

Assembly and Operating Manual

CPS

Tool changer

Translation of the original manual

Hand in hand for tomorrow

Imprint

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Technical changes:

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Document number: 1602089

Version: 03.00 | 09/02/2026 | en

Dear Customer,

Thank you for trusting our products and our family-owned company, the leading technology supplier of robots and production machines.

Our team is always available to answer any questions on this product and other solutions. Ask us questions and challenge us. We will find a solution!

Best regards,

Your SCHUNK team

Customer Management

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Please read the operating manual in full and keep it close to the product.

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1 General

1.1 About this manual

This manual contains important information for a safe and appropriate use of the product.

This manual is an integral part of the product and must be kept accessible for the personnel at all times.

Before starting work, the personnel must have read and understood this operating manual. Prerequisite for safe working is the observance of all safety instructions in this manual.

In addition to these instructions, the documents listed under ▶ 1.1.4 [8] are applicable.

NOTE: The illustrations in this manual are intended to provide a basic understanding and may deviate from the actual version.

1.1.1 Presentation of Warning Labels

To make risks clear, the following signal words and symbols are used for safety notes.



⚠ DANGER

Dangers for persons!

Non-observance will inevitably cause irreversible injury or death.



⚠ WARNING

Dangers for persons!

Non-observance can lead to irreversible injury and even death.



⚠ CAUTION

Dangers for persons!

Non-observance can cause minor injuries.

NOTICE

Material damage!

Information about avoiding material damage.

1.1.2 Definition of Terms

The term "product" replaces the product name on the title page in this manual.

1.1.3 Symbol definition

The following symbols are used in this manual:

■ Prerequisite for an action

1. Action 1

2. Action 2

⇒ Intermediate results

⇒ Final results

▶ 1.1.3 [8]: chapter number and [page number] in hyperlinks

1.1.4 Applicable documents

- General terms of business *
- Catalog data sheet of the purchased product *
- Assembly and Operating Manual for optional modules COS *
- Assembly and Operating Manual for the storage rack CTS *
- Catalog data sheets for optional modules COS *
- Catalog data sheet for storage racks CTS *

The documents labeled with an asterisk (*) can be downloaded from [schunk.com/downloads](https://www.schunk.com/downloads).

1.1.5 Sizes

This operating manual applies to the following sizes:

- CPS 001
- CPS 005
- CPS 007
- CPS 011
- CPS 020
- CPS 021
- CPS 029
- CPS 040
- CPS 041
- CPS 046
- CPS 060
- CPS 071
- CPS 076
- CPS 110
- CPS 160

- CPS 210
- CPS 310
- CPS 510
- CPS 1210

1.2 Warranty

If the product is used as intended, the warranty is valid for 24 months from the ex-works delivery date under the following conditions:

- Observe the specified maintenance and lubrication intervals
- Observe the ambient conditions and operating conditions

Parts touching the workpiece and wear parts are not included in the warranty.

1.3 Scope of delivery

The scope of delivery includes

- Master CPS-K and/or tool CPS-A in the version ordered
- Safety information (product-specific instructions available online)
- Accessory pack

Accessory pack

CPS-K Contents of the accessory kit:

- Mounting screws
- 1x cylindrical pin for position orientation
- *Only for size 210, 310, 510:* 2x O-ring for the control module, which is not included in the scope of delivery

Size	ID.-No. of the accessory pack
001	1594678
005	1594679
007	1594680
011	1594681
020	1594682
021	1594683
029	1594685
040	1594687
041	1594688
046	1594689
060	1591749
071	1592853
076	1591914
110	1594343

Size	ID.-No. of the accessory pack
160	1594344
210	1594345
310	1594346
510	1594347
1210	1643429

Tab.: ID.-No. of the accessory pack

1.4 Accessories

The following accessories are available for the product, which must be ordered separately:

- Optional module COS
- Modular storage rack CTS
- Sensors for lock/unlock monitoring and for tool presence monitoring
- Seal kit
- Cable connectors and cable extensions
- Adapter plates for fastening to the robot
- Spare parts sensor distribution box

For information regarding which accessory articles can be used with the corresponding product variants, see catalog data sheet.

Seal kit

Contents of the seal kit:

- Seals items 70, 71, 72, 73, 74
- See assembly drawing for position of seals, ▶ 7.8 [106]

Size	ID.-No. of the seal kit
001	1592620
005	1592621
007	1592623
011	1592625
020	1592626
021	1592626
029	1592628
040	1592642
041	1592629
046	1592642
060	1592643
071	1592643

Size	ID.-No. of the seal kit
076	1592644
110	1592648
160	1592649
210	1592649
310	1592652
510	1592654
1210	1642858

Tab.: ID.-No. of the seal kit

Seal kit "Transfer seal"

Contents of the "transfer seal" seal kit:

- 5x items 75, 76, 77, 78
- See assembly drawing for position of seals, ▶ 7.8 [106]

Size	ID.-No. of the seal kit
M5	1602942
G1/8"	1602944
G1/4"	1602943
G3/8"	1602945
G1/2"	1602946

Tab.: ID.-No. of the seal kit "Transfer seal"

Spare parts "Sensor distribution box"

- See drawing for location of spare parts, ▶ 7.8.19 [125]

Item	Description	ID
100	Sensor distribution box	1646042
1020	Sensor bracket	1646028
1030	Sensor IN-C 80-SL-M8-PNP	1619110
1040	Cable for RTL sensors	1646040
1050	Cable short	1646041
1060	Signal cable PKG-3Z-0.43-PSW-3M P7x2	1622471
-	Attachment kit sensor	1646588

Tab.: Spare parts "Sensor distribution box"

2 Basic safety notes

2.1 Intended use

- Tool changer for automatic changing of a tool or a suitable end effector on a robot, taking into account defined technical data and using suitable and effective technical equipment around the danger zone, e.g. of the robot.
- When implementing and operating components in safety-related parts of the control systems, the basic safety principles in accordance with DIN EN ISO 13849-2 apply. The proven safety principles in accordance with DIN EN ISO 13849-2 also apply to categories 1, 2, 3 and 4.
- The product is intended for installation in a machine/ automated system. The applicable guidelines for the machine/ automated system must be observed and complied with.
- The product may only be used within the scope of its technical data, ▶ 3 [21].

Operating conditions

- Use only in covered or closed areas.
- Use in non-explosive areas.
- Only the substances permitted for the respective product should be fed through (fluids, electricity). All substances are only to be fed through the modules provided for this purpose. Never feed through corrosive or flammable gases.
- Only use the accessories permitted for the respective product.
- The product is intended for industrial and industry-oriented use.
- Appropriate use of the product includes compliance with all instructions in this manual.

2.2 Not intended use

Any use that exceeds or differs from the appropriate use is regarded as misuse. This includes in particular:

- Assembly on products that are not robots
- Use of the product as lifting equipment
- Outdoor use
- Use in potentially explosive areas

2.3 Constructional changes

Implementation of structural changes

Modifications, changes or reworking, e.g. additional threads, holes, or safety devices, can damage the product or impair its functionality or safety.

- Structural changes should only be made with the written approval of SCHUNK.

2.4 Spare parts

Use of unauthorized spare parts

Using unauthorized spare parts can endanger personnel and damage the product or cause it to malfunction.

- Use only original spare parts or spares authorized by SCHUNK.

2.5 Ambient conditions and operating conditions

Required ambient conditions and operating conditions

Incorrect ambient and operating conditions can make the product unsafe, leading to the risk of serious injuries, considerable material damage and/or a significant reduction to the product's life span.

- Make sure that the product is used only in the context of its defined application parameters, ▶ 3 [📄 21].

2.6 Personnel qualification

Inadequate qualifications of the personnel

If the personnel working with the product is not sufficiently qualified, the result may be serious injuries and significant property damage.

- All work may only be performed by qualified personnel.
- Before working with the product, the personnel must have read and understood the complete assembly and operating manual.
- Observe the national safety regulations and rules and general safety instructions.

The following personal qualifications are necessary for the various activities related to the product:

Trained electrician

Due to their technical training, knowledge and experience, trained electricians are able to work on electrical systems, recognize and avoid possible dangers and know the relevant standards and regulations.

Qualified personnel

Due to its technical training, knowledge and experience, qualified personnel is able to perform the delegated tasks, recognize and avoid possible dangers and knows the relevant standards and regulations.

Instructed person

Instructed persons were instructed by the operator about the delegated tasks and possible dangers due to improper behaviour.

Service personnel of the manufacturer

Due to its technical training, knowledge and experience, service personnel of the manufacturer is able to perform the delegated tasks and to recognize and avoid possible dangers.

2.7 Personal protective equipment

Use of personal protective equipment

Personal protective equipment serves to protect staff against danger which may interfere with their health or safety at work.

- When working on and with the product, observe the occupational health and safety regulations and wear the required personal protective equipment.
- Observe the valid safety and accident prevention regulations.
- Wear protective gloves to guard against sharp edges and corners or rough surfaces.
- Wear heat-resistant protective gloves when handling hot surfaces.
- Wear protective gloves and safety goggles when handling hazardous substances.
- Wear close-fitting protective clothing and also wear long hair in a hairnet when dealing with moving components.

2.8 Notes on safe operation

Incorrect handling of the personnel

Incorrect handling and assembly may impair the product's safety and cause serious injuries and considerable material damage.

- Avoid any manner of working that may interfere with the function and operational safety of the product.
- Use the product as intended.
- Observe the safety notes and assembly instructions.
- Do not expose the product to any corrosive media. This does not apply to products that are designed for special environments.
- Eliminate any malfunction immediately.
- Observe the care and maintenance instructions.
- Observe the current safety, accident prevention and environmental protection regulations regarding the product's application field.

2.9 Transport

Handling during transport

Incorrect handling during transport may impair the product's safety and cause serious injuries and considerable material damage.

- When handling heavy weights, use lifting equipment to lift the product and transport it by appropriate means.
- Secure the product against falling during transportation and handling.
- Stand clear of suspended loads.

2.10 Disposal

Handling of disposal

The incorrect handling of disposal may impair the product's safety and cause serious injuries as well as considerable material and environmental harm.

- Follow local regulations on dispatching product components for recycling or proper disposal.

2.11 Fundamental dangers

General

- Observe safety distances.
- Never deactivate safety devices.
- Before commissioning the product, take appropriate protective measures to secure the danger zone.
- Disconnect power sources before installation, modification, maintenance, or calibration. Ensure that no residual energy remains in the system.
- If the energy supply is connected, do not move any parts by hand.
- Do not reach into the open mechanism or movement area of the product during operation.

2.11.1 Protection during handling and assembly

Incorrect handling and assembly

Incorrect handling and assembly may impair the product's safety and cause serious injuries and considerable material damage.

- Have all work carried out by appropriately qualified personnel.
- For all work, secure the product against accidental operation.
- Observe the relevant accident prevention rules.
- Use suitable assembly and transport equipment and take precautions to prevent jamming and crushing.

Incorrect lifting of loads

Falling loads may cause serious injuries and even death.

- Stand clear of suspended loads and do not step into their swiveling range.
- Never move loads without supervision.
- Do not leave suspended loads unattended.

2.11.2 Protection during commissioning and operation

Falling or violently ejected components

Falling and violently ejected components can cause serious injuries and even death.

- Take appropriate protective measures to secure the danger zone.
- Never step into the danger zone during operation.

2.11.3 Protection against dangerous movements

Unexpected movements

Residual energy in the system may cause serious injuries while working with the product.

- Switch off the energy supply, ensure that no residual energy remains and secure against inadvertent reactivation.
- Never rely solely on the response of the monitoring function to avert danger. Until the installed monitors become effective, it must be assumed that the drive movement is faulty, with its action being dependent on the control unit and the current operating condition of the drive. Perform maintenance work, modifications, and attachments outside the danger zone defined by the movement range.
- To avoid accidents and/or material damage, human access to the movement range of the machine must be restricted. Limit/prevent accidental access for people in this area due through technical safety measures. The protective cover and protective fence must be rigid enough to withstand the maximum possible movement energy. EMERGENCY STOP switches must be easily and quickly accessible. Before starting up the machine or automated system, check that the EMERGENCY STOP system is working. Prevent operation of the machine if this protective equipment does not function correctly.

2.12 Notes on particular risks



⚠ WARNING

Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
 - Make sure, that no residual energy remains in the system.
-



⚠ WARNING

Risk of crushing from objects falling and being ejected!

During operation, the load can no longer be held if the maximum permissible load is exceeded, if a component breaks or if the pressure drops.

- Check product for damage before operation. Arrange for repairs if necessary.
- Observe maintenance intervals.
- Take suitable protective measures to secure the danger zone.



⚠ WARNING

Risk of injury when replacing an older SWK quick-change master!

If an existing SWK quick-change master is replaced by an exchange-compatible CPS tool changer, there is a risk of injury if the following instructions are not observed.

The functions of the CPS tool changer and the SWK quick-change master differ, which is why correct processing of the signals in the higher-level control system must be ensured. With regard to safety circuitry in accordance with ISO 13849, failure to observe this can result in the unintentional opening of the tool changer and consequently in serious injury or even death.

- Ensure the correct wiring of the pneumatic connections and the external sensor system. For an example circuit diagram, see ▶ 2.13 [📄 20]
- Perform the following measures before commissioning the CPS tool changer:
 - ⇒ Reassessment and, if necessary, adaptation of the risk assessment
 - ⇒ Reassessment and, if necessary, adaptation of the safety functions (SRP/CS)
 - ⇒ Check and, if necessary, adjust the control by the higher-level control system



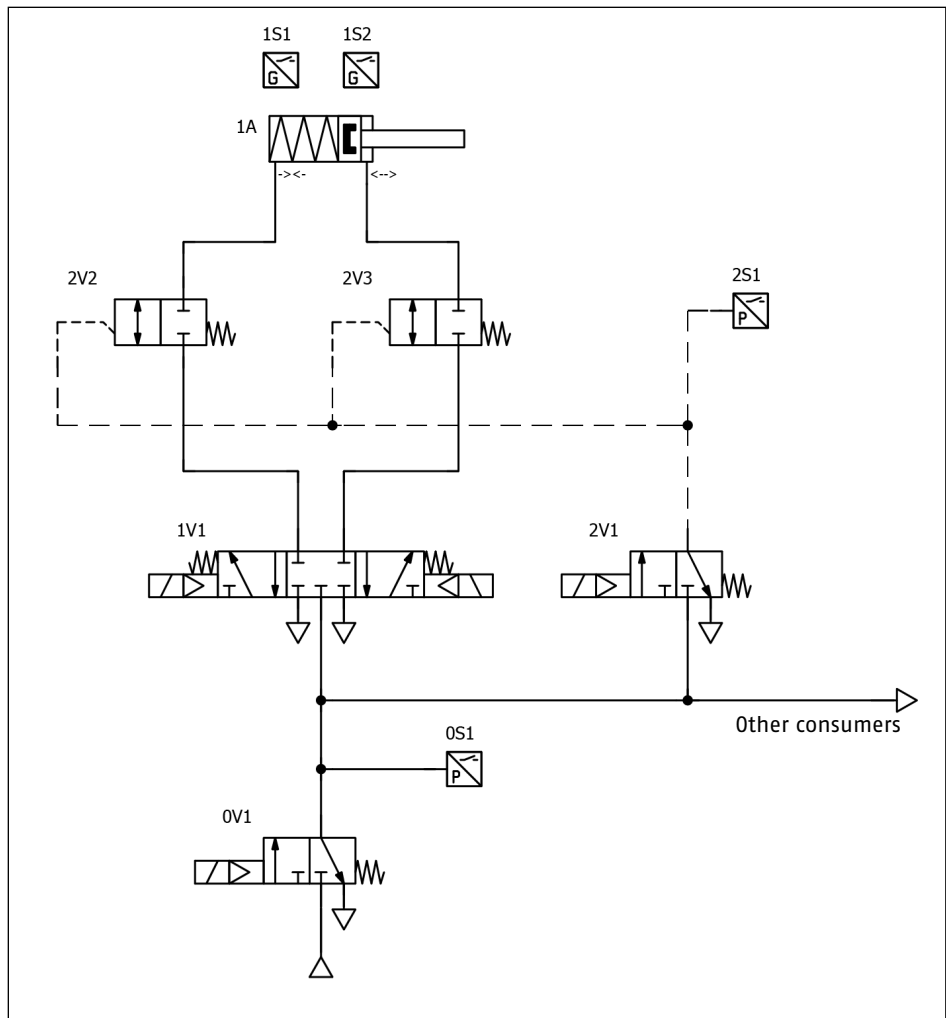
⚠ CAUTION

Risk of injury due to contact with lubricants!

Lubricant may cause irritation and allergic reactions if it contacts the skin or eyes.

- Avoid contact between lubricant and skin or eyes.
- Wear safety goggles and protective gloves.
- Observe information on the safety data sheet of the lubricant.

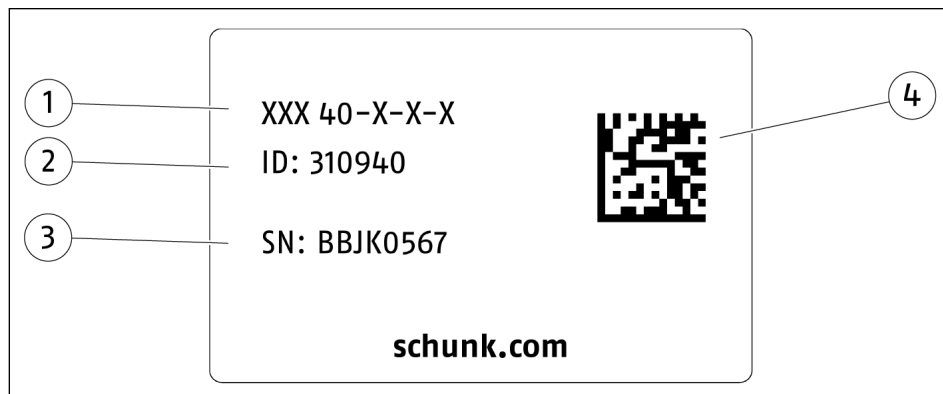
2.13 Example safety circuit



Example safety circuit according to DGUV IFA Report 2/2017, example 25 (application of DIN EN ISO 13849)

3 Technical data

3.1 Name plate



1 Product designation

2 ID

3 Serial number

4 Data matrix code

Scan code or enter serial number on the web and get all the product information: operating manuals, spare parts packages, software updates and much more.

For further information, visit [schunk.com/serialisierung](https://www.schunk.com/serialisierung)

A separate app may be required for scanning with a mobile phone.

3.2 Basic data

Size	Weight [kg]		Max. moment, static [Nm]	
	CPS-K	CPS-A	M_x, M_y	M_z
001	0.03	0.02	6	6
005	0.27	0.1	60	60
007	0.19	0.08	90	150
011	0.13	0.08	105	150
020	0.48	0.35	300	240
021	0.51	0.35	300	240
029	1.0	0.7	360	450
040	1.1	0.62	1050	1050
041	1.4	0.8	1050	1050
046	2.0	1.1	1050	1200
060	1.3	0.7	1500	1200
071	2.0	1.3	1800	1800
076	2.6	1.4	2400	5400

Size	Weight [kg]		Max. moment, static [Nm]	
	CPS-K	CPS-A	M _x , M _y	M _z
110	4.5	2.3	3000	5400
160	7.6	3.1	10500*	5400*
210	5.8	2.7	10500*	5400*
310	13.4	7.3	15000	13500
510	19.7	8.7	30000**	13500**
1210	21.5	10	33000	16500

* In case of fastening with 10 x M10 12.9 screws

** In case of fastening with 12 x M16 12.9 screws

More technical data is included in the catalog data sheet. Whichever is the latest version.

3.3 Ambient conditions and operating conditions

Designation	Value
Ambient temperature [°C]	
min.	+5
max.	+60
Pressure medium	Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4]
Nominal operating pressure [bar]	6
Minimum pressure [bar]	4.5
Maximum pressure [bar]	7
Protection class IP, DIN EN 60529	54

MTTF_D value

Designation	Value
Validation according to EN ISO 13849-2:2013	MTTF _D -value = 150
By fulfilling the requirements a), b) and c) listed in chapter C.2 of EN ISO 13849-1:2023, the MTTF _D value for the product is CPS with the informative procedure according to Table C.1 for mechanical components:	years

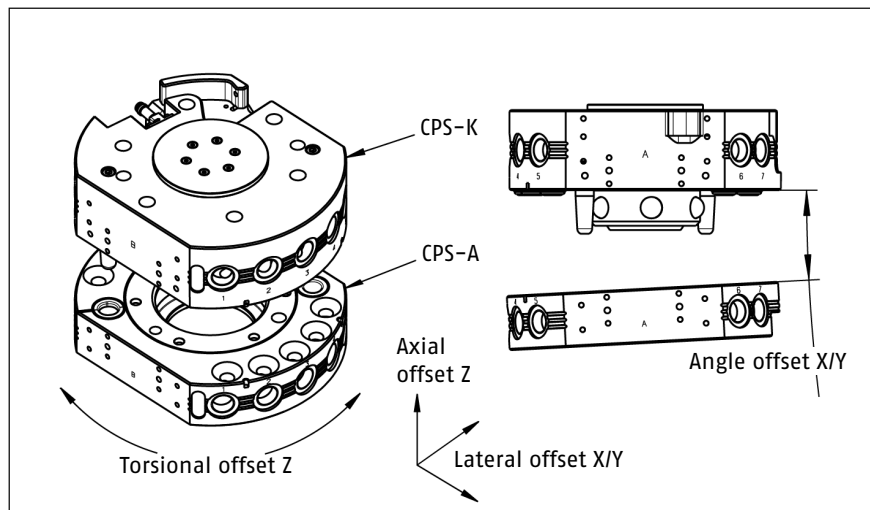
Fault exclusion for the faults "unexpected release without release signal" and "breakage during operation"

Taking into account the specifications in these instructions and catalog information, fault exclusion is confirmed for the system. For safe operation, the operating pressure must always be ensured.

Fault exclusion in de-energized state

Taking into account the specifications in this manual and catalog information, the system is confirmed to maintain the locking function in static and dynamic applications regardless of position in the event of a fault, e.g., pressure drop in the power supply. After restarting the machine, ensure that the operating pressure for locking is restored.

3.4 Max. permissible offset between master and tool



Offset definition

Size	Max. torsional offset Z [°]	Max. axial offset Z [mm] *	Max. lateral offset XY [mm] **	Max. angular offset XY [°]
001	±1	1	±2	±0.7
005	±2	2	±1	±1.1
007	±2	1.5	±1	±0.8
011	±2	1.5	±1	±0.8
020	±2	2	±1	±0.8
021	±2	2	±1	±0.8
029	±1	1.5	±1	±0.8
040	±2	3	±2	±1.0
041	±2	3	±2	±1.0
046	±2	2.5	±1.5	±1.0
060	±1	3	±2	±0.6
071	±1	3	±2	±0.6
076	±1	2	±1	±0.7
110	±1	3	±1	±0.7
160	±1	2	±2	±0.7
210	±1	2	±2	±0.7
310	±1	2.5	±2	±0.7
510	±1	2.5	±2	±0.7
1210	±1	1.0	±2	±0.7

* Maximum values specified. By reducing the actual values, wear when locking / unlocking is minimized.

** The actual values may be higher in some cases. However, higher offset values increase wear when locking / unlocking.

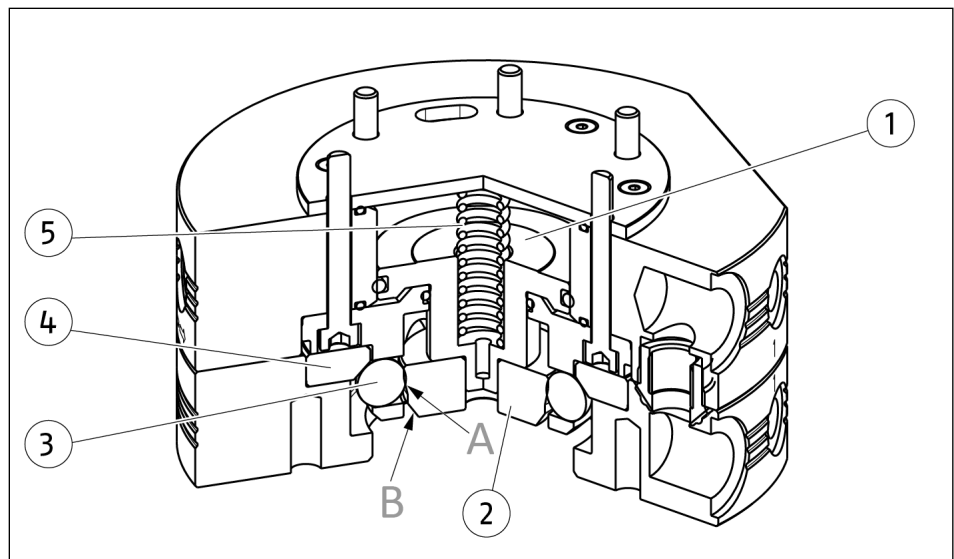
4 Design and description

4.1 Description

The product (CPS) enables automated tool changing and consists of a master CPS-K and a tool CPS-A.

- The masterCPS-K (SWK)CPS-K is connected with the robot and together with the CPS-A forms the interface between the robot and the end effector.
- The tool CPS-A is connected to the end effector. If different tools are used with a CPS-K, each end effector is equipped with a CPS-A. Unused tools are stored by the robot in a storage rack when not in use.
- Optional modules COS for transferring media and storage racks CTS are optionally available as accessories from SCHUNK.

4.1.1 Functional principle



Schematic diagram of locking mechanism

1	Cylinder piston
2	Locking piston
3	Locking ball
4	Bearing race
5	Pressure spring

Locking

The locking piston (2) is attached to the cylinder piston (1) and has two bevels. When the cylinder piston (1) is actuated, the locking piston (2) presses the locking balls (3) underneath the hardened locking ring (4) at an inclination A. This presses CPS-K and CPS-A together. The pressure spring (5) means that CPS-K and CPS-A can only be separated by pneumatic or manual actuation of the cylinder piston.

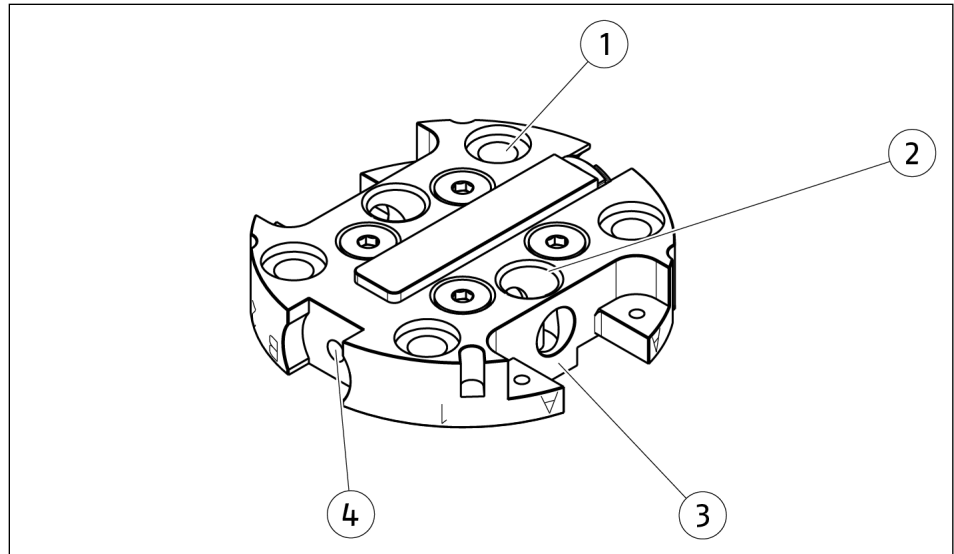
Unlocking

When the cylinder pistons are actuated again, the locking piston (2) moves in the opposite direction, the locking balls (3) and the locking ring (4) are released again. The CPS-K is in unlocked state and can be separated from the CPS-A.

4.2 Design

4.2.1 Size 001

CPS-K



Structure CPS 001-K

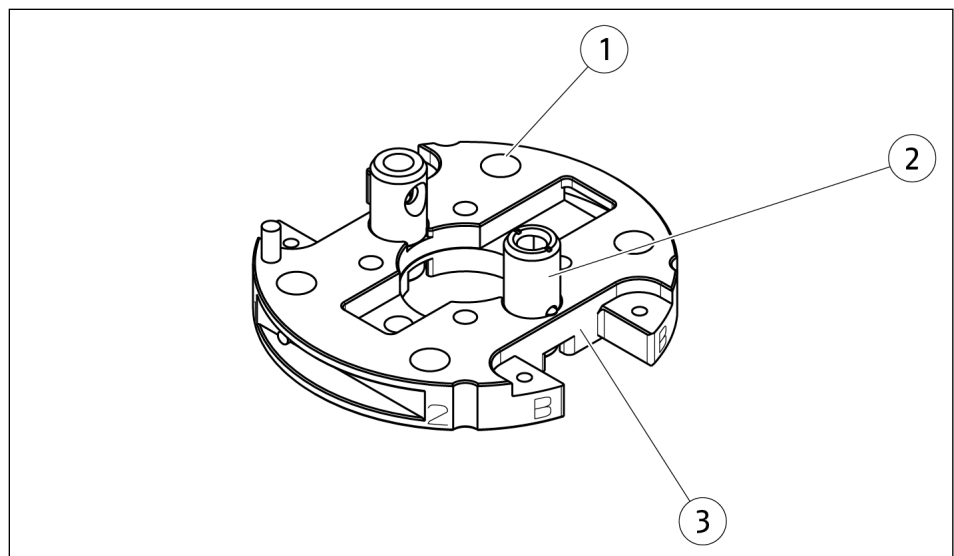
- 1 Pneumatic feed-through with O-ring

- 2 Bore hole for centering/locking sleeve

- 3 Screw-on surfaces for optional modules

- 4 Main air connections: Locking and unlocking

CPS-A



Structure CPS 001-A

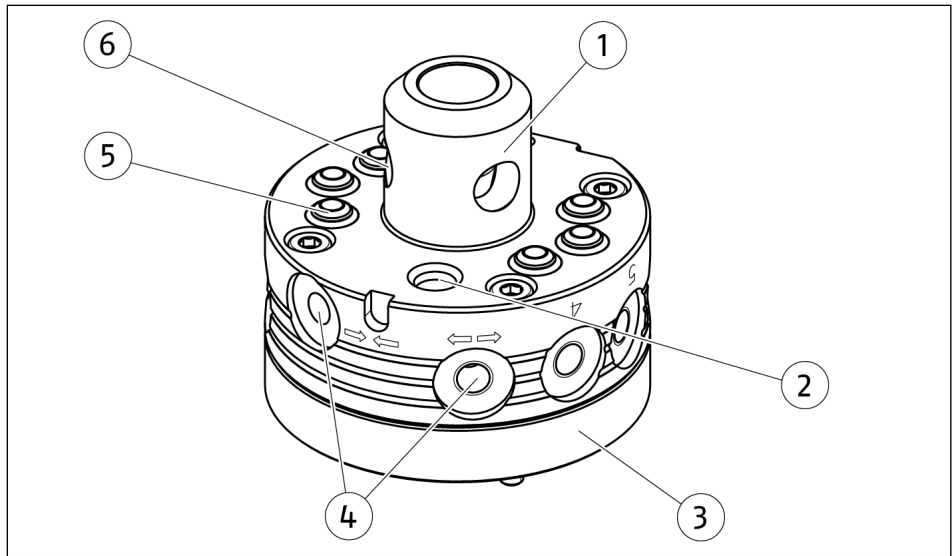
- 1 Port for pneumatic feed-through

- 2 Centering / locking sleeve

- 3 Screw-on surfaces for optional modules

4.2.2 Size 005

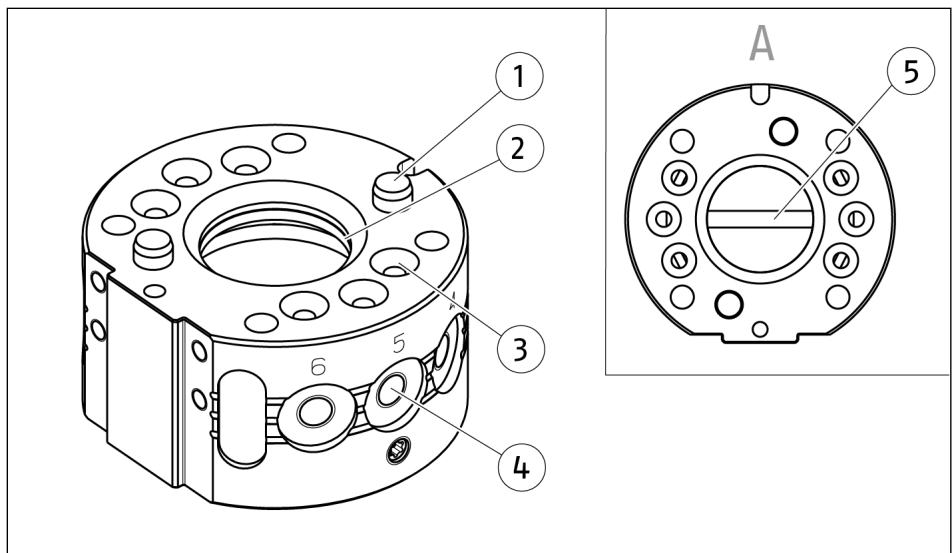
CPS-K



Structure CPS 005-K

- 1 Locking mechanism
- 2 Alignment pin bushing
- 3 Cover plate
- 4 Main air connections: Locking and unlocking (observe reverse piston direction)
- 5 Pneumatic feed-through with rubber bushing
- 6 Locking ball

CPS-A

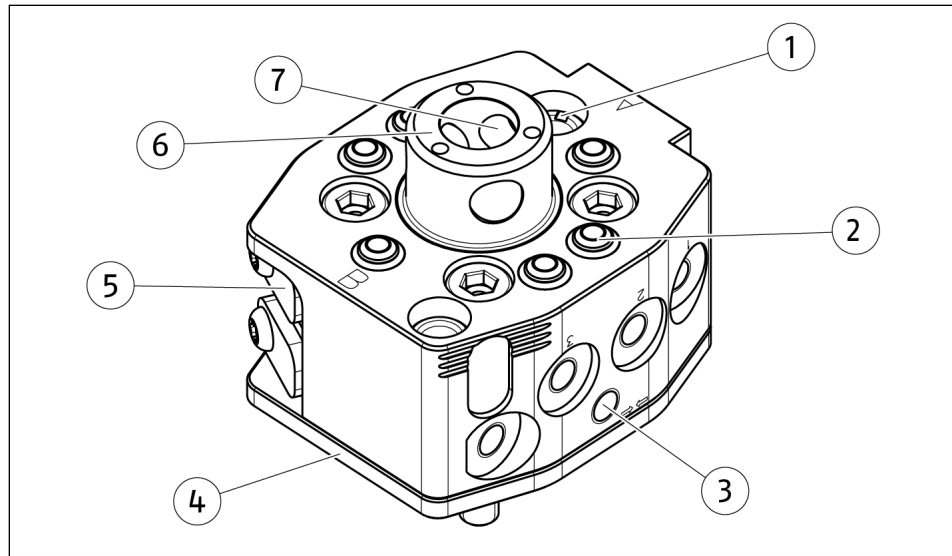


Structure CPS 005-A, A = view from above

- 1 Alignment pin
- 2 Bearing race
- 3 Pneumatic feed-through
- 4 Port for pneumatic feed-through
- 5 Release bolts

4.2.3 Size 007

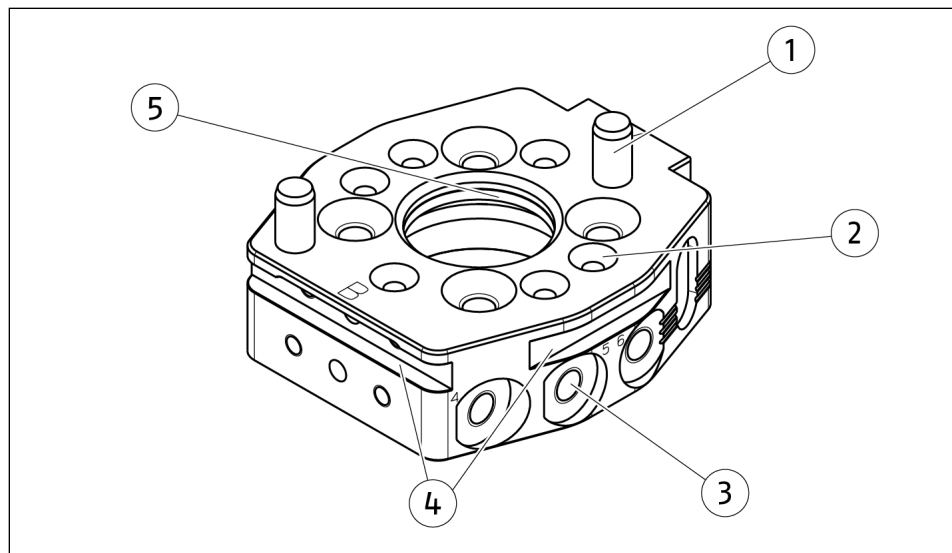
CPS-K



Structure CPS 007-K

- | | |
|---|---------------------------------------------|
| 1 | Alignment pin bushing |
| 2 | Pneumatic feed-through with rubber bushing |
| 3 | Main air connections: Locking and unlocking |
| 4 | Cover plate |
| 5 | Cover for sensors, lock/unlock monitoring |
| 6 | Locking mechanism |
| 7 | Locking ball |

CPS-A

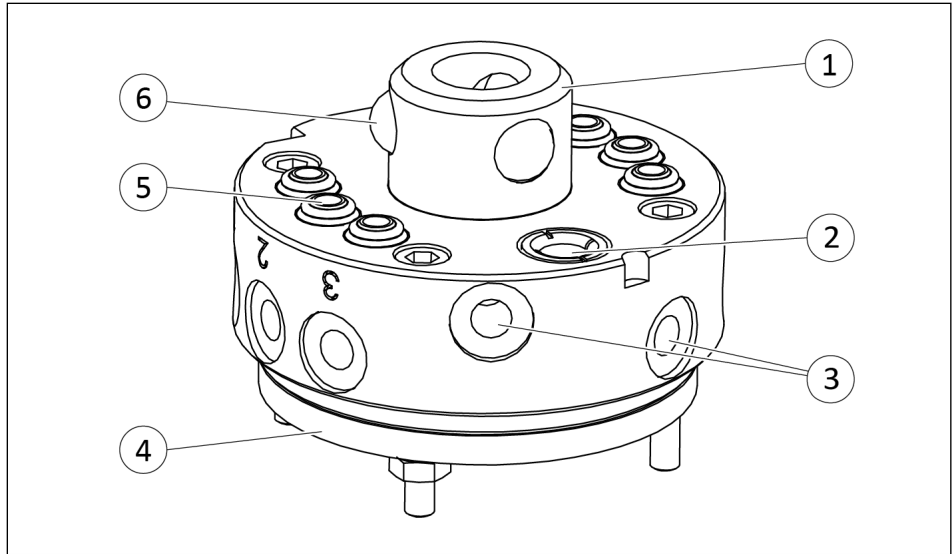


Structure CPS 007-A

- | | |
|---|-------------------------------------|
| 1 | Alignment pin |
| 2 | Pneumatic feed-through |
| 3 | Port for pneumatic feed-through |
| 4 | Slot for depositing in storage rack |
| 5 | Bearing race |

4.2.4 Size 011

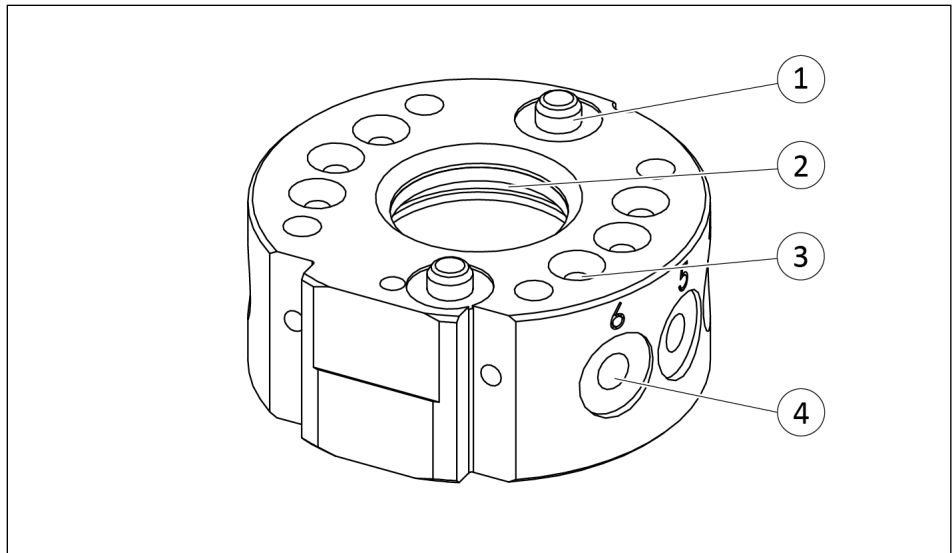
CPS-K



Structure CPS 011-K

- 1 Locking mechanism
- 2 Alignment pin bushing
- 3 Main air connections: Locking and unlocking
- 4 Cover plate
- 5 Pneumatic feed-through with rubber bushing
- 6 Locking ball

CPS-A

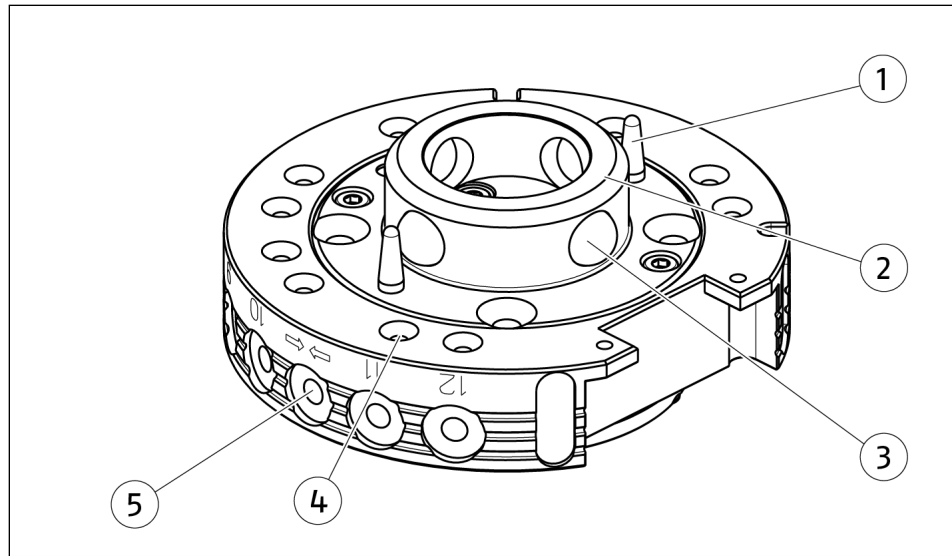


Structure CPS 011-A

- 1 Alignment pin
- 2 Bearing race
- 3 Pneumatic feed-through
- 4 Port for pneumatic feed-through

4.2.5 Size 020

CPS-K



Structure CPS 020-K

- 1 Alignment pin

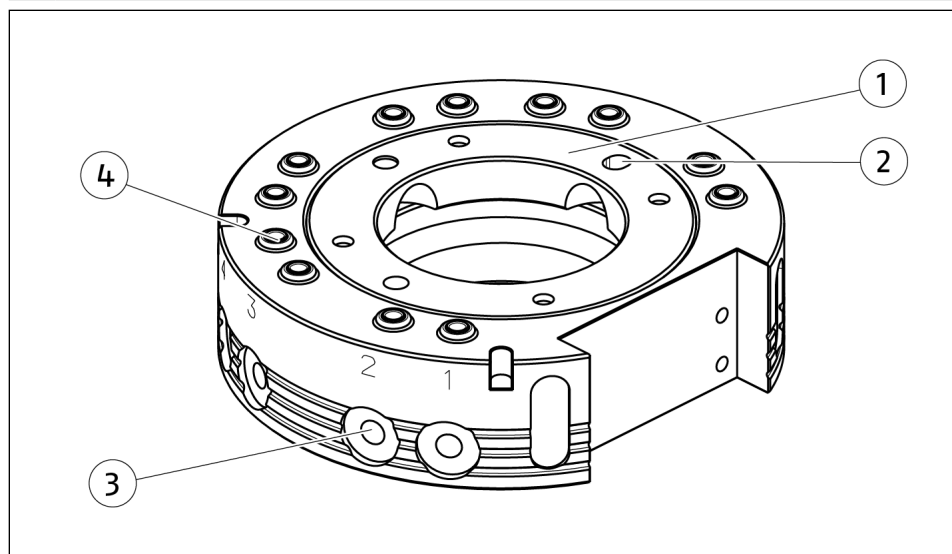
- 2 Locking mechanism

- 3 Locking ball

- 4 Pneumatic feed-through

- 5 Main air connections: Locking and unlocking

CPS-A



Structure CPS 020-A

- 1 Bearing race with recesses for locking balls

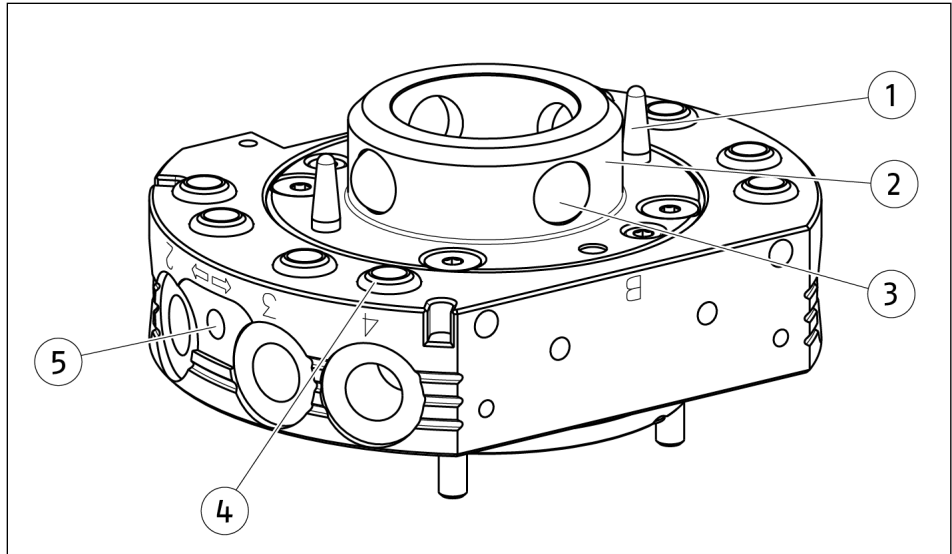
- 2 Alignment pin bushing

- 3 Port for pneumatic feed-through

- 4 Pneumatic feed-through with rubber bushing

4.2.6 Sizes 021/041/060

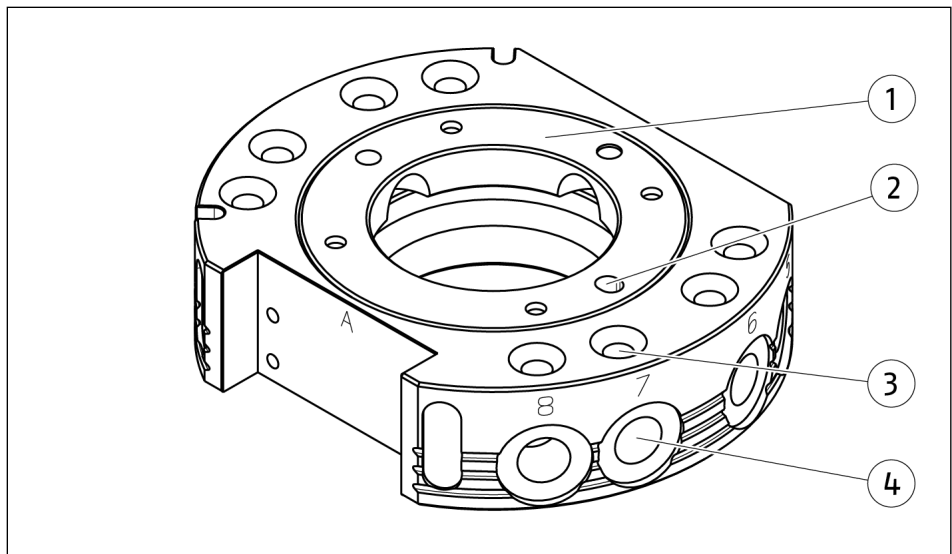
CPS-K



Exemplary design shown on CPS 021-K

- 1 Alignment pin
- 2 Locking mechanism
- 3 Locking ball
- 4 Pneumatic feed-through with rubber bushing
- 5 Main air connections: Locking and unlocking

CPS-A

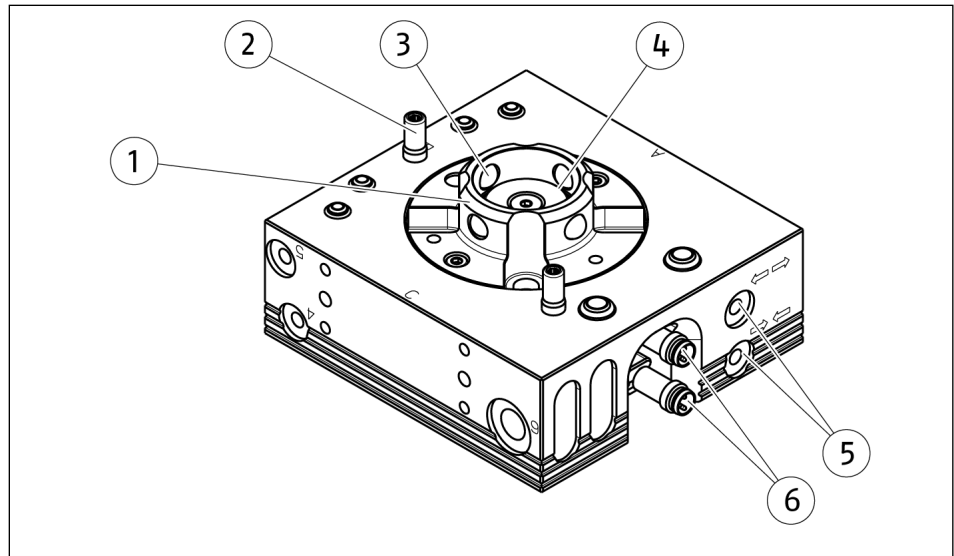


Exemplary design shown on CPS 021-A

- 1 Bearing race with recesses for locking balls
- 2 Alignment pin bushing
- 3 Pneumatic feed-through
- 4 Port for pneumatic feed-through

4.2.7 Size 029

CPS-K



Structure CPS 029-K

- 1 Locking mechanism

- 2 Alignment pin

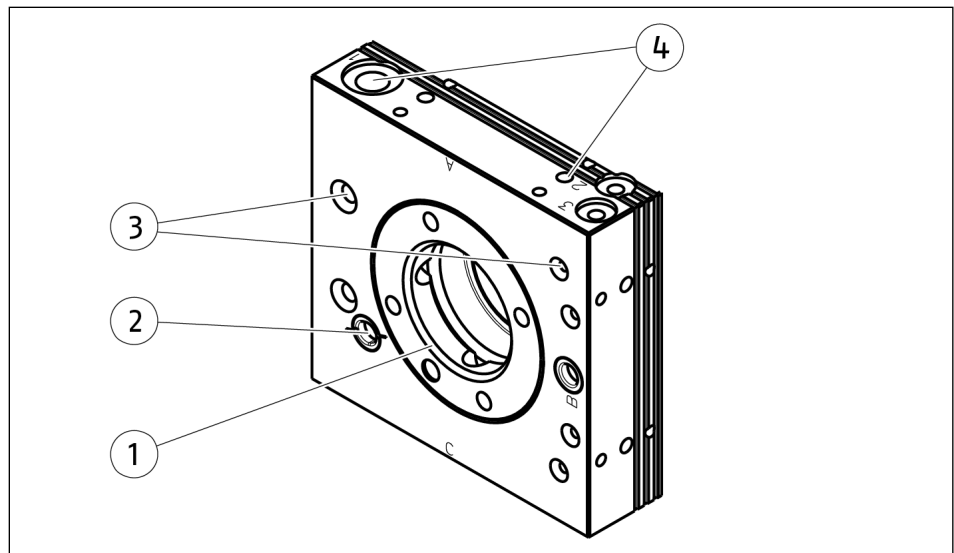
- 3 Locking ball

- 4 Locking piston

- 5 Main air connections: Locking and unlocking

- 6 Sensors for lock/unlock monitoring

CPS-A



Structure CPS 029-A

- 1 Bearing race with recesses for locking balls

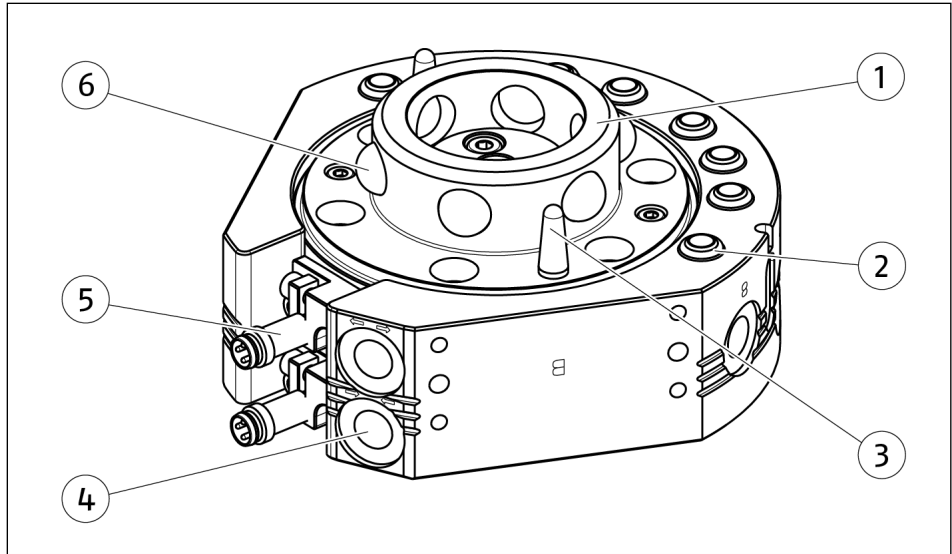
- 2 Alignment pin bushing

- 3 Pneumatic feed-through

- 4 Port for pneumatic feed-through

4.2.8 Size 040

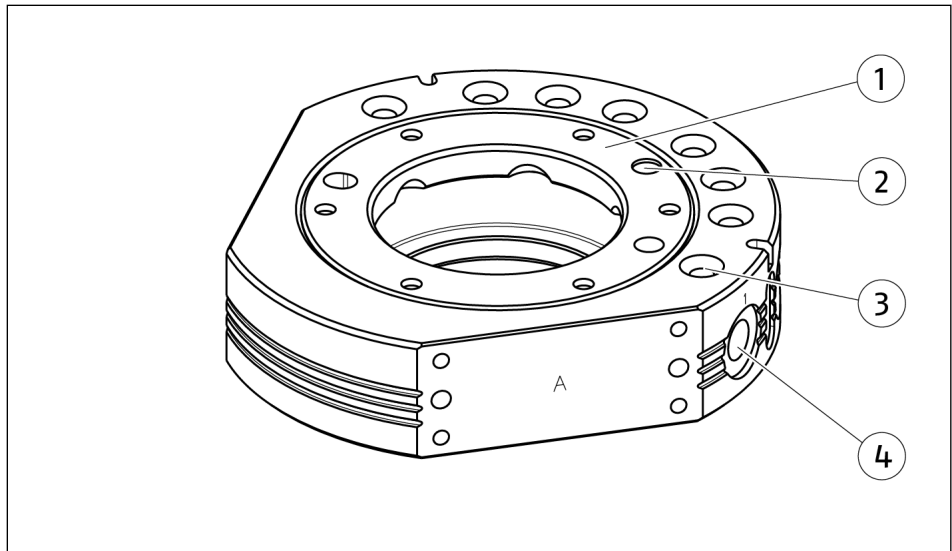
CPS-K



Structure CPS 040-K

- 1 Locking mechanism
- 2 Pneumatic feed-through with rubber bushing
- 3 Alignment pin
- 4 Main air connections: Locking and unlocking
- 5 Sensors for lock/unlock monitoring
- 6 Locking ball

CPS-A

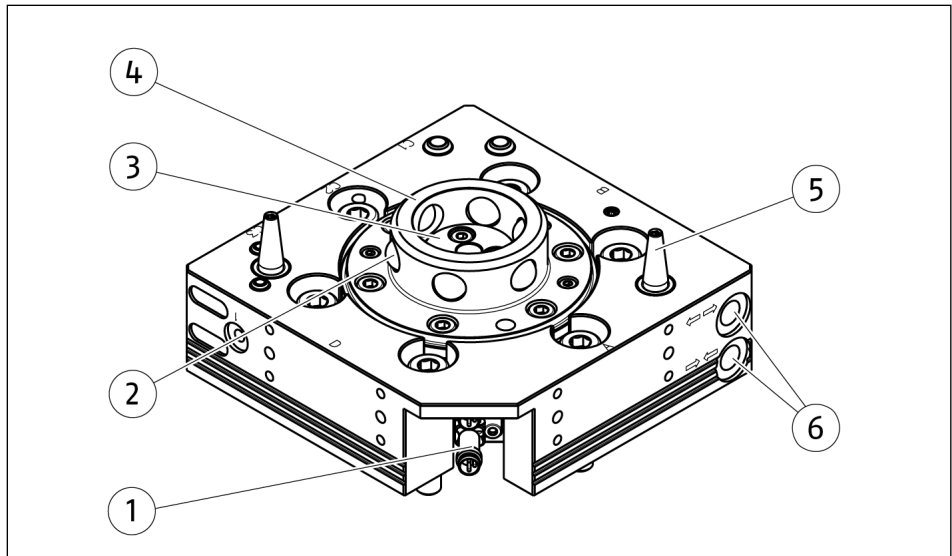


Structure CPS 040-A

- 1 Bearing race
- 2 Alignment pin bushing
- 3 Pneumatic feed-through
- 4 Port for pneumatic feed-through

4.2.9 Size 046

CPS-K



Structure CPS 046-K

- 1 Sensors for lock/unlock monitoring

- 2 Locking ball

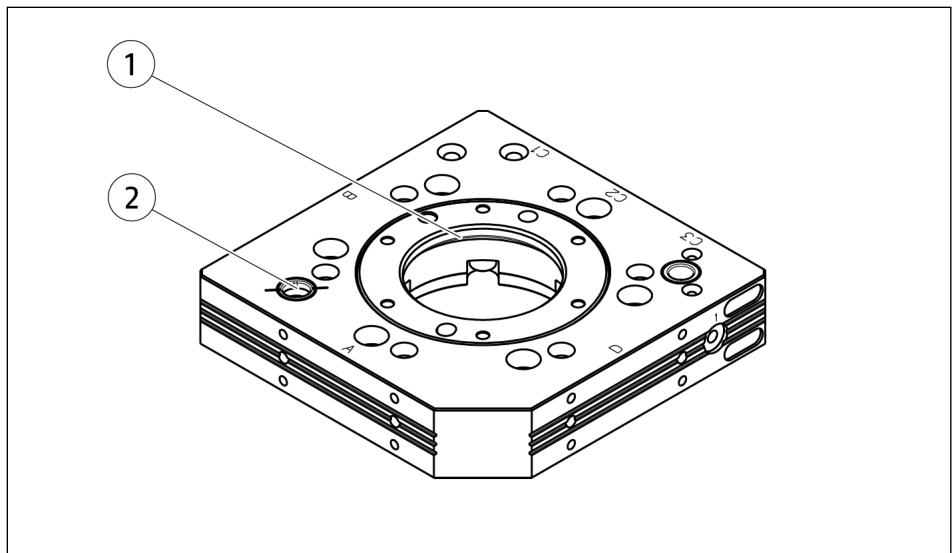
- 3 Locking piston

- 4 Locking mechanism

- 5 Alignment pin

- 6 Main air connections: Locking and unlocking

CPS-A



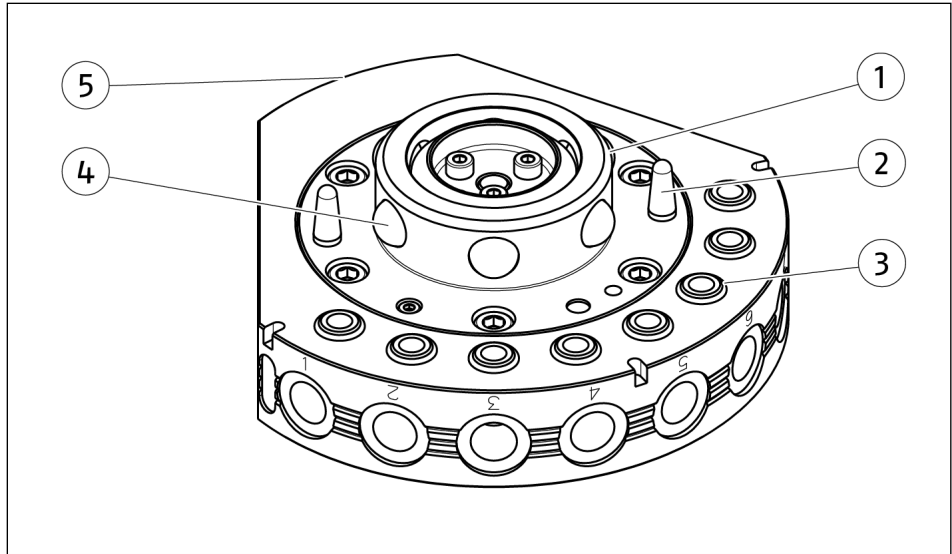
Structure CPS 046-A

- 1 Alignment pin bushing

- 2 Bearing race

4.2.10 Size 071

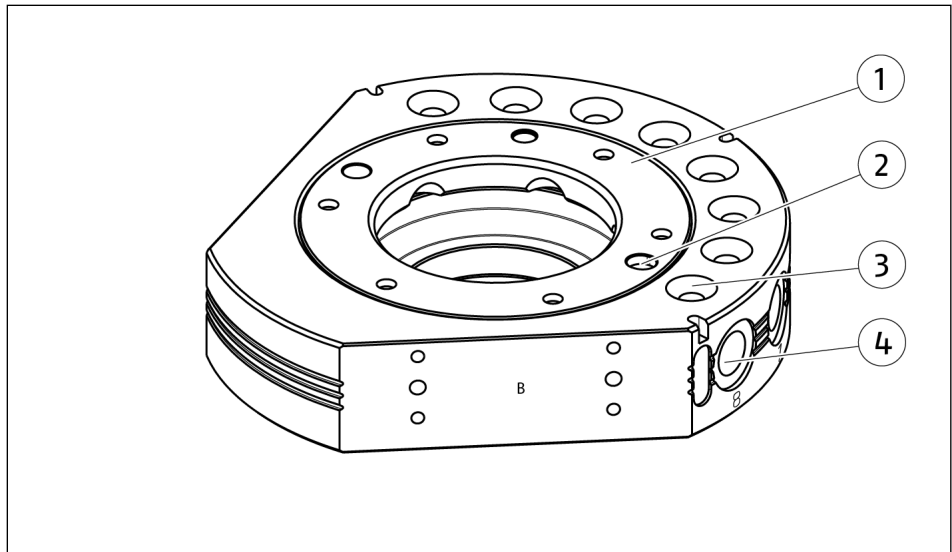
CPS-K



Structure CPS 071-K

- 1 Locking mechanism
- 2 Alignment pin
- 3 Pneumatic feed-through with rubber bushing
- 4 Locking ball
- 5 Main air connections: Locking and unlocking

CPS-A

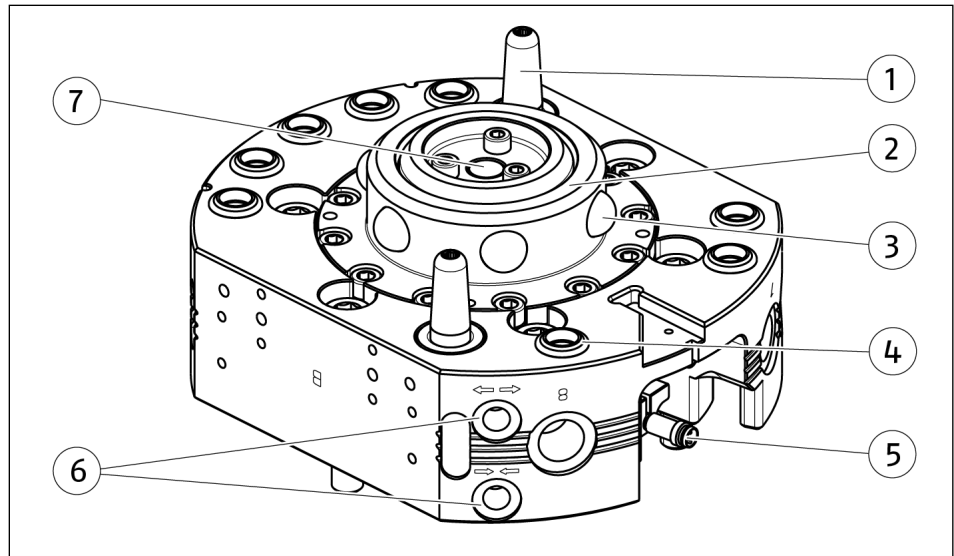


Structure CPS 071-A

- 1 Bearing race
- 2 Alignment pin bushing
- 3 Pneumatic feed-through
- 4 Port for pneumatic feed-through

4.2.11 Size 076/110/160

CPS-K



Exemplary design shown on CPS 110-K

- 1 Alignment pin

- 2 Locking mechanism

- 3 Locking ball

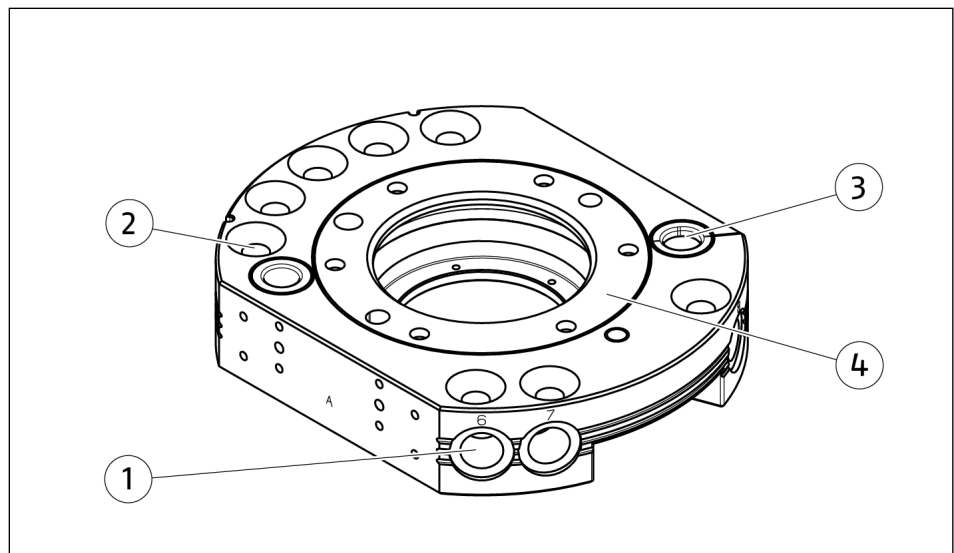
- 4 Pneumatic feed-through with rubber bushing

- 5 Sensors for lock/unlock monitoring

- 6 Main air connections: Locking and unlocking

- 7 Locking piston

CPS-A



Exemplary design shown on CPS 110-A

- 1 Port for pneumatic feed-through

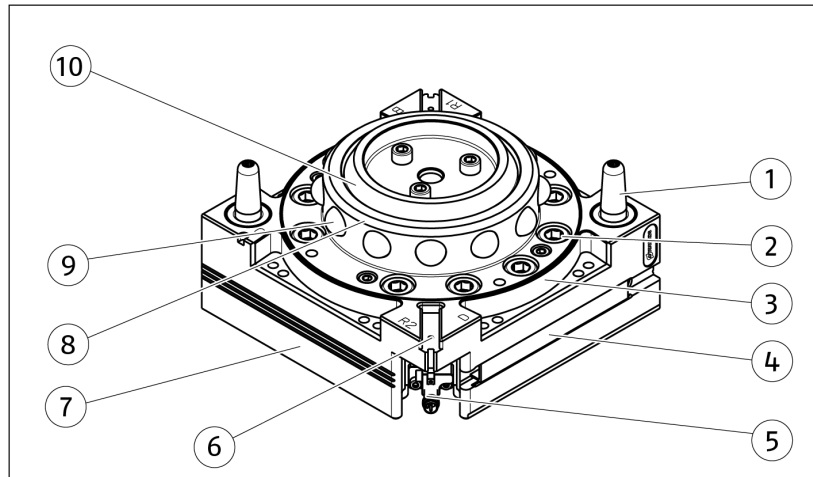
- 2 Pneumatic feed-through

- 3 Alignment pin bushing

- 4 Bearing race

4.2.12 Size 210

CPS-K



Structure CPS 210-K

- 1 Alignment pin

- 2 Fastening screws for flange on robot side

- 3 Screw-on surfaces for optional modules

- 4 Cable holder

- 5 Sensors for lock/unlock monitoring

- 6 Proximity switch for tool presence monitoring (optional, Ready-to-Lock signal)

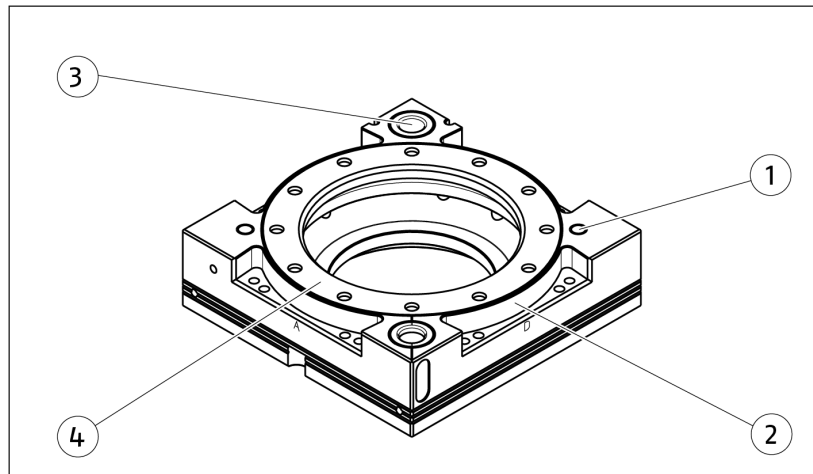
- 7 Screw-on surface for optional module for compressed air supply (Locking and unlocking)

- 8 Locking mechanism

- 9 Locking ball

- 10 Locking piston

CPS-A



Structure CPS 210-A

- 1 Proximity switch switching lug for tool presence monitoring

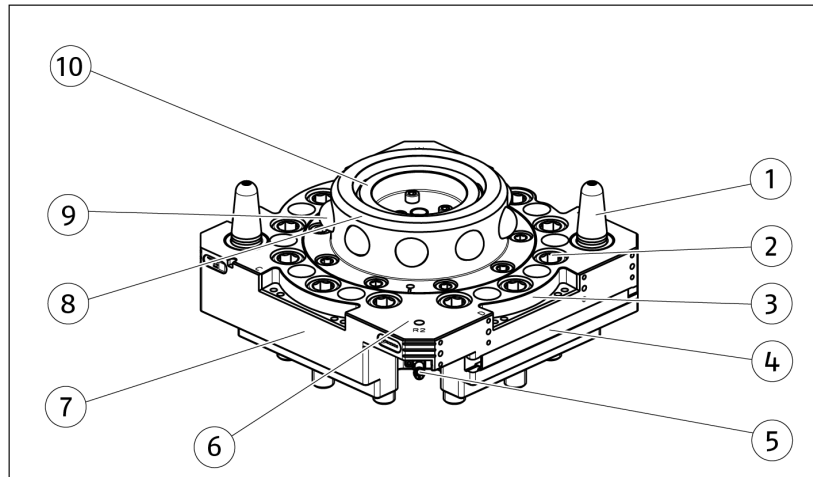
- 2 Screw-on surfaces for optional modules

- 3 Alignment pin bushing

- 4 Bearing race

4.2.13 Size 310

CPS-K



Structure CPS 310-K

- 1 Alignment pin

- 2 Fastening screws for flange on robot side

- 3 Screw-on surfaces for optional modules

- 4 Cable holder

- 5 Sensors for lock/unlock monitoring

- 6 Proximity switch for tool presence monitoring (optional, Ready-to-Lock signal)

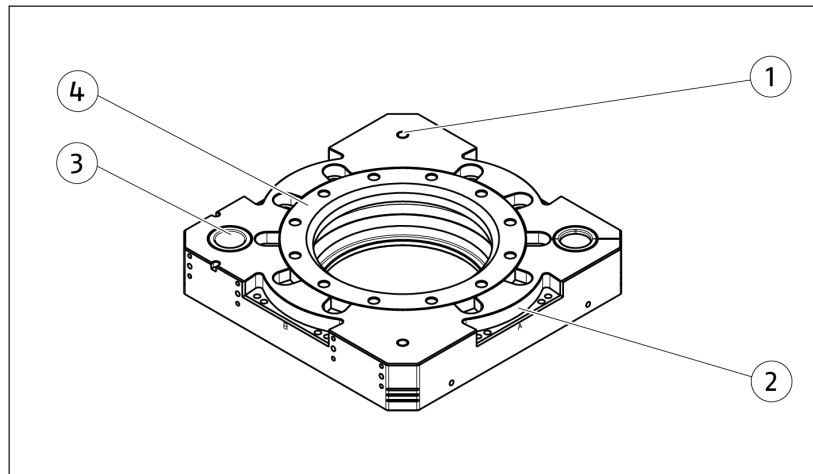
- 7 Screw-on surface for optional module for compressed air supply (Locking and unlocking)

- 8 Locking mechanism

- 9 Locking ball

- 10 Locking piston

CPS-A



Structure CPS 310-A

- 1 Proximity switch switching lug for tool presence monitoring

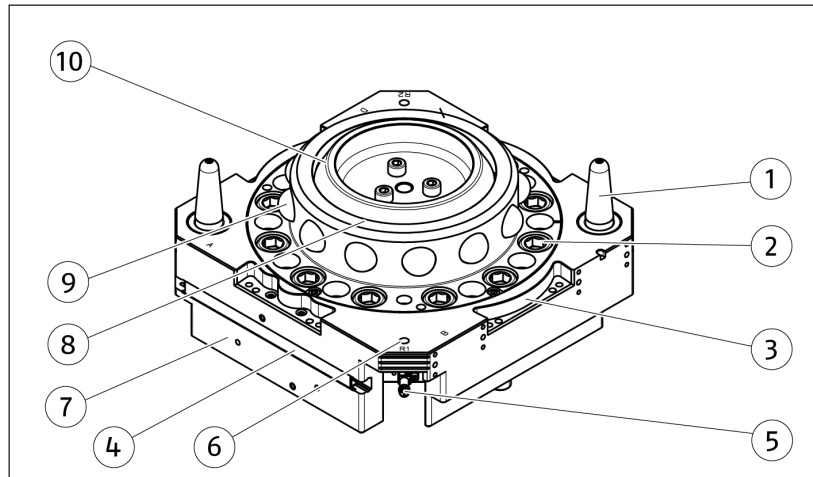
- 2 Screw-on surfaces for optional modules

- 3 Alignment pin bushing

- 4 Bearing race

4.2.14 Size 510

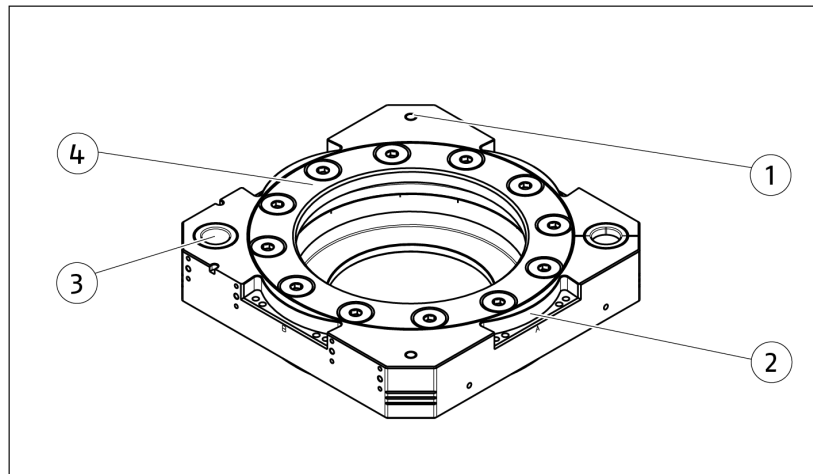
CPS-K



Structure CPS 510-K

- 1 Alignment pin
- 2 Fastening screws for flange on robot side
- 3 Screw-on surfaces for optional modules
- 4 Cable holder
- 5 Sensors for lock/unlock monitoring
- 6 Proximity switch for tool presence monitoring (optional, Ready-to-Lock signal)
- 7 Screw-on surface for optional module for compressed air supply (Locking and unlocking)
- 8 Locking mechanism
- 9 Locking ball
- 10 Locking piston

CPS-A

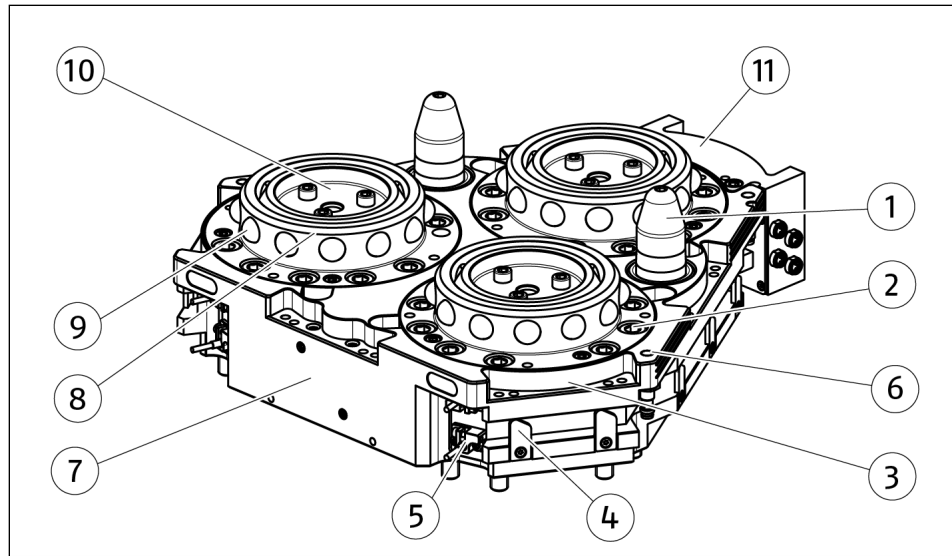


Structure CPS 510-A

- 1 Proximity switch switching lug for tool presence monitoring
- 2 Screw-on surfaces for optional modules
- 3 Alignment pin bushing
- 4 Bearing race

4.2.15 Size 1210

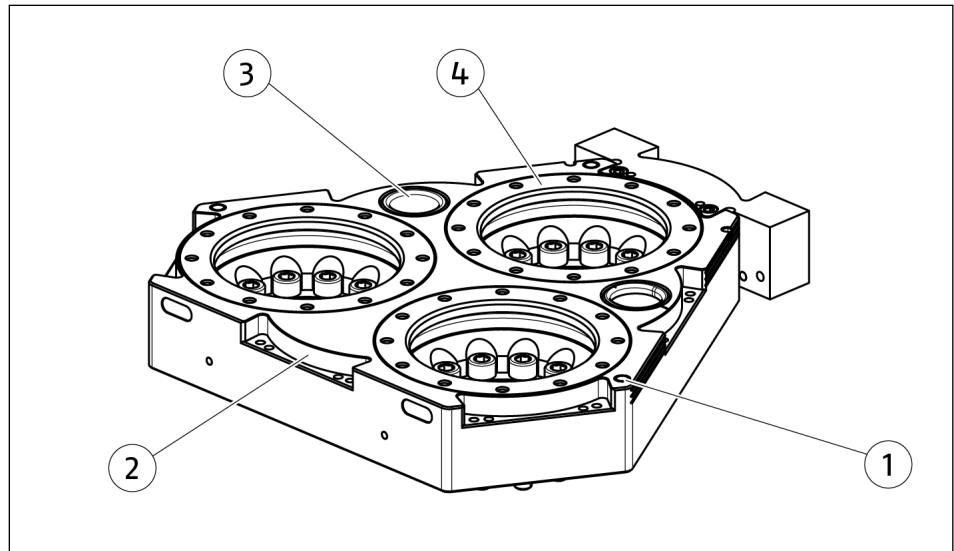
CPS-K



Structure CPS 1210-K

- | | |
|----|----------------------------------------------------------------------------------------|
| 1 | Alignment pin |
| 2 | Fastening screws for flange on robot side |
| 3 | Screw-on surfaces for optional modules |
| 4 | Cable holder |
| 5 | Sensors for lock/unlock monitoring |
| 6 | Proximity switch for tool presence monitoring (optional, Ready-to-Lock signal) |
| 7 | Screw-on surface for optional module for compressed air supply (Locking and unlocking) |
| 8 | Locking mechanism |
| 9 | Locking ball |
| 10 | Locking piston |
| 11 | Sensor distribution box |

CPS-A



Structure CPS 1210-A

- 1 Proximity switch switching lug for tool presence monitoring
- 2 Screw-on surfaces for optional modules
- 3 Alignment pin bushing
- 4 Bearing race

5 Assembly

5.1 Installing and connecting



⚠ WARNING

Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.



⚠ WARNING

Risk of injury due to improperly carried out assembly!

Improperly carried out assembly work can lead to severe injuries and property damage.

- Before beginning work, ensure sufficient assembly clearance.
- Secure components from falling down or over.
- Ensure that all work has been carried out in accordance with the specifications in these instructions.
- Observe tightening torques.



⚠ CAUTION

Risk of injury due to moving parts coming into proximity with stationary parts!

Moving components may cause severe injuries. Body parts may get crushed and bruised.

- Do not reach between the product and robot during assembly.
- During the coupling procedure, do not grip between the master and the tool.

1. Check the evenness of the mounting surface, ▶ 5.2 [44].
2. Attach the product to the robot, ▶ 5.2 [44].
 - ⇒ Use the fastening elements from the accessory kit, ▶ 1.3 [9].
 - ⇒ Observe the maximal tightening torque, admissible screw-in depth and, if necessary, strength class.
3. Connect pneumatic connections to compressed air supply via a suitable 4 or 5-way valve, ▶ 5.3 [67]
4. Mount sensors if necessary, ▶ 5.4 [79].
5. If necessary, install optional modules, see separate assembly and operating manual for the optional module.
6. Make sure that the connections are not stressed due to tensile and pressure forces. Apply appropriate strain relief devices if required.

5.2 Mechanical connection

NOTE

- Secure all screws with medium-strength threadlocker. To do this, apply adhesive to the exposed screw threads.
 - ⇒ Use adhesive only once. Always apply new adhesive if reusing fastening elements.
- Mounted screws may not protrude above the surface! Select screws so that they are flush with the surfaces and screw them together without washers.

Evenness of the mounting surface

The values apply to the whole mounting surface to which the product is mounted.

Edge length	Permissible unevenness
< 100	< 0.02
> 100	< 0.05

Tab.: Requirements for evenness of the mounting surface (Dimensions in mm)

Adapter plate requirements

An adapter plate can be used for mounting the CPS-K on the robot and the end effector on the CPS-A. An adapter plate is necessary if the screw connection pattern of the CPS has to be adapted to the customer's equipment (robot flange, end effector). **NOTICE! Only use adapter plates if they have bore holes and recesses that match the product exactly. Precise assembly is a prerequisite for proper functioning.**

The adapter plate must meet the following requirements:

- The adapter plate requires bores for the mounting screws with sufficient thread depth for mounting on the robot.

- The adapter plate requires centering recesses for dowel pins with sufficient depth so that no gap is created during assembly.
- Depending on the robot flange, the adapter plate requires a centering plate on the robot side and a fitting bore at the interface to the CPS-K robot side.
- Depending on the end effector, the adapter plate requires a centering plate on the CPS-A tool side and a fitting bore at the interface to the end effector.
- For sizes with an external locking monitoring system, the adapter plate requires a recess that has been adapted to the sensor outlet.

The catalog data sheet contains detailed information and precise manufacturing instructions for possible adapter plate design.

NOTE

Mounting of the CPS-K with an external piston stroke monitoring system is described in chapter ▶ 5.4.3 [81].

5.2.1 Tightening torques for screws

The following overview shows the tightening torques for the fastening screws for CPS-K and CPS-A.

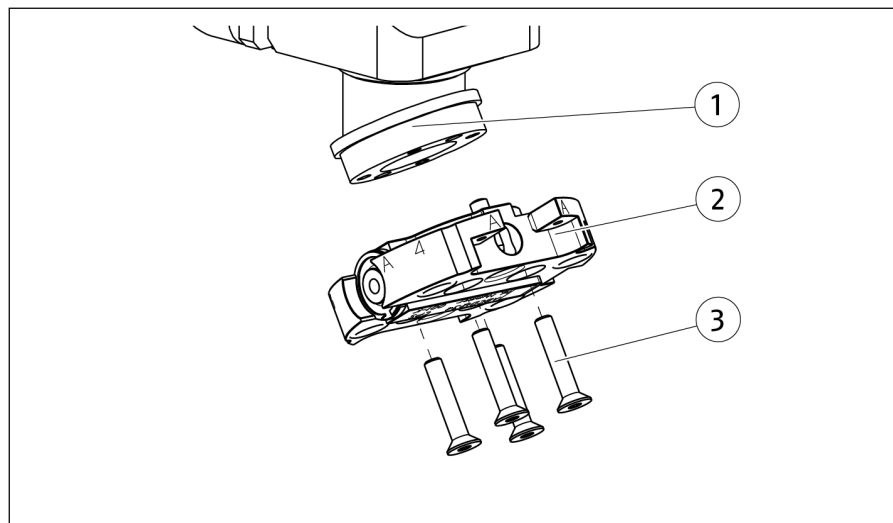
Size	Screw	Strength class	Standard	Tightening torque [Nm]
001-K	M3x16 *	010.9	ISO 10642	1.4
001-A	M3 / M5	12.9	ISO 4762	2.4 / 9
005-K	M3x25 *	12.9	ISO 4762	2.4
005-A	M5	12.9	ISO 4762	9
007-K	M3x35 **	010.9	ISO 7984	7
007-A	M5	12.9	ISO 4762	9
011-K	M3x25 *	12.9	ISO 4762	2.4
011-A	M5	12.9	ISO 4762	9
020-K	M4x30 *	010.9	ISO 10642	3.4
020-A	M6	12.9	ISO 4762	15
021-K	M4x35 *	010.9	ISO 10642	3.4
021-A	M6	12.9	ISO 4762	15
029-K	M6x35 **	12.9	ISO 4762	15
029-A	M6	12.9	ISO 4762	15
040-K	M5x45 *	12.9	ISO 4762	9
040-A	M8	12.9	ISO 4762	32

Size	Screw	Strength class	Standard	Tightening torque [Nm]
041-K	M5x40 *	12.9	ISO 4762	9
041-A	M8	12.9	ISO 4762	32
046-K	M8x40	12.9	ISO 4762	32
046-A	M6 / M8 / M10	12.9	ISO 4762	15 / 32 / 62
060-K	M6x40 *	010.9	ISO 10642	12
060-A	M8	12.9	ISO 4762	32
071-K	M6x40 *	12.9	ISO 4762	15
071-A	M8	12.9	ISO 4762	32
076-K	M10x35 **	12.9	ISO 4762	62
076-A	M10	12.9	ISO 4762	62
110-K	M10x50 **	12.9	ISO 4762	62
110-A	M10	12.9	ISO 4762	62
160-K	M10x55 **	12.9	ISO 4762	62
160-A	M10	12.9	ISO 4762	62
210-K	M10x55 **	12.9	ISO 4762	62
210-A	M10 / M12	12.9	ISO 4762	62 / 108
310-K	M16x65 **	12.9	ISO 4762	262
310-A	M10 / M12 / M16	12.9	ISO 4762	62 / 108 / 262
510-K	M16x85 **	12.9	ISO 4762	262
510-A	M12 / M16	12.9	ISO 4762	108 / 262
1210-K	M10x70 **	12.9	ISO 4762	62
1210-A	M10	12.9	ISO 4762	62

* The screw length is matched to the SCHUNK adapter plate.

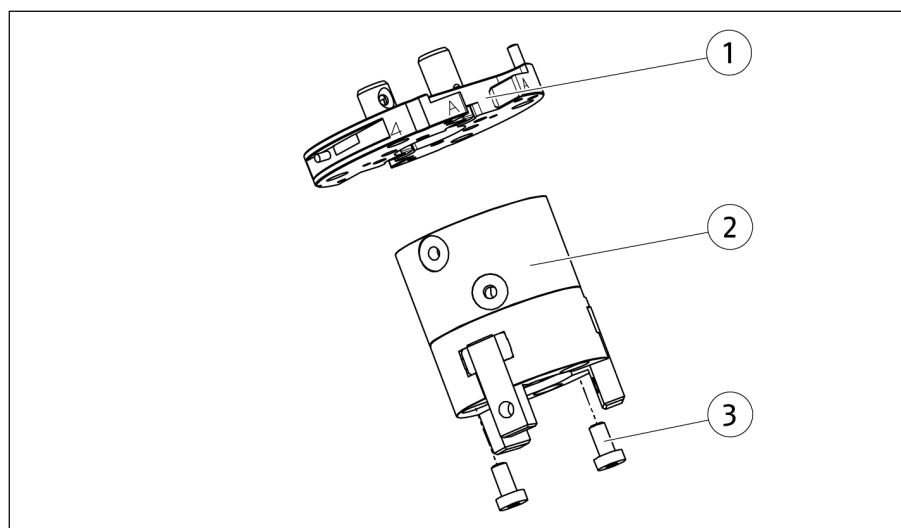
** The screw length is matched to a screw-in depth of 1.0 x screw diameter. For materials with a tensile strength ≤ 800 MPa, the screw-in depth must be increased accordingly!

5.2.2 Size 001



Mounting on robot for CPS-K 001

1. Clean the mounting surfaces on the robot (1) and CPS-K (2).
2. Mount optional adapter plate between the robot (1) and CPS-K.
3. Insert the CPS-K (2) with integrated dowel pins into the bores on the robot.
4. Apply screw lock to screws (3).
5. Secure CPS-K (2) to robot (1) with screws (3).
 - ⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].



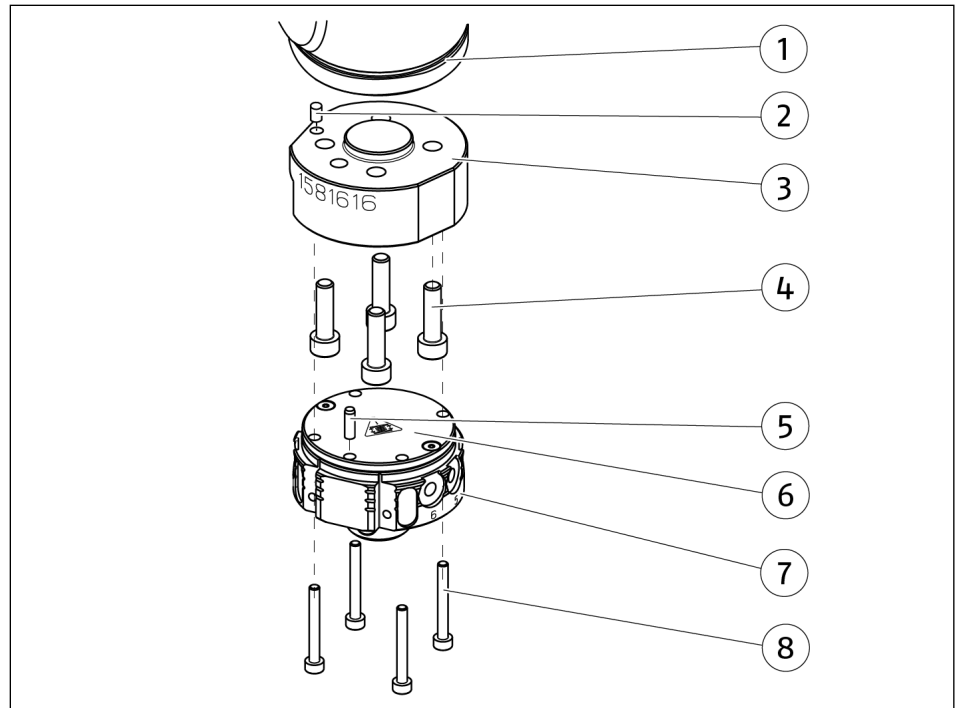
Mounting the end effector to CPS 001-A

1. Clean the mounting patterns on the CPS-A (1) and end effector (2).
2. Mount optional adapter plate between CPS-A and end effector.
3. Secure the end effector (2) with screws (3).
 - ⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].

5.2.3 Size 005/011

NOTE

Observe requirements when using an adapter plate, ▶ 5.2 [44]. Further information on the adapter plate design and precise manufacturing instructions can be found in the catalog data sheet, ▶ 1.1.4 [8].



Mounting on robot, shown as an example on CPS-K 011

1. Clean the mounting patterns on the robot (1), adapter plate (3) and CPS-K (7).
2. Insert dowel pin (2) into adapter plate (3).
3. Apply screw lock to screws (4).
4. Insert the adapter plate (3) with dowel pin (2) into the bore on the robot.
5. Secure the adapter plate (3) to the robot (1) with screws (4).
⇒ Observe the tightening torque for the mounting screws.

NOTE

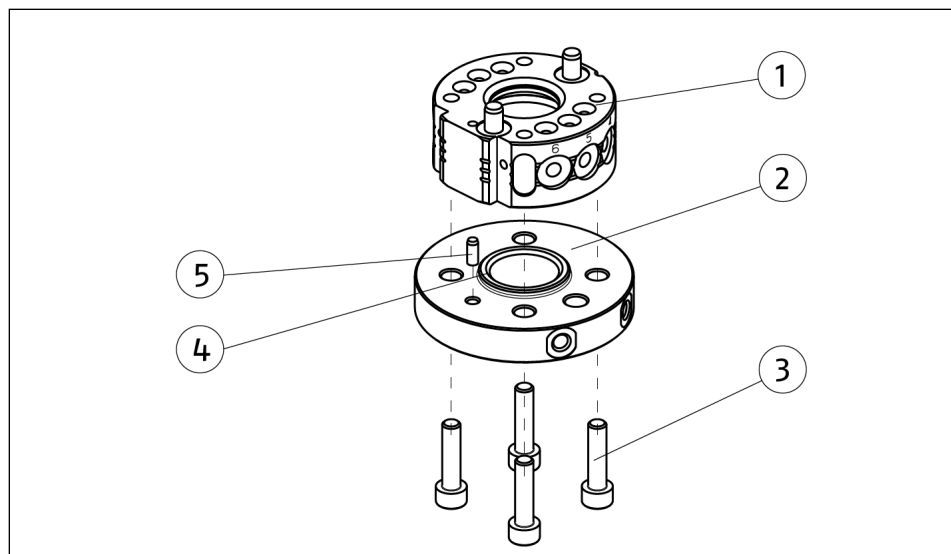
Depending on the type of adapter plate (3), the CPS-K (7) is mounted on the adapter plate with or without the cover plate (6). If the adapter plate replaces the cover plate, the cover plate must be removed.

6. *If the piston chamber cover (6) needs to be removed:*
CAUTION! Risk of injury from spring forces! The piston chamber cover (6) is under spring tension. Remove piston

chamber cover (6) from the CPS-K (7).

NOTICE! Product may leak! When removing the cover plate, ensure that the O-ring remains in the CPS-K

7. Insert dowel pin (5) into bore on cover plate / CPS-K.
8. Apply screw lock to screws (8).
9. Insert CPS-K (7) with dowel pin (5) into the bore in the adapter plate.
10. Secure CPS-K (7) to adapter plate (3) with screws (8).
 - ⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].



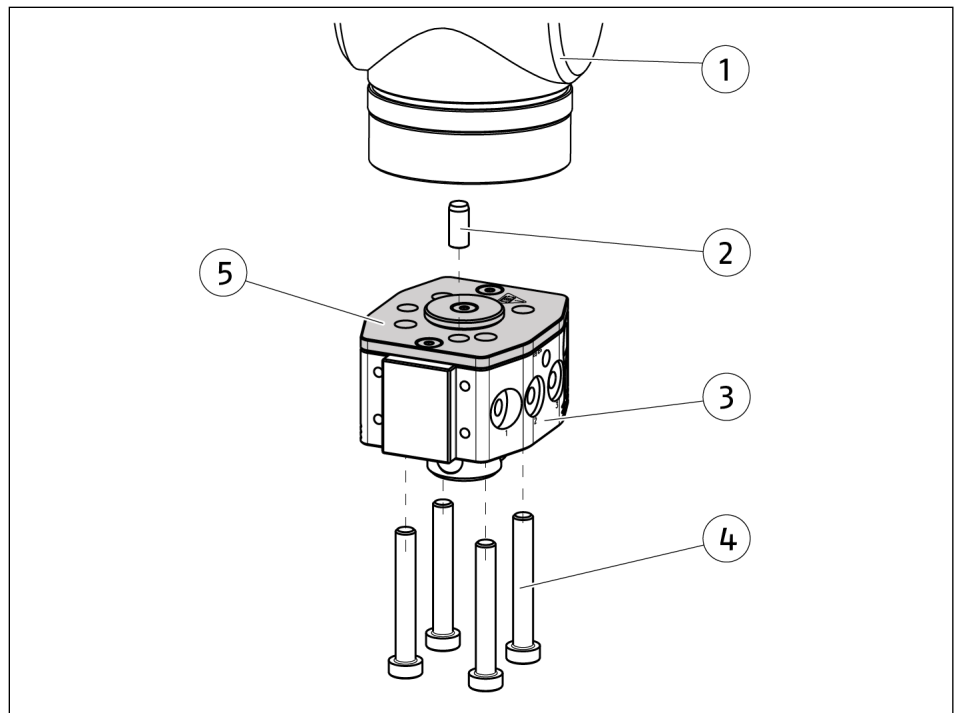
Mount adapter plate (shown as an example) to CPS-A, illustrated on CPS-A 011

1. Clean mounting surfaces on CPS-A (1) and adapter plate (2).
2. Insert the adapter plate (2) with two alignment pins and/or with one alignment pin and the centering collar on the adapter plate (4) into the holes provided for this purpose.
3. Fasten the adapter plate (2) to the CPS-A (1) with screws (3).
 - ⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].
4. Mount the end effector.

5.2.4 Size 007

NOTE

- The product in this size has an ISO flange as standard. When using a robot without ISO an flange interface, the product can be mounted to the robot using an adapter plate.
- Only use the screws supplied in the accessory kit for assembly!

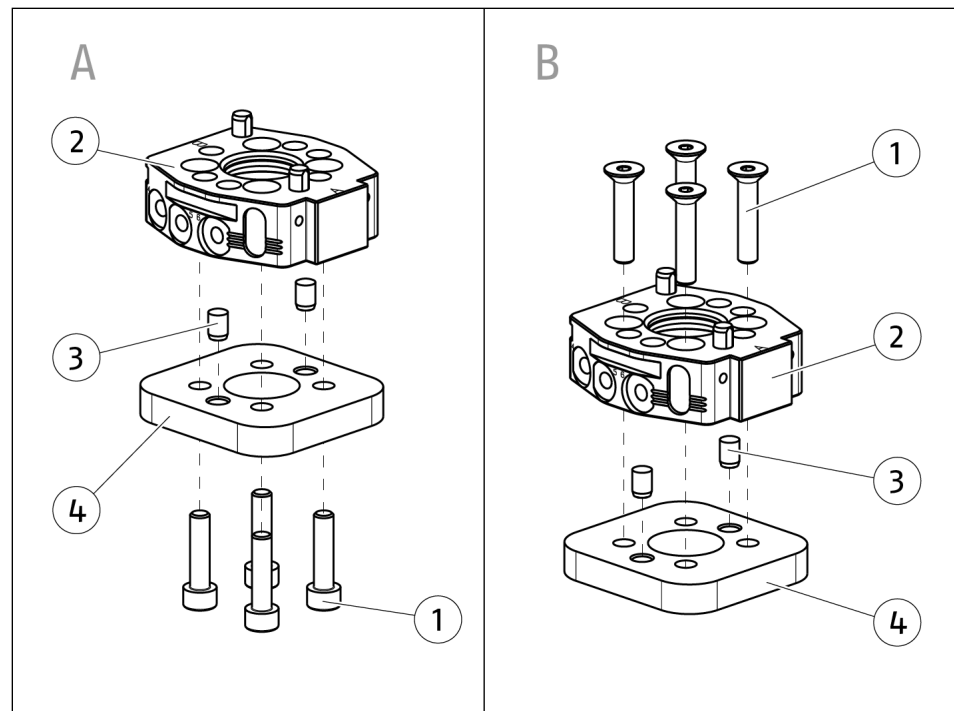


Mounting on robot for CPS 007-K

1. Clean the mounting surfaces on the robot (1) and CPS-K (3).
2. **For mounting on a robot without ISO flange interface:** Mount adapter plate between robot (1) and CPS-K (3).
3. Insert alignment pin (2) in CPS-K (3).
4. Apply screw lock to screws (4).
5. Align CPS-K with centering pin (2) on robot and insert CPS-K (3) with centering collar (5) into the fitting bore on the robot (1).
6. Secure CPS-K (3) with screws (4) to the robot (1).
 - ⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].

NOTE

- The tool changer has been redesigned and has an additional pneumatic feed-through.
- When using existing SWA-007 adapters, only pneumatic connections 1-5 are used. Remove the seal on pneumatic connection 6.



Mounting adapter plate (4) (shown as an example) to CPS 007-A
(A = mounting from below; B = mounting from above)

NOTE

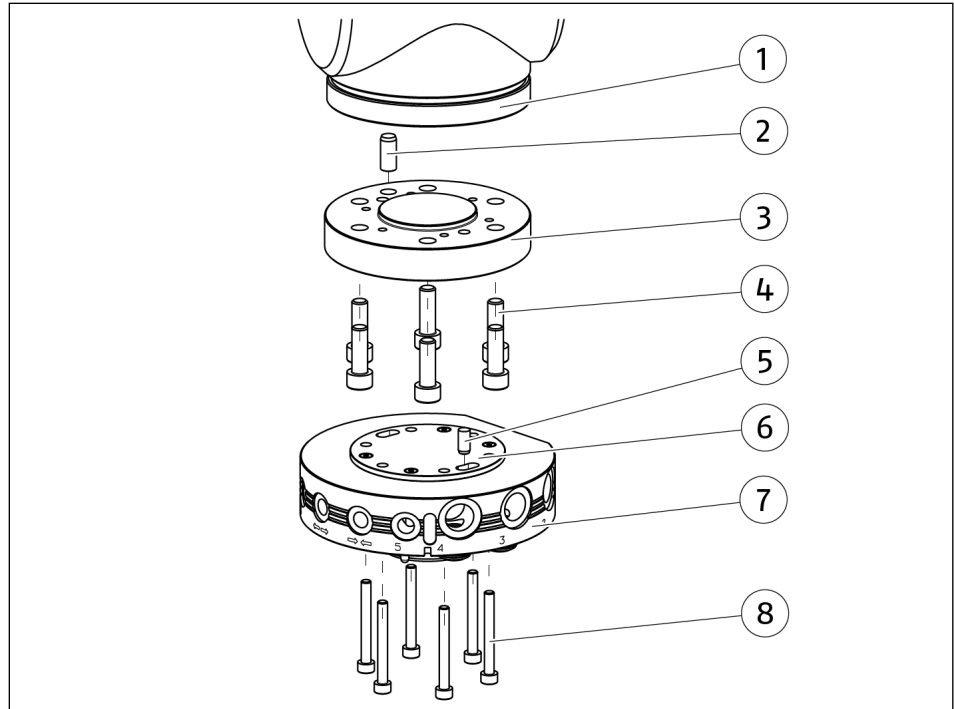
If the axial pneumatic feed-throughs are to be used on CPS 007-A, it is very important to observe the notes in chapter ▶ 5.3.4.1 [71].

1. Clean mounting surfaces on CPS-A (2) and adapter plate (4).
2. Insert the adapter plate (4) with two dowel pins (3) or one dowel pin and a centering plate into the bores provided for this purpose.
3. Secure the adapter plate (4) to the CPS-A (2) from above or below with screws (1).
 - ⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].
4. Mount the end effector.

5.2.5 Sizes 020/021/041/060

NOTE

Observe requirements when using an adapter plate, ▶ 5.2 [44]. Further information on the adapter plate design and precise manufacturing instructions can be found in the catalog data sheet, ▶ 1.1.4 [8].



Mounting on robot shown as an example at CPS-K 041

1. Clean the mounting patterns on the robot (1), adapter plate (3) and CPS-K (7).
2. Insert dowel pin (2) into adapter plate (3).
3. Apply screw lock to screws (4).
4. Insert the adapter plate (3) with dowel pin (2) into the bore on the robot.
5. Secure the adapter plate (3) to the robot (1) with screws (4).
⇒ Observe the tightening torque for the mounting screws.

NOTE

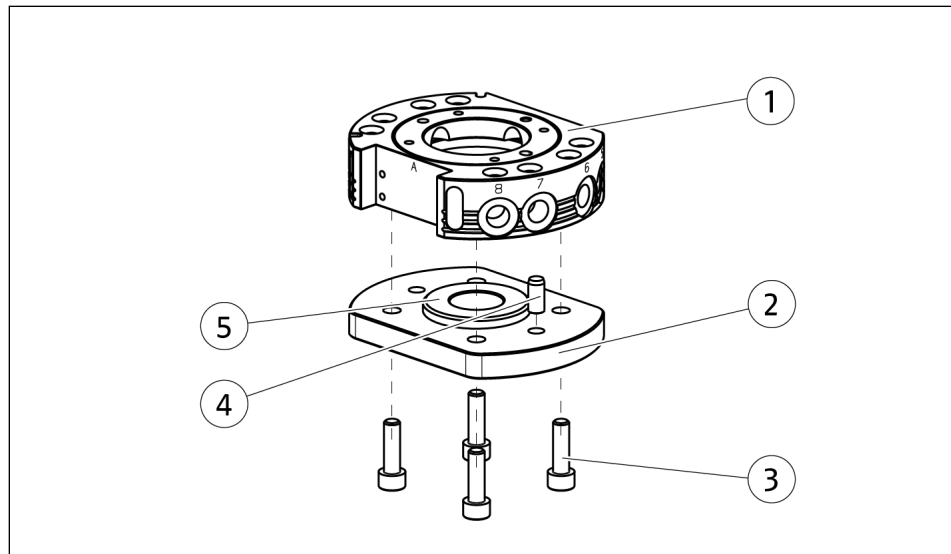
Depending on the type of adapter plate (3), the CPS-K (7) is mounted on the adapter plate with or without the cover plate (6). If the adapter plate replaces the cover plate, the cover plate must be removed.

6. *If the piston chamber cover (6) needs to be removed:*
CAUTION! Risk of injury from spring forces! The piston chamber cover (6) is under spring tension. Loosen screws (8)

and remove piston chamber cover (6) from the CPS-K (7).

NOTICE! Product may leak! When removing the cover plate, ensure that the O-ring remains in the CPS-K

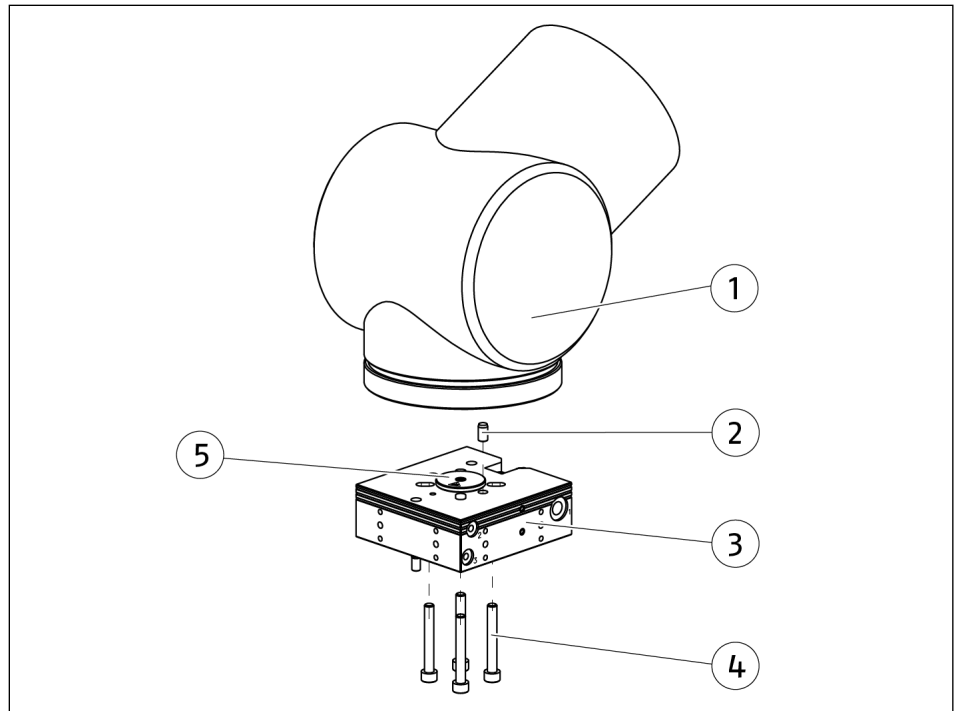
7. Insert dowel pins (6) on the cover plate / CPS-K into the bores on the adapter plate.
8. Apply screw lock to screws (8).
9. Secure CPS-K (7) to adapter plate (3) with screws (8).
 - ⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].



Mounting adapter plate (shown as an example) to CPS-A, illustrated on CPS 021-A

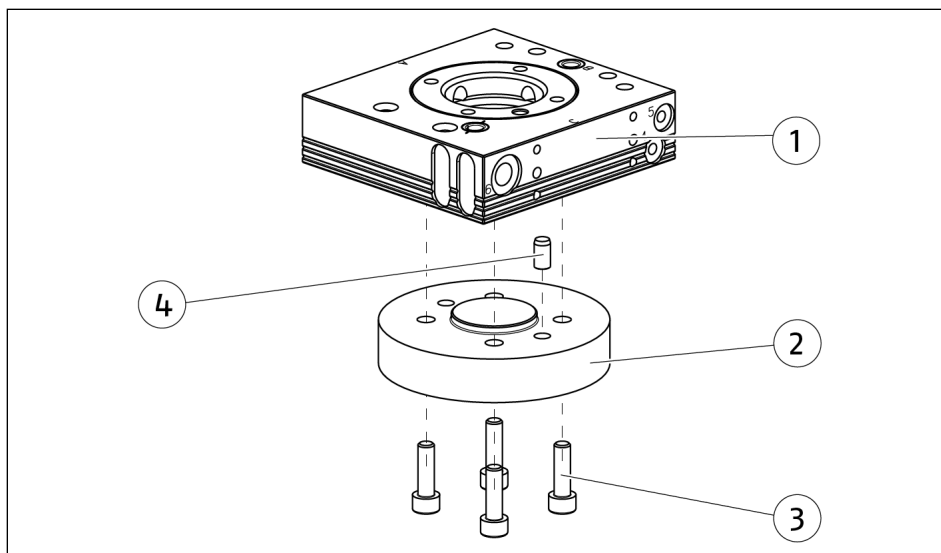
1. Clean mounting surfaces on CPS-A (1) and adapter plate (2).
2. Insert the adapter plate (2) with two dowel pins (4) and/or with one dowel pin and the centering collar (5) into the bores provided for this purpose.
3. Fasten the adapter plate (2) to the CPS-A (1) with screws (3).
 - ⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].
4. Mount the end effector.

5.2.6 Size 029



Mounting on robot for CPS-K 029

1. Clean the mounting surfaces on the robot (1) and CPS-K (3).
2. **For mounting on a robot without ISO flange interface:**
Mount adapter plate between robot (1) and CPS-K (3).
3. Insert alignment pin (2) in CPS-K (3).
4. Apply screw lock to screws (4).
5. Align CPS-K with centering pin (2) on robot and insert CPS-K (3) with centering collar (5) into the fitting bore on the robot (1).
6. Secure CPS-K (3) with screws (4) to the robot (1).
⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].



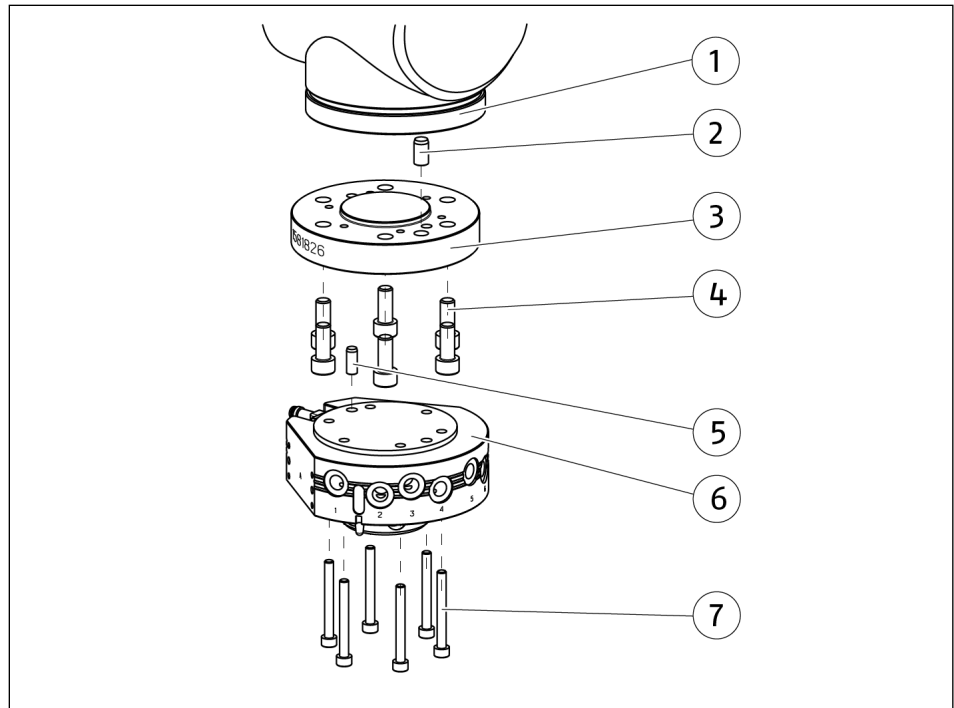
Mounting adapter plate (shown as an example) on CPS 029-A

- 1.** Clean mounting surfaces on CPS-A (1) and adapter plate (2).
- 2.** Insert the adapter plate (2) with two alignment pins and/or with one alignment pin and the centering collar on the adapter plate (4) into the holes provided for this purpose.
- 3.** Fasten the adapter plate (2) to the CPS-A (1) with screws (3).
 - ⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].
- 4.** Mount the end effector.

5.2.7 Size 040

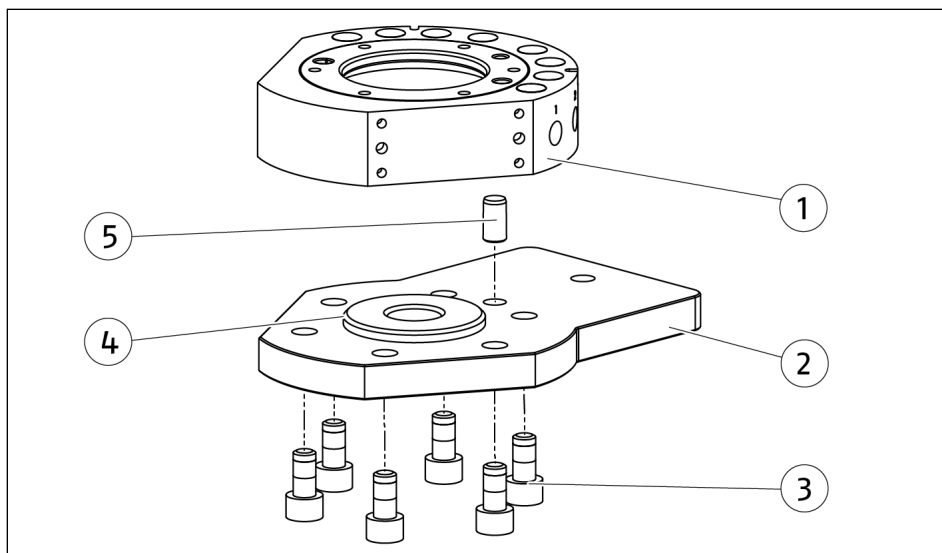
NOTE

Observe requirements when using an adapter plate, ▶ 5.2 [44]. Further information on the adapter plate design and precise manufacturing instructions can be found in the catalog data sheet, ▶ 1.1.4 [8].



Mounting on robot for CPS 040-K

1. Clean the mounting patterns on the robot (1), adapter plate (3) and CPS-K (7).
2. Insert dowel pin (2) into adapter plate (3).
3. Apply screw lock to screws (4).
4. Insert the adapter plate (3) with dowel pin (2) into the bore on the robot.
5. Secure the adapter plate (3) to the robot (1) with screws (4).
⇒ Observe the tightening torque for the mounting screws.
6. Insert dowel pins (5) into CPS-K (6).
7. Insert the CPS-K (6) with dowel pins (5) into the bores on the adapter plate.
8. Apply screw lock to screws (7).
9. Fasten CPS-K (6) to adapter plate (3) with screws (7).
⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].



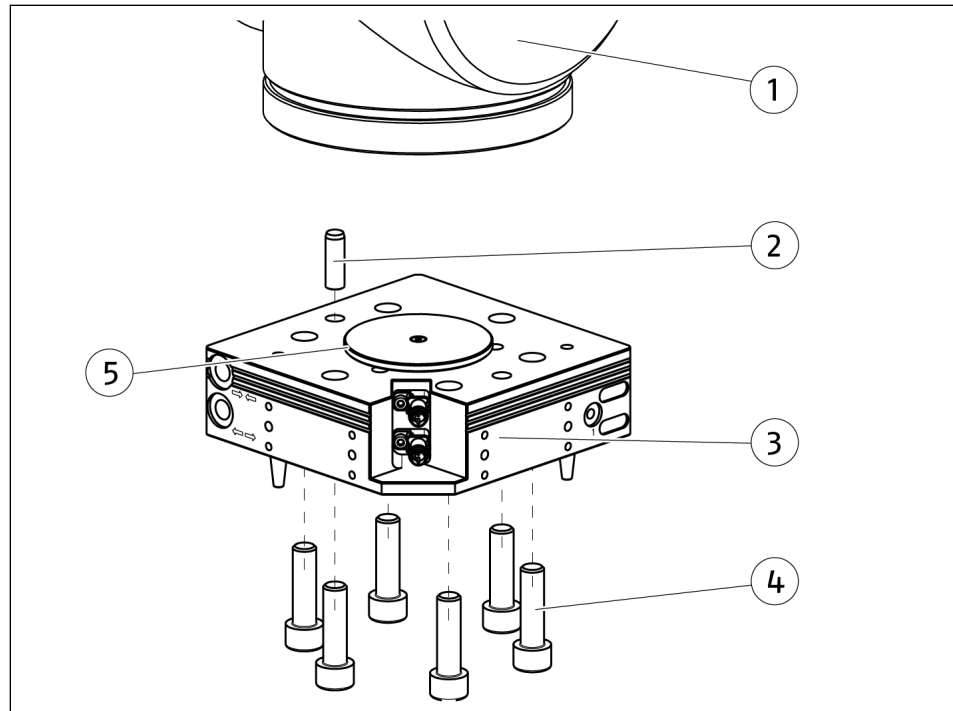
Mount adapter plate (shown as an example) to CPS-A.

- 1.** Clean mounting surfaces on CPS-A (1) and adapter plate (2).
- 2.** Insert the adapter plate (2) with two dowel pins and/or with one dowel pin (5) and the centering collar (4) into the bores provided for this purpose.
- 3.** Fasten the adapter plate (2) to the CPS-A (1) with screws (3).
 ⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].
- 4.** Mount the end effector.

5.2.8 Size 046

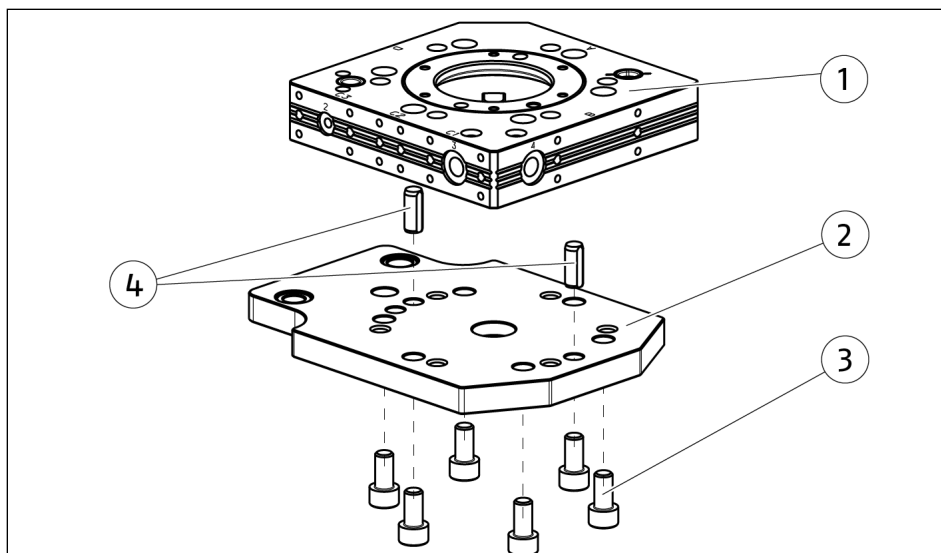
NOTE

The product in this size has an ISO flange as standard. When using a robot without ISO flange interface, the product can be mounted to the robot using an adapter plate.



Mounting on robot for CPS 046-K

1. Clean the mounting surfaces on the robot (1) and CPS-K (3).
2. **For mounting on a robot without ISO flange interface:**
Mount adapter plate between robot (1) and CPS-K (3).
3. Insert alignment pin (2) in CPS-K (3).
4. Apply screw lock to screws (4).
5. Align CPS-K with centering pin (2) on robot and insert CPS-K (3) with centering collar (5) into the fitting bore on the robot (1).
6. Secure CPS-K (3) with screws (4) to the robot (1).
⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].



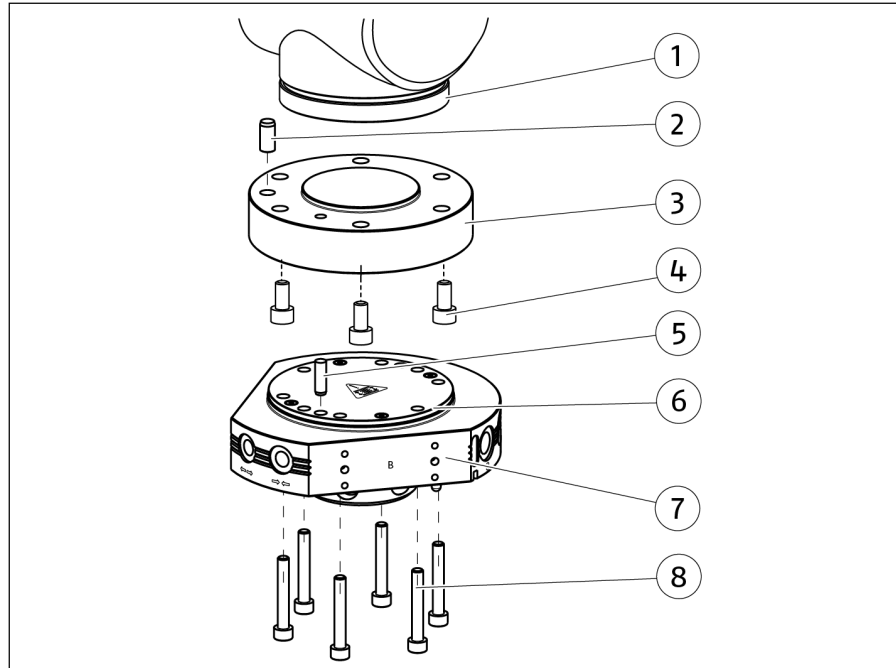
Mounting adapter plate (shown as an example) on CPS 046-A

1. Clean mounting surfaces on CPS-A (1) and adapter plate (2).
2. Insert the adapter plate (2) with two alignment pins (4) and/or with one alignment pin and the centering collar on the adapter plate into the holes provided for this purpose.
3. Fasten the adapter plate (2) to the CPS-A (1) with screws (3).
 ⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].
4. Mount the end effector.

5.2.9 Size 071

NOTE

Observe requirements when using an adapter plate, ▶ 5.2 [44]. Further information on the adapter plate design and precise manufacturing instructions can be found in the catalog data sheet, ▶ 1.1.4 [8].



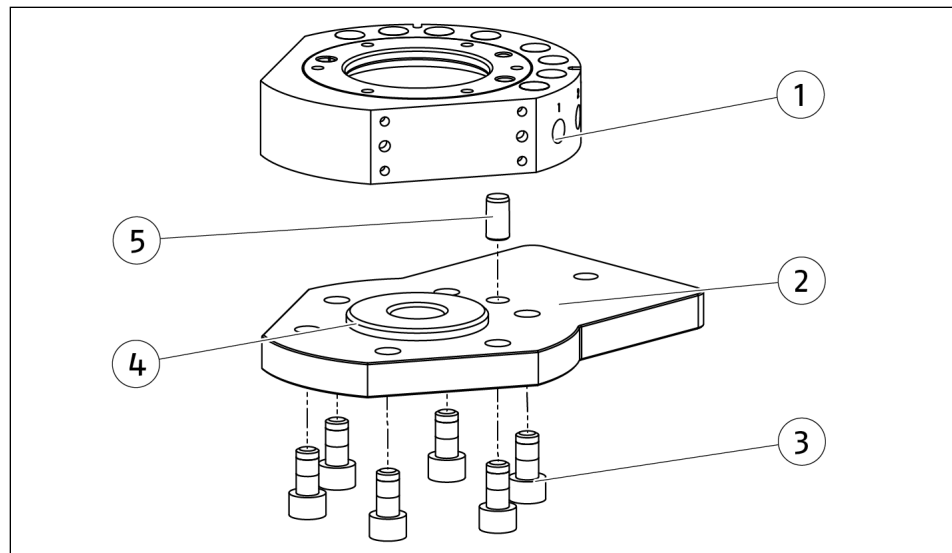
Mounting on robot for CPS 071-K

1. Clean the mounting patterns on the robot (1), adapter plate (3) and CPS-K (7).
2. Insert dowel pin (2) into adapter plate (3).
3. Apply screw lock to screws (4).
4. Insert the adapter plate (3) with dowel pin (2) into the bore on the robot.
5. Secure the adapter plate (3) to the robot (1) with screws (4).
⇒ Observe the tightening torque for the mounting screws.

NOTE

Depending on the type of adapter plate (3), the CPS-K (7) is mounted on the adapter plate with or without the cover plate (6). If the adapter plate replaces the cover plate, the cover plate must be removed.

6. If the piston chamber cover (6) needs to be removed:
CAUTION! Risk of injury from spring forces! The piston chamber cover (6) is under spring tension. Loosen screws (8) and remove cover plate (6) from the CPS-K (7)
NOTICE! Product may leak! When removing the cover plate, ensure that the O-ring remains in the CPS-K
7. Insert dowel pins (5) into CPS-K (6).
8. Insert dowel pins (6) on the cover plate / CPS-K into the bores on the adapter plate.
9. Apply screw lock to screws (8).
10. Secure CPS-K (7) to adapter plate (3) with screws (8).
 ⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].



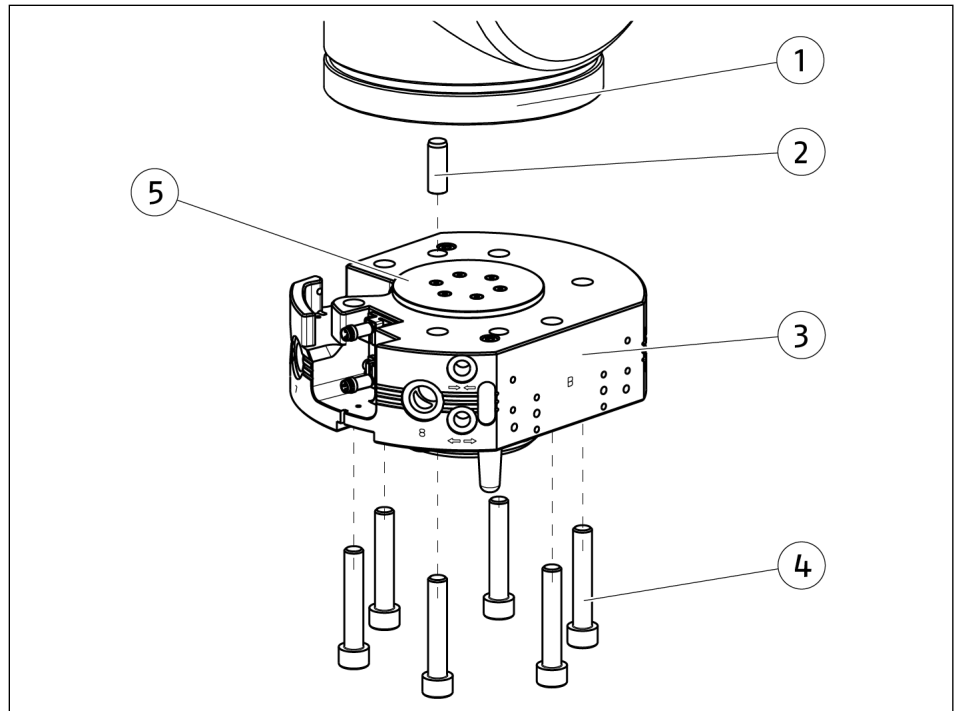
Mount adapter plate (shown as an example) to CPS-A

1. Clean mounting surfaces on CPS-A (1) and adapter plate (2).
2. Insert the adapter plate (2) with two dowel pins (5) and/or with one dowel pin and the centering collar (4) into the bores provided for this purpose.
3. Fasten the adapter plate (2) to the CPS-A (1) with screws (3).
 ⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].
4. Mount the end effector.

5.2.10 Size 076/110/160

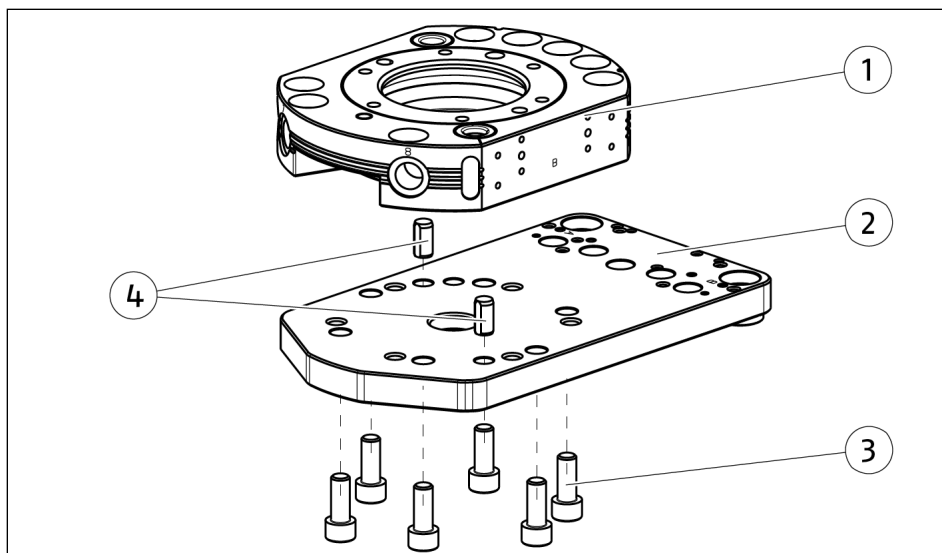
NOTE

The product in this size has an ISO flange as standard. When using a robot without ISO flange interface, the product can be mounted to the robot using an adapter plate.



Mounting on robot shown as an example on CPS 110-K

1. Clean the mounting surfaces on the robot (1) and CPS-K (3).
2. **For mounting on a robot without ISO flange interface:**
Mount adapter plate between robot (1) and CPS-K (3).
3. Insert alignment pin (2) in CPS-K (3).
4. Apply screw lock to screws (4).
5. Align CPS-K with centering pin (2) on robot and insert CPS-K (3) with centering collar (5) into the fitting bore on the robot (1).
6. Secure CPS-K (3) with screws (4) to the robot (1).
⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].



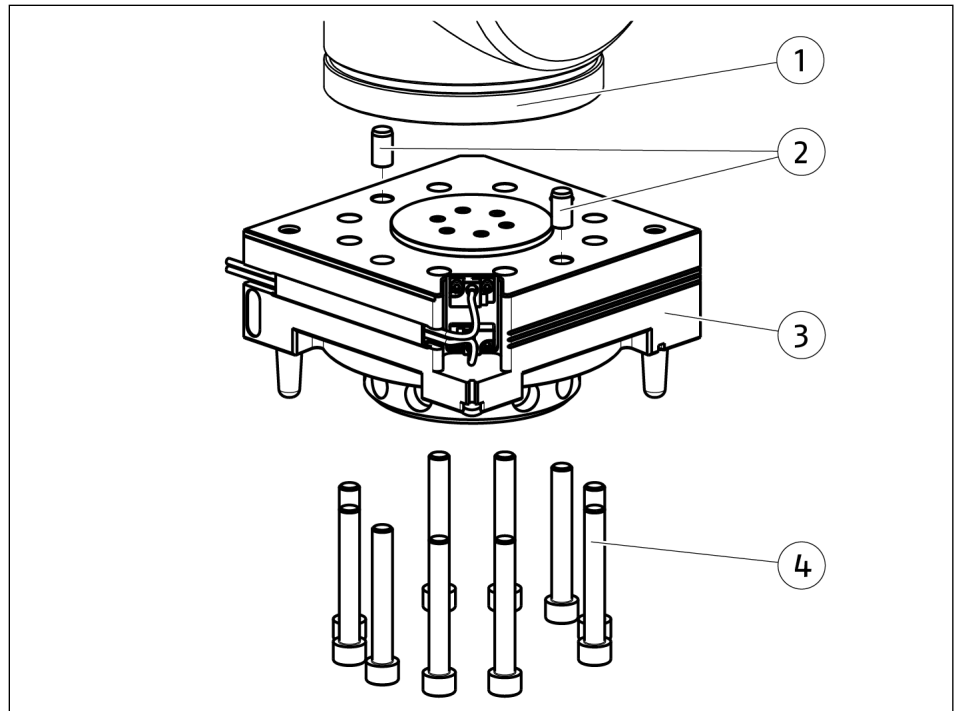
Mounting adapter plate (shown as an example) to CPS-A, illustrated on CPS 110-A

- 1.** Clean mounting surfaces on CPS-A (1) and adapter plate (2).
- 2.** Insert the adapter plate (2) with two alignment pins (4) and/or with one alignment pin and a centering collar on the adapter plate into the holes provided for this purpose.
- 3.** Fasten the adapter plate (2) to the CPS-A (1) with screws (3).
 - ⇒ Observe the tightening torque of the mounting screws, ► [5.2.1](#) [[45](#)].
- 4.** Mount the end effector.

5.2.11 Size 210/310/510

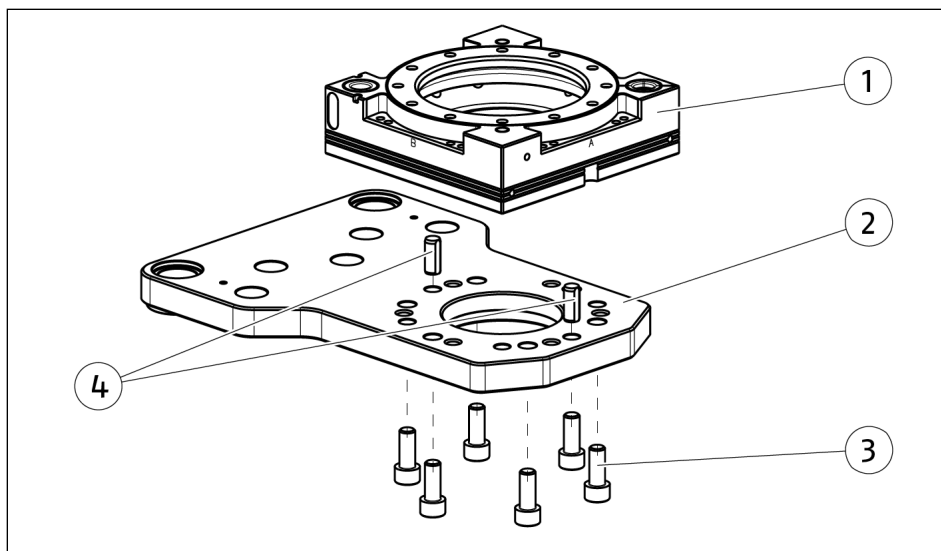
NOTE

The product in this size has an ISO flange as standard. When using a robot without ISO flange interface, the product can be mounted to the robot using an adapter plate.



Mounting on robot shown as an example on CPS 210-K

1. Clean the mounting surfaces on the robot (1) and CPS-K (3).
2. **For mounting on a robot without ISO flange interface:**
Mount adapter plate between robot (1) and CPS-K (3).
3. Insert alignment pin (2) in CPS-K (3).
4. Apply screw lock to screws (4).
5. Align CPS-K with centering pin (2) on robot and insert CPS-K (3) with centering collar (5) into the fitting bore on the robot (1).
6. Secure CPS-K (3) with screws (4) to the robot (1).
⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].



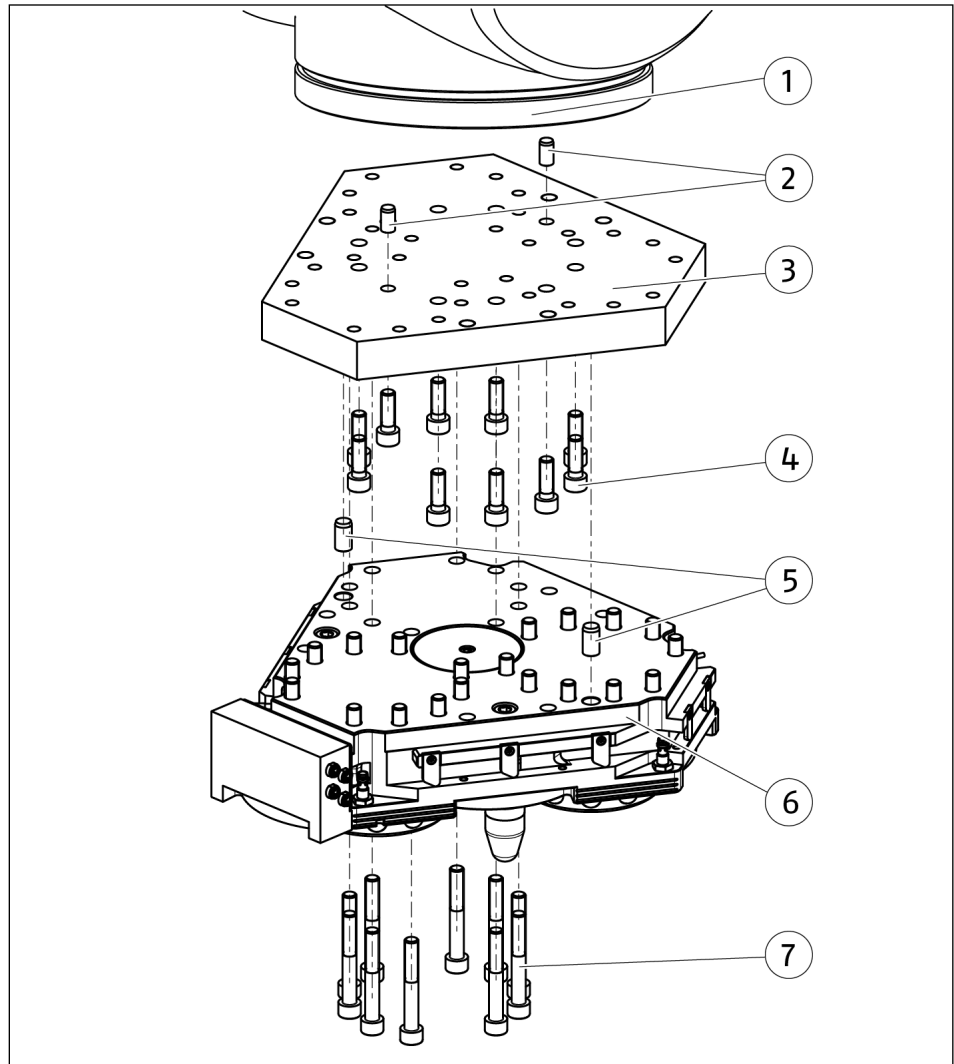
Mounting adapter plate (shown as an example) on CPS-A, illustrated on CPS 210-A

1. Clean mounting surfaces on CPS-A (1) and adapter plate (2).
2. Insert the adapter plate (2) with two dowel pins (4) into the bores provided for this purpose.
3. Fasten the adapter plate (2) to the CPS-A (1) with screws (3).
 - ⇒ Observe the tightening torque of the mounting screws, ▶ 5.2.1 [45].
4. Mount the end effector.

5.2.12 Size 1210

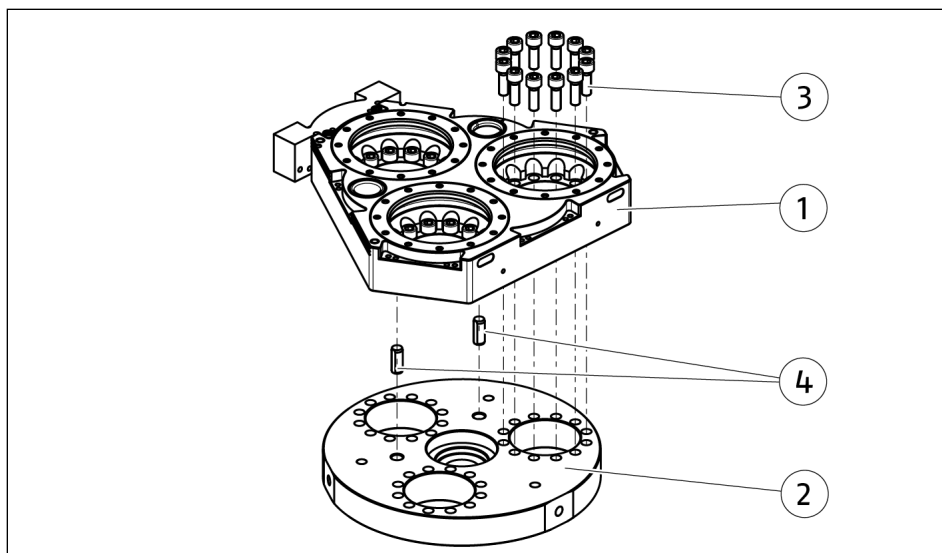
NOTE

Observe requirements when using an adapter plate, ▶ 5.2 [44]. Further information on the adapter plate design and precise manufacturing instructions can be found in the catalog data sheet, ▶ 1.1.4 [8].



Mounting on the robot for CPS 1210-K

- 1.** Clean the mounting patterns on the robot (1), adapter plate (3) and CPS-K (6).
- 2.** Insert dowel pin (2) into adapter plate (3).
- 3.** Apply screw lock to screws (4).
- 4.** Insert the adapter plate (3) with dowel pin (2) into the bore on the robot.
- 5.** Secure the adapter plate (3) to the robot (1) with screws (4).
⇒ Observe the tightening torque for the mounting screws.
- 6.** Insert dowel pins (5) into CPS-K (6).
- 7.** Insert the CPS-K (6) with dowel pins (5) into the bores on the adapter plate.
- 8.** Apply screw lock to screws (7).
- 9.** Fasten CPS-K (6) to adapter plate (3) with screws (7).
⇒ Observe the tightening torque of the mounting screws, ► 5.2.1 [45].



Mount adapter plate (shown as an example) to CPS-A.

1. Clean mounting surfaces on CPS-A (1) and adapter plate (2).
2. Insert the adapter plate (2) with two dowel pins (4) into the bores provided for this purpose.
3. Fasten the adapter plate (2) to the CPS-A (1) with screws (3).
 - ⇒ Observe the tightening torque of the mounting screws, ► 5.2.1 [45].
4. Mount the end effector.

5.3 Pneumatic connection

NOTICE

Material damage due to loss of compressed air!

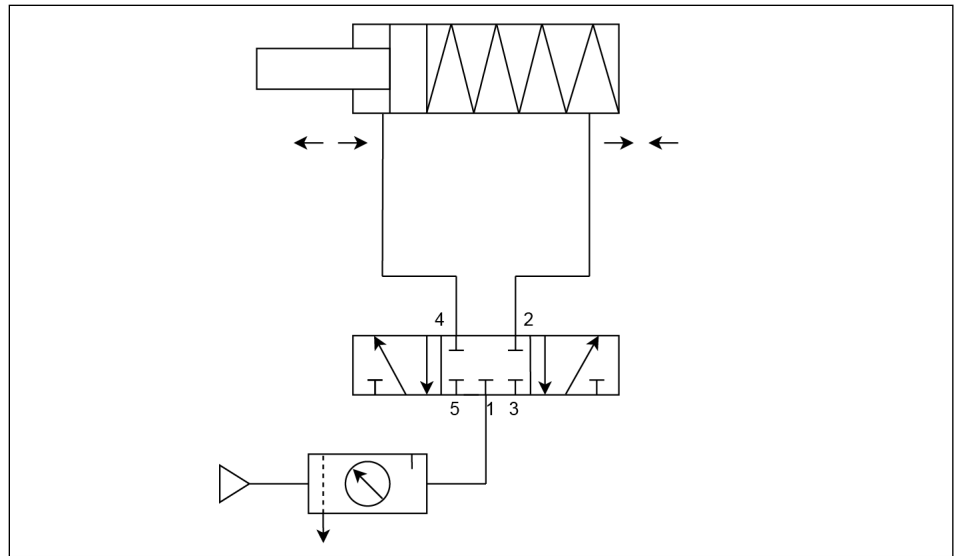
The CPS-A can become loose in the event of a loss of compressed air, but the connection between CPS-K and CPS-A is ensured by a pressure spring. The CPS-K can then no longer decouple a coupled CPS-A or accept a new CPS-A. A loss of compressed air leads to increased wear.

- End the fail-safe operation as soon as possible. To do this, restore the compressed air supply or stop operation of the machine/automated system to eliminate the cause of the failure.
- After a fail-safe operation, check the system for damage and monitor the resumption of normal operation for proper functioning.

NOTE

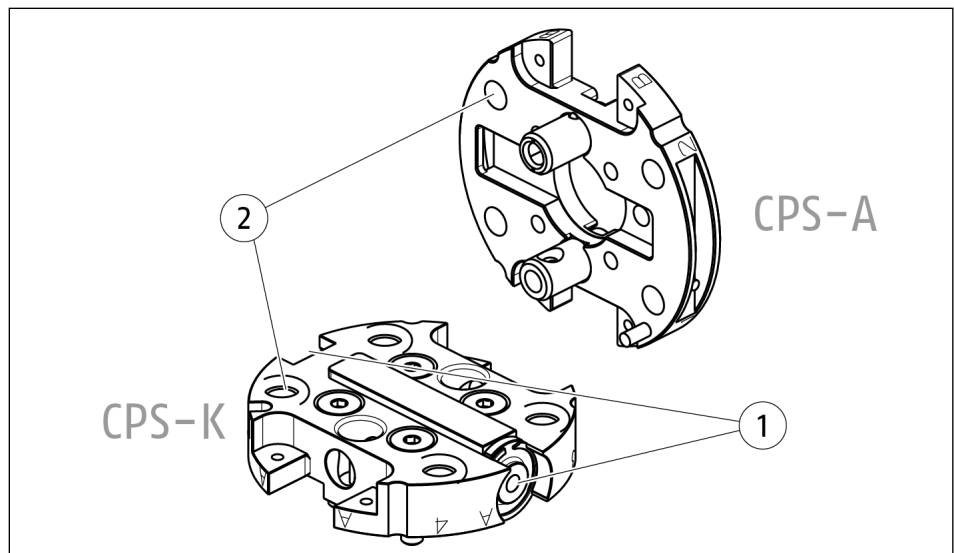
Observe the requirements for the compressed air supply, ► 3 [21].

5.3.1 Example for pneumatic control



Main air connections CPS-K: Locking -><-, Unlocking <-->

5.3.2 Size 001



Pneumatic connection, Size 001

1 Main air connections: Locking -><-, Unlocking <-->

2 Pneumatic feed-through

Size	① Main air connections * Locking -><-- Unlocking <-->	② Pneumatic feed-throughs *
001	M3 / 4	4x M5 / 6

Tab.: Dimensions of compressed air connections

* Thread / Max. depth of engagement from locating surface [mm]

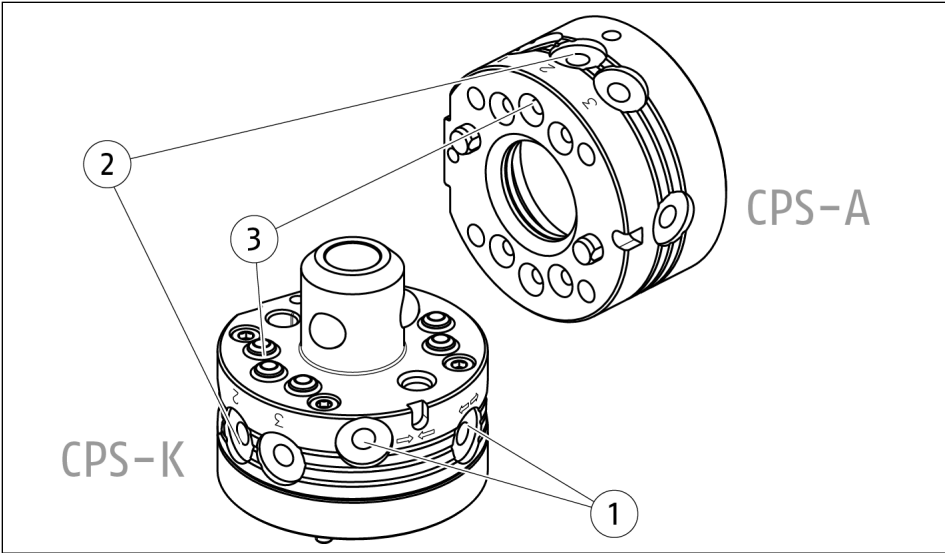
5.3.3 Size 005

NOTICE

Product damage possible due to lack of compensation!

The piston of the CPS 005-K moves in the opposite direction when unlocked, i.e. in the direction of the CPS-A. The end effector is actively repelled via the release bolt in the CPS-A. If there is no possibility for displacement due to the tool rack or the robot, the product can wear out faster or become damaged beyond repair after a short time.

- Ensure sufficient compensation in the direction of the release bolt, which compensates for the separation of CPS-K and CPS-A.
 - ⇒ Min. distance when locking [mm]: 1.5
 - ⇒ Max. distance when locking [mm]: 3



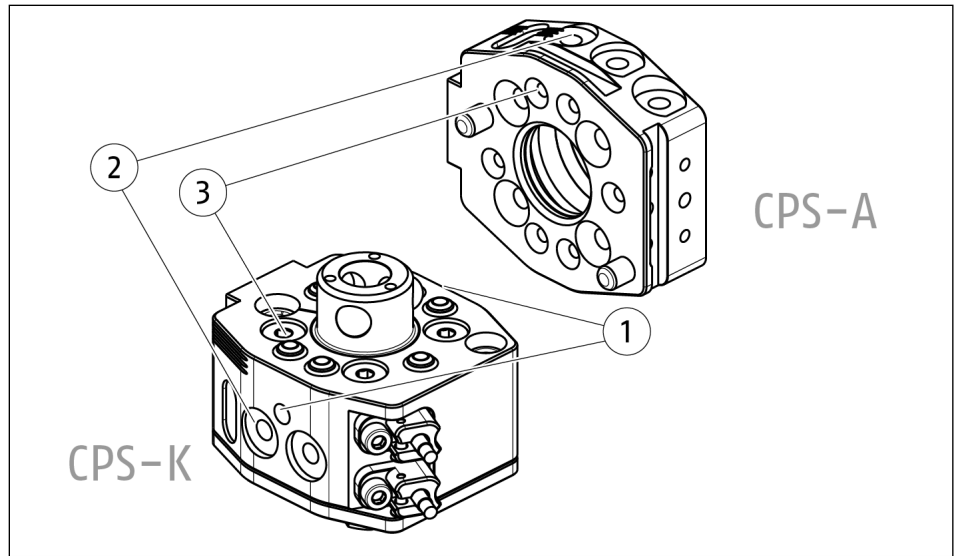
Pneumatic connection, Size 005

- 1 Main air connections: Locking -><- , Unlocking <-->
- 2 Port for pneumatic feed-through
- 3 Pneumatic feed-through with rubber bushing

Size	① Main air connections * Locking -><- Unlocking <-->	② Pneumatic feed-throughs *
005	M5 / 6	6x M5 / 6

Tab.: Dimensions of compressed air connections
 * Thread / Max. depth of engagement from locating surface [mm]

5.3.4 Size 007



Pneumatic connection, Size 007

1 Main air connections:
 Locking -><-,
 Unlocking <--> with pneumatic screw connection *

2 Port for pneumatic feed-through

3 Pneumatic feed-through

* contained in accessory kit

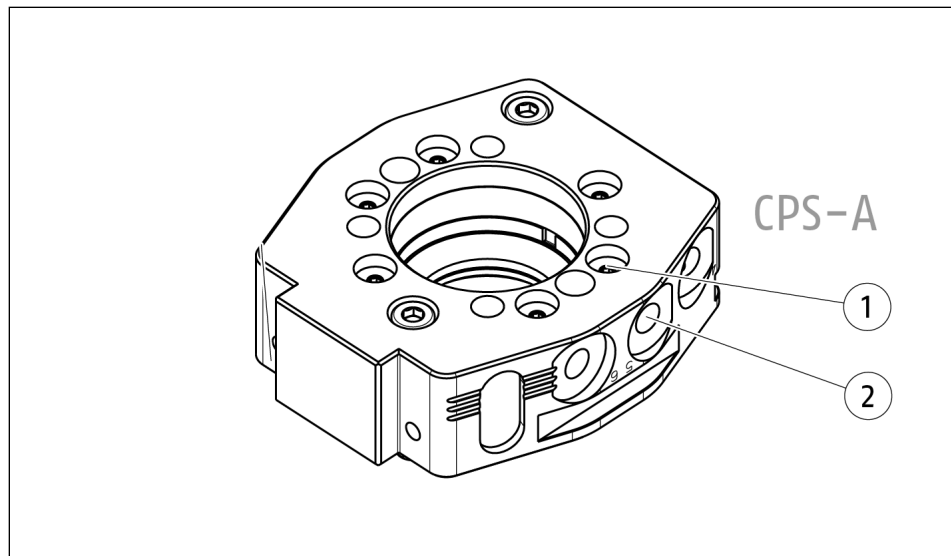
Size	① Main air connections * Locking -><- Unlocking <-->	② Pneumatic feed-throughs *
007	M5 / 6	6x M5 / 6

Tab.: Dimensions of compressed air connections

* Thread / Max. depth of engagement from locating surface [mm]

5.3.4.1 Axial pneumatic feed-throughs

For pneumatic feed-throughs, the CPS 007-A has axial ports, which can optionally be used instead of the radial connections.

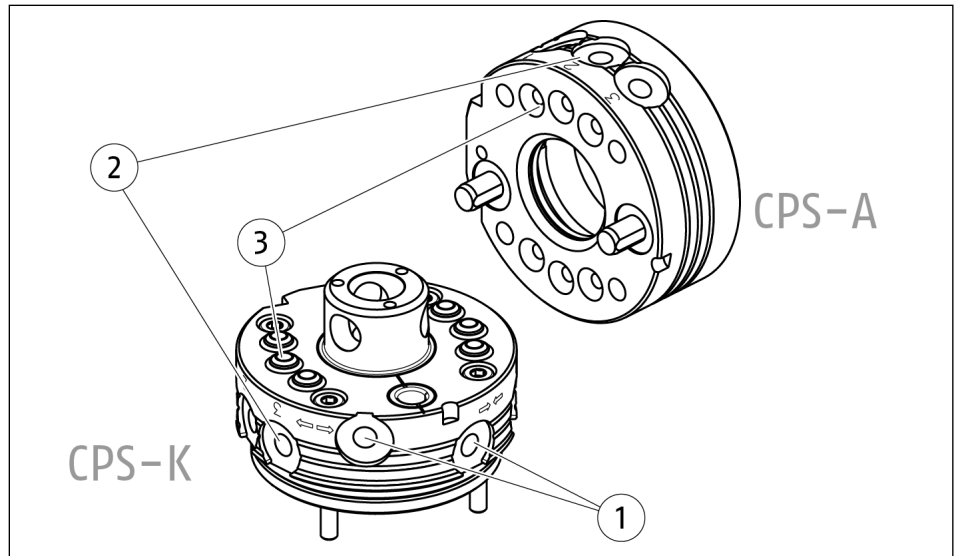


Axial pneumatic feed-throughs on CPS 007-A

- 1 Axial port for pneumatic feed-through
- 2 Radial port for pneumatic feed-through

1. Remove screws on the bottom of the CPS-A from the axial ports for pneumatic feed-through (1).
2. Seal the axial ports for pneumatic feed-through (1) with O-rings from the accessory kit.
3. Close the radial ports for pneumatic feed-through (2) with plugs.

5.3.5 Size 011



Pneumatic connection, Size 011

- 1 Main air connections: Locking -><- , Unlocking <-->

- 2 Port for pneumatic feed-through

- 3 Pneumatic feed-through with rubber bushing

Size	① Main air connections * Locking -><- Unlocking <-->	② Pneumatic feed-throughs *
011	M5 / 6	6x M5 / 6

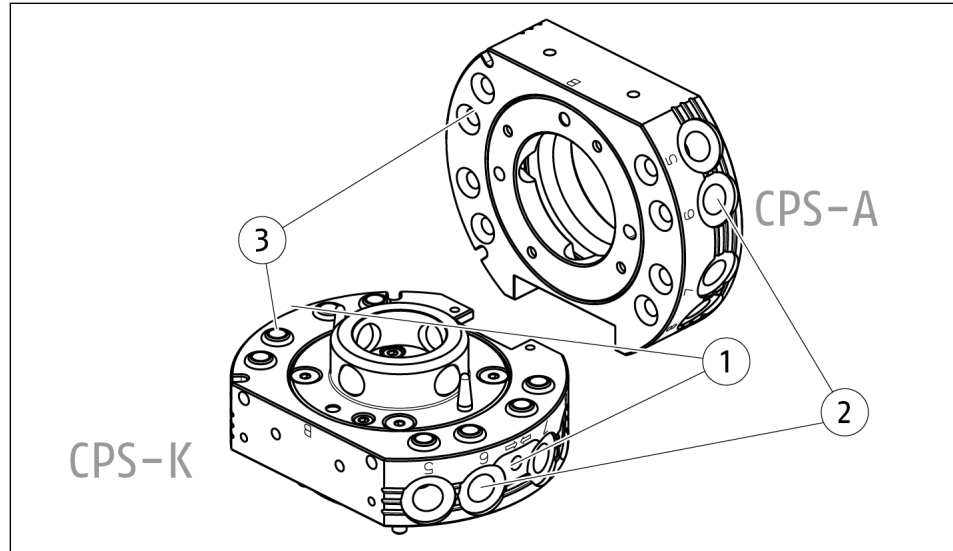
Tab.: Dimensions of compressed air connections

* Thread / Max. depth of engagement from locating surface [mm]

5.3.6 Sizes 020/021/041/060

NOTE

The gaskets for size 020 are located at CPS-A and not, as shown here, at CPS-K.



Pneumatic connection, shown as an example at Size 021

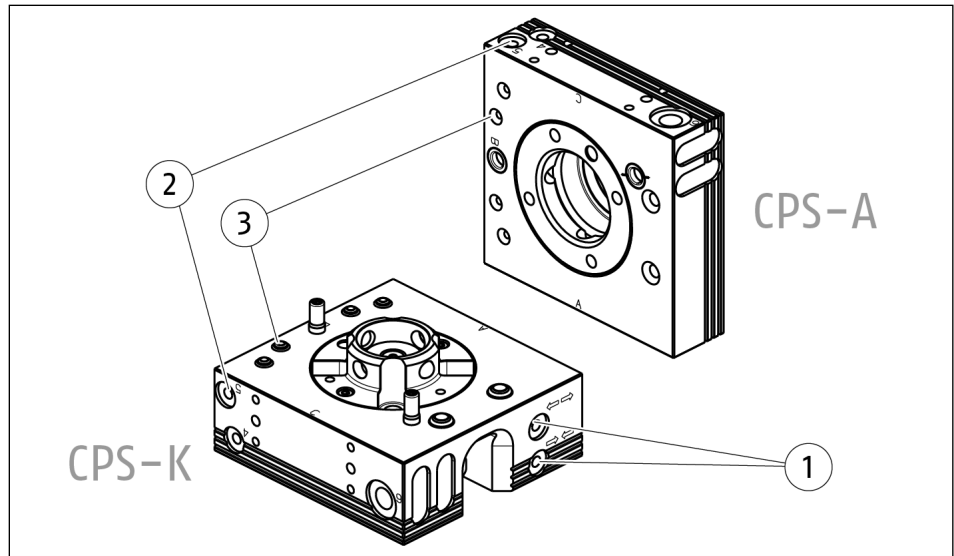
- 1 Main air connections: Locking -><- , Unlocking <-->
- 2 Port for pneumatic feed-through
- 3 Pneumatic feed-through with rubber bushing

Size	① Main air connections * Locking -><- Unlocking <-->	② Pneumatic feed-throughs *
020	M5 / 6	12x M5 / 6
021	M5 / 4	8x G1/8" / 6
041	G1/8" / 10	6x G3/8" / 13 4x G1/8" / 10
060	G1/8" / 10	8x G1/8" / 10

Tab.: Dimensions of compressed air connections

* Thread / Max. depth of engagement from locating surface [mm]

5.3.7 Size 029



Pneumatic connection, Size 029

- 1 Main air connections: Locking -><- , Unlocking <-->

- 2 Port for pneumatic feed-through

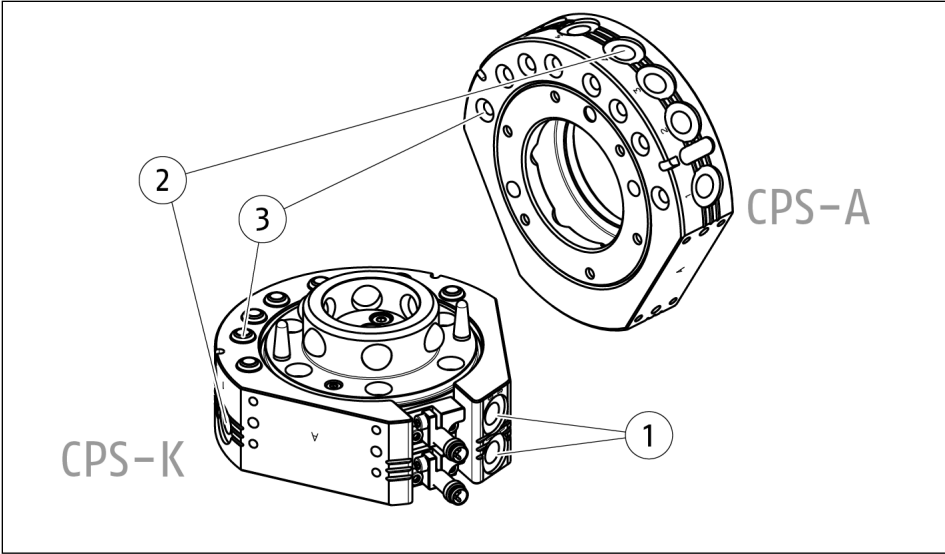
- 3 Pneumatic feed-through with rubber bushing

Size	① Main air connections * Locking -><- Unlocking <-->	② Pneumatic feed-throughs *
029	M5 / 6	2x G1/8" / 8 4x M5 / 6

Tab.: Dimensions of compressed air connections

* Thread / Max. depth of engagement from locating surface [mm]

5.3.8 Size 040



Pneumatic connection, Size 040

- 1 Main air connections: Locking -><- , Unlocking <-->

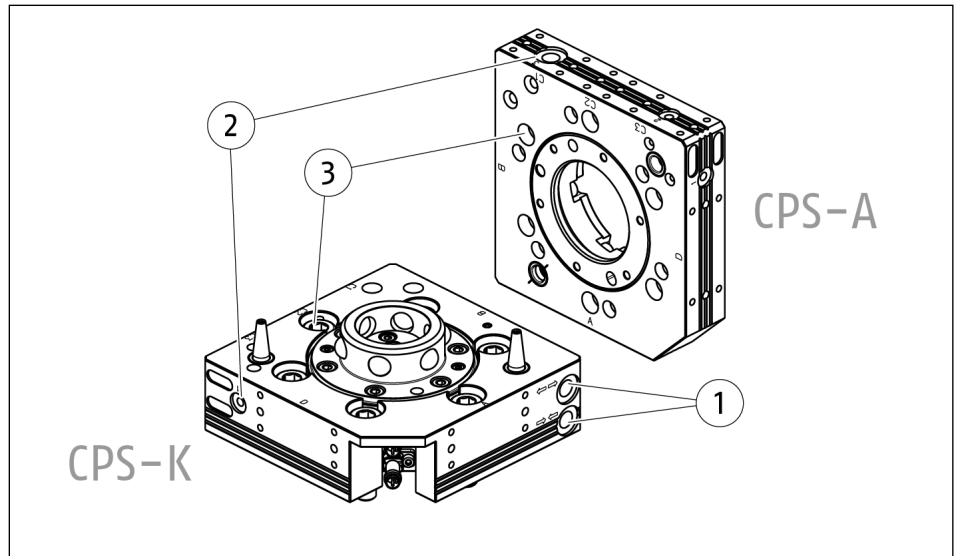
- 2 Port for pneumatic feed-through

- 3 Pneumatic feed-through

Size	① Main air connections * Locking -><- Unlocking <-->	② Pneumatic feed-throughs *
040	G1/8" / 10	8x G1/8" / 10

Tab.: Dimensions of compressed air connections
 * Thread / Max. depth of engagement from locating surface [mm]

5.3.9 Size 046



Pneumatic connection, Size 046

- 1 Main air connections: Locking -><- , Unlocking <-->

- 2 Port for pneumatic feed-through

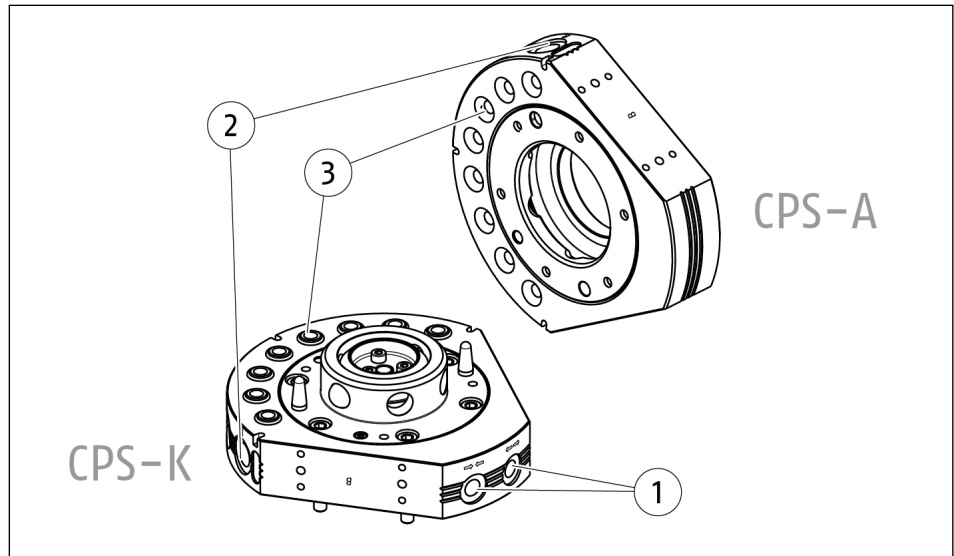
- 3 Pneumatic feed-through

Size	① Main air connections * Locking -><- Unlocking <-->	② Pneumatic feed-throughs *
046	G1/8" / 10	2 x M5 / 6 2 x G1/8" / 10

Tab.: Dimensions of compressed air connections

* Thread / Max. depth of engagement from locating surface [mm]

5.3.10 Size 071



Pneumatic connection, Size 071

- 1 Main air connections: Locking -><- , Unlocking <-->

- 2 Port for pneumatic feed-through

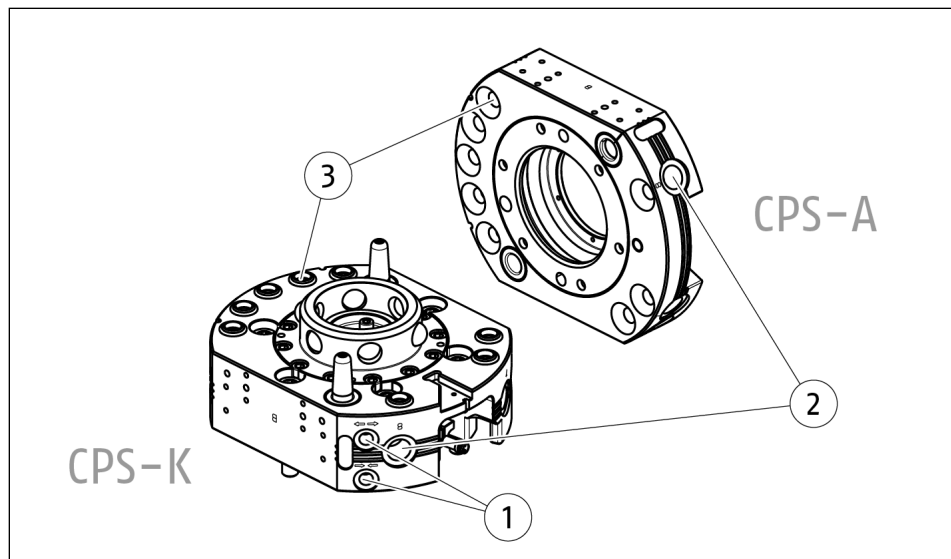
- 3 Pneumatic feed-through

Size	① Main air connections * Locking -><- Unlocking <-->	② Pneumatic feed-throughs *
071	G1/8" / 10	8x G1/4" / 10

Tab.: Dimensions of compressed air connections

* Thread / Max. depth of engagement from locating surface [mm]

5.3.11 Size 076/110/160



Pneumatic connection, Size 076 / 110 / 160

- 1 Main air connections: Locking -><- , Unlocking <-->
- 2 Port for pneumatic feed-through
- 3 Pneumatic feed-through with rubber bushing

Size	① Main air connections * Locking -><- Unlocking <-->	② Pneumatic feed-throughs *
076	G1/8" / 10	5x G3/8" / 8
110	G1/8" / 10	8x G3/8" / 8
160	G1/8" / 10	5x G3/8" / 8 4x G1/2" / 17.5

Tab.: Dimensions of compressed air connections

* Thread / Max. depth of engagement from locating surface [mm]

5.3.12 Size 210 / 310 / 510 / 1210

NOTE

In this size, the compressed air supply is realized via an optional module.

5.4 Mounting the sensor

The product is equipped for the use of sensors.

- For the exact type designations of suitable sensors, please see catalog datasheet and ▶ 5.4.1 [📄 79].
- For technical data for the suitable sensors, see Assembly and Operating Manual and catalog datasheet – which can be found at schunk.com.
- Information on handling sensors is available at schunk.com or from SCHUNK contact persons.

5.4.1 Overview of sensors

The **lock/unlock monitoring** checks whether the locking mechanism is locked or unlocked. Depending on the size, the lock/unlock monitoring is integrated or can be mounted externally. The sensors for the integrated lock/unlock monitoring are set at the factory as standard; the master is also available without sensors as an option.

The **presence monitoring** for CPS-A checks whether the master and tool have the correct minimum distance and position for locking. A sensor is attached to the CPS-K for this purpose. A presence signal is transmitted on contact with the sensor target integrated in the CPS-A.

Size	Locking monitoring		Tool presence monitoring
	integrated	external	
001	-	-	-
005	-	-	-
007	✓	-	-
011	-	✓	-
020	-	✓	-
021	-	✓	-
029	✓	-	-
040	✓	-	-
041	-	✓	-
046	✓	-	-
060	-	✓	-
071	-	✓	-
076	✓	-	✓
110	✓	-	✓
160	✓	-	✓

Size	Locking monitoring		Tool presence monitoring
	integrated	external	
210	✓	-	✓
310	✓	-	✓
510	✓	-	✓
1210	✓	-	✓

The catalog data sheet contains more information.

5.4.2 Checking the integrated locking monitoring



⚠ CAUTION

Risk of injury from objects flying out!

Do not apply compressed air to the compressed air connections when installing the locking monitoring system. Parts may come loose or the adapter plate or the O-ring may be damaged.

- Only apply compressed air to the pneumatic connection when the CPS-K is mounted on the robot.

NOTICE

The sensor adjustment can be lost!

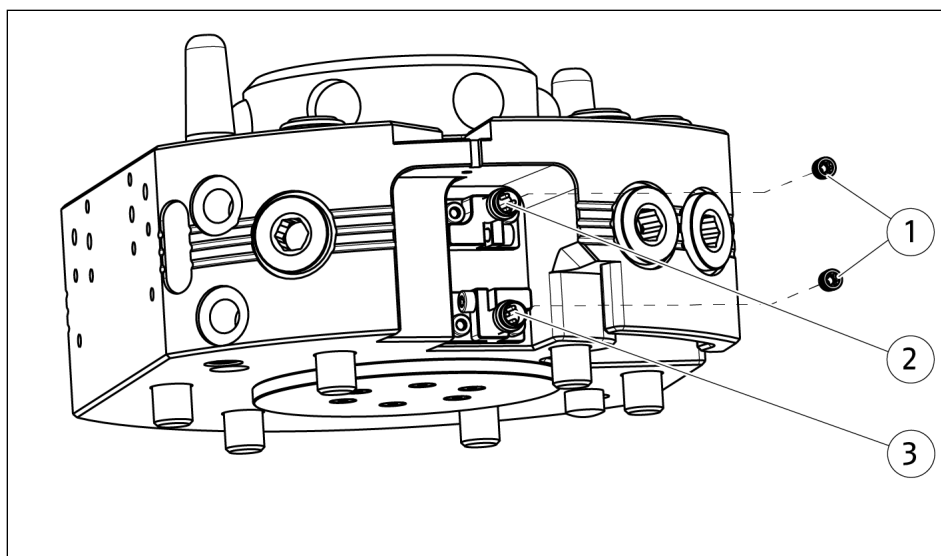
Do not move or remove sensors from the sensor assembly. The sensors are preset at the factory.

NOTE

Some of the sizes (▶ 5.4.1 [79]) can be equipped with an integrated locking monitoring system.

If the integrated locking monitoring is required later for these sizes, this can be retrofitted. For more information, please contact SCHUNK.

1. Remove the seals (1) from the sensor holes.
2. Mount the sensors for the lock (2) and unlock monitoring (3).
3. Connect the sensor cable to the robot control system.
4. Switch on energy supply.
5. Lock and unlock the locking piston and check the signals of the sensors.



Integrated lock/unlock monitoring, shown as an example on CPS 160-K

5.4.3 Mounting and checking external locking monitoring

NOTE

For some of the sizes (► 5.4.1 [📄 79]) an external locking monitoring system can be attached to the CPS-K.

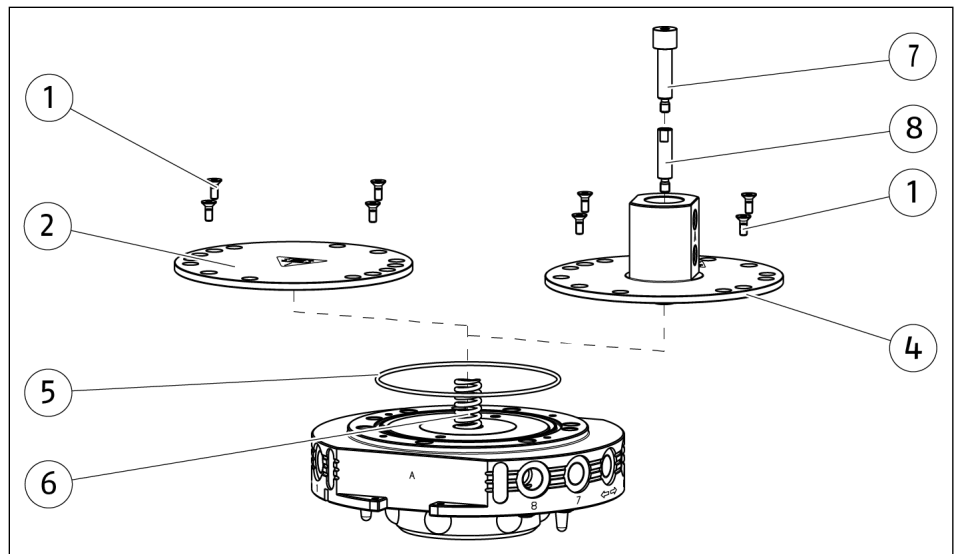
NOTICE

The sensor adjustment can be lost!

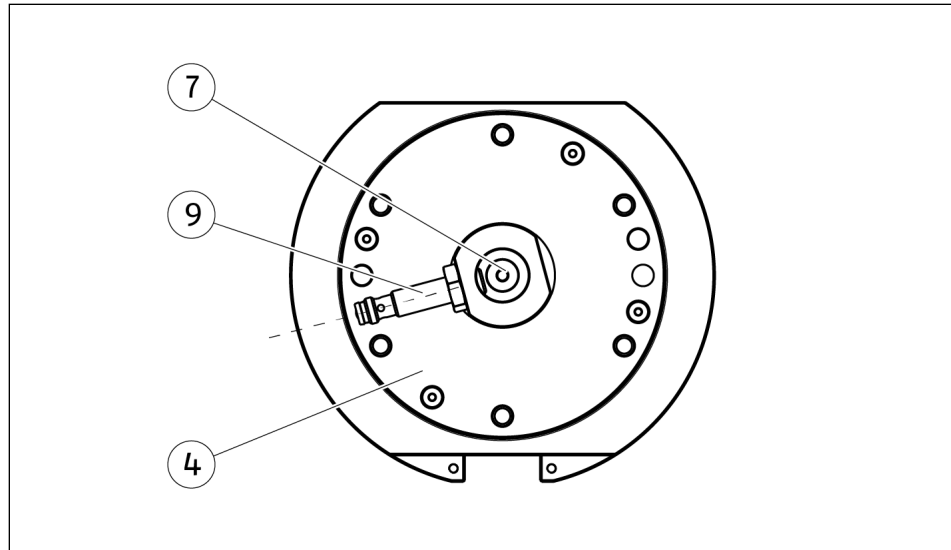
Do not move or remove sensors from the sensor assembly. The sensors are preset at the factory.

1. Place the CPS-A in the storage rack, secure and uncouple it.
2. Switch off the power supply and ensure that there is no residual energy in the system.
3. Remove the compressed air pipes on the CPS-K.
4. Disassemble the CPS-K from the robot and safely set the CPS-K aside, ► 7.3 [📄 90].

5. **CAUTION! Risk of injury due to spring forces! The piston chamber cover (2) is under spring tension.** Loosen the screws (1) and carefully remove the piston chamber cover (2) from the CPS-K. Ensure that the O-ring (5) and pressure spring (6) remain in CPS-K.
 - ⇒ Cover for external lock/unlock monitoring system is fitted.
6. Mount the cover (4) onto CPS-K using screws (1).
 - ⇒ The. switching lug (7) is mounted.
7. Screw the spacer (8) onto the switching lug (7) using a medium-strength thread-locker.
8. Screw the switching lug (7) with a medium-strength thread-locker through the cover and into the cylinder piston of the CPS-K.
 - ⇒ Observe the wrench size of the hexagon socket wrenches (1) and (2) and the max. tightening torque of the mounting screws for each size, see table "Mounting detection shaft", ▶ 5.4.5 [85].
 - ⇒ The. switching lug (7) is mounted.



9. Mounting the sensors (9).
10. Look at the sensor assembly from above.
11. Check that the switching lug (7) and sensors (9) are not touching, adjust the clearance if necessary.
 - ⇒ Sensors (9) are mounted.



12. Connect the sensor cable to the robot control system.
13. Connect all compressed air lines.
14. Switch on energy supply.
15. Lock and unlock the locking piston and check the signals of the sensors.
 - ⇒ CPS-K can be used with external locking monitoring.

5.4.4 Installing the sensor for the tool presence monitoring.

NOTE

For some sizes (► 5.4.1 [□ 79]) a tool presence monitoring device can be mounted on the CPS-K. The associated switch element on the CPS-A is integrated as standard.

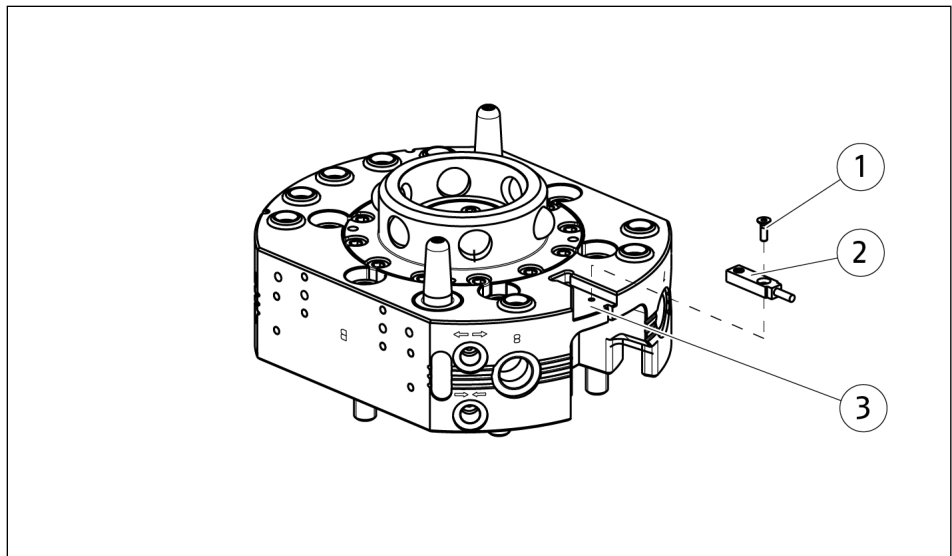
For more information, please contact SCHUNK.

Disassembling CPS-A

1. Place the CPS-A in the storage rack, secure and uncouple it.
2. Switch off the power supply and ensure that there is no residual energy in the system.
3. Remove the compressed air pipes on the CPS-K.
4. Disassemble the CPS-K from the robot and safely set the CPS-K aside, ► 7.3 [□ 90].

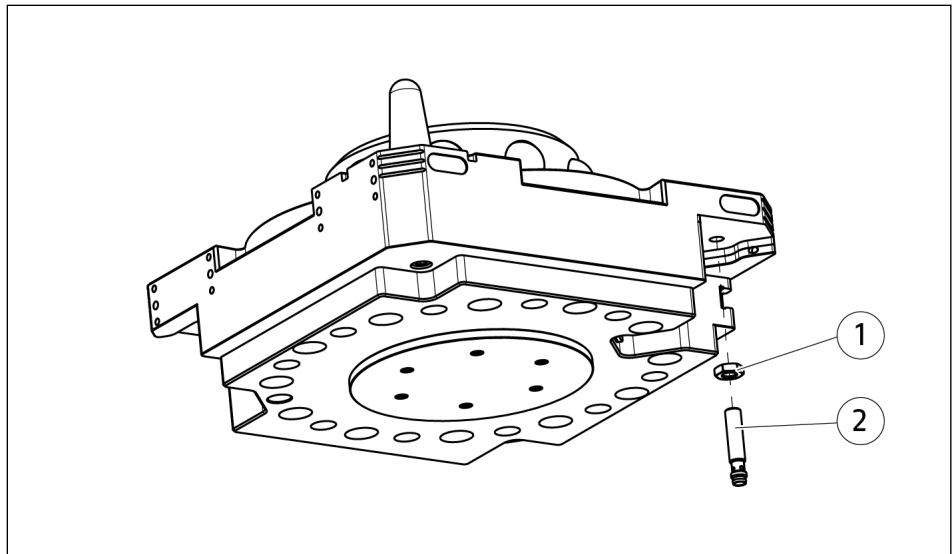
Installing the sensor **Size 076, 110, 160, 210:**

1. Apply medium-strength threadlocker to the screw (1).
2. Fasten sensor (2) in the recess (3) with the screw.



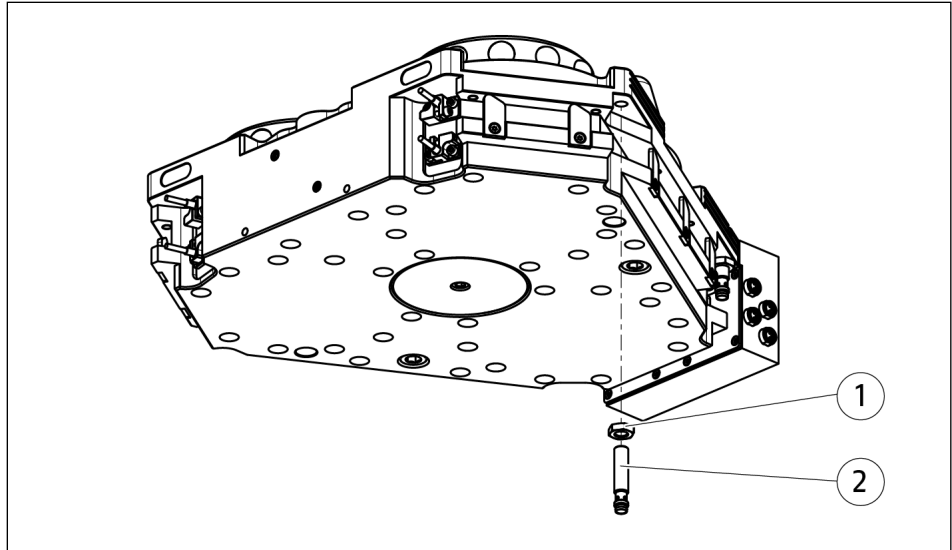
Size 310, 510:

1. Screw the sensor (2) into the housing of the CPS-K until the sensor surface is flush with the surrounding surface of the housing.
2. Tighten counter nut (1).



Size 1210:

1. Screw the sensor (2) into the housing of the CPS-K until the sensor surface is flush with the surrounding surface of the housing.
2. Tighten counter nut (1).



Sensor testing

1. Hold a ferromagnetic object on the sensor surface and test the presence monitoring LED.
 ⇒ The sensor LED will illuminate.
2. Mount CPS-K to the robot, ▶ 5.2 [44].

5.4.5 Wrench sizes and tightening torques

Size	Wrench size (SW) of hexagon socket wrench [mm]		Max. tightening torque [Nm]
	Locking piston	Detection shaft	
011	3	2.5	1.5
020	4	2.5	1.5
021	4	2.5	1.5
041	4	3	1.5
060	5	3	1.5
071	5	3	1.5

Tab.: Installing detection shaft

Size	Wrench size (SW) of hexagon socket wrench [mm]	Mounting screw	Max. tightening torque [Nm]
011	2	M3	1.0
020	2.5	M4	1.0
021	2.5	M4	1.0
041	3	M5	5.0
060	4	M6	6.5
071	4	M6	6.5

Tab.: Mount CPS-K to adapter plate for sensor assembly

6 Troubleshooting

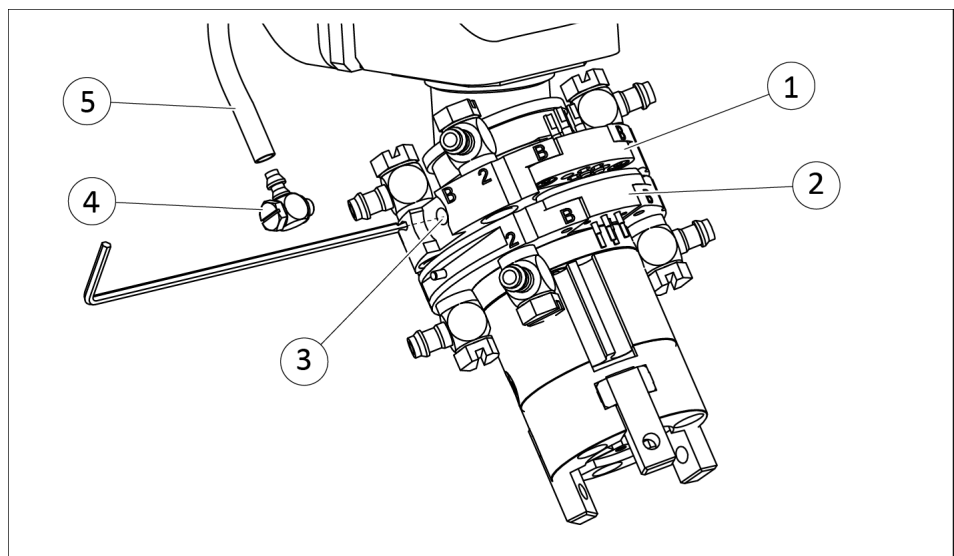
6.1 Product does not lock or unlock

Possible cause	Corrective action
Dirt between CPS-K and CPS-A.	Separate and clean CPS-K and CPS-A. ▶ 7.4 [91]
Locking balls or locking piston tilted.	Clean and lubricate product. ▶ 7.4 [91]
Locking ball missing.	Send damaged products to SCHUNK for repair.
Pressure drops below minimum.	Check compressed air lines. ▶ 5.3 [67] Check seals, disassemble product if necessary and replace seals. ▶ 7.5 [95]
Compressed air in the locking or unlocking connection cannot escape.	Vent connection. ▶ 5.3 [67]
CPS-K and CPS-A have a greater offset to each other than permitted.	Check whether the CPS-A is properly placed in the storage rack. Teach the robot again to bring CPS-A and CPS-K closer together before attempting to lock. For the permissible offset, see ▶ 3.4 [24].

Release the locking manually

NOTE

If the compressed air supply fails, the CPS 001 can be unlocked manually and the CPS-K can be disconnected from the CPS-A.



Release the locking on CPS 001 manually

1. Move the product to the deposit position.
2. Remove the compressed air pipe (5) from the elbow fitting (4).
3. Remove elbow fitting (4) from CPS-K (1).

4. **CAUTION! Risk of injury from falling objects! Secure CPS-A (2) and end effector against falling.**
Insert hexagon socket wrench with ball head into locked connection (3) and manually unlock locking piston by pressing.
5. CPS-A (2) from CPS-K (1).

6.2 Locking or unlocking signal faulty

Possible cause	Corrective action
Sensor defective or incorrectly adjusted.	Adjust or replace sensor. ▶ 7.7 [99]
Sensor cable damaged or connection loose.	Check cables and connections for damage and replace, if necessary.

6.3 Tool presence monitoring faulty

Possible cause	Corrective action
Sensor defective or incorrectly adjusted.	Adjust or replace sensor. ▶ 7.7 [99]
Sensor cable damaged or connection loose.	Check cables and connections for damage and replace, if necessary.
End effector not placed correctly.	Check end effector in the storage rack. Re-teach the robot if necessary.

6.4 Electrical signals are not transmitted

NOTE

Troubleshooting notes can be found in the separate assembly and operating manual for the *electrical* optional module, ▶ 1.1.4 [8].

7 Maintenance

7.1 Maintenance intervals

NOTICE

Material damage due to hardening lubricants!

Lubricants harden more quickly at temperatures above 60°C, leading to possible product damage.

- Reduce the lubricant intervals accordingly.

Original spare parts

Use only original spare parts of SCHUNK when replacing spare and wear parts.

Ambient conditions and operating conditions	Maintenance interval	Maintenance work
in dirty environments or with a tool change > 1 time per minute	weekly	Clean all parts thoroughly, check for damage and wear and grease with a lint-free cloth or brush, ▶ 7.4 [91].
tool change < 1 time per week	monthly	<p>Check product for tightness, replace seals if necessary, ▶ 7.5 [95].</p> <p>Check alignment pins for damage and wear, replace if necessary, ▶ 7.6 [98].</p> <p>Check sensors for damage and wear, replace if necessary, ▶ 7.7 [99].</p> <p>Check optional modules for damage and wear, clean if necessary and change seals, see separate assembly and operating manuals for the optional modules COS.</p>
all	as required	Send damaged products to SCHUNK for repair.

7.2 Lubricants/greasing areas

During maintenance, treat all greased areas with lubricant. Thinly apply lubricant with a lint-free cloth.

SCHUNK recommends the listed lubricant.

Lubricant point	Lubricant
Male coupling	SCHUNK grease 1
Centering / locking sleeve	
Locking ball	
Alignment pin	
Seals and sealing surfaces	
Detection shaft	

Details regarding SCHUNK lubricant designations are available at [schunk.com/lubricants](https://www.schunk.com/lubricants).

The product contains food-compliant lubricants as standard.

The requirements of standard EN 1672-2:2020 are not fully met.

NOTE

- Change contaminated food-compliant lubricant.
- Observe information in the safety data sheet from the lubricant manufacturer.

7.3 Removing the product from the robot arm



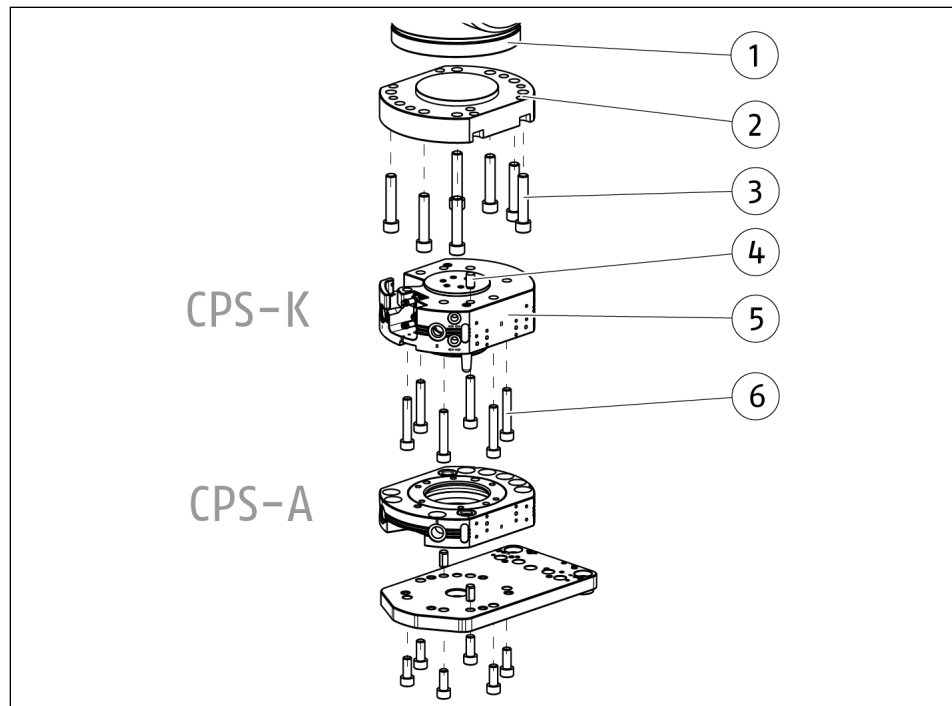
⚠ WARNING

Risk of injury due to unexpected movements and falling tools!

If the energy supply is switched on or if residual energy is still present in the system, this can cause components to move unexpectedly or fall, which may result in serious injuries.

- Before starting any work on the product: Switch off the energy supply and secure against re-connection.
- Ensure that no residual energy remains in the system.
- Only carry out maintenance work when the tool is placed in the storage rack or secured against falling.

1. Place the CPS-A in the storage rack, secure and uncouple it.
2. Switch off and deactivate all activated supply circuits (e.g. electrical, air, water, etc.).
3. Ensure that there is no residual energy in the system.
4. Remove the compressed air pipes on the CPS-K.
5. Loosen screws (6) and remove CPS-K (5) from the robot (1). Make sure that the dowel pin (4) does not fall off.
6. Place down the CPS-K (5).
7. **When using an adapter plate:** If necessary, loosen the screws (3) and remove the adapter plate (2) from the robot (1).



Disassembling the product from the robot, shown as an example

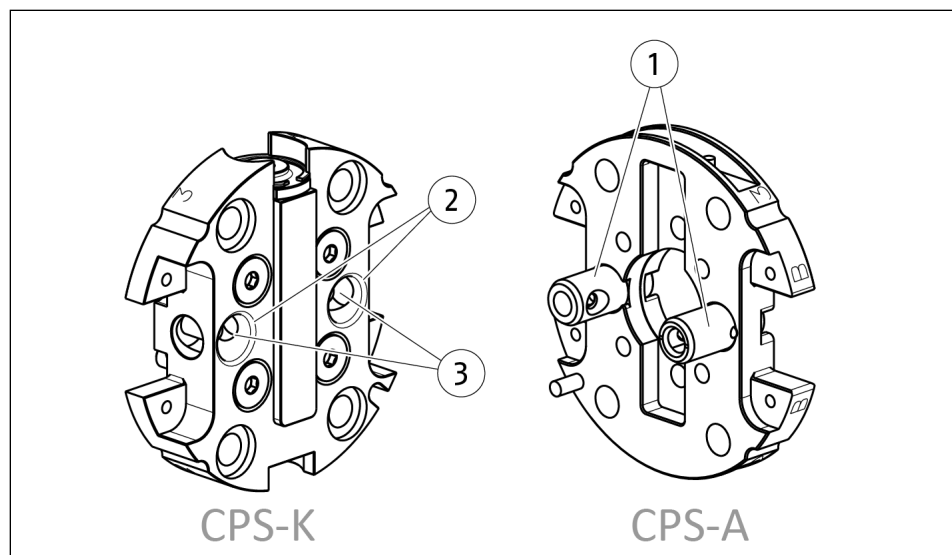
7.4 Clean and lubricate product

Size 001

- CPS-A is in the storage rack, CPS-K has been removed from the robot, ▶ 7.3 [90]
1. Remove lubricant residues and dirt from the centering / locking sleeve (1) on the CPS-A and the locking mechanism (2) and centering pin (3) on the CPS-K.
 2. Lubricate the centering / locking sleeve (1) on the CPS-A, ▶ 7.2 [89].

NOTE

Locking mechanism (2) and centering pin (3) on the CPS-K are sufficiently lubricated at the factory on delivery.

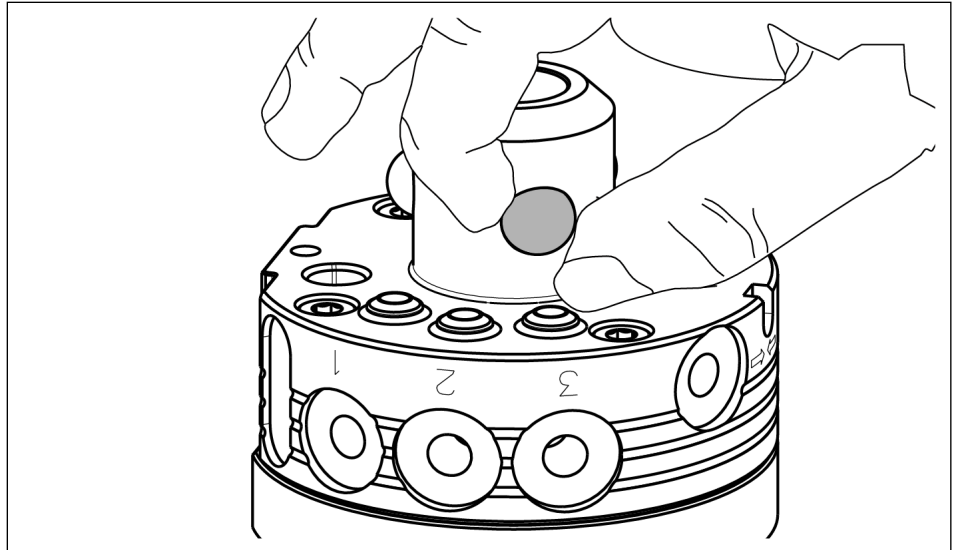


Cleaning and lubrication CPS 001

Size 005, Size 011

- CPS-A is in the storage rack, CPS-K has been removed from the robot, ▶ 7.3 [90]

1. Check locking balls. Each ball must move freely in the ball bearing.
2. Loosen stuck balls and clean with a clean cloth.

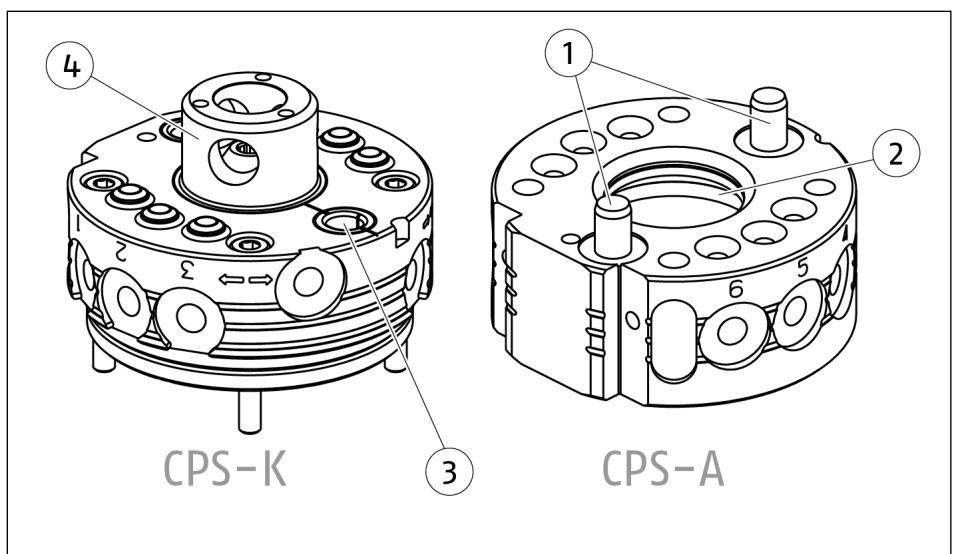


Check that the locking balls on the CPS-K can move

3. Remove lubricant residues and dirt from the alignment pin (1), bearing race (2), alignment pin bushings (3) and locking mechanism (4).
4. Generously lubricate the locking mechanism (4) and alignment pin (1), ▶ 7.2 [89].

NOTE

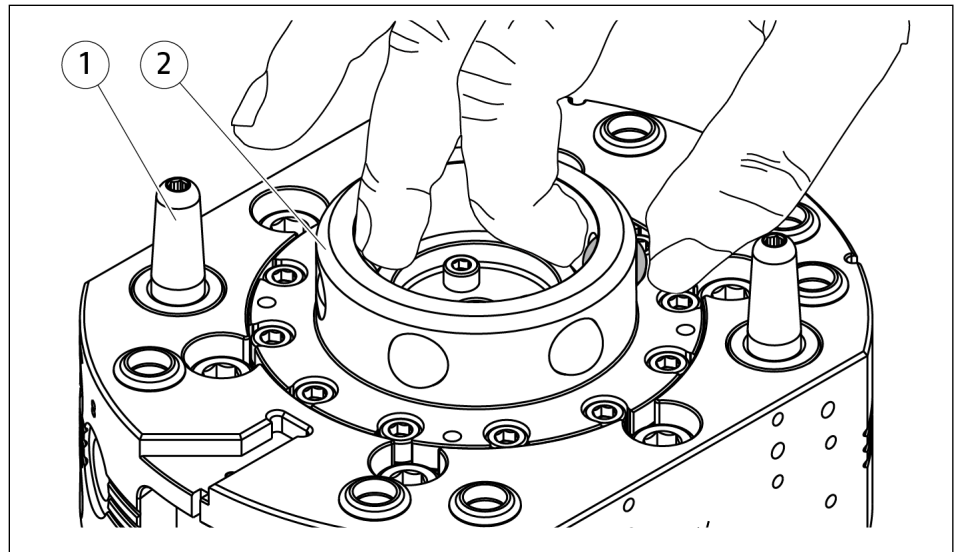
The centering bushes and the locking ring are sufficiently lubricated at the factory on delivery.



Clean CPS with a lint-free cloth

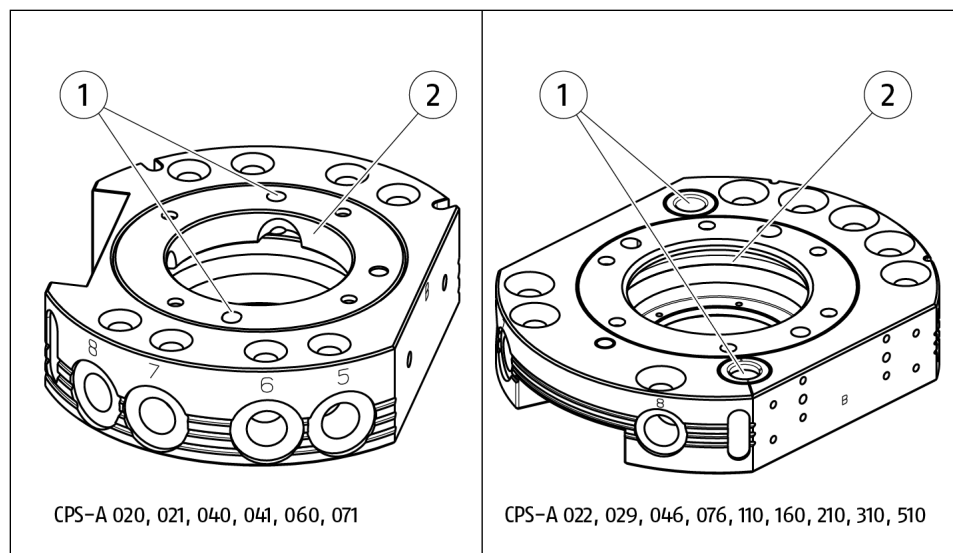
Size 020 to Size 510

- CPS-A is in the storage rack, CPS-K has been removed from the robot, ▶ 7.3 [90]
1. Check locking balls. Each ball must move freely in the ball bearing.
 2. Loosen stuck balls and clean with a clean cloth.
 3. Remove lubricant residues and dirt from the centering pin (1) and locking mechanism (2) and lubricate generously, ▶ 7.2 [89].



Check that the locking balls on the CPS-K can move, and lubricate them

4. Clean the alignment pin bushing (1) and bearing race (2) and remove lubricant residues and dirt.



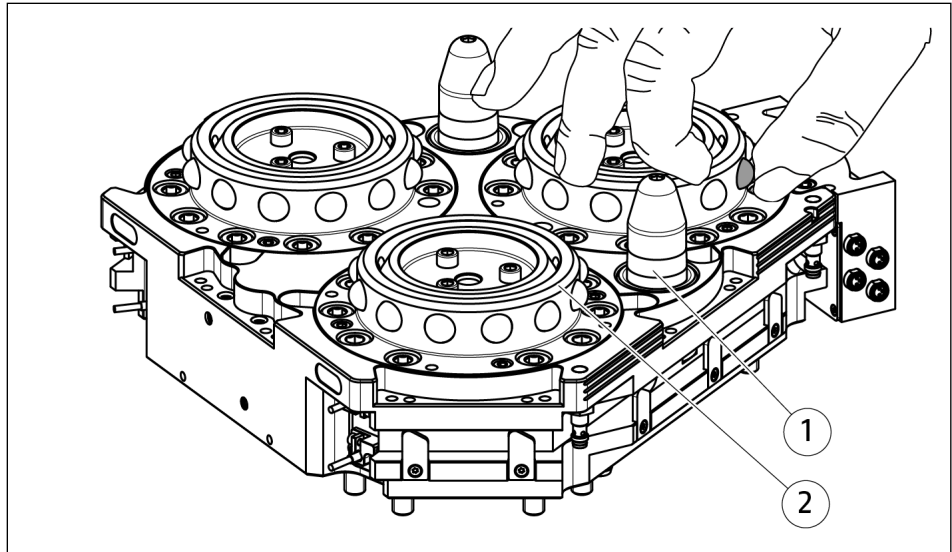
Clean the locking mechanism on the CPS-A

NOTE

The centering bushes and the locking ring are sufficiently lubricated at the factory on delivery.

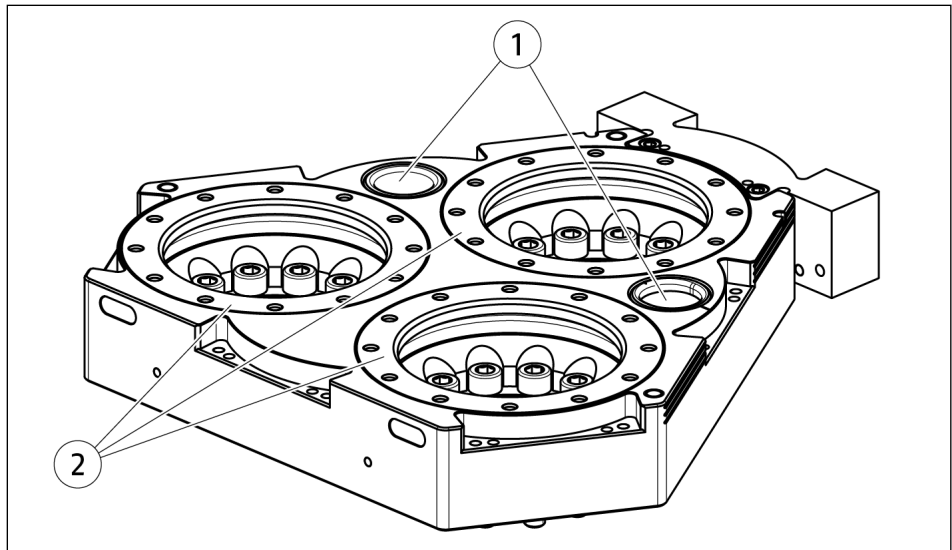
Size 1210:

- CPS-A is in the storage rack, CPS-K has been removed from the robot, ▶ 7.3 [90]
- 1. Check locking balls. Each ball must move freely in the ball bearing.
- 2. Loosen stuck balls and clean with a clean cloth.
- 3. Remove lubricant residues and dirt from the centering pin (1) and locking mechanism (2) and lubricate generously, ▶ 7.2 [89].



Check that the locking balls on the CPS-K can move, and lubricate them

- 4. Clean the alignment pin bushing (1) and bearing race (2) and remove lubricant residues and dirt.



Clean the locking mechanism on the CPS-A

NOTE

The centering bushes and the locking ring are sufficiently lubricated at the factory on delivery.

7.5 Replacing seals

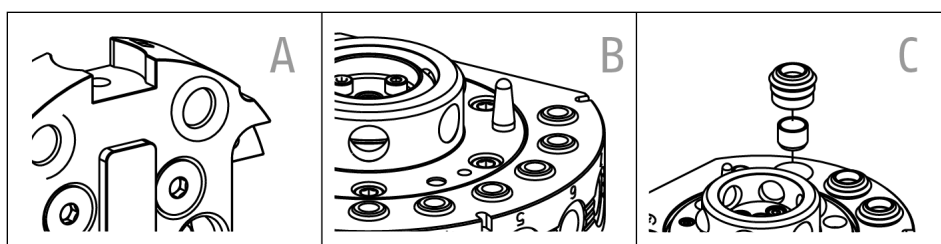
7.5.1 Overview of the seals

NOTE

For information on the available seal kits, see chapter ▶ 1.4 [📄 10].

The seals on the pneumatic feed-throughs in the CPS-K may look as follows:

- O-ring (A)
- Rubber bushings (B)
- Rubber bushings with sleeve (C)



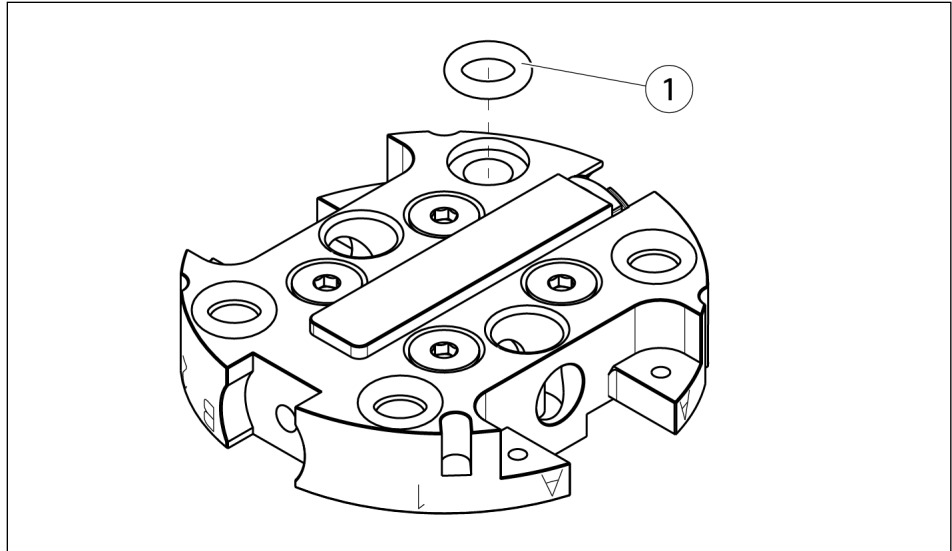
Seals on the pneumatic feed-throughs

Size	A	B	C
001	✓		
005		✓	
007		✓	
011		✓	
020		✓	
021		✓	
029		✓	
040		✓	
041		✓	✓
046		✓	
060		✓	
071		✓	
076			✓
110			✓
160			✓
210	Pneumatic feed-throughs via optional modules		
310	Pneumatic feed-throughs via optional modules		
510	Pneumatic feed-throughs via optional modules		
1210	Pneumatic feed-throughs via optional modules		

7.5.2 Change O-ring

- CPS-A is in the storage rack, CPS-K has been removed from the robot, ▶ 7.3 [89]

 1. Remove damaged O-ring (1).
 2. Lightly lubricate the new O-ring (1), ▶ 7.2 [89].
 3. Carefully insert the O-ring (1) into the bore up to the stop.

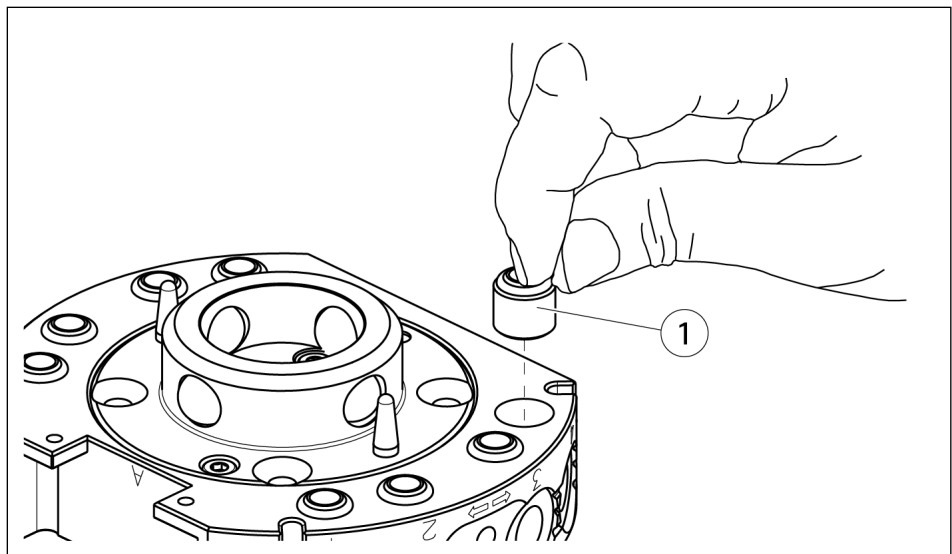


Change O-ring

7.5.3 Change rubber bushing

- CPS-A is in the storage rack, CPS-K has been removed from the robot, ▶ 7.3 [89]

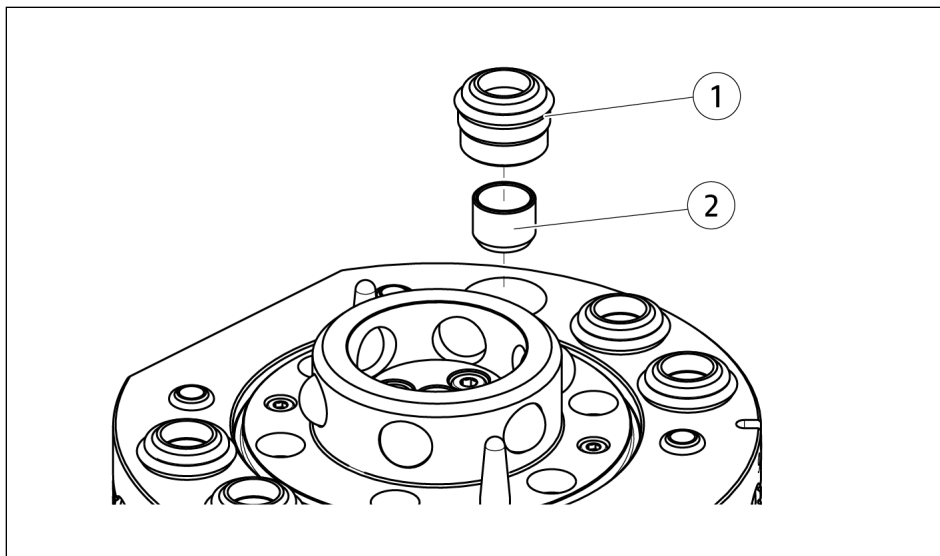
 1. Remove damaged rubber bushing (1).
 2. Lightly lubricate the new rubber bushing (1), ▶ 7.2 [89].
 3. Carefully insert the rubber bushing (1) into the bore with the flat end up to the stop. The conical end points upwards.



Change rubber bushing

7.5.4 Replace rubber bushing with sleeve

- CPS-A is in the storage rack, CPS-K has been removed from the robot, ▶ 7.3 [📄 90]
- 1. Remove damaged rubber bushing (1) and sleeve (2).
- 2. Lightly lubricate the new rubber bushing (1), ▶ 7.2 [📄 89].
- 3. Carefully insert the rubber bushing (1) into the bore with the flat end up to the stop. The conical end points upwards.
- 4. Press sleeve (2) into the rubber bushing (1) up to the stop.



Replace rubber bushing with sleeve

7.6 Change alignment pins

NOTE

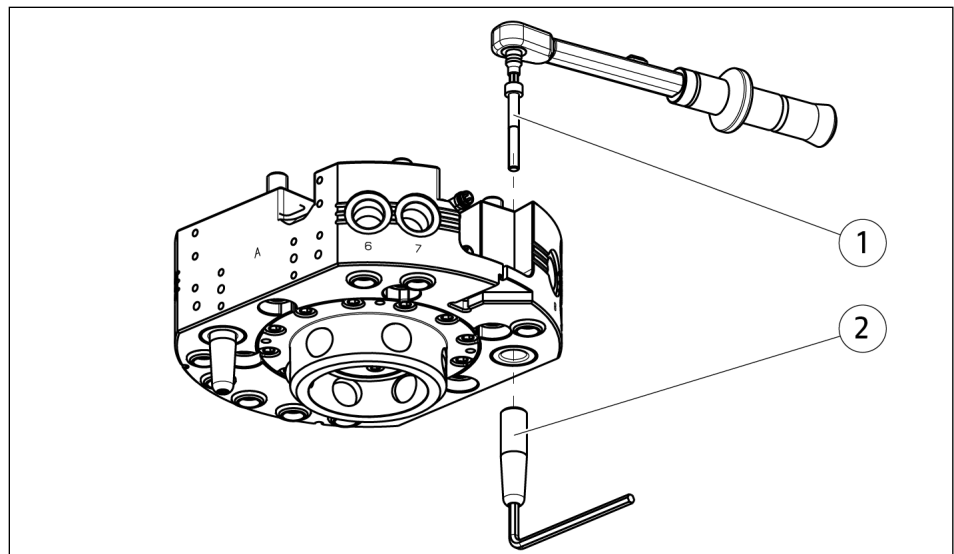
External alignment pins can be ordered as spare parts from SCHUNK.

7.6.1 External alignment pins

NOTE

Sizes 007, 029, 046, 076, 110, 160, 210, 310, 510 and 1210 are fitted with external centering pins.

- CPS-A is in the storage rack, CPS-K has been removed from the robot, ▶ 7.3 [90]
- 1. Remove all lubricant residue and dirt from the alignment pins (2).
- 2. Loosen screw (1) with ratchet and remove centering pins (2) from CPS-K.
- 3. Insert a new centering pin (2) in the bore for centering pins and secure with a screw (1).
- 4. Lubricate the new centering pin (2), ▶ 7.2 [89].



Remove alignment pins

7.6.2 Internal alignment pins

NOTE

Sizes 005, 011, 020, 021, 040, 041, 060 and 071 are fitted with internal centering pins. They are installed in the male coupling.

- Please contact SCHUNK for the replacement of internal alignment pins.

7.7 Change sensors

7.7.1 Changing integrated locking monitoring



⚠ CAUTION

Risk of injury from objects flying out!

Do not apply compressed air to the compressed air connections when installing the locking monitoring system. Parts may come loose or the adapter plate or the O-ring may be damaged.

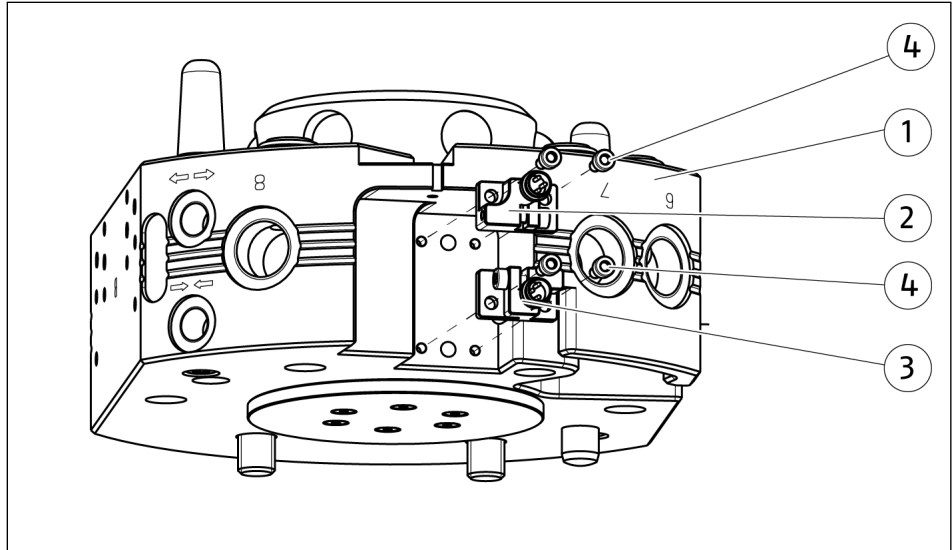
- Only apply compressed air to the pneumatic connection when the CPS-K is mounted on the robot.

NOTE

Integrated locking monitoring can be retrofitted if required. The installation for retrofitting is carried out in the same way as for replacement. Contact SCHUNK for ordering retrofit parts.

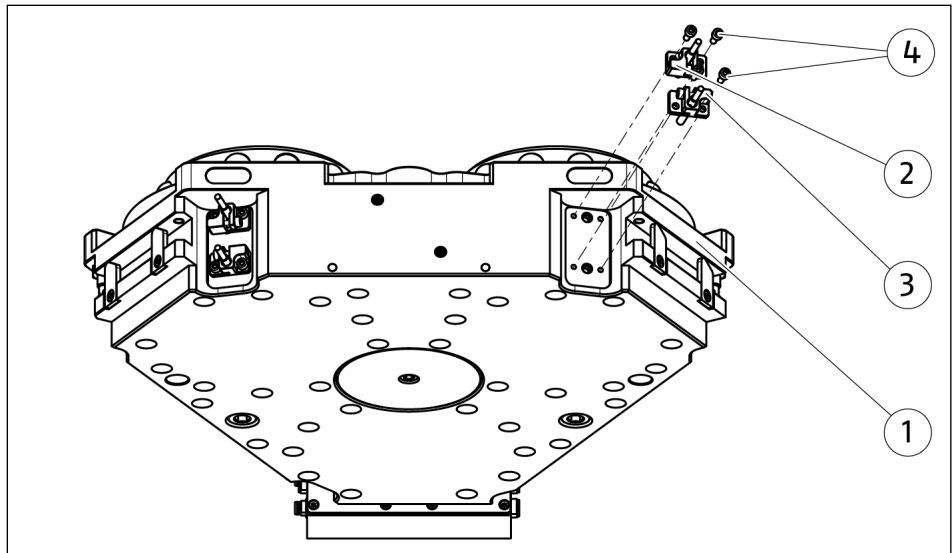
- CPS-A is in the storage rack, CPS-K has been removed from the robot, ▶ 7.3 [📄 90]
1. Check sensor cable for damage, replace if necessary.
 2. **For retrofitting:** Remove the protection cover from the bores on the CPS-K.
For changing: Loosen the mounting screws and remove the sensor assembly with damaged sensor from CPS-K.
 3. Secure the new sensor assembly lock (2) or unlocking monitoring (3) to the CPS-K (1) with screws (4).
⇒ Max. tightening torque: 1.4 Nm
 4. Connect cable to sensor assembly (2) and (3).
 5. Connect all compressed air lines.
 6. Switch on energy supply.
 7. Lock and unlock the locking piston and check the signals of the sensors.

similar to Size 007,
029, 040, 046,
076,110,160, 210, 310,
510



Changing integrated locking monitoring

Size 1210

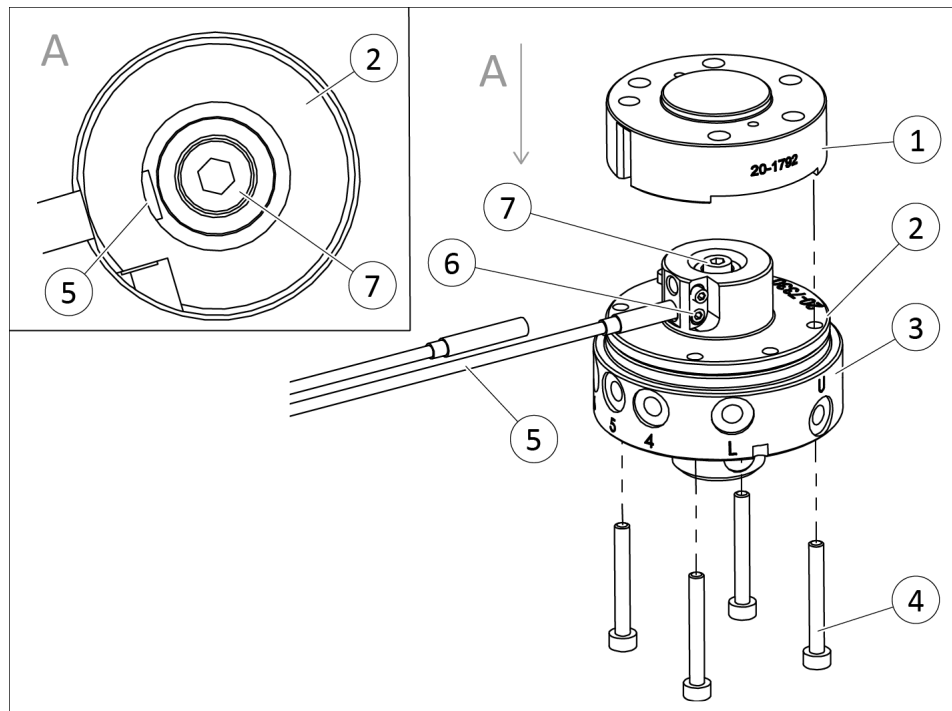


Changing integrated locking monitoring

To connect the sensor to the sensor distribution box,
see ▶ 7.8.19 [125].

7.7.2 Changing external locking monitoring

Size 011



Changing external lock/unlock monitoring, A = view from above

Removing a defective sensor

1. Place the CPS-A in the storage rack, secure and uncouple it.
2. Check sensor cable for damage, replace if necessary.
3. Lock and unlock the locking piston and check the signals of the sensors.
4. Switch off the power supply and ensure that there is no residual energy in the system.
5. Remove the compressed air pipes on the CPS-K.
6. Loosen the screws (4) and dismantle the CPS-K (3) complete with the mounted sensor assembly (2) from the adapter plate (1).
7. Loosen screw (6) and unscrew the damaged sensor (5) from the sensor assembly (2).

Mount new sensor

1. Screw the new sensor (5) into the sensor assembly (2) until the sensor (5) touches the switching lug.
2. Unscrew the sensor (5) again by a half turn.
3. Look at the sensor assembly from above.
4. Ensure that the detection shaft (7) and sensors (5) do not touch each other, readjust the distance if necessary.

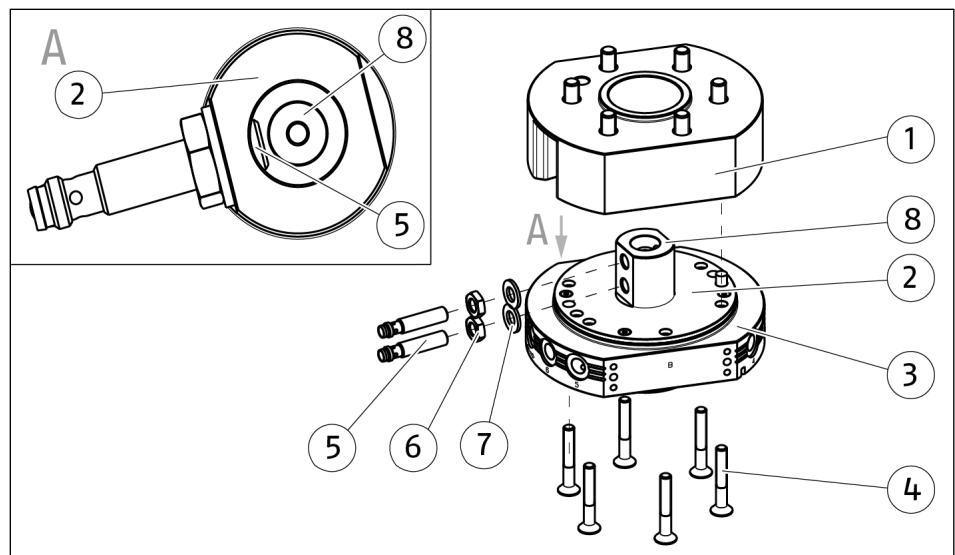
5. Apply screw lock to screw (6) and fasten sensor (5) with screw (6).

NOTICE! Risk of damage to the sensor! Carefully screw in screw (6) until screw (6) touches the sensor, then tighten an additional approx. 1/4 turn.

Check the new sensor

1. Switch on energy supply.
 - ⇒ The sensor LED will illuminate.
 - ⇒ Sensor signal is ON.
2. Mount the CPS-K (3) complete with the mounted sensor assembly (2) to the adapter plate (1) using screws (4).
 - ⇒ Observe the tightening torque for the mounting screws.
3. Connect compressed air pipes to the CPS-K.
4. Lock and unlock the locking piston and check the signals of the sensors.

Size 020/ 021/ 041/ 060/ 071



Changing external lock/unlock monitoring system, A = view from above, shown as an example on CPS 041-K

Removing a defective sensor

1. Place the CPS-A in the storage rack, secure and uncouple it.
2. Check sensor cable for damage, replace if necessary.
3. Lock and unlock the locking piston and check the signals of the sensors.
4. Switch off the power supply and ensure that there is no residual energy in the system.
5. Remove the compressed air pipes on the CPS-K.
6. Loosen the screws (4) and dismantle the CPS-K (3) complete with the mounted sensor assembly (2) from the adapter plate (1).

7. Remove sensor cable.
8. Loosen the hexagon nut (6) and unscrew the sensor (5) from the sensor assembly (2).
9. Remove washer (7) from sensor (5).

Mount new sensor

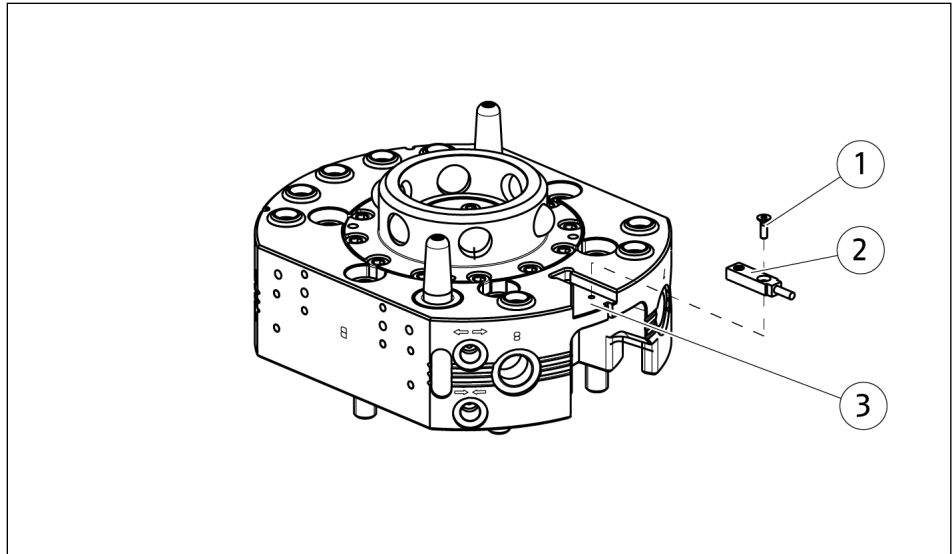
1. Screw hexagon nut (6) onto new sensor (5).
2. Screw the new sensor (5) with washer (7) into the sensor assembly (2) until sensor (5) touches the switching lug (8).
3. Unscrew the sensor (5) again by a half turn.
4. Look at the sensor assembly from above.
5. Check that the switching lug (8) and sensor (5) do not touch each other, readjust the distance if necessary.
6. Apply threadlocker to the thread of the sensor (5).
7. Tighten the hexagon nut (6).
 - ⇒ Max. tightening torque [Nm]: 2.3

Check the new sensor

1. Connect sensor cable.
2. Switch on energy supply.
 - ⇒ The sensor LED will illuminate.
 - ⇒ Sensor signal is ON.
3. Mount the CPS-K (3) complete with the mounted sensor assembly (2) to the adapter plate (1) using screws (4).
 - ⇒ Observe the tightening torque for the mounting screws.
4. Connect compressed air pipes to the CPS-K.
5. Lock and unlock the locking piston and check the signals of the sensors.

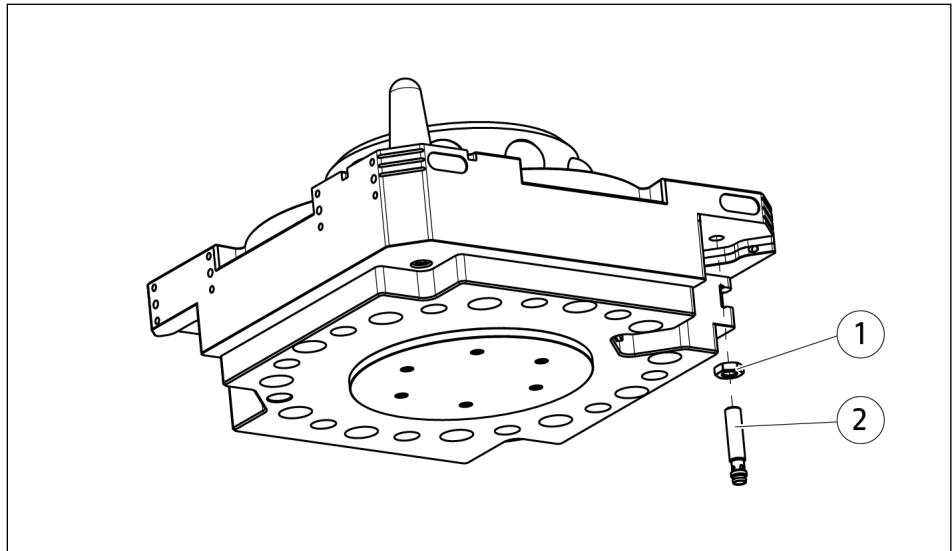
7.7.3 Replace the sensor for tool presence monitoring

Size 076, 110, 160, 210



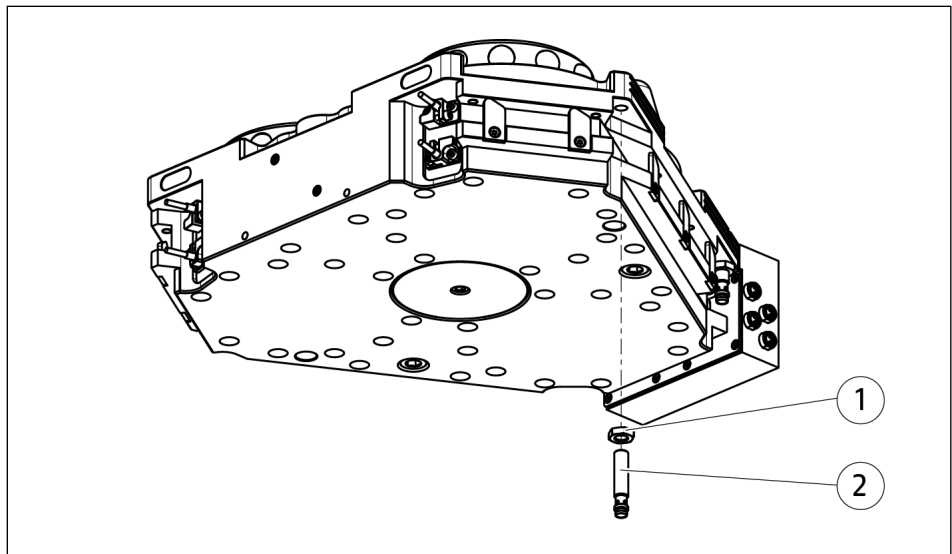
Replace the sensor for presence monitoring

Size 310, 510



Replace the sensor for presence monitoring

Size 1210



Replace the sensor for presence monitoring

- Removing the sensor**
1. Place the CPS-A in the storage rack, secure and uncouple it.
 2. Switch off the power supply and ensure that there is no residual energy in the system.
 3. Remove the compressed air pipes on the CPS-K.
 4. Disassemble the CPS-K from the robot and safely set the CPS-K aside, ▶ 7.3 [📄 90].
 5. Size 076, 110, 160, 210: Loosen the screw (1).
 6. Size 310, 510: Loosen the counter nut (1).
 7. Remove sensor (2).

Mounting a new sensor

Size 076, 110, 160, 210:

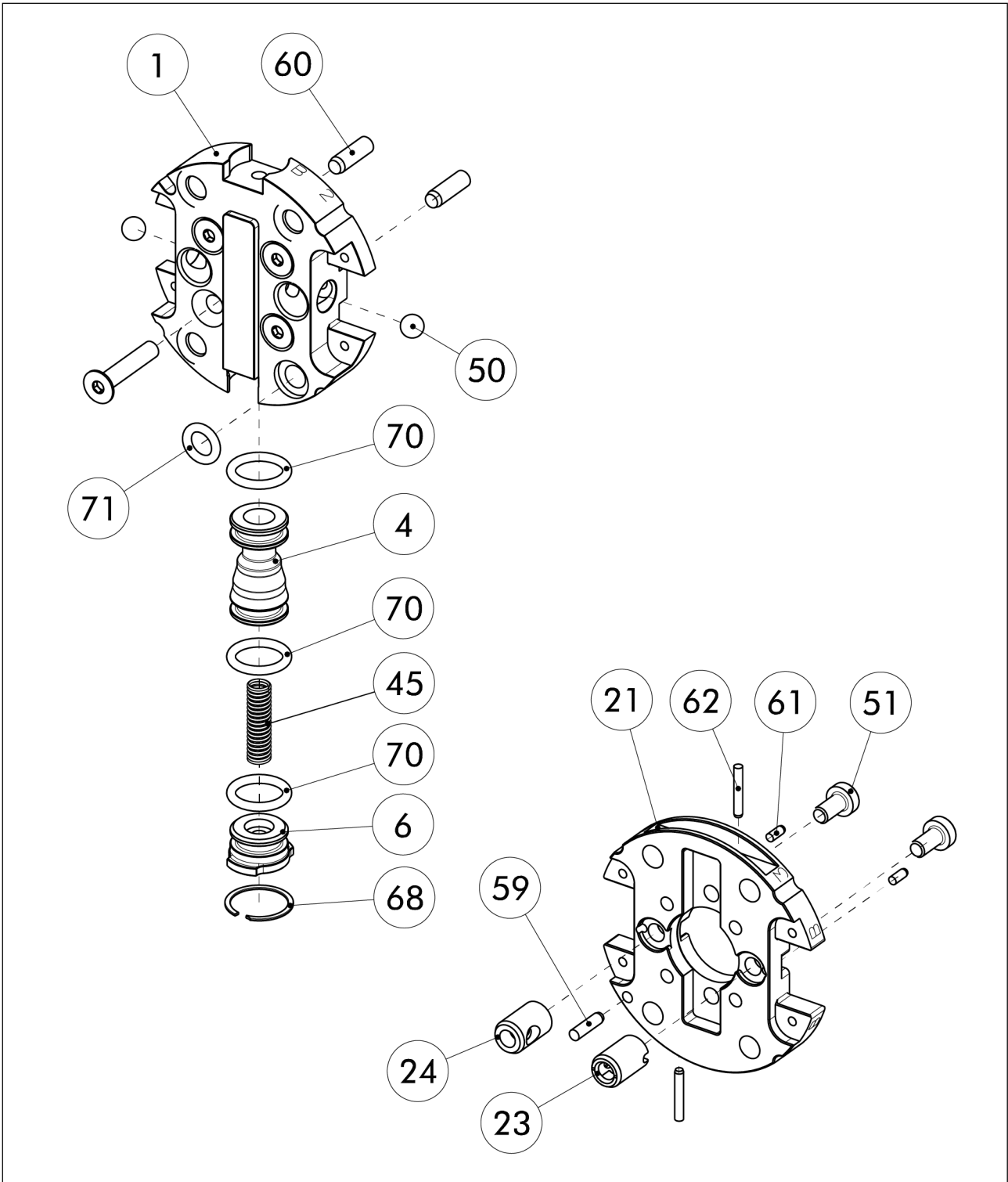
1. Apply medium-strength threadlocker to the screw (1).
2. Fasten sensor (2) in the recess (3) with the screw.
3. Hold a ferromagnetic object on the sensor surface and test the presence monitoring LED.
⇒ The sensor LED will illuminate.

Size 310, 510, 1210:

1. Screw the sensor (2) into the housing of the CPS-K until the sensor surface is flush with the surrounding surface of the housing.
2. Tighten counter nut (1).
3. Size 1210: Connect the sensor to the sensor distribution box, see ▶ 7.8.19 [📄 125]
4. Hold a ferromagnetic object on the sensor surface and test the presence monitoring LED.
⇒ The sensor LED will illuminate.

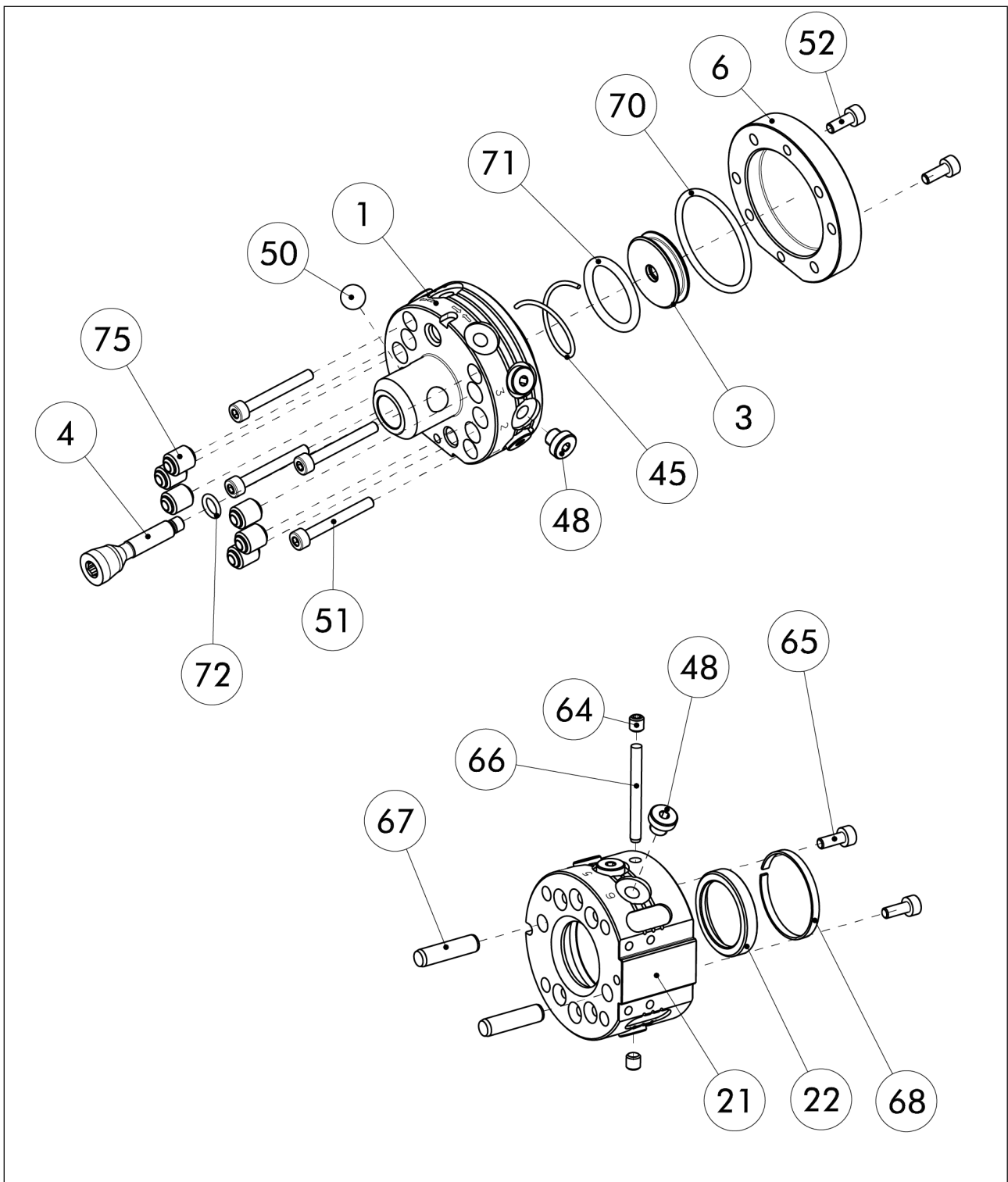
7.8 Assembly drawings

7.8.1 Size 001



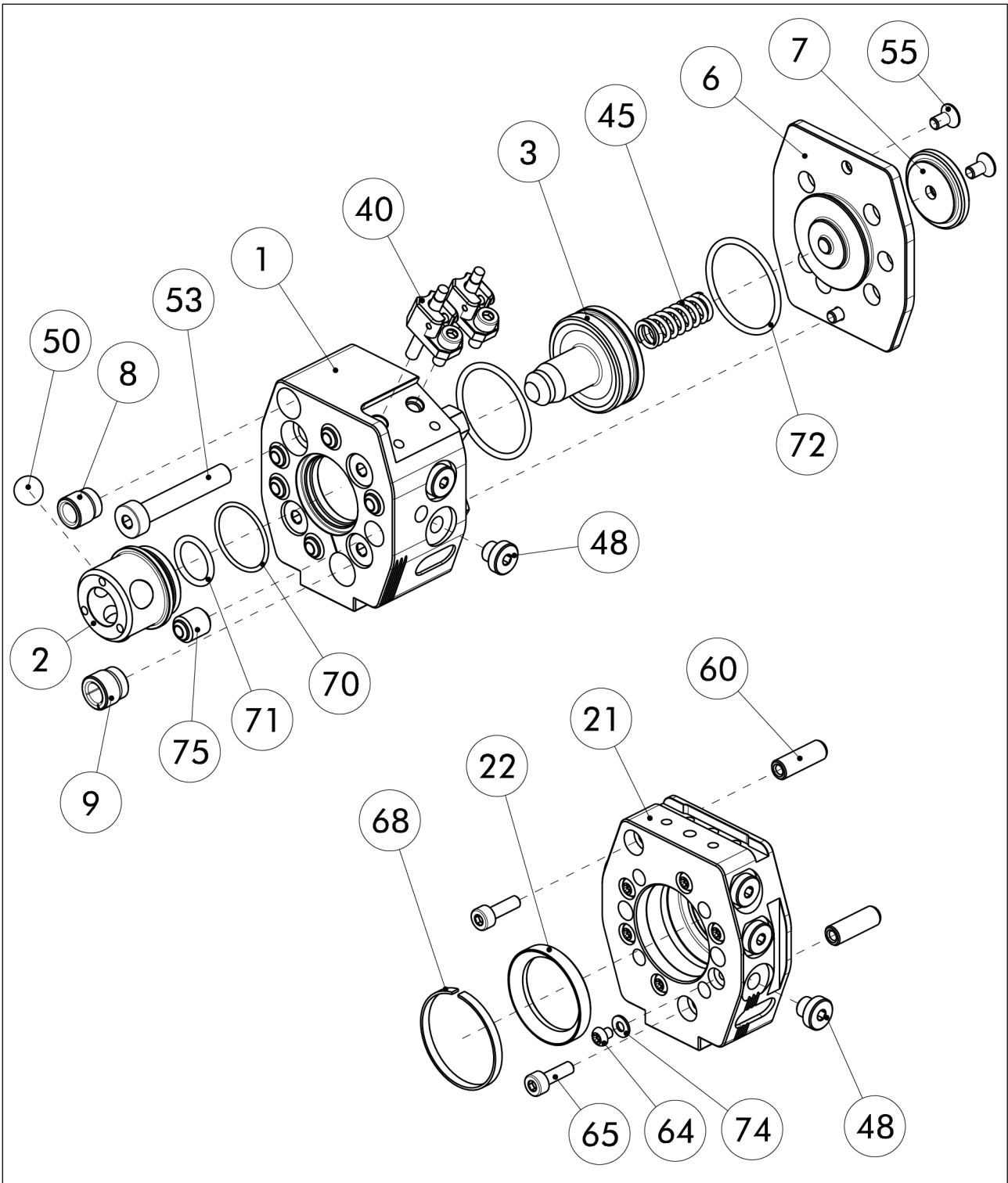
Assembly CPS 001-K (top) and CPS 001-A (bottom)

7.8.2 Size 005



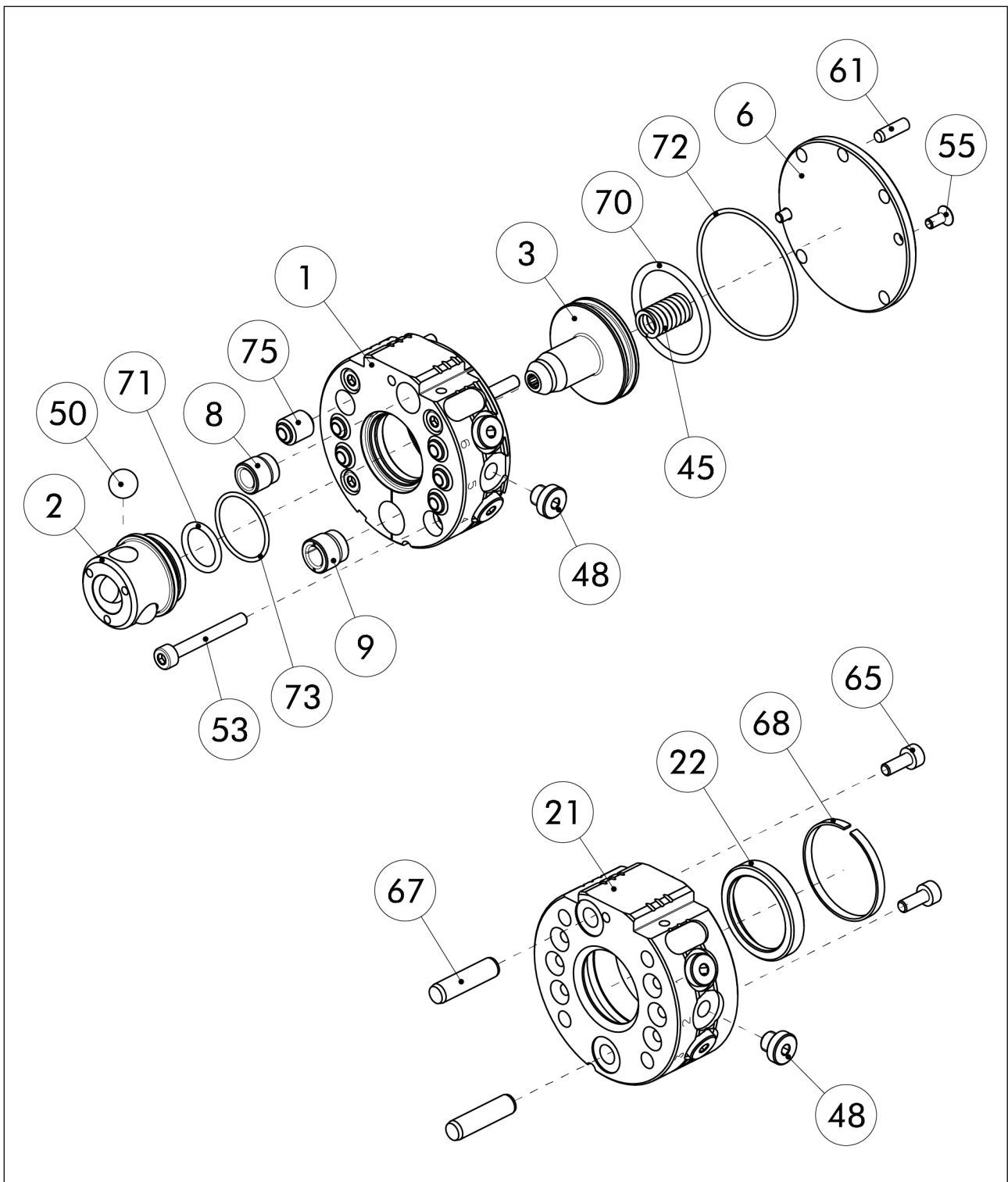
Assembly CPS 005-K (top) and CPS 005-A (bottom)

7.8.3 Size 007



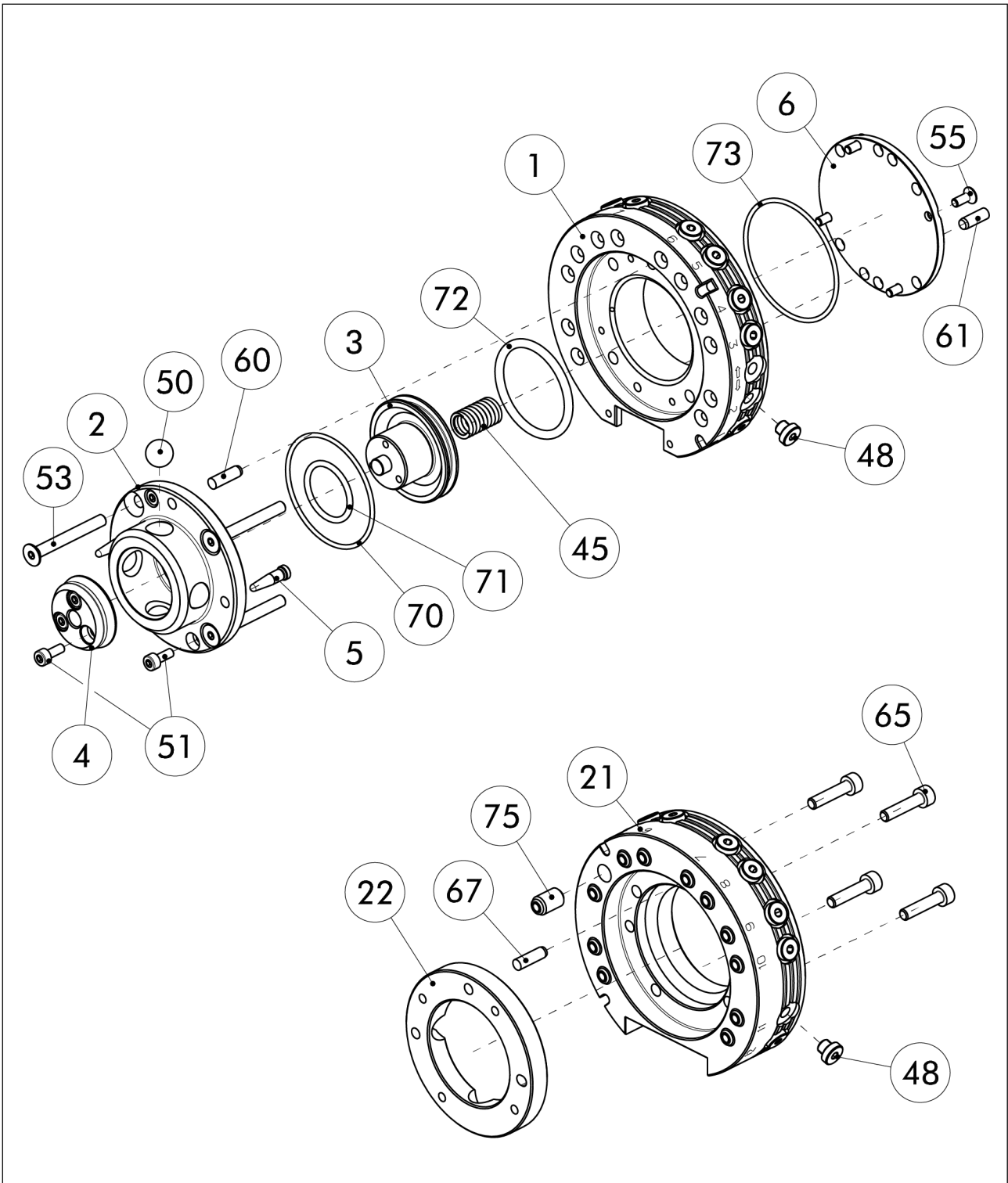
Assembly CPS 007-K (top) and CPS 007-A (bottom)

7.8.4 Size 011



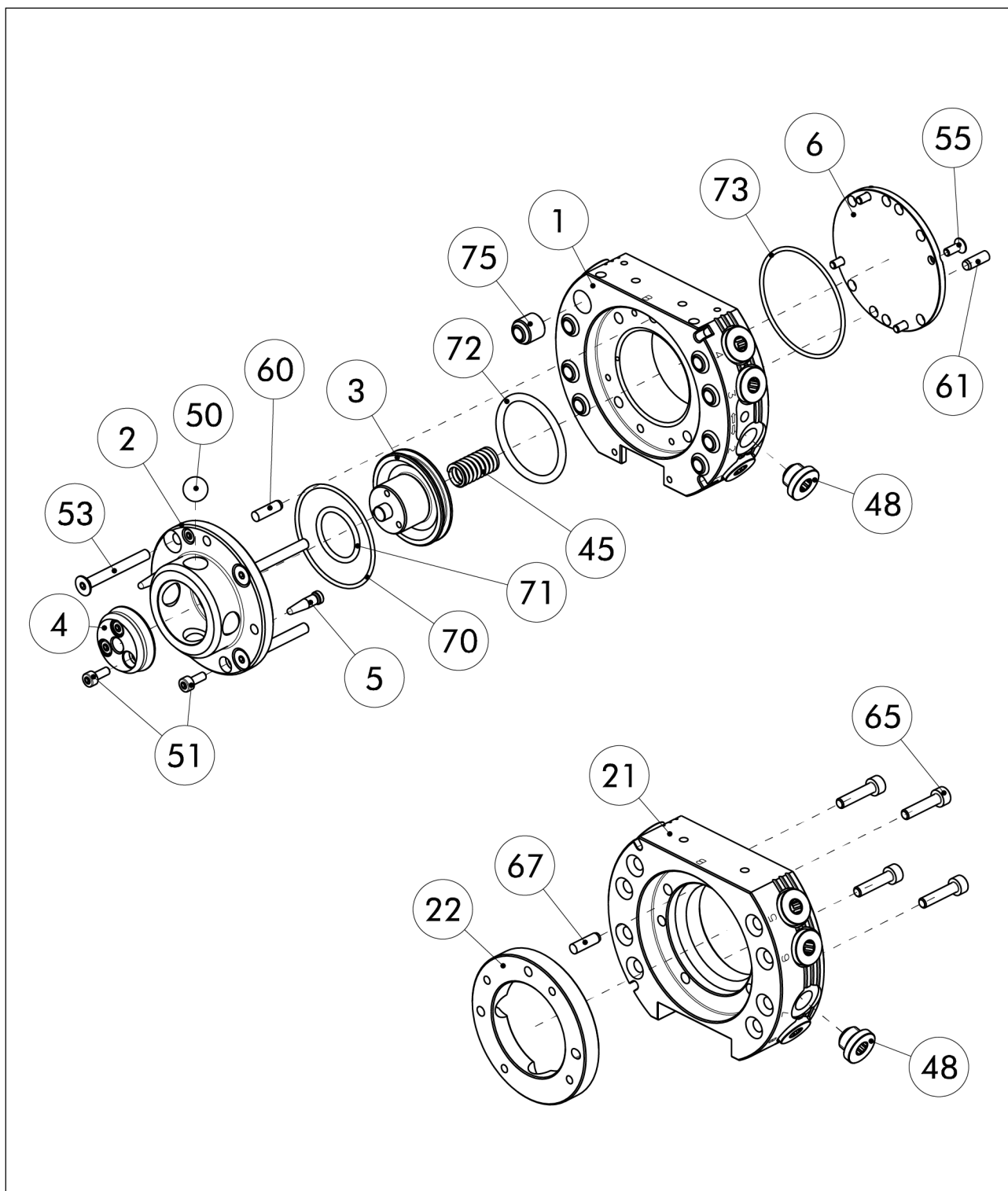
Assembly CPS 011-K (top) and CPS 011-A (bottom)

7.8.5 Size 020



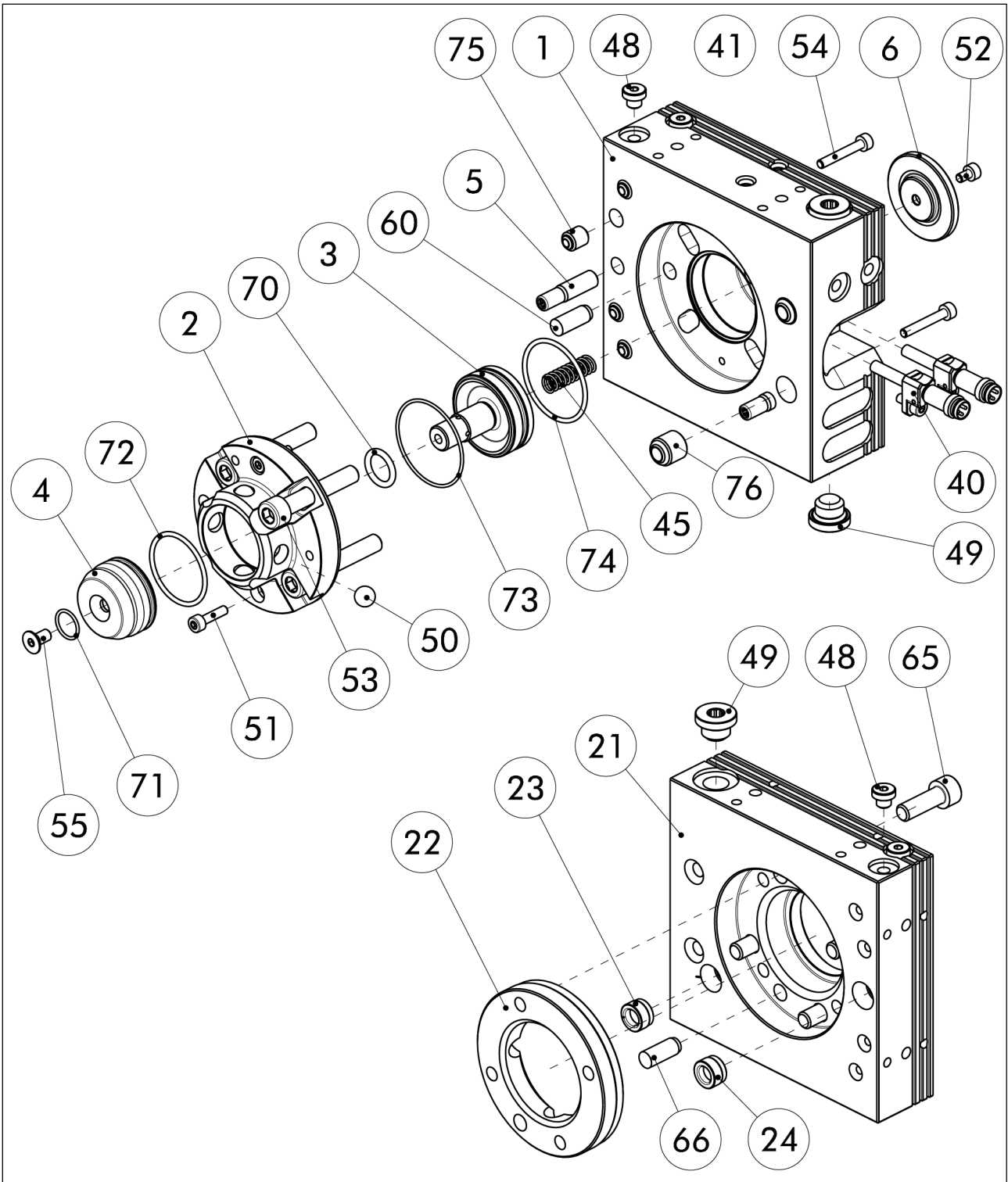
Assembly of CPS 020-K (top) and CPS 020-A (bottom)

7.8.6 Size 021



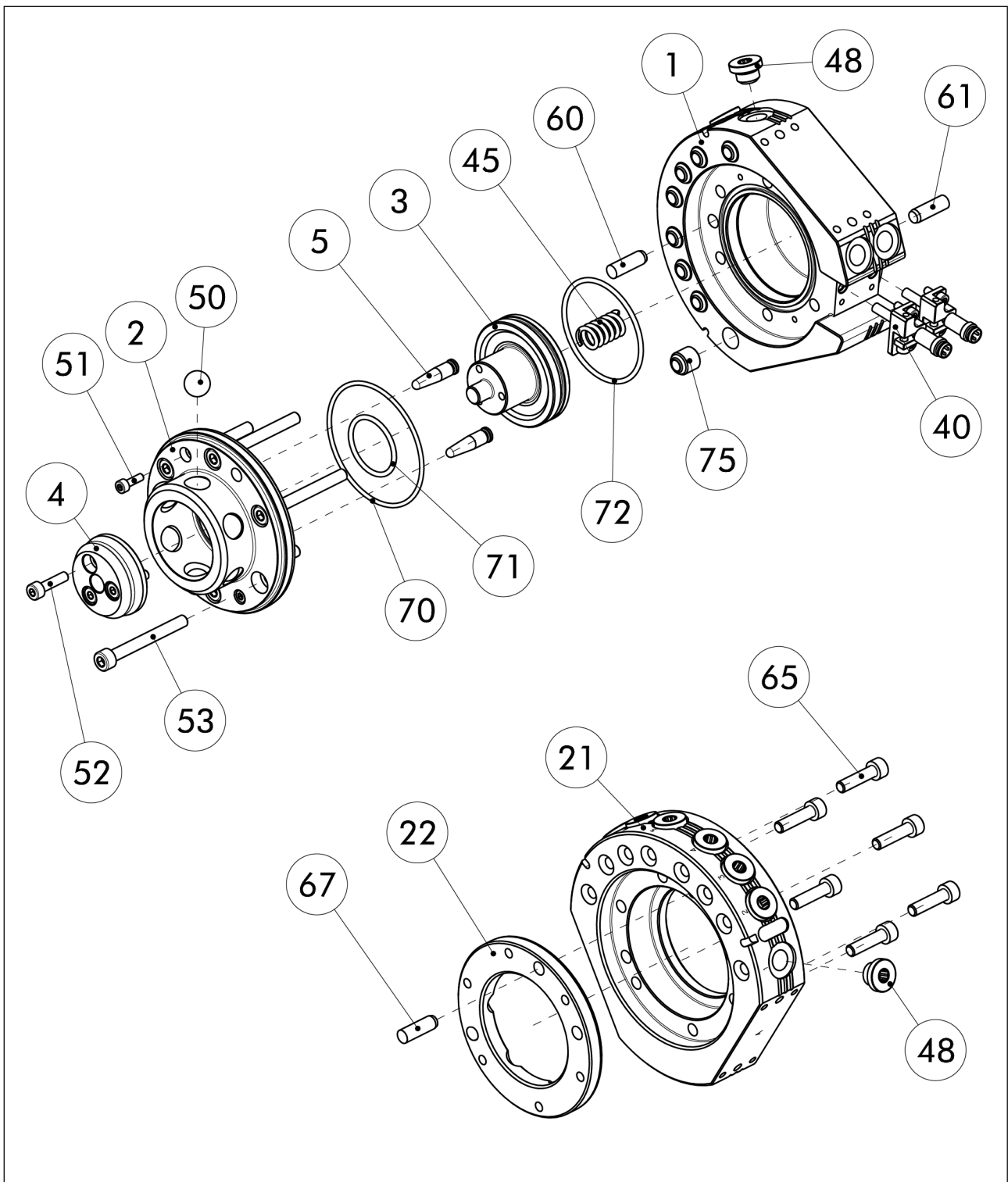
Assembly of CPS 021-K (top) and CPS 021-A (bottom)

7.8.7 Size 029



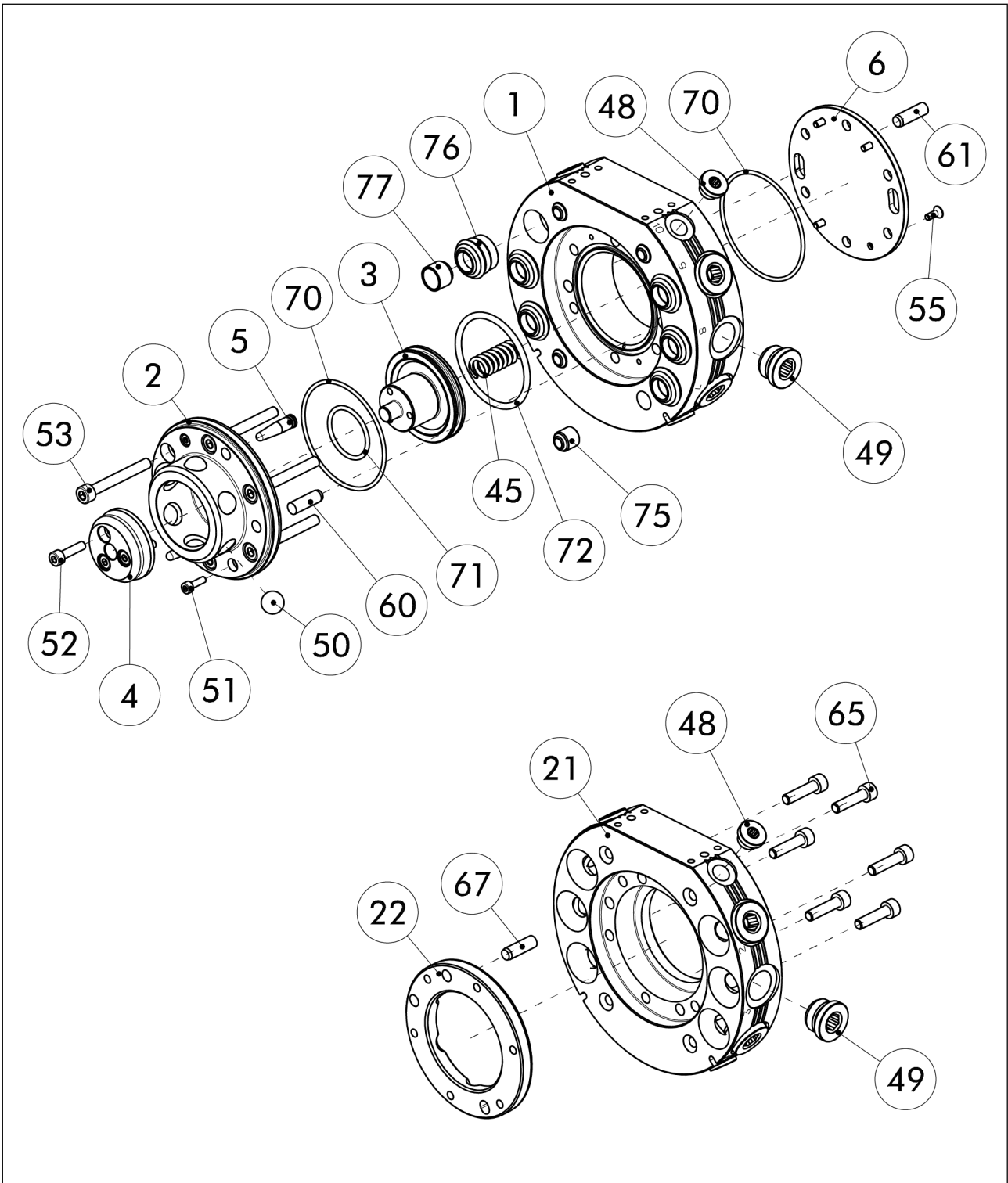
Assembly of CPS 029-K (top) and CPS 029-A (bottom)

7.8.8 Size 040



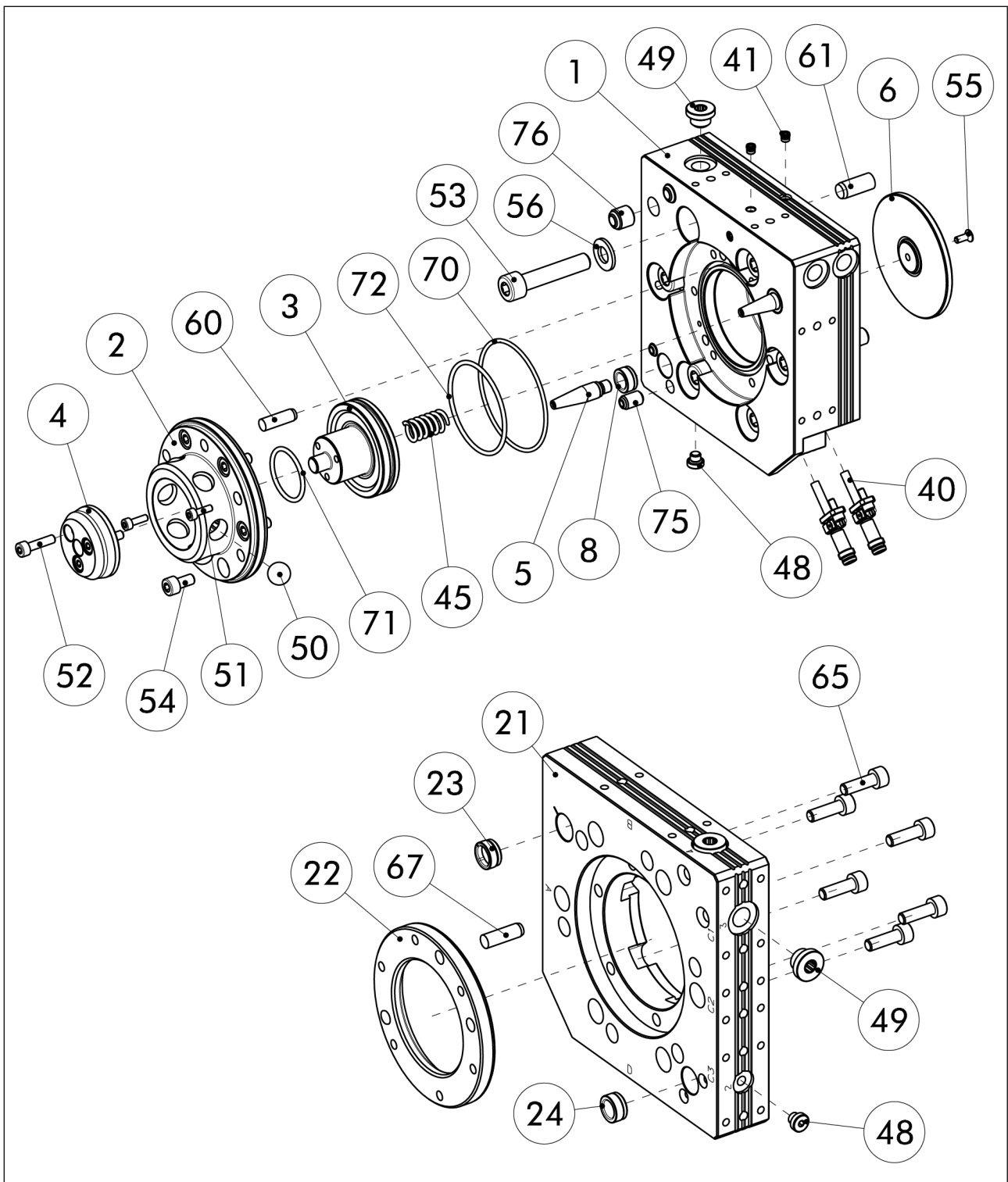
Assembly of CPS 040-K (top) and CPS 040-A (bottom)

7.8.9 Size 041



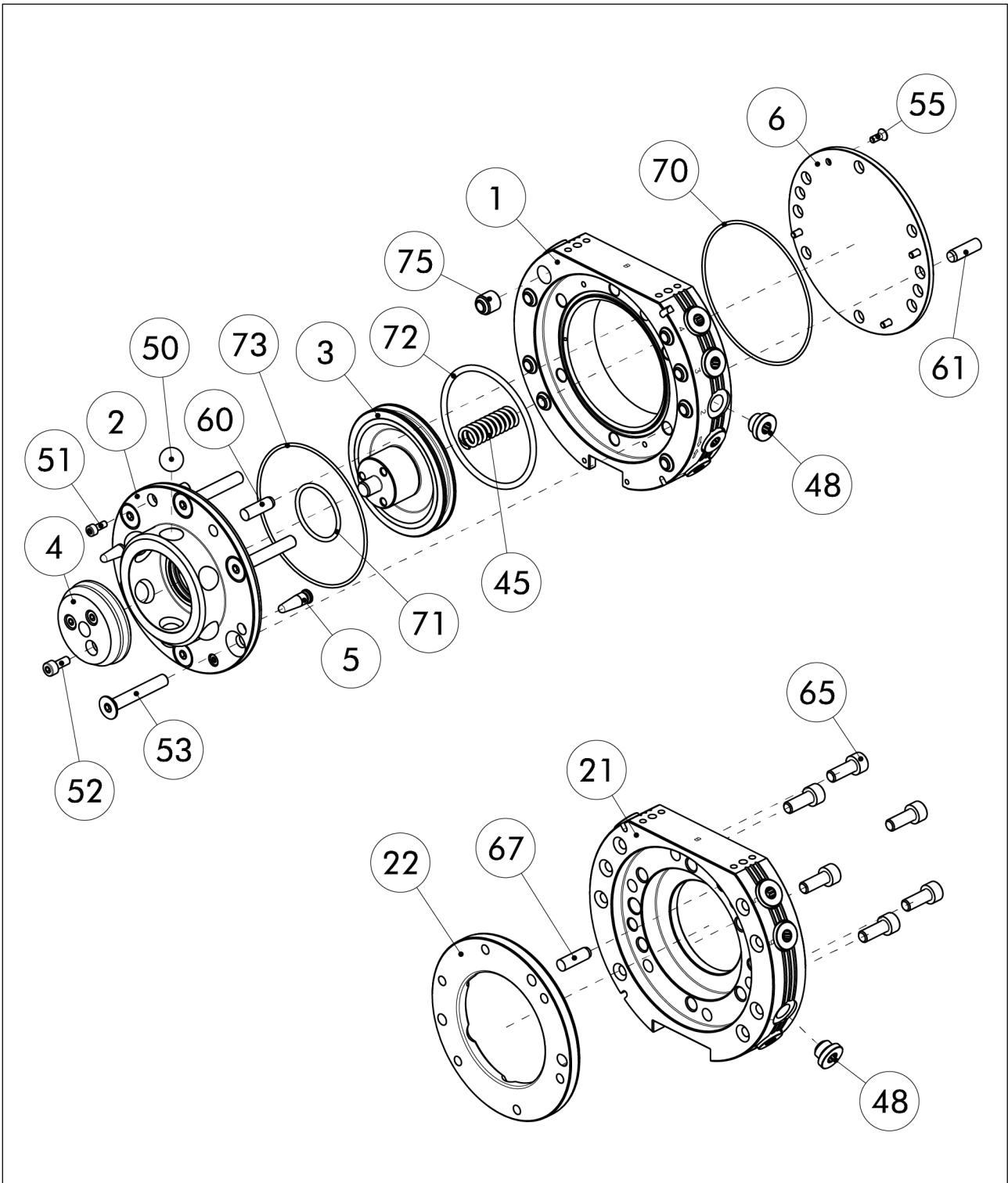
Assembly of CPS 041-K (top) and CPS 041-A (bottom)

7.8.10 Size 046



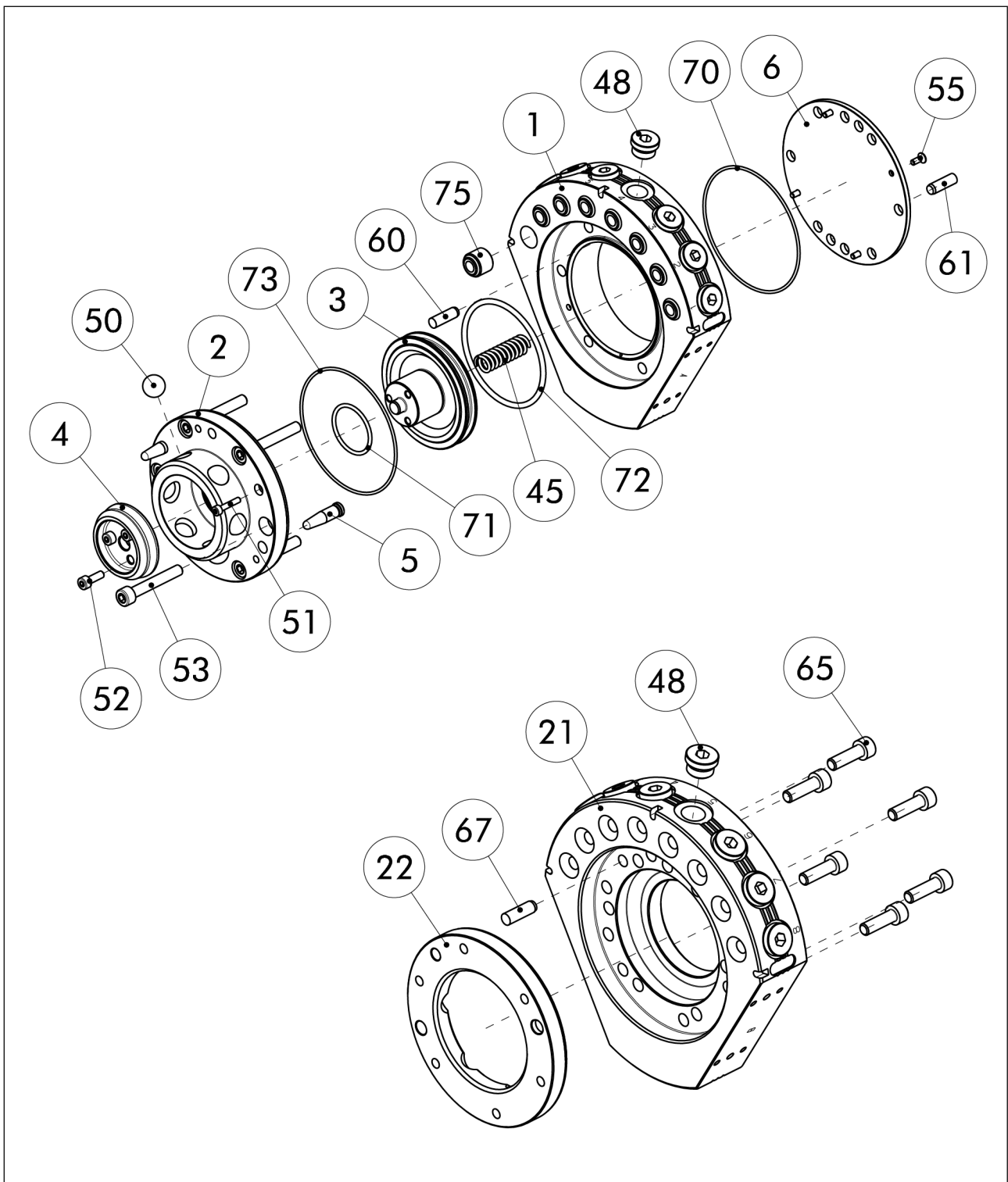
Assembly of CPS 046-K (top) and CPS 046-A (bottom)

7.8.11 Size 060



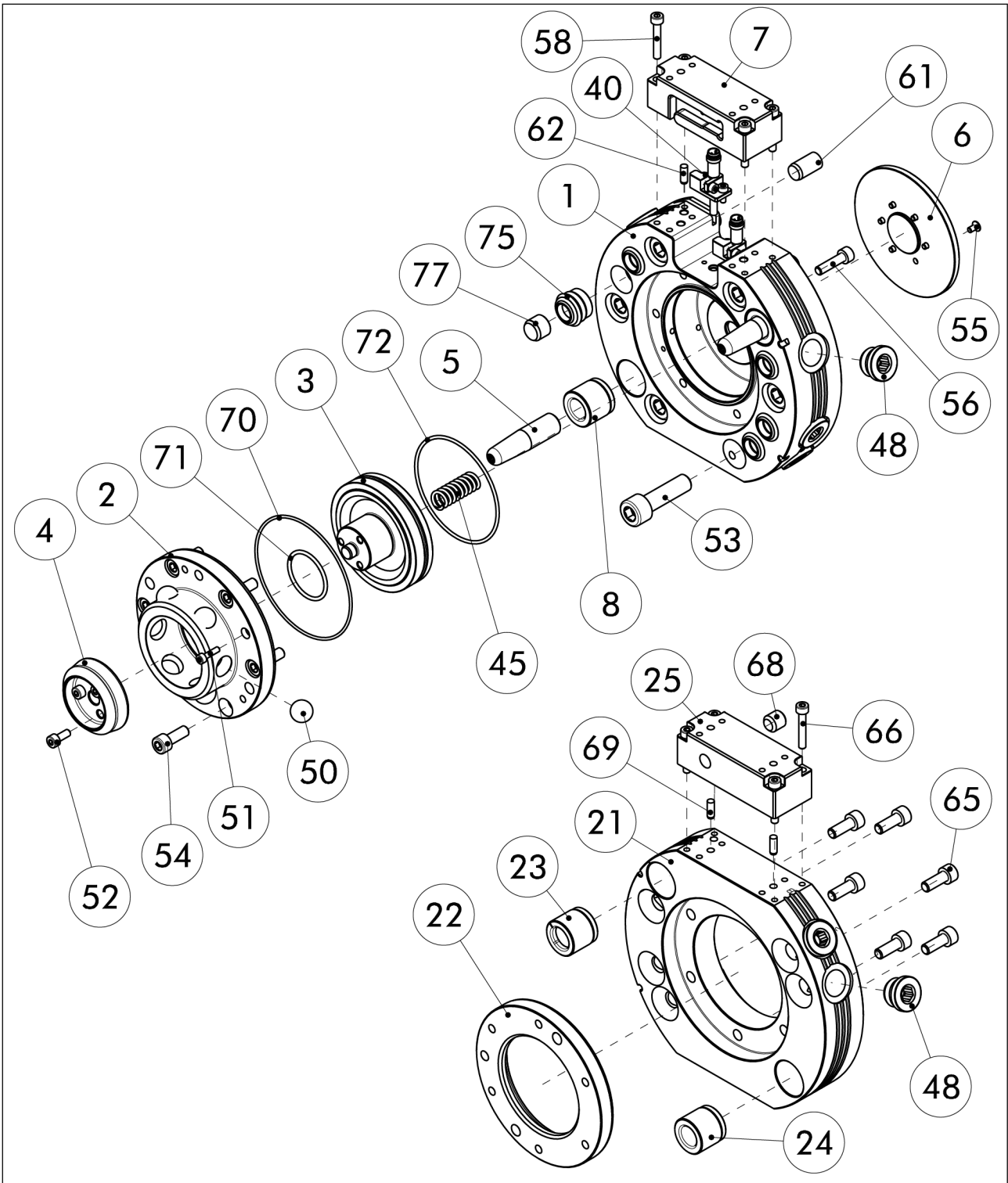
Assembly of CPS 060-K (top) and CPS 060-A (bottom)

7.8.12 Size 071



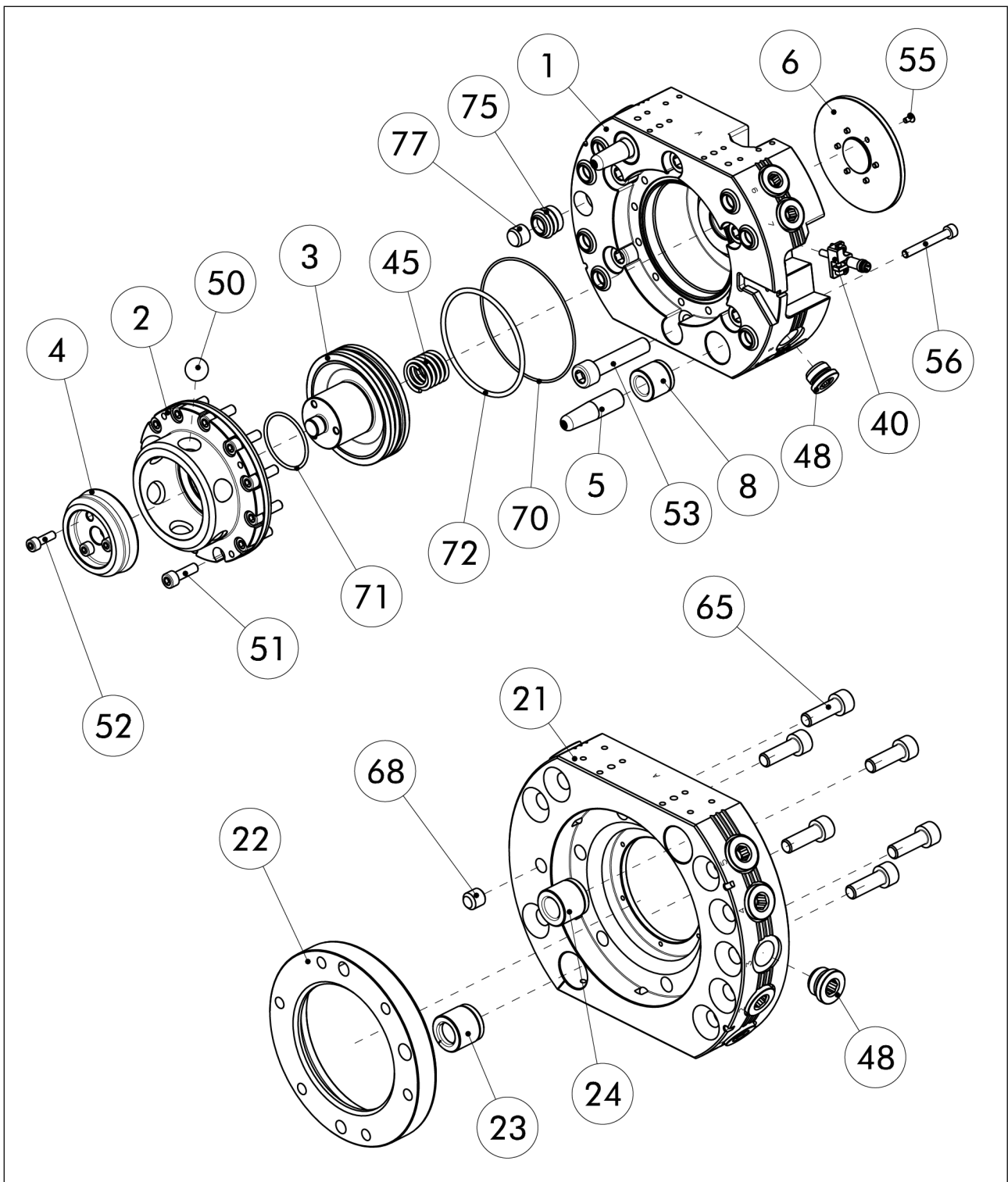
Assembly of CPS 071-K (top) and CPS 071-A (bottom)

7.8.13 Size 076



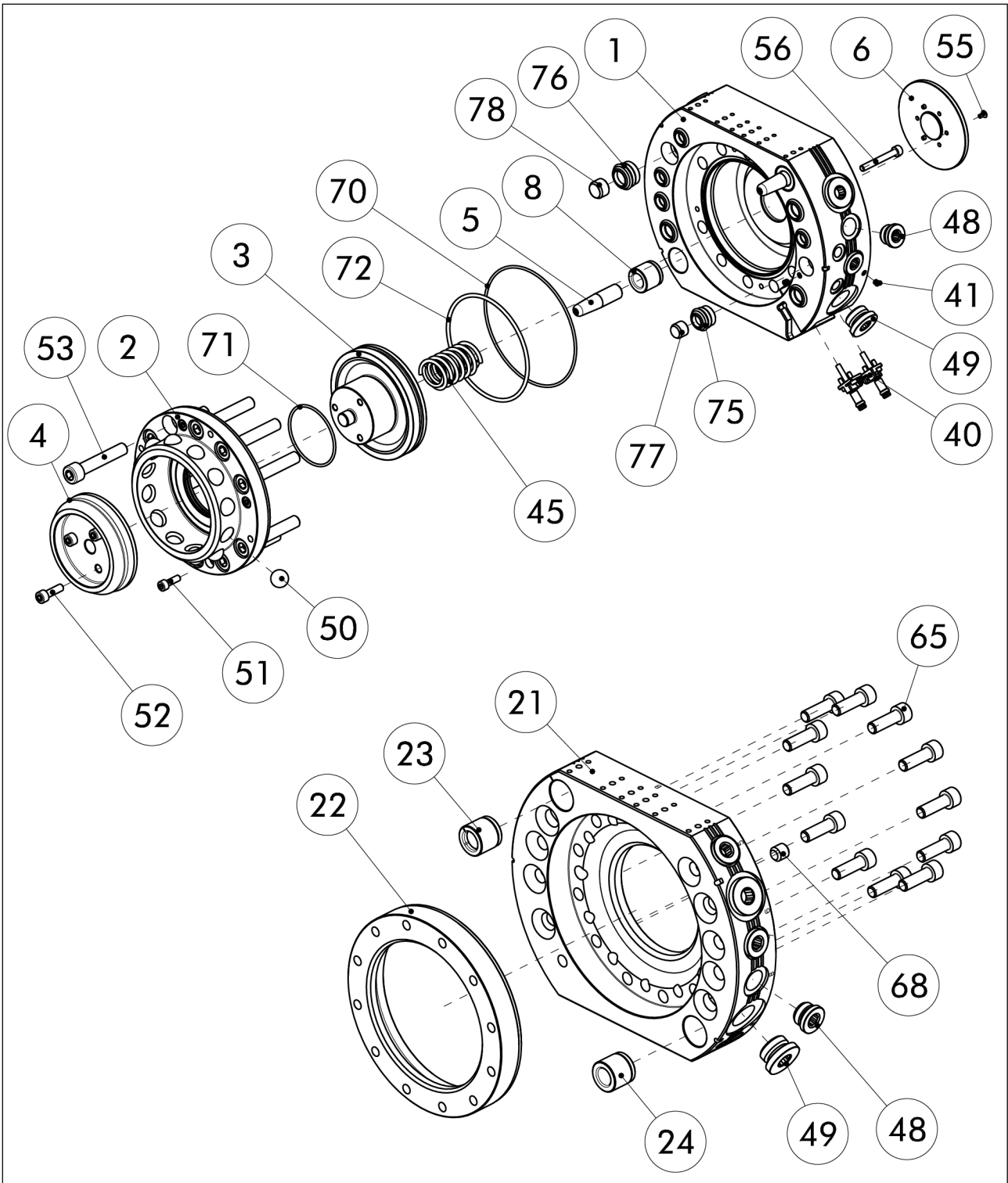
Assembly of CPS 076-K (top) and CPS 076-A (bottom)

7.8.14 Size 110



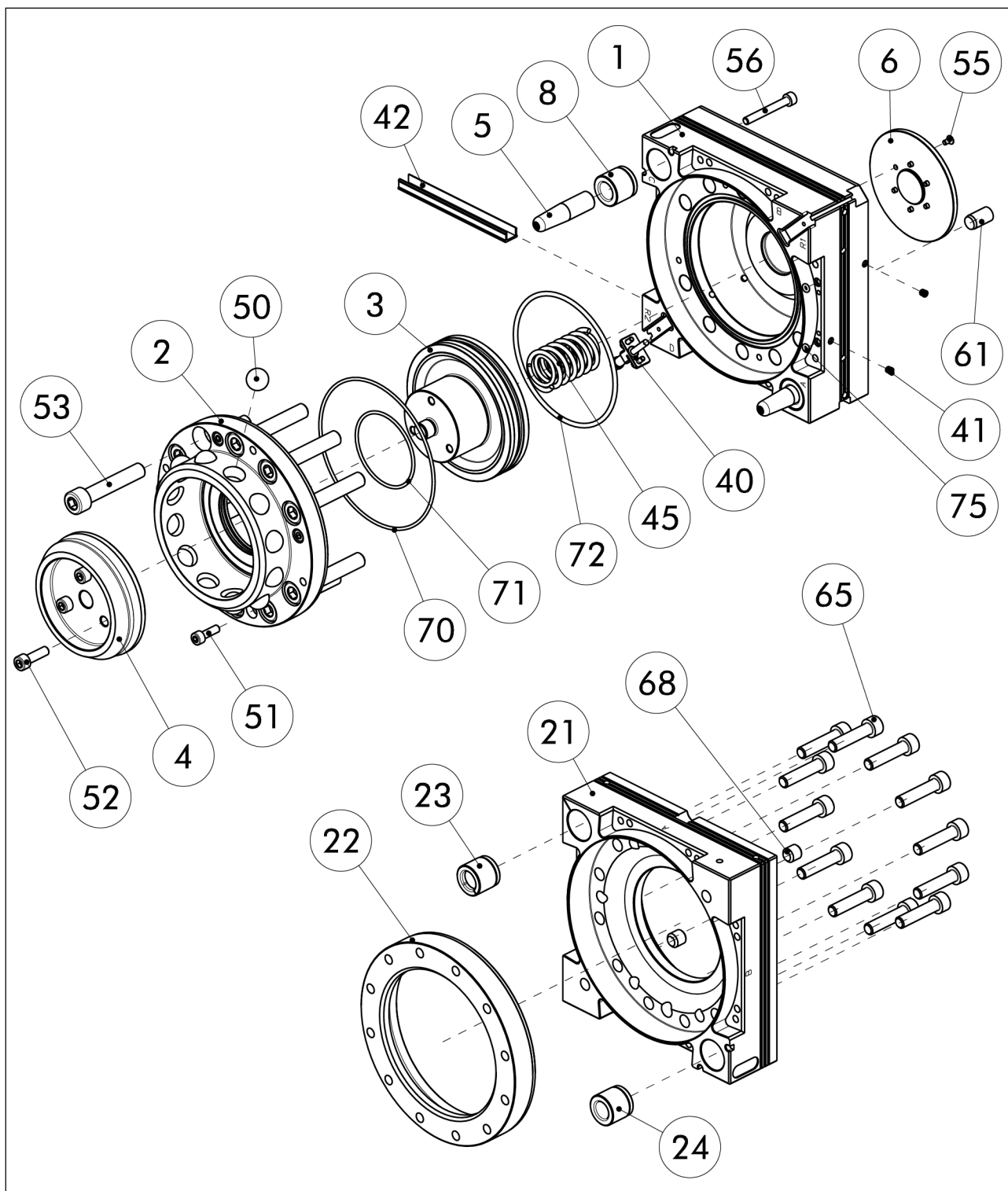
Assembly of CPS 110-K (top) and CPS 110-A (bottom)

7.8.15 Size 160



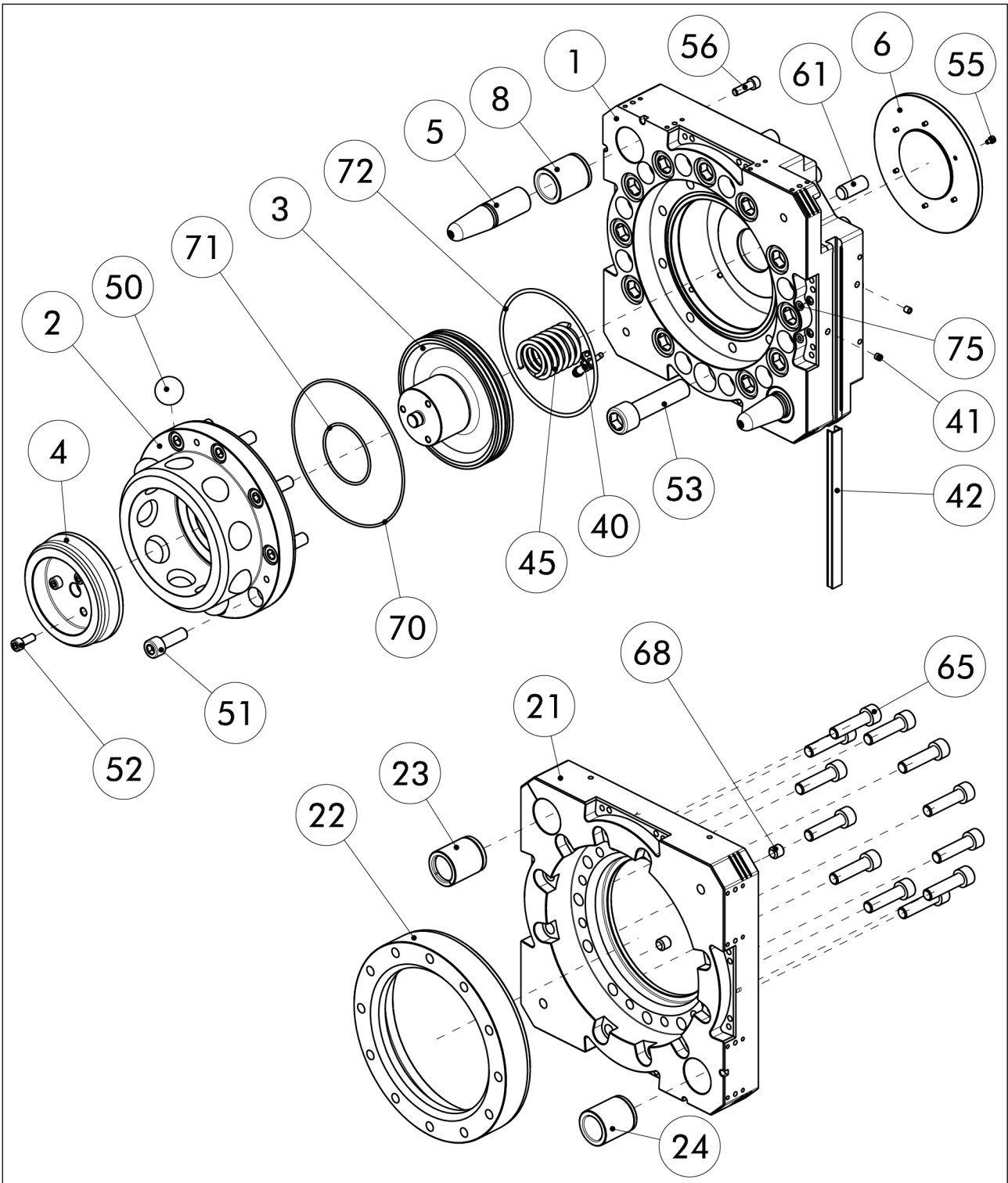
Assembly of CPS 160-K (top) and CPS 160-A (bottom)

7.8.16 Size 210



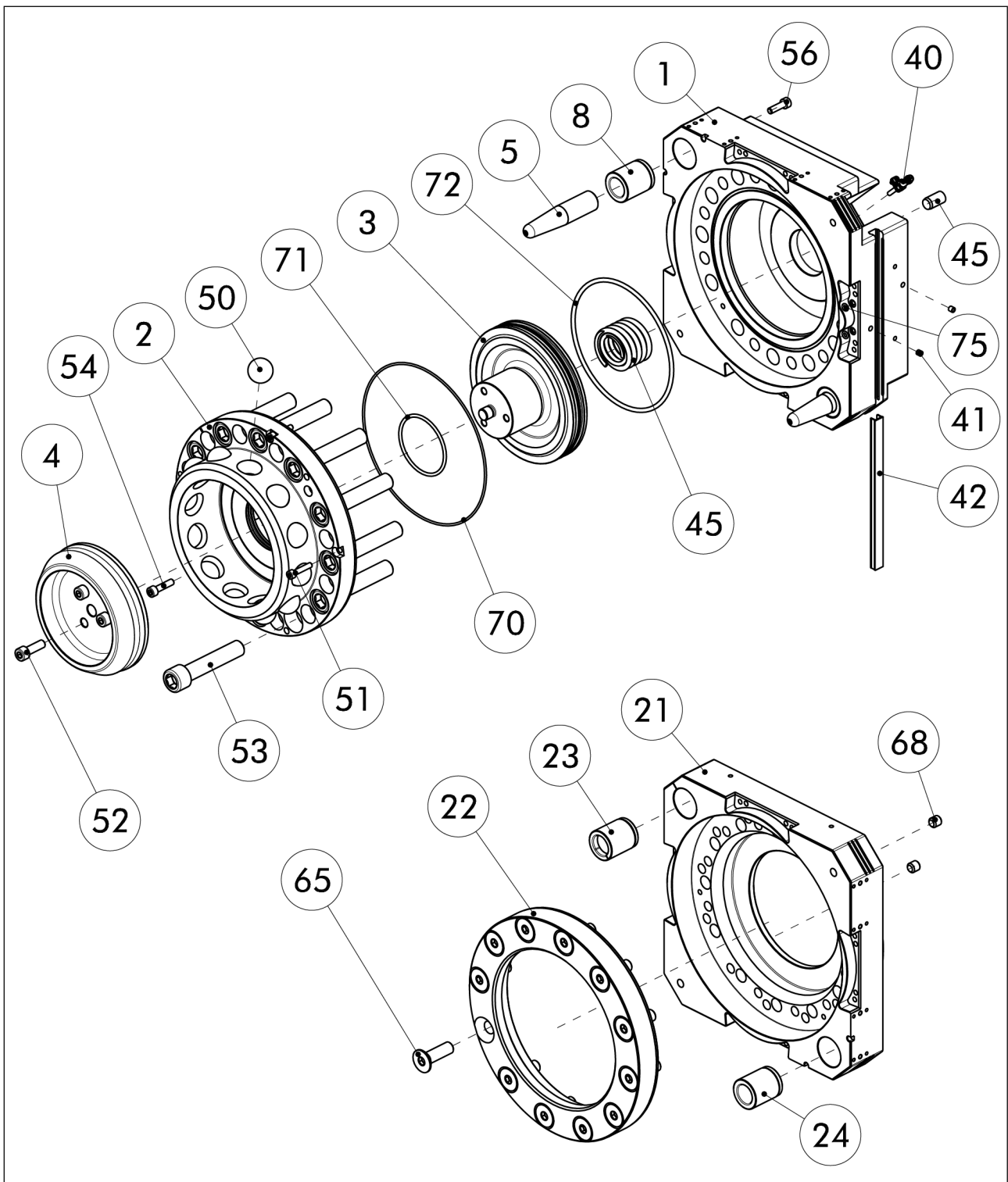
Assembly of CPS 210-K (top) and CPS 210-A (bottom)

7.8.17 Size 310



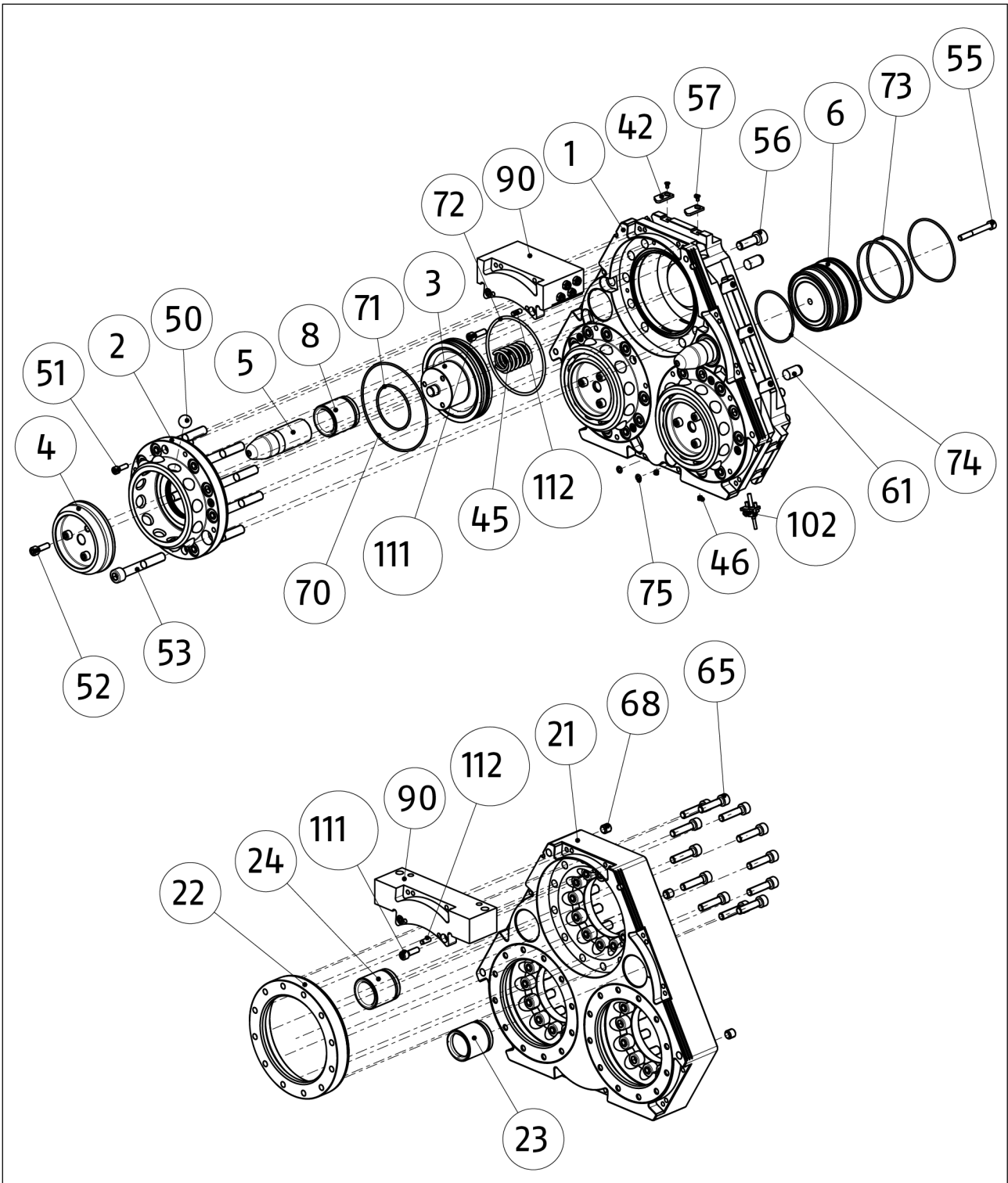
Assembly of CPS 310-K (top) and CPS 310-A (bottom)

7.8.18 Size 510



Assembly of CPS 510-K (top) and CPS 510-A (bottom)

7.8.19 Size 1210



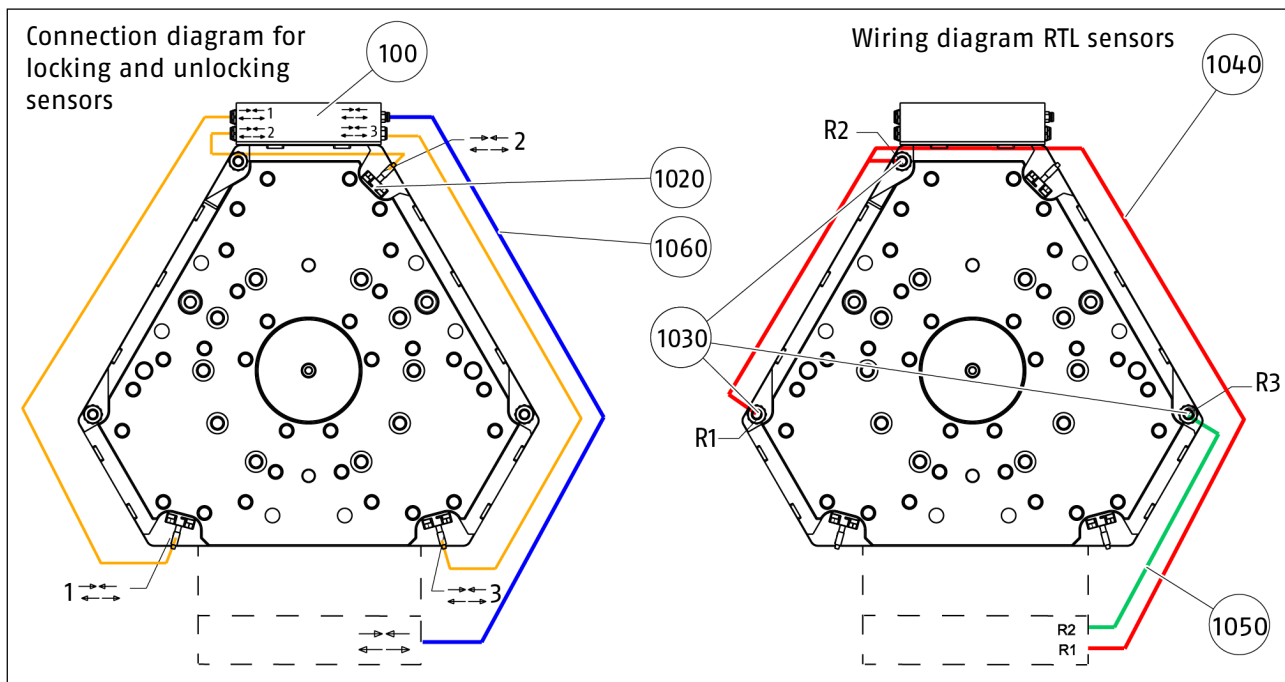
Assembly CPS 1210-K (top) and CPS 1210-A (bottom) Sensor distribution box

Sensor distribution box

The following illustration shows the cables of the locking and unlocking sensors and the RTL sensors.

CPS 1210 has 3 RTL sensors. These are labeled "R1", "R2", "R3". The sensors "R1" and "R2" are connected in series via a distribution cable and therefore provide the control module with a single signal "R1".

Only when "R1" and "R2" are triggered is a "tool present" signal sent to "R1".



Wiring diagram sensor distribution box

Item	Description	ID
100	Sensor distribution box	1646042
1020	Sensor bracket	1646028
1030	Sensor IN-C 80-SL-M8-PNP	1619110
1040	Cable for RTL sensors	1646040
1050	Cable short	1646041
1060	Signal cable PKG-3Z-0.43-PSW-3M P7x2	1622471
-	Attachment kit sensor	1646588

Tab.: Spare parts "Sensor distribution box"

8 Disassembly and disposal



⚠ WARNING

Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
 - Make sure, that no residual energy remains in the system.
-
- Disconnect the entire energy supply from the product, discharge any accumulated residual energy.
 - Remove any lubricant and dispose of in an environmentally friendly manner.
 - Follow local regulations on dispatching product components for recycling or proper disposal.

9 Translation of the original declaration of incorporation

in terms of the Directive 2006/42/EG, Annex II, Part 1 Section B.

Manufacturer/
Distributor H.-D. SCHUNK GmbH & Co.
 Spanntechnik KG
 Lothringer Str. 23
 D-88512 Mengen

We hereby declare that the partly completed machine described below

Product designation: Tool changer / CPS /pneumatic
ID number 1590948, 1591016, 1591017, 1591033, 1591034, 1590976, 1590977,
 1590978, 1590979 1590981, 1590984, 1590986, 1590997, 1591020,
 1591027, 1591028, 1591031, 1591035, 1590259, 1590282, 1590284,
 1590286, 1590992, 1590994, 1590995, 1590996, 1590998, 1590999,
 1613262, 1613280, 1613282, 1613284, 1613287, 1613289, 1613301, 1613303,
 1613305, 1613306, 1619548, 1619553, 1619554, 1619555, 1619558,
 1619570, 1619572, 1619573, 1619574, 1639338, 1639339

meets the following basic occupational health and safety of the Machinery Directive 2006/42/EC:
No. 1.1.1, No. 1.1.2, No. 1.1.3, No. 1.1.5, No. 1.3.2, No. 1.5.3, No. 1.5.4, No. 1.5.6, No. 1.5.8, No.
1.5.10, No. 1.5.11, No. 1.5.13

The partly completed machinery may not be put into operation until it has been confirmed that the machine into which the partly completed machinery is to be installed complies with the provisions of the Machinery Directive (2006/42/EC). The declaration shall be rendered invalid if modifications are made to the product.

Applied harmonized standards, especially:

EN ISO 12100:2010 Safety of machinery – General principles for design –
 Risk assessment and risk reduction

The special technical documentation according to Annex VII, Part B, belonging to the partly completed machine, has been created.

Person authorized to compile the technical documentation:
Philipp Schröder, Address: see manufacturer's address

Signature: see original declaration

Mengen, February 2026

p.p. Philipp Schröder; Head of
Engineering Design

10 UKCA declaration of incorporation

in accordance with the Supply of Machinery (Safety) Regulations 2008.

Manufacturer/ Distributor SCHUNK Intec Limited
Clamping and gripping technology
3 Drakes Mews, Crownhill
MK8 0ER Milton Keynes

We hereby declare that on the date of the declaration the following partly completed machine complied with all basic safety and health regulations found in the "Supply of Machinery (Safety) Regulations 2008".

The declaration shall be rendered invalid if modifications are made to the product.

Product designation: Tool changer / CPS / pneumatic
ID number 1590948, 1591016, 1591017, 1591033, 1591034, 1590976, 1590977, 1590978, 1590979, 1590981, 1590984, 1590986, 1590997, 1591020, 1591027, 1591028, 1591031, 1591035, 1590259, 1590282, 1590284, 1590286, 1590992, 1590994, 1590995, 1590996, 1590998, 1590999, 1613262, 1613280, 1613282, 1613284, 1613287, 1613289, 1613301, 1613303, 1613305, 1613306, 1619548, 1619553, 1619554, 1619555, 1619558, 1619570, 1619572, 1619573, 1619574, 1639338, 1639339

The partly completed machine may not be put into operation until it has been confirmed that the machine into which the partly completed machine is to be installed complies with the provisions of the "Supply of Machinery (Safety) Regulations 2008".

Applied harmonized standards, especially:

EN ISO 12100:2010 Safety of machinery – General principles for design – Risk assessment and risk reduction

The special technical documentation according to Annex VII, Part B, belonging to the partly completed machine, has been created.

Person authorized to compile the technical documentation:
Marcel Machado, address: refer to manufacturer's address



Mengen, February 2026

p.p. Philipp Schröder; Head of
Engineering Design

To customers of Heinz-Dieter Schunk GmbH & Co. Spanntechnik KG

July 2025

REACH Regulation (EC) No 1907/2006
RoHS Directive 2011/65/EU
WEE Directive 2012/19/EU
POP Regulation (EU) No 2019/1021

Dear Sir or Madam,

We are pleased to respond to your inquiry regarding the above-mentioned regulations and directives.

REACH Regulation (EC) No 1907/2006

All products of Heinz-Dieter Schunk GmbH & Co. Spanntechnik KG fully comply with the REACH Regulation (EC) No 1907/2006 concerning the registration, evaluation, authorization and restriction of chemicals (REACH). We place great importance on completely avoiding chemicals that are harmful to people and the environment. Only in exceptional cases to our SCHUNK products contain substances of very high concern (SVHCs) from the European Chemicals Agency (ECHA) candidate list, with a mass content exceeding 0.1%.

We fulfill our obligation to provide information about substances in products by listing affected components/parts on our homepage, which can be accessed at: <https://schunk.com/svhc>.

RoHS Directive 2011/65/EU – Extension 2015/863/EU and WEEE Directive 2012/19/EU

All products of Heinz-Dieter Schunk GmbH & Co. Spanntechnik KG are not subject to the RoHS or WEEE Directives, as they are exclusively designed for use in process and factory automation. Their intended function is considered as part of a stationary industrial large-scale tool.

POP Regulation (EU) No 2019/1021

All products of Heinz-Dieter Schunk GmbH & Co. Spanntechnik KG are manufactured without the use of persistent organic pollutants (POPs), in accordance with the Stockholm Convention.

As an active supporter of environmental protection, sustainability, and health, SCHUNK works closely with renowned partners to ensure that supplied parts meet our requirements and that our products remain fully compliant with applicable regulations.

Kind regards,

Heinz-Dieter Schunk GmbH & Co. Spanntechnik KG

A handwritten signature in blue ink, appearing to read "M. Kleiner".

Markus Kleiner
Managing Director

Customers of H.-D. SCHUNK GmbH & Co. Spanntechnik KG

May 2025

Statement on the Use of PFAS

Dear Sir or Madam,

As an active supporter of environmental protection, sustainability, and health, SCHUNK works closely with partners to ensure that supplied parts meet our requirements and that our products remain compliant with applicable regulations.

To further our commitment regarding the current topic of PFAS (Per- and Polyfluorinated Alkyl Substances), we would like to inform you accordingly. PFAS are a group of chemicals used in various products, but due to their persistence in the environment and potential health risks, they are increasingly coming into focus.

At present, we are still in a phase where the specific guidelines and regulations from the European Chemicals Agency (ECHA) concerning PFAS have not yet been fully published or clearly defined. We are monitoring developments closely and are committed to informing you promptly once we receive reliable and detailed information.

Our goal is to handle this topic responsibly and transparently, and to comply with all future legal requirements.

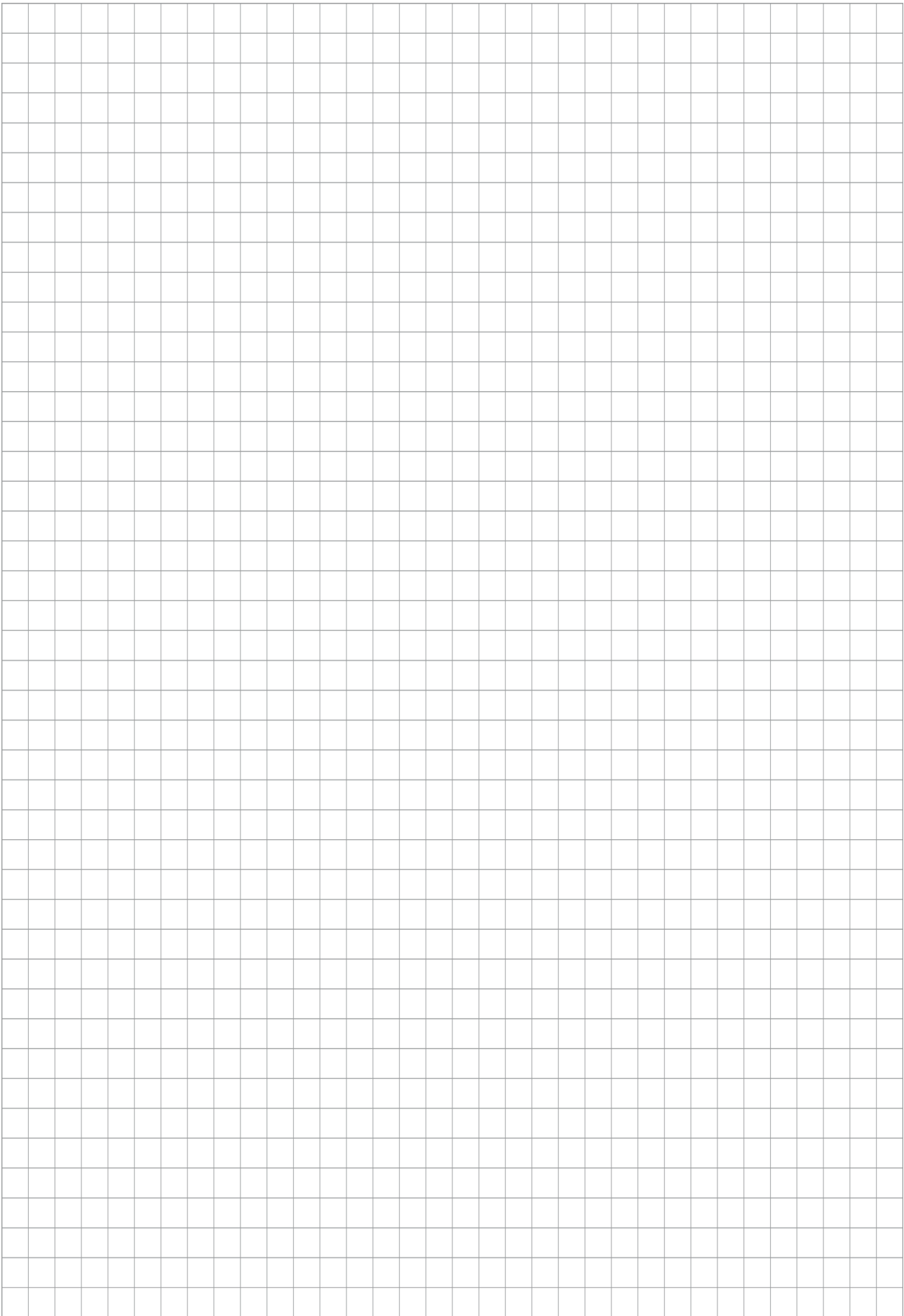
Should you have any questions or require further information, please do not hesitate to contact us.

Best regards,

Heinz-Dieter Schunk GmbH & Co. Spanntechnik KG


i.V. Alexander Koch

Heinz-Dieter SCHUNK GmbH & Co.
Spanntechnik KG
Manager, Design department
Lothringer Str. 23 | D-88512 Mengen





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schunk.com

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