Compact Spiders reach every corner
Like a spider in its web

A unique four-axis design makes the Epson Spider extremely compact and incredibly fast. Its outstanding precision means it can reach 100% of the positions in its action field, offering you everything you need for efficient production.

Closing the gap

The tool axis is positioned centrally over the production area, allowing the Epson spider to reach every point of the cylindrical work area directly, with “shortcut” movements, whilst requiring very little space.

In conventional SCARA robots, the work area design is kidney-shaped, known as ‘dead space’ and an outward robot arm orientation means that travel paths are longer. The Epson Spider does not have any dead space, resulting in more efficient and productive travel paths.
Epson Spider RS3
Load capacity: 3 kg
Range: 350 mm
Maximum square working range: 495 x 495 mm
Maximum working range: Ø 700 mm
Pallet size: e.g. 400 x 600 mm
Also available in cleanroom protection class

Epson Spider RS4
Load capacity: 4 kg
Range: 550 mm
Maximum square working range: 777 x 777 mm
Maximum working range: Ø 1100 mm
Pallet size: e.g. 600 x 800 mm
Also available in cleanroom protection class

Benefits at a glance:
Short cycle times
Overlapping working ranges; no dead zones
Compact, ideal for confined workspaces
Outstanding joining properties
High insertion forces
Excellent repeatability
Intuitive direct teaching
Reduced maintenance effort; durability
High operational reliability
Unique and advantageous

**Increased productivity with less space required**

**Overhead mounting:**
The independent mounting base, common in most SCARA robots, is no longer an obstacle with Epson Spider robots, eliminating the ‘dead zone’. The second horizontal base axis has an inward orientation, enabling the zero position to be traversed to give maximum agility in confined environments.

**Internal wiring:**
Increases the working range of the two horizontal base axes to 450°, allowing the working ranges to be overlapped. At the same time a position can be approached in up to four arm-orientations.

**Cylindrical shape working range:**
Both horizontal base axes have the same arm length so they can reach the zero point of the tool axis, allowing a perfect cylindrical working range.

**Overhead mounting**

Base plate for ceiling mounting

Tool centre point (TCP) = robot zero point

Arm 1 = Arm 2

1

2

450°
Ideal for production lines

Avoid expensive idling of systems and benefit from quick conversion of production lines for new products, flexible adaptation of system-to-market segment, and easy connection to existing work cells. The Epson Spider is perfectly suited to an economic and flexible cell design with integrated work processes.

Example scenario - car key manufacturing:

**System requirements:**
- Production of 11 different key sets
- Max. 0.1% permissible error rate
- +/- 0.04 mm required accuracy
- Limited construction space

**Solution:**
- 2x Epson Spider RS4-551S
- 1x Epson RC620+ controller
- 2x high speed milling spindles
- 6x CNC axes
- Communication via D-I/O and TCP/IP

**Benefits at a glance:**
- Flexible production
- Cost reduction through compact standard units and reuse
- No special cell design necessary
- Programming simplified by middleware
- Reduced spare parts inventory
- Parallel systems for cycle time reduction
- Distributed creation of special equipment

Epson Smart Motion: Gets to the point fast

The revolutionary motor management from Epson Smart Motion is used in all Epson robot systems. It allows the robots to reach their end positions faster, with greater accuracy and with fewer vibrations. Whatever manufacturing challenges you face, Epson robots get to the point.
**Epson Spider RS3:**

**Compact and agile**

**Epson spider RS3**

<table>
<thead>
<tr>
<th>Design</th>
<th>Inwardly oriented horizontal articulated arm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load capacity</td>
<td>1 or 3 kg</td>
</tr>
<tr>
<td>Range</td>
<td>Horizontal (J1 + J2) 350 mm (175 + 175) Vertical (J3) 130 or 100 mm (cleanroom) Orientation (J4) +/- 720°</td>
</tr>
<tr>
<td>Repeatability</td>
<td>Horizontal (J1 + J2) +/- 0,01 mm Vertical (J3) +/- 0,01 mm Orientation (J4) +/- 0,01°</td>
</tr>
<tr>
<td>Mass moment of inertia</td>
<td>0,005/0,05 kg m²</td>
</tr>
<tr>
<td>User cabling</td>
<td>Electrical: connection for 1x 15-pin D-Sub connector Pneumatic: connections for compressed air supply (1x Ø 4 mm and 2x Ø 6 mm)</td>
</tr>
<tr>
<td>Z axis</td>
<td>16 H 7 / 11 mm external / internal</td>
</tr>
<tr>
<td>Insertion force</td>
<td>150 N continuous</td>
</tr>
<tr>
<td>Weight</td>
<td>17 kg</td>
</tr>
<tr>
<td>Control</td>
<td>RC700-A</td>
</tr>
<tr>
<td>Manipulator design</td>
<td>Mounting option ceiling Protection and ESD: ISO3 and ESD</td>
</tr>
<tr>
<td>Available options</td>
<td>Internal wiring unit, longer cable (5m / 10m / 20m), tool adapter, Force Sensor</td>
</tr>
</tbody>
</table>

J1 = Axis 1  J2 = Axis 2  J3 = Axis 3  J4 = Axis 4

**What’s included:**

- Epson robot and controller
- 70g grease for Z axis
- 1x plug for emergency stop
- 1x set user plugs
- 1x backup disk for robot controller
- 1x Epson RC+ program CD including simulation software
- 1x USB programming cable
- 1x CD manual
- 1x installation / safety manual
- 1x set 3m motor and signal cables

**Optional:**

- Longer power and signal cable (5m / 10m / 20m)
- Tool adapter to facilitate installation of end-effectors to the Z axis
- Internal wiring unit routes 15 electrical wires and two pneumatic lines internally through the manipulator to the end-effector
- Epson Force Sensor for the greatest precision in force-controlled applications
**Epson Spider RS4: Increased range and load capacity**

<table>
<thead>
<tr>
<th>Epson spider RS4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design</strong></td>
</tr>
<tr>
<td><strong>Load capacity</strong></td>
</tr>
</tbody>
</table>
| **Range**        | Horizontal (J1 + J2) 550 mm (275+275)  
                  | Vertical (J3) 130 or 100 mm (cleanroom)  
                  | Cleanroom (J4) +/- 720° |
| **Repeatability**| Horizontal (J1 + J2) +/- 0,015 mm  
                  | Vertical (J3) +/- 0,01 mm  
                  | Cleanroom (J4) +/- 0,01° |
| **Mass moment of inertia** | 0,005/0,05 kg m² |
| **User cabling** | Electrical: connection for 1x 15-pin D-Sub connector  
                  | Pneumatic: connections for compressed air supply (1x Ø 4 mm and 2x Ø 6 mm) |
| **Z axis**       | 16 H 7 / 11 mm external / internal |
| **Insertion force** | 150 N continuous |
| **Weight**       | 19 kg |
| **Control**      | RC700-A |
| **Manipulator design** | Mounting option ceiling  
                  | Protection class and ESD: ISO3 and ESD |
| **Available options** | Internal wiring unit, longer cable (5m / 10m / 20m), tool adapter, Force Sensor |

**What’s included:**
- Epson robot and controller
- 70g grease for Z axis
- 1x plug for emergency stop
- 1x set user plugs
- 1x backup disk for robot controller
- 1x Epson RC+ program CD including simulation software
- 1x USB programming cable
- 1x CD manual
- 1x installation / safety manual
- 1x set 3m motor and signal cables

**Optional:**
- Longer power and signal cable (5m / 10m / 20m)
- Tool adapter to facilitate installation of end-effectors to the Z axis
- Internal wiring unit routes 15 electrical wires and two pneumatic lines internally through the manipulator to the end-effector
- Epson Force Sensor for the greatest precision in force-controlled applications

**J1 = Axis 1  J2 = Axis 2  J3 = Axis 3  J4 = Axis 4**
Simulation of robot cells

Good preparation is everything. Plan and visualise all procedures in your production, validate your program offline initially, and carry out troubleshooting and editing work easily, from your desk. With the Epson RC+ Simulator – included in the software package – you save time and money through all phases of your project.

Phase 1
Design
Plan your robot cell at full size in advance and work out the expected cycle time for your application to check feasibility before a single part for the system has been made. Plan future system expansions in the simulation system to keep downtime to a minimum.

Phase 2
Integration
Completing the program validation process before the robots are delivered enables you to create programs at the same time, with the system capable of displaying and evaluating even complex motions. Collision risks are identified and equipment damage is prevented.

Phase 3
Operation and maintenance
Troubleshoot and modify programs from your desk. Use the 3D layout to visualise collision detection and robot motions, and undertake reachability checks.

Even simpler designs using the CAD-to-Point function
The CAD-to-Point function allows CAD data to be converted into robot points.
About Epson

Epson Robotic Solutions is one of the leading suppliers of high tech robot systems that are renowned worldwide for their reliability. The product range includes six-axis robots, SCARA robots, the SCARA entry-level LS and T models, the special Epson-developed Spider and N2 robots types, as well as the pioneering Dual Arm robot. Added to this are image processing controls and the Epson Force Sensor for force-controlled applications.

This gives Epson Robotic Solutions one of the most comprehensive ranges of high-precision industrial robots in the world, making them a technological pioneer for intelligently controlled automation processes.

**Technological pioneer**

1982  
Epson SCARA robots freely available in Japan for the first time

1986  
First class 1 cleanroom robot

1997  
First PC-based controller

2008  
Inventor of the right or left arm-optimised G3 SCARA robot

2009  
Inventor of the spider – a unique SCARA robot with no dead zones

2013  
First application of Epson QMEMS® sensors in robotics, reducing six-axis kinematics vibrations

2014  
Epson Compact Vision CV2: Epson’s own ultra-fast image processing computer

2016  
Epson N2 series: World’s first six-axis robot with folding arm - extremely compact and space-saving

2017  
Epson Dual Arm robot with an arm geometry inspired by human physiology, as well as integrated sensors such as cameras, force sensors, and accelerometers

**Pre and after-sales support**

Feasibility studies for maximum planning and project security

Support for planning and implementation

Introductory seminars, programming/maintenance courses, operator training

Inspection and individual maintenance concepts

Hotline service, on-site repair service

Central spare part stocking
Experience all our Epson robots in action. Build, simulate and improve your automation application in a workshop cell, with help from our experts. The cell can be controlled and networked using all conventional fieldbus systems. In addition, we can supply you with modern peripherals such as a vision and conveyor tracking system.

Make an appointment

Call us on
+49 2159 5381800

or send an email to
info.rs@epson.de

Epson Deutschland GmbH
Robotic Solutions
Otto-Hahn-Strasse 4
40670 Meerbusch

Phone: +49 2159 5381800
Fax: +49 2159 5383170
E-mail: info.rs@epson.de
www.epson.de/robots