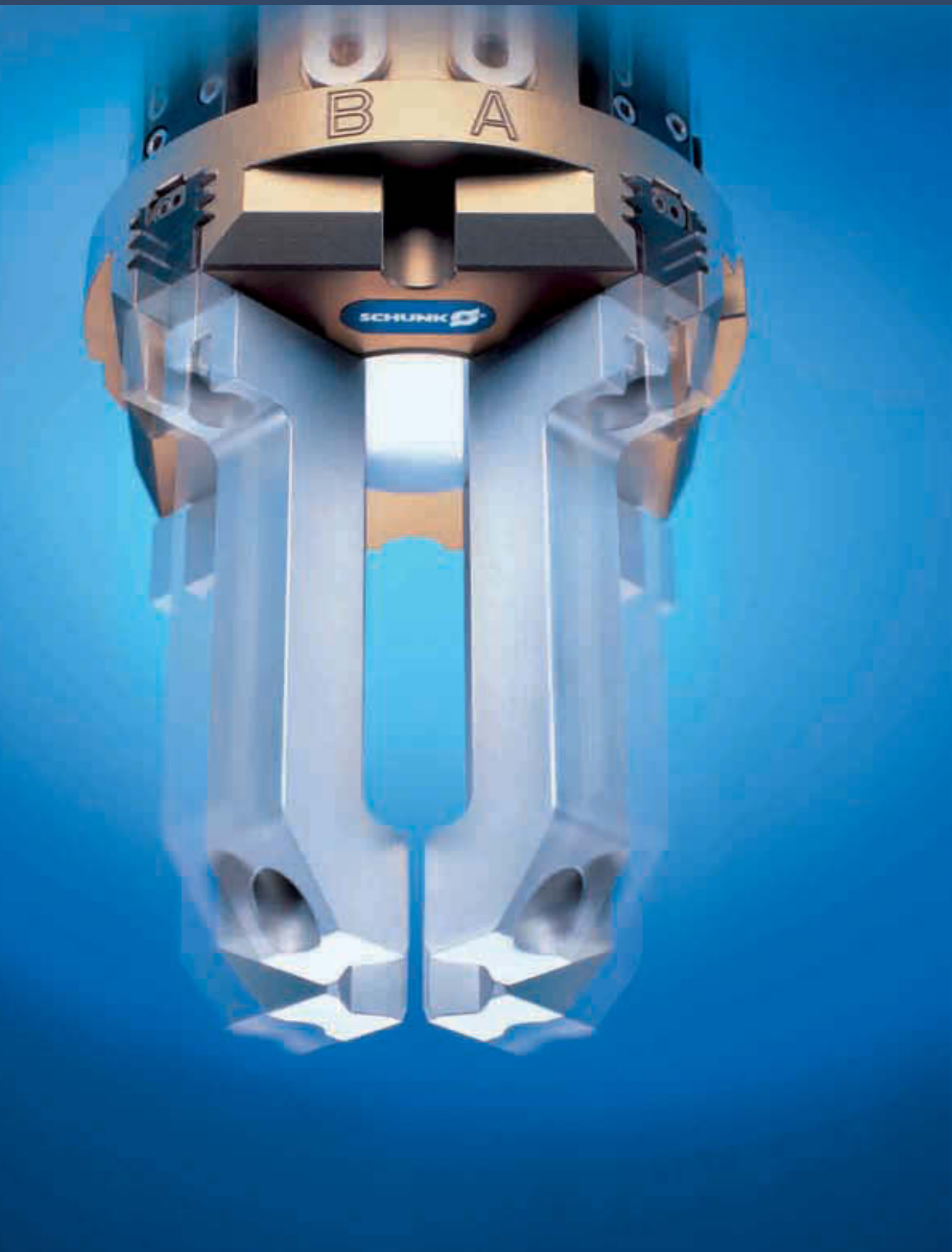
Pneumatic Gripping Modules

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

PZV

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

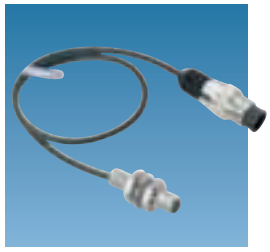
SCHUNK accessories – the suitable complement for the highest level of functionality, reliability and controlled production of all automation modules.

Centering sleeves

Fittings

MMS magnetic switch

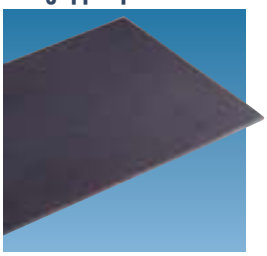
IN inductive proximity switches



BSWS quick-change jaw system

W/WK/KV/GK sensor cables

HKI gripper pads



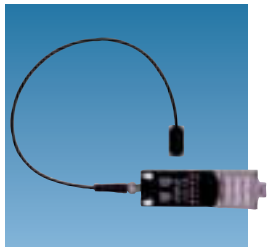
V sensor distributors

SDV-P pressure maintenance valves

Finger blanks

FMS force measuring system

FPS flexible position sensor



ⓘ 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.

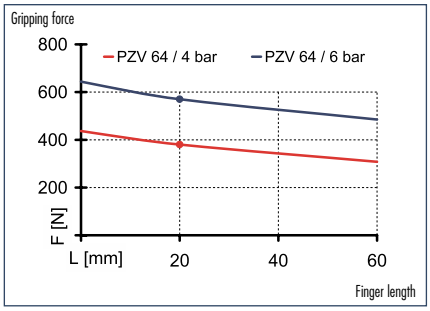
Pressure reduction with two-finger use
If the PZV is used as a double 2-finger parallel gripper (gripping with only 2 of the 4 fingers), in sizes PZV 160 and PZV 200 the pressure must be reduced to max. 5 bar.

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.

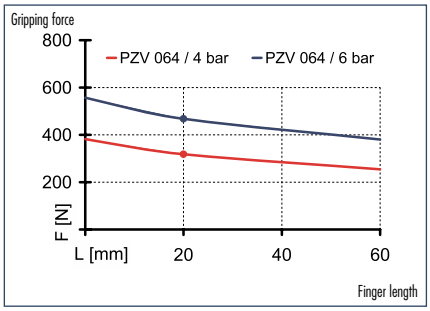
Closing and opening times
Closing and opening times are purely the times that the base jaws or fingers are in motion. Valve switching times, hose filling times or SPC reaction times are not included in the above times and must be taken into consideration when determining cycle times.

PZV 64

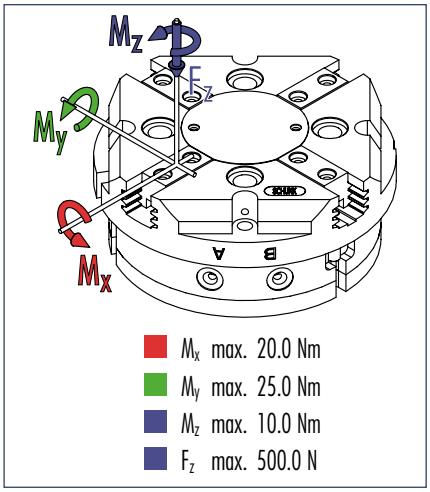
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

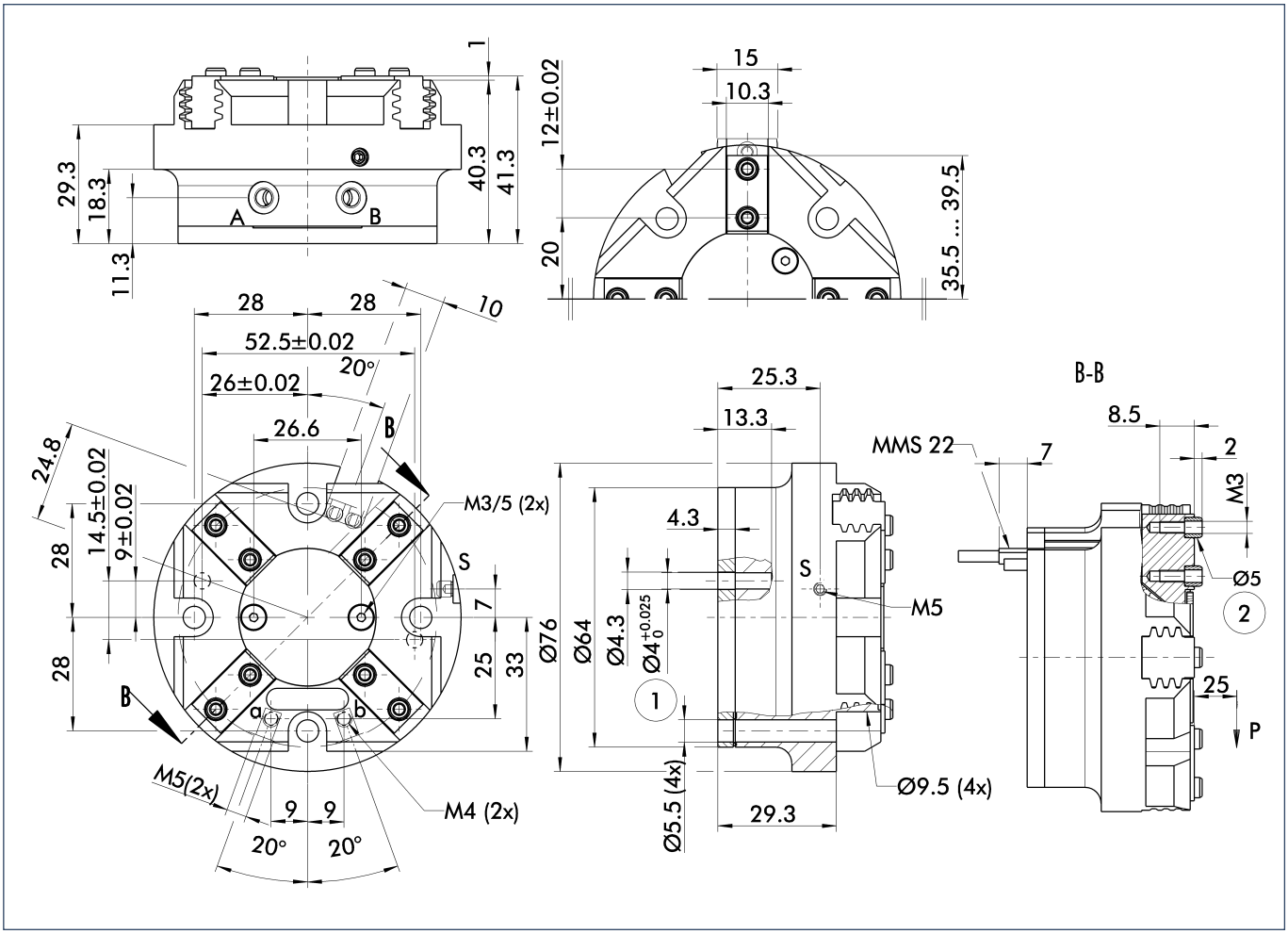


ⓘ Moments and forces apply per base jaw and may occur simultaneously. M_y may arise in addition to the moment generated by the gripping force itself. If the max. permitted finger weight is exceeded, it is imperative to throttle the air pressure so that the jaw movement occurs without any hitting or bouncing.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

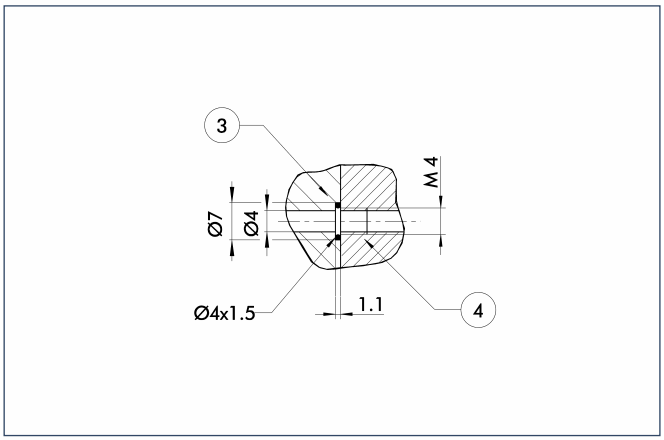


The drawing shows the gripper in the basic version with closed jaws, the dimensions do not include the options described below.

ⓘ 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

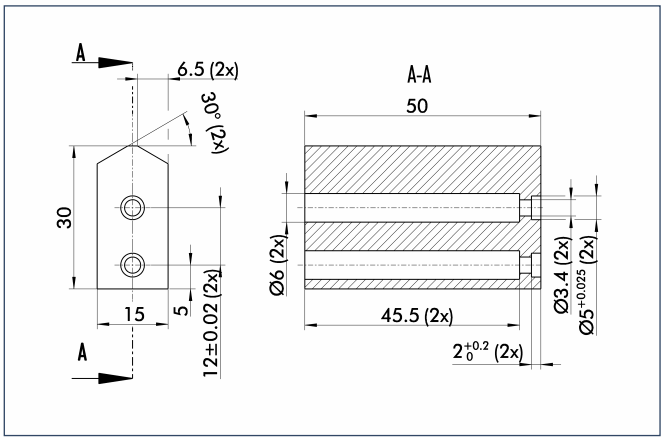
Hoseless direct connection



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.

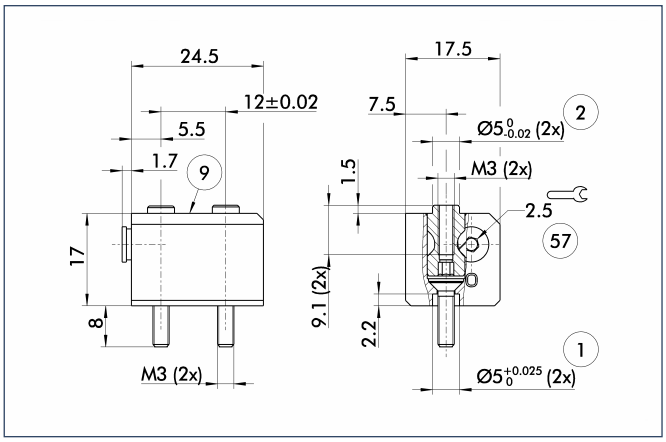
Finger blanks



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



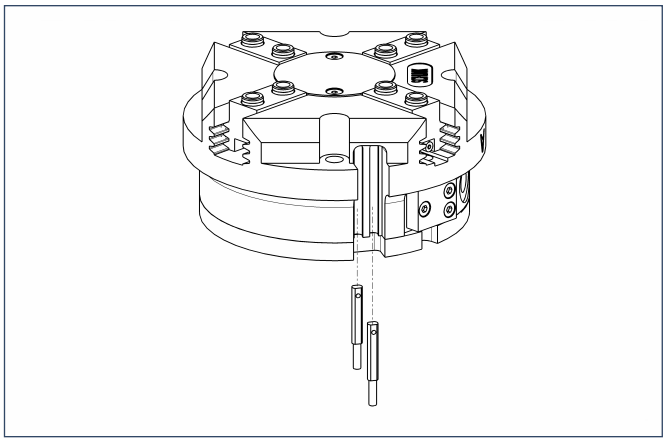
① Gripper connection
② Finger connection
⑨ For screw connection diagram, see basic version
57 Locking mechanism

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

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

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	

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

Extension cables for proximity switches/magnetic switches

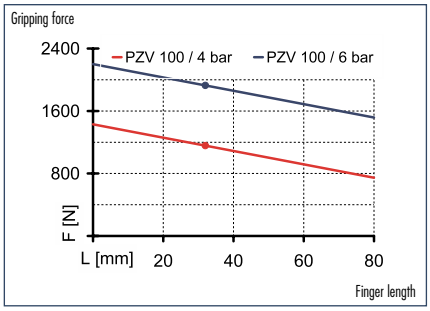
Description	ID
GK 3-M5-PNP/NPN	0301652
GK 3-M8	0301622
KV 10-M8	0301496
KV 20-M8	0301497
W 3-M5-PNP/NPN	0301650
WK 3-M8	0301594
WK 3-M8 NPN	0301602
WK 5-M8	0301502
WK 5-M8 NPN	9641116

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

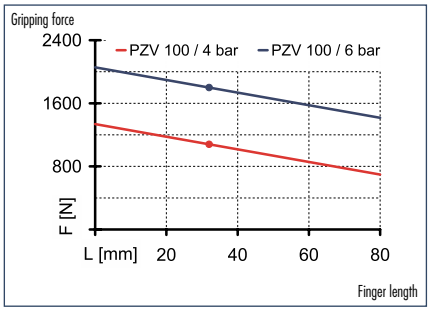
You can find more detailed information and individual parts of the above-mentioned accessories in the “Accessories” catalog section.

PZV 100

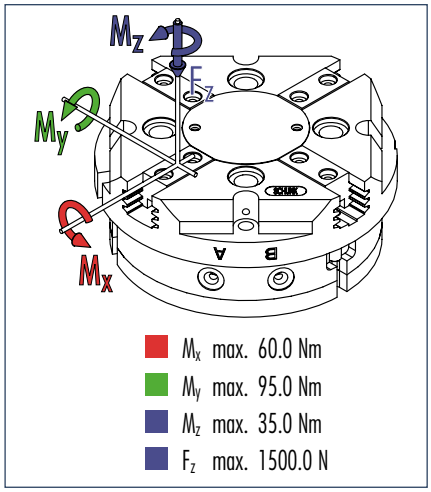
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

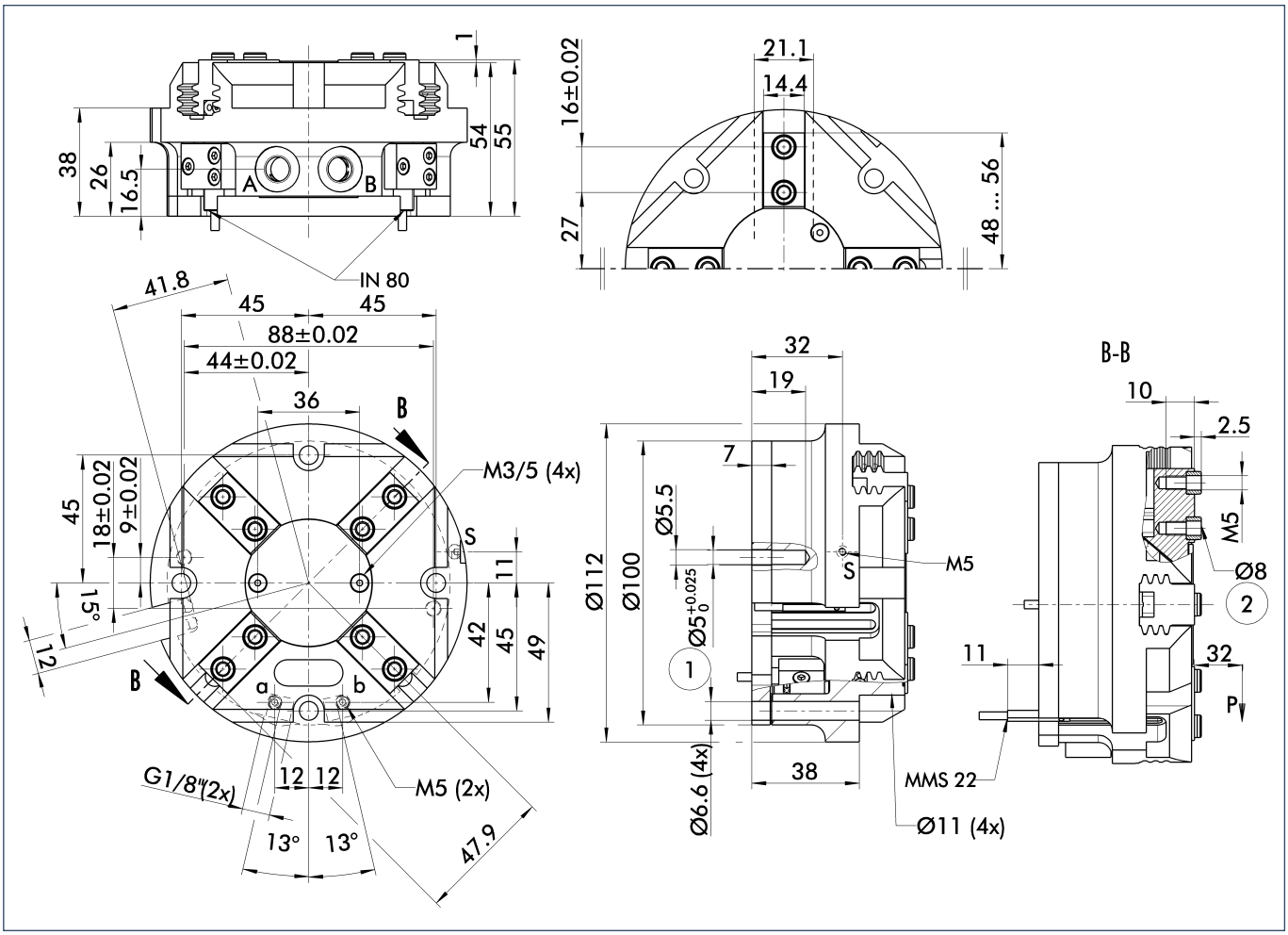


ⓘ Moments and forces apply per base jaw and may occur simultaneously. M_y may arise in addition to the moment generated by the gripping force itself. If the max. permitted finger weight is exceeded, it is imperative to throttle the air pressure so that the jaw movement occurs without any hitting or bouncing. 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	[cm³]	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

Main views

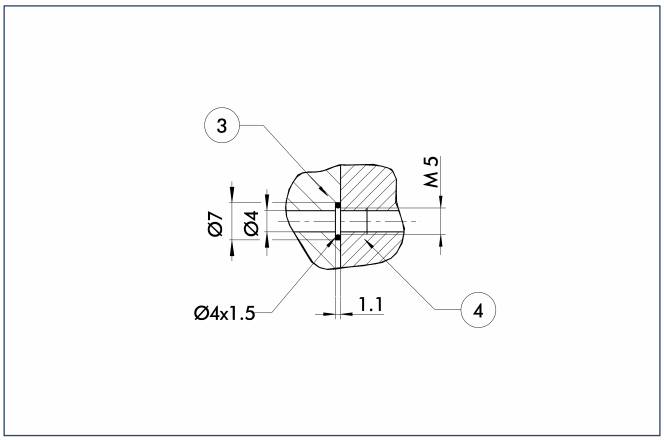


The drawing shows the gripper in the basic version with closed jaws, the dimensions do not include the options described below.

ⓘ 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

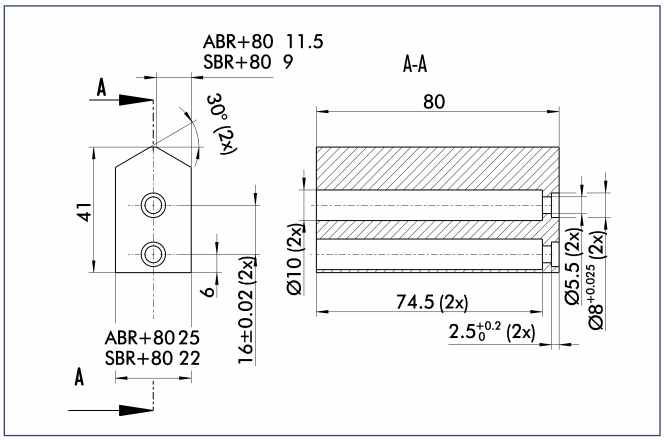
Hoseless direct connection



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.

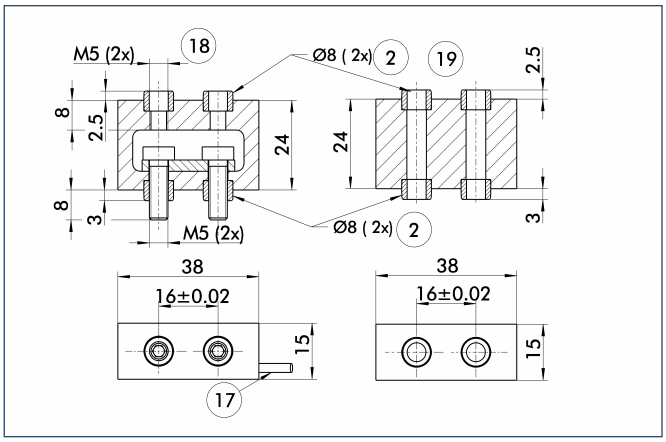
Finger blanks



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

Description	Material	Scope of delivery	ID
ABR-plus 80	Aluminum	1	0300011
SBR-plus 80	16 MnCr 5	1	0300021

FMS force measuring jaws

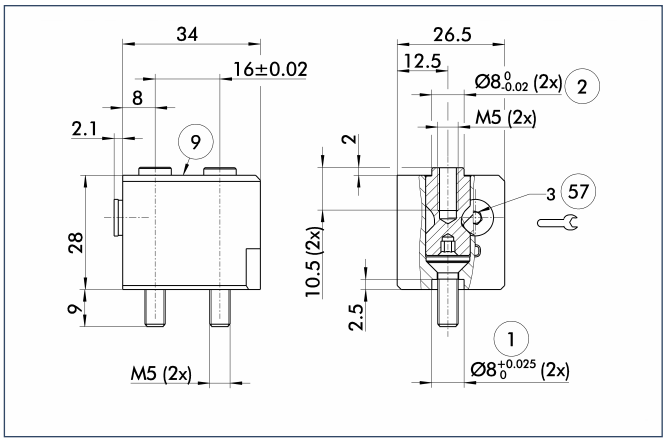


② Finger connection
⑱ Fine serration
⑰ Cable outlet
⑲ Air connection

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-A1	0301810
FMS-AK10	0301822
FMS-AK2	0301820
FMS-AK20	0301823
FMS-AK5	0301821
FMS-ZBA 80	0301834
FMS-ZBP 80	0301835

BSWS quick-change jaw system



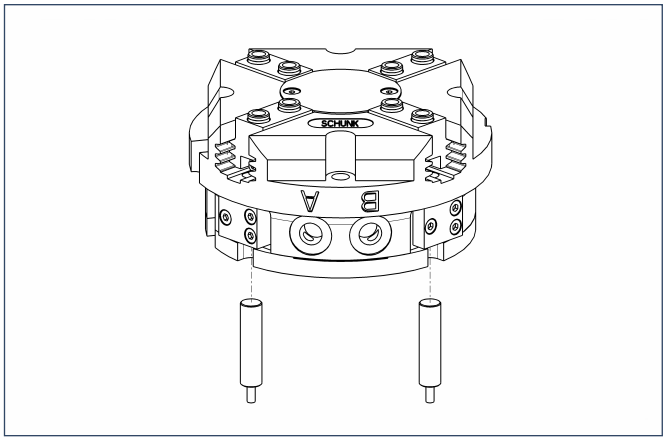
① Gripper connection
⑨ For screw connection diagram, see basic version
② Finger connection
⑤⑦ Locking mechanism

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 80	0303024
BSWS-B 80	0303025

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

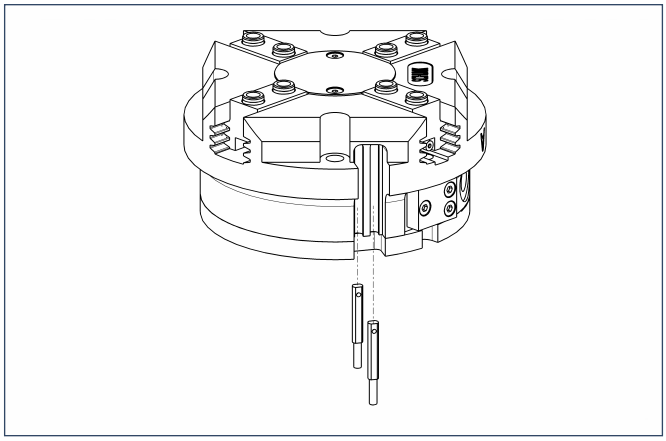
Sensor system



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	

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



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

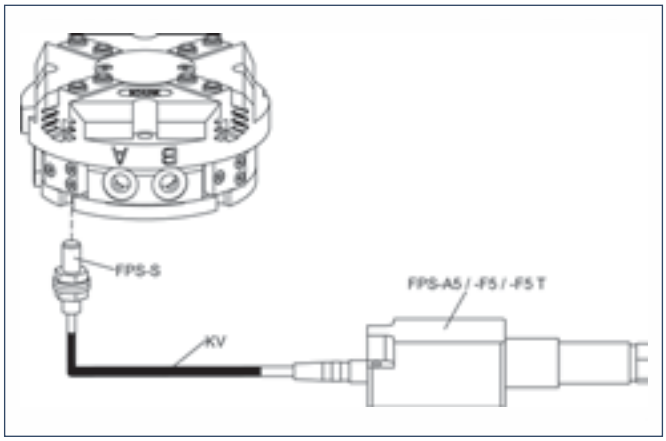
Description	ID	Recommended product
MMS 22-S-M5-NPN	0301455	
MMS 22-S-M5-NPN-SA	0301461	
MMS 22-S-M5-PNP	0301454	
MMS 22-S-M5-PNP-SA	0301460	
MMS 22-S-M8-NPN	0301451	
MMS 22-S-M8-NPN-SA	0301457	
MMS 22-S-M8-PNP	0301450	•
MMS 22-S-M8-PNP-SA	0301456	
MMSK 22-S-NPN	0301453	
MMSK 22-S-NPN-SA	0301459	
MMSK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

ⓘ 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

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



Measuring system:
FPS position monitor

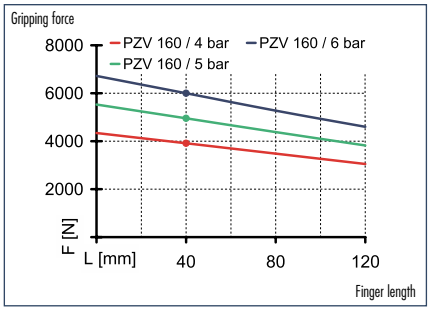
Description	ID
AS-PGN-plus/PZN-plus 80/1, PZB 80/100	0301632
FPS-A5	0301802
FPS-F5	0301805
FPS-F5 T	0301807
FPS-S M8	0301704

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.

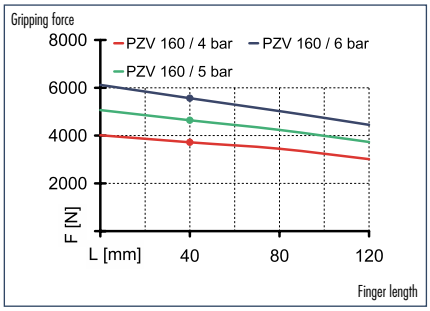
You can find more detailed information and individual parts of the above-mentioned accessories in the "Accessories" catalog section.

PZV 160

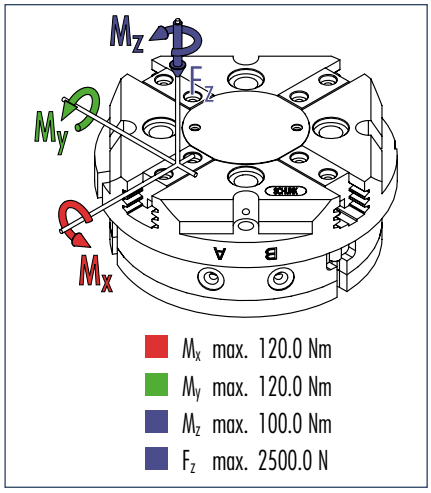
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load

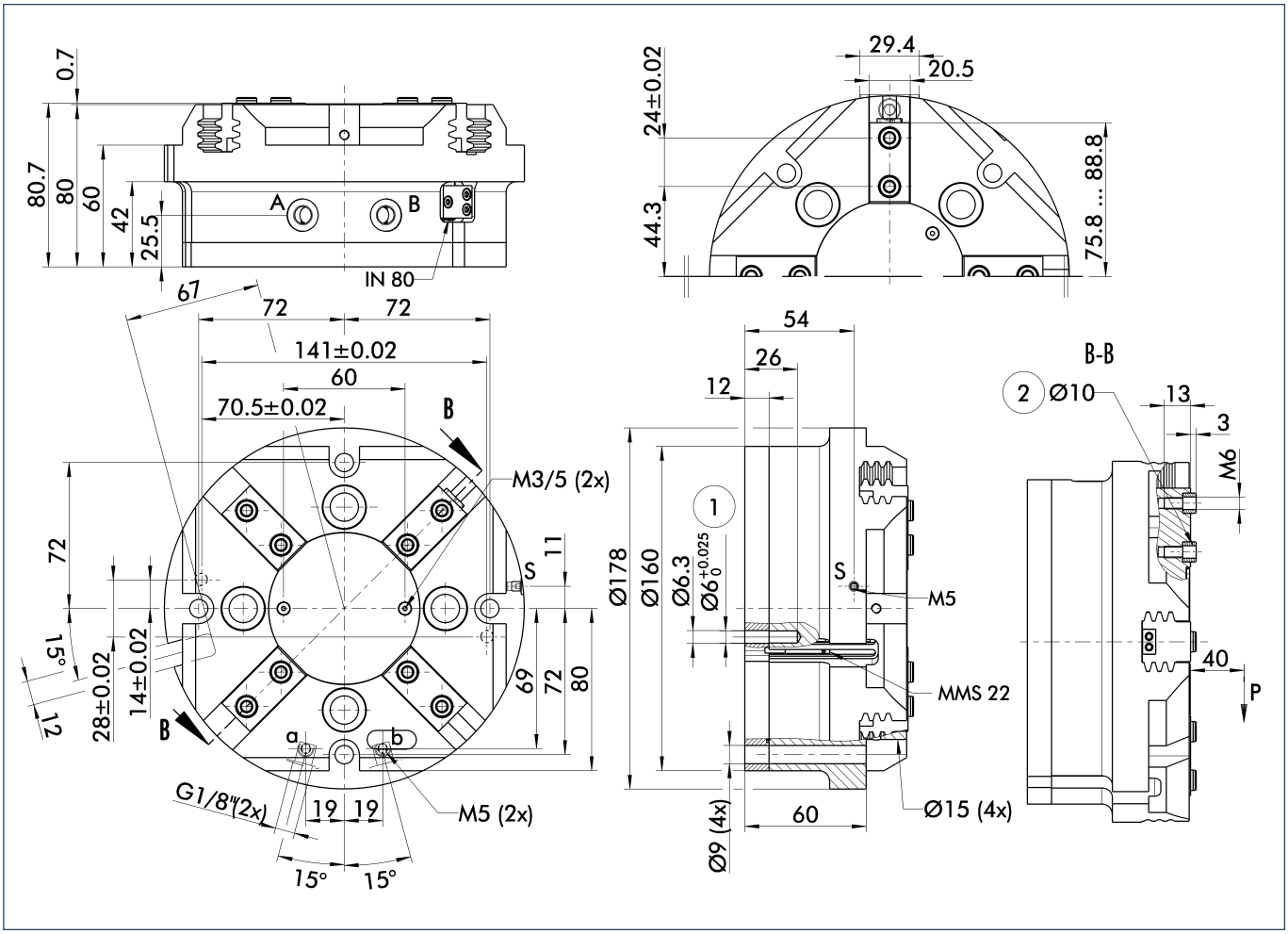


ⓘ Moments and forces apply per base jaw and may occur simultaneously. M_y may arise in addition to the moment generated by the gripping force itself. If the max. permitted finger weight is exceeded, it is imperative to throttle the air pressure so that the jaw movement occurs without any hitting or bouncing. 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	[cm³]	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

Main views

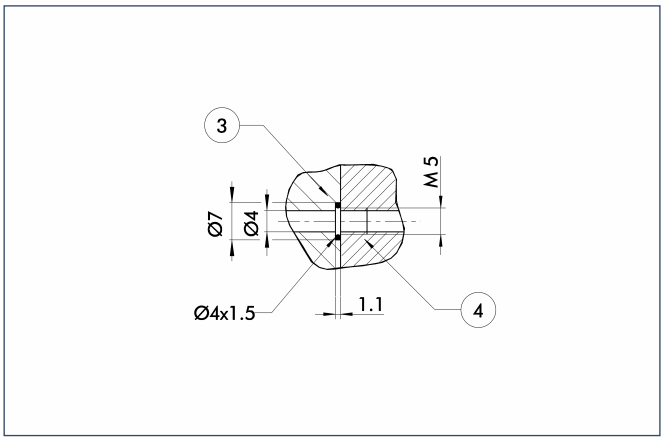


The drawing shows the gripper in the basic version with closed jaws, the dimensions do not include the options described below.

ⓘ 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

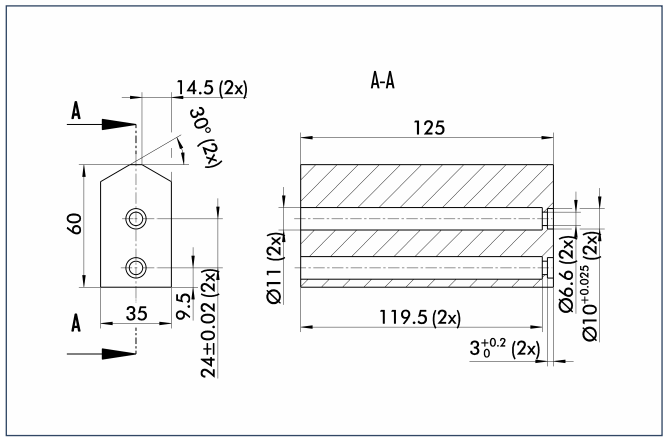
Hoseless direct connection



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.

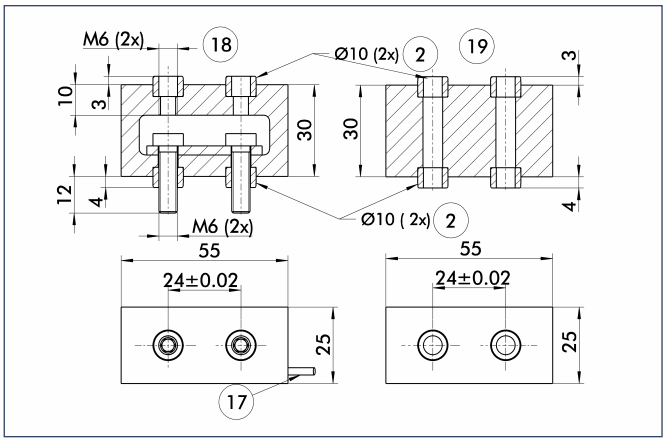
Finger blanks



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

Description	Material	Scope of delivery	ID
ABR-plus 125	Aluminum	1	0300013
SBR-plus 125	16 MnCr 5	1	0300023

FMS force measuring jaws

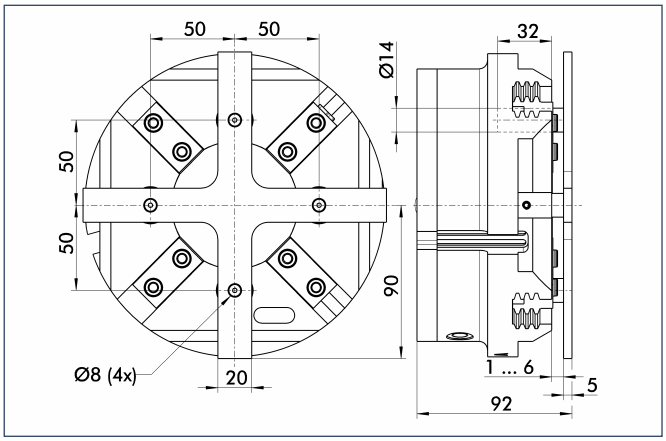


② Finger connection
⑱ Fine serration
⑰ Cable outlet
⑲ Air connection

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-A1	0301810
FMS-AK10	0301822
FMS-AK2	0301820
FMS-AK20	0301823
FMS-AK5	0301821
FMS-ZBA 125	0301838
FMS-ZBP 125	0301839

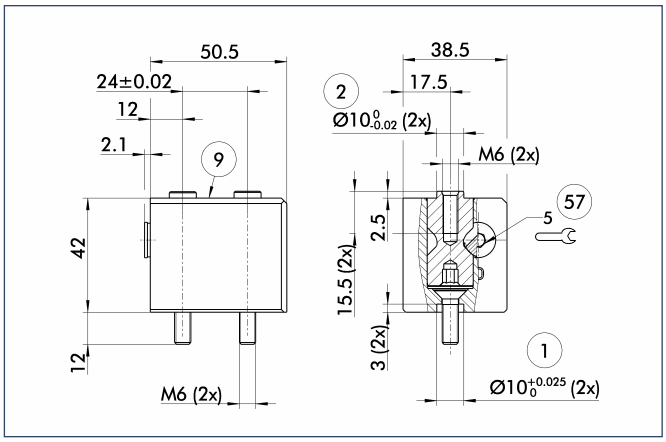
Spring-loaded pressure piece



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 160	5 mm	272 N	0304014

BSWS quick-change jaw system



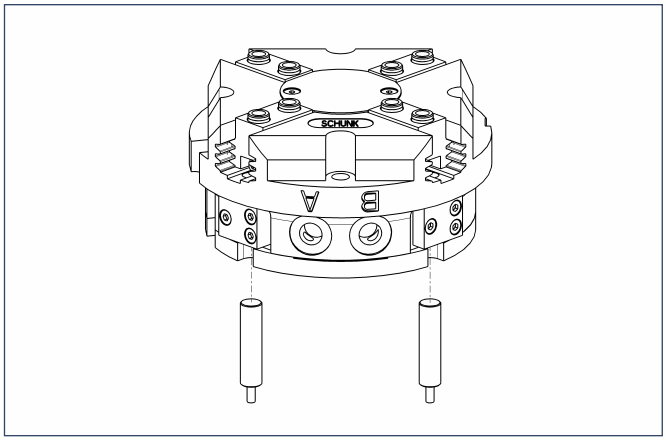
① Gripper connection
⑨ For screw connection diagram, see basic version
② Finger connection
⑤⑦ Locking mechanism

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 125	0303028
BSWS-B 125	0303029

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

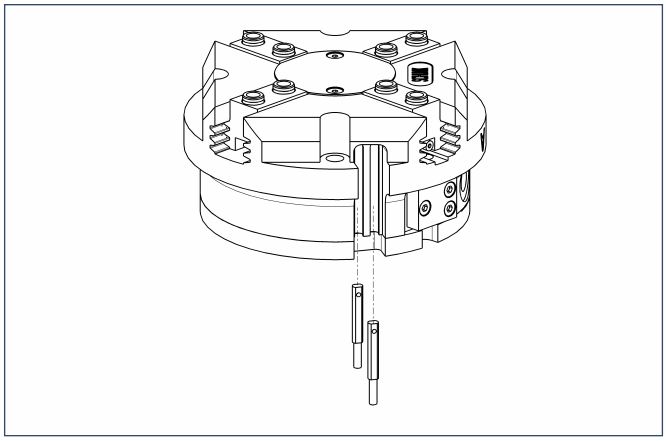
Sensor system



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	

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



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

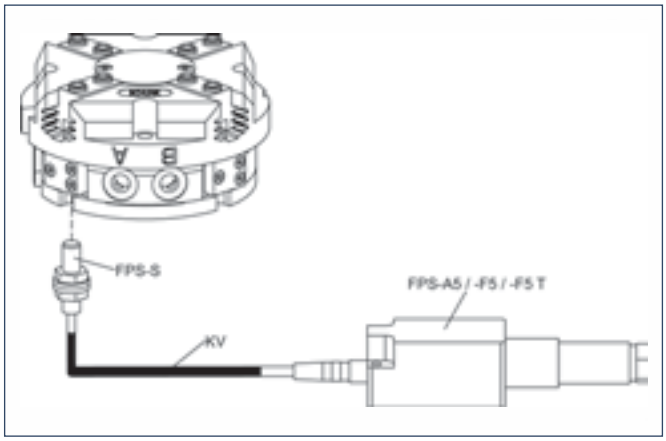
Description	ID	Recommended product
MMS 22-S-M5-NPN	0301455	
MMS 22-S-M5-NPN-SA	0301461	
MMS 22-S-M5-PNP	0301454	
MMS 22-S-M5-PNP-SA	0301460	
MMS 22-S-M8-NPN	0301451	
MMS 22-S-M8-NPN-SA	0301457	
MMS 22-S-M8-PNP	0301450	•
MMS 22-S-M8-PNP-SA	0301456	
MMSK 22-S-NPN	0301453	
MMSK 22-S-NPN-SA	0301459	
MMSK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

ⓘ 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

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



Measuring system:
FPS position monitor

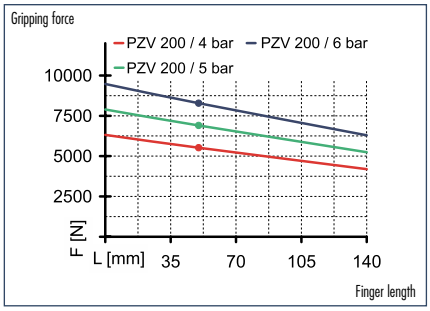
Description	ID
AS-PGN/PZN-plus 125/1, PZB 160	0301636
FPS-A5	0301802
FPS-F5	0301805
FPS-F5 T	0301807
FPS-S M8	0301704

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.

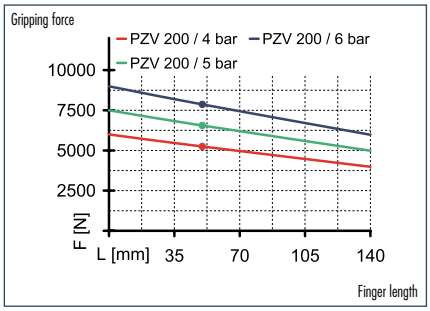
You can find more detailed information and individual parts of the above-mentioned accessories in the "Accessories" catalog section.

PZV 200

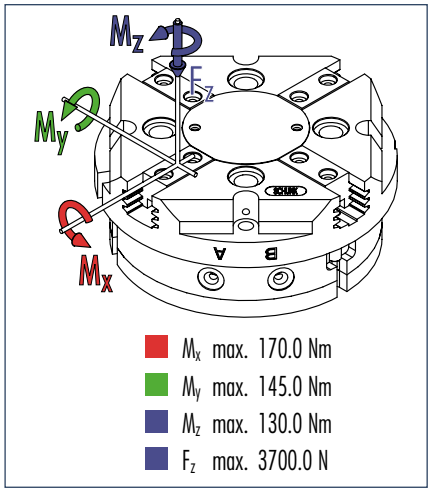
Gripping force, I.D. gripping



Gripping force, O.D. gripping



Finger load



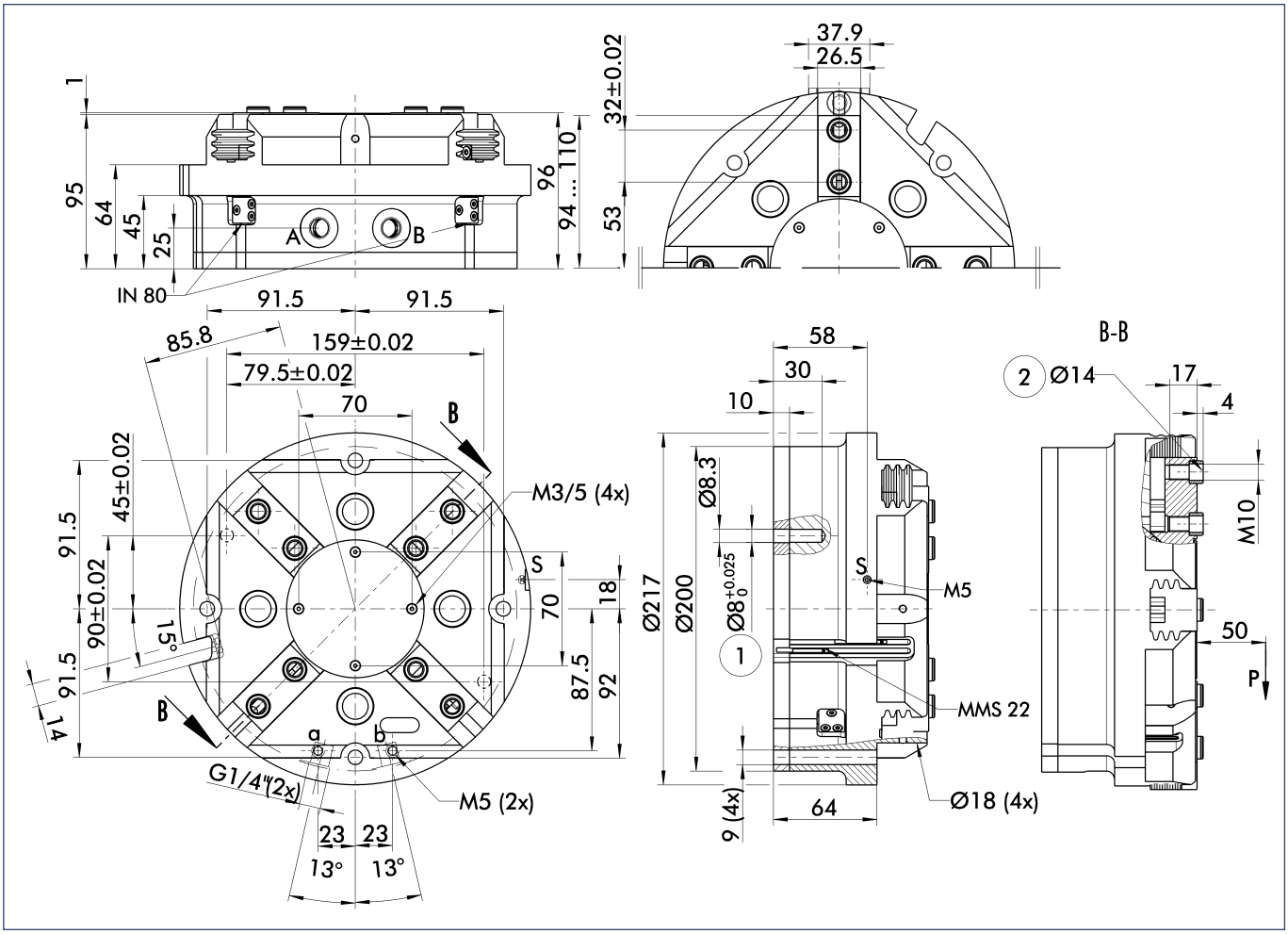
- M_x max. 170.0 Nm
- M_y max. 145.0 Nm
- M_z max. 130.0 Nm
- F_z max. 3700.0 N

ⓘ 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 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

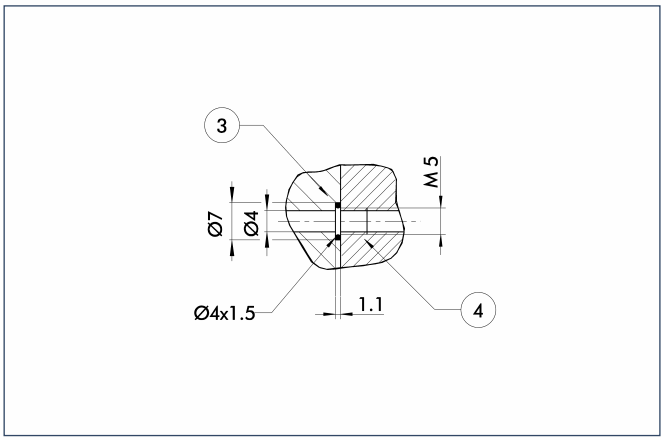


The drawing shows the gripper in the basic version with closed jaws, the dimensions do not include the options described below.

ⓘ 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

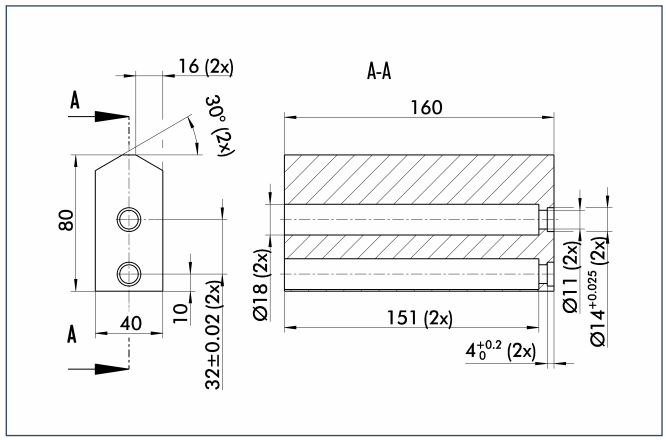
Hoseless direct connection



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.

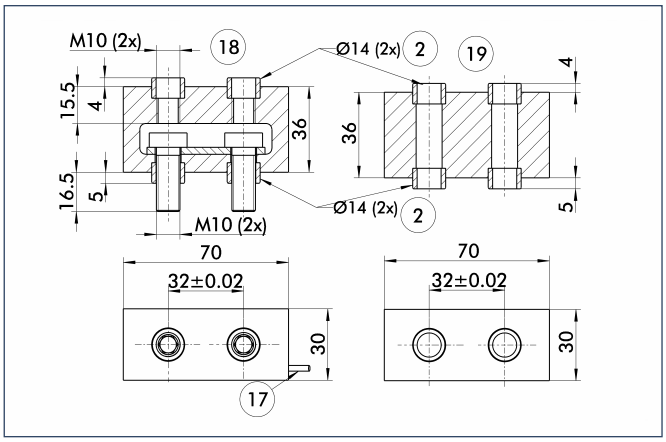
Finger blanks



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

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

FMS force measuring jaws

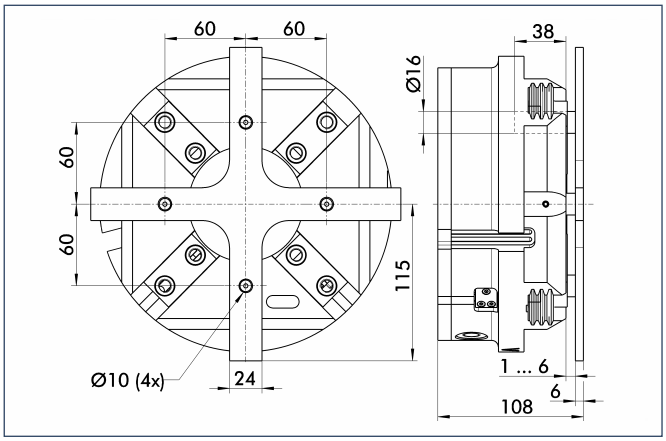


② Finger connection
⑰ Cable outlet
⑱ Fine serration
⑲ Air connection

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

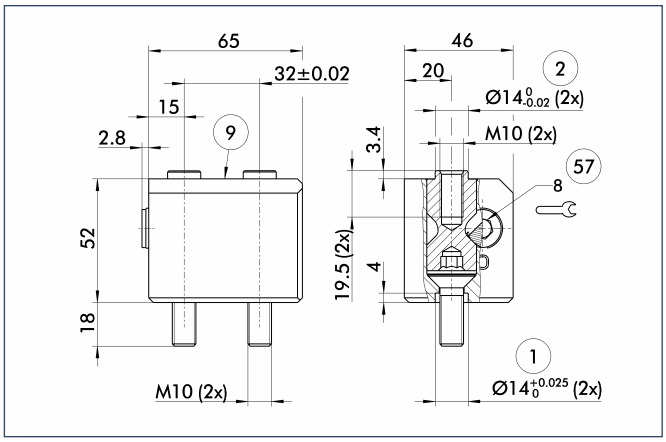
Spring-loaded pressure piece



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



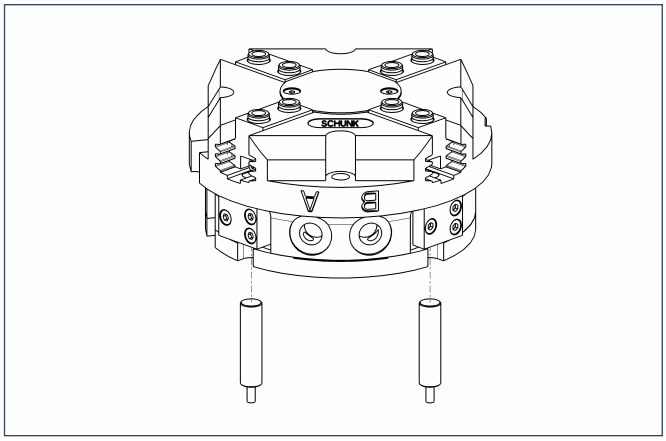
① Gripper connection
② Finger connection
⑨ For screw connection diagram, see basic version
57 Locking mechanism

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.

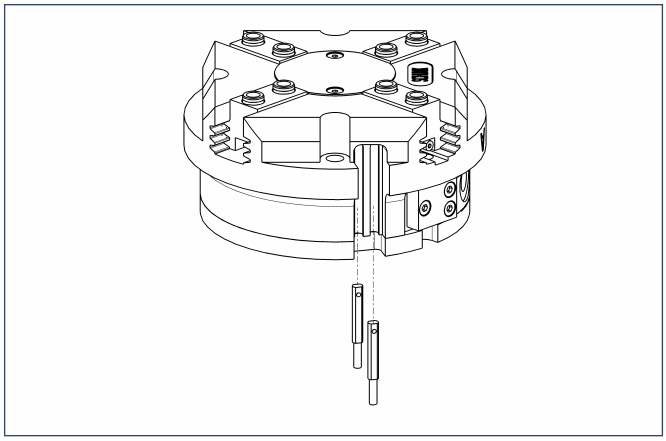
Sensor system



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	

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



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

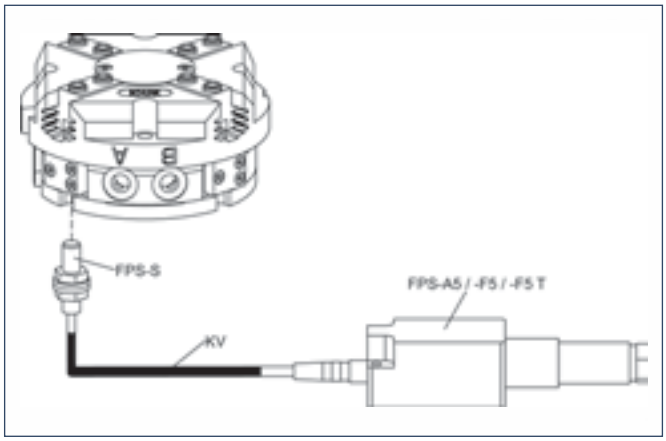
Description	ID	Recommended product
MMS 22-S-M5-NPN	0301455	
MMS 22-S-M5-NPN-SA	0301461	
MMS 22-S-M5-PNP	0301454	
MMS 22-S-M5-PNP-SA	0301460	
MMS 22-S-M8-NPN	0301451	
MMS 22-S-M8-NPN-SA	0301457	
MMS 22-S-M8-PNP	0301450	•
MMS 22-S-M8-PNP-SA	0301456	
MMSK 22-S-NPN	0301453	
MMSK 22-S-NPN-SA	0301459	
MMSK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

ⓘ 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

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



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.