documents for proper and safe equipment operation.

* The contents in this catalog are subject to change without notice.



Yushin commends itself to contributions to the creation of more and more sensitive technologies by employing our human principles.

Heartful Technology
Yushin

Yushin Precision Equipment Co., Ltd.

Head Office / 11-260 Kogahonmachi, Fushimi-ku,
Kyoto, 612-8482 Japan
TEL +81-75-933-9555 FAX +81-75-944-4033

please access..... yushin.com
www.yushin.com