

# EPSON E2 SCARA Robots

**Speed, Power and Ease of Use**



**Now Available  
with our Low Cost  
RC170 Controller!**



**EPSON Robots**

The Power of Choice

[robots.epson.com](http://robots.epson.com)

## More Than Just Another SCARA— It's an EPSON!

EPSON E2 Robots are the proven workhorse series in our long history of high performance advanced SCARA robots. Fast cycle times, a wide variety of models (wall mount, ceiling mount, table top, and more), super precision, and incredible 24/7 reliability are just some of the many features you get with EPSON E2 SCARA robots.

After all, this is more than just another SCARA robot. It's an EPSON!

## Flexibility to Choose the Right Robot for the Job

With 36 models available, EPSON E2 Robots have a wide variety of configurations to help fit today's tough application needs. From simple pick and place to highly complex jobs our E2 Robots are the right robots for your application. E2 Robots are available from very small to very large arm configurations in lengths of 250, 350, 450, 550, 650 and 850mm. And with repeatabilities down to 8 microns these are some of the most repeatable SCARA robots ever made. In addition, all EPSON E2 robots are available with our high performance, open architecture RC420/520 controllers or our low cost Micro PowerDrive RC170 controllers. Add to that the fact that our robots have super fast cycle times and you're sure to find the robot you need with EPSON.

## Faster Cycles = Higher Profits

EPSON E2 Robots cycle times are some of the fastest in the industry. No special tuning or adjustments are required. E2 Robots are just plain fast. With cycle times as fast as 0.38 seconds EPSON E2 Robots can maximize part throughput for even the most demanding cycle time requirements. This means more parts per hour and higher profits.

## Plug It In and Turn It On

EPSON E2 Robots are ready to use when you receive them. Electrical and pneumatic lines are pre-routed through the arm for easy user wiring. Software is pre-configured for your specific robot arm. All options are pre-installed at the factory so your robot is ready to go right out of the box. We make installation easy so you can begin robot system development within minutes of receiving your EPSON E2 Robots.

## General Features

- Over 36 different configurations available
- Arm lengths from 250mm to 850mm
- Multiple mounting capability
- Repeatabilities down to 8 microns
- Very fast cycle times (down to 0.38 seconds)
- Class 10 Clean room/ESD compliant models
- Multiple Controller types available (PC based, PLC Slave, low cost and more)
- Easy to use Microsoft Windows™ based Software
- Integrated Options: Vision Guidance, Conveyor Tracking, Force Sensing, .NET / Active X Controls, DeviceNet, Profibus, Ethernet IP, Audit Log/Security and more
- Meets UL1740, CE and RIA/ANSI 15.06 1999 safety standards





# The Power of Choice

- Extended Z Axis available for applications requiring longer strokes
- Hollow Z Axis Quill for easy routing of Electrical and Pneumatic lines



- High torque Sigma III AC Servomotors provide the highest performance in a compact space
- Reduced cable height for easy installation into workcells with limited height requirements
- Absolute encoders mean faster start-ups. No more wasting time homing the robot at power up.
- Class 10 Cleanroom/ESD Compliant models available

- Built in pneumatic and electrical lines eliminate external utility lines that can snag on other workcell components
- Orange LED servo power indicator for safety
- Z Axis release switch for easy manual positioning of the Z axis



Over 36 models available!

## Multiple Mounting Configurations



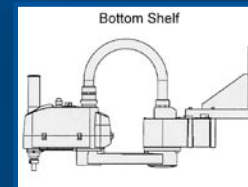
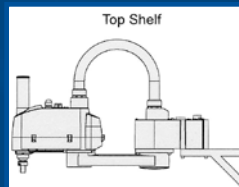
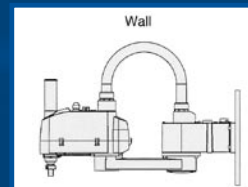
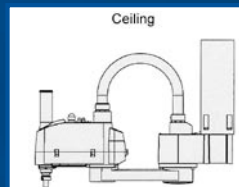
E2C351SM



E2S453SM



E2S551SM



EPSON E2 Multi-mount robots can be mounted to a wall, shelf top, shelf bottom, or ceiling and are available in both standard (SM) and cleanroom/ESD (CM) configurations. They are available in 350, 450, 550 and 650mm lengths so the chances are that EPSON has the right robot configuration for your next application.

# E2C Robots

## Compact Robots for High Precision Jobs!

EPSON pioneered the small, ultra high precision SCARA robot market in 1998. Our new E2C Robots continue EPSON's leadership role. The E2C robots have small footprints and small sizes to meet the demanding space requirements of factories with limited workspace areas.

E2C Robots come in two sizes at 250 and 350mm lengths. They come standard with 120mm of Z axis stroke length. (100mm for the Class 10 Cleanroom/ESD models). They also have outstanding performance ratings and are perfect for applications requiring smaller robots with very demanding repeatability specifications such as hard disk assembly, biotechnology, electronics, medical devices, photonics, semiconductor, telecommunications, and many other application areas.

E2C351 robots are available in Table Top, Wall Mount, Ceiling Mount, or Shelf Mount configurations to help maximize available workspace. Each of the E2C Robots (250 to 350 mm models) is available in a Class 10 cleanroom configuration. Plus all of the E2 cleanroom robots are also ESD compliant. This is ideal for those sensitive applications where static electricity can create defective parts.

With manufacturing systems today, high cycle rates are the name of the game. E2C robots are extremely fast with cycle times down to 0.39 seconds. Not only are our champion data speed times some of the fastest in the industry, our real world cycle times are second to none due to the E2 Robots high duty cycle performance capabilities. This equates to more parts assembled in less time.

The **E2C251S** has superior repeatability of 8 microns!

## The Small Footprint Solution!



**E2C251S**  
Compact Robot  
(Table Top Type)



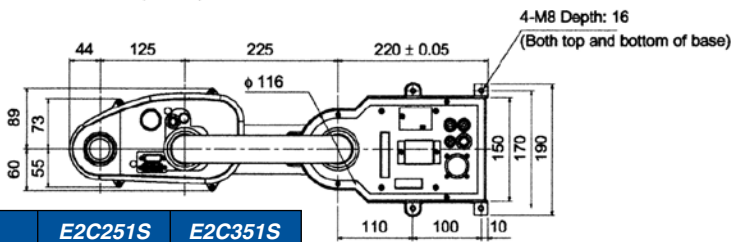
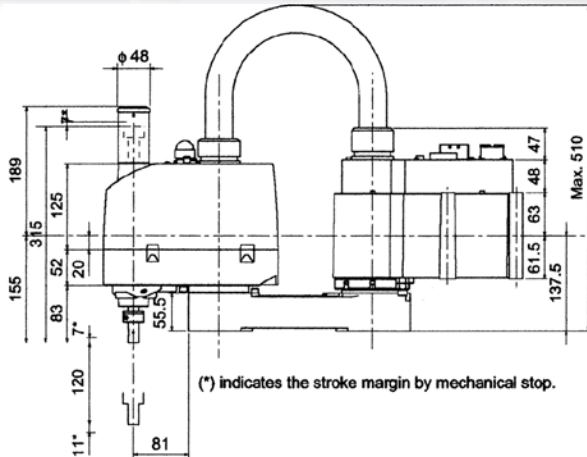
**E2C351C**  
Cleanroom Robot  
(Table Top Type)



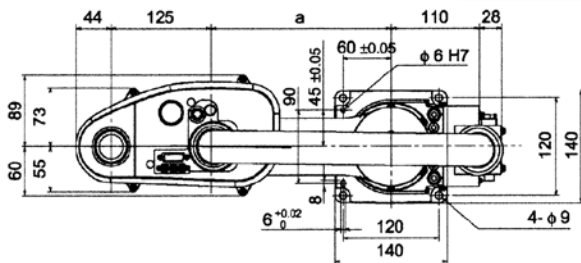
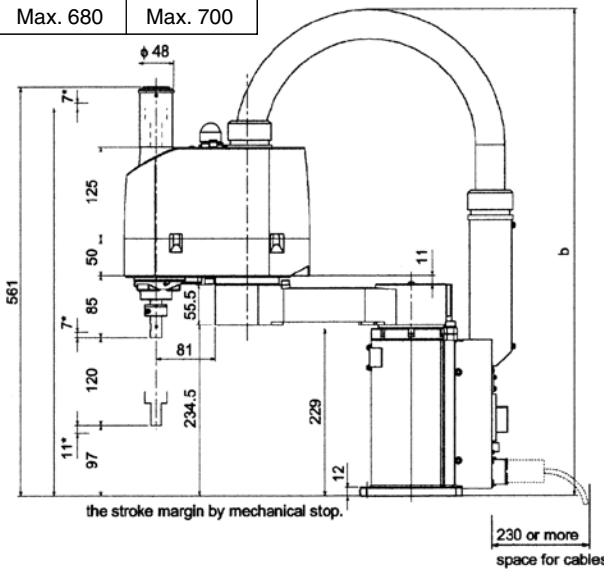
**E2C351SM**  
Compact Robot  
(Multi-Mount Type)



## Compact Robots for High Precision Jobs!



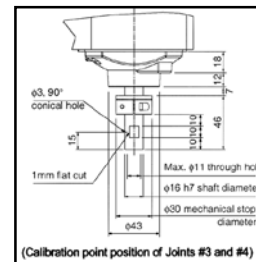
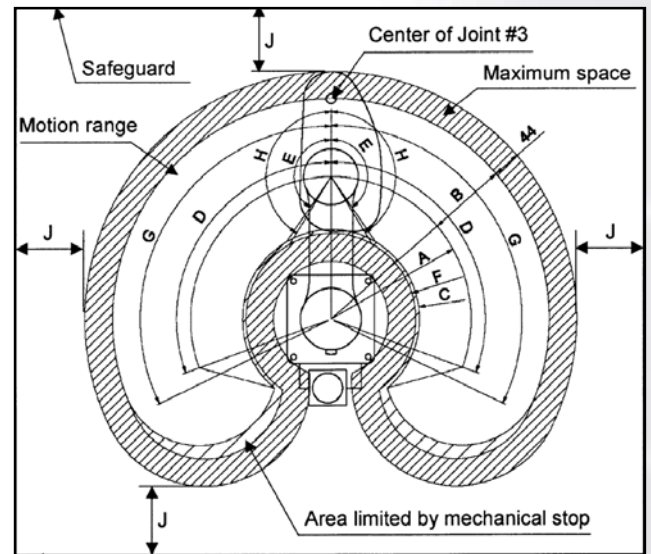
	E2C251S	E2C351S
a	125	225
b	Max. 680	Max. 700



Standard Motion Range of Manipulator	E2C251S/C	E2C351S/C
A (Length of Axis 1)	125 mm	225 mm
B (Length of Axis 2)	125 mm	125 mm
C	95.7 mm	142 mm
D (Motion range of Joint 1)	90 degrees	110 degrees
E (Motion range of Joint 2)	135 degrees	145 degrees
F	89.6 mm	136 mm
G (Range to the mechanical stop of Joint 1)	98 degrees	116 degrees
H (Range to the mechanical stop of Joint 2)	138 degrees	148 degrees
J (Range to the safeguard)	approx. 100 mm*	

\* "J" shows the necessary distance (minimum) between the maximum space and safeguard.

	E2C25	E2C35
<b>Configuration</b>	SCARA 4 Axis AC Servo	
<b>Range</b>	Axis 1 + Axis 2 Z Axis Z Axis Clean U Axis	250 mm 120 mm 100 mm +/- 360 deg
<b>Max Speed</b>	Axis 1 + Axis 2 (combined) Z Axis U Axis	2900 mm/sec 1100 mm/sec 2600 deg/sec
<b>Repeatability</b>	Axis 1 + Axis 2 Z Axis U Axis	+/- 0.008 mm +/- 0.010 mm +/- 0.020 deg
<b>Payload</b>	Rated / Max	1 kg / 3 kg
<b>Moment of Inertia</b>	U Axis Rated U Axis Max	0.005 kg*m <sup>2</sup> 0.05 kg*m <sup>2</sup>
<b>Cycle Time</b>		0.395 secs / 0.417 secs
<b>Motor Ratings</b>	Axis 1 Axis 2 Axis 3 Axis 4	150 watt 150 watt 150 watt 150 watt
<b>Downward Force</b>	Z Axis	150N (15.3kgf)
<b>User Lines</b>	Electric Pneumatic	15 electric 2 at 6 mm; 1 at 4 mm
<b>Weight</b>		14 kg; 16 kg (multi mount)
<b>Clean Rating</b>		Class 10 (0.13 μm particle size)
<b>Environmental Conditions</b>	Temperature Humidity	5-40 deg C 10-80% (no condensation)



**Note:** The work envelope drawing above is for the E2C351S/C table top models only. For side mount work envelope drawings please refer to our web site.

Complete CAD drawing files are available at [www.robots.epson.com](http://www.robots.epson.com)



## A Wide Variety of Models to Choose From!

EPSON E2S Robots can be thought of as the core of our SCARA robot offerings. They come in 450, 550 and 650mm lengths and are perfect for many different applications requiring a medium sized robot with outstanding performance.

E2S Robots are available in Table Top, Wall Mount, Ceiling Mount, or Shelf Mount configurations to help maximize available workspace. Each of the E2S Robots is also available in a Class 10 cleanroom configuration. Plus all of the E2 cleanroom robots are also ESD compliant. This is ideal for those critical applications where static electricity can create defective parts.

As with all our E2 robots, the E2S robots are very fast with cycle times down to 0.40 seconds. Not only are our champion data speed times some of the fastest in the industry, our real world cycle times are second to none due to the high duty cycle performance capabilities of our E2 robots.

E2S robots come standard with 170mm of Z axis stroke length (150mm for the Class 10 cleanroom/ESD models). There is also a 320mm Z axis option for all E2S offerings (300mm Z axis option is available for the Class 10 cleanroom/ESD models).

E2S Robots are ideal for applications in the Automotive, Appliance, Aerospace, Computer Components, Consumer Products, Electronics, Food, Medical Devices, Plastics, Semiconductor, and Telecommunications industries due to their multiple size and mounting configurations and powerful capabilities.



**E2S451S**  
Standard Robot  
(Table Top Type)



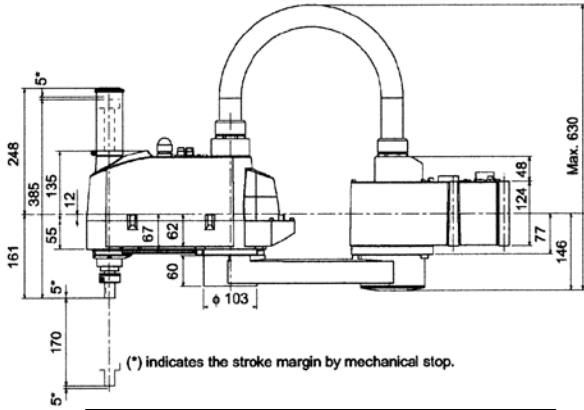
**E2S551C**  
Clean/ESD Robot  
(Table Top Type)



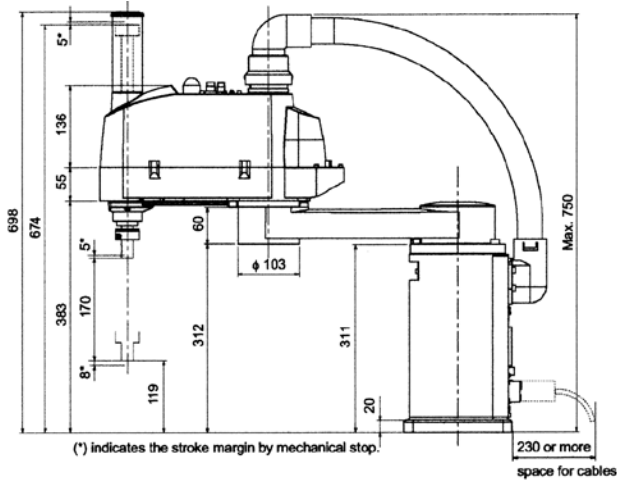
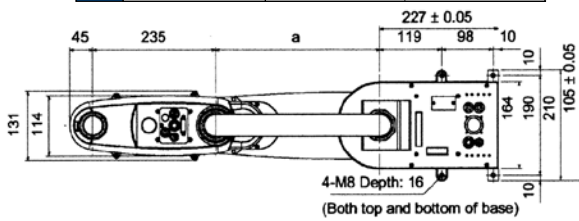
**E2S435SM**  
Standard Robot  
(Multi-Mount Type)



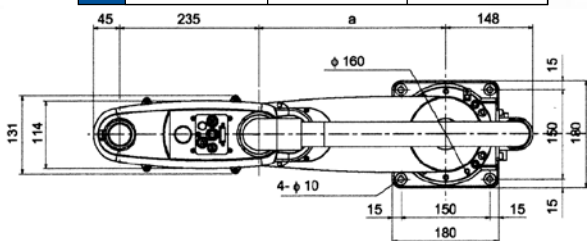
## A Wide Variety of Models to Choose From!



	E2S45*SM	E2S55*SM	E2S65*SM
a	215	315	415



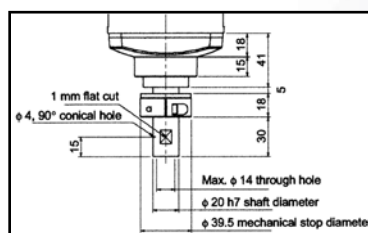
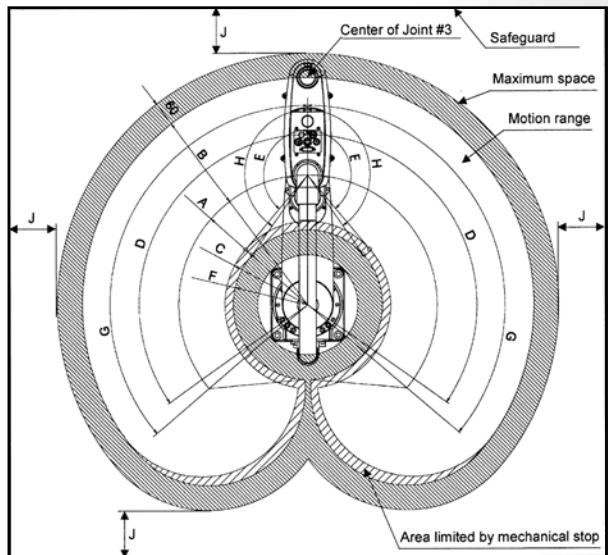
	E2S45*S	E2S55*S	E2S65*S
a	215	315	415



Standard Motion Range of Manipulator	E2S45*S/C	E2S55*S/C	E2S65*S/C
A (Length of Axis 1)	215 mm	315 mm	415 mm
B (Length of Axis 2)	235 mm	235 mm	235 mm
C	156 mm	203 mm	280 mm
D (Motion range of Joint 1)	125 degrees	125 degrees	125 degrees
E (Motion range of Joint 2)	140 degrees	140 degrees	140 degrees
F	136 mm	182 mm	260 mm
G (Range to the mechanical stop of Joint 1)	130 degrees	130 degrees	130 degrees
H (Range to the mechanical stop of Joint 2)	145 degrees	145 degrees	145 degrees
J (Range to the safeguard)	approx. 100 mm*		

\* "J" shows the necessary distance (minimum) between the maximum space and safeguard.

	E2S45	E2S55	E2S65	
Configuration	SCARA 4 Axis AC Servo			
Range	Axis 1 + Axis 2 Z Axis/Option Z Axis Clean U Axis	450 mm 170/320 mm 150/300 mm +/- 360 deg	550 mm 170/320 mm 150/300 mm +/- 360 deg	650 mm 170/320 mm 150/300 mm +/- 360 deg
Max Speed	Axis 1 + Axis 2 (combined) Z Axis U Axis	5400 mm/sec 1100 mm/sec 1870 deg/sec	6000 mm/sec 1100 mm/sec 1870 deg/sec	6300 mm/sec 1100 mm/sec 1870 deg/sec
Repeatability	Axis 1 + Axis 2 Z Axis U Axis	+/- 0.015 mm +/- 0.010 mm +/- 0.020 deg		
Payload	Rated / Max	2 kg / 5 kg		
Moment of Inertia	U Axis Rated U Axis Max	0.01 kg*m <sup>2</sup> 0.12 kg*m <sup>2</sup>		
Cycle Time		0.409 secs	0.427 secs	0.477 secs
Motor Ratings	Axis 1 Axis 2 Axis 3 Axis 4	400 watt 150 watt 150 watt 150 watt		
Downward Force	Z Axis	150N (15.3kgf)		
User Lines	Electric Pneumatic	15 electric		
Weight		20 kg; 22 kg (multi mount)		
Clean Rating		Class 10 (0.13 μm particle size)		
Environmental Conditions	Temperature Humidity	5-40 deg C 10-80% (no condensation)		



Note: The work envelope drawing above is for the E2S table top models only. For side mount work envelope drawings please refer to our web site.

Complete CAD drawing files are available at [www.robots.epson.com](http://www.robots.epson.com)



# E2L Robots

## Longer Reach for the Larger Jobs!

EPSON E2L Robots are perfect for applications that require a lot of reach. Not only do they come available in 650 and 850mm versions but they also come standard with a 320mm Z Axis stroke (300mm Z Axis stroke for cleanroom/ESD models).

E2L Robots are available in Class 10 cleanroom configurations. Plus all of the E2 cleanroom robots are also ESD compliant. This is ideal for those critical applications where static electricity can create defective parts.

As with all our E2 robots, the E2L robots are very fast. In fact, the E2L653S has the fastest champion data cycle time at 0.38 seconds. Not only are our champion data speed times some of the fastest in the industry, our real world cycle times are second to none due to the high duty cycle performance capabilities of our E2 robots.

The E2L robots are ideal for applications in the Automotive, Appliance, Aerospace, Computer Components, Consumer Products, Electronics, Food, Medical Devices, Plastics, Semiconductor, and Telecommunications industries due to their multiple size configurations and powerful capabilities.



**E2L853S**  
Long Reach Robot  
(Table Top Type)



**E2L653C**  
Clean/ESD Robot  
(Table Top Type)



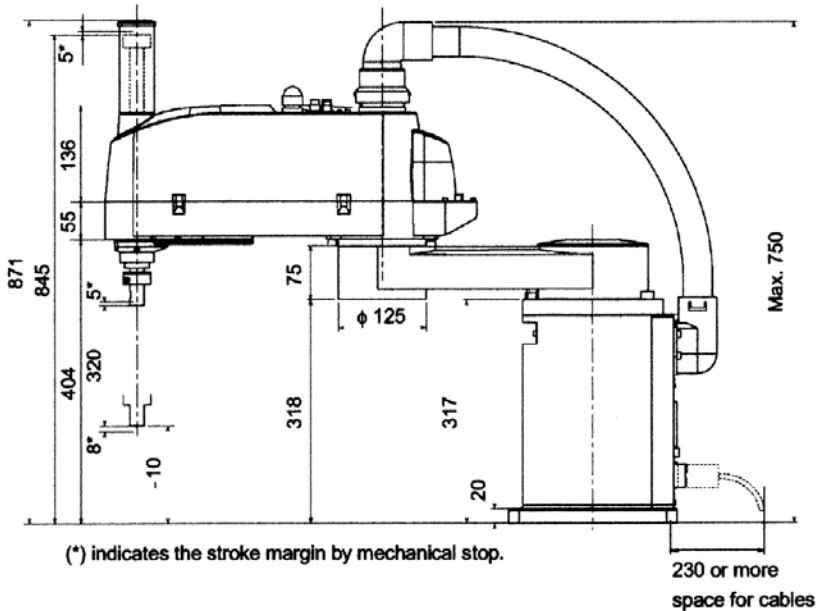
**E2L653S**  
Long Reach Robot  
(Table Top Type)

The  
**E2L653S** is the  
fastest EPSON  
E2 Robot with  
a cycle time of  
0.38 seconds!

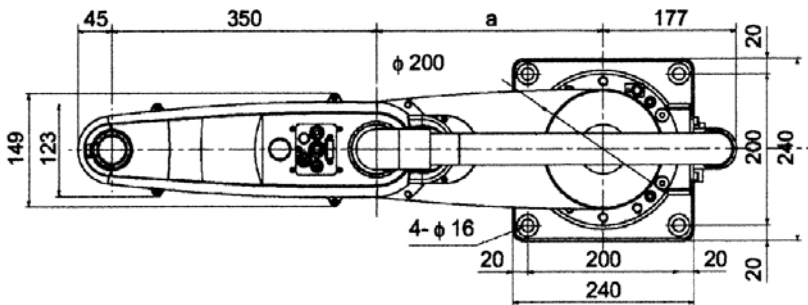


# E2L Robots

**Longer Reach for the Large Jobs!**

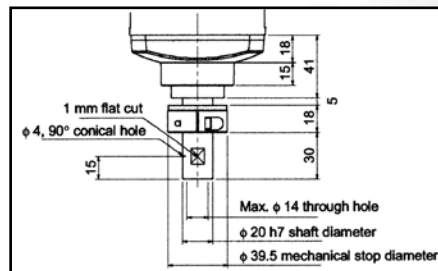
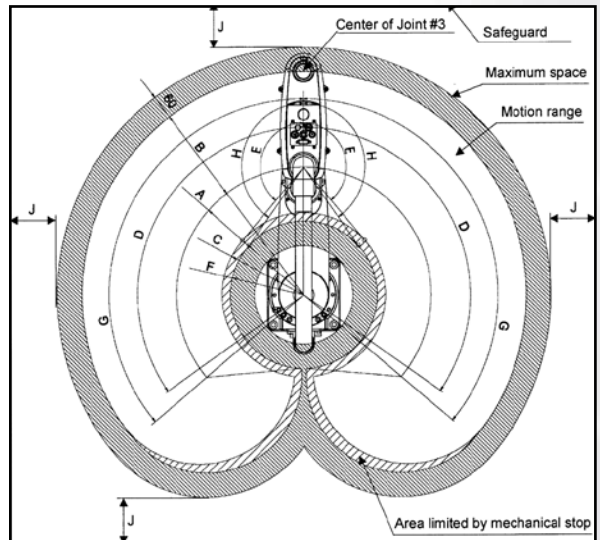


	E2L653S	E2L853S
a	300	500



		E2L65	E2L85
<b>Configuration</b>		SCARA 4 Axis AC Servo	
<b>Range</b>	Axis 1 + Axis 2	650 mm	850 mm
	Z Axis	320 mm	320 mm
	Z Axis Clean	300 mm	300 mm
	U Axis	+/- 360 deg	+/- 360 deg
<b>Max Speed</b>	Axis 1 + Axis 2 (combined)	5200 mm/sec	6100 mm/sec
	Z Axis	1100 mm/sec	1100 mm/sec
	U Axis	1870 deg/sec	1870 deg/sec
<b>Repeatability</b>	Axis 1 + Axis 2	+/- 0.020 mm	
	Z Axis	+/- 0.010 mm	
	U Axis	+/- 0.020 deg	
<b>Payload</b>	Rated / Max	2 kg / 5 kg	
<b>Moment of Inertia</b>	U Axis Rated	0.010 kg*m <sup>2</sup>	
	U Axis Max	0.120 kg*m <sup>2</sup>	
<b>Cycle Time</b>		0.381 secs	0.437 secs
<b>Motor Ratings</b>	Axis 1	400 watt	
	Axis 2	400 watt	
	Axis 3	150 watt	
	Axis 4	150 watt	
<b>Downward Force</b>	Z Axis	200N (20.4kgf)	
<b>User Lines</b>	Electric	15 electric	
	Pneumatic	2 at 6 mm; 1 at 4 mm	
<b>Weight</b>		31 kg	
<b>Clean Rating</b>		Class 10 (0.13 μm particle size)	
<b>Environmental Conditions</b>	Temperature	5-40 deg C	
	Humidity	10-80% (no condensation)	

Standard Motion Range of Manipulator	E2L65*S/C	E2L85*S/C
A (Length of Axis 1)	300 mm	500 mm
B (Length of Axis 2)	350 mm	350 mm
C	228 mm	324 mm
D (Motion range of Joint 1)	130 degrees	130 degrees
E (Motion range of Joint 2)	140 degrees	140 degrees
F	201 mm	292 mm
G (Range to the mechanical stop of Joint 1)	132 degrees	132 degrees
H (Range to the mechanical stop of Joint 2)	145 degrees	145 degrees
J (Range to the safeguard)	approx. 100 mm*	



Complete CAD drawing files are available at [www.robots.epson.com](http://www.robots.epson.com)

\* "J" shows the necessary distance (minimum) between the maximum space and safeguard.

## Heavy Duty SCARA Robot!

EPSON E2H Heavy Duty SCARA robots are the answer to demanding high payload applications that require fast cycle times, high duty cycles and high precision. All E2H robots come with 850mm of reach, 340mm of Z axis stroke, payload ratings to 20Kg and repeatabilities of +/-0.025mm. This is truly a heavy duty SCARA robot.

The rigid arm design combined with powerful EPSON controls make the EPSON E2H robots ideal for heavy parts assembly, machine tending, material handling, packaging, dispensing, and many other high payload high speed applications.

EPSON E2H robots also allow users the choice between our highly popular PC based controllers or low cost Micro PowerDrive controllers. We realize that all applications are not the same and thus give customers the flexibility to select the controller that fits best for their application.



**E2H853S**  
Heavy Duty Robot  
(Table Top Type)



**E2H853C**  
Clean/ESD Robot  
(Table Top Type)





# E2 Robots & Controller Specifications



E2 Series Specifications		E2C251	E2C351	E2S45x	E2S55x	E2S65x	E2L653	E2L853	E2H853
Configuration		SCARA 4 Axis AC Servo							
Range	Axis 1 + Axis 2	250 mm	350 mm	450 mm	550 mm	650 mm	650 mm	850 mm	850 mm
	Z Axis	120 mm	120 mm	170/320 mm	170/320 mm	170/320 mm	320 mm	320 mm	340 mm
	Z Axis Clean	100 mm	100 mm	150/300 mm	150/300 mm	150/300 mm	300 mm	300 mm	290 mm
	U Axis	+/- 360 deg	+/- 360 deg	+/- 360 deg	+/- 360 deg	+/- 360 deg	+/- 360 deg	+/- 360 deg	+/- 360 deg
Max Speed	Axis 1 + Axis 2	2900 mm/sec	3600 mm/sec	5400 mm/sec	6000 mm/sec	6300 mm/sec	5200 mm/sec	6100 mm/sec	5266 mm/sec
	Z Axis	1100 mm/sec	1100 mm/sec	1100 mm/sec	1100 mm/sec	1100 mm/sec	1100 mm/sec	1100 mm/sec	1100 mm/sec
	Z Axis	2600 deg/sec	2600 deg/sec	1870 deg/sec	1870 deg/sec	1870 deg/sec	1870 deg/sec	1870 deg/sec	1428 mm/sec
	U Axis								
Repeatability	Axis 1 + Axis 2	+/-0.008 mm	+/-0.010 mm	+/-0.015 mm	+/-0.015 mm	+/-0.015 mm	+/-0.020 mm	+/-0.020 mm	+/-0.025 mm
	Z Axis	+/-0.010 mm	+/-0.010 mm	+/-0.010 mm	+/-0.010 mm	+/-0.010 mm	+/-0.010 mm	+/-0.010 mm	+/-0.010 mm
	Z Axis	+/-0.02 deg	+/-0.02 deg	+/-0.02 deg	+/-0.02 deg	+/-0.02 deg	+/-0.02 deg	+/-0.02 deg	+/-0.030 deg
	U Axis								
Payload	Rated / Max	1 kg / 3 kg		2 kg / 5 kg		2 kg / 5 kg		2 kg / 20 kg	
	U Axis Rated	0.005 kg*m <sup>2</sup>		0.01 kg*m <sup>2</sup>		0.01 kg*m <sup>2</sup>		0.020 kg*m <sup>2</sup>	
Moment of Inertia	U Axis Max	0.05 kg*m <sup>2</sup>		0.12 kg*m <sup>2</sup>		0.12 kg*m <sup>2</sup>		0.450 kg*m <sup>2</sup>	
Cycle Time		0.395 secs	0.417 secs	0.409 secs	0.427 secs	0.477 secs	0.381 secs	0.437 secs	0.46 secs
Motor Ratings	Axis 1	150 watt		400 watt		400 watt		400 watt	
	Axis 2	150 watt		150 watt		400 watt		400 watt	
	Axis 3	150 watt		150 watt		150 watt		400 watt	
	Axis 4	150 watt		150 watt		150 watt		150 watt	
Downward Force	Z Axis	150N (15.3 kgf)		150N (15.3 kgf)		200N (20.4 kgf)			
Weight		14 kg; 16 kg (multi-mount)		20 kg; 22 kg (multi-mount)		31 kg		37 kg	
User Lines	Electric Pneumatic	15 electric 2 at 6 mm; 1 at 4 mm							
Clean Rating		Class 10 (0.13 µm particle size)							
Environmental Conditions	Temperature Humidity	5-40 deg C 10-80% (no condensation)							



With EPSON robots, you get the Power of Choice. We are proud to offer E2 SCARA Robot customers a choice between our low cost yet powerful Micro PowerDrive RC170 controllers, or our high performance, open architecture RC420 or RC520 controllers.

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Rev: EPSONE2D

