



Hand in hand for tomorrow



Product data sheet

Long-stroke gripper PFH-mini 50

PFH-mini

Long-stroke gripper

Loadable. Flexible. Reliable.

Long-stroke gripper PFH-mini

2-finger parallel gripper with long jaw stroke for large parts and/or a broad range of parts

Field of application

clean to slightly dirty environments

Advantages – Your benefits

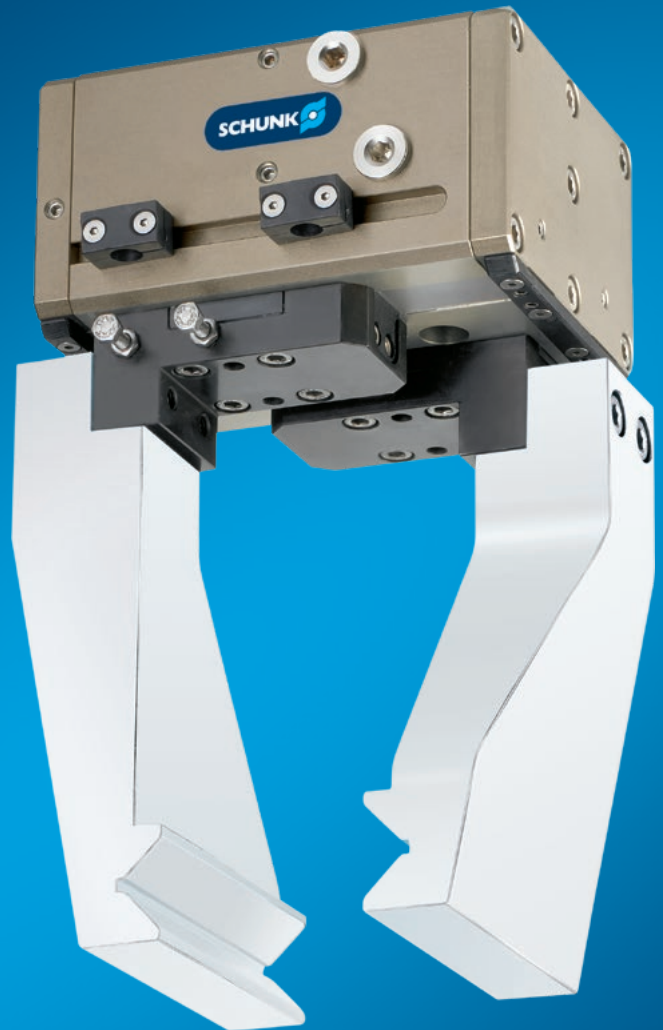
Robust sliding guide for the precise handling of different workpieces

High maximum moments possible suitable for using long gripper fingers

Double piston rack and pinion principle for centric clamping

Mounting from two sides in three screw directions for universal and flexible gripper assembly

Air supply via hose-free direct connection or screw connections for flexible pressure supply in all automated systems



Sizes
Quantity: 3



Weight
2.65 .. 12.6 kg



Gripping force
630 .. 2950 N



Stroke per jaw
30 .. 100 mm



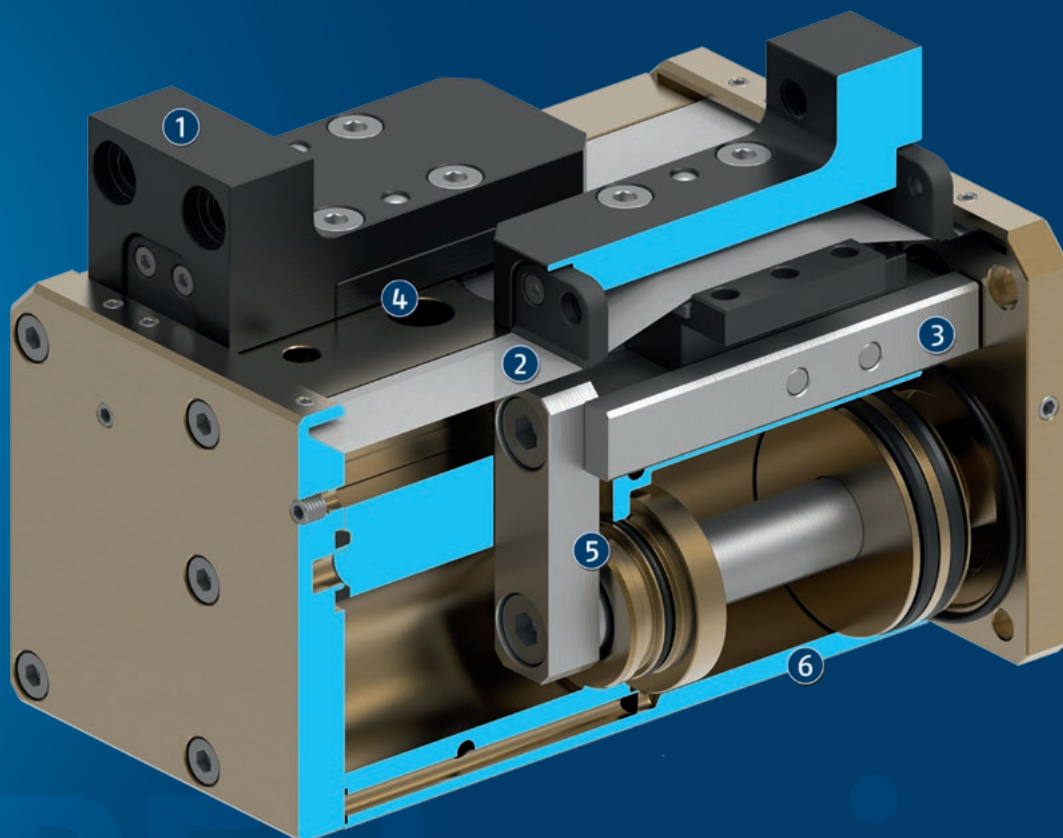
Workpiece weight
3.15 .. 13 kg

Functional description

By pressure actuation of the opposing piston, the base jaws, everyone is guided by a carrier on the piston, are set in motion.

The jaw stroke is synchronized by means of rack and

pinion kinematics.



① **Base jaw**
for the connection of workpiece-specific gripper fingers

② **Dust cover**
along the whole guidance length against coarse dirt

③ **Sliding guide**
for precise gripping with minimal play at a high load capacity

④ **Centering and mounting possibilities**
for universal assembly of the gripper

⑤ **Kinematics**
Double piston rack and pinion principle for centric clamping

⑥ **Housing**
is weight-optimized due to the use of high-strength aluminum alloy

General notes about the series

Operating principle: Double piston rack and pinion principle

Housing material: Aluminum alloy, anodized

Base jaw material: Steel

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

Warranty: 24 months

Service life characteristics: on request

Scope of delivery: Brackets for proximity switches, centering sleeves, O-rings for direct connection, assembly instructions (operating manual with declaration of incorporation is available online)

Gripping force maintenance: possible by using the version with mechanical gripping force maintenance or pressure maintenance valve SDV-P

Gripping force: is the arithmetic sum of the individual force applied to each jaw at distance P (see illustration).

Finger length: is measured from the reference surface as the distance P in direction to the main axis.

The maximum permissible finger length applies until the nominal operating pressure is achieved. With higher pressures, the finger length must be reduced proportionally to the nominal operating pressure.

Repeat accuracy: is defined as a distribution of the end Position for 100 consecutive strokes.

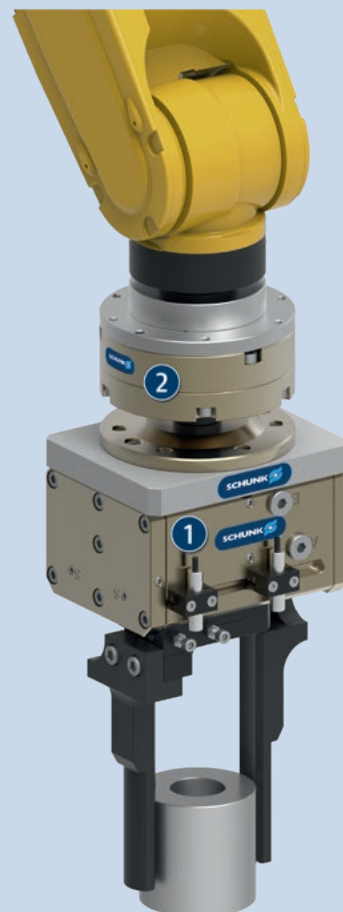
Workpiece weight: is calculated for force-fit gripping with a coefficient of static friction of 0.1 and a safety factor of 2 against workpiece slippage at acceleration due to gravity g. For form-fit or capture gripping, there are significantly higher permissible workpiece weights.

Closing and opening times: are movement times of the base jaws only, without application-specific gripper fingers. Valve switching times, hose fill times, or PLC reaction times are not included, and are to be considered when cycle times are calculated.

Application example

Assembly unit for intermediate sleeves with various diameters. The unit is equipped with a collision sensor to prevent damages.

- 1 2-finger parallel gripper PFH-mini with workpiece-specific gripper fingers
- 2 Collision sensor OPS



SCHUNK offers more ...

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



Anti-collision and overload protection sensor



Tolerance compensation unit



Pressure maintenance valve



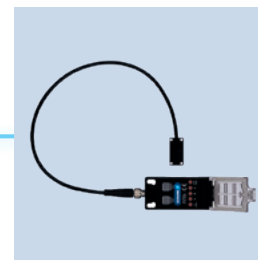
Finger blank



Inductive proximity switch



Magnetic switches



Flexible position sensor

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

Gripping force maintenance version AS/IS: The mechanical gripping force maintenance version ensures minimum gripping force even in the event of a pressure drop. In the AS/IS version this acts as a closing force, in the IS version as an opening force.

Gripper with guide cover: against heavy contamination

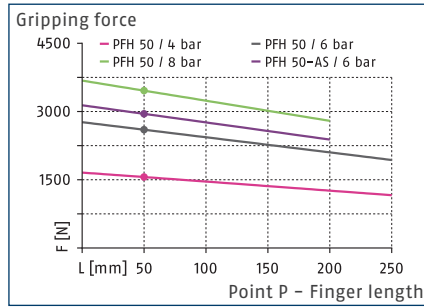
Food-grade lubrication: The product contains food-compliant lubricants as standard. The requirements of EN 1672-2:2020 are not fully met. The relevant NSF certificates are available at <https://info.nsf.org/USDA/Listings.asp> using the lubricant information in the operating manual.

PFH-mini 50

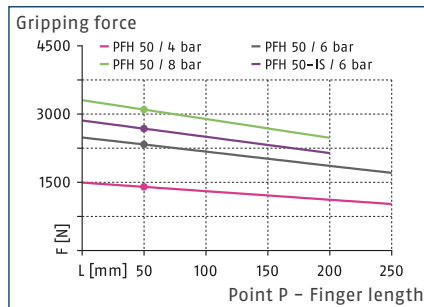
Long-stroke gripper



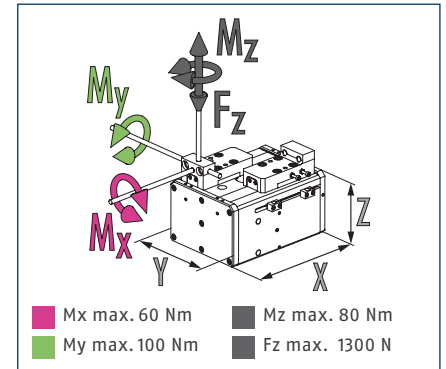
Gripping force O.D. gripping



Gripping force I.D. gripping



Dimensions and maximum loads



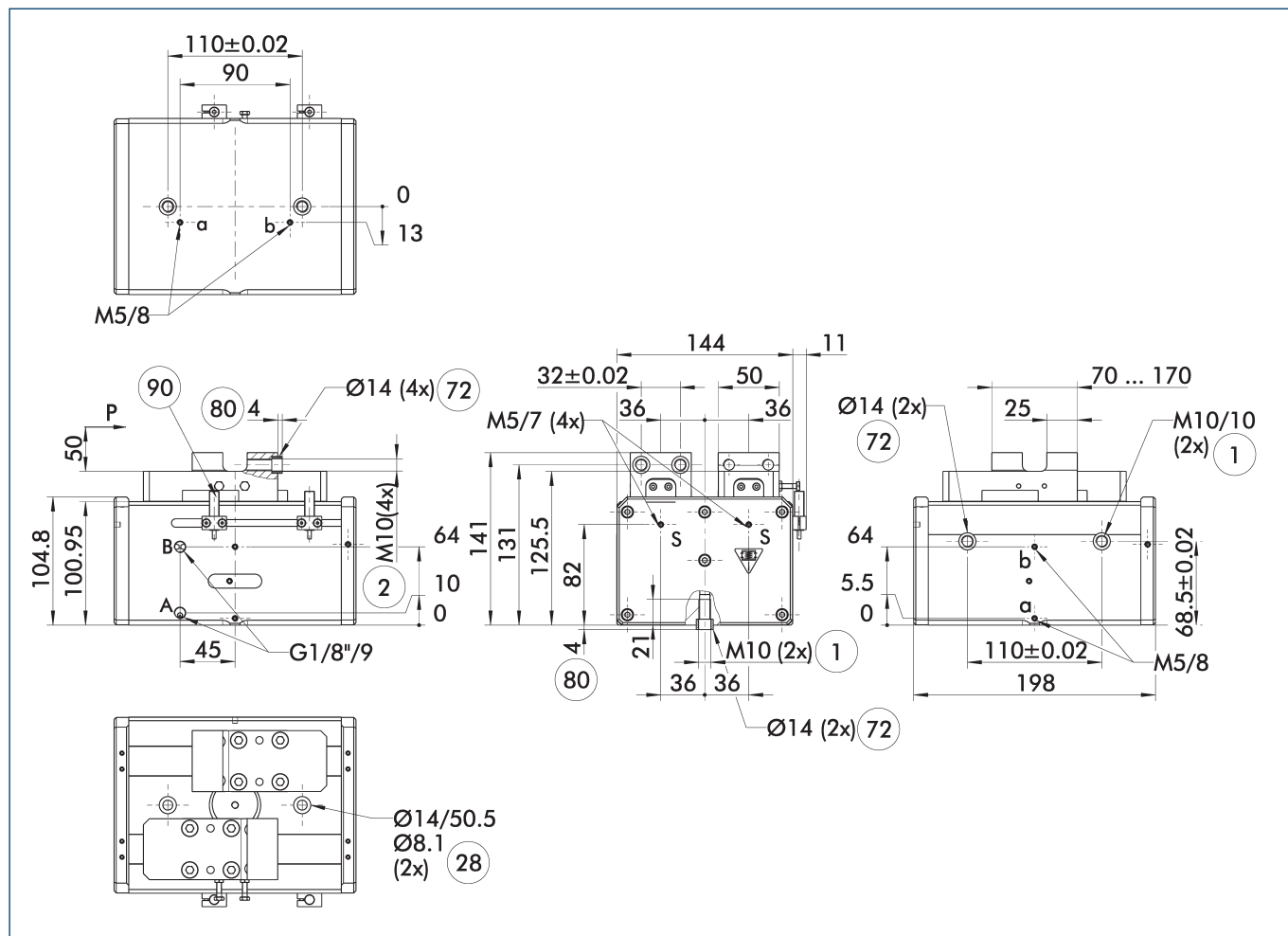
① The indicated moments and forces are static values, apply for each base jaw and may appear simultaneously. Loads may additionally occur to the moment produced by the gripping force itself.

Technical data

Description		PFH 50	PFH 50-100	PFH 50-AS	PFH 50-IS
ID		0302050	0302053	0302051	0302052
Stroke per jaw	[mm]	50	100	50	50
Closing/opening force	[N]	2600/2330	2600/2330	2950/-	-/2680
Min. spring force	[N]			350	350
Weight	[kg]	9.6	12.6	9.7	9.7
Recommended workpiece weight	[kg]	13	13	13	11.65
Cylinder volume per double stroke	[cm³]	603	1205	603	603
Min./nom./max. operating pressure	[bar]	2/6/8	2/6/8	5/6/6.5	5/6/6.5
Min./max. air purge pressure	[bar]	0.5/1	0.5/1	0.5/1	0.5/1
Closing/opening time	[s]	0.6/0.7	1/1.2	0.5/0.8	0.7/0.6
Closing/opening time with spring	[s]			0.80	0.80
Max. permissible finger length	[mm]	250	250	200	200
Max. permissible weight per finger	[kg]	4	4	4	4
IP protection class		41	41	41	41
Min./max. ambient temperature	[°C]	5/90	5/90	5/90	5/90
Repeat accuracy	[mm]	0.05	0.05	0.05	0.05
Dimensions X x Y x Z	[mm]	198 x 144 x 104.8	303 x 144 x 104.8	198 x 144 x 104.8	198 x 144 x 104.8

① It may take a few 100 gripping cycles until the full gripping force (as indicated in the data table) will be available.

Main view PFH 50



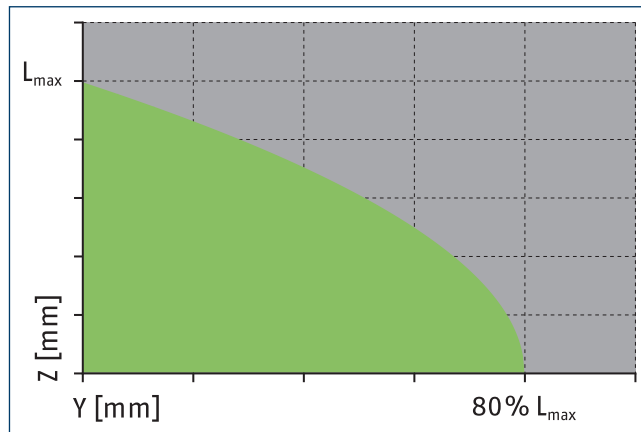
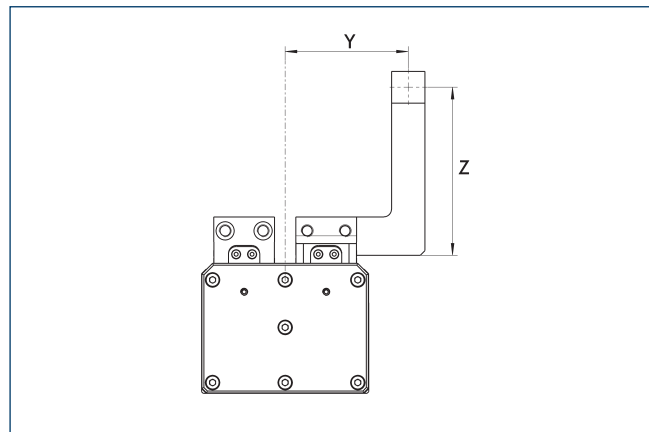
The drawing shows the gripper in the basic version with closed jaws, without dimensional consideration of the options described below.

① As an alternative/in addition to spring-assisted mechanical gripping force maintenance, the SDV-P pressure maintenance valve can be used for I.D. and O.D. gripping (see "Accessories" section of catalog).

- A, a Main / direct connection, gripper opening
- B, b Main / direct connection, gripper closing
- S Air purge connection
- ① Gripper connection

- ② Finger connection
- ②⑧ Through-hole
- ⑦② Fit for centering sleeves
- ⑧① Depth of the centering sleeve hole in the counter part
- ⑨① Sensor IN ...

Maximum permitted finger projection



■ Permitted range

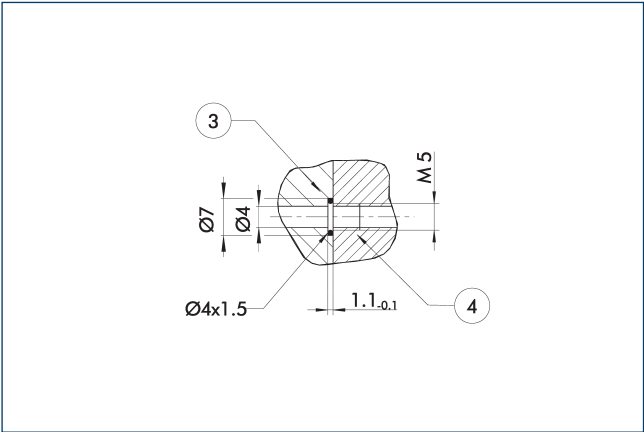
■ Inadmissible range

L_{max} is equivalent to the maximum permitted finger length, see the technical data table.

PFH-mini 50

Long-stroke gripper

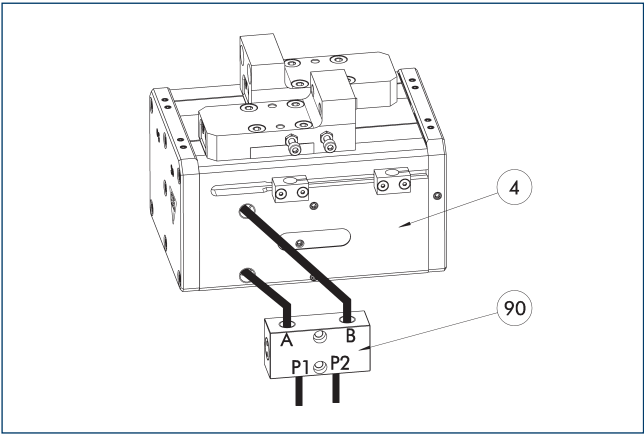
Hose-free direct connection M5



- ③ Adapter ④ Grippers

The direct connection is used for supplying compressed air without hoses. Instead, the pressure medium is fed through bore-holes in the mounting plate.

SDV-P pressure maintenance valve



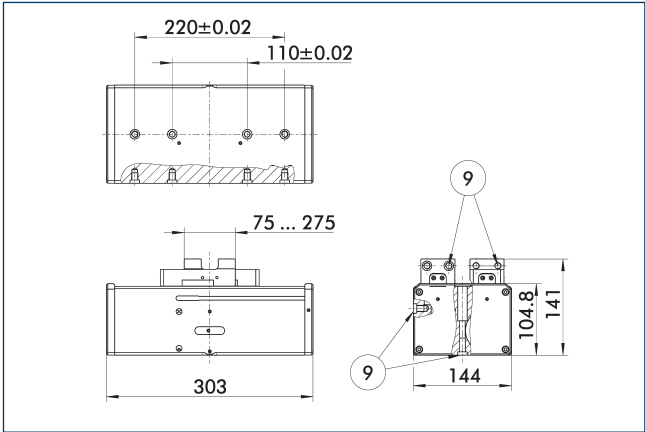
- ④ Grippers ⑨⑩ SDV-P pressure maintenance valve

The SDV-P pressure maintenance valve ensures in emergency STOP situations that the pressure in the piston chamber of pneumatic gripper, swivel, linear, and quick-change modules is temporarily maintained.

Description	ID	Recommended hose diameter
		[mm]
Pressure maintenance valve		
SDV-P 07	0403131	8
Pressure maintenance valve with air bleed screw		
SDV-P 07-E	0300121	8

① In order to achieve the specified closing and opening time for each gripper variant, the recommended hose diameter must be used. The direct allocation of the respective variant of the gripper for the respective SDV-P can be found at schunk.com.

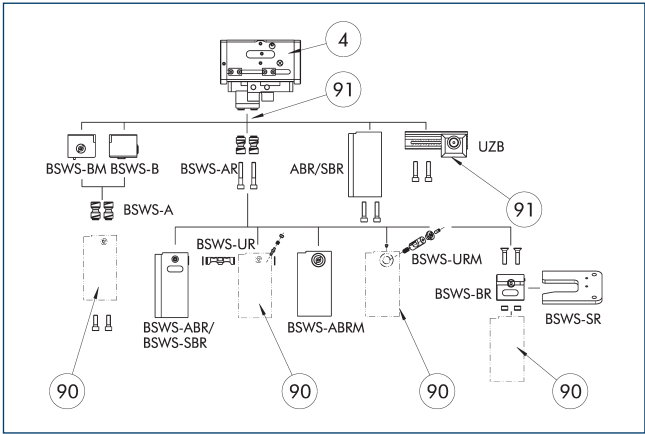
Stroke variant PFH 50-100



- ⑨ For mounting screw connection diagram, see basic version

The drawing shows changes in dimensions of the version with a different stroke compared to the version shown in the main view.

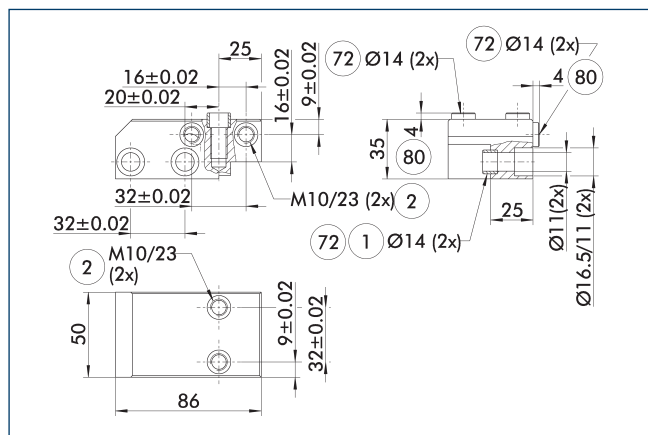
Intermediate jaw interface



- ④ Grippers ⑨⑩ Uniform screw connection pattern

By using the intermediate jaw, you have the possibility of directly connecting a wide range of accessories directly. This includes jaw quick-change systems, finger blanks, and universal intermediate jaws.

ZBA-PFH 50-160 intermediate jaws

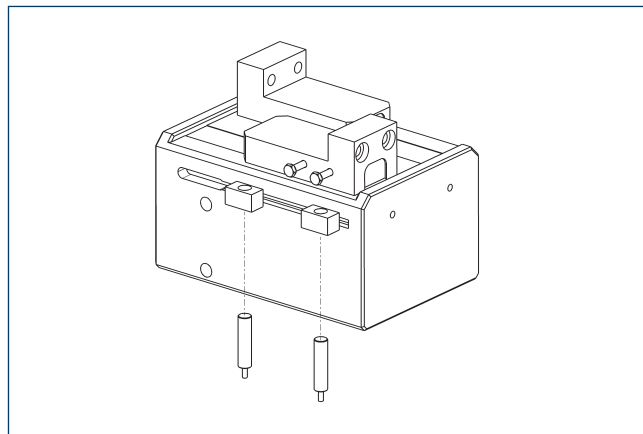


- ① Gripper connection
- ② Finger connection
- 72 Fit for centering sleeves
- 80 Depth of the centering sleeve hole in the counter part

The optional intermediate jaw makes a screw connection of the gripper fingers in Z-direction possible. Furthermore, the intermediate jaws compensate the parallel offset of the base jaws in Y- direction and enable an aligned connection. The design of the customer-specific gripper fingers is simplified as a result.

Description	ID	Material	Finger interface	Scope of delivery
Intermediate jaw				
ZBA-PFH 50-160	0300222	Steel	PGN-plus 160	2

Inductive proximity switches

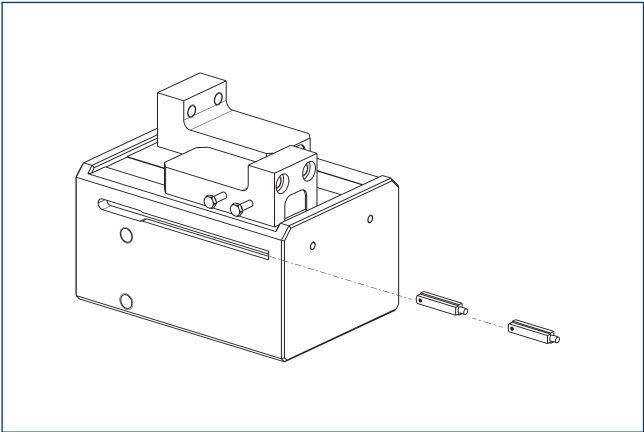


Directly mounted end position monitoring.

Description	ID	Often combined
Inductive proximity switch		
IN 80-S-M12	0301578	
IN 80-S-M8	0301478	●
INK 80-S	0301550	
Connection cables		
KA BG08-L 3P-0300-PNP	0301622	●
KA BG08-L 3P-0500-PNP	0301623	
KA BG12-L 3P-0500-PNP	30016369	
KA BW08-L 3P-0300-PNP	0301594	
KA BW08-L 3P-0500-PNP	0301502	
KA BW12-L 3P-0300-PNP	0301503	
KA BW12-L 3P-0500-PNP	0301507	
Clip for connector/socket		
CLI-M12	0301464	
CLI-M8	0301463	
Cable extension		
KV BG12-SG12 3P-0030-PNP	0301999	
KV BG12-SG12 3P-0060-PNP	0301998	
KV BW08-SG08 3P-0030-PNP	0301495	
KV BW08-SG08 3P-0100-PNP	0301496	
KV BW08-SG08 3P-0200-PNP	0301497	●
KV BW12-SG12 3P-0030-PNP	0301595	
KV BW12-SG12 3P-0100-PNP	0301596	
KV BW12-SG12 3P-0200-PNP	0301597	
Sensor distributor		
V2-M12	0301776	●
V2-M8	0301775	●
V4-M8	0301746	
V8-M8	0301751	

- ① Two sensors are required per unit for monitoring two positions. On option, extension cables and sensor distributors are available. Additional product variants of the sensor, and further information and technical data can be found in the catalog chapter sensor system.

Electronic magnetic switch MMS



End position monitoring for mounting in the T-slot

Description	ID	Often combined
Electronic magnetic switch		
MMS 30-S-M12-PNP	0301571	
MMS 30-S-M8-PNP	0301471	●
MMSK 30-S-PNP	0301563	
Connection cables		
KA BG08-L 3P-0300-PNP	0301622	●
KA BG08-L 3P-0500-PNP	0301623	
KA BG12-L 3P-0500-PNP	30016369	
KA BW08-L 3P-0300-PNP	0301594	
KA BW08-L 3P-0500-PNP	0301502	
Clip for connector/socket		
CLI-M12	0301464	
CLI-M8	0301463	
Cable extension		
KV BG12-SG12 3P-0030-PNP	0301999	
KV BG12-SG12 3P-0060-PNP	0301998	
KV BW08-SG08 3P-0030-PNP	0301495	
KV BW08-SG08 3P-0100-PNP	0301496	
KV BW08-SG08 3P-0200-PNP	0301497	●
KV BW12-SG12 3P-0030-PNP	0301595	
KV BW12-SG12 3P-0100-PNP	0301596	
KV BW12-SG12 3P-0200-PNP	0301597	
Sensor distributor		
V2-M8	0301775	●
V4-M8	0301746	
V8-M8	0301751	

❗ Two sensors are required per unit for monitoring two positions. On option, extension cables and sensor distributors are available. Additional product variants of the sensor, and further information and technical data can be found in the catalog chapter sensor system.



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