



Superior Clamping and Gripping



Product Information

Anti-collision and overload protection sensor OPR 061

Compliant. Highly responsive. Automatic reset.

Collision and overload sensor OPR

Collision and overload protection with automatic reset for protecting robots and handling units against damage resulting from collisions 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

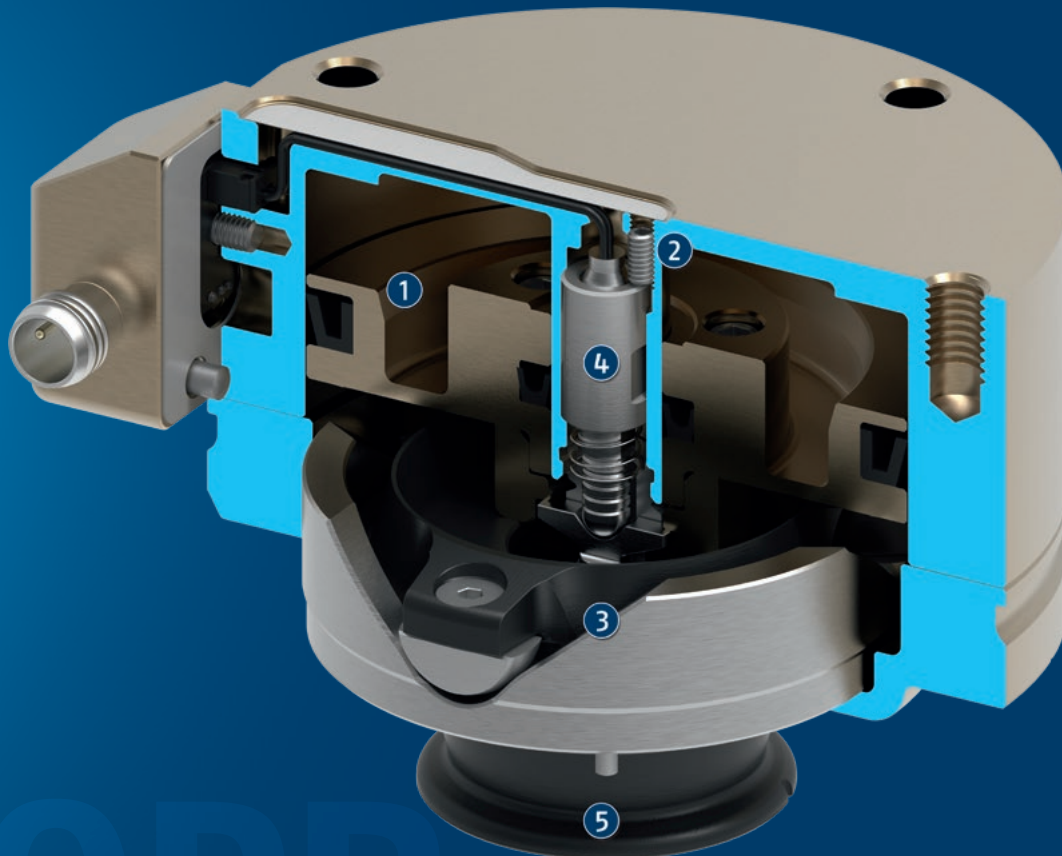


Trigger moment M_z
6.9 .. 1500 Nm

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

Splash water protection: Optional

Scope of delivery: Angular plug with 5 m cable and open wire strand, operating and maintenance instructions, manufacturer's declaration

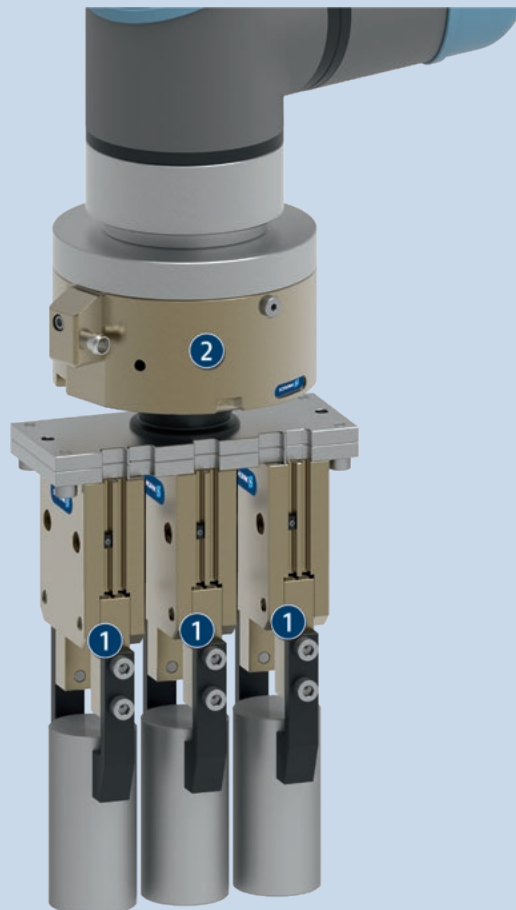
Warranty: 24 months

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 OPR even more productive – the suitable addition for the highest functionality, flexibility, reliability, and controlled production.



Quick change system



Manual change system



Rotary feed-through



Universal gripper



Angular gripper



Universal gripper

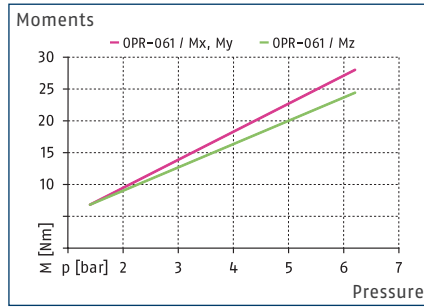
① For more information on these products can be found on the following product pages or at schunk.com. Please contact us: SCHUNK technical hotline +49-7133-103-2696

OPR 061

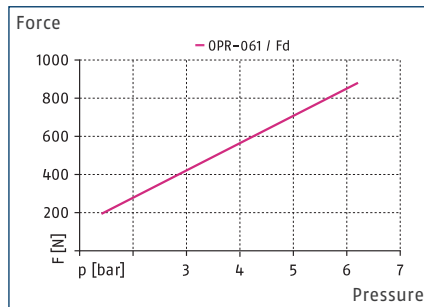
Anti-collision and overload protection sensor



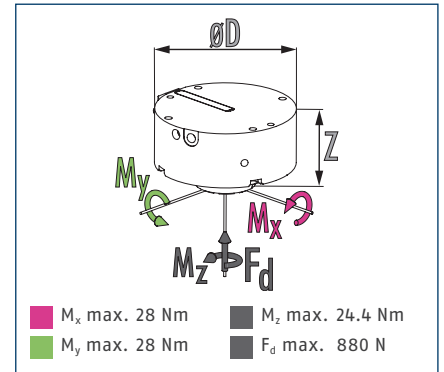
Triggering torque M_x , M_y , M_z



Triggering force F_d



Dimensions and maximum loads

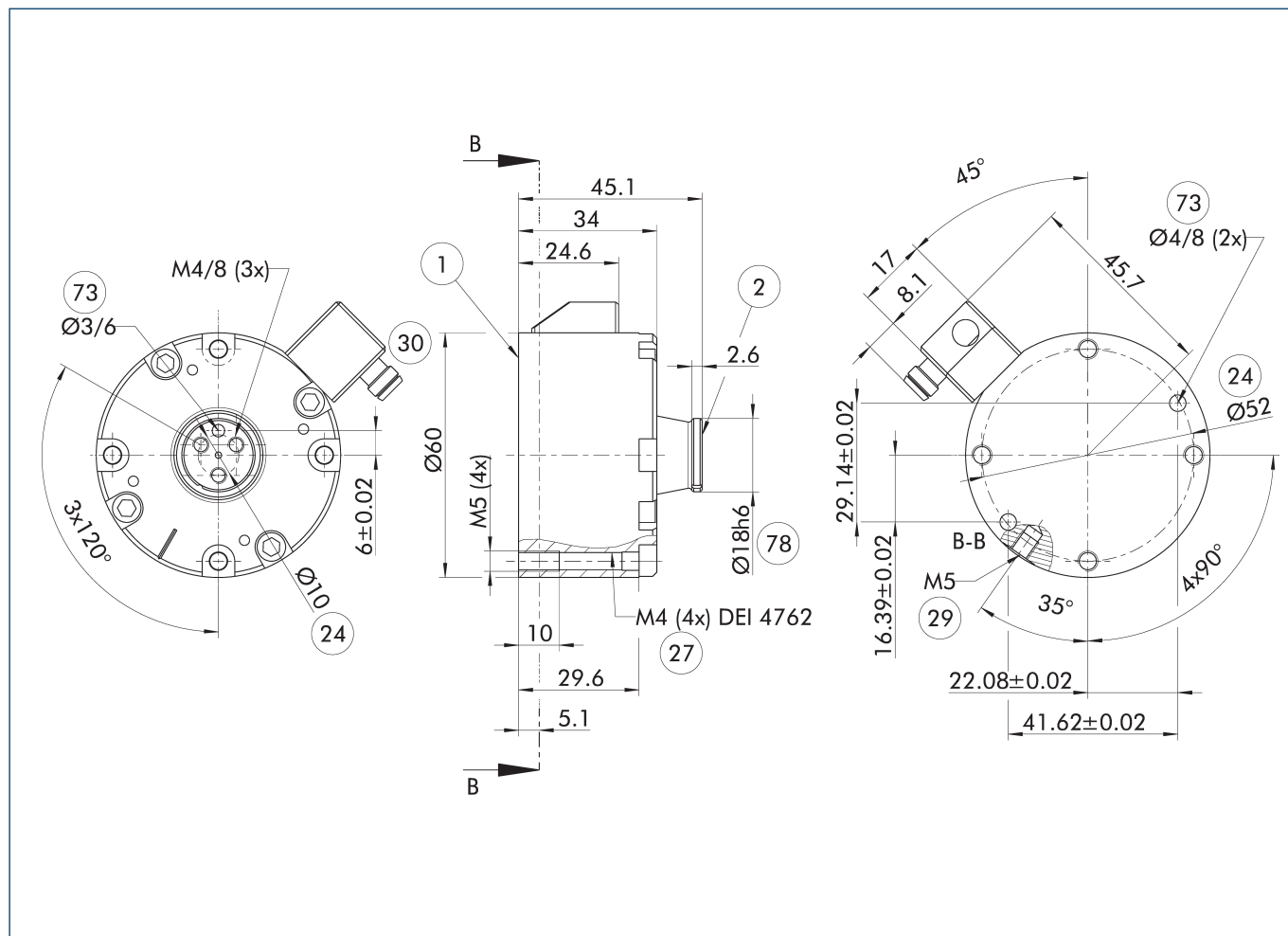


① The design of a collision sensor is defined by the occurring forces and moments in your application.

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 M_x, M_y	[Nm]	6.8	8.6	10.3	12.1
Min. triggering torque, rotatory M_z	[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
Options and their characteristics					
Splash-proof version		OPR-061-P00-S	OPR-061-P05-S	OPR-061-P10-S	OPR-061-P15-S
ID		0321365	0321366	0321367	0321368
IP protection class		65	65	65	65

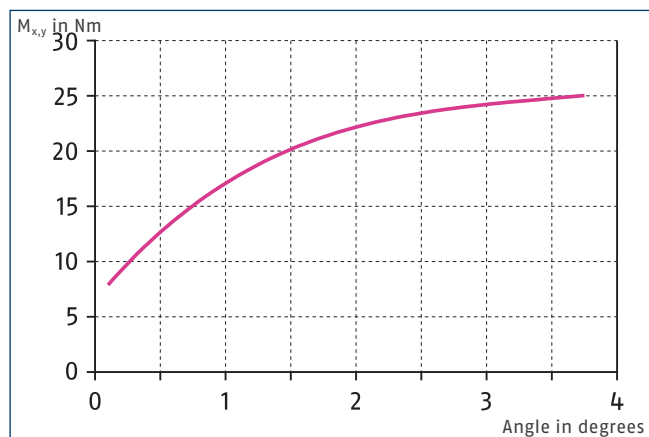
Main view



The main view shows the unit in its basic version.

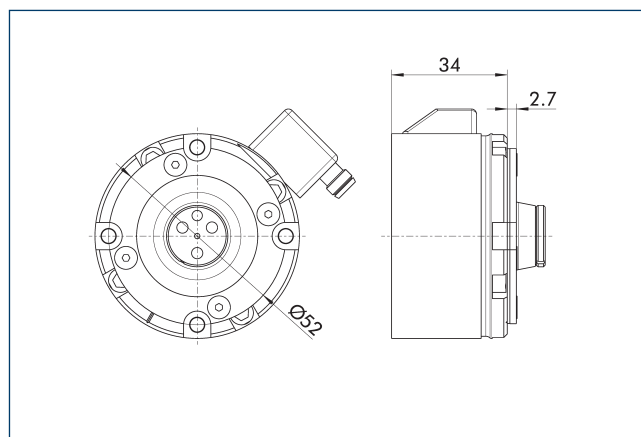
- | | |
|---------------------------------------|---|
| ① Robot-side connection | ②⑨ Air connection P |
| ② Tool-side connection | ③⑩ Cable connector in enclosed pack with 5 m connection cable |
| ④ Bolt circle | ⑦⑩ Fit for centering pins |
| ⑤ Through holes for screw connections | ⑦⑩ Fit for centering |

Moment loading



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

Splash-proof version

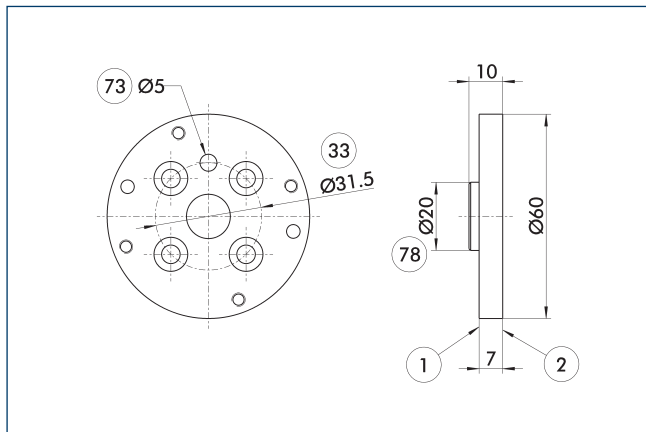


When using the splash water protection version, please be aware of the differences compared to the basic version.

OPR 061

Anti-collision and overload protection sensor

Adapter plate ISO 9409-A31.5-R

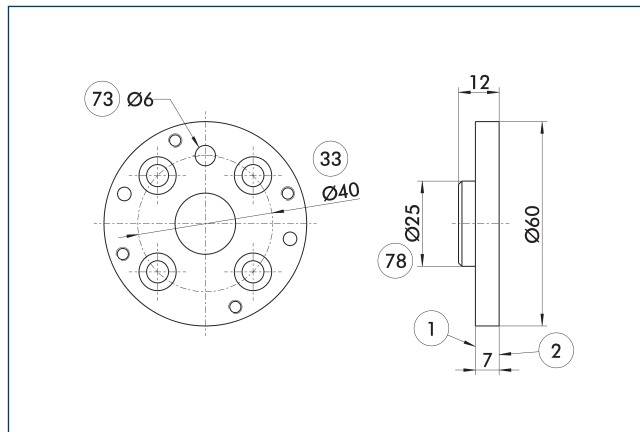


- ① Robot-side connection
- ② Tool-side connection
- ③③ DIN ISO-9409 bolt circle
- ⑦③ Fit for centering pins
- ⑦⑧ Fit for centering

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

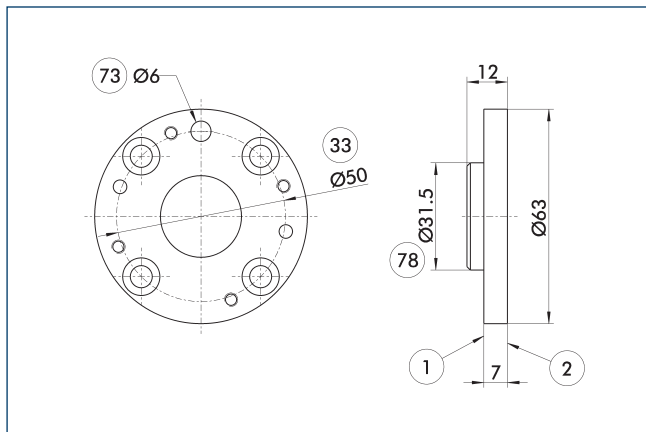


- ① Robot-side connection
- ② Tool-side connection
- ③③ DIN ISO-9409 bolt circle
- ⑦③ Fit for centering pins
- ⑦⑧ Fit for centering

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

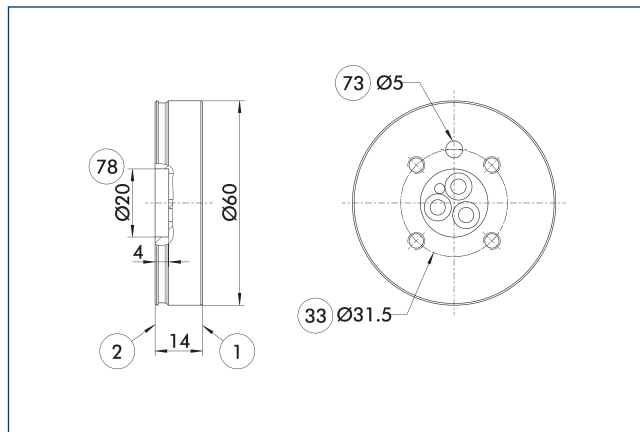


- ① Robot-side connection
- ② Tool-side connection
- ③③ DIN ISO-9409 bolt circle
- ⑦③ Fit for centering pins
- ⑦⑧ Fit for centering

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

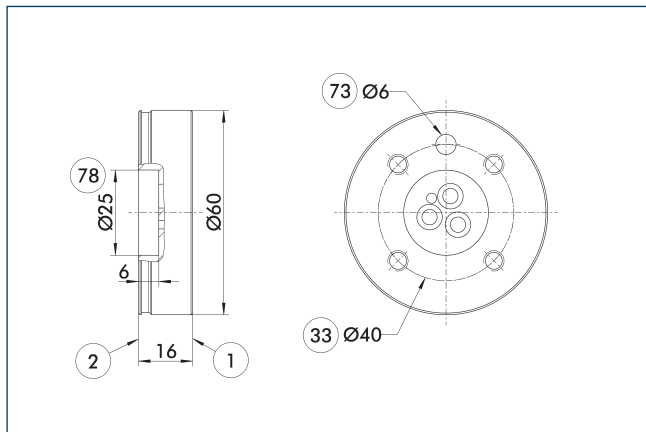


- ① Robot-side connection
- ② Tool-side connection
- ③③ DIN ISO-9409 bolt circle
- ⑦③ Fit for centering pins
- ⑦⑧ Fit for centering

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

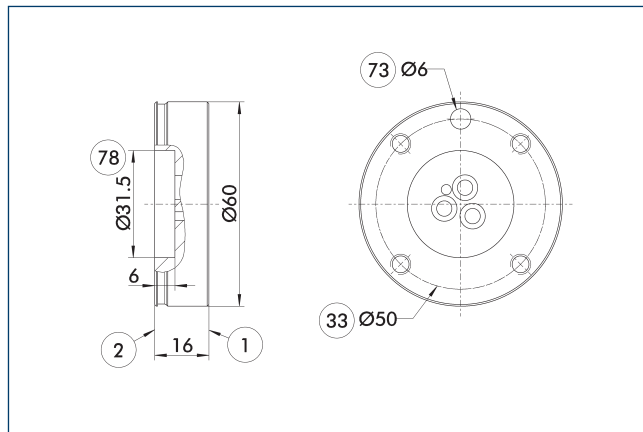


- ① Robot-side connection
- ② Tool-side connection
- ③③ DIN ISO-9409 bolt circle
- ⑦③ Fit for centering pins
- ⑦⑧ Fit for centering

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

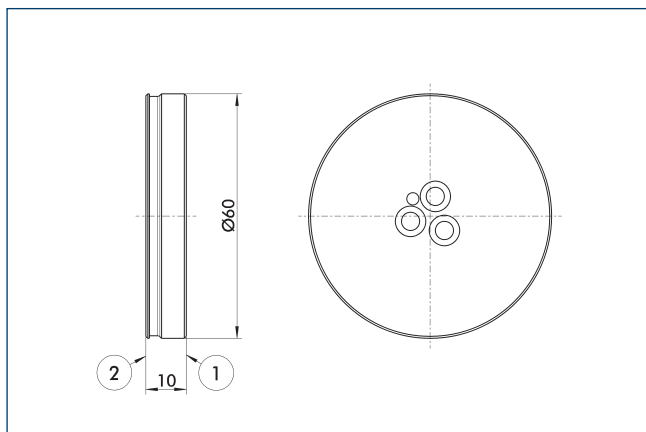


- ① Robot-side connection
- ② Tool-side connection
- ③③ DIN ISO-9409 bolt circle
- ⑦③ Fit for centering pins
- ⑦⑧ Fit for centering

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

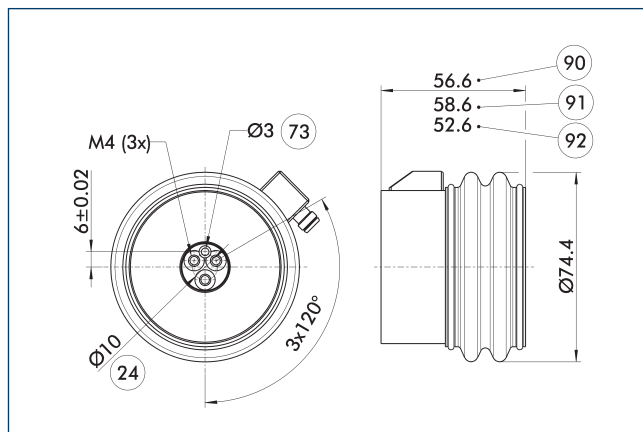


- ① Robot-side connection
- ② Tool-side connection

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

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

Protection cover OPR-061



- ②④ Bolt circle
- ⑦③ Fit for centering pins
- 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

- ① Please note that when using the protection boot a tool side adapter plate is also needed.

SCHUNK GmbH & Co. KG
Spann- und Greiftechnik

Bahnhofstr. 106 - 134
D-74348 Lauffen/Neckar
Tel. +49-7133-103-0
Fax +49-7133-103-2399
info@de.schunk.com
schunk.com



J. Lehmann

Jens Lehmann, German goalkeeper legend, SCHUNK brand ambassador since 2012 for
safe, precise gripping and holding.
schunk.com/Lehmann