

Technical Description

Swivel S20

M0116-1

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



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1 INTRODUCTION

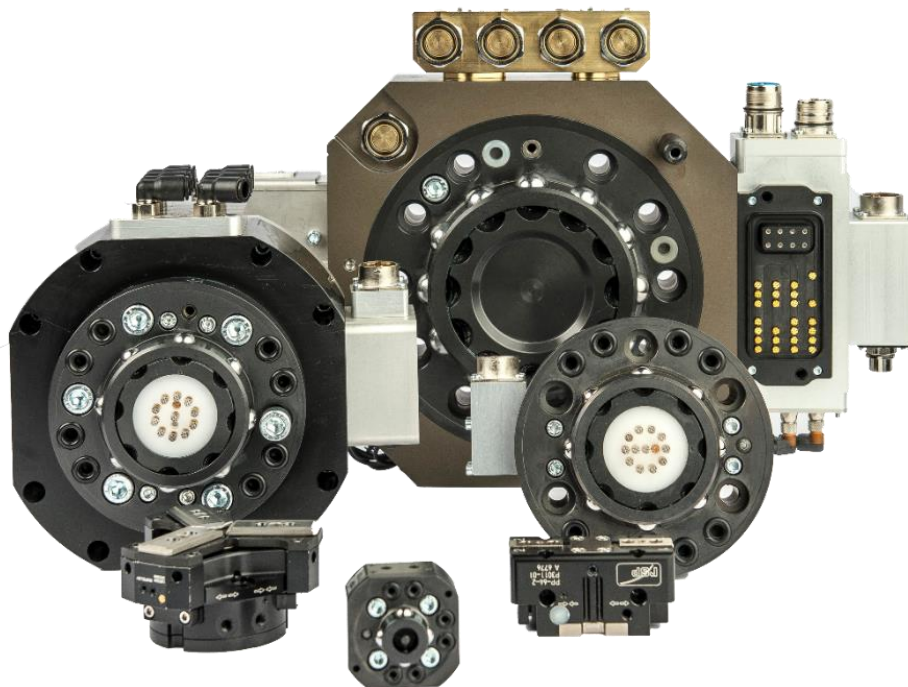
Robot System Products is a front-rank provider of peripheral products for high performance robot applications. We provide complete system solutions for your robot installations, aiming to improve your productivity with the most reliable and cost-effective tooling on the market. Continuously we explore 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: robotssystemproducts.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	Connection kits for tool changers and tool attachments simplifying electrical installations.
3D-models	Available in Solid Works®, X_T and STEP -format.

2 TECHNICAL SPECIFICATIONS

2.1 Description of swivels

This document presents the Robot System Products' S20-2, S20-6, S20-2E and S20-6E 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 S20-2 and S20-6, 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 S20-2, S20-6, S20-2E and S20-6E cannot transport fluids.

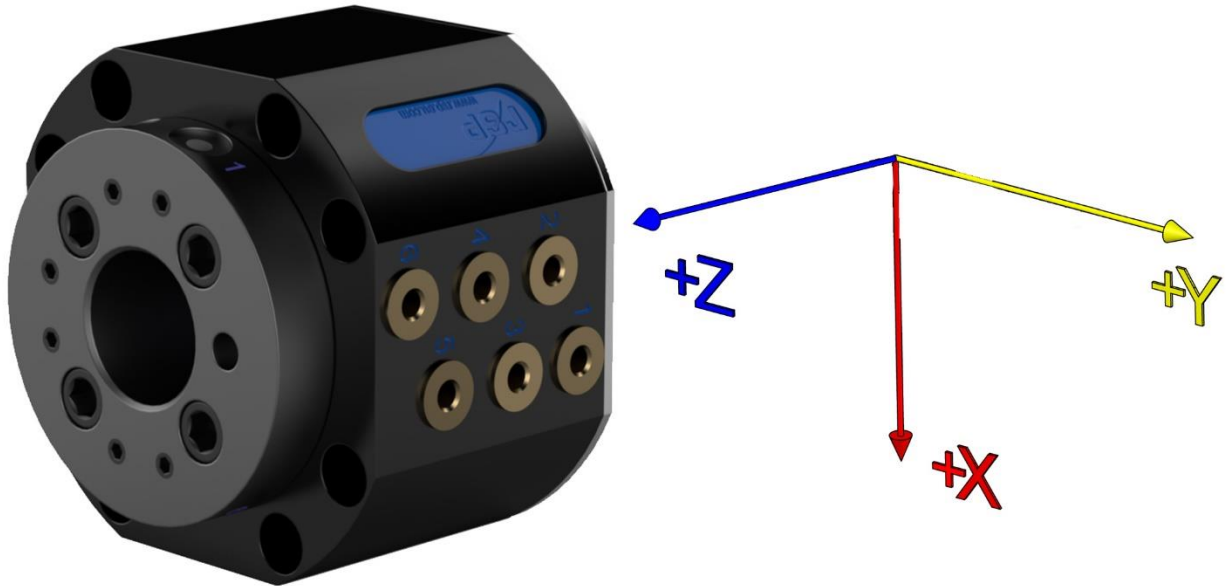
For swivels rotation stops, which prohibits the swivels to rotate in relation to the robot, are mandatory. Depending on robot model adaptation plates between the swivel and the robot flange may be needed. Adaptation kits including both rotation stops and, when required, adaptation plates are available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



S20-6E

2.1.1 Coordinate System Definition

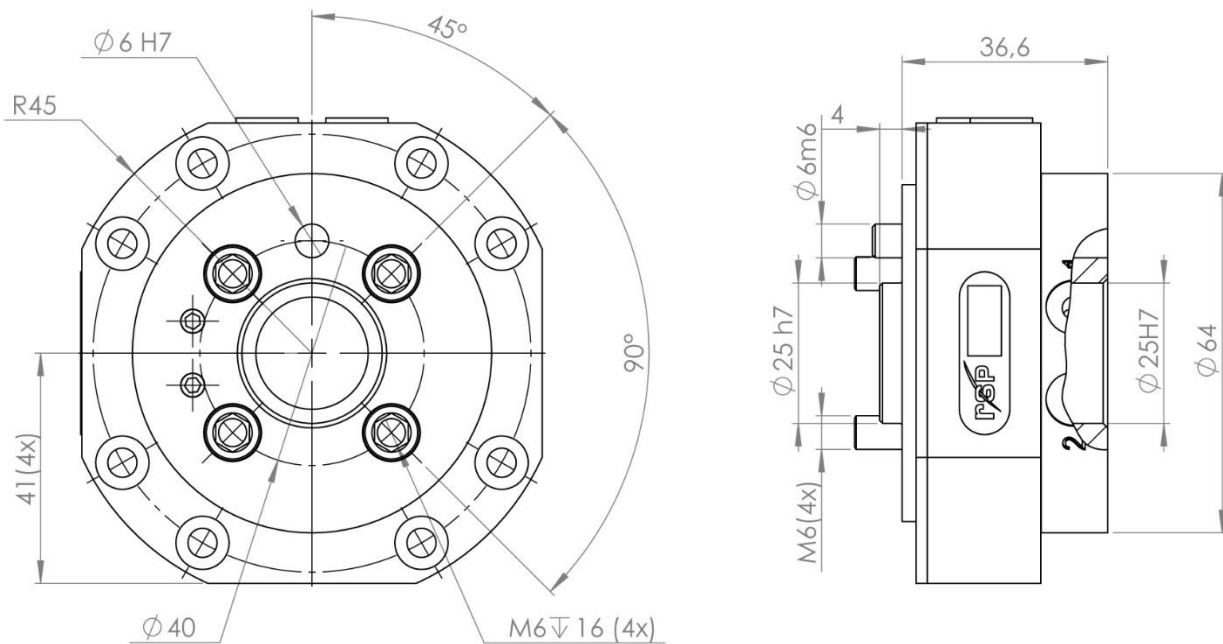
A swivel adds load to the robot. If the arm and tool loads are not stated correctly during programming the behaviour of the robot and the wear of the equipment will be affected. Information about weight and centre of gravity can, in accordance with the co-ordinate system stated below, be found in the 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 S20-2. Article no: P0110A

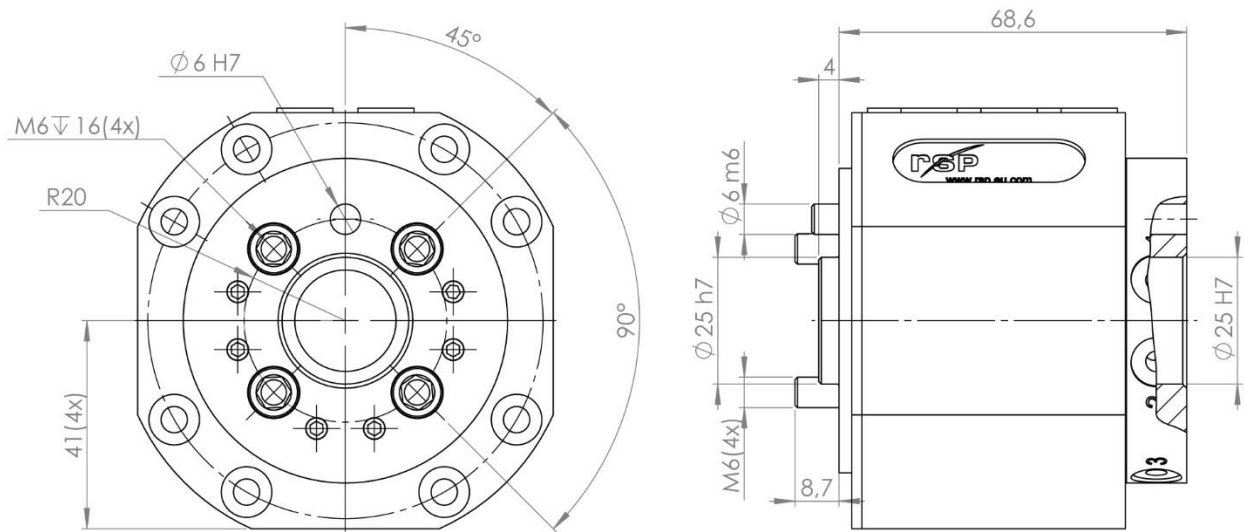


Swivel S20-2 transfers 2 pneumatic channels to the tool.

Technical data

Working temperature		+10°C–+50°C
Bolt pattern		ISO 9409-1-40-4-M6
Maximum tool load	Fz (static)	±200 N
	Mx/My (dynamic)	±200 Nm
	Mz (dynamic)	±100 Nm
Weight and centre of gravity (Z)		0.35 kg / 17 mm
Rotational torque		5 Nm
Air channels	Pneumatic diagram Connections, robot side Connections, tool side Air quality	See section 2.1.6 . 2 x M5 (150 l/min, max 10 bar) 2 x M5 Oil-clean and waterless filtered air, with max 25µm particle content

2.1.3 Swivel S20-6. Article no: P0112A

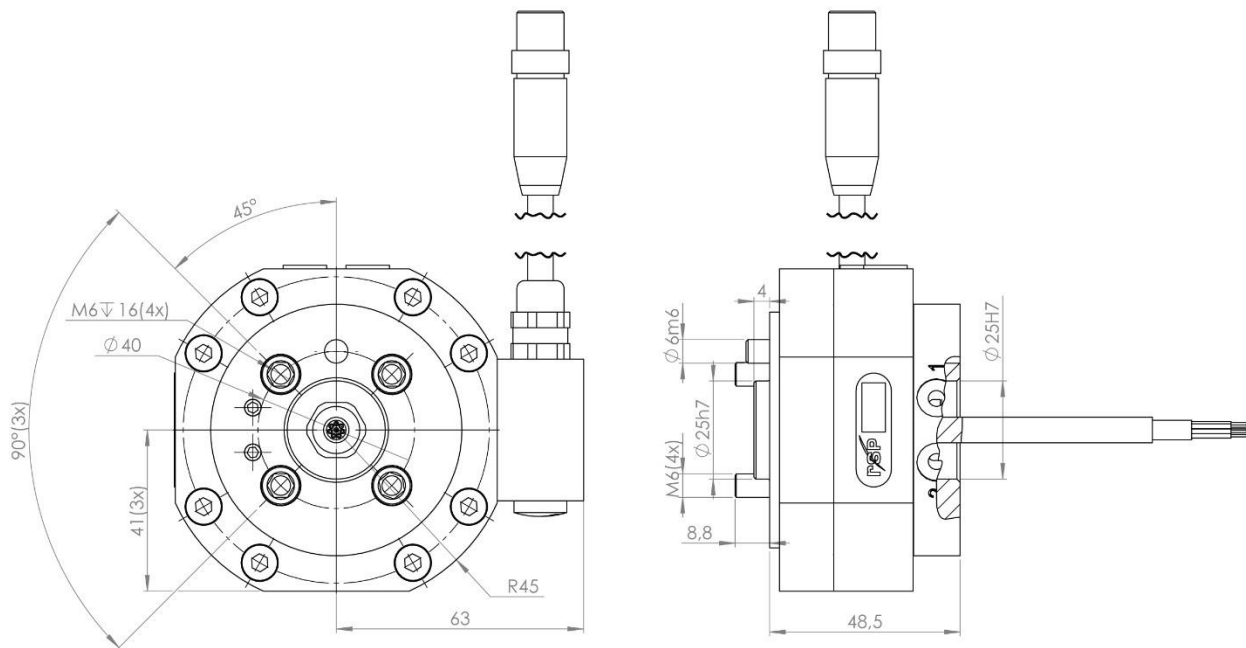


Swivel S20-6 transfers 6 pneumatic channels to the tool.

Technical data

Working temperature		+10°C–+50°C
Bolt pattern		ISO 9409-1-40-4-M6
Maximum tool load	Fz (static)	±200 N
	Mx/My (dynamic)	±200 Nm
	Mz (dynamic)	±100 Nm
Weight and centre of gravity (Z)		0.65 kg / 33 mm
Rotational torque		5 Nm
Air channels	Pneumatic diagram	See section 2.1.7 .
	Connections, robot side	6 x M5 (150 l/min, max 10 bar)
	Connections, tool side	6 x M5
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content

2.1.4 Swivel S20-2E. Article no: P0111B

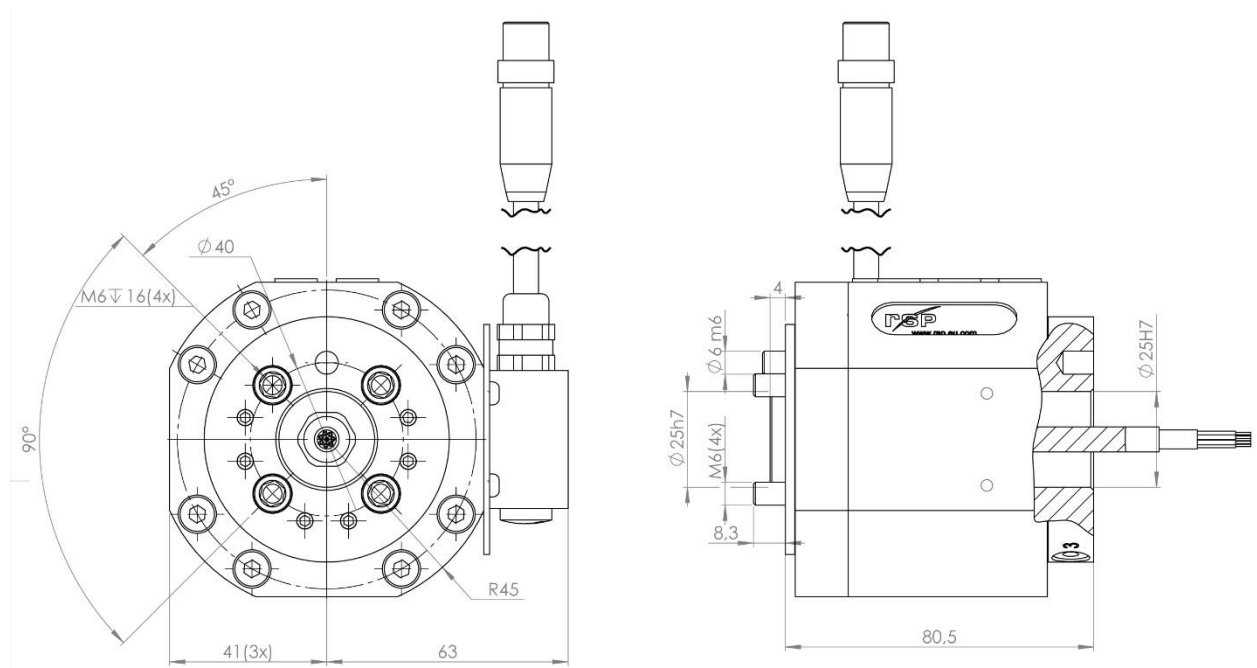


Swivel S20-2E transfers 2 pneumatic channels and 8 electrical signals to the tool.

Technical data

Working temperature		+10°C–+50°C
Bolt pattern		ISO 9409-1-40-4-M6
Maximum tool load	Fz (static)	±200 N
	Mx/My (dynamic)	±200 Nm
	Mz (dynamic)	±100 Nm
Weight and centre of gravity (Z)		0.65 kg / 22 mm
Rotational torque		5 Nm
Air channels	Pneumatic diagram	See section 2.1.6 .
	Connections, robot side	2 x M5 (150 l/min, max 10 bar)
	Connections, tool side	2 x M5
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content
Electrical signals	Circuit diagram	E0173-001 (see section 2.1.8)
	Total signals	8 x (0.5 A, 30V)
	Connection, robot side	M12 8P
	Connection, tool side	0.5 m, 8 x 0.25 mm ² cable, free end
Connection kits (optional)	P0025 (cable kit)	M12-8P – M12 8S, 2-meter cable (0,25 mm ²)
	P0025-30 (cable kit)	M12-8P – M12 8S, 3-meter cable (0,25 mm ²)

2.1.5 Swivel S20-6E. Article no: P0113B

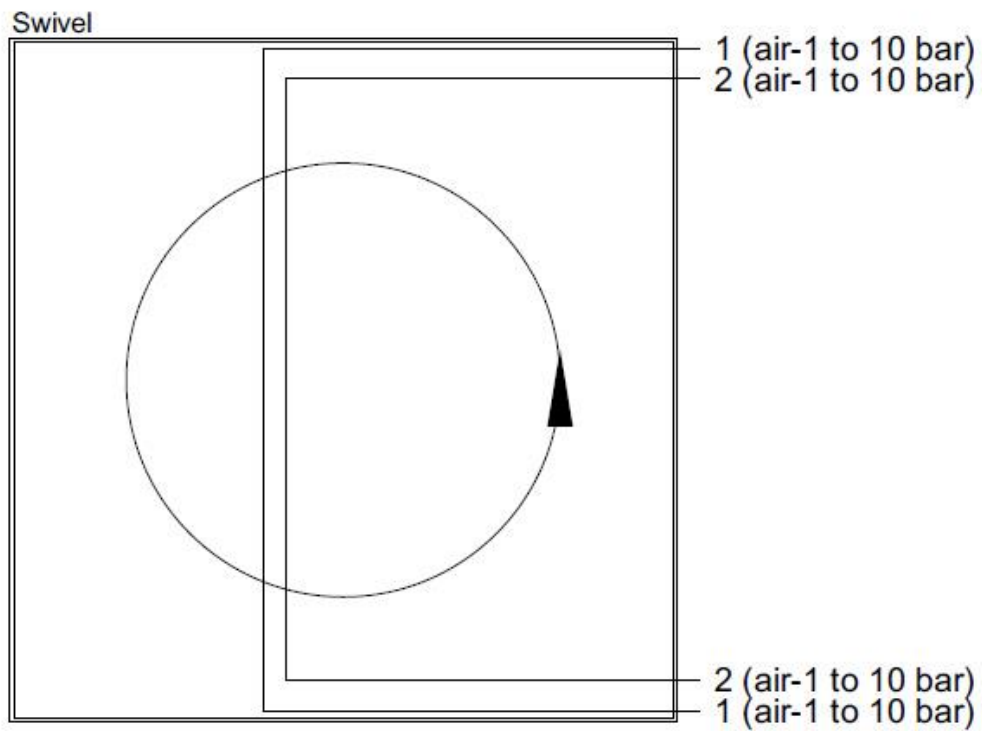


Swivel S20-6E transfers 6 pneumatic channels and 8 electrical signals to the tool.

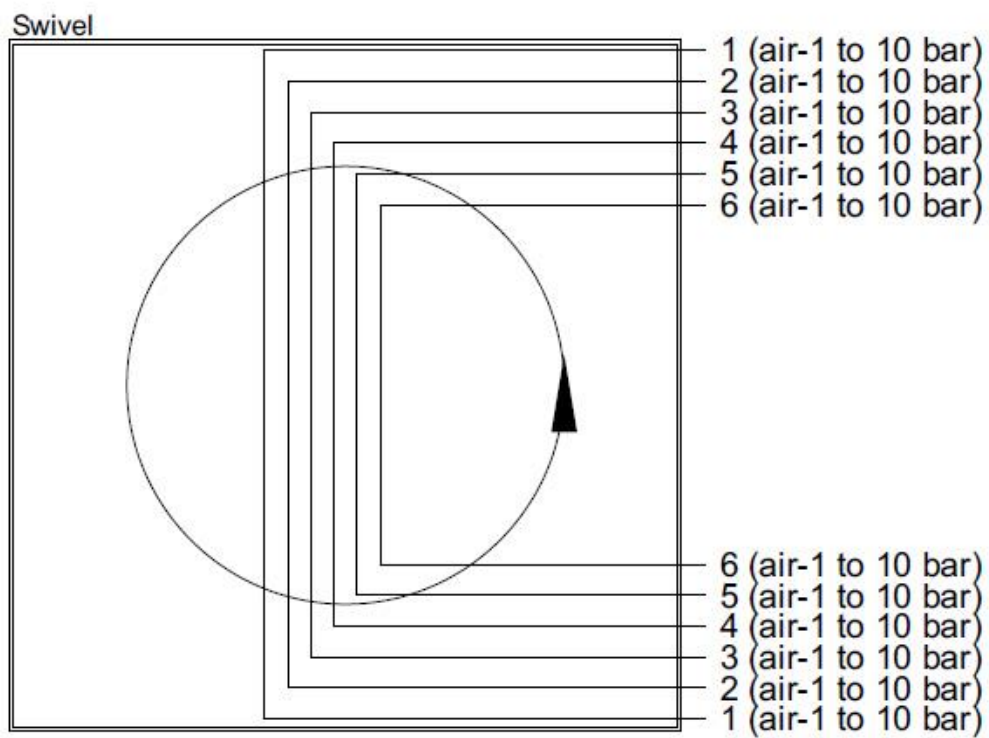
Technical data

Working temperature		10°C–+50°C
Bolt pattern		ISO 9409-1-40-4-M6
Maximum tool load	Fz (static)	±200 N
	Mx/My (dynamic)	±200 Nm
	Mz (dynamic)	±100 Nm
Weight and centre of gravity (Z)		1.0 kg / 36 mm
Rotational torque		5 Nm
Air channels	Pneumatic diagram	See section 2.1.7 .
	Connections, robot side	6 x M5 (150 l/min, max 10 bar)
	Connections, tool side	6 x M5
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content
Electrical signals	Circuit diagram	E0173-001 (see section 2.1.8)
	Total signals	8 x (0.5 A, 30V)
	Connection, robot side	M12 8P
	Connection, tool side	0.5 m, 8 x 0.25 mm ² cable, free end
Connection kits (optional)	P0025 (cable kit)	M12-8P – M12 8S, 2-meter cable (0,25 mm ²)
	P0025-30 (cable kit)	M12-8P – M12 8S, 3-meter cable (0,25 mm ²)

2.1.6 Pneumatic diagram swivel P0110A and P0111B

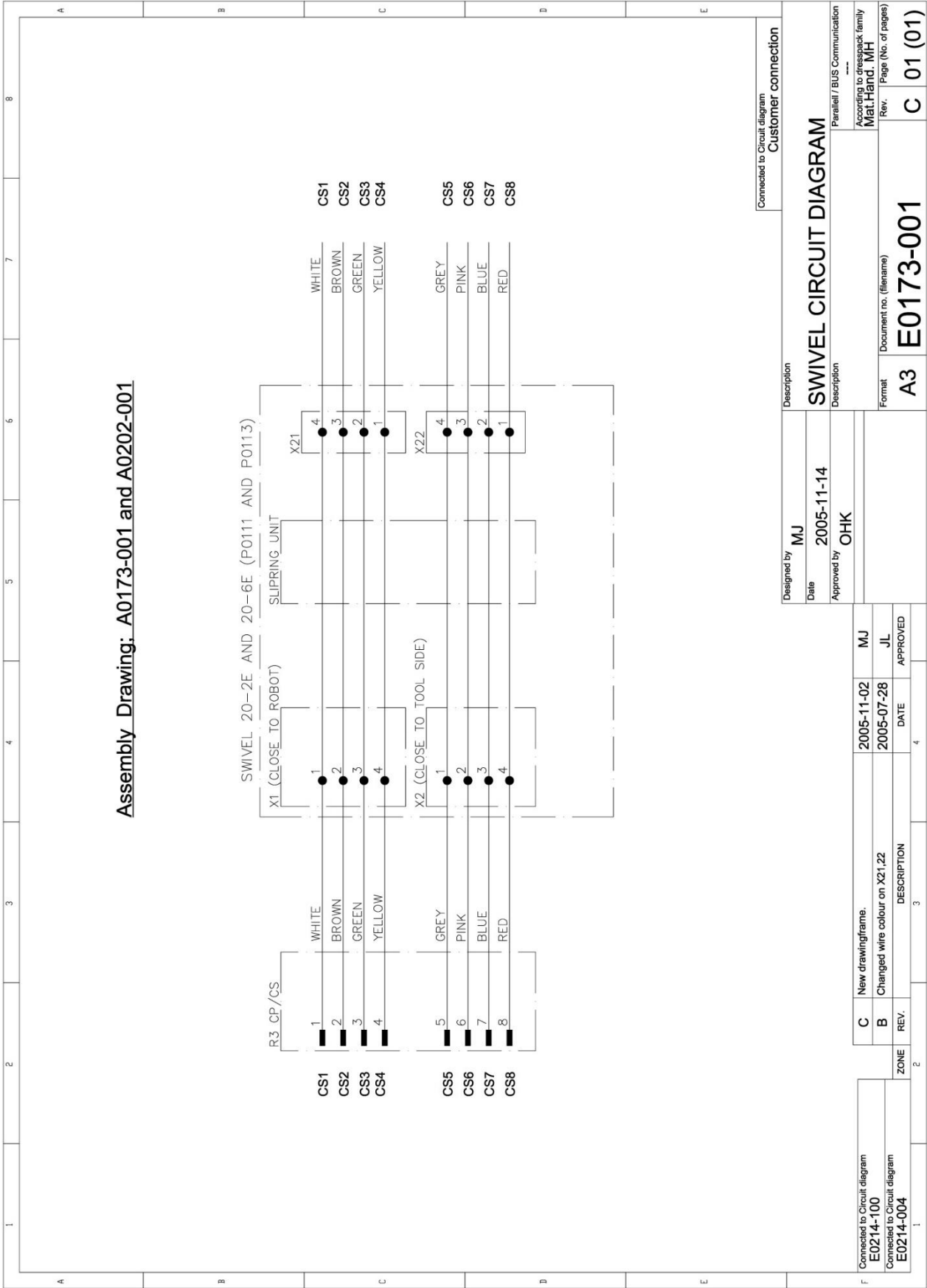


2.1.7 Pneumatic diagram swivel P0112A and P0113B



2.1.8 Circuit diagram E0173-001 for P0111B and P0113B

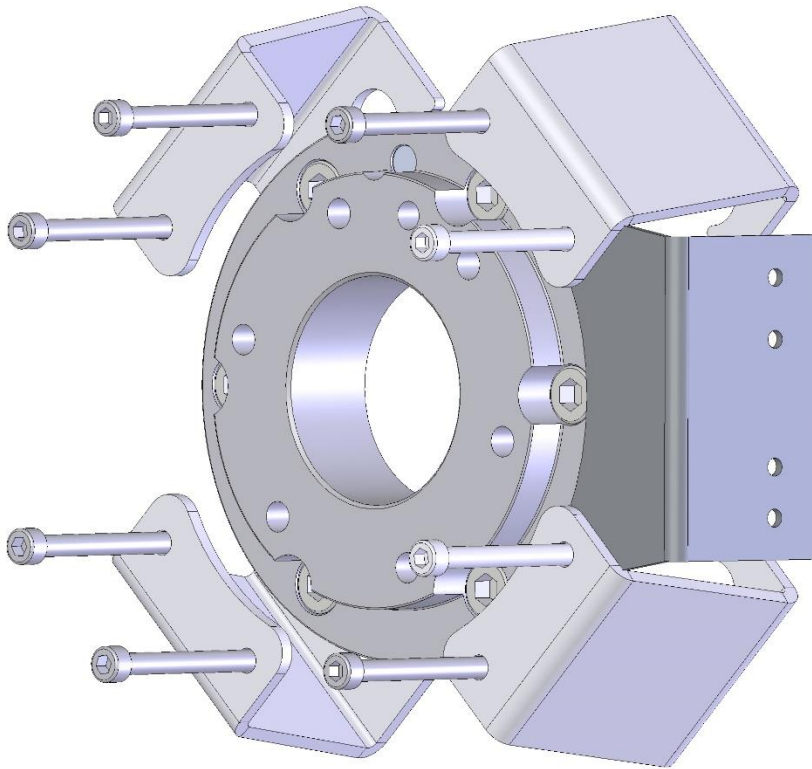
Assembly Drawing: A0173-001 and A0202-001



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



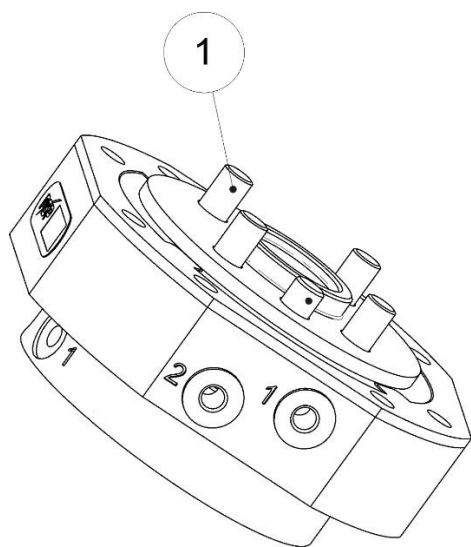
NOTE! Dependent on robot model and rotation stop, there can be limitations on the freedom of movement of axis 5. Contact Robot System Products for more information.

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.

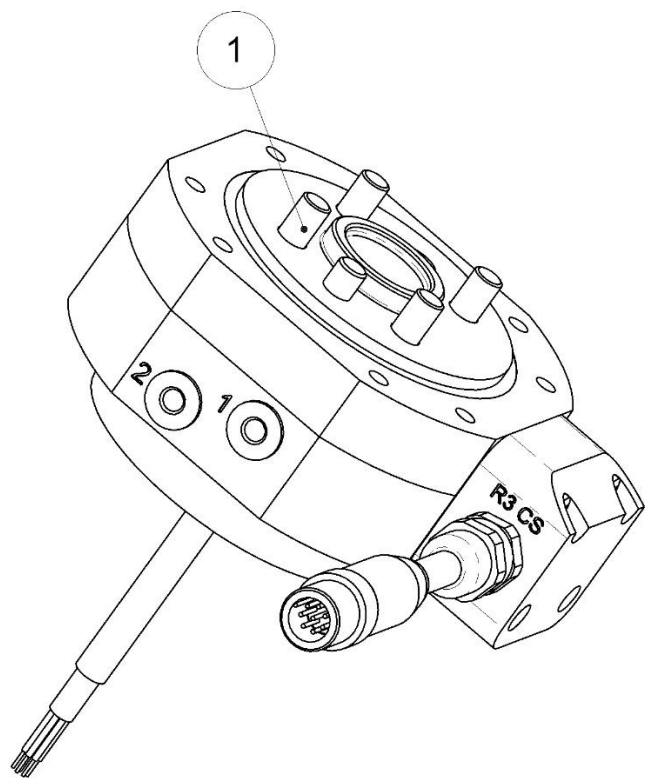
3 SPARE PARTS

5.1 Part list for swivel P0110A



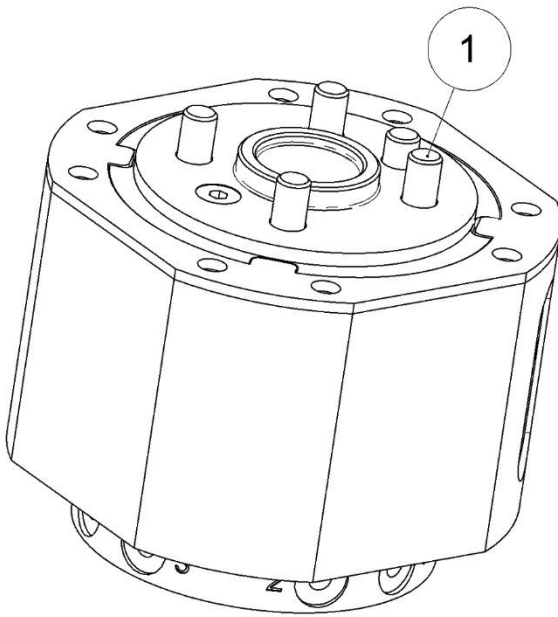
Item	Description	Part number	Pcs
1	Locking screw	A0173-011	4

5.2 Part list for swivel P0111B



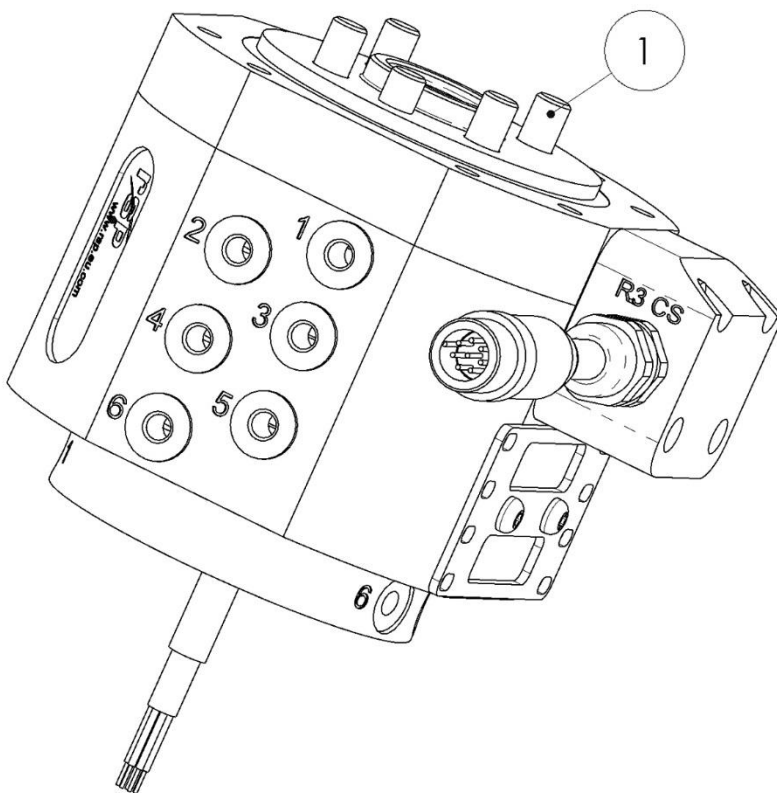
Item	Description	Part number	Pcs
1	Locking screw	A0173-005	4

5.3 Part list for swivel P0112A



Item	Description	Part number	Pcs
1	Locking screw	A0202-005	4

5.4 Part list for swivel P0113B



Item	Description	Part number	Pcs
1	Locking screw	A0202-006	4

