

# Technical Description

## CoboShift Tool Changers ATC/MTC18

M0121-1

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



**COBOSHIFT™**  
BY ROBOT SYSTEM PRODUCTS

**rsp** robot system  
products



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# 1 INTRODUCTION

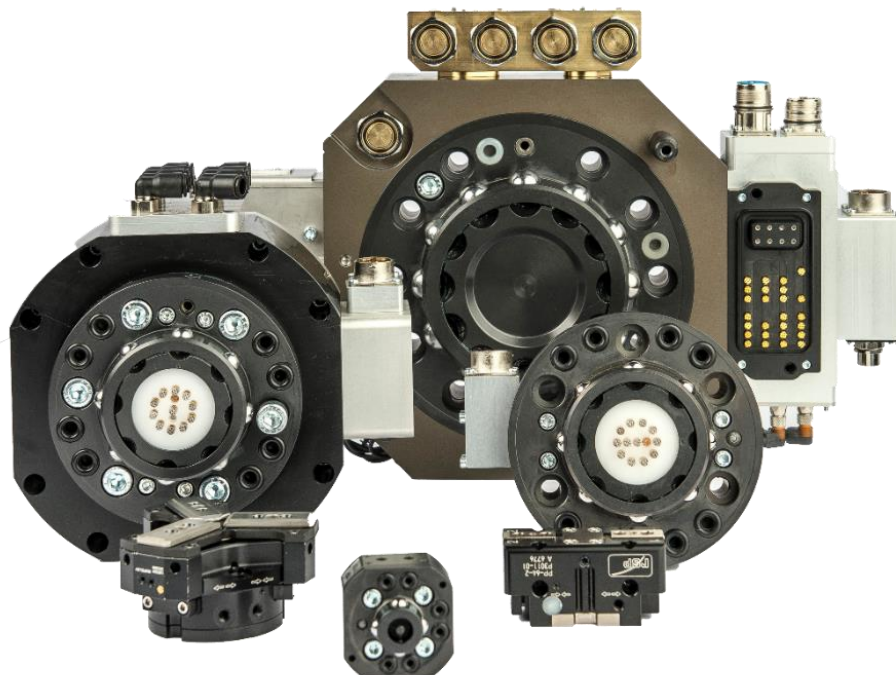
**Robot System Products** is a front-rank provider of peripheral products for high performance robot applications. We provide complete system solutions for your robot installations, aiming to improve your productivity with the most reliable and cost-effective tooling on the market. Continuously we explore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



## 1.1 RSP tool changer

The Robot System Products' tool changers enable robots to handle and switch between multiple tools. They are built to ensure reliable and smooth operation, being compact with low weight and robust design and incorporating many safety features. Depending on model and options, electrical signals, weld and servo power, data, water and compressed air are transferred from the robot side to the tool.

The patented locking device TrueConnect™ has a minimum of play and gives a practically, through the lifespan, absolute positioning repeatability. The principle behind the locking mechanism is the uniform distribution of load obtained by pressing locking balls into spherical grooves. In consequence, substantially larger positional tolerances are accepted during docking.

## 1.2 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* (M0119-1) procedures for mounting, installation and replacement of equipment are described together with descriptions of inspection, cleaning and lubrication activities including recommended maintenance intervals.

## 1.3 Wear parts

Wear parts should be replaced before considerable damage occurs. The interval depends on the number of tool changes and its working environment. Generally, the more contaminated environment, the closer maintenance intervals.

The following parts are considered as wear parts:

- Signal pins
- Air sealings
- O-rings

## 1.4 Complementary equipment

Complementary equipment is described in separate documents.

Article	Note
External valve units	Mounted at the rear of the upper arm. Shuts off the air automatically during tool changing.
Tool parking systems	RSP tool parking systems give rigid installations for easy tool changing.
Connection kits	Connection kits for tool changers and tool attachments simplifying electrical installations.
3D-models	Available in Solid Works®, STEP and Parasolid-format.

## 2 TECHNICAL SPECIFICATIONS

### ***2.1 Description of tool changers and tool attachments***

This document presents the Robot System Products CoboShift tool changers ATC18 and MTC18 including tool attachments dedicated for collaborative robots. Likewise presented are adaptation kits and a tool stand kit.

The tool changers ATC18-4 and MTC18-4 transfer compressed air to the tool, they cannot transport fluids. ATC18 and MTC18 can be equipped for transfer of electric and power signals, via spring loaded signal pins, power pins and sockets, to the tool attachment.

For other bolt circles adaptation plates between the tool changer and the turning disc on the robot may be needed. Such adaptation plates are available from RSP.

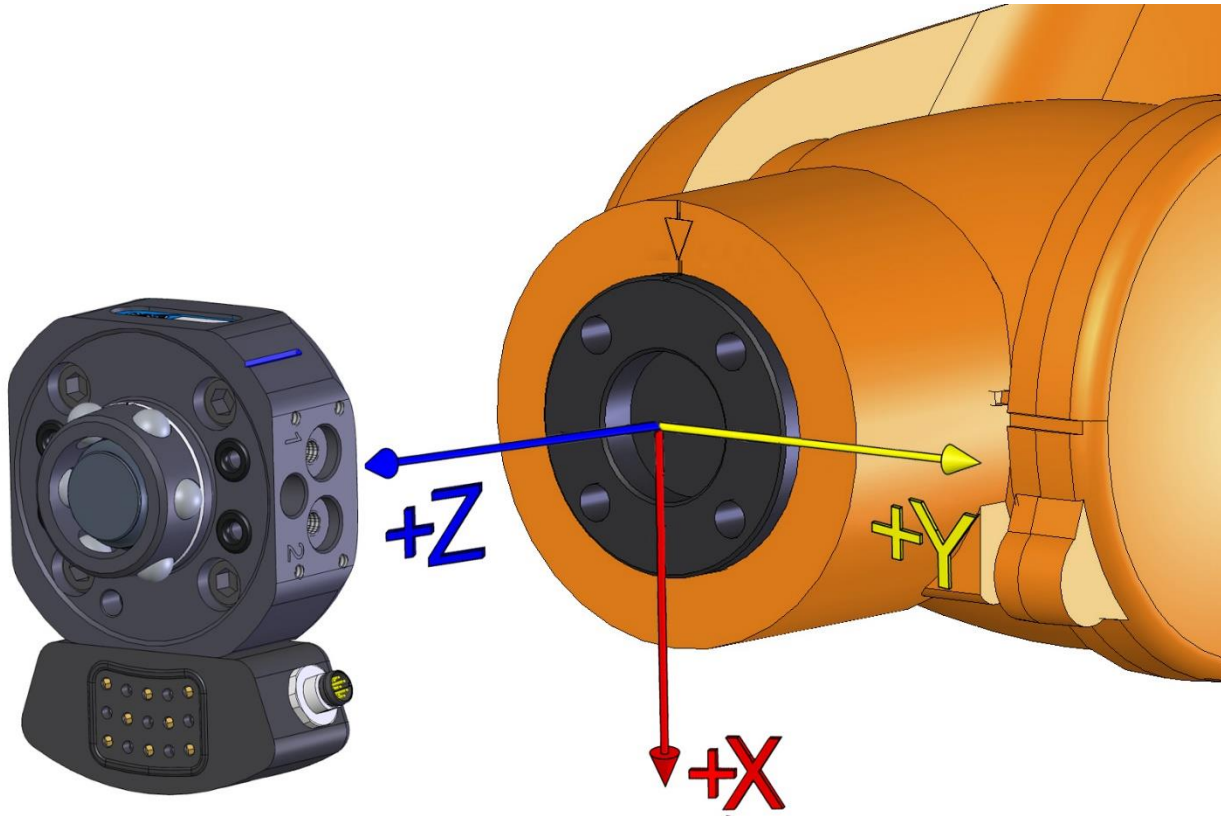
There may be some limitations on the movement of axis 5 for some robot models. Contact Robot System Products for more information.



***ATC18-4 with P1179 mounted***

### 2.1.1 Coordinate System Definition

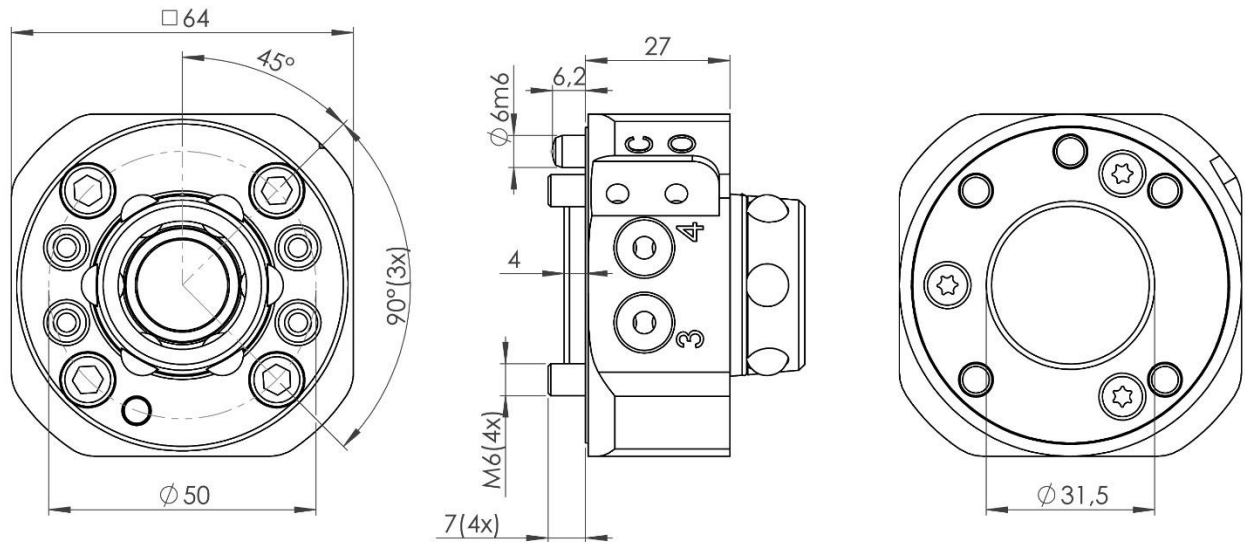
A tool changer adds load to the robot. If the arm and tool loads are not stated correctly during programming the behaviour of the robot and the wear of the equipment will be affected. Information about weight and centre of gravity can, in accordance with the co-ordinate system stated below, be found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



**NOTE!** For the CoboShift tool changers with or without tool attachment, the origin of the co-ordinate system is situated in the centre of the robot mounting flange.



## 2.1.2 CoboShift Tool Changer, ATC18-4. Article: P1181



CoboShift tool changer P1181 transfers 4 pneumatic channels to the CoboShift tool attachment and has separate inlets for Open TC and Close TC. To be used together with tool attachment P1182.

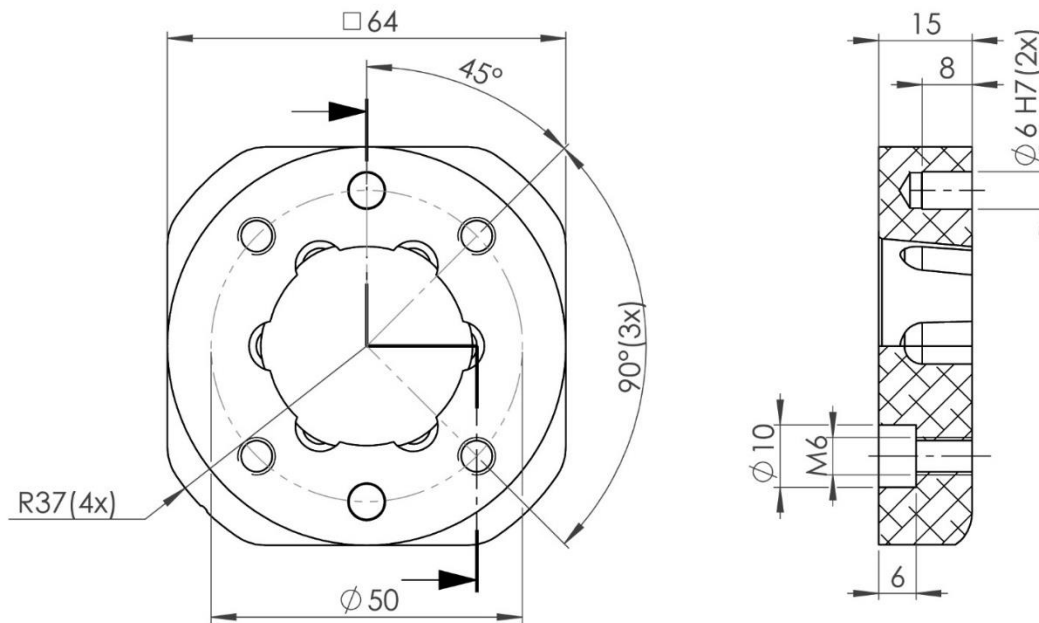
### Technical data

<b>Working temperature</b>		+10°C – +50°C
<b>Bolt pattern</b>		ISO 9409-1 50-4-M6
<b>Maximum tool load</b> (M6-screws, 12.9)	Fz (static)	±180 N
	Mx/My (dynamic)	±130 Nm
	Mz (dynamic)	±130 Nm
<b>Maximum tool load</b> (M6-screws, 8.8)	Fz (static)	±180 N
	Mx/My (dynamic)	±130 Nm
	Mz (dynamic)	±75 Nm
<b>Weight and centre of gravity (Z)</b>		
P1181		0.35 kg / 16 mm
P1181+P1182		0,45 kg / 20 mm
<b>Air channels</b>	Pneumatic diagram	See section 2.1.6
	User channels, robot side	4 x M5 (185 l/min, max 10 bar)
	Dedicated channels (2 x M5)	Open TC marked O (6-10 bar) Close TC marked C (6-10 bar)
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content



**NOTE!** One position pin is included in the delivery. To be mounted, if required, by the customer in the Ø 5 mm hole.

### 2.1.3 CoboShift Tool Attachment, ATA18-4. Article: P1182



CoboShift tool attachment P1182 transfers 4 pneumatic channels to the tool. To be used together with tool changer P1181.

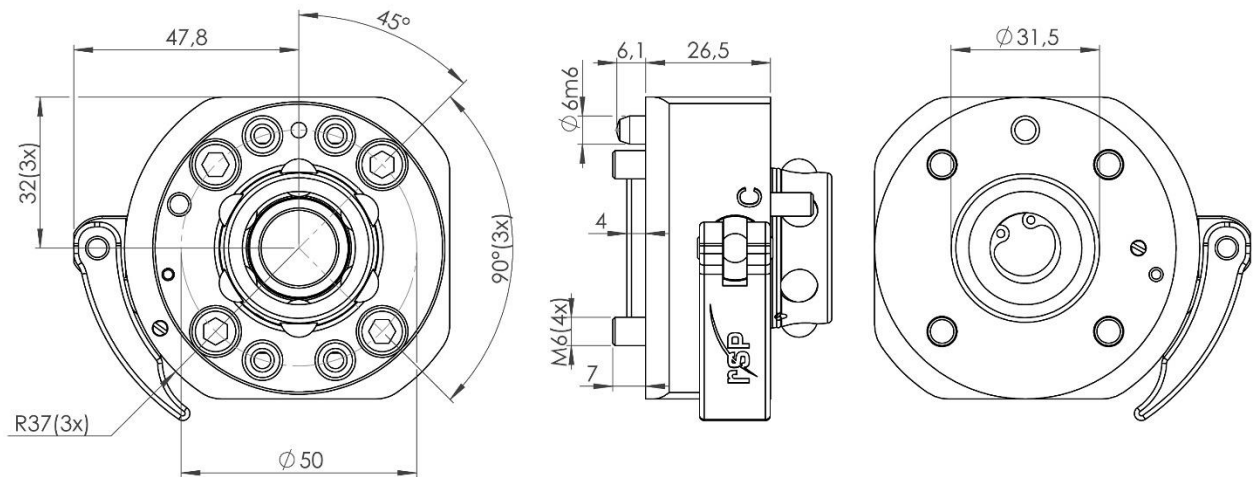
#### Technical data

<b>Working temperature</b>		+10°C – +50°C
<b>Bolt pattern</b>		ISO 9409-1 50-4-M6
<b>Weight</b>		0.10 kg
<b>Maximum tool load</b> (M6-screws, 12.9)	Fz (static)	±180 N
	Mx/My (dynamic)	±130 Nm
	Mz (dynamic)	±130 Nm
<b>Maximum tool load</b> (M6-screws, 8.8)	Fz (static)	±180 N
	Mx/My (dynamic)	±130 Nm
	Mz (dynamic)	±75 Nm
<b>Maximum tool load</b> (M5-screws, 12.9)	Fz (static)	±180 N
	Mx/My (dynamic)	±130 Nm
	Mz (dynamic)	±90 Nm
<b>Maximum tool load</b> (M5-screws, 8.8)	Fz (static)	±180 N
	Mx/My (dynamic)	±130 Nm
	Mz (dynamic)	± 55 Nm
<b>Air channels</b>	Connections, tool side	4 x M5



**NOTE!** Tools can be mounted to the tool attachment using four M6-screws, alternatively the tool attachment can be mounted to the tool using four M5-screws.

## 2.1.4 CoboShift Manual Tool Changer, MTC18-4. Article: P6018



CoboShift manual tool changer P6018 transfers 4 pneumatic channels to the CoboShift tool attachment. To be used together with tool attachment P6019.

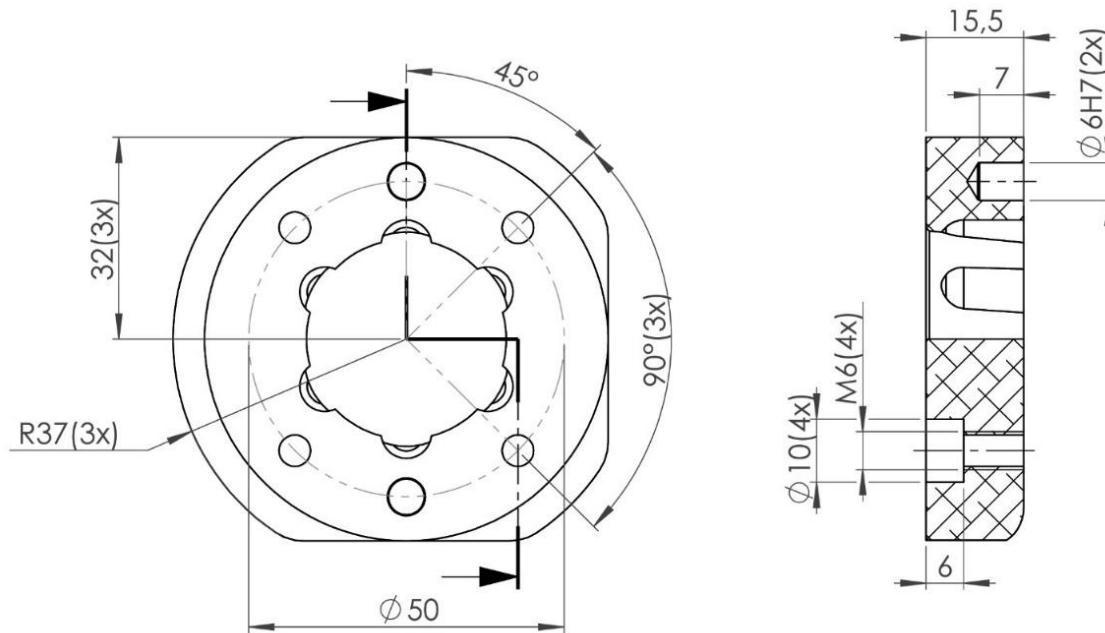
### Technical data

<b>Working temperature</b>		+10°C – +50°C
<b>Bolt pattern</b>		ISO 9409-1 50-4-M6
<b>Maximum tool load</b> (M6-screws, 12.9)	Fz (static)	±180 N
	Mx/My (dynamic)	±130 Nm
	Mz (dynamic)	±130 Nm
<b>Maximum tool load</b> (M6-screws, 8.8)	Fz (static)	±180 N
	Mx/My (dynamic)	±130 Nm
	Mz (dynamic)	±75 Nm
<b>Weight and centre of gravity (Z)</b>		
P6018		0.41 kg / 16 mm
P6018+P6019		0.53 kg / 20 mm
<b>Air channels</b>	Pneumatic diagram	See section 2.1.7
	User channels, robot side	4 x M5 (185 l/min, max 10 bar)
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content



**NOTE!** One position pin is mounted in the Ø 5 mm hole.

## 2.1.5 CoboShift Manual Tool Attachment, MTA18-4. Article: P6019



CoboShift manual tool attachment P6019 transfers 4 pneumatic channels to the tool. To be used together with tool changer P6018.

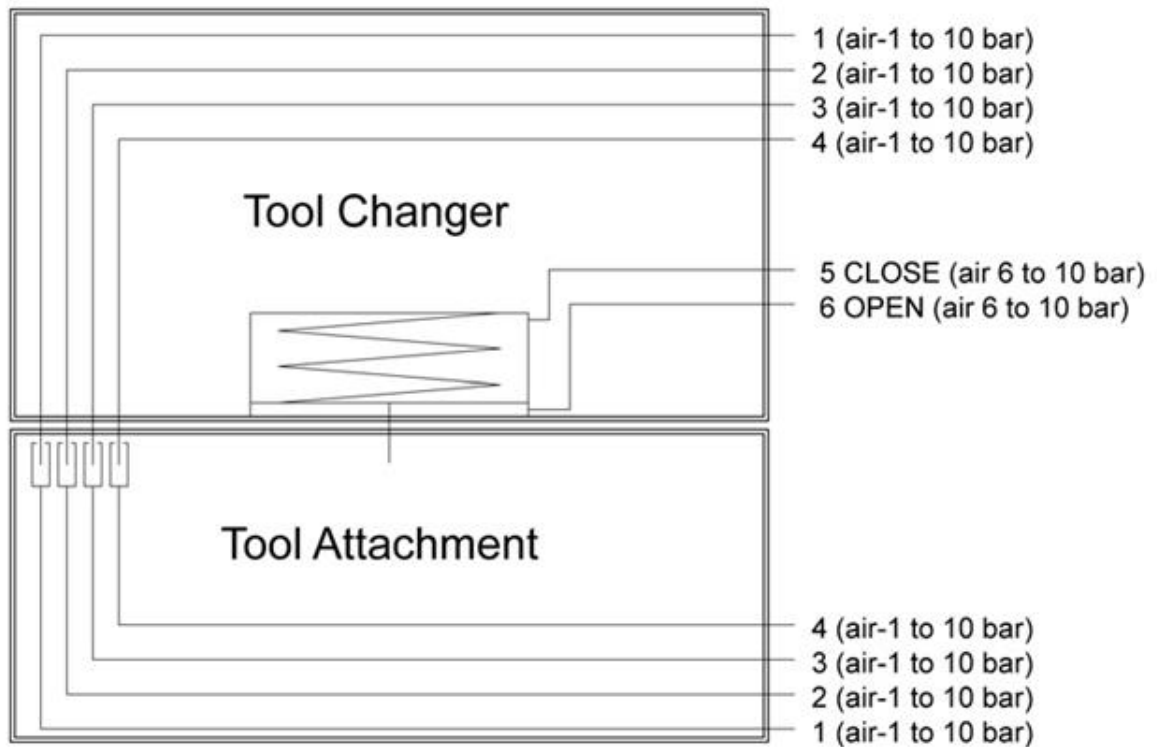
### Technical data

<b>Working temperature</b>		+10°C – +50°C
<b>Bolt pattern</b>		ISO 9409-1 50-4-M6
<b>Weight</b>		0.12 kg
<b>Maximum tool load</b> (M6-screws, 12.9)	Fz (static)	±180 N
	Mx/My (dynamic)	±130 Nm
	Mz (dynamic)	±130 Nm
<b>Maximum tool load</b> (M6-screws, 8.8)	Fz (static)	±180 N
	Mx/My (dynamic)	±130 Nm
	Mz (dynamic)	±75 Nm
<b>Maximum tool load</b> (M5-screws, 12.9)	Fz (static)	±180 N
	Mx/My (dynamic)	±130 Nm
	Mz (dynamic)	±90 Nm
<b>Maximum tool load</b> (M5-screws, 8.8)	Fz (static)	±180 N
	Mx/My (dynamic)	±130 Nm
	Mz (dynamic)	± 55 Nm
<b>Air channels</b>	Connections, tool side	4 x M5

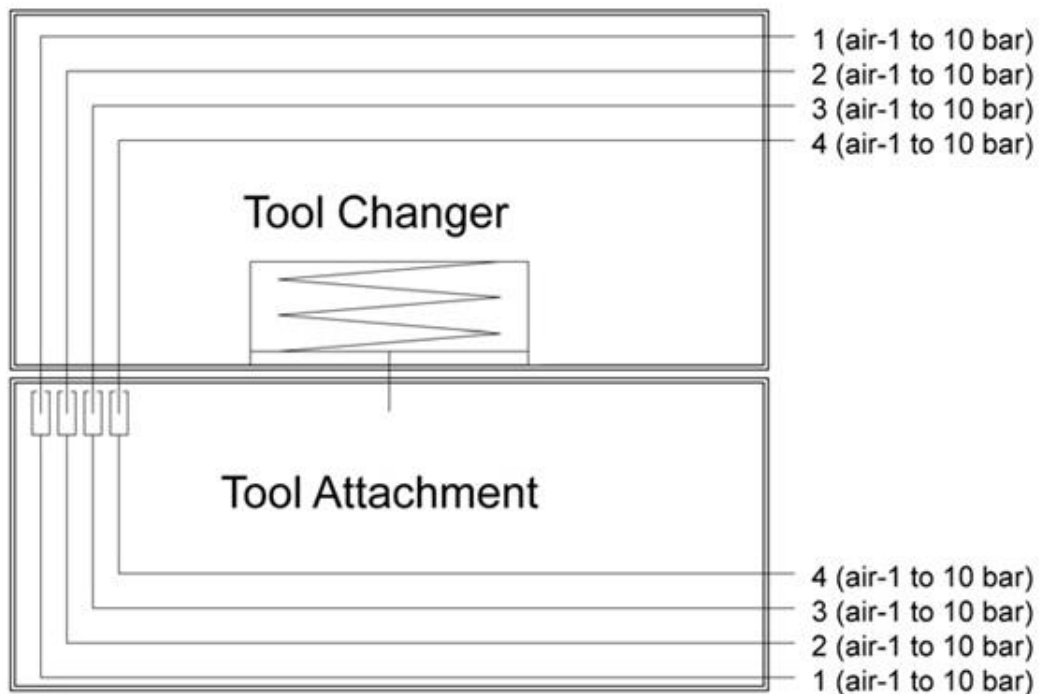


**NOTE!** Tools can be mounted to the tool attachment using four M6-screws, alternatively the tool attachment can be mounted to the tool using four M5-screws.

### 2.1.6 Pneumatic diagram for CoboShift tool changer ATC18/ATA18

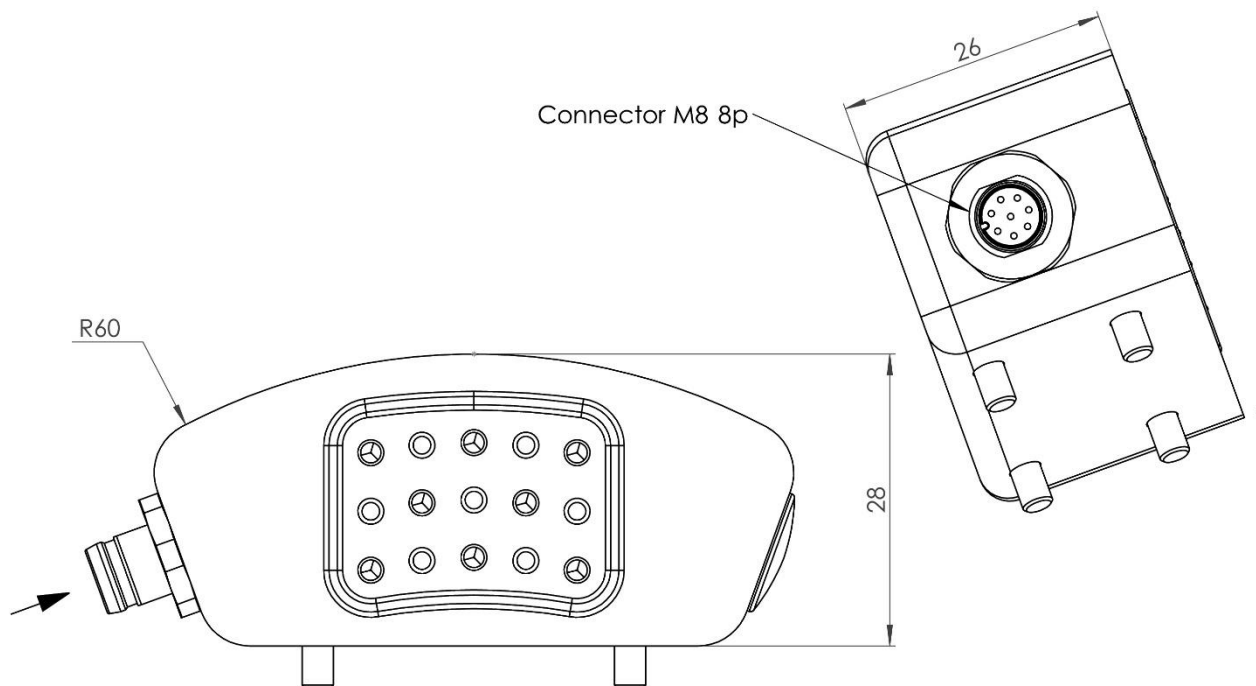


### 2.1.7 Pneumatic diagram for CoboShift manual tool changer MTC18/MTA18



## 2.2 Options

### 2.2.1 CoboShift Signal Module, 8 signals, robot side. Article: P1179

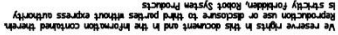


CoboShift Signal Module P1179 transfers 8 electrical signal to the CoboShift tool attachment. Can be mounted at two different positions on the tool changer. To be used with module P1180 mounted on the tool attachment.

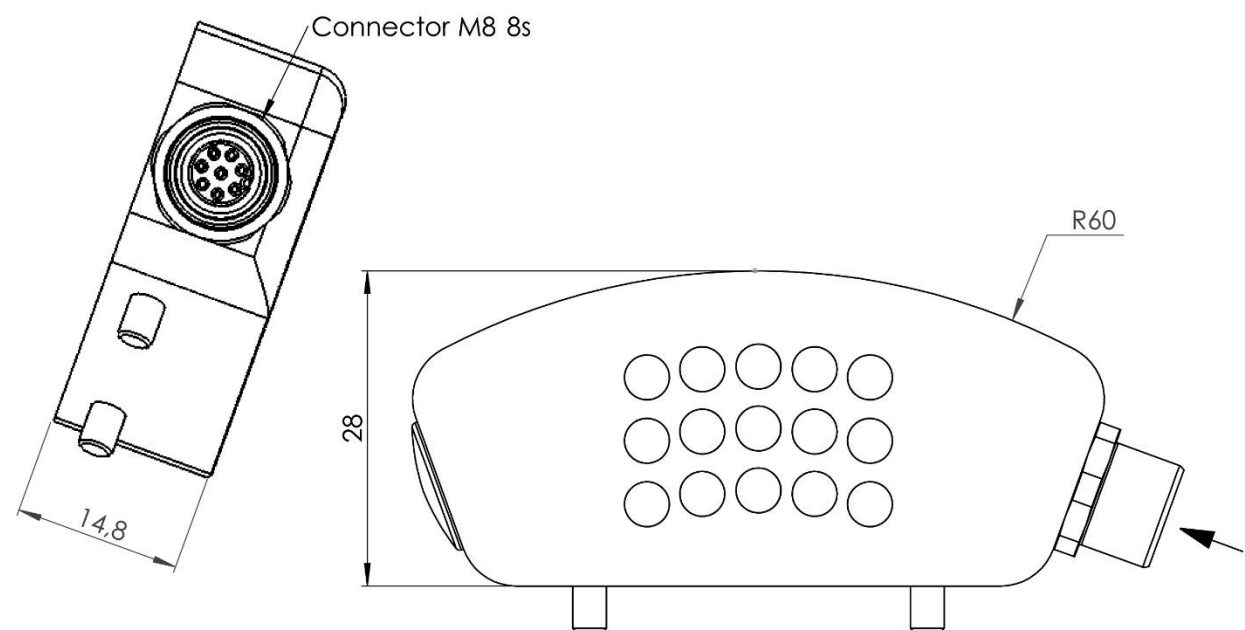
#### Technical data

<b>Weight</b>		0.05 kg
<b>Electrical signals</b>	Circuit diagram	E0185-087 (section 2.2.2)
	Total signals	8 x (1A, 30V)
	Connection, robot side	M8 8P (I2007)

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2.2.3 CoboShift Signal Module, 8 signals, tool side. Article: P1180



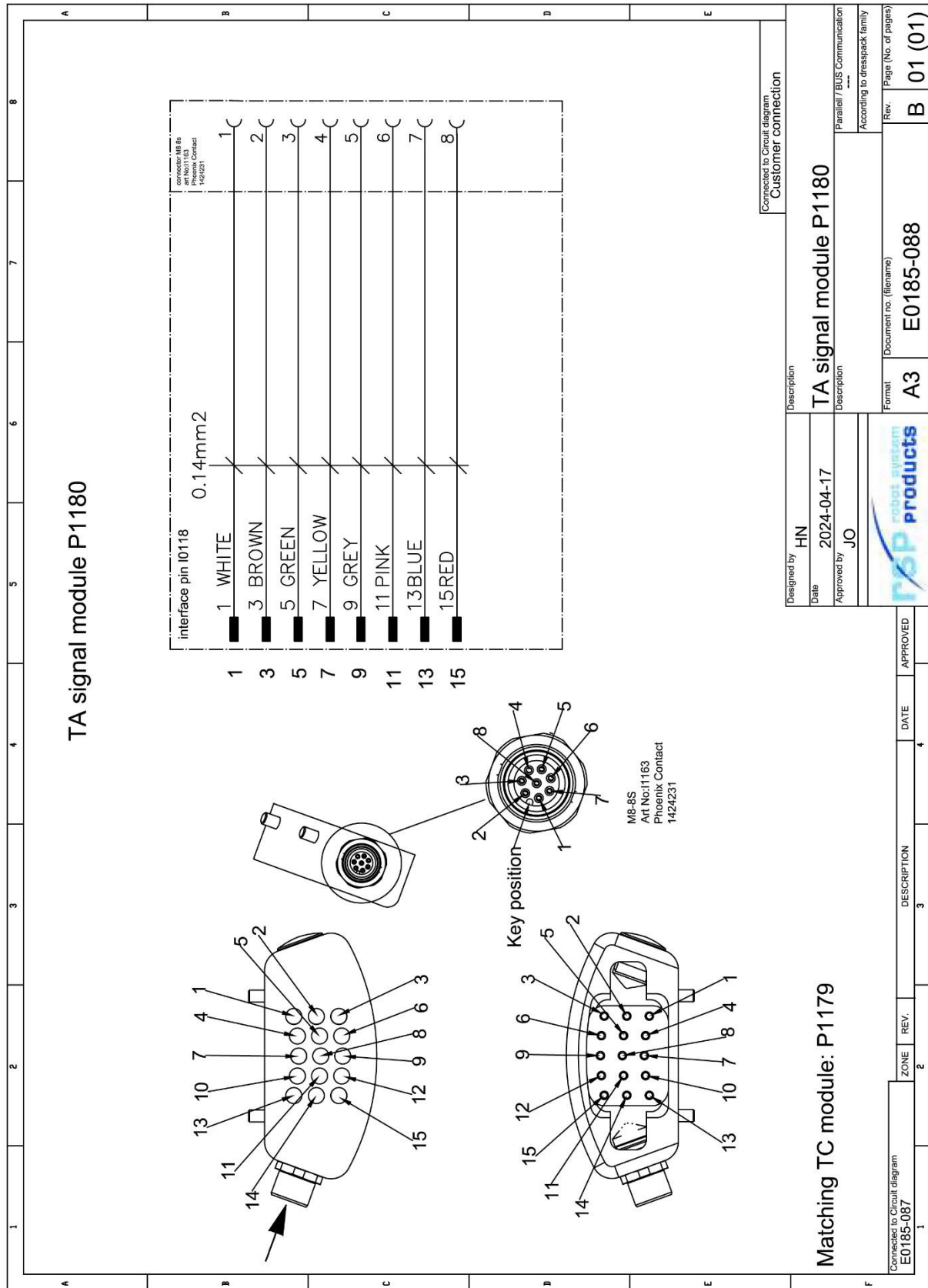
CoboShift Signal Module P1180 transfers 8 electrical signal to the tool. Can be mounted at two different positions on the tool attachment. To be used with module P1179 mounted on the tool changer.

Technical data

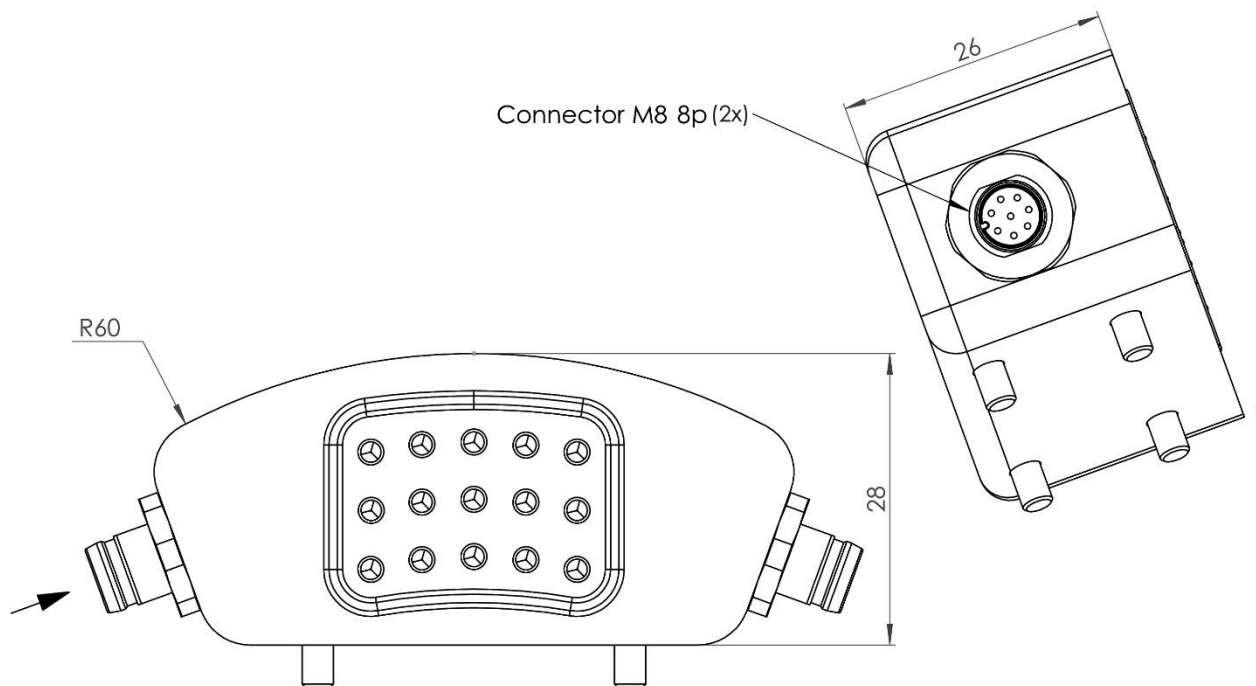
Weight		0.03 kg
Electrical signals	Circuit diagram	E0185-088 (section 2.2.4)
	Connection, tool side	M8 8S (I1163)



## M0121-1 version 3.4



2.2.5 CoboShift Signal Module, 15 signals, robot side. Article: P1189

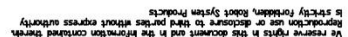


CoboShift Signal Module P1189 transfers 15 electrical signal to the CoboShift tool attachment. Can be mounted at two different positions on the tool changer. To be used with module P1190 mounted on the tool attachment.

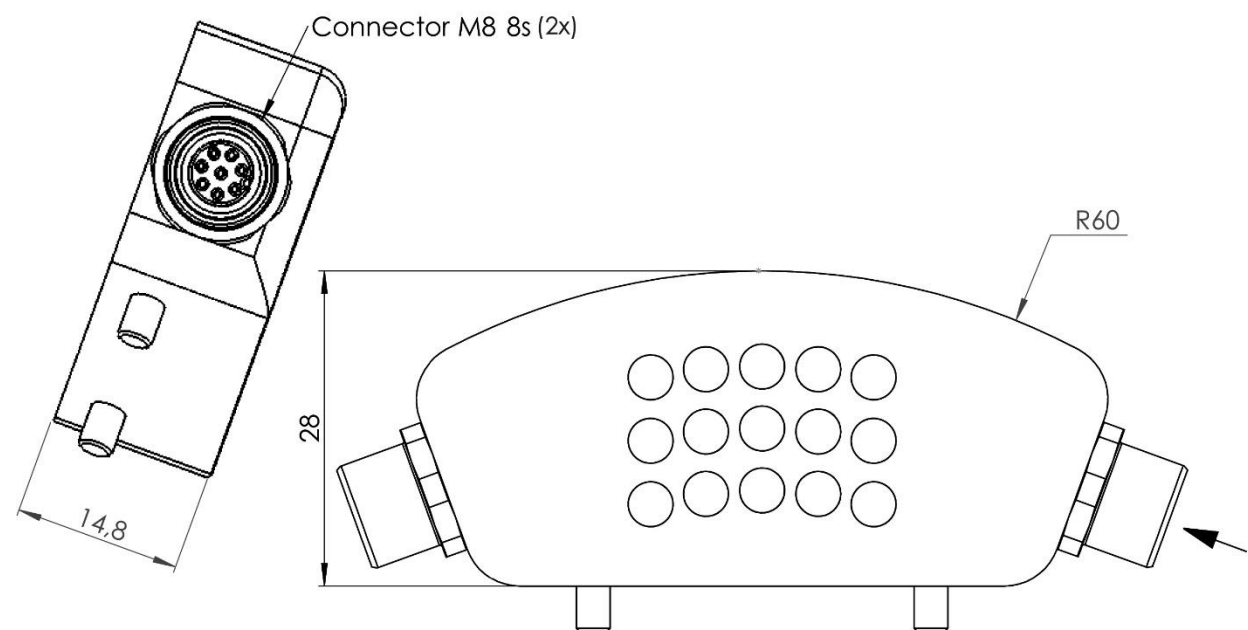
Technical data

<b>Weight</b>		0.06 kg
<b>Electrical signals</b>	Circuit diagram	E0185-100 (section 2.2.6)
	Total signals	15 x (1A, 30V)
	Connection, robot side	2 x M8 8P (I2007)

## M0121-1 version 3.4



2.2.7 CoboShift Signal Module, 15 signals, tool side. Article: P1190

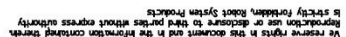


CoboShift Signal Module P1190 transfers 15 electrical signal to the tool. Can be mounted at two different positions on the tool attachment. To be used with module P1189 mounted on the tool changer.

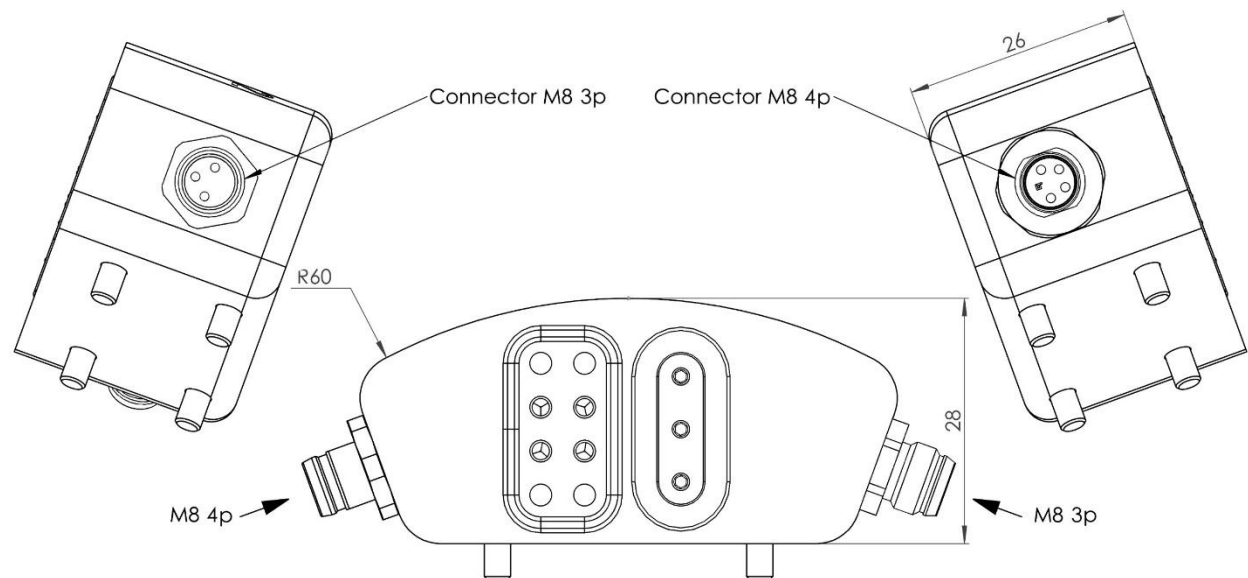
Technical data

Weight		0.03 kg
Electrical signals	Circuit diagram	E0185-101 (section 2.2.8)
	Connection, tool side	2 x M8 8S (I1163)

## M0121-1 version 3.4



2.2.9 CoboShift Power and Signal Module, 7 signals, robot side.  
Article: P1193



CoboShift Power and Signal Module P1193 transfers 4 electrical signals and 3 power signals to the CoboShift tool attachment. Can be mounted at two different positions on the tool changer. To be used with module P1194 mounted on the tool attachment.

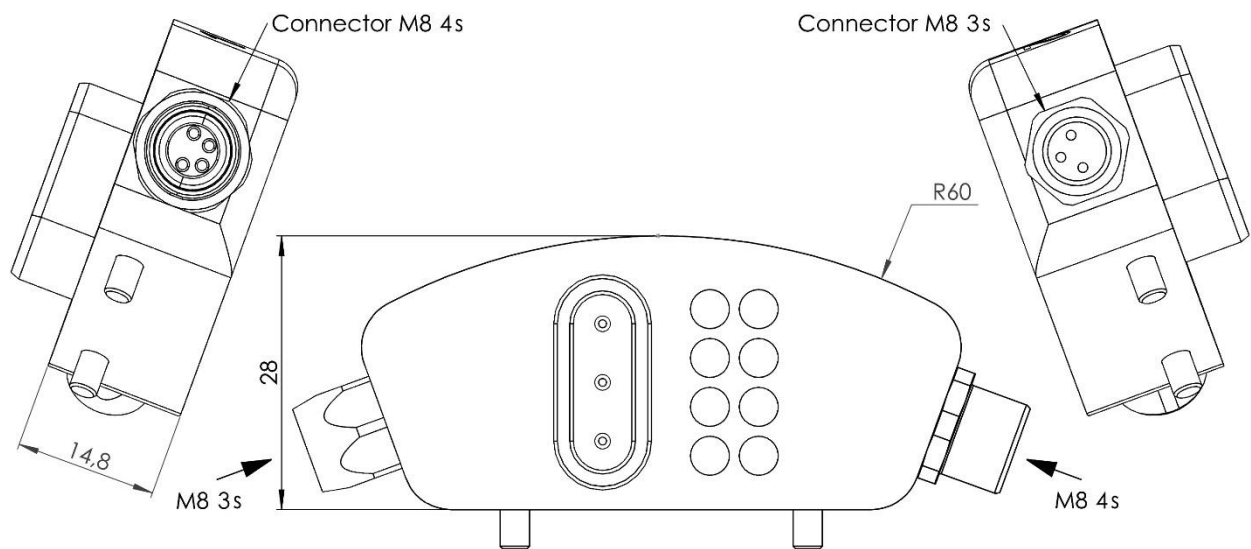
Technical data

Weight		0.07 kg
Electrical signals	Circuit diagram	E0185-103 (section 2.2.10)
	Total signals	4 x (1A, 30V), 3 x (4A, 60V)
	Connection, robot side	M8 4P (I2033), M8 3P (I1168)

## M0121-1 version 3.4



2.2.11 CoboShift power and signal Module, 7 signals, tool side.  
Article: P1194



CoboShift Power and Signal Module P1194 transfers 4 electrical signals and 3 power signals to the tool. Can be mounted at two different positions on the tool attachment. To be used with module P1193 mounted on the tool changer.

Technical data

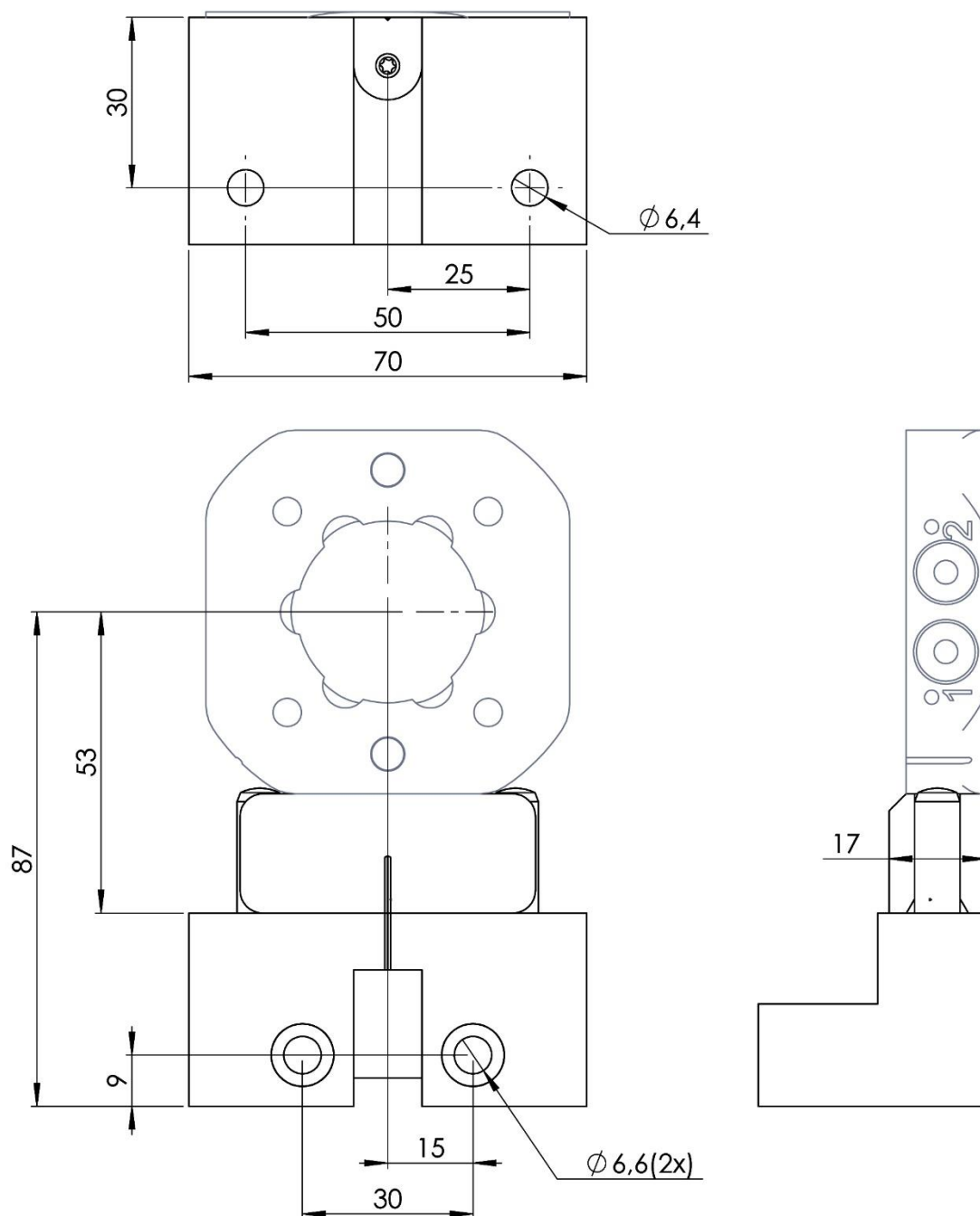
Weight		0.05 kg
Electrical signals	Circuit diagram	E0185-102 (section 2.2.12)
	Connection, tool side	M8 4S (I2034), M8 3S (I0029)



## M0121-1 version 3.4



## 2.2.13 Tool stand kit for CoboShift ATC18-4 and MTC18-4. Article: P1185



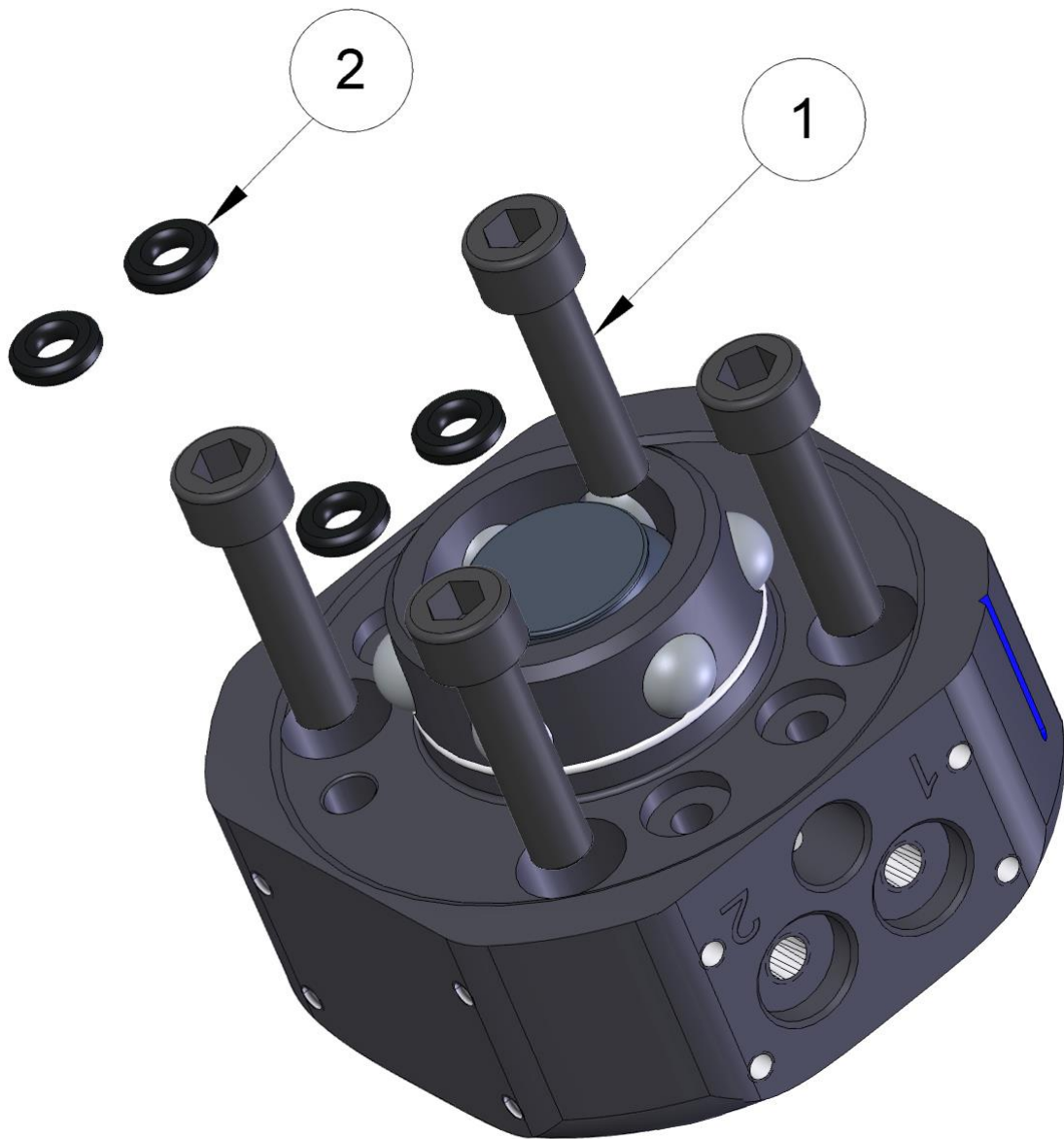
The tool stand kit P1185 is divided in two parts, one tool stand table (P1183) to be mounted on a tool stand and one bracket (P1184) to be mounted with a CoboShift tool attachment P1182, P1188 or P1192. The combination gives a robust tool stand solution for easy tool changing.

### Technical data

<b>Weight</b> (bracket mounted on tool attachment)	0,12 kg
<b>Maximum load</b>	18 kg

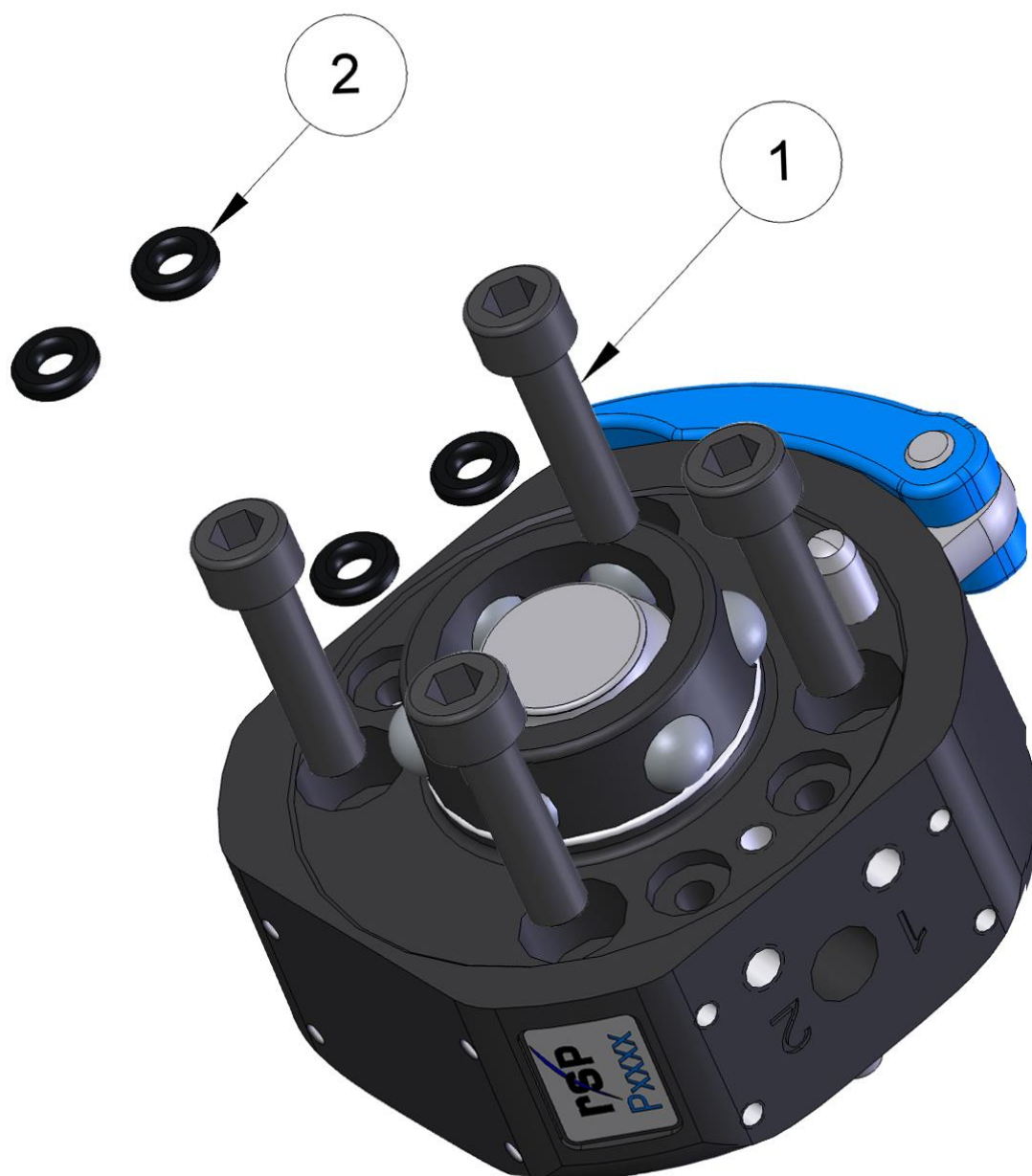
### 3 SPARE PARTS

#### 3.1 Part list for CoboShift tool changer P1181



Item	Description	Part number	Wear part	Pcs
1	Fastening screw M6x25	MC6S 6x25 12.9		4
2	Air sealings	I0158	X	4

### 3.2 Part list for CoboShift manual tool changer P6018



Item	Description	Part number	Wear part	Pcs
1	Fastening screw M6x25	MC6S 6x25 12.9		4
2	Air sealings	I0158	X	4

### 3.3 Part list for CoboShift signal module P1179 and P1189



Item	Description	Part number	Wear part	Pcs
1	Spring loaded signal pin (P1179)	I0154	X	8
1	Spring loaded signal pin (P1189)	I0154	X	15
2	O.ring	I1945	X	1

### 3.4 Part list for CoboShift signal module P1193



Item	Description	Part number	Wear part	Pcs
1	Spring loaded signal pin	I0154	X	4
2	O.ring	I0776	X	1



