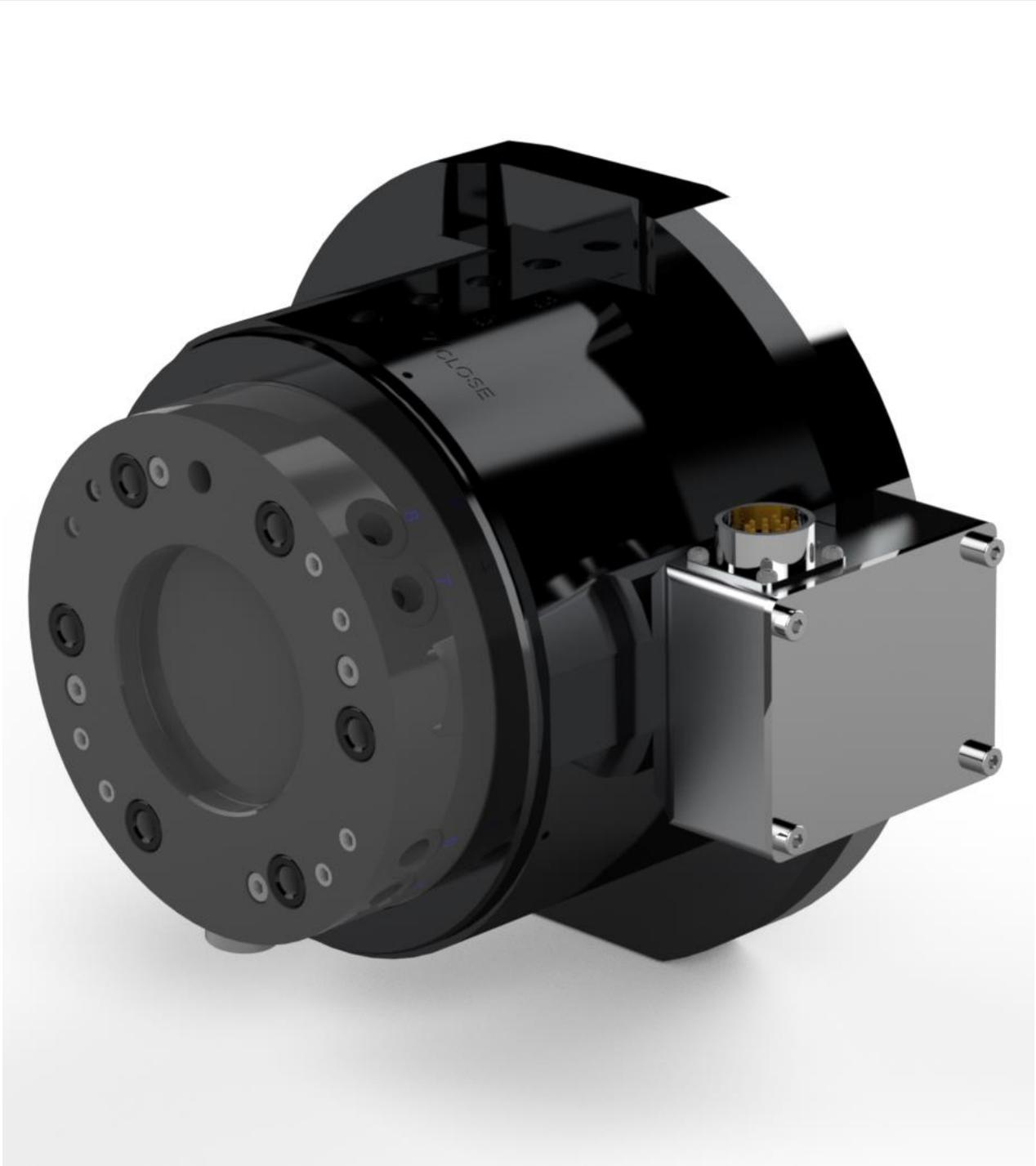


# Technical Description

## Swivel S250

M0637-1

Tool changers | **Swivels** | Swivel tool changers | Grippers | Hose packages | Valve units | Tool systems





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# 1 INTRODUCTION

**Robot System Products** is a front-rank provider of peripheral products for high performance robot applications. We provide complete system solutions for your robot installations, aiming to improve your productivity with the most reliable and cost-effective tooling on the market. Continuously we explore emerging technologies, working with leading edge design.

**Robot System Products** has a wide range of standard robot peripheral products:

- Tool changers
- Swivels
- Swivel tool changers
- CiRo
- Grippers
- Hose Packages
- Valve units
- Tool systems
- Tool parking systems

**Robot System Products'** tool changers are constructed to maximize the flexibility and reliability of your robot fleet. Through our patented locking device TrueConnect™ robustness and high safety are combined with low weight and compactness. With our swivels compressed air, water, electrical and data signals as well as weld and servo power are transferred to your tools with robot motion capabilities fully maintained. Our Swivel tool changers unite the TrueConnect™ mechanism with our swivel technology, combining the best out of the two technologies. With RSP's cost-effective CiRo, cables and hoses can be freely selected with high robot flexibility maintained, and space requirements reduced. Our integrated Tool systems are delivered as complete plug-and-play solutions designed for quick and simple installation.

**Robot System Products'** product lines are available for all major robot brands and come with complete documentation. 3D-models for simulation are available for download at: [www.rsp.eu.com](http://www.rsp.eu.com).



## 1.1 Documents

This *Technical Description* contains product information and data, drawings, circuit and pneumatic diagrams and lists of spare parts. In the document *Installation and Maintenance* (M0415-1) procedures for mounting, installation and replacement of equipment are described together with descriptions of inspection, cleaning and lubrication activities including recommended maintenance intervals.

## 1.2 Complementary Equipment

Complementary equipment is described in separate documents.

Article	Note
Cable and Hose Packages	Complete packages for most robots on the market ready to be mounted without any modifications.
External valve units	Mounted at the rear of the upper arm.
Connection kits	In order to make electrical installation easier, connection kits are available for the swivels.
3D-models	Available in Solid Works® and STEP-format.

## 2 TECHNICAL SPECIFICATIONS

### 2.1 Description of swivels

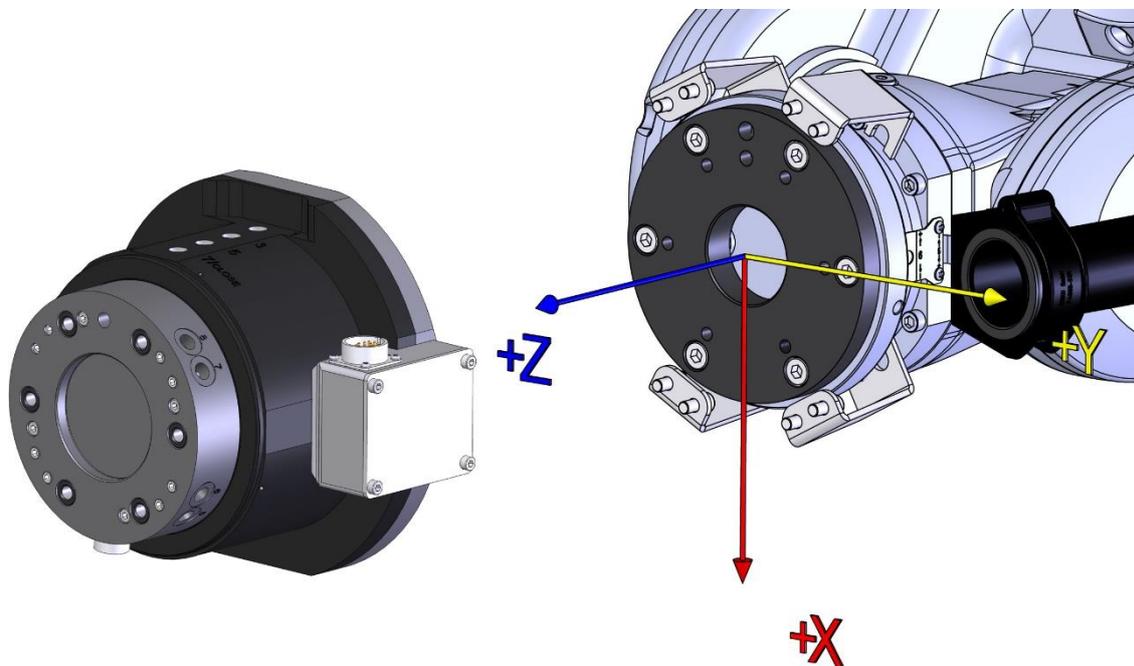
This document presents the Robot System Products' S250-8 and S250-8E swivels, which are dedicated for material handling, especially when a lot of robot movements are performed. When using an RSP swivel compressed air and electric signals will be directly available at the tool without limiting the axis 6 rotation or the robot's working range. With RSP's hose packages there is no need to consider loose, hanging cables and hoses during programming. In addition, the design and installation time for the system integrator will be significantly reduced.

The swivel S250-8, transfers compressed air to the tool, it can also be equipped with transfer of electrical signals, the electrical versions are designated 'E'. The swivels S250-8 and S250-8E cannot transport fluids.

For swivels rotation stops, which prohibits the swivels to rotate in relation to the robot, are mandatory. Depending on robot model adaptation plates between the swivel and the robot flange may be needed. Adaptation kits, including both rotation stops and, when required, adaptation plates, are available from RSP. Likewise presented are connection kits to facilitate electrical installation.

#### 2.1.1 Coordinate System Definition

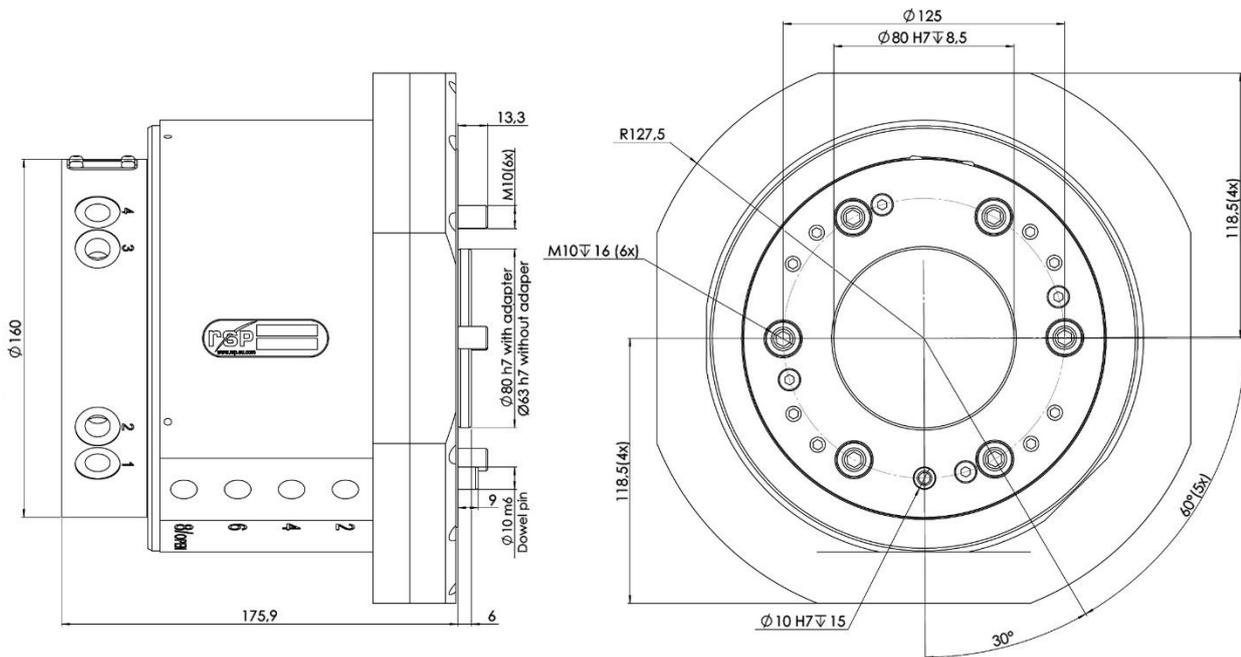
A swivel adds load to the robot. If the arm and tool loads are not stated correctly during programming the behaviour of the robot and the wear of the equipment will be affected. Information about weight and centre of gravity can, in accordance with the co-ordinate system stated below, be found in the technical specification tables of the swivel.



#### NOTE!

For the swivel the origo is situated on the surface in the centre of the robot mounting flange.

## 2.1.2 Swivel S250-8. Article no: P6303

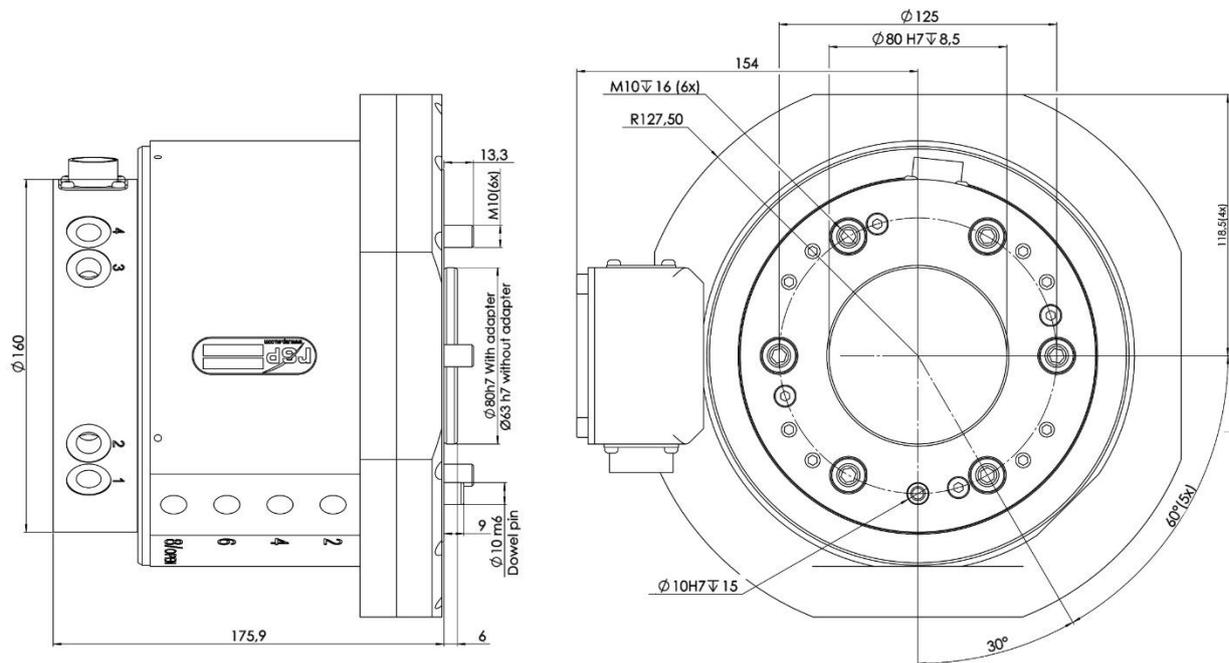


Swivel S250-8 transfers 8 pneumatic channels to the tool.

### Technical data

<b>Working temperature</b>	10°C–+50°C								
<b>Bolt pattern</b>	ISO 9409-1-125-6-M10								
<b>Maximum tool load</b>	<table border="0"> <tr> <td>Fz (static)</td> <td>± 2500 N</td> </tr> <tr> <td>Mx/My (dynamic)</td> <td>± 2000 Nm</td> </tr> <tr> <td>Mz (dynamic)</td> <td>± 1250 Nm</td> </tr> </table>	Fz (static)	± 2500 N	Mx/My (dynamic)	± 2000 Nm	Mz (dynamic)	± 1250 Nm		
Fz (static)	± 2500 N								
Mx/My (dynamic)	± 2000 Nm								
Mz (dynamic)	± 1250 Nm								
<b>Weight and centre of gravity (Z-direction)</b>	10.8 kg / 76 mm								
<b>Rotational torque</b>	80 Nm								
<b>Air channels</b>	<table border="0"> <tr> <td>Pneumatic diagram</td> <td>See <a href="#">section 2.1.5</a>.</td> </tr> <tr> <td>Connection, robot side</td> <td>8 x G ¼" (1600 l/min, max 10 bar)</td> </tr> <tr> <td>Air quality</td> <td>Oil-clean and waterless filtered air, with max 25µm particle content</td> </tr> <tr> <td>Connections, tool side</td> <td>8 x G ¼"</td> </tr> </table>	Pneumatic diagram	See <a href="#">section 2.1.5</a> .	Connection, robot side	8 x G ¼" (1600 l/min, max 10 bar)	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content	Connections, tool side	8 x G ¼"
Pneumatic diagram	See <a href="#">section 2.1.5</a> .								
Connection, robot side	8 x G ¼" (1600 l/min, max 10 bar)								
Air quality	Oil-clean and waterless filtered air, with max 25µm particle content								
Connections, tool side	8 x G ¼"								

### 2.1.3 Swivel S250-8E. Article no: P6304

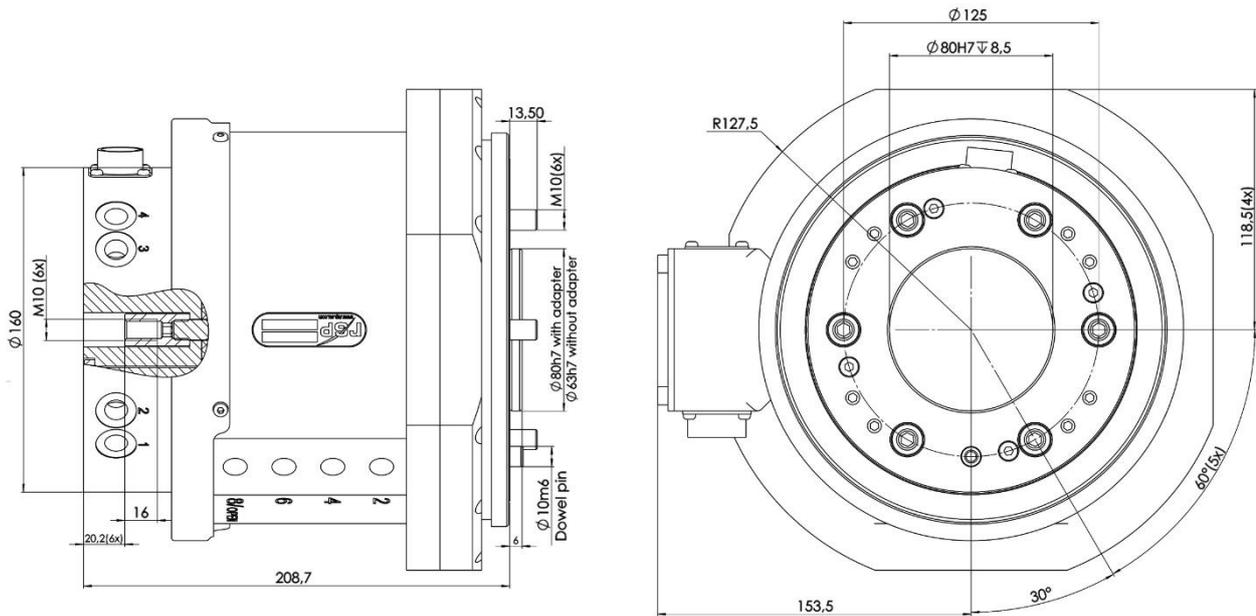


Swivel S250-8E transfers 8 pneumatic channels and 17 electrical signals to the tool.

#### Technical data

<b>Working temperature</b>		10°C–+50°C
<b>Bolt pattern</b>		ISO 9409-1-125-6-M10
<b>Maximum tool load</b>	Fz (static) Mx/My (dynamic) Mz (dynamic)	± 2500 N ± 2000 Nm ± 1250 Nm
<b>Weight and centre of gravity (Z-direction)</b>		11.5 kg / 74 mm
<b>Rotational torque</b>		80 Nm
<b>Air channels</b>	Pneumatic diagram Connection, robot side Air quality  Connections, tool side	See <a href="#">section 2.1.5</a> 8 x G ¼" (1600 l/min, max 10 bar) Oil-clean and waterless filtered air, with max 25µm particle content 8 x G ¼"
<b>Electrical signals</b>	Circuit diagram Connection, robot side Total signals Dedicated signals Connection, tool side	E0196-003 (see <a href="#">section 2.1.6</a> ) Souriau 23P (UTO01823PH) 17 x (2A, 30V) + PE 24V, 0V Compact Souriau 19S (UTOW01419SH)
<b>Connection kits (optional)</b>	P8129-50 (cable kit, robot side)  P8002 (connector, robot side) P8002-1 (connector, robot side) P8105-20 (cable kit, tool side)  P8007 (connector, tool side) P8007-1 (connector, tool side)	Souriau 23S, 5-meter cable (CP/CS/CBUS), open end Souriau 23S (straight) Souriau 23S (angled) Compact Souriau 19P, 2-meter cable, open end Compact Souriau 19P, (straight) Compact Souriau 19P, (angled)

## 2.1.4 Swivel S250-8E Sealed. Article no: P6307

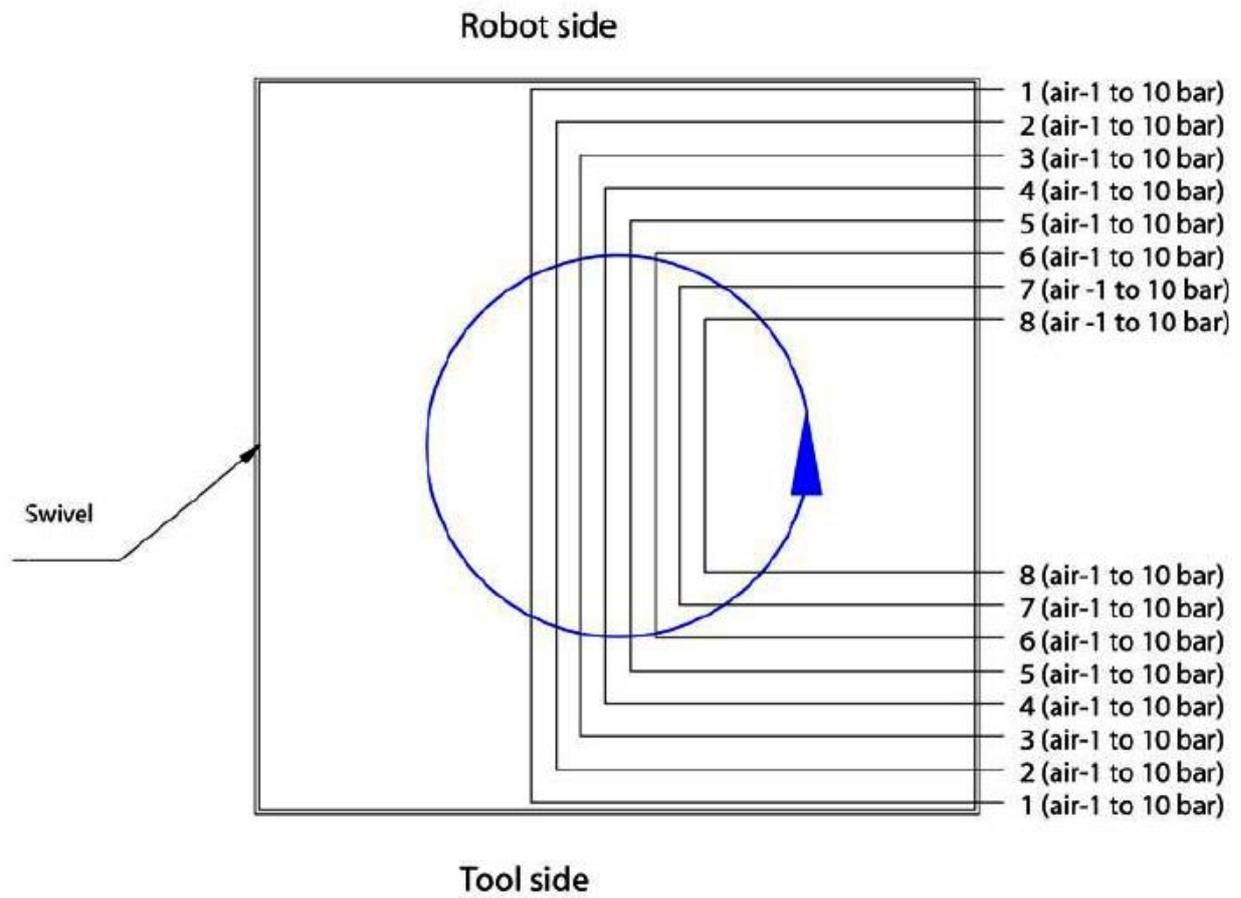


Swivel S250-8E Sealed transfers 8 pneumatic channels and 17 electrical signals to the tool.

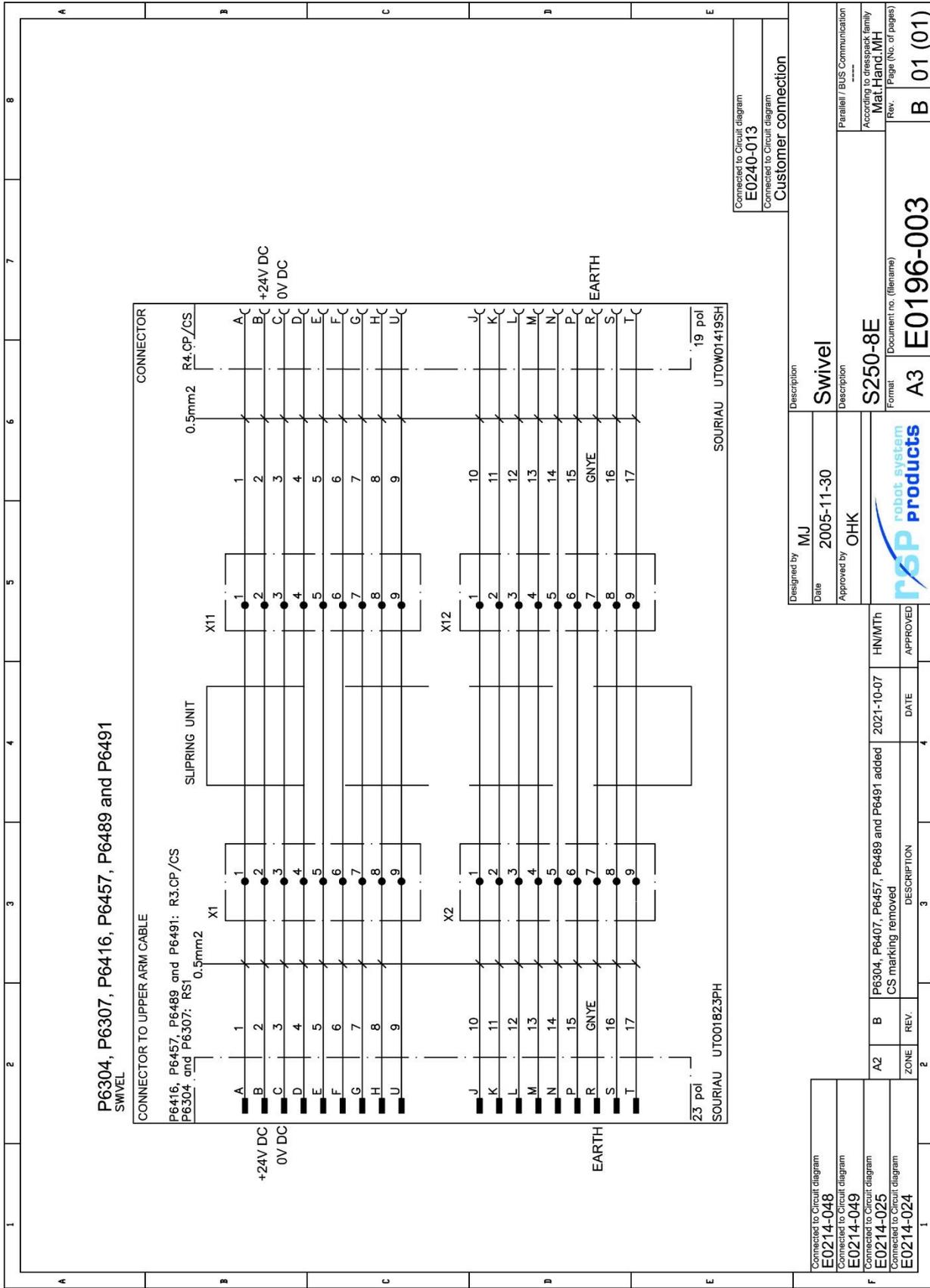
### Technical data

<b>Working temperature</b>		10°C–+50°C
<b>Bolt pattern</b>		ISO 9409-1-125-6-M10
<b>Maximum tool load</b>	Fz (static)	± 2500 N
	Mx/My (dynamic)	± 2000 Nm
	Mz (dynamic)	± 1250 Nm
<b>Weight and centre of gravity (Z-direction)</b>		13.2 kg / 90 mm
<b>Rotational torque</b>		80 Nm
<b>Air channels</b>	Pneumatic diagram	See <a href="#">section 2.1.5</a> .
	Connection, robot side Air quality	8 x G ¼" (1600 l/min, max 10 bar) Oil-clean and waterless filtered air, with max 25µm particle content
	Connections, tool side	8 x G ¼"
<b>Electrical signals</b>	Circuit diagram	E0196-003 (see <a href="#">section 2.1.6</a> )
	Connection, robot side	Souriau 23P (UTO01823PH)
	Total signals	17 x (2A, 30V) + PE
	Dedicated signals	24V, 0V
	Connection, tool side	Compact Souriau 19S (UTOW01419SH)
<b>Connection kits (optional)</b>	P8129-50 (cable kit, robot side)	Souriau 23S, 5-meter cable (CP/CS/CBUS), open end
	P8002 (connector, robot side)	Souriau 23S (straight)
	P8002-1 (connector, robot side)	Souriau 23S (angled)
	P8105-20 (cable kit, tool side)	Compact Souriau 19P, 2-meter cable, open end.
	P8007 (connector, tool side)	Compact Souriau 19P, (straight)
	P8007-1 (connector, tool side)	Compact Souriau 19P, (angled)

## 2.1.5 Pneumatic diagram for P6303, P6304 and P6307



## 2.1.6 Circuit diagram E0196-003 for P6304 and P6307



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Connected to Circuit diagram <b>E0240-013</b>
Connected to Circuit diagram <b>Customer connection</b>

Designed by <b>MJ</b>	Description <b>Swivel</b>
Date <b>2005-11-30</b>	Description <b>S250-8E</b>
Approved by <b>OHK</b>	Format <b>A3</b>
Document no. (filename) <b>E0196-003</b>	
Page (No. of pages) <b>B 01 (01)</b>	

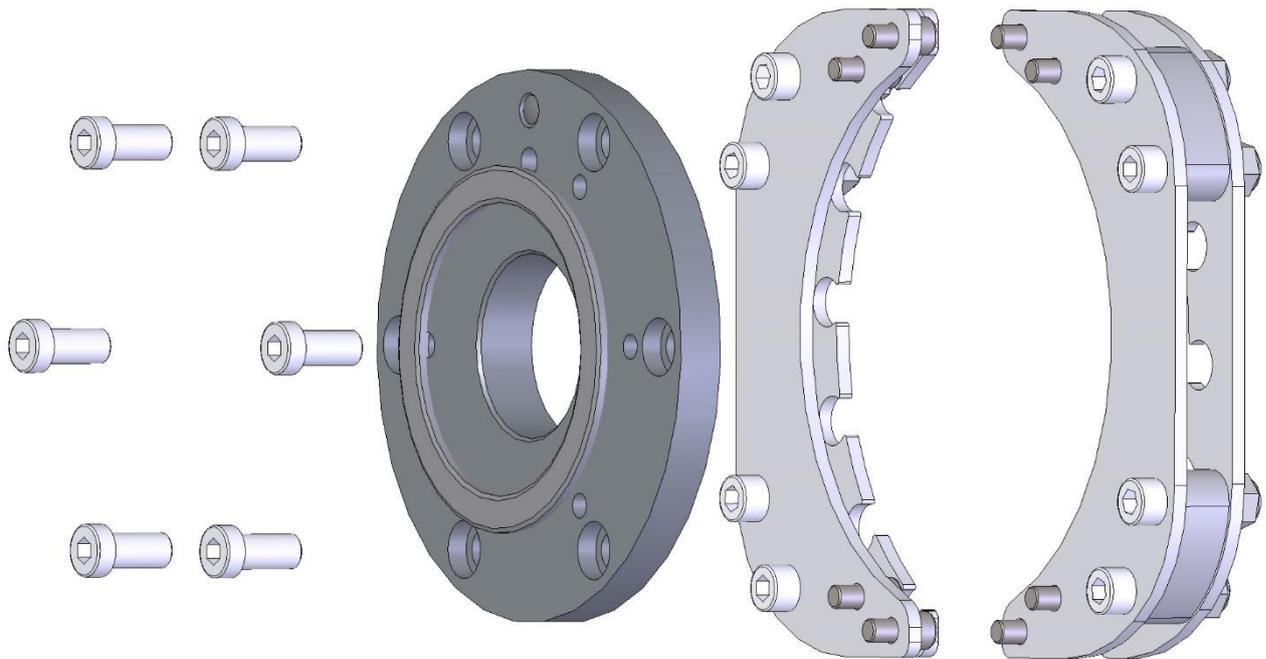
robot system products	
APPROVED	
DATE	DATE
2021-10-07	2021-10-07
DESCRIPTION	DESCRIPTION
P6304, P6407, P6457, P6489 and P6491 added CS marking removed	P6304, P6407, P6457, P6489 and P6491 added CS marking removed
REV.	REV.
B	B
ZONE	ZONE
2	2

Connected to Circuit diagram <b>E0214-048</b>
Connected to Circuit diagram <b>E0214-049</b>
Connected to Circuit diagram <b>E0214-025</b>
Connected to Circuit diagram <b>E0214-024</b>

## 2.2 Options for swivel

### 2.2.1 Robot adaptation kit

A robot adaptation kit is mandatory for mounting of a swivel to a robot. The adaptation kits always include rotation stops which are prohibiting the swivel to rotate in relation to the robots. Dependent on robot model an adaptation kit may also include an adaptation plate for other bolt circles. Robot adaptation kits are available from RSP.



*Example of adaptation kit including rotation stop, adaptation plate and hose holder*



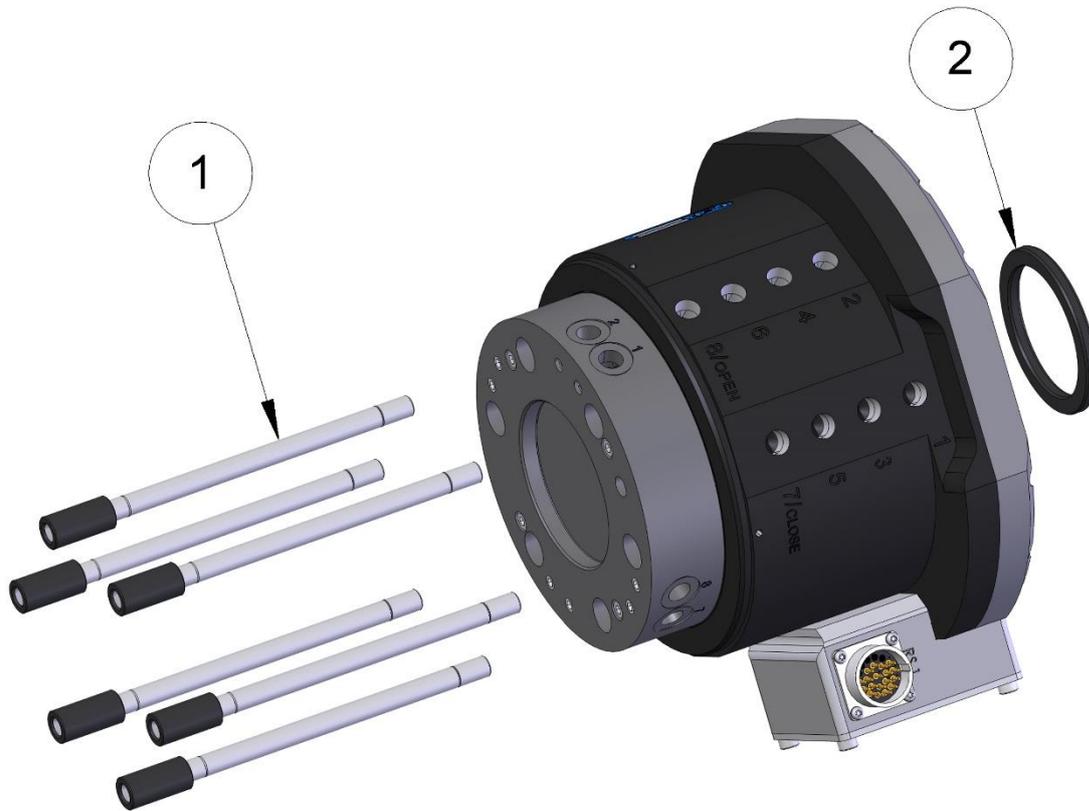
**NOTE!** Dependent on robot model and rotation stop, there can be limitations on the freedom of movement of axis 5. Contact Robot System Products for more information.

### 2.2.2 Limitation of Robot movements

There can be some limitations on the movement of axis 5 for some robot models. Contact Robot System Products for more information.

### 3 SPARE PARTS

#### 3.1 Part list for swivel P6303, P6304 and P6307



Item	Description	Part number	Pcs
1	Locking screw (P6303 and P6304)	A0196-026	6
1	Locking screw (P6307)	A0196-068	6
2	Adapter ring (Ø63-Ø80)	P0196-026	1



