

Pneumatic Gripping Modules

Pneumatic · Multiple-finger Centric Grippers



MULTIPLE-FINGER CENTRIC GRIPPERS

Series	Size	Page
Multiple-finger Centric Grippers		
PZV		558
PZV	64	562
PZV	100	566
PZV	160	570
PZV	200	574

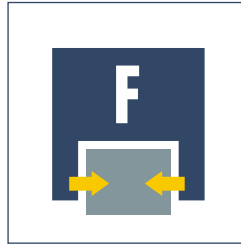




Sizes
64 .. 200



Weight
0.5 kg .. 10.0 kg



Gripping force
570 N .. 6900 N



Stroke per finger
4 mm .. 16 mm



Workpiece weight
0.7 kg .. 34.5 kg

Application example



Centering and rotating unit for the precise picking up, orientation and subsequent joining of square materials

- 1 PZV 160 Multiple-finger Gripper
- 2 OPS 160 Collision and Overload Protection

- 3 SRU 50.1-90-3 Rotary Actuator

4-Finger Centric Gripper

The multiple-finger gripper for applications in which two or three fingers are insufficient.

Area of application

4-finger centric grippers have advantages over the usual centric grippers, for example when cylindrical workpieces are being magazined in tablets. The PZV handles the workpieces in a controlled, reliable manner despite the interfering contours.

Your advantages and benefits

Robust multiple-tooth guidance

for precise handling

Wedge-hook design

for high power transmission and synchronized gripping

Air supply via hose-free direct connection or screw connections

for the flexible supply of compressed air in all automation systems

Comprehensive sensor accessories

for diverse monitoring tasks and stroke position monitoring.



General information on the series

Working principle

Wedge-hook kinematics

Housing material

Aluminum alloy, hard-anodized

Base jaw material

Steel

Actuation

Pneumatic, with filtered compressed air (10 µm): Dry, lubricated or non-lubricated

Pressure medium: Required quality class of compressed air according to DIN ISO

8573-1: Quality class 4

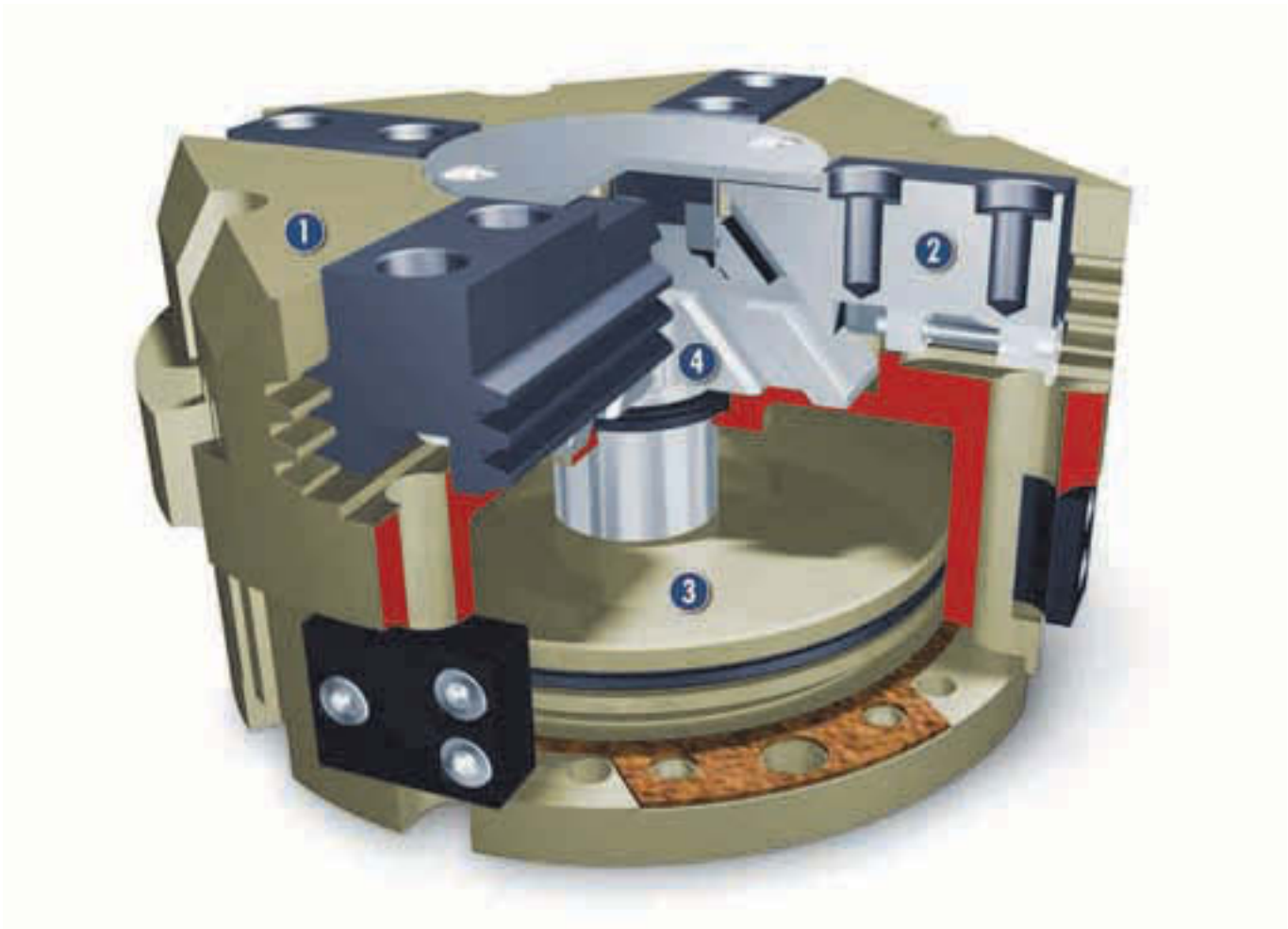
Warranty

24 months

Scope of delivery

Brackets for proximity switches, centering sleeves, O-rings for direct connection, assembly and operating manual with manufacturer's declaration

Sectional diagram of functions



1 Housing
High-strength, hard-anodized aluminum alloy

2 Base jaws with multiple-tooth guidance
for precise gripping through high load-bearing base jaw guide with minimum play

3 Pneumatic piston
as a powerful drive

4 Wedge hook
for quadruple jaw drive and synchronized, forceful movements

Function description

The piston is moved up or down by means of compressed air. Through its angled active surfaces, the wedge hook transforms this motion into centric, synchronous movements of the four base jaws.

Options and special information

Intermediate sizes may be available on request. Please note that the four-finger grip is an umbrella term, and may constitute a two or three-finger grip in certain cases.

Accessories

SCHUNK accessories – the suitable complement for the highest level of functionality, reliability and controlled production of all automation modules.

Centering sleeves



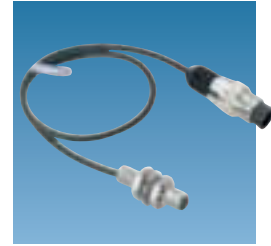
Fittings



MMS magnetic switch



IN inductive proximity switches



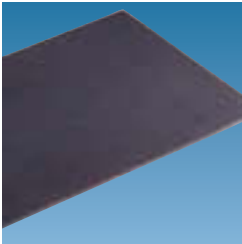
BSWS quick-change jaw system



W/WK/KV/GK sensor cables



HKI gripper pads



V sensor distributors



SDV-P pressure maintenance valves



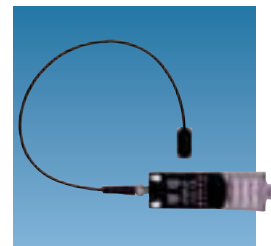
Finger blanks



FMS force measuring system



FPS flexible position sensor



① For the exact size of the required accessories, availability of this size and the designation and ID, please refer to the additional views at the end of the size in question. You can find more detailed information on our accessory range in the "Accessories" catalog section.

General information on the series

Gripping force

is the arithmetic total of the gripping force applied to each base jaw at distance P (see illustration), measured from the upper edge of the gripper.

Finger length

is measured from the upper edge of the gripper housing in the direction of the main axis.

Repeat accuracy

is defined as the spread of the limit position after 100 consecutive strokes.

Pressure reduction with two-finger use

If the PZV is used as a double 2-finger parallel gripper (gripping with only 2 of the 4 fingers), in sizes PZV 160 and PZV 200 the pressure must be reduced to max. 5 bar.

Workpiece weight

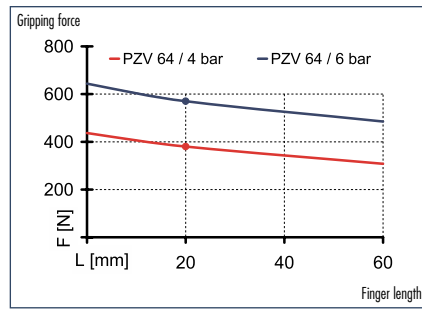
The recommended workpiece weight is calculated for a force-type connection with a coefficient of friction of 0.1 and a safety factor of 2 against slippage of the workpiece on acceleration due to gravity g. Considerably heavier workpiece weights are permitted with form-fit gripping.

Closing and opening times

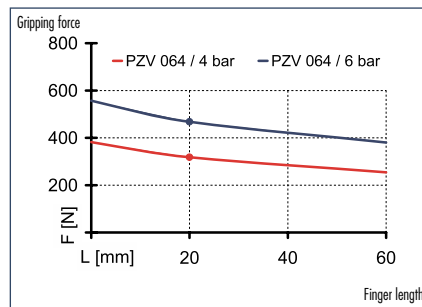
Closing and opening times are purely the times that the base jaws or fingers are in motion. Valve switching times, hose filling times or SPC reaction times are not included in the above times and must be taken into consideration when determining cycle times.



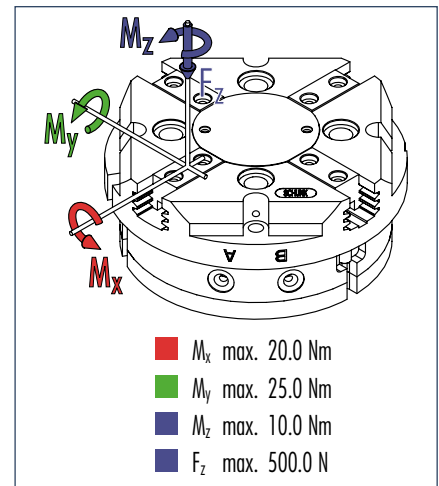
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

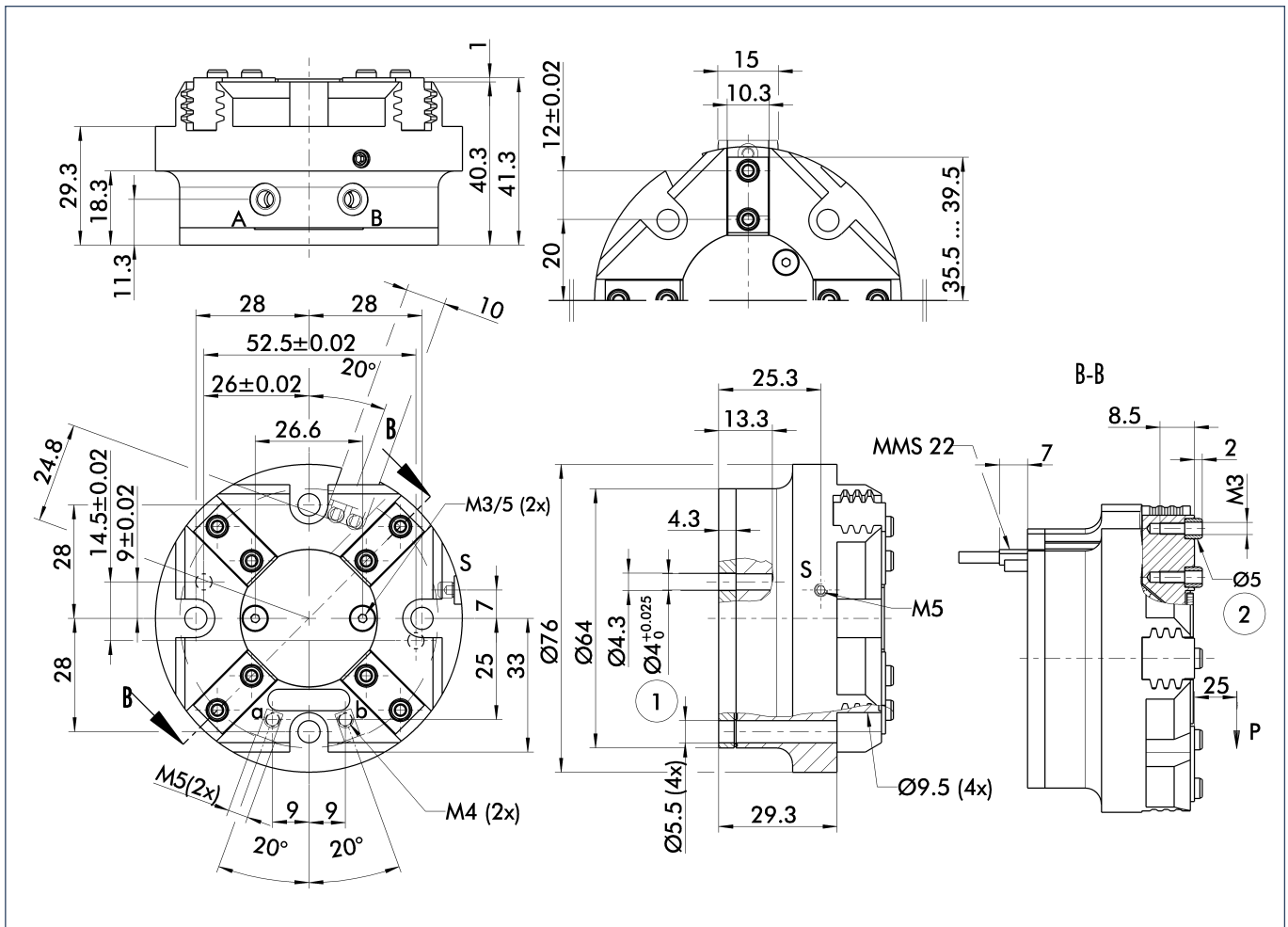


① Moments and forces apply per base jaw and may occur simultaneously. M_y may arise in addition to the moment generated by the gripping force itself. If the max. permitted finger weight is exceeded, it is imperative to throttle the air pressure so that the jaw movement occurs without any hitting or bouncing. Service life may be reduced.

Technical data

Description	PZV 64	
ID	0304000	
Stroke per finger	[mm]	4.0
Closing force	[N]	570.0
Opening force	[N]	630.0
Weight	[kg]	0.5
Recommended workpiece weight	[kg]	2.8
Air consumption per double stroke	[cm ³]	25.0
Nominal pressure	[bar]	6.0
Minimum pressure	[bar]	2.0
Maximum pressure	[bar]	8.0
Closing time	[s]	0.02
Opening time	[s]	0.02
Max. permitted finger length	[mm]	64.0
Max. permitted weight per finger	[kg]	0.18
IP class		40
Min. ambient temperature	[°C]	-10.0
Max. ambient temperature	[°C]	90.0
Repeat accuracy	[mm]	0.01

Main views

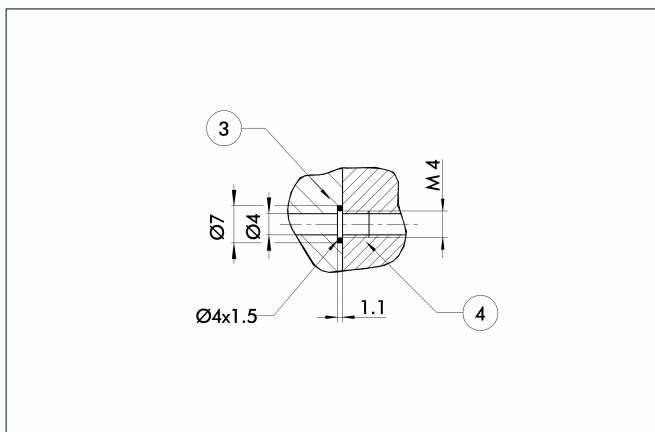


The drawing shows the gripper in the basic version with closed jaws, the dimensions do not include the options described below.

① The SDV-P pressure maintenance valve can be used as a gripping force safety device (see "Accessories" catalog section).

- A,a Main/direct connection, gripper opening
- B,b Main/direct connection, gripper closing
- S,s Air purge connection or bleeder ventilation hole
- ① Gripper connection
- ② Finger connection

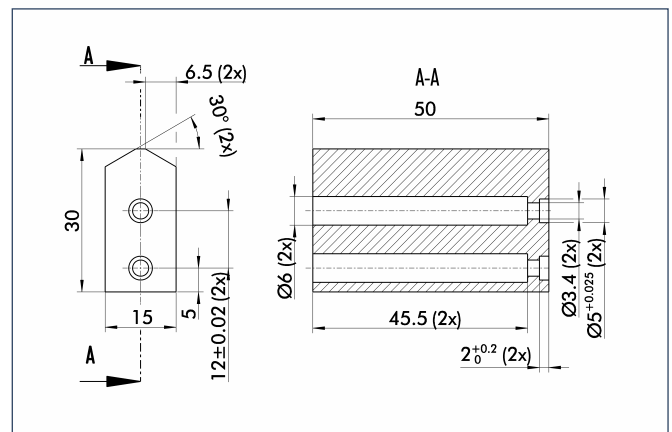
Hoseless direct connection



- ③ Adapter
- ④ Gripper

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

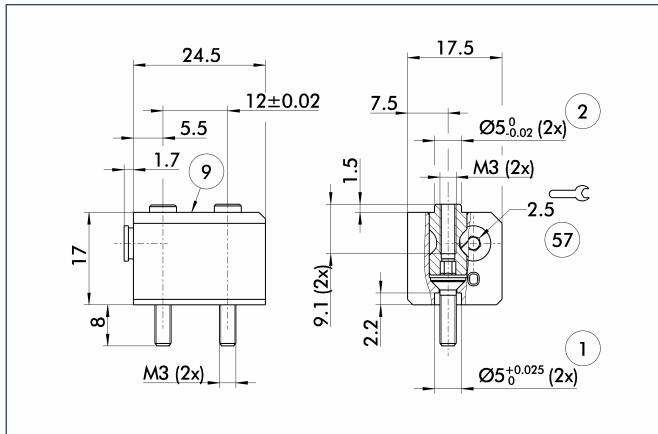
Finger blanks



Finger blanks for customized subsequent machining, incl. screw connection diagram

Description	Material	Scope of delivery	ID
ABR-plus 50	Aluminum	1	0300009
SBR-plus 50	16 MnCr 5	1	0300019

BSWS quick-change jaw system

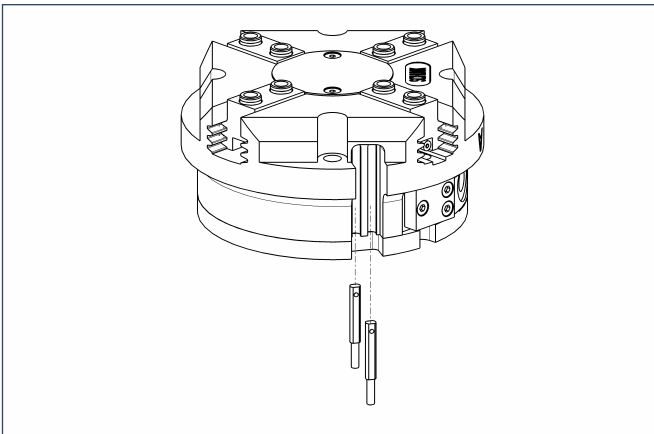


- ① Gripper connection
- ② Finger connection
- ⑨ For screw connection diagram, see basic version
- ⑤⑦ Locking mechanism

The BSWS quick-change jaw system enables top jaws to be changed on the gripper manually and rapidly. An adapter (BSWS-A) and a base (BSWS-B) are required for each gripper jaw.

Description	ID
BSWS-A 50	0303020
BSWS-B 50	0303021

Sensor system



End position monitoring:

Electronic magnetic switches, for mounting in C-slot

Description	ID	Recommended product
MMS 22-S-M5-NPN	0301455	
MMS 22-S-M5-NPN-SA	0301461	
MMS 22-S-M5-PNP	0301454	
MMS 22-S-M5-PNP-SA	0301460	
MMS 22-S-M8-NPN	0301451	
MMS 22-S-M8-NPN-SA	0301457	
MMS 22-S-M8-PNP	0301450	•
MMS 22-S-M8-PNP-SA	0301456	
MMSK 22-S-NPN	0301453	
MMSK 22-S-NPN-SA	0301459	
MMSK 22-S-PNP	0301452	
MMSK 22-S-PNP-SA	0301458	

① Two sensors (NO contacts) are required for each gripper, plus extension cables as an option.

Extension cables for proximity switches/magnetic switches

Description	ID
GK 3-M5-PNP/NPN	0301652
GK 3-M8	0301622
KV 10-M8	0301496
KV 20-M8	0301497
W 3-M5-PNP/NPN	0301650
WK 3-M8	0301594
WK 3-M8 NPN	0301602
WK 5-M8	0301502
WK 5-M8 NPN	9641116

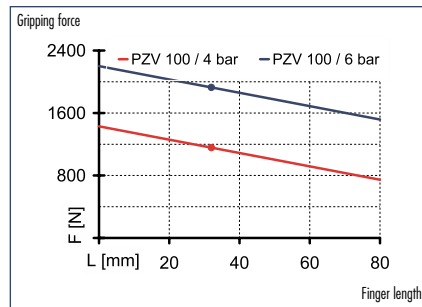
① Please note the minimum permitted bending radii for the sensor cables, which are generally 35 mm.



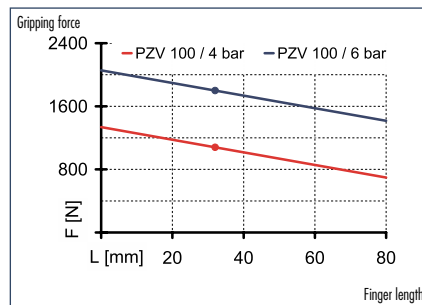
You can find more detailed information and individual parts of the above-mentioned accessories in the "Accessories" catalog section.



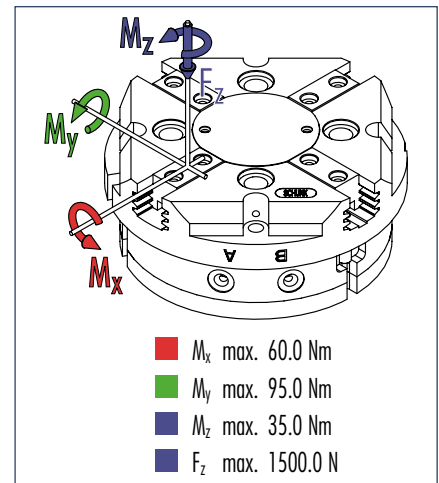
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

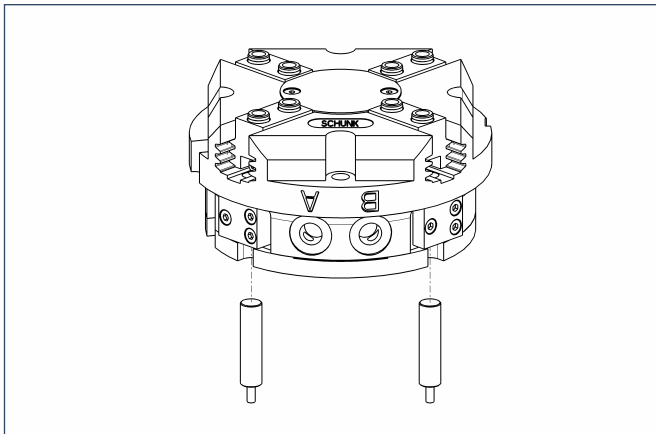


① Moments and forces apply per base jaw and may occur simultaneously. M_y may arise in addition to the moment generated by the gripping force itself. If the max. permitted finger weight is exceeded, it is imperative to throttle the air pressure so that the jaw movement occurs without any hitting or bouncing. Service life may be reduced.

Technical data

Description	PZV 100	
ID	0304002	
Stroke per finger	[mm]	8.0
Closing force	[N]	1800.0
Opening force	[N]	1900.0
Weight	[kg]	1.6
Recommended workpiece weight	[kg]	9.0
Air consumption per double stroke	[cm ³]	120.0
Nominal pressure	[bar]	6.0
Minimum pressure	[bar]	2.0
Maximum pressure	[bar]	8.0
Closing time	[s]	0.04
Opening time	[s]	0.04
Max. permitted finger length	[mm]	80.0
Max. permitted weight per finger	[kg]	0.6
IP class		40
Min. ambient temperature	[°C]	-10.0
Max. ambient temperature	[°C]	90.0
Repeat accuracy	[mm]	0.01

Sensor system



End position monitoring:
Inductive proximity switches, for direct mounting

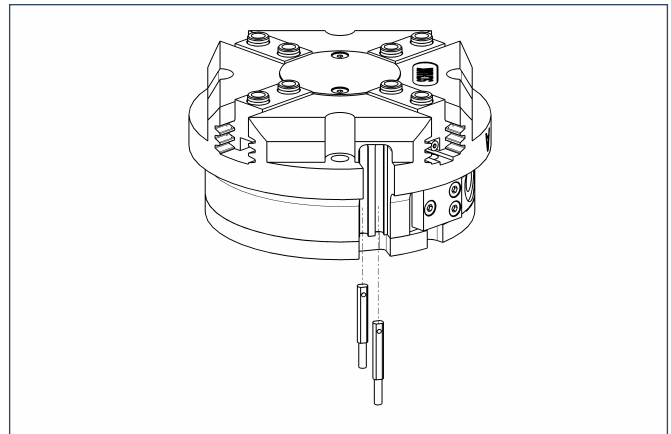
Description	ID	Recommended product
IN 80/S-M12	0301578	
IN 80/S-M8	0301478	•
IN-B 80/S-M8	0301477	
INK 80/S	0301550	

① Two sensors (NO contacts) are required for each gripper, plus extension cables as an option.

Extension cables for proximity switches/magnetic switches

Description	ID
GK 3-M5-PNP/NPN	0301652
GK 3-M8	0301622
KV 10-M12	0301596
KV 10-M8	0301496
KV 20-M12	0301597
KV 20-M8	0301497
KV 3-M12	0301595
KV 3-M8	0301495
W 3-M12	0301503
W 3-M5-PNP/NPN	0301650
W 5-M12	0301507
WK 3-M8	0301594
WK 3-M8 NPN	0301602
WK 5-M8	0301502
WK 5-M8 NPN	9641116

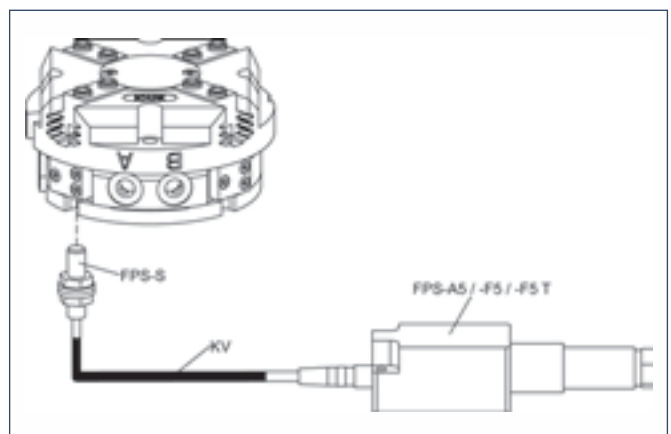
① Please note the minimum permitted bending radii for the sensor cables, which are generally 35 mm.



End position monitoring:
Electronic magnetic switches, for mounting in C-slot

Description	ID	Recommended product
MMS 22-S-M5-NPN	0301455	
MMS 22-S-M5-NPN-SA	0301461	
MMS 22-S-M5-PNP	0301454	
MMS 22-S-M5-PNP-SA	0301460	
MMS 22-S-M8-NPN	0301451	
MMS 22-S-M8-NPN-SA	0301457	
MMS 22-S-M8-PNP	0301450	•
MMS 22-S-M8-PNP-SA	0301456	
MMSK 22-S-NPN	0301453	
MMSK 22-S-NPN-SA	0301459	
MMSK 22-S-PNP	0301452	
MMSK 22-S-PNP-SA	0301458	

① Two sensors (NO contacts) are required for each gripper, plus extension cables as an option.



Measuring system:

FPS position monitor

Description	ID
AS-PGN-plus/PZN-plus 80/1, PZB 80/100	0301632
FPS-A5	0301802
FPS-F5	0301805
FPS-F5 T	0301807
FPS-S M8	0301704

When using an FPS system, an FPS sensor (FPS-S) and an electronic processor (FPS-F5/ F5 T or A5) are required for each gripper as well as a mounting kit (AS), if listed. Cable extensions (KV) are available as options in the "Accessories" catalog section.



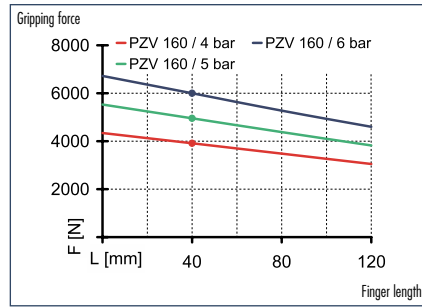
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PZV 160

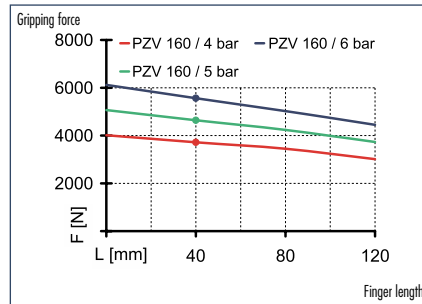
Pneumatic · Multiple-finger Centric Grippers · 4-Finger Centric Grippers



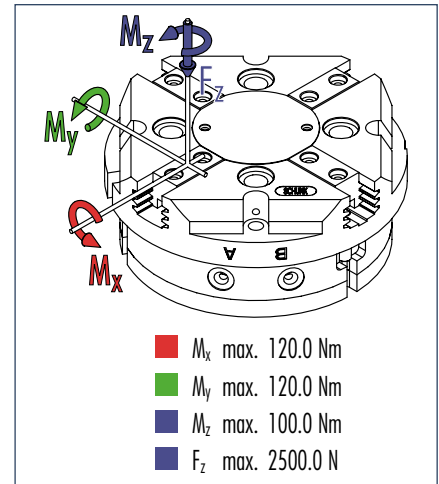
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

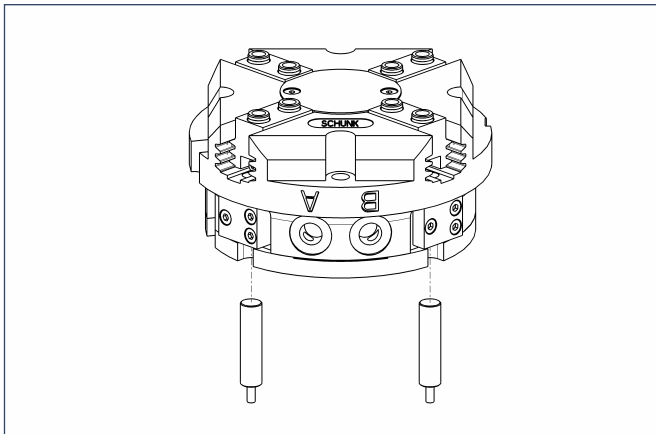


① Moments and forces apply per base jaw and may occur simultaneously. M_y may arise in addition to the moment generated by the gripping force itself. If the max. permitted finger weight is exceeded, it is imperative to throttle the air pressure so that the jaw movement occurs without any hitting or bouncing. Service life may be reduced.

Technical data

Description	PZV 160	
ID	0304004	
Stroke per finger	[mm]	13.0
Closing force	[N]	5200.0
Opening force	[N]	5600.0
Weight	[kg]	5.5
Recommended workpiece weight	[kg]	26.0
Air consumption per double stroke	[cm ³]	520.0
Nominal pressure	[bar]	6.0
Minimum pressure	[bar]	2.0
Maximum pressure	[bar]	6.0
Closing time	[s]	0.1
Opening time	[s]	0.1
Max. permitted finger length	[mm]	120.0
Max. permitted weight per finger	[kg]	2.1
IP class		40
Min. ambient temperature	[°C]	-10.0
Max. ambient temperature	[°C]	90.0
Repeat accuracy	[mm]	0.01

Sensor system



End position monitoring:
Inductive proximity switches, for direct mounting

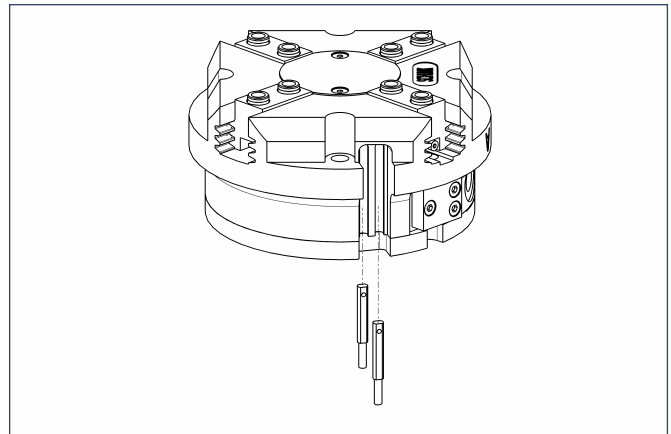
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IN 80/S-M8	0301478	•
IN-B 80/S-M8	0301477	
INK 80/S	0301550	

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KV 3-M12	0301595
KV 3-M8	0301495
W 3-M12	0301503
W 3-M5-PNP/NPN	0301650
W 5-M12	0301507
WK 3-M8	0301594
WK 3-M8 NPN	0301602
WK 5-M8	0301502
WK 5-M8 NPN	9641116

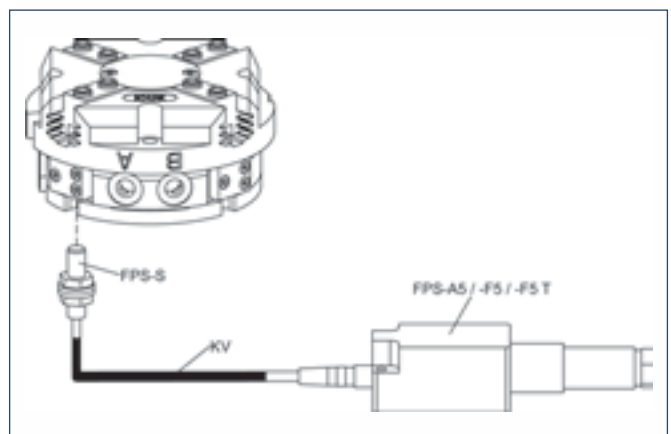
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Electronic magnetic switches, for mounting in C-slot

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MMS 22-S-M8-PNP-SA	0301456	
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MMSK 22-S-PNP-SA	0301458	

① Two sensors (NO contacts) are required for each gripper, plus extension cables as an option.



Measuring system:

FPS position monitor

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FPS-S M8	0301704

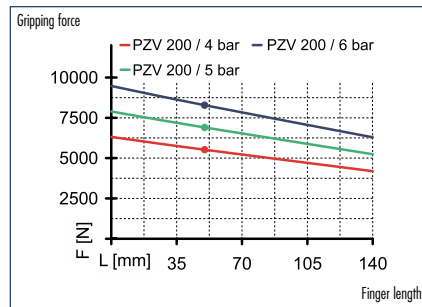
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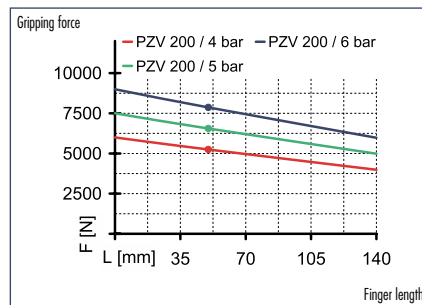
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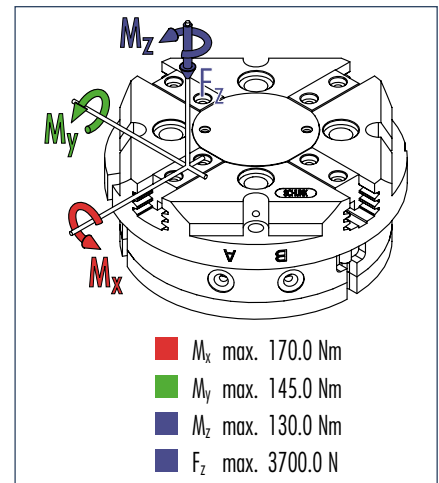
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

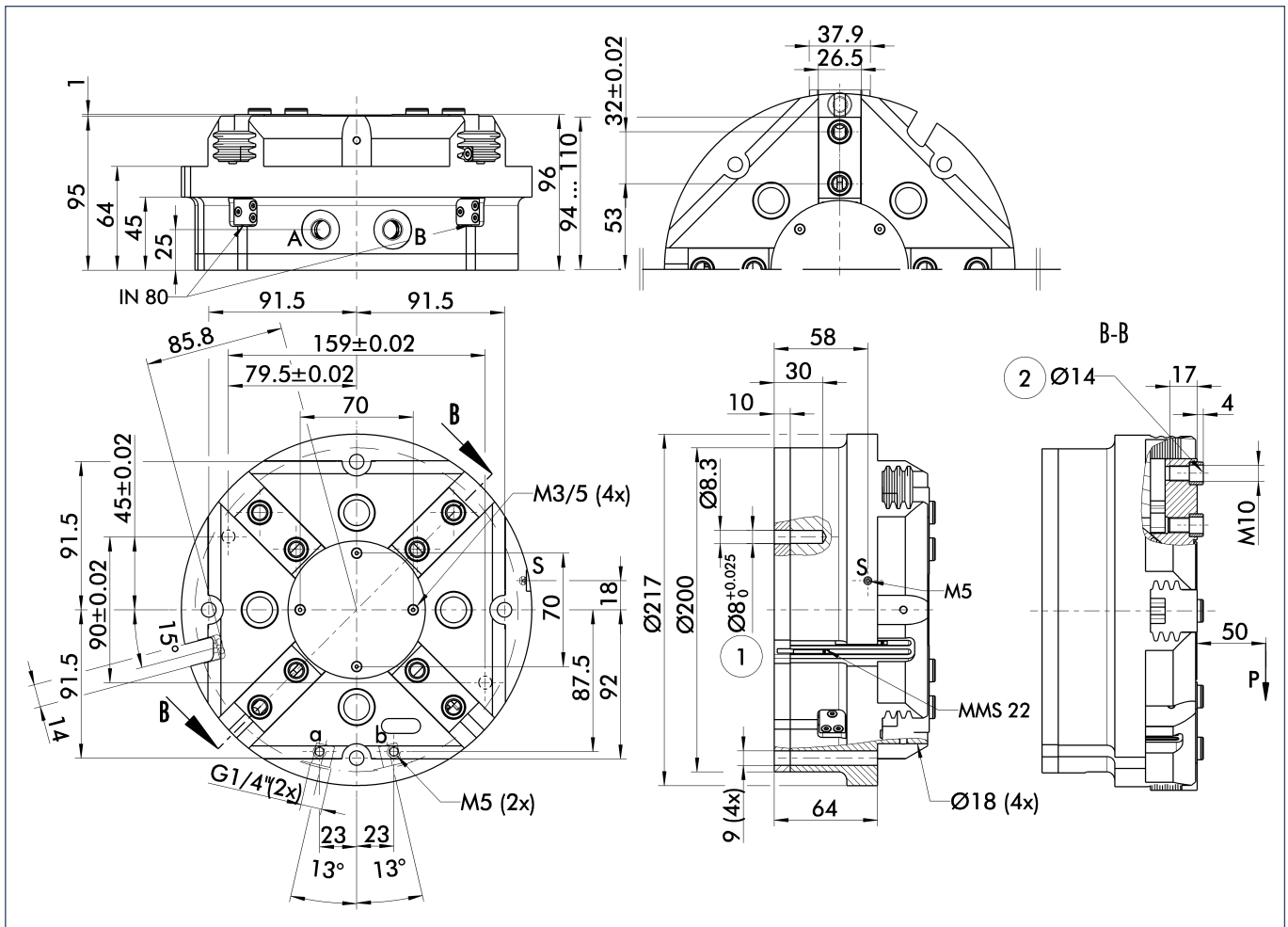


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Technical data

Description	PZV 200	
ID	0304005	
Stroke per finger	[mm]	16.0
Closing force	[N]	6900.0
Opening force	[N]	7300.0
Weight	[kg]	10.0
Recommended workpiece weight	[kg]	34.5
Air consumption per double stroke	[cm ³]	1040.0
Nominal pressure	[bar]	6.0
Minimum pressure	[bar]	2.0
Maximum pressure	[bar]	6.0
Closing time	[s]	0.15
Opening time	[s]	0.15
Max. permitted finger length	[mm]	140.0
Max. permitted weight per finger	[kg]	3.5
IP class		40
Min. ambient temperature	[°C]	-10.0
Max. ambient temperature	[°C]	90.0
Repeat accuracy	[mm]	0.02

Main views

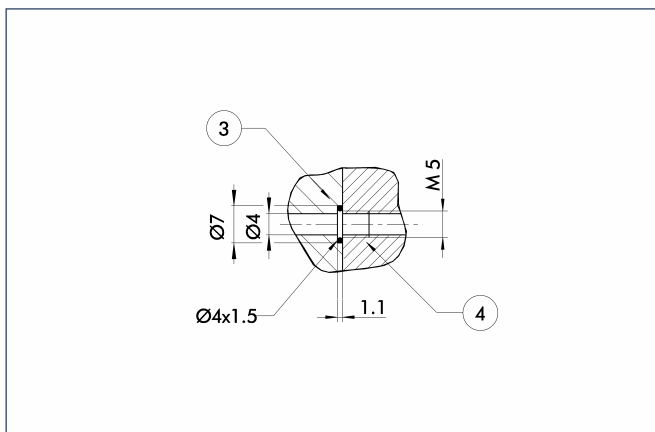


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① The SDV-P pressure maintenance valve can be used as a gripping force safety device (see "Accessories" catalog section).

- A,a Main/direct connection, gripper opening
- B,b Main/direct connection, gripper closing
- S,S Air purge connection or bleeder ventilation hole
- ① Gripper connection
- ② Finger connection

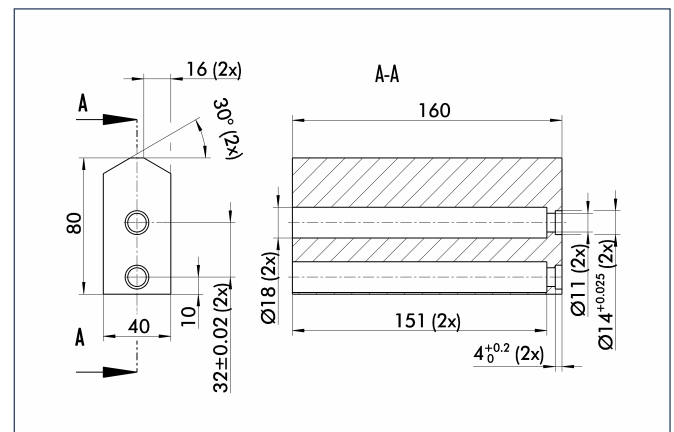
Hoseless direct connection



- ③ Adapter
- ④ Gripper

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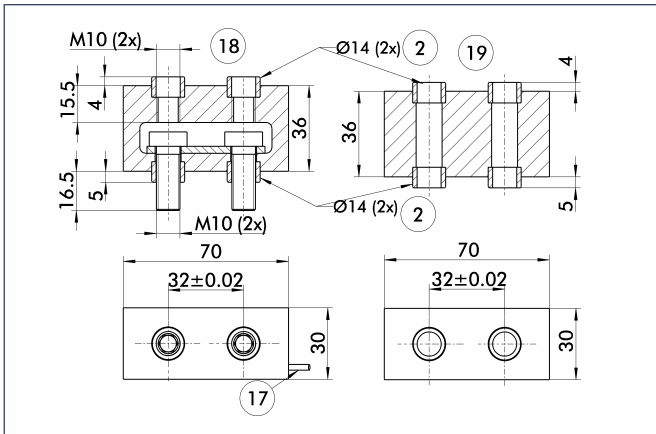
Finger blanks



Finger blanks for customized subsequent machining, incl. screw connection diagram

Description	Material	Scope of delivery	ID
ABR-plus 160	Aluminum	1	0300014
SBR-plus 160	16 MnCr 5	1	0300024

FMS force measuring jaws

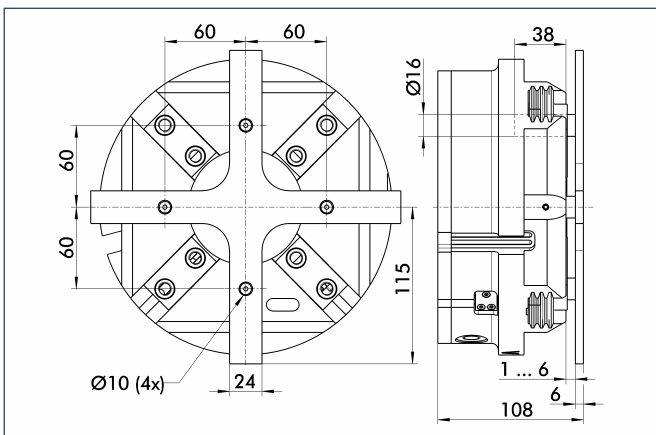


- ② Finger connection
- ⑬ Fine serration
- ⑰ Cable outlet
- ⑲ Air connection

Force measuring jaws measure gripping forces, but can also determine workpiece weights or dimensional deviations. There are active and passive intermediate jaws (FMS-ZBA or FMS-ZBP). At least one active force measuring jaw is required per gripper, the rest can be passive. For each active jaw, an FMS-A1 electronic processor and an FMS-A connection cable are required.

Description	ID
FMS-A2	0301811
FMS-AK10	0301822
FMS-AK2	0301820
FMS-AK20	0301823
FMS-AK5	0301821
FMS-ZBA 160	0301840
FMS-ZBP 160	0301841

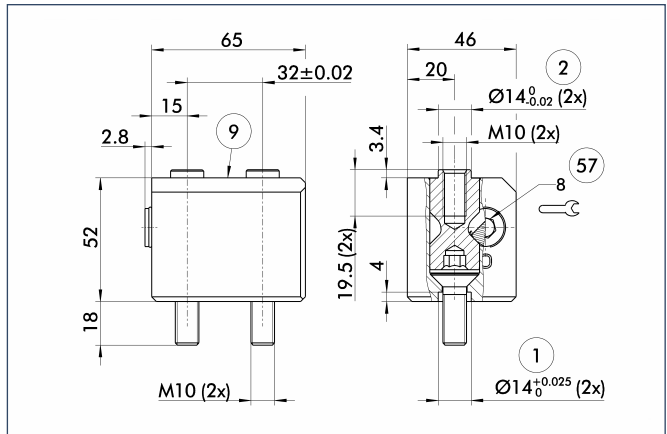
Spring-loaded pressure piece



For spring-assisted positioning of the workpiece against a stop after the gripper has opened. Specially developed for loading machines.

Description	Stroke	Min. total force	ID
A-PZV 200	5 mm	328 N	0304015

BSWS quick-change jaw system



- ① Gripper connection
- ② Finger connection
- ⑨ For screw connection diagram, see basic version
- ⑤⑦ Locking mechanism

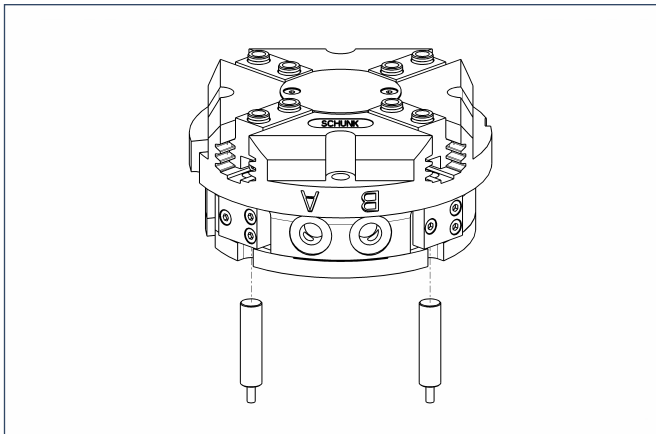
The BSWS quick-change jaw system enables top jaws to be changed on the gripper manually and rapidly. An adapter (BSWS-A) and a base (BSWS-B) are required for each gripper jaw.

Description	ID
BSWS-A 160	0303030
BSWS-B 160	0303031



You can find more detailed information and individual parts of the above-mentioned accessories in the "Accessories" catalog section.

Sensor system



End position monitoring:
Inductive proximity switches, for direct mounting

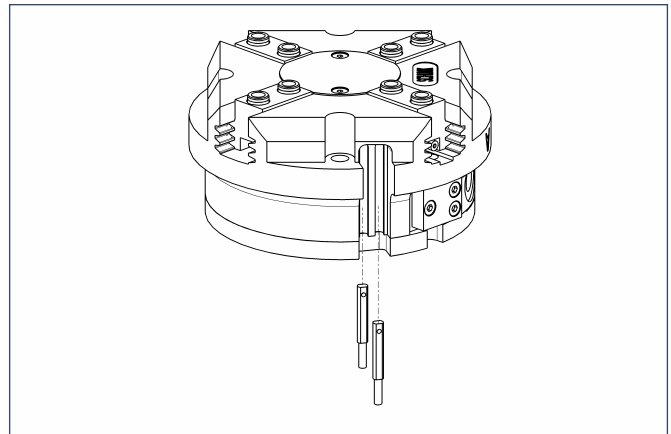
Description	ID	Recommended product
IN 80/S-M12	0301578	
IN 80/S-M8	0301478	•
IN-B 80/S-M8	0301477	
INK 80/S	0301550	

① Two sensors (NO contacts) are required for each gripper, plus extension cables as an option.

Extension cables for proximity switches/magnetic switches

Description	ID
GK 3-M5-PNP/NPN	0301652
GK 3-M8	0301622
KV 10-M12	0301596
KV 10-M8	0301496
KV 20-M12	0301597
KV 20-M8	0301497
KV 3-M12	0301595
KV 3-M8	0301495
W 3-M12	0301503
W 3-M5-PNP/NPN	0301650
W 5-M12	0301507
WK 3-M8	0301594
WK 3-M8 NPN	0301602
WK 5-M8	0301502
WK 5-M8 NPN	9641116

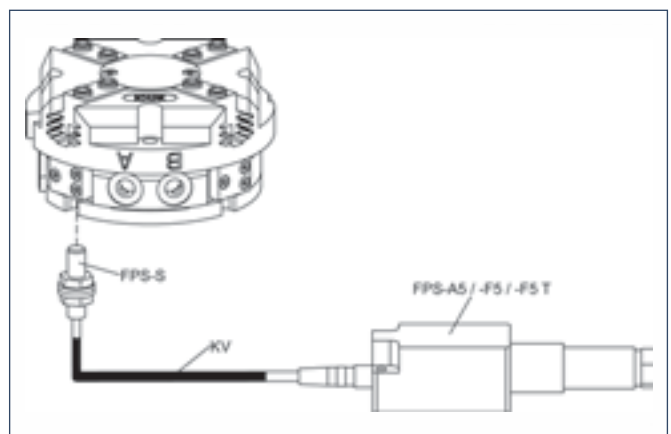
① Please note the minimum permitted bending radii for the sensor cables, which are generally 35 mm.



End position monitoring:
Electronic magnetic switches, for mounting in C-slot

Description	ID	Recommended product
MMS 22-S-M5-NPN	0301455	
MMS 22-S-M5-NPN-SA	0301461	
MMS 22-S-M5-PNP	0301454	
MMS 22-S-M5-PNP-SA	0301460	
MMS 22-S-M8-NPN	0301451	
MMS 22-S-M8-NPN-SA	0301457	
MMS 22-S-M8-PNP	0301450	•
MMS 22-S-M8-PNP-SA	0301456	
MMSK 22-S-NPN	0301453	
MMSK 22-S-NPN-SA	0301459	
MMSK 22-S-PNP	0301452	
MMSK 22-S-PNP-SA	0301458	

① Two sensors (NO contacts) are required for each gripper, plus extension cables as an option.



Measuring system:

FPS position monitor

Description	ID
AS-PGN/PZN-plus 160/1	0301638
FPS-A5	0301802
FPS-F5	0301805
FPS-F5 T	0301807
FPS-S M8	0301704

When using an FPS system, an FPS sensor (FPS-S) and an electronic processor (FPS-F5/ F5 T or A5) are required for each gripper as well as a mounting kit (AS), if listed. Cable extensions (KV) are available as options in the "Accessories" catalog section.



You can find more detailed information and individual parts of the above-mentioned accessories in the "Accessories" catalog section.