

# Technical Description

## Swivel S100

M0414-1

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





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# 1 INTRODUCTION

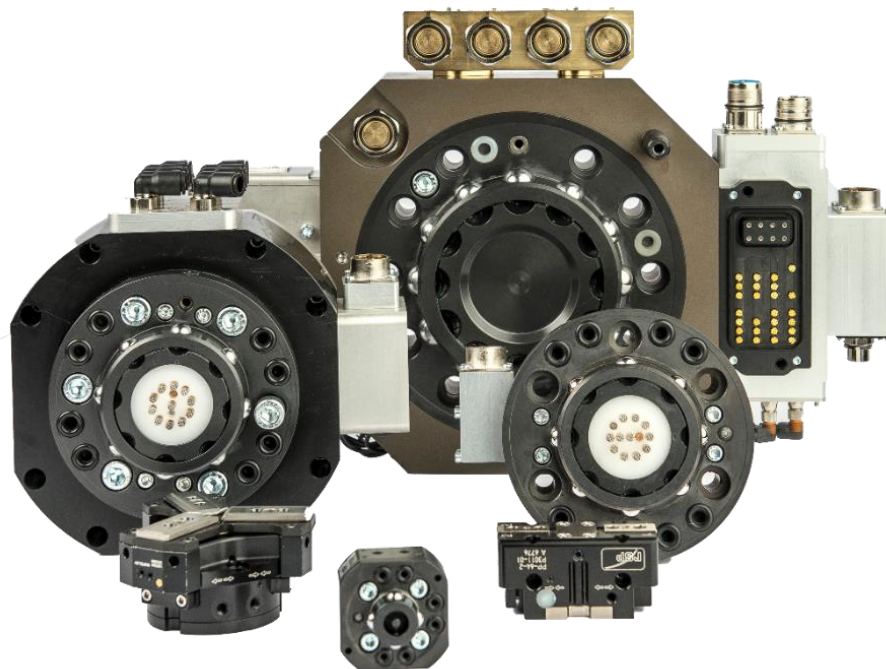
**Robot System Products** is a front-rank provider of peripheral products for high performance robot applications. We provide complete system solutions for your robot installations, aiming to improve your productivity with the most reliable and cost-effective tooling on the market. Continuously we explore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

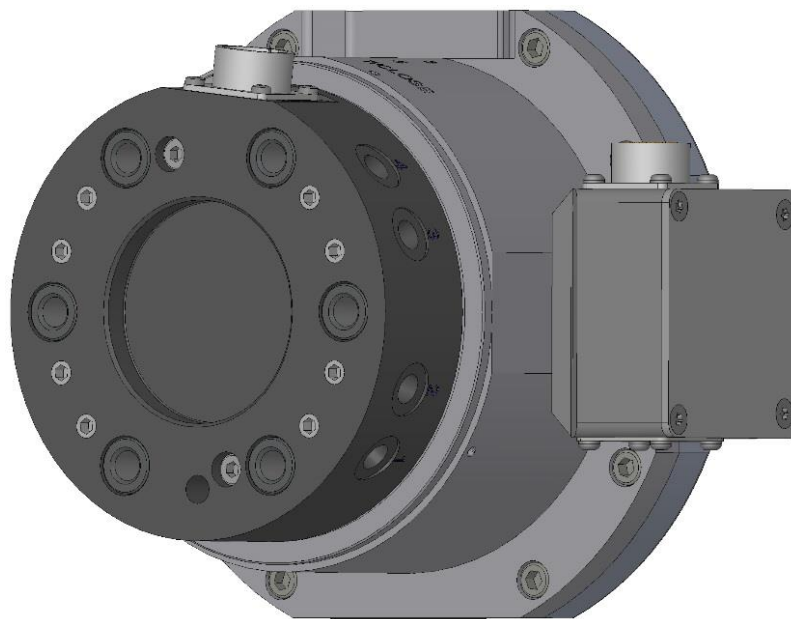
## 2 TECHNICAL SPECIFICATIONS

### 2.1 Description of swivels

This document presents the Robot System Products' S100-4, S100-8, S100-4E and S100-8E 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 swivels S100-4 and S100-8, transfers compressed air to the tool. They can also be equipped with transfer of electrical signals to the tool, the electrical versions are designated 'E'. The swivels S100-4 and S100-8 cannot transport fluids.

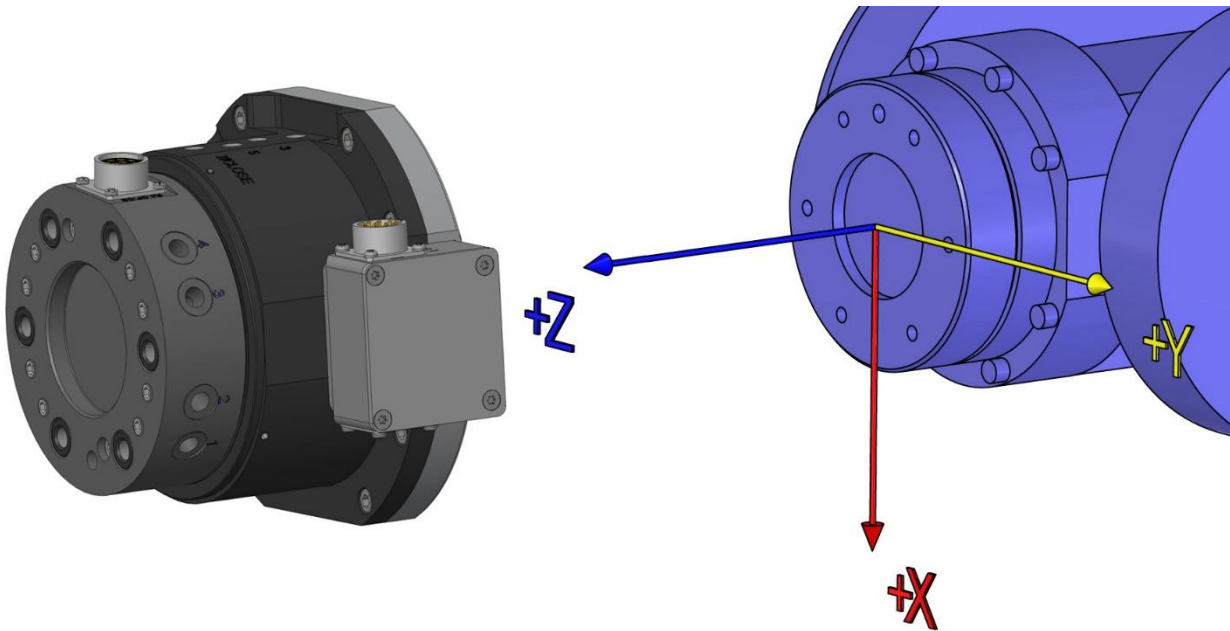
For swivels rotation stops, which prohibits the swivels to rotate in relation to the robot, are mandatory. Depending on robot model adaptation plates between the swivel and the robot flange may be needed. Adaptation kits including both rotation stops and, when required, adaptation plates are available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



**S100-8E**

## 2.1.1 Coordinate System Definition

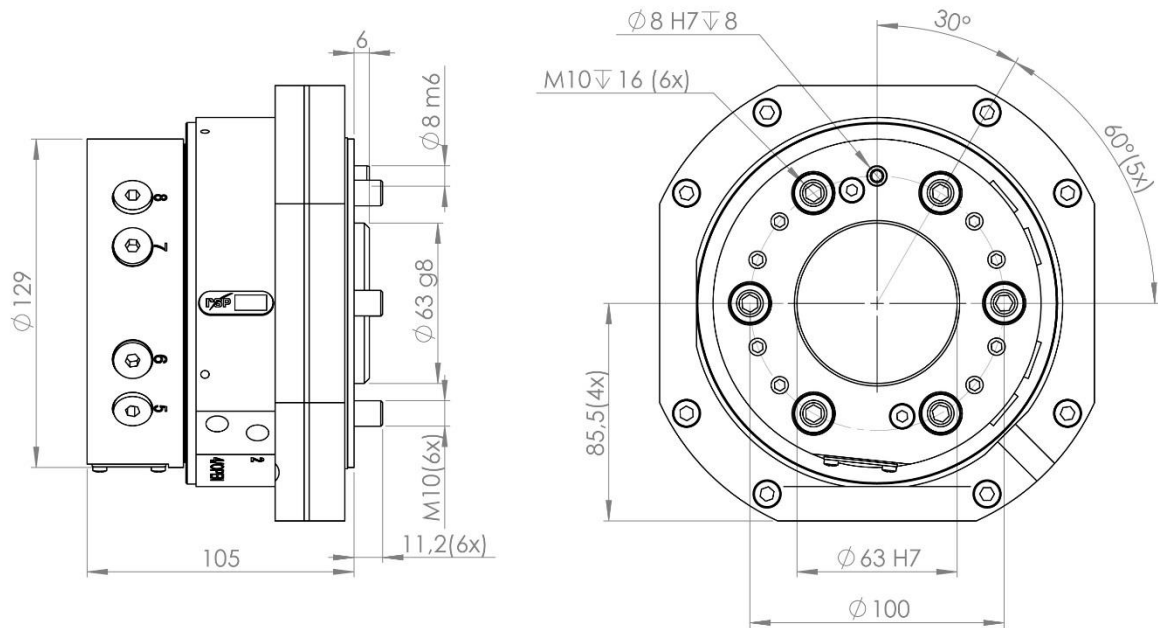
A swivel adds load to the robot. If the arm and tool loads are not stated correctly during programming the behaviour of the robot and the wear of the equipment will be affected. Information about weight and centre of gravity can, in accordance with the co-ordinate system stated below, be found in the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



**NOTE!** For the swivel the origin of the co-ordinate system is situated on the surface in the centre of the robot mounting flange.



## 2.1.2 Swivel S100-4. Article no: P1914

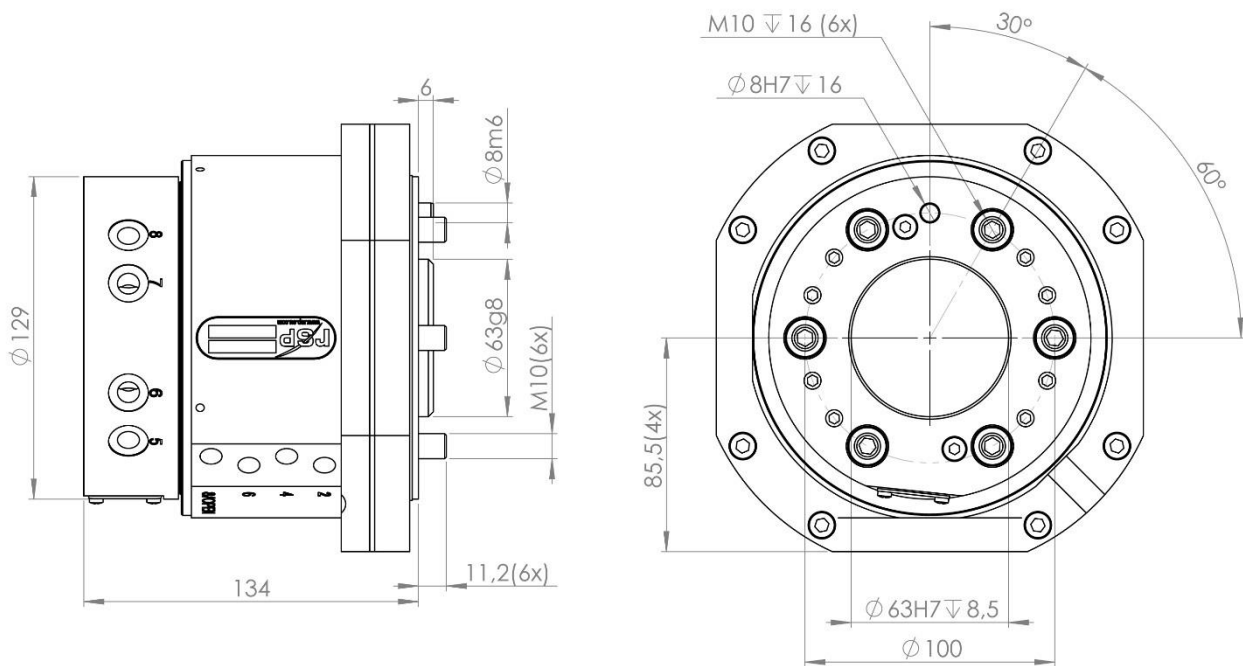


Swivel S100-4 transfers 4 pneumatic channels to the tool.

### Technical data

<b>Working temperature</b>	+10°C–+50°C	
<b>Bolt pattern</b>	ISO 9409-1 100-6-M10	
<b>Maximum tool load</b>	Fz (static)	± 1000 N
	Mx/My (dynamic)	± 1000 Nm
	Mz (dynamic)	± 1000 Nm
<b>Weight and centre of gravity (Z-direction)</b>	3.9 kg / 47 mm	
<b>Rotational torque</b>	35 Nm	
<b>Air channels</b>	Pneumatic diagram	See <a href="#">section 2.1.9</a>
	Connection, robot side	4 x G 1/8" (600 l/min, max 10 bar)
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content
	Connections, tool side	4 x G 1/8"

## 2.1.3 Swivel S100-8. Article no: P1912

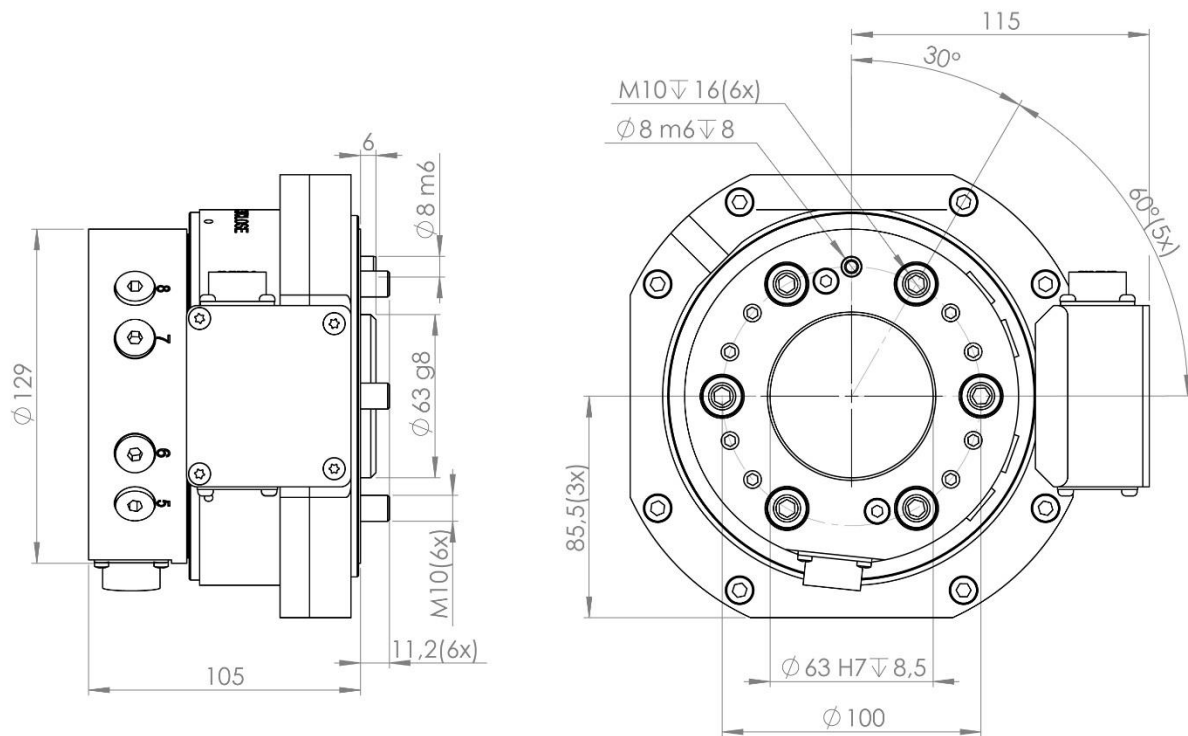


Swivel S100-8 transfers 8 pneumatic channels to the tool.

### Technical data

<b>Working temperature</b>		+10°C--+50°C
<b>Bolt pattern</b>		ISO 9409-1 100-6-M10
<b>Maximum tool load</b>	Fz (static)	± 1000 N
	Mx/My (dynamic)	± 1000 Nm
	Mz (dynamic)	± 1000 Nm
<b>Weight and centre of gravity (Z-direction)</b>		4.8 kg / 60 mm
<b>Rotational torque</b>		45 Nm
<b>Air channels</b>	Pneumatic diagram	See <a href="#">section 2.1.10</a>
	Connection, robot side	8 x G 1/8" (600 l/min, max 10 bar)
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content
	Connections, tool side	8 x G 1/8"

## 2.1.4 Swivel S100-4E. Article no: P1913

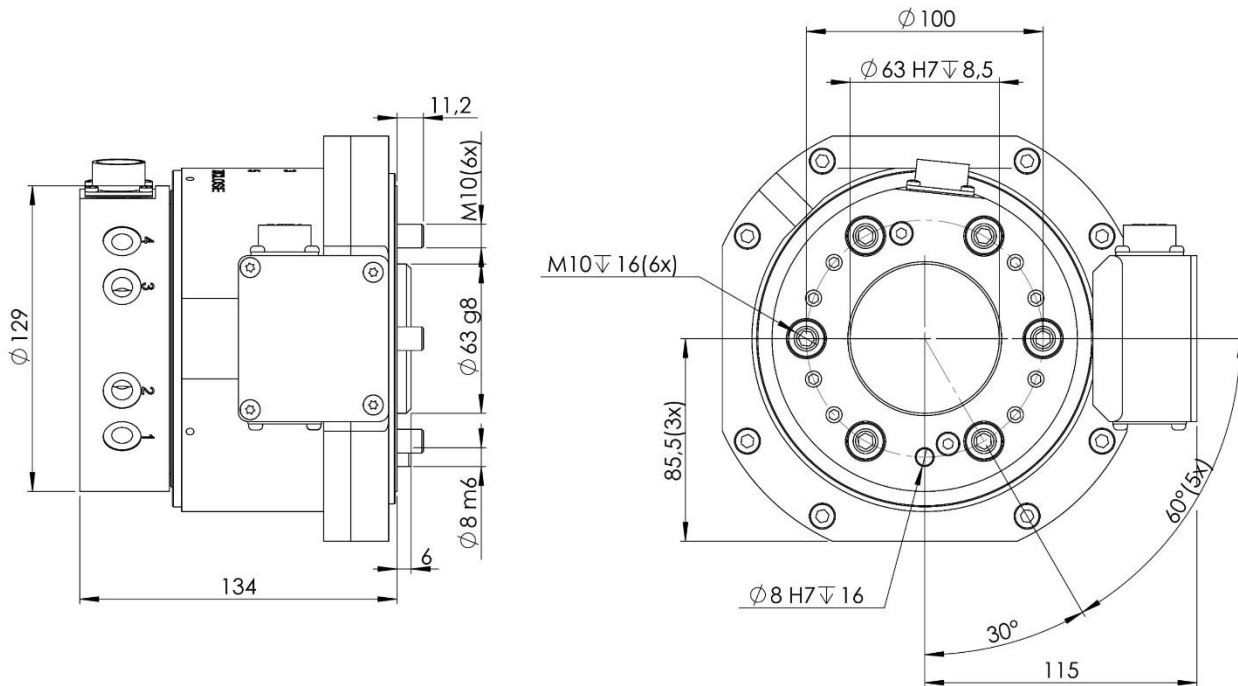


Swivel S100-4E transfers 4 pneumatic channels and 12 electrical signals to the tool.

### Technical data

<b>Working temperature</b>		+10°C--+50°C
<b>Bolt pattern</b>		ISO 9409-1 100-6-M10
<b>Maximum tool load</b>	Fz (static) Mx/My (dynamic) Mz (dynamic)	± 1000 N ± 1000 Nm ± 1000 Nm
<b>Weight and centre of gravity (Z-direction)</b>		4.3 kg / 45 mm
<b>Rotational torque</b>		35 Nm
<b>Air channels</b>	Pneumatic diagram Connection, robot side Air quality  Connections, tool side	See <a href="#">section 2.1.9</a> 4 x G 1/8" (600 l/min, max 10 bar) Oil-clean and waterless filtered air, with max 25µm particle content 4 x G 1/8"
<b>Electrical signals</b>	Circuit diagram Connection, robot side Total signals Dedicated signals Connection, tool side	E0199-003 ( <a href="#">section 2.1.11</a> ) Souriau 12P (UT001412PHT) 12 x (1A, 60V) 24V, 0V Souriau 12S (UT001412SHT)
<b>Connection kits (optional)</b>	P8116-40 (cable kit, robot side) P8006 (connector, robot side) P8111-20 (cable kit, tool side) P8005 (connector, tool side)	Souriau 12S, 4-meter cable, open end Souriau 12S (straight) Souriau 12P, 2-meter, open end. Souriau 12P, (straight)

## 2.1.5 Swivel S100-8E. Article no: P1911

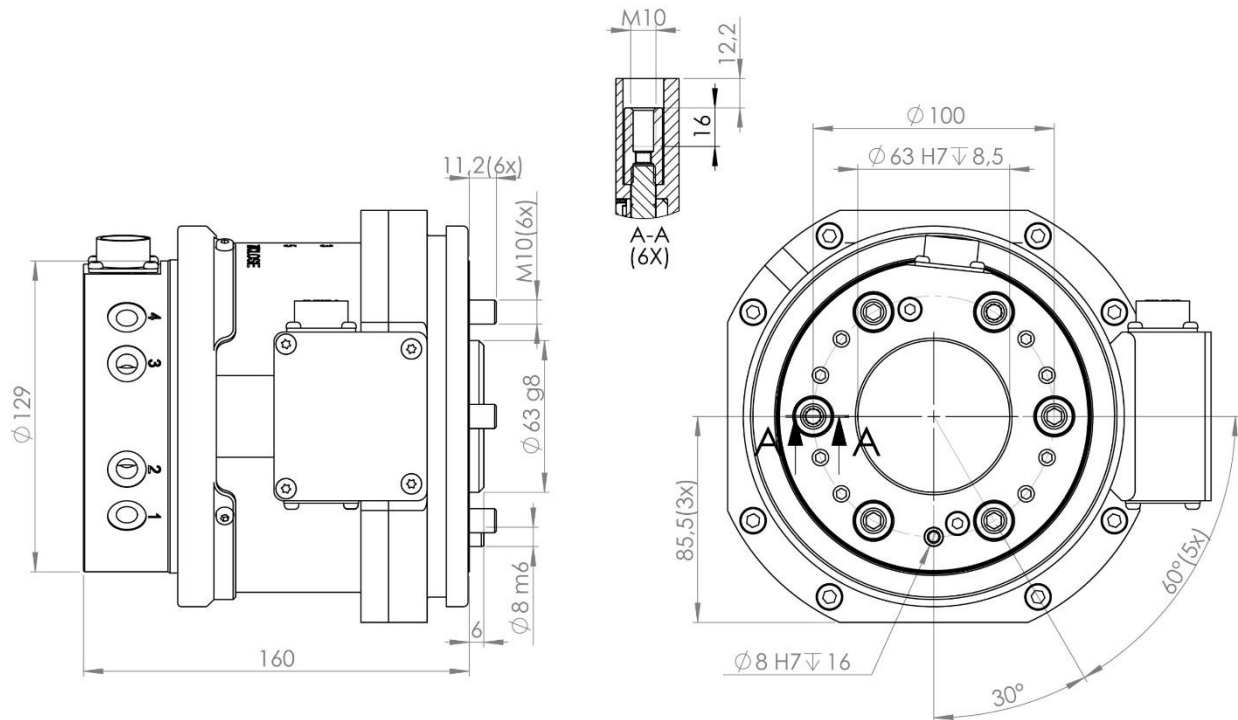


Swivel S100-8E transfers 8 pneumatic channels and 12 electrical signals to the tool.

### Technical data

<b>Working temperature</b>		+10°C–+50°C
<b>Bolt pattern</b>		ISO 9409-1 100-6-M10
<b>Maximum tool load</b>	Fz (static)	± 1000 N
	Mx/My (dynamic)	± 1000 Nm
	Mz (dynamic)	± 1000 Nm
<b>Weight and centre of gravity (Z-direction)</b>		5.2 kg / 58 mm
<b>Rotational torque</b>		45 Nm
<b>Air channels</b>	Pneumatic diagram	See <a href="#">section 2.1.10</a>
	Connection, robot side	8 x G 1/8" (600 l/min, max 10 bar)
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content
	Connections, tool side	8 x G 1/8"
<b>Electrical signals</b>	Circuit diagram	E0199-003 ( <a href="#">section 2.1.11</a> )
	Connection, robot side	Souriau 12P (UT001412PHT)
	Total signals	12 x (1A, 60V)
	Dedicated signals	24V, 0V
	Connection, tool side	Souriau 12S (UT001412SHT)
<b>Connection kits (optional)</b>	P8116-40 (cable kit, robot side)	Souriau 12S, 4-meter cable, open end
	P8006 (connector, robot side)	Souriau 12S (straight)
	P8111-20 (cable kit, tool side)	Souriau 12P, 2-meter, open end.
	P8005 (connector, tool side)	Souriau 12P, (straight)

## 2.1.6 Swivel S100-8E sealed. Article no: P1917

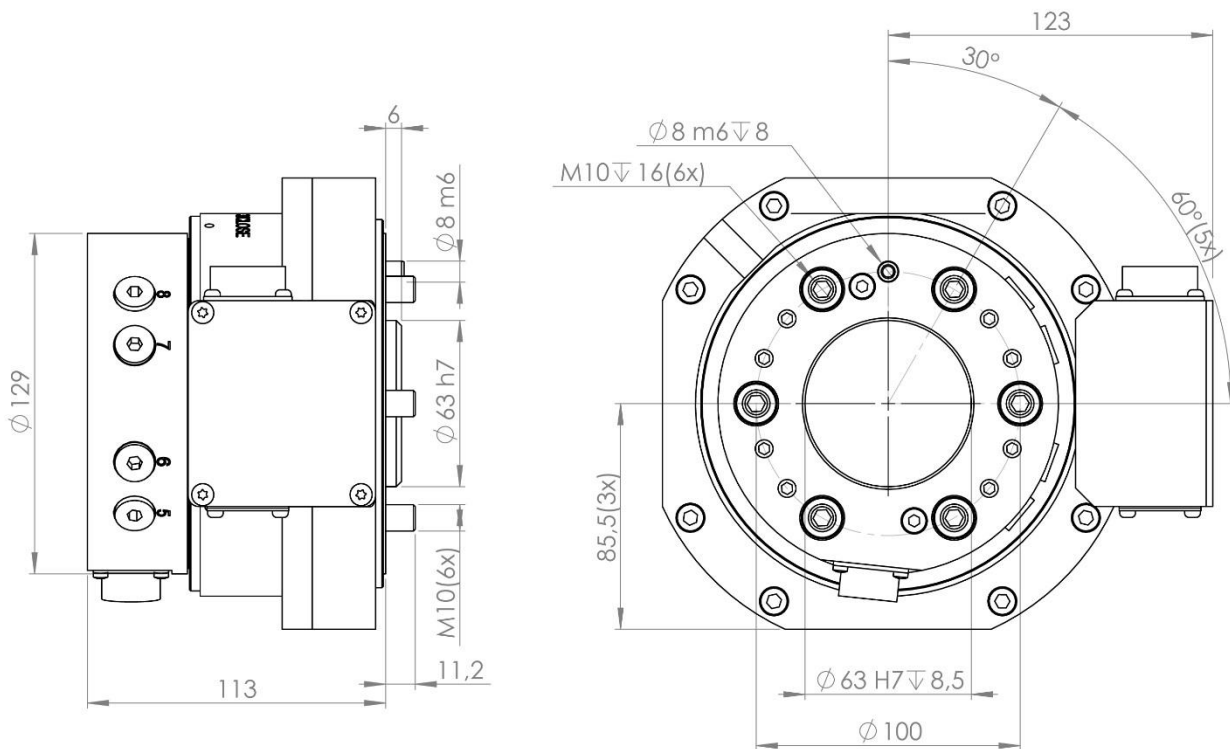


Swivel S100-8E sealed transfers 8 pneumatic channels and 12 electrical signals to the tool. To be used in dirty and damp environments.

### Technical data

<b>Working temperature</b>		+10°C–+50°C
<b>Bolt pattern</b>		ISO 9409-1 100-6-M10
<b>Maximum tool load</b>	Fz (static)	± 1000 N
	Mx/My (dynamic)	± 1000 Nm
	Mz (dynamic)	± 1000 Nm
<b>Weight and centre of gravity (Z-direction)</b>		6.8 kg / 72 mm
<b>Rotational torque</b>		45 Nm
<b>Air channels</b>	Pneumatic diagram	See <a href="#">section 2.1.10</a>
	Connection, robot side	8 x G 1/8" (600 l/min, max 10 bar)
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content
	Connections, tool side	8 x G 1/8"
<b>Electrical signals</b>	Circuit diagram	E0199-003 ( <a href="#">section 2.1.11</a> )
	Connection, robot side	Souriau 12P (UT001412PHT)
	Total signals	12 x (1A, 60V)
	Dedicated signals	24V, 0V
	Connection, tool side	Souriau 12S (UT001412SHT)
<b>Connection kits (optional)</b>	P8116-40 (cable kit, robot side)	Souriau 12S, 4-meter cable, open end
	P8006 (connector, robot side)	Souriau 12S (straight)
	P8111-20 (cable kit, tool side)	Souriau 12P, 2-meter, open end.
	P8005 (connector, tool side)	Souriau 12P, (straight)

## 2.1.7 Swivel S100-4EE. Article no: P1919

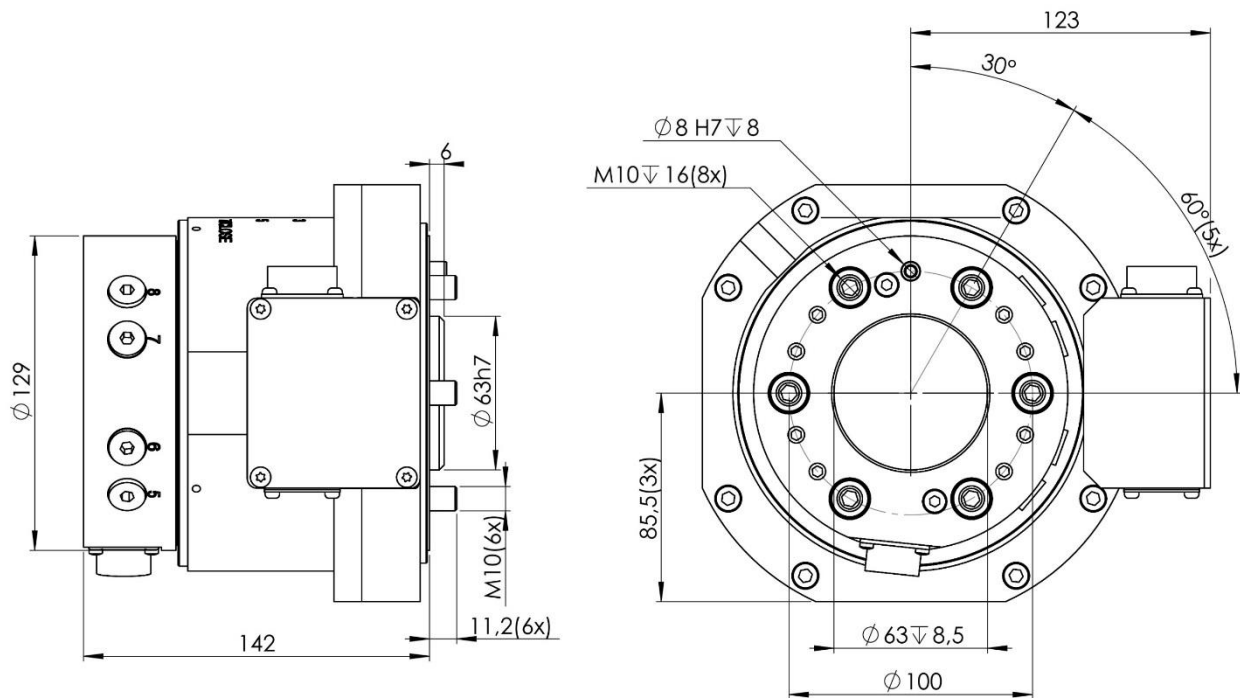


Swivel S100-4E transfers 4 pneumatic channels and 19 electrical signals to the tool.

### Technical data

<b>Working temperature</b>		+10°C–+50°C
<b>Bolt pattern</b>		ISO 9409-1 100-6-M10
<b>Maximum tool load</b>	Fz (static)	± 1000 N
	Mx/My (dynamic)	± 1000 Nm
	Mz (dynamic)	± 1000 Nm
<b>Rotational torque</b>		35 Nm
<b>Weight and centre of gravity (Z-direction)</b>		4.7 kg / 50 mm
<b>Air channels</b>	Pneumatic diagram Connection, robot side Air quality	See <a href="#">section 2.1.9</a> 4 x G 1/8" (600 l/min, max 10 bar) Oil-clean and waterless filtered air, with max 25µm particle content
	Connections, tool side	4 x G 1/8"
<b>Electrical signals</b>	Circuit diagram	E0199-140 ( <a href="#">section 2.1.12</a> )
	Connection, robot side	Souriau 23P (UT001823PH)
	Total signals	19 x (1A, 30V)
	Dedicated signals	24V, 0V
Connection, tool side		Compact Souriau 19S (UT0W01419SH)
<b>Connection kits (optional)</b>	P8129-50 (cable kit, robot side)	Souriau 23S, 5-meter cable, open end
	P8002 (connector, robot side)	Souriau 23S (straight)
	P8105-20 (cable kit, tool side)	Compact Souriau 19P, 2-meter, open end
	P8007 (connector, tool side)	Compact Souriau 19P, (straight)

## 2.1.8 Swivel S100-8EE. Article no: P1920

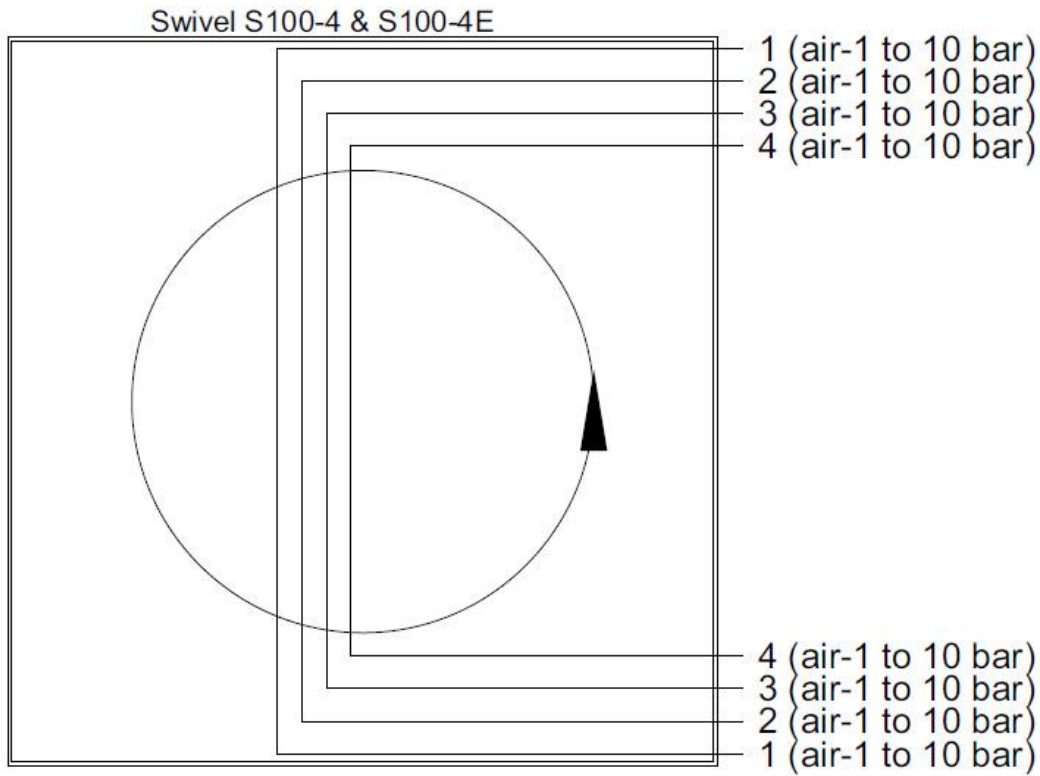


Swivel S100-8E transfers 8 pneumatic channels and 19 electrical signals to the tool.

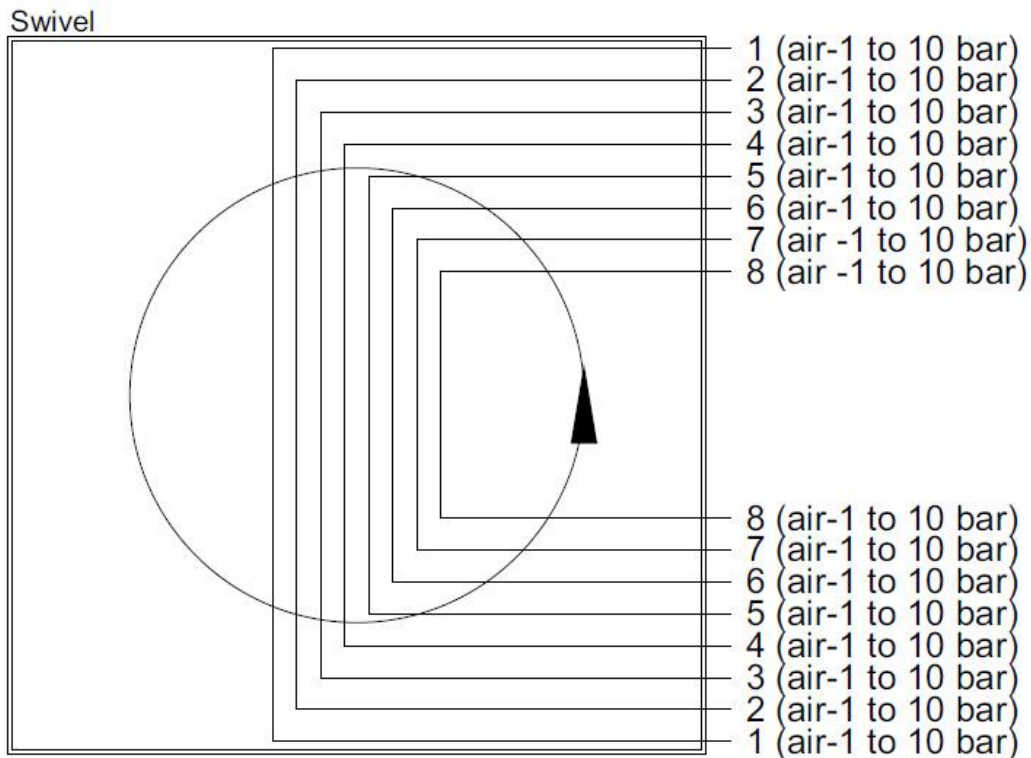
### Technical data

<b>Working temperature</b>		+10°C–+50°C
<b>Bolt pattern</b>		ISO 9409-1 100-6-M10
<b>Maximum tool load</b>	Fz (static)	± 1000 N
	Mx/My (dynamic)	± 1000 Nm
	Mz (dynamic)	± 1000 Nm
<b>Weight and centre of gravity (Z-direction)</b>		5.6 kg / 63 mm
<b>Rotational torque</b>		45 Nm
<b>Air channels</b>	Pneumatic diagram	See <a href="#">section 2.1.10</a>
	Connection, robot side	8 x G 1/8" (600 l/min, max 10 bar)
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content
	Connections, tool side	8 x G 1/8"
<b>Electrical signals</b>	Circuit diagram	E0199-140 ( <a href="#">section 2.1.12</a> )
	Connection, robot side	Souriau 23P (UT001823PH)
	Total signals	19 x (1A, 30V)
	Dedicated signals	24V, 0V
	Connection, tool side	Compact Souriau 19S (UT0W01419SH)
<b>Connection kits (optional)</b>	P8129-50 (cable kit, robot side)	Souriau 23S, 5-meter cable, open end
	P8002 (connector, robot side)	Souriau 23S (straight)
	P8105-20 (cable kit, tool side)	Compact Souriau 19P, 2-meter, open end
	P8007 (connector, tool side)	Compact Souriau 19P, (straight)

### 2.1.9 Pneumatic diagram for swivels P1914, P1913 and P1919

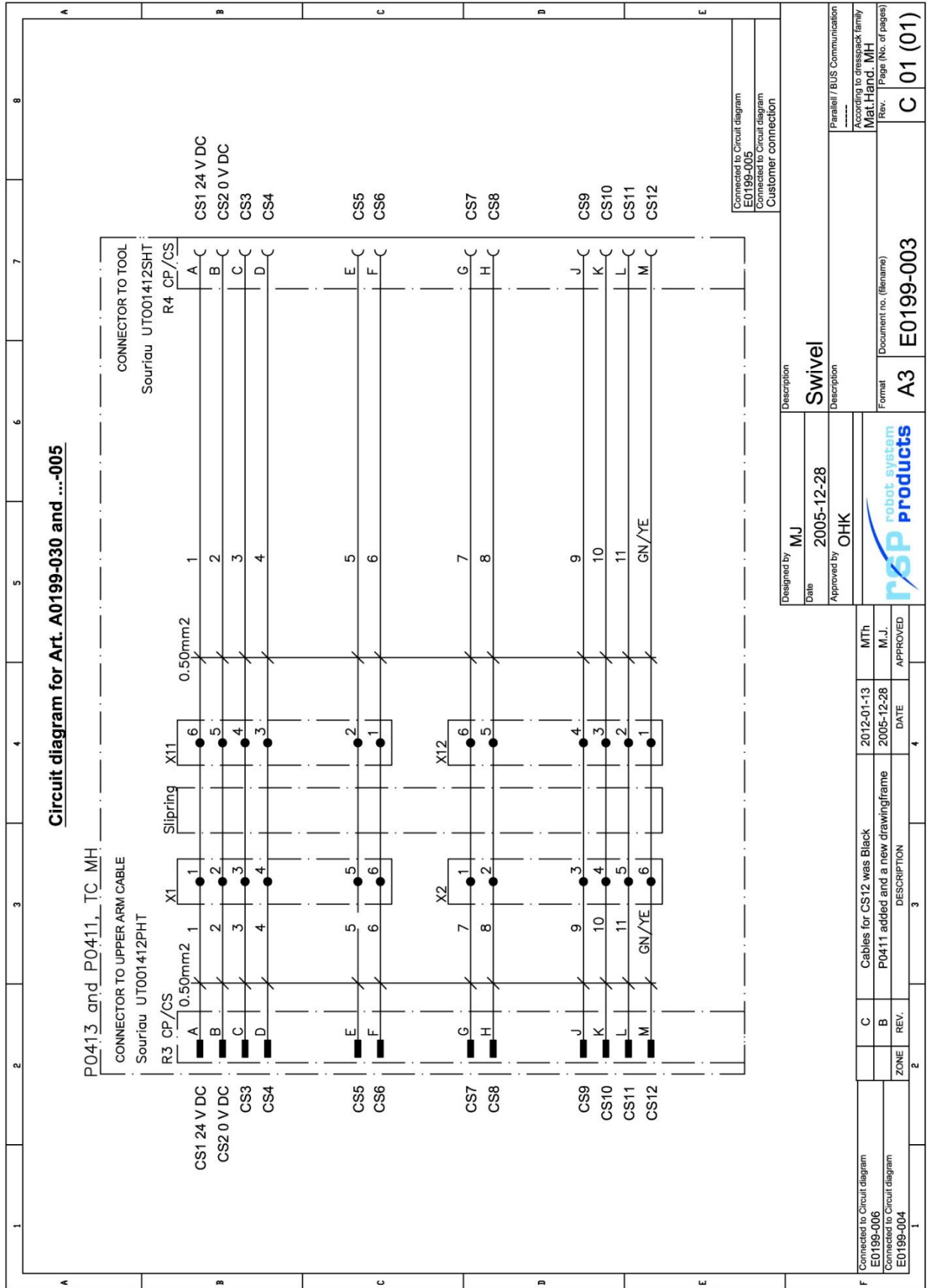


### 2.1.10 Pneumatic diagram for swivels P1912, P1911, P1917 and P1920



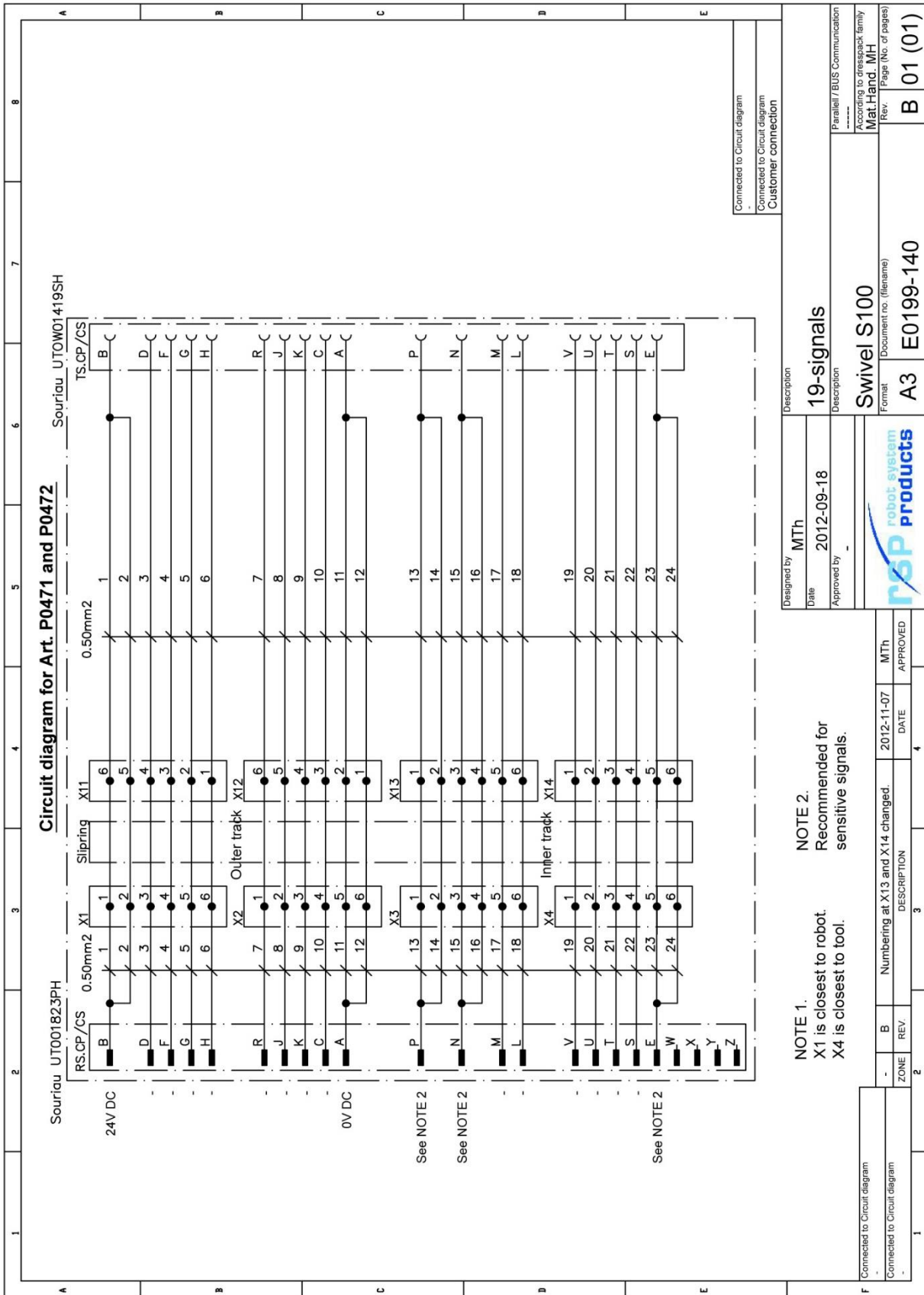


## 2.1.11 Circuit diagram E0199-003 for P1913, P1911 and P1917



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## 2.1.12 Circuit diagram E0199-140 for P1919 and P1920

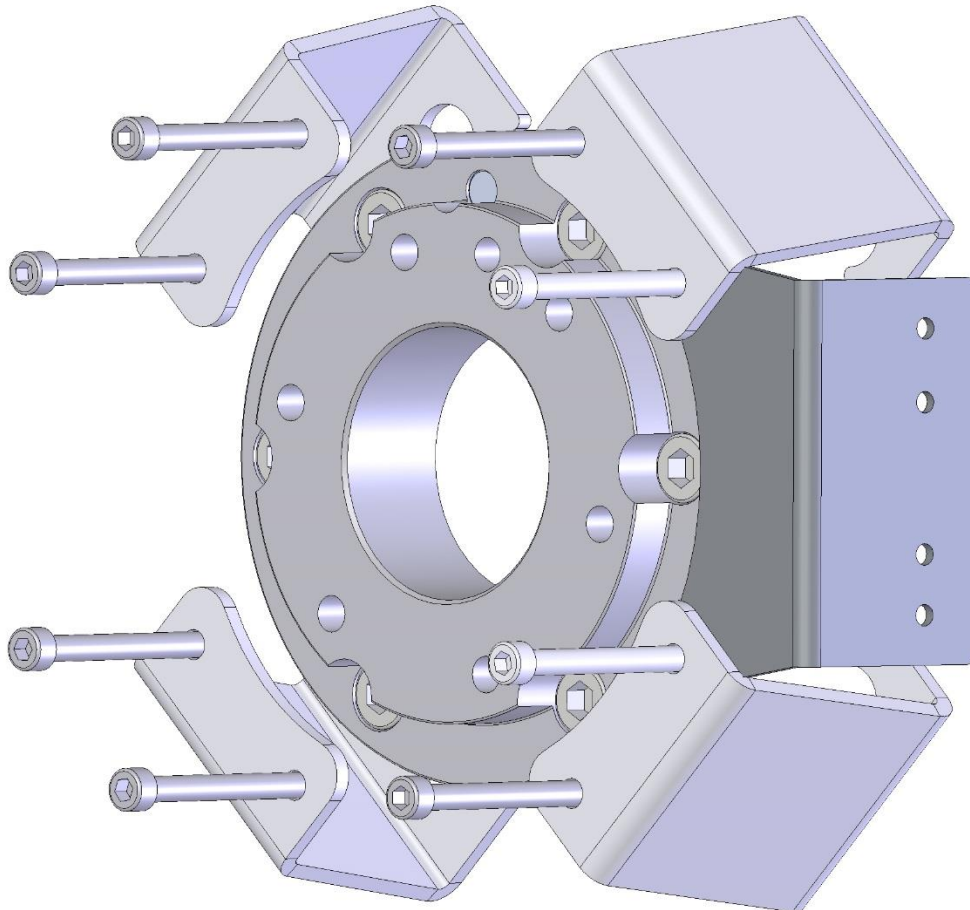


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## 2.2 Options for swivel tool changer

### 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*

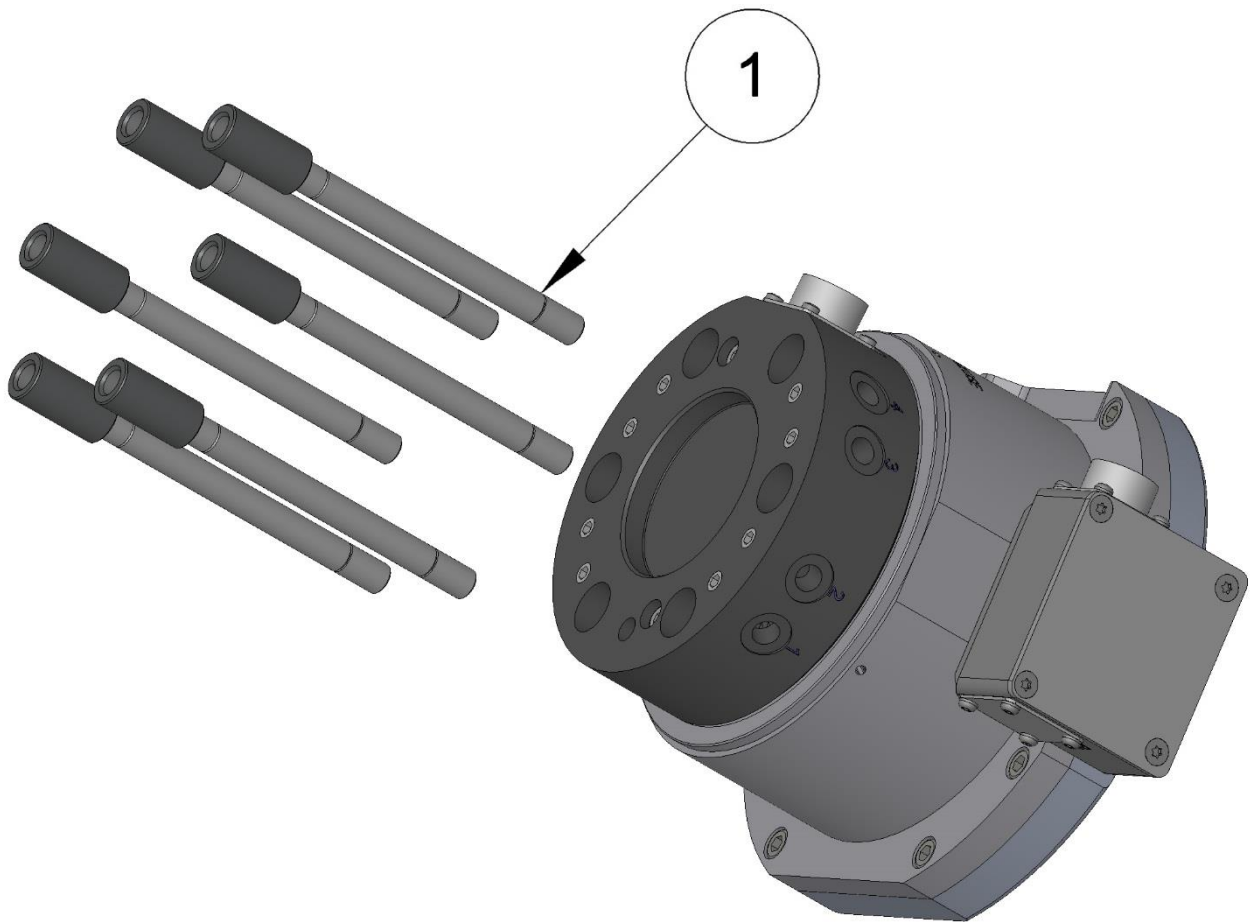


**NOTE!** Dependent on robot model and rotation stop, there can be limitations on the freedom of movement of axis 5. Contact Robot System Products for more information.

### 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 PART LIST



Item	Description	Swivel	Part number	Pcs
1	Securing screw	S100-4 (P1914) S100-4E (P1913)	A0199-015	6
1	Securing screw	S100-8 (P1912) S100-8E (P1911)	A0199-014	6
1	Securing screw	S100-8E sealed (P1917)	A0199-180	6
1	Securing screw	S100-4EE (P1919)	A0199-148	6
1	Securing screw	S100-8EE (P1920)	A0199-141	6



