

# Installation and Maintenance

## Swivels S20–S350

M0415-1

Tool changers | Swivels | **Swivels 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 tool systems 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 RSPs unique Circular Rotators cables and hoses can be freely selected with high robot flexibility maintained, and the 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: [robotsystemproducts.com](http://robotsystemproducts.com).

## 1.1 Installation and Maintenance manual

This document describes how the swivels, S20, S100, S250 and S350 are installed and replaced. In addition, the document describes required maintenance activities, including inspection, cleaning, lubrication, replacement of wear parts, required tools and products and disposal and recycling.

The *Technical Descriptions* of each respective unit are separate documents containing product information, drawings, technical data, electrical and pneumatic diagrams and lists of spare parts.

## 1.2 Safety

### 1.2.1 General

The integrator installing the swivel must follow the safety demands stated in standards and provisions applicable in the country where the swivel is to be installed. The products are all prepared for CE-certification.

The user of the Robot System Products swivel is responsible that law and directives applicable in respective countries, with regards to safety, are followed. The user is also responsible to guarantee that all safety devices are installed correctly.



**WARNING!**

Never carry out service work on a robot that has not been taken out of operation. See safety information for the robot.



**WARNING!**

Only perform work on tools attached to the swivel if the air pressure is safely switched off.



**WARNING!**

Be aware that the swivel is heavy and may cause personal injury and equipment damage if dropped.

### 1.2.2 Explanation of warnings

The warnings in this document are specific to the products in this manual. It is expected that the user also pay attention to certain notifications from the robot manufacturer and/or the manufacturers of other components used in the installation.



**WARNING!**

The warning sign will make you aware that a situation could result in potential serious injury or damage to equipment.



**NOTE!**

The note sign will alert you about something important to consider.

## 1.3 Tightening torques

### Tightening torques for mounting (screw class 8.8)

Dimension	Torque
M4	3 Nm
M5	6 Nm
M6	10 Nm
M8	24 Nm
M10	47 Nm
M12	82 Nm
M16	200 Nm

## 1.4 Recommended equipment

### Equipment recommended for installation and maintenance work

Tools	Applications
Complete set of Allen keys	For dismounting and mounting
Torx key	For all socket head cap screws
Torque wrench	For dismounting and mounting

## 1.5 Required products

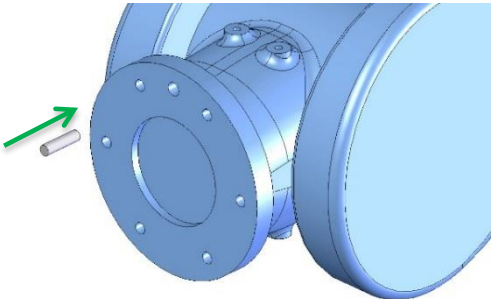
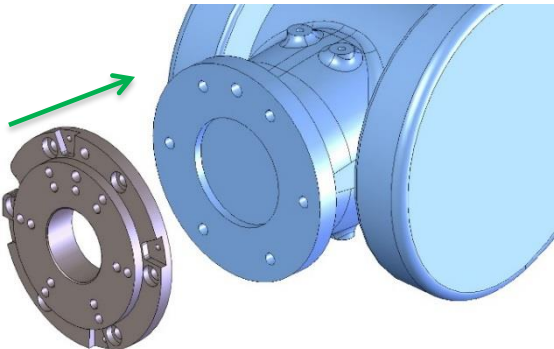
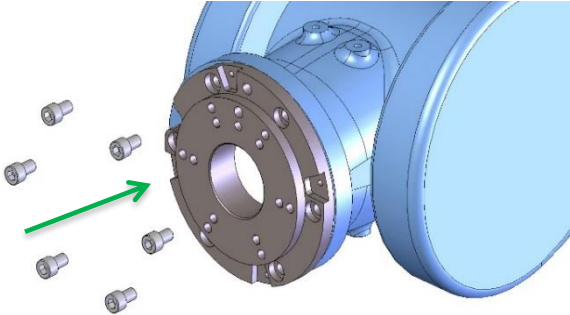
Product	Specification	Note
Cleaning agent	Industrial alcohol or similar	For cleaning
Cloth	Lint free cloth	For cleaning



**NOTE!** Chemical resistance protective gloves are recommended when using grease or cleaning agents such as industrial alcohol. Safety goggles are recommended when working with cleaning agents such as industrial alcohol. Adequate ventilation should be provided when chemical substances are used.

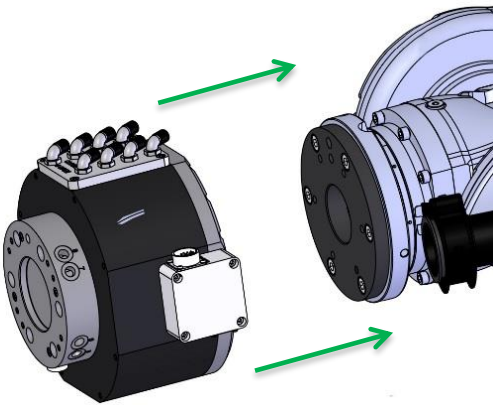
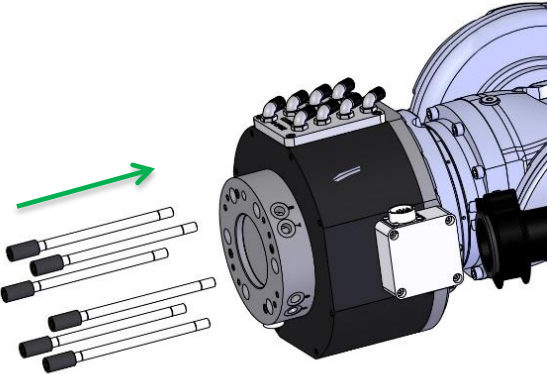
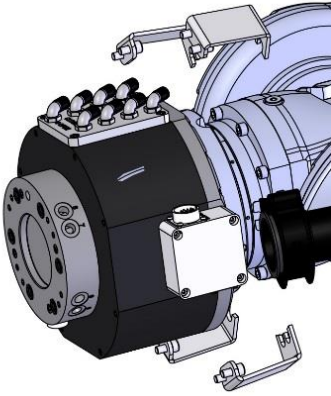
## 2 INSTALLATION OF SWIVEL



	Action	Note
1	<b>Safety</b>	Read the <a href="#">safety section 1.2</a> .
2	<b>Service position</b>	Place the robot in service position.
3	<b>Power off</b>	Switch the power off and lock the circuit breaker.  <b>NOTE!</b> Read the safety chapter for the robot.
4	<b>Pneumatic air off</b>	<b>NOTE!</b> The pressure in the pneumatic system must be released before installation.
5	<b>Mount guide pin</b> 	Press the enclosed guide pin into the robot flange.
6	<b>Fit adaptation plate</b> 	Lift the adaptation plate and fit the guide pin to the guide hole in robot flange.  <b>NOTE!</b> Only if adaptation plate is used.
7	<b>Mount adaptation plate</b> 	Mount the adaptation plate with the enclosed screws. Use a torque wrench when tightening (see tightening torques above).





8	<b>Fit the swivel to robot</b>	 <p>Lift the swivel to the robot flange (or adaptation plate). Make sure that the guide pin fits to the guide hole in the swivel.</p> <p><b>WARNING!</b> The swivel is heavy and may cause damage if dropped.</p>
9	<b>Mount swivel</b>	 <p>Mount the swivel with the enclosed screws. Use an Allen key for tightening (see tightening torques above).</p>
10	<b>Turn robot arm into position</b>	<p>Rotate axis 6 to put the rotation stop in position for mounting.</p>
11	<b>Mount rotation stop</b>	 <p>Fit the rotation stop including hose bracket with enclosed screws and nuts. The tightening torque for S20 is 4 Nm, for S100 6 Nm and for S250 and S350 10 Nm.</p> <p><b>NOTE!</b> Design and mounting methods are dependent on swivel and robot models. Mounting instructions are included in the adaptation kits.</p>
12	<b>Connect air</b>	<p>Mount air hoses. <i>Pneumatic diagrams</i> are found in the <i>Technical Description</i> of respective unit.</p>
13	<b>Connect signals (electrical versions only)</b>	<p>Connect electrical connectors. <i>Circuit diagrams</i> are found in the <i>Technical Description</i> of respective unit.</p>
14	<b>Power on</b>	<p>Unlock the circuit breaker and switch the power on.</p>



## 3 MAINTENANCE AND SERVICE

The swivel must be maintained regularly to ensure proper function. The specified intervals are approximate and valid under normal conditions. Under extreme conditions, such as dirty environments or extreme robot movements, the intervals should be shortened. Consider the table as a guide and update as your production experience of each system increases.



**NOTE!**

Read the [safety section 1.2](#) before any maintenance activities are carried out.



**NOTE!**

Swivel must only be dismantled and repaired by Robot System Products during the warranty period. Otherwise the warranty will not be valid.

### 3.1 Maintenance scheme

Maintenance activity	Equipment	Interval	Description
Inspection	Swivel	2 weeks	Visual inspection of swivel, rotation stop and cables ( <a href="#">section 3.3</a> ).
Cleaning	Swivel	3 months	Cleaning of swivel, interval depending on environment. ( <a href="#">section 3.4</a> ).
Service	Swivel	30 months	Complete service, to be done by Robot System Products

### 3.2 Complete service of swivel

Under normal working conditions we recommend a complete service on swivels to be carried out every 30<sup>th</sup> months by qualified Robot System Products personnel. This will ensure proper function and increase the lifespan of the swivel considerably. Please contact us for a quotation.

The 30 months swivel service at RSP includes inspection and cleaning of the full unit, replacement of rotoglyde and slip ring sets.

### 3.3 Visual inspection of swivel

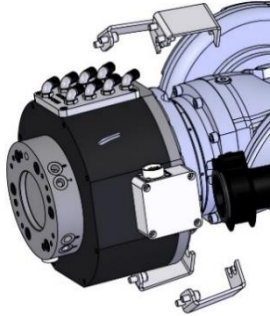
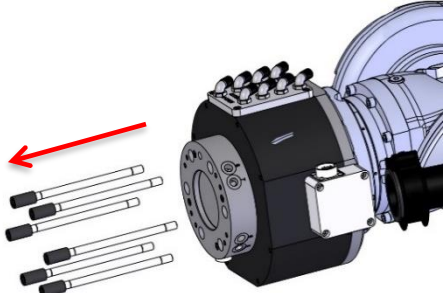
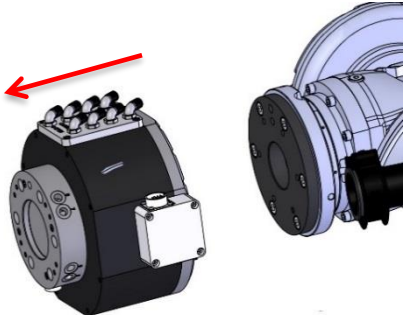
Action	Note
<b>Check air connections</b>	Check that the air connections are not dirty or damaged. Clean if dirty. Replace damaged parts.
<b>Check electrical connections</b> (electrical versions only)	Check that electrical connections are not dirty or damaged. Clean if dirty. Replace damaged parts.
<b>Check cables and hoses</b>	Check that cables and hoses are not squeezed or damaged. Replace damaged parts.
<b>Check rotation stops</b>	Check that rotation stops are not worn-out or damaged. Replace damaged parts.
<b>Check swivel in general</b>	Check the swivel for damages. For replacements see <a href="#">chapter 4</a>

### 3.4 Cleaning of swivel

Action	Note
<b>Clean the swivel unit generally</b>	Clean the swivel using lint free clothes and industrial alcohol or similar.

## 4 DISMOUNTING AND REPLACEMENT



	Action	Note
1	<b>Safety</b>	Read the <a href="#">safety section 1.2</a> .
2	<b>Service position</b>	Place the robot in service position.
3	<b>Power off</b>	Switch the power off and lock the circuit breaker. <b>NOTE!</b> Read the safety chapter for the robot.
4	<b>Pneumatic air off</b>	<b>NOTE!</b> The pressure in the pneumatic system must be released before dismounting begins.
5	<b>Disconnect electrical connectors (electrical versions only)</b>	<b>NOTE!</b> Handle contacts with care, as they are sensitive to mechanical damages. Make sure no dirt enters the contacts.
6	<b>Dismount air hoses</b>	Put markings on the air hoses and dismount from the swivel. <b>NOTE!</b> Make sure that no dirt enters the air hoses.
7	<b>Remove rotation stop</b> 	Release and remove the screws and nuts holding the rotation stop. Remove the rotation stop.
8	<b>Remove screws</b> 	Remove the fastening screws holding the swivel to the robot flange.  <b>WARNING!</b> The swivel is heavy and may cause damage if dropped.
9	<b>Dismount swivel</b> 	<b>NOTE!</b> A guide pin is mounted between the swivel and the robot flange.
10	<b>Clean the robot flange</b>	
11	<b>Mount replacement swivel</b>	Follow instructions in <a href="#">chapter 2</a> .

## **5 DISPOSAL AND RECYCLING**

### **Taking care of spent equipment**

Used equipment must be taken care of in an environmentally-friendly way.

When disposed of, a major share of the material, or its energy content, can be recycled. The quantities possible to recycle vary depending on technical resources and practises in respective country. Non-recyclable components shall be handed over to an authorized environmental waste treatment facility for destruction or disposal.

### **Electronics**

Electronic equipment shall be sent to an authorized recycling company or sorted into different component materials and treated as such.

### **Metals**

Metals can, in general, be melted down, recycled and used in new products. They shall be sorted according to type and surface coating and handed over to an authorized recycling facility.

Metal components made of steel, aluminium, and brass are substantial in size and easy to identify. Copper is primarily used in transmission of power for spot welding. Equipment for spot welding, specifically sliding contacts, may also contain small amounts of lead. Silver or gold plating of contact surfaces may occur.

### **Plastics**

Thermoplastics can, in general, be re-heated and recycled without any major loss of quality. They shall be handed over to an authorized recycling facility. POM occurs in swivel housings, etc. PTFE in some sealings.

### **Rubber**

Rubber shall be handed over to an authorized environmental waste treatment facility either for recycling, disposal or destruction. Rubber occurs in O-rings.

### **Other material**

All other material shall be sorted and handed to an authorized environmental waste treatment facility in accordance with national legislation.



