



Hand in hand for tomorrow



## Product data sheet

Anti-collision and overload protection sensor OPR 061

# OPR

Anti-collision and overload protection sensor

**Compliant. Highly responsive. Automatic reset.**

## Collision and overload sensor OPR

for control of robots and handling units in the event of a collision or overload conditions

### Field of application

Standard solution for all robot applications whereby the robot, the tool or the workpiece are to be protected against greater damages in case of a collision.



### Advantages – Your benefits

**Automatic reset** for faster production restart after a collision

**Triggering force and torque can be adjusted via the operating pressure** for optimal protection of your robots and components

**Integrated monitoring** for signal transmission without delay in case of collisions so that the robot can be stopped immediately

**ISO adapter plates as an option** for easy assembly to most of robot types without any manufacturing costs/work

**On option also with integrated springs** for maintaining the position in the event of pressure loss

**Mechanical flexibility in the event of collisions** for compensation of the robot's reaction pathway in the event of a collision or overload



Sizes  
Quantity: 7



Triggering force  $F_d$   
440 .. 14000 N



Trigger moment  $M_x$   
6 .. 2000 Nm



Trigger moment  $M_y$   
6 .. 2000 Nm

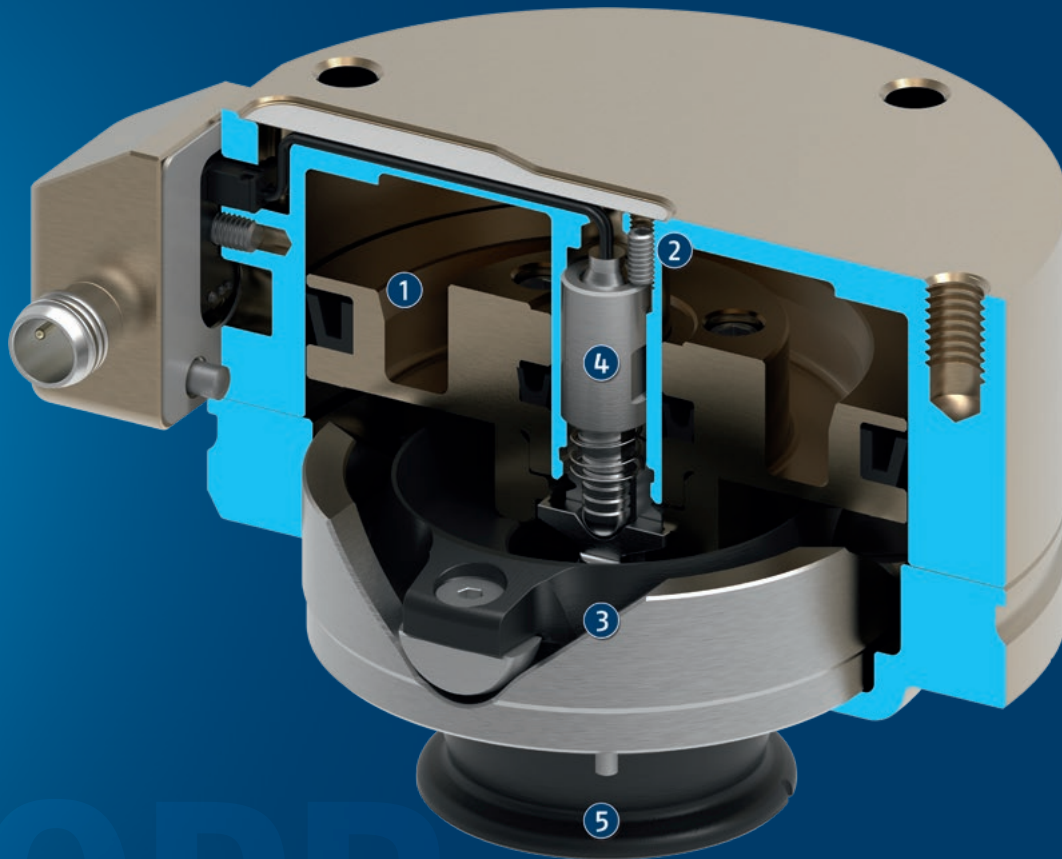


Trigger moment  $M_z$   
6.9 .. 1500 Nm

## Functional description

In case of a collision, the mounting flange will be deflected. This simultaneously actuates a sensor whose signal triggers the system's emergency stop mechanism. The OPR automatically returns to zero position when the

gripper moves away from the collision object. Production can continue immediately as manual resetting is not necessary.



① **Pneumatic pistons**  
for easy responsiveness by pressure

② **Adjustment screw**  
for adjusting the switching point

③ **Bearing**  
for absorption of high forces and moments

④ **Monitoring**  
via mechanical switch

⑤ **Mounting flange**  
deflects in the event of a collision

## General notes about the series

**Actuation:** pneumatic, with filtered compressed air as per ISO 8573-1:2010 [7:4:4].

**Operating principle:** integrated cylinder pistons

**Scope of delivery:** Collision and overload sensor in the ordered variant, elements for electrical connection and safety information. Product-specific instructions can be downloaded at [schunk.com/downloads-manuals](https://schunk.com/downloads-manuals).

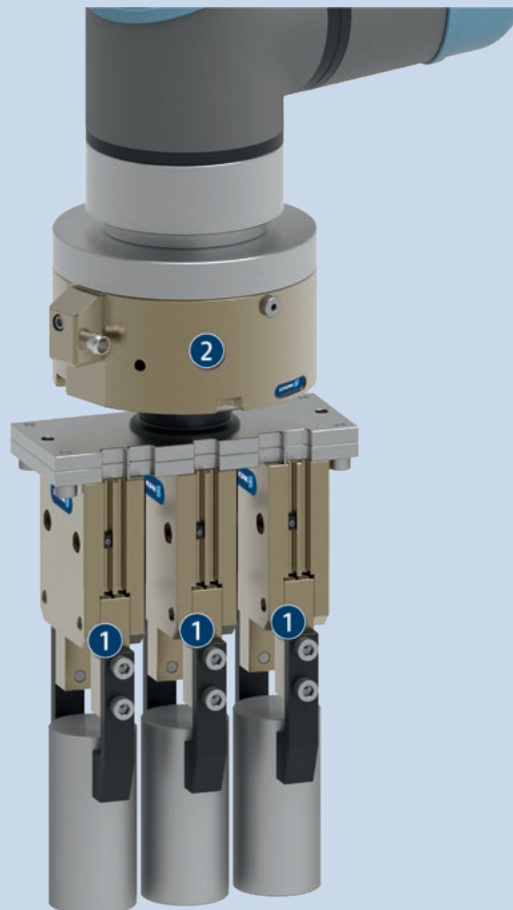
**Warranty:** 24 months

**Harsh environmental conditions:** Please note that use under harsh environmental conditions (e.g. in the coolant area, cast and grinding dust) can considerably reduce the service life of the units, and we will not take over any warranty. However, in many cases we can find a solution. Please contact us for assistance.

## Application example

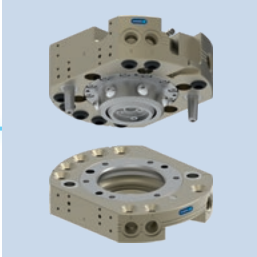
Triple transfer unit for packaging with small boxboards

- ❶ 2-finger angular gripper SWG
- ❷ Collision sensor OPR

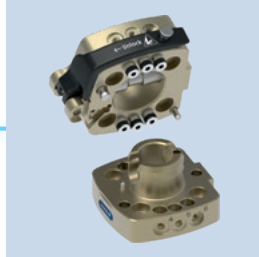


## SCHUNK offers more ...

The following components make the product even more productive – the suitable addition for the highest functionality, flexibility, reliability, and controlled production.



Tool changer



Manual change system



Rotary feed-through



Universal gripper



Angular gripper



Universal gripper

① For more information on these products can be found on the following product pages or at [schunk.com](https://www.schunk.com).

## Options and special information

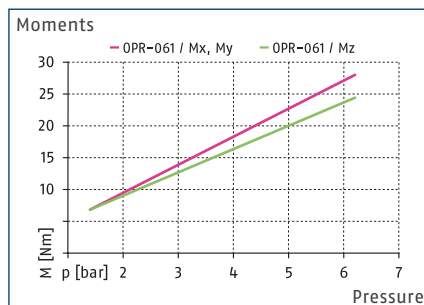
**Food-grade lubrication:** The product contains food-compliant lubricants as standard. The requirements of EN 1672-2:2020 are not fully met. The relevant NSF certificates are available at <https://info.nsf.org/USDA/Listings.asp> using the lubricant information in the operating manual.

# OPR 061

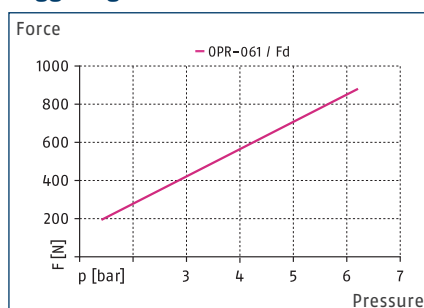
Anti-collision and overload protection sensor



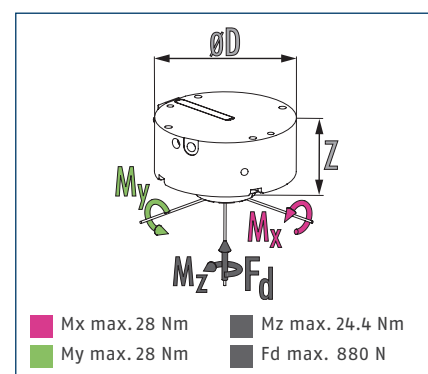
## Trigger moment $M_x$ , $M_y$ , $M_z$



## Triggering force $F_d$



## Dimensions and maximum loads

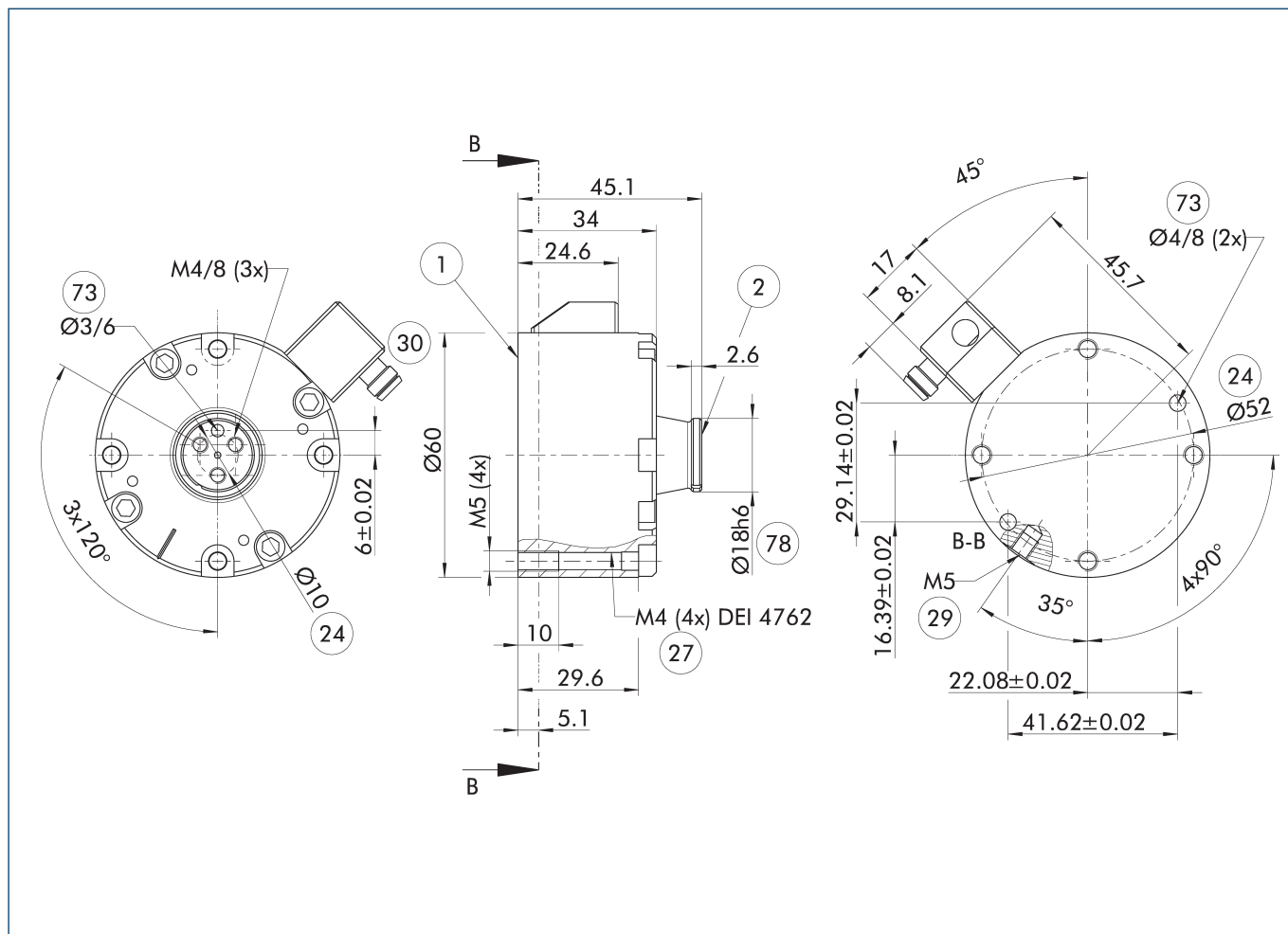


① The design of a collision sensor is defined by the occurring forces and moments in your application.

## Technical data

Description		OPR-061-P00	OPR-061-P05	OPR-061-P10	OPR-061-P15
ID		0321361	0321362	0321363	0321364
Axial deflection	[mm]	5.6	5.6	5.6	5.6
Angular deflection	[°]	±11	±11	±11	±11
Deflection rotatory	[°]	±20	±20	±20	±20
Min. triggering moment, angular Mx, My	[Nm]	6.8	8.6	10.3	12.1
Min. triggering torque, rotatory Mz	[Nm]	6.8	8.5	10.1	11.8
Spring triggering force	[N]		48	96	144
Spring release torque, angular	[Nm]		1.8	3.5	5.3
Spring release torque, rotatory	[Nm]		1.7	3.3	5
Supply voltage	[V]	10/30	10/30	10/30	10/30
Repeat accuracy	[mm]	±0.025	±0.025	±0.025	±0.025
Responsiveness	[mm]	0.5	0.5	0.5	0.5
Repeat accuracy, rotary	[min]	5	5	5	5
Min./nom./max. operating pressure	[bar]	1.4/-/6.2	1.4/-/5.9	1.4/-/5.5	1.4/-/5.2
Weight	[kg]	0.32	0.33	0.33	0.33
Min./max. ambient temperature	[°C]	5/60	5/60	5/60	5/60
Dimensions Ø D x Z	[mm]	60 x 45.1	60 x 45.1	60 x 45.1	60 x 45.1

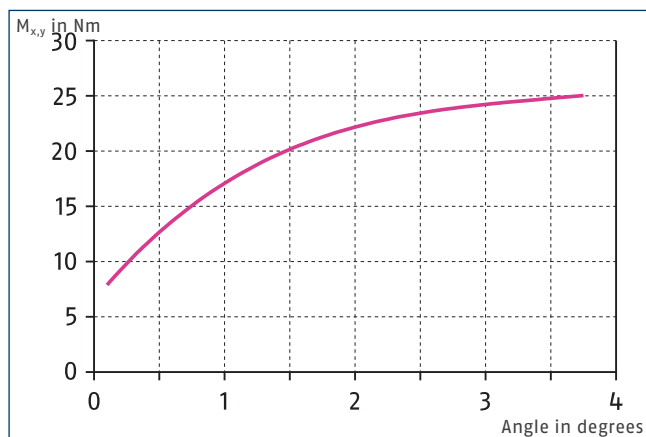
## Main view



The main view shows the unit in its basic version.

- |                                       |   |
|---------------------------------------|---|
| ① Robot-side connection               | ②⑨ Air connection P   |
| ② Tool-side connection                | ③⑩ Cable connector in enclosed pack with 5 m connection cable |
| ④ Bolt circle                         | ⑦③ Fit for centering pins                                     |
| ⑦ Through holes for screw connections | ⑦⑧ Fit for centering  |

## Moment loading

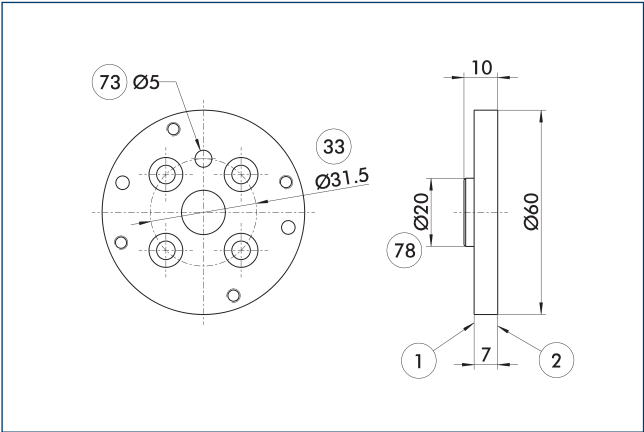


The diagram shows the angular deflection of the OPR according to the moment  $M_{x, y}$  with maximum permissible operating pressure.

# OPR 061

Anti-collision and overload protection sensor

## Adapter plate ISO 9409-A31.5-R

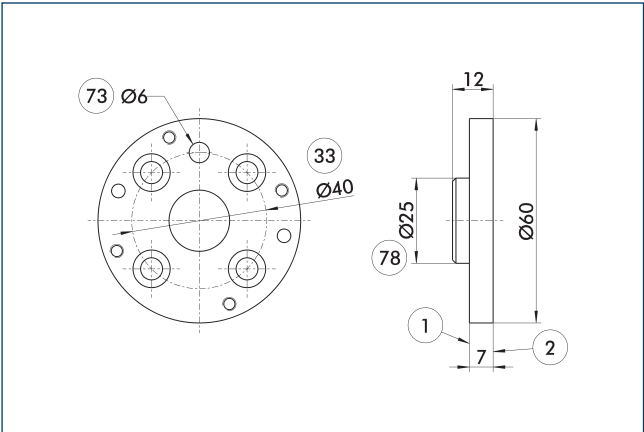


- ① Robot-side connection
- ② Tool-side connection
- ③ DIN ISO-9409 bolt circle
- ⑦③ Fit for centering pins
- ⑦⑧ Fit for centering

Robot-side adapter plate to mount the OPR to a mounting pattern according to ISO 9409-31.5-4-M5.

Description	ID	
Robot side		
A-OPR-061-ISO-A31-R	0321369	

## Adapter plate ISO 9409-A40-R

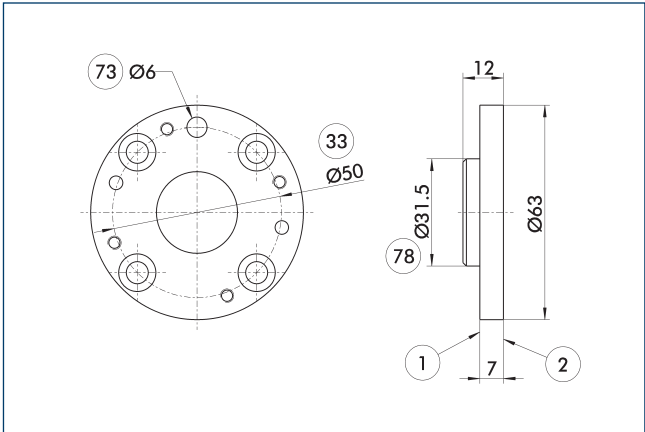


- ① Robot-side connection
- ② Tool-side connection
- ③ DIN ISO-9409 bolt circle
- ⑦③ Fit for centering pins
- ⑦⑧ Fit for centering

Robot-side adapter plate for direct attachment of the OPR to an ISO 9409-40-4-M6-compliant flange pattern.

Description	ID	
Robot side		
A-OPR-061-ISO-A40-R	0321370	

## Adapter plate ISO 9409-A50-R



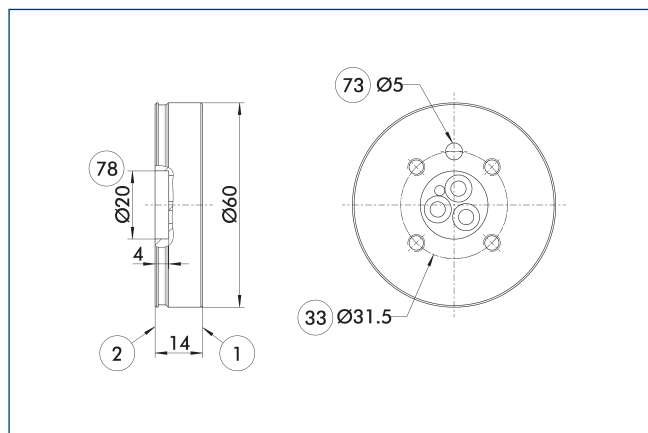
- ① Robot-side connection
- ② Tool-side connection
- ③ DIN ISO-9409 bolt circle
- ⑦③ Fit for centering pins
- ⑦⑧ Fit for centering

Robot-side adapter plate to mount the OPR to a mounting pattern according to ISO 9409-50-4-M6.

Description	ID	
Robot side		
A-OPR-061-ISO-A50-R	0321371	



### Adapter plate ISO-9409-A31.5-T

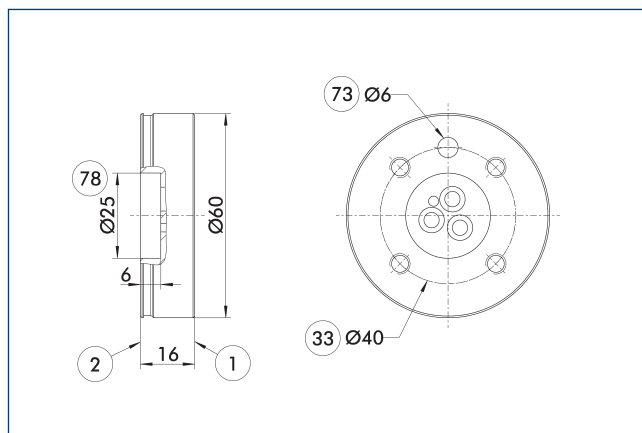


- ① Robot-side connection
- ② Tool-side connection
- ③③ DIN ISO-9409 bolt circle
- ⑦③ Fit for centering pins
- ⑦⑧ Fit for centering

Tool-side adapter plate with ISO 9409 screw connection pattern.

Description	ID	
Tool side		
A-OPR-061-ISO-A31-T	0321372	

### Adapter plate ISO 9409-A40-T

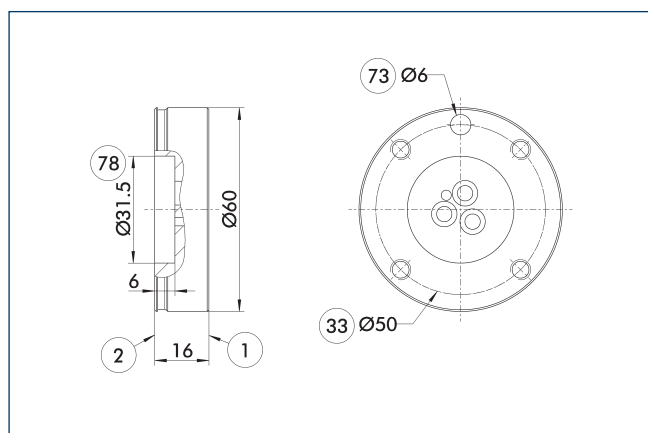


- ① Robot-side connection
- ② Tool-side connection
- ③③ DIN ISO-9409 bolt circle
- ⑦③ Fit for centering pins
- ⑦⑧ Fit for centering

Tool-side adapter plate with ISO 9409 screw connection pattern.

Description	ID	
Tool side		
A-OPR-061-ISO-A40-T	0321373	

### Adapter plate ISO 9409-A50-T

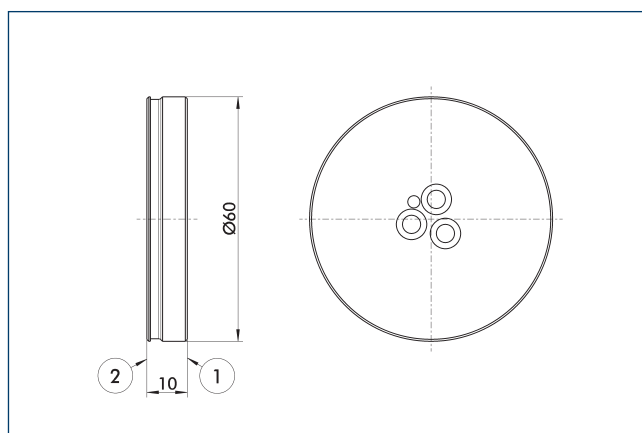


- ① Robot-side connection
- ② Tool-side connection
- ③③ DIN ISO-9409 bolt circle
- ⑦③ Fit for centering pins
- ⑦⑧ Fit for centering

Tool-side adapter plate with ISO 9409 screw connection pattern.

Description	ID	
Tool side		
A-OPR-061-ISO-A50-T	0321374	

### Adapter plate BLANK-T



- ① Robot-side connection
- ② Tool-side connection

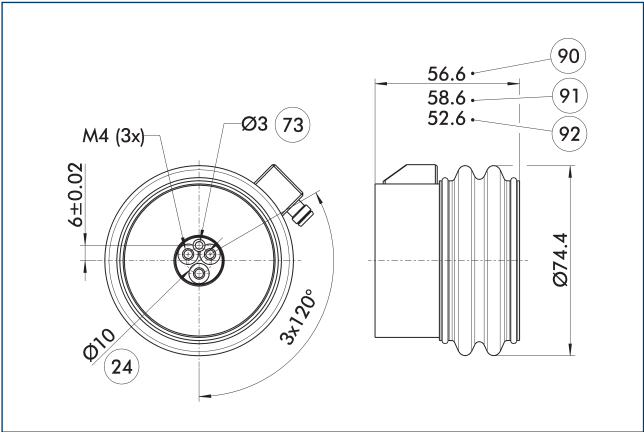
Unfinished tool-side adapter to be machined by the customer.

Description	ID	
Tool side		
A-OPR-061-BLANK-T	0321375	

# OPR 061

Anti-collision and overload protection sensor

## Protection cover OPR-061



- 24 Bolt circle

73 Fit for centering pins

90 Total height with adapter plate with flange pattern according to ISO 9409-A31.5
- 91 Total height with adapter plate with flange pattern according to ISO 9409-A40/A50

92 Total height with adapter plate without flange pattern

The protection boot protects the OPR against coolants for use up to IP 65.

Description	ID	IP protection class
Protection cover		
OPR-061 Flexboot	0321376	65

- ⓘ Please note that when using the protection boot a tool side adapter plate is also needed.





**SCHUNK SE & Co. KG**

**Spanntechnik**

**Greiftechnik**

**Automatisierungstechnik**

Bahnhofstr. 106 - 134

D-74348 Lauffen/Neckar

Tel. +49-7133-103-0

Fax +49-7133-103-2399

[info@de.schunk.com](mailto:info@de.schunk.com)

[schunk.com](http://schunk.com)

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