Hand in hand for tomorrow

SCHUNK®

Product data sheet

Angular gripper PWG-plus 80

Reliable. Robust. Compact.

Universal gripper PWG-plus

Robust 2-finger angular gripper with oval piston and bone drive

Field of application

For universal use in clean and slightly dirty environments.

Advantages – Your benefits

Variable top jaw design since grippers are available in jaw version, but also in finger version via intermediate jaws

Gripping force maintenance for a high process reliability

Stroke limitation while opening optional available for confined spaces and short cycle times

Can be used in tough environments due to the gripper's sturdy set-up

Sizes	Weight	Gripping moment	Angle per jaw	Workpiece weight
Quantity: 8	0.13 .. 13.6 kg	3.32 .. 1025 Nm	15°	0.4 .. 23.13 kg

Functional description

The kinematics transforms this vertical motion into a synchronous and rotatory gripping motion of the base jaws.

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

② **Housing**
is weight-optimized due to the use of high-strength aluminum alloy

③ **Drive**
pneumatic oval piston for maximum driving force

④ **Lever mechanism**
for precise and synchronized gripping

General notes about the series

Operating principle: force-guided lever gear

Housing material: Aluminum

Base jaw material: hard-anodized, high strength aluminum

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: Centering sleeves, O-rings for direct connection, fixed throttle (for size 50-200), safety information (product-specific instructions available online)

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

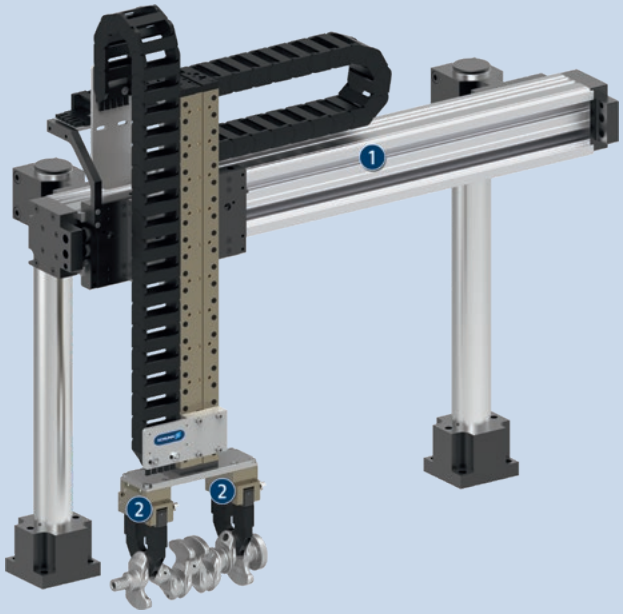
Closing moment: is the arithmetic sum of the individual moment applied to each jaw.
The indicated closing moment will be reached at an opening angle of 0°. A detailed closing moment course depending on the opening angle can be taken out of the diagram "closing moment course".

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

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

Cross gantry for light to medium-weight components.

❶ Line gantry LPP, pneumatic

❷ 2-finger angular gripper PWG-plus

SCHUNK offers more ...

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

Compensation unit

Manual change system

Tolerance compensation unit

Pressure maintenance valve

Flexible position sensor

Magnetic switches

Inductive proximity switch

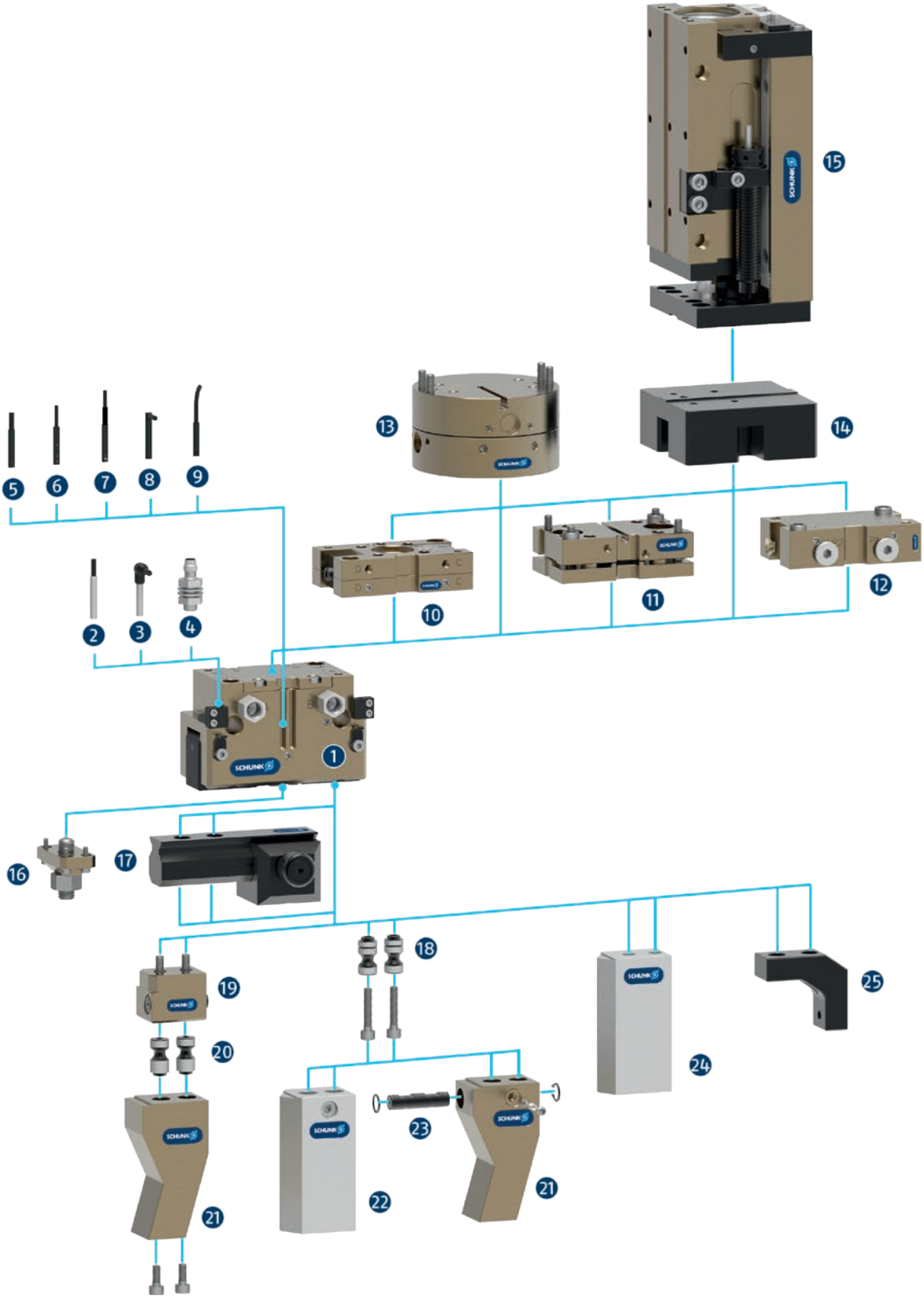
ⓘ For more information on these products can be found on the following product pages or at schunk.com.

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/S version this acts as a closing force, in the IS version as an opening force.
High-temperature version V/HT: for use in hot environments
Power booster version KVZ: if higher gripping forces are required
Additional versions: Various options can be combined with each other. Numerous additional options are also available – just tell us what your task is!
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.

SCHUNK gripper PWG-plus

Overview Accessories



1 **PWG-plus**
Universal 2-finger angular gripper with a high gripping force

Sensor system

2 **IN ...**
Inductive proximity switch with molded cable and straight cable outlet

3 **IN ...-SA**
Inductive proximity switch with molded cable and laberal cable outlet

4 **IN-C 80**
Inductive proximity switch, directly pluggable

5 **MMS 22**
Magnetic switch with straight cable outlet for monitoring a position

MMS 22-PI1
Magnetic switch with straight cable outlet for monitoring a freely programmable position

6 **MMS 22-PI2**
Magnetic switch with straight cable outlet for monitoring two freely programmable position

7 **MMS 22-PI1-HD**
MMS 22-PI1 in robust design

MMS 22-PI2-HD
MMS 22-PI2 in robust design

8 **MMS 22-SA**
Magnetic switch with lateral cable outlet for monitoring a position

MMS 22-PI1-SA
Magnetic switch with side cable outlet for monitoring a freely programmable position

9 **MMS-P**
Magnetic switch with straight cable outlet for monitoring two freely programmable position

Complementary products

12 **SDV-P-E-P**
Pressure maintenance valve for temporary force and position maintenance

13 **AGE**
Compensation unit for compensation of large tolerances along the X and Y axes

14 **ASG**
Adapter plate for combining various automation components in the modular system

15 **CLM**
Linear module with pneumatic drive and scope-free pre-loaded junction rollers

16 **HVE**
Sleeve for protection against dirt

Finger Accessories

17 **UZB**
The universal intermediate jaw allows fast tool-free and reliable plugging and shifting of top jaws at the gripper.

18 **BSWS-AR**
Adapter pin of the jaw quick-change system for fast, manual change of top jaws

19 **BSWS-B**
Locking mechanism of the jaw quick-change system for fast, manual exchange of top jaws

20 **BSWS-A**
Adapter pin of the jaw quick-change system for adaptation to the customized finger

21 **Customized fingers**

22 **BSWS-ABR**
Finger blank made of aluminum with interface to the jaw quick-change system

BSWS-SBR
Finger blank made of steel with interface to the jaw quick-change system

23 **BSWS-UR**
Locking mechanism for the integration of the jaw quick-change system into customized fingers

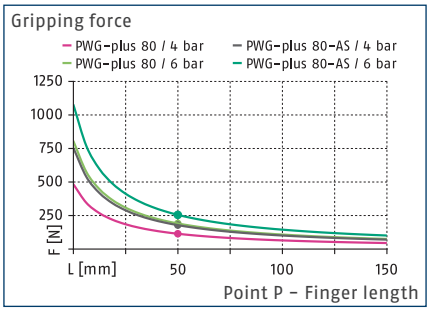
24 **ABR/SBR**
Finger blanks made of steel or aluminum with standardized screw connection diagram

25 **ZBA**
Intermediate jaws for reorientation of the mounting surface

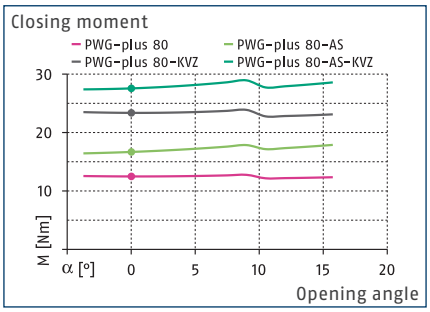
PWG-plus 80

Angular gripper

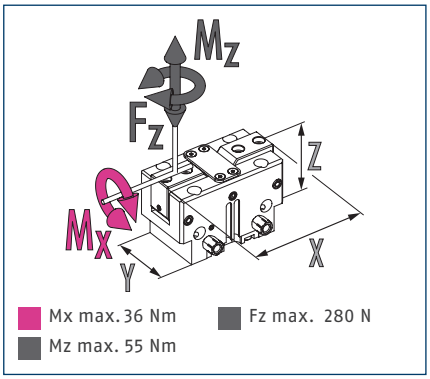
Gripping force O.D. gripping



Closing moment curve



Dimensions and maximum loads

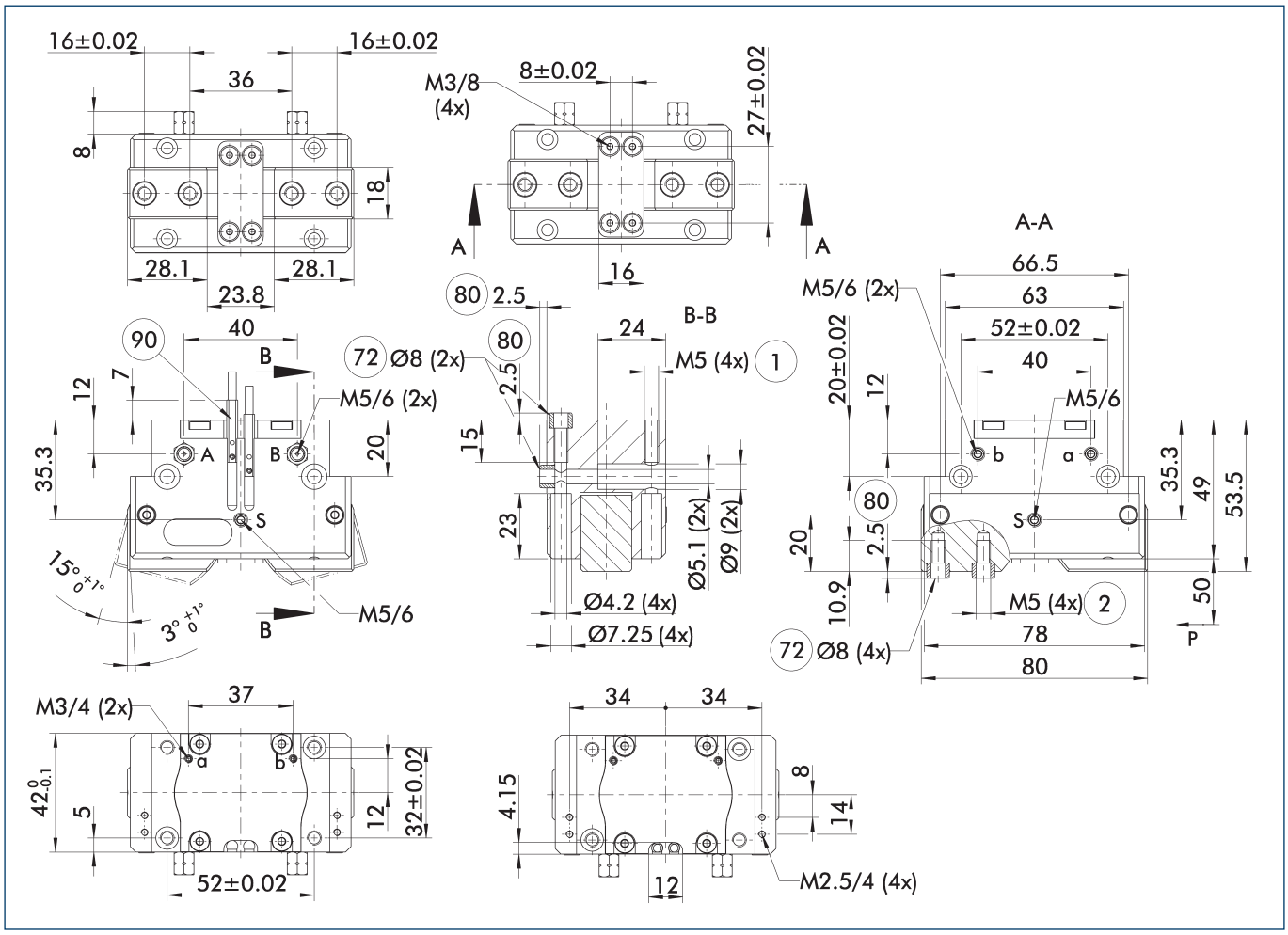


ⓘ The indicated torques and forces are static values, apply for each base jaw, and may occur simultaneously.

Technical data

Description		PWG-plus 80	PWG-plus 80-AS
ID		0311630	0311631
Opening angle per jaw	[°]	15	15
Closed angle per jaw	[°]	3	3
Closing moment	[Nm]	12.5	16.7
Closing moment generated by spring	[Nm]		4.2
Weight	[kg]	0.39	0.49
Recommended workpiece weight	[kg]	0.97	0.97
Cylinder volume per double stroke	[cm³]	20	33.5
Min./nom./max. operating pressure	[bar]	2/6/8	4/6/6.5
Min./max. air purge pressure	[bar]	0.5/1	0.5/1
Closing/opening time	[s]	0.08/0.08	0.08/0.15
Max. permissible finger length	[mm]	100	100
Max. permissible inertia per chuck jaw	[kgcm²]	37.3	37.3
IP protection class		30	30
Min./max. ambient temperature	[°C]	5/90	5/90
Repeat accuracy	[mm]	0.02	0.02
Dimensions X x Y x Z	[mm]	80 x 42 x 53.5	80 x 42 x 71.5
Options and their characteristics			
High-temperature version		39311630	39311631
Min./max. ambient temperature	[°C]	5/130	5/130
Power booster version		0311635	0311636
Closing moment	[Nm]	23.4	27.6
Closing moment generated by spring	[Nm]		4.2
Weight	[kg]	0.54	0.64
Maximum pressure	[bar]	6	6
Max. permissible finger length	[mm]	100	100

Main view

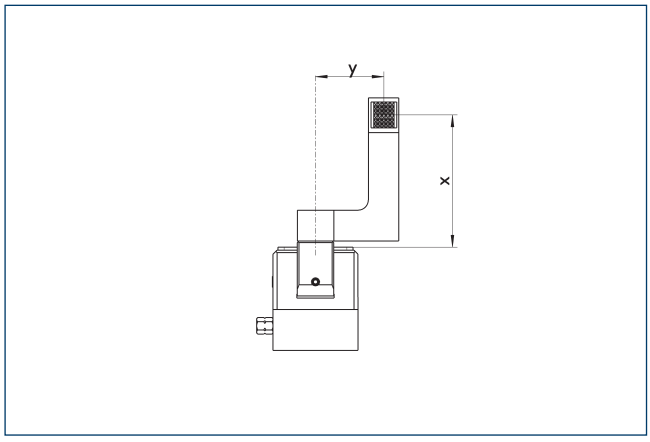


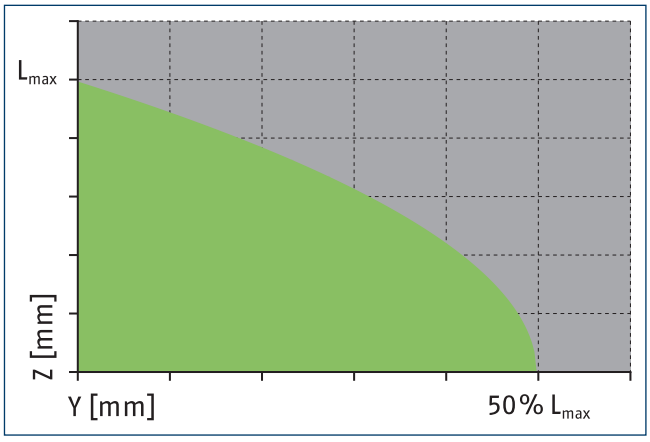
The drawing shows the gripper in the basic version with closed jaws, without dimensional consideration of the options described below.

ⓘ 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
(72) Fit for centering sleeves
(80) Depth of the centering sleeve hole in the counter part
(90) Sensor MMS 22..

Maximum permitted finger projection





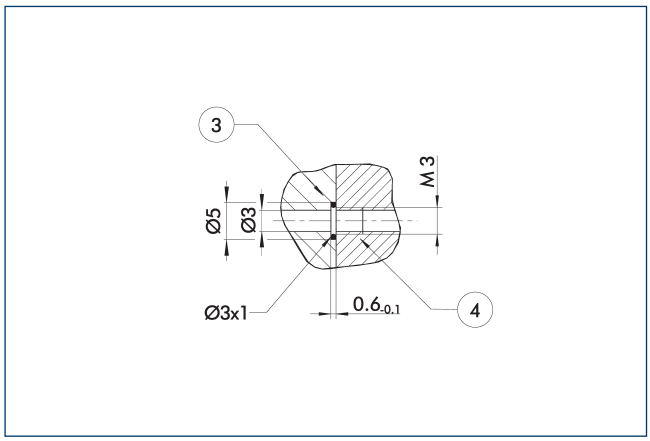
Permitted range
Inadmissible range

Lmax is equivalent to the maximum permitted finger length, see the technical data table.

PWG-plus 80

Angular gripper

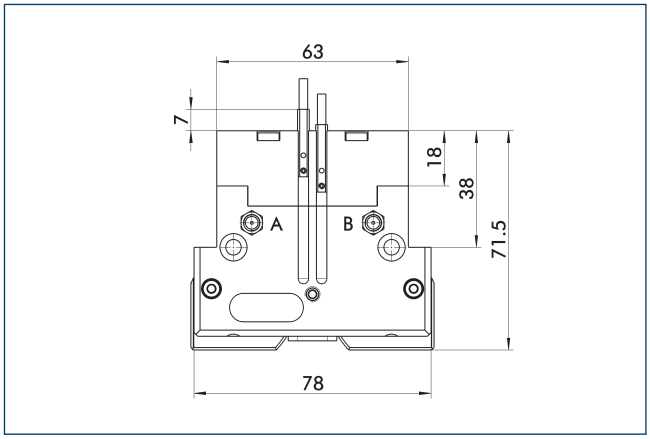
Hose-free direct connection M3



(3) Adapter (4) Grippers

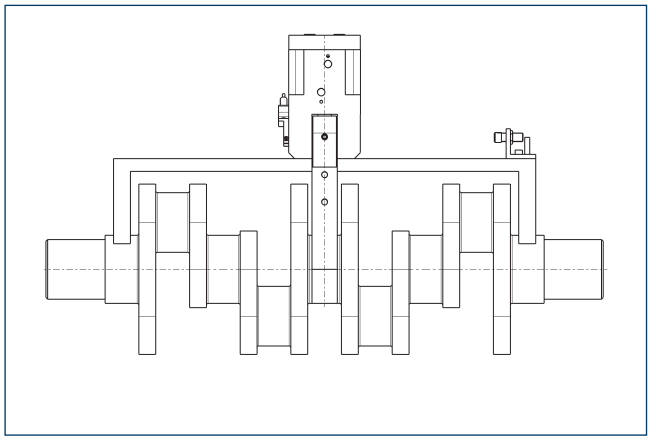
The direct connection is used for supplying compressed air without hoses. Instead, the pressure medium is fed through bore-holes in the mounting plate.

Gripping force maintenance



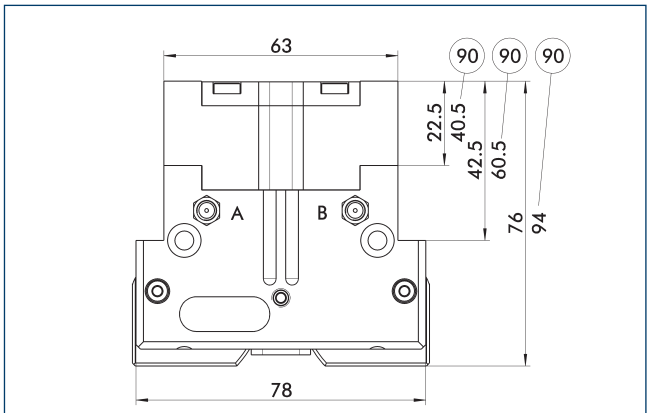
The mechanical gripping force maintenance ensures that a minimum clamping force will be applied even in case of pressure drop. This acts as closing force in the AS version. Besides this, the gripping force maintenance can be used to increase gripping force or for single actuated gripping.

Shaft support



The complete assembly group for handling of cranks and cam shafts can be supplied on request.

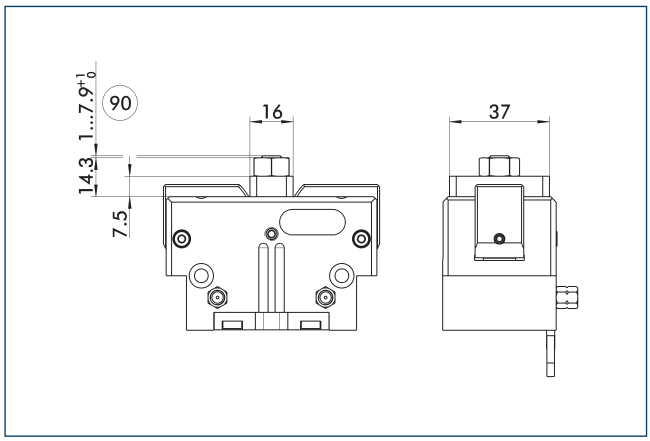
Power booster version



(90) Applies to AS version

The KVZ cylinder increases the gripping forces during opening and closing. A second, in series-connected piston also increases the force on the wedge hook. Please consider that grippers which are equipped with a gripping force maintenance device are higher.

Attachment kit for opening angle limitation

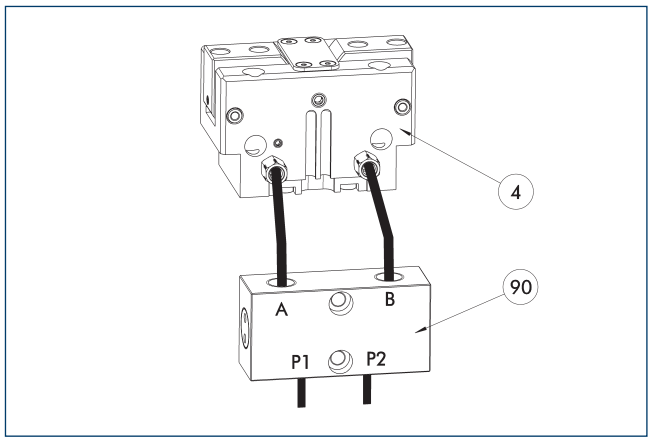


(90) Max. adjustment travel

Stepless adjustment of the opening angle is possible with an attachment kit.

Description	ID	
Stroke adjustment		
HVE-PWG-plus 80	0311733	

SDV-P pressure maintenance valve



(4) Grippers

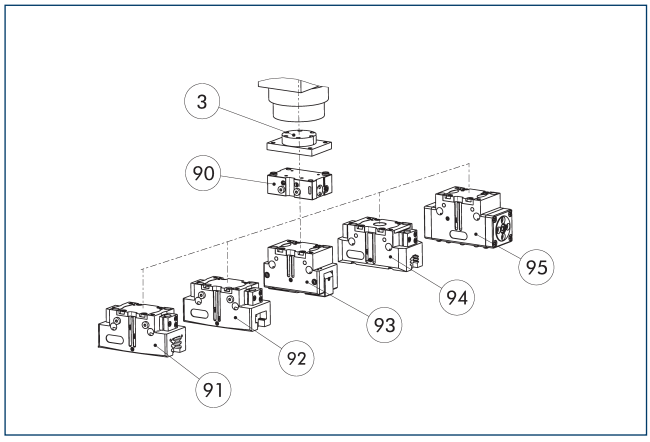
(90) SDV-P pressure maintenance valve

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 04	0403130	6
Pressure maintenance valve with air bleed screw		
SDV-P 04-E	0300120	6

ⓘ 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.

SDV-P E-P pressure maintenance valve



(3) Adapter

(90) SDV-P E-P pressure maintenance valve

(91) 2-finger parallel gripper PGN-plus/PGN-plus-P

(92) 2-finger parallel gripper JGP-P

(93) 2-finger angular gripper PWG-plus

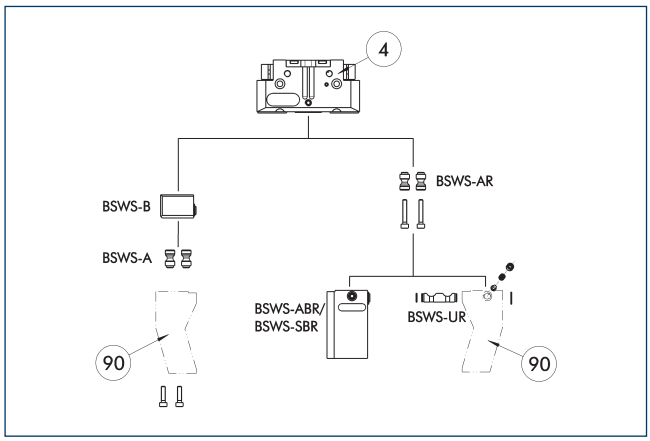
(94) 2-finger parallel gripper PGB

(95) Sealed DPG-plus gripper

The SDV-P E-P pressure maintenance valves ensure that the pressure in the piston chamber is maintained temporarily during an emergency stop. SDV-P E-P can be directly connected to the listed grippers without the need for additional pneumatic hoses.

Description	ID	
Pressure maintenance valve		
SDV-P 80-E-P	0300125	

BSWS jaw quick-change jaw systems



(4) Grippers

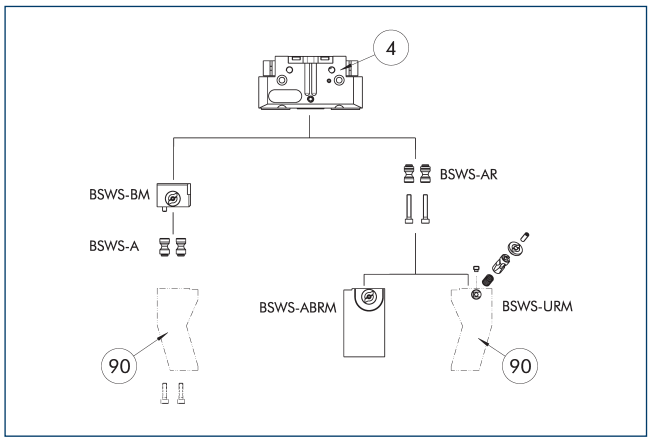
(90) Customized gripper fingers

There are various jaw quick-change systems available for the gripper. For detailed information, please refer to the corresponding product.

Description	ID	Scope of delivery
Jaw quick-change system adapter pin		
BSWS-A 80	0303024	2
BSWS-AR 80	0300093	2
Quick-change jaw system base		
BSWS-B 80	0303025	1
Jaw quick-change system finger blank		
BSWS-ABR-PGZN-plus 80	0300073	1
BSWS-SBR-PGZN-plus 80	0300083	1
Jaw quick-change system locking mechanism		
BSWS-UR 80	0302992	1

ⓘ If the operating pressure is higher than 6 bar, suitability for use beyond the application limits must be checked. Only systems that are listed in the table, can be used.

Jaw quick-change system BSWS-M



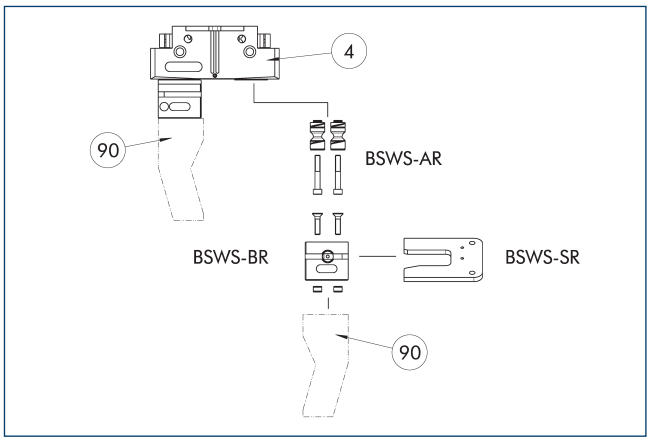
(4) Grippers (90) Customized gripper fingers

There are various jaw quick-change systems available for the gripper. For detailed information, please refer to the corresponding product.

Description	ID	Scope of delivery
Jaw quick-change system adapter pin		
BSWS-A 80	0303024	2
BSWS-AR 80	0300093	2
Quick-change jaw system base		
BSWS-BM 80	1313901	1
Jaw quick-change system finger blank		
BSWS-ABRM-PGZN-plus 80	1420852	1
Jaw quick-change system locking mechanism		
BSWS-URM 80	1398402	1

ⓘ If the operating pressure is higher than 6 bar, suitability for use beyond the application limits must be checked. Only systems that are listed in the table, can be used.

Jaw quick-change system BSWS-R



(4) Grippers (90) Customized gripper fingers

There are various jaw quick-change systems available for the gripper. For detailed information, please refer to the corresponding product.

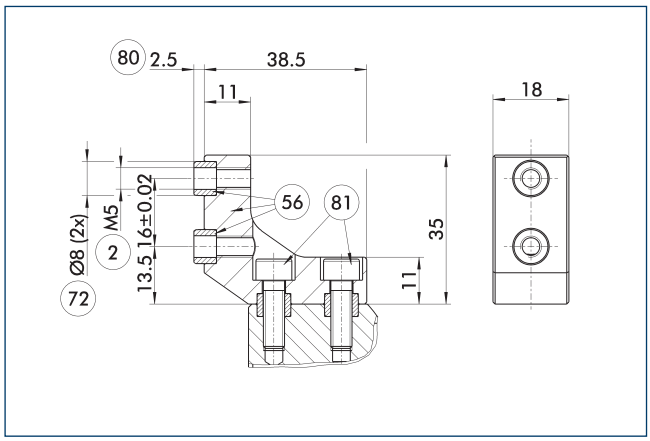
Description	ID	Scope of delivery
Jaw quick-change system adapter pin		
BSWS-AR 80	0300093	2
Quick-change jaw system base		
BSWS-BR 80	1555917	1
Storage system		
BSWS-SR 80	1555951	1
Attachment kit for proximity switch		
AS-IN40-BSWS-SR 80/100	1561458	1
Inductive proximity switch		
IN 40-S-M12	0301574	
IN 40-S-M8	0301474	
INK 40-S	0301555	

ⓘ If the operating pressure is higher than 6 bar, suitability for use beyond the application limits must be checked. Only systems that are listed in the table, can be used.

PWG-plus 80

Angular gripper

ZBA-L-plus 80 intermediate jaws

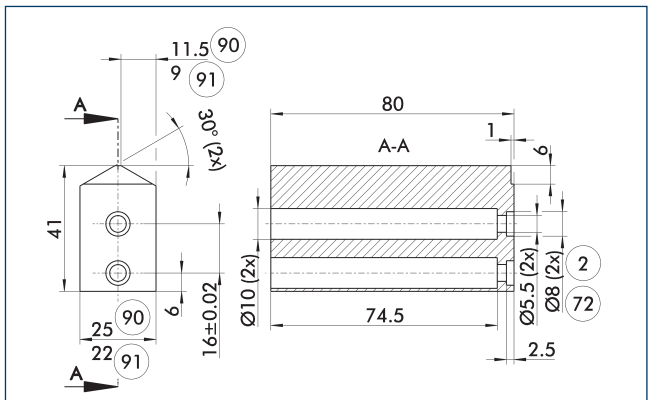


(2) Finger connection
(56) Included in the scope of delivery
(72) Fit for centering sleeves
(80) Depth of the centering sleeve hole in the counter part
(81) Not included in the scope of delivery

The optional ZBA-L-plus intermediate jaws allow the screw connection diagram of the top jaws to be rotated by 90°. This makes it easier to design and produce top jaws (particularly for long versions) because no deep through-bores are required.

Description	ID	Material	Finger interface	Scope of delivery
Intermediate jaw				
ZBA-L-plus 80	0311732	Aluminum	PGN-plus 80	1

Finger blanks ABR/SBR-PGZN-plus 80



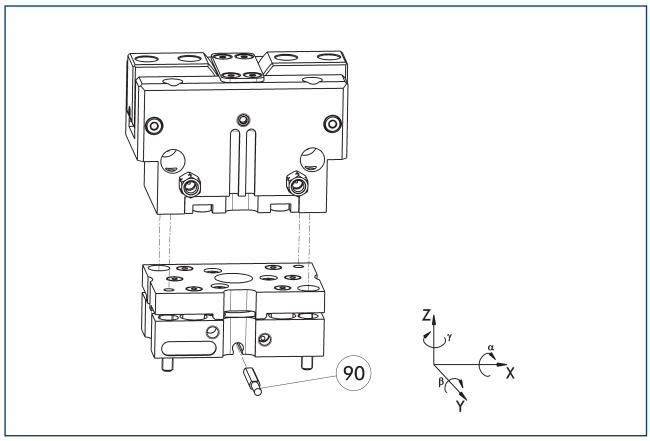
(2) Finger connection
(72) Fit for centering sleeves
(90) ABR-PGZN-plus
(91) SBR-PGZN-plus

The drawing shows the finger blank which can be reworked by the customer.

Description	ID	Material	Scope of delivery
Finger blank			
ABR-PGZN-plus 80	0300011	Aluminum (3.4365)	1
SBR-PGZN-plus 80	0300021	Steel (1.7131)	1

ⓘ When finger blanks are used, the closing stroke of individual gripper series may be limited. Please check this in detail in advance using the CAD data and adjust the reworking of the fingers accordingly.

Tolerance compensation unit TCU

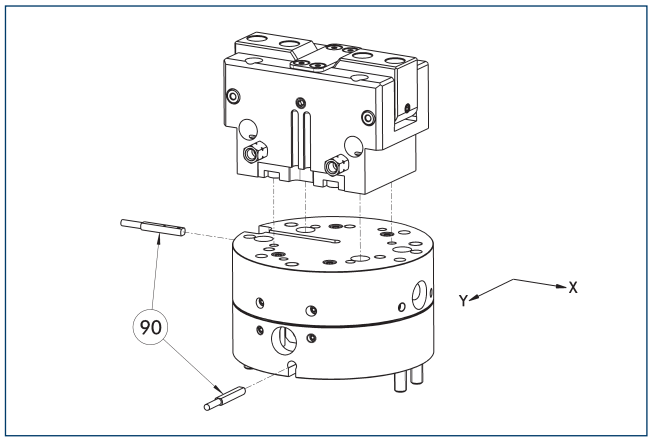


(90) Monitoring of locking

Grippers can be directly mounted without an adapter plate. Tolerance compensation unit and gripper have an identical screw connection diagram. Therefore the tolerance compensation units can be assembled later. Please consider the additional assembly height of the tolerance compensation unit. For details please refer to our catalog robot accessories.

Description	ID	Locking	Deflection	Often combined
Compensation unit				
TCU-P-080-3-MV	0324792	yes	±1°/±1,5°/±2°	●
TCU-P-080-3-OV	0324793	no	±1°/±1,5°/±2°	

Compensation unit AGE-F

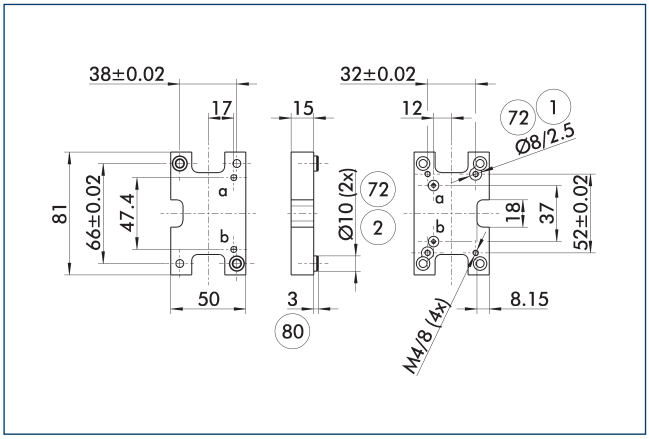


(90) Monitoring

Grippers can be directly mounted without an adapter plate. For details see our catalog Gripping or Robot Accessories.

Description	ID	Compensation XY	Reset force	Often combined
		[mm]	[N]	
Compensation unit				
AGE-F-XY-063-1	0324940	± 4	12	
AGE-F-XY-063-2	0324941	± 4	16	
AGE-F-XY-063-3	0324942	± 4	20	●

Adapter plate PGN-plus 80

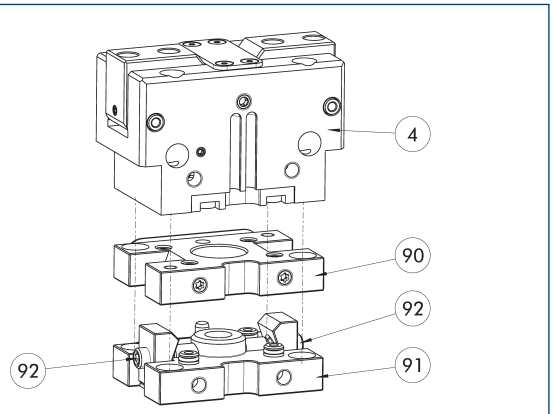


(1) Robot-side connection
(2) Tool-side connection
(72) Fit for centering sleeves
(80) Depth of the centering sleeve hole in the counter part

The adapter plate has integrated air feed-throughs in order to be able to use the hose-free direct connection of the appropriate gripper.

Description	ID	
Tool side		
A-CWA-100-080-P	0305804	

Compact change system for grippers

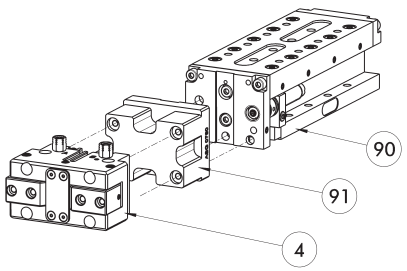


(4) Grippers
(90) CWA compact change adapter
(91) CWK compact change master
(92) Locking mechanism

Grippers can be directly mounted without an adapter plate. For details see our catalog Gripping or Robot Accessories.

Description	ID	
Tool side		
A-CWA-100-080-P	0305804	
CWA compact change adapter		
CWA-080-P	0305781	
CWK compact change master		
CWK-080-P	0305780	

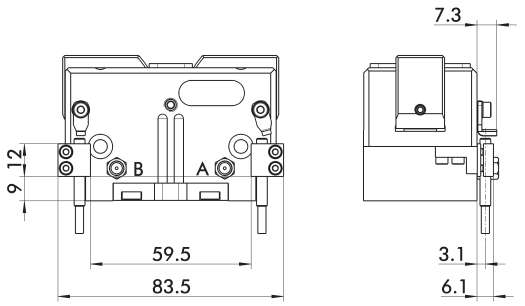
Modular Assembly Automation



(4) Grippers
(90) Linear module CLM/KLM/LM/ELP/ELM/ELS/HLM
(91) ASG adapter plate

Grippers and linear modules can be combined with standard adapter plates from the modular assembly system. For more information see our main catalog "Modular Assembly Automation".

Attachment kit for proximity switch IN 40

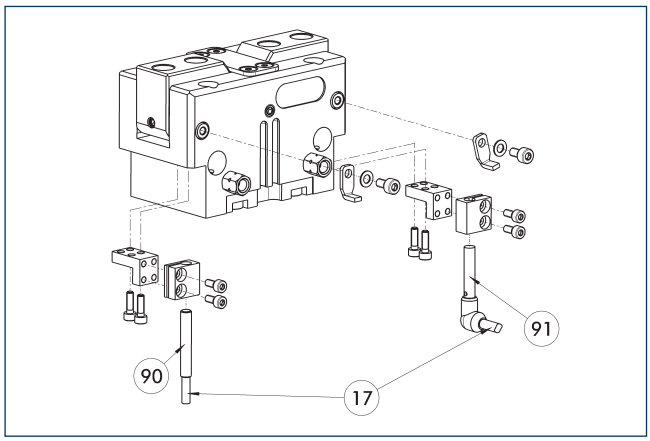


End position monitoring can be mounted with an attachment kit.

Description	ID	
Attachment kit for proximity switch		
AS-IN40-PWG-plus 80	0311730	

ⓘ This attachment kit needs to be ordered optionally as an accessory.

IN 40 inductive proximity switches



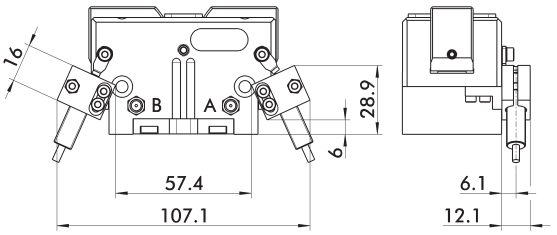
17 Cable outlet
91 Sensor IN..-SA
90 Sensor IN ...

End position monitoring can be mounted with an attachment kit.

Description	ID	Often combined
Attachment kit for proximity switch		
AS-IN40-PWG-plus 80	0311730	
Inductive proximity switch		
IN 40-S-M12	0301574	
IN 40-S-M8	0301474	●
INK 40-S	0301555	
Inductive proximity switch with lateral cable outlet		
IN 40-S-M12-SA	0301577	
IN 40-S-M8-SA	0301473	●
INK 40-S-SA	0301565	

ⓘ Two sensors (closer/S) are required for each unit and extension cables are available as an option. This attachment kit needs to be ordered optionally as an accessory. For sensor cables, note the minimum permissible bending radii. These are generally 35 mm.

Attachment kit for proximity switch IN 80

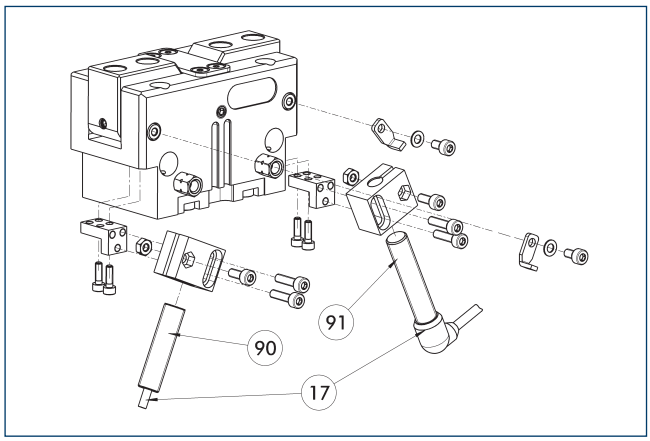


End position monitoring can be mounted with an attachment kit.

Description	ID	
Attachment kit for proximity switch		
AS-IN80-PWG-plus 80	0311731	

ⓘ This attachment kit needs to be ordered optionally as an accessory.

IN 80 inductive proximity switches



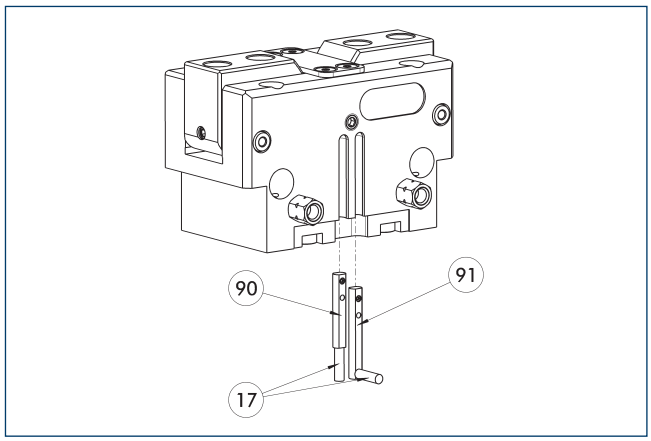
(17) Cable outlet
(91) Sensor IN..-SA
(90) Sensor IN ...

End position monitoring can be mounted with an attachment kit.

Description	ID	Often combined
Attachment kit for proximity switch		
AS-IN80-PWG-plus 80	0311731	
Inductive proximity switch		
IN 80-S-M12	0301578	
IN 80-S-M8	0301478	●
IN-C 80-S-M8-PNP	0301475	
INK 80-S	0301550	
INK 80-SL	0301579	
Inductive proximity switch with lateral cable outlet		
IN 80-S-M12-SA	0301587	
IN 80-S-M8-SA	0301483	●
INK 80-S-SA	0301566	

ⓘ Two sensors (closer/S) are required for each unit and extension cables are available as an option. This attachment kit needs to be ordered optionally as an accessory. For sensor cables, note the minimum permissible bending radii. These are generally 35 mm.

Electronic magnetic switch MMS



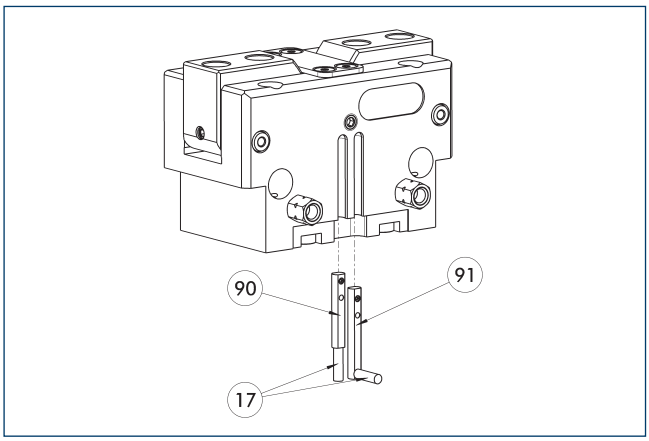
(17) Cable outlet
(91) Sensor MMS 22...-SA
(90) Sensor MMS 22..

End position monitoring for mounting in the C-slot.

Description	ID	Often combined
Electronic magnetic switch		
MMS 22-S-M8-PNP	0301032	●
MMSK 22-S-PNP	0301034	
Electronic magnetic switches with lateral cable outlet		
MMS 22-S-M8-PNP-SA	0301042	●
MMSK 22-S-PNP-SA	0301044	
Connection cables		
KA BG08-L 3P-0300-PNP	0301622	●
KA BG08-L 3P-0500-PNP	0301623	
KA BW08-L 3P-0300-PNP	0301594	
KA BW08-L 3P-0500-PNP	0301502	
Clip for connector/socket		
CLI-M8	0301463	
Cable extension		
KV BW08-SG08 3P-0030-PNP	0301495	
KV BW08-SG08 3P-0100-PNP	0301496	
KV BW08-SG08 3P-0200-PNP	0301497	●
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.

Programmable magnetic switch MMS 22-PI1



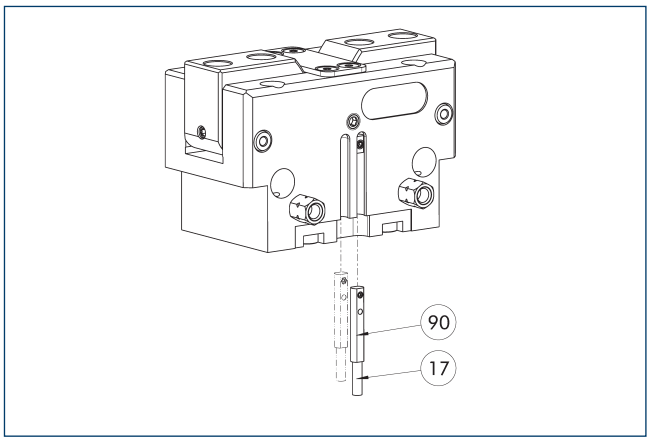
(17) Cable outlet
(91) Sensor MMS 22 ..-PI1-...-SA
(90) Sensor MMS 22 PI1-...

Position monitoring with one programmable position per sensor and integrated electronic system in the sensor. Can be programmed using MT magnetic teaching tool (included in the scope of delivery, ID 0301030) or ST plug teaching tool (optional). End position monitoring for mounting in the C-slot. If the ST plug teaching tools are listed in the table provided, teaching is only possible with the ST teaching tools.

Description	ID	Often combined
Programmable magnetic switch		
MMS 22-PI1-S-M8-PNP	0301160	●
MMSK 22-PI1-S-PNP	0301162	
Programmable magnetic switch with lateral cable outlet		
MMS 22-PI1-S-M8-PNP-SA	0301166	●
MMSK 22-PI1-S-PNP-SA	0301168	
Programmable magnetic switch with stainless steel housing		
MMS 22-PI1-S-M8-PNP-HD	0301110	●
MMSK 22-PI1-S-PNP-HD	0301112	

ⓘ 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.

Programmable magnetic switch MMS 22-PI2



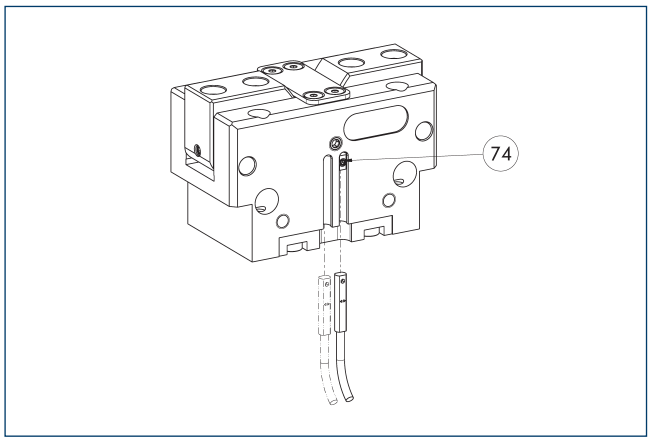
(17) Cable outlet
(90) MMS 22...-PI2-... sensor

Position monitoring with two programmable positions per sensor and electronics integrated in the sensor. Can be programmed using MT magnetic teaching tool (included in the scope of delivery, ID 0301030) or ST plug teaching tool (optional). End position monitoring for mounting in the C-slot. If the ST plug teaching tools are listed in the table provided, teaching is only possible with the ST teaching tools.

Description	ID	Often combined
Programmable magnetic switch		
MMS 22-PI2-S-M8-PNP	0301180	●
MMSK 22-PI2-S-PNP	0301182	
Programmable magnetic switch with lateral cable outlet		
MMS 22-PI2-S-M8-PNP-SA	0301186	●
MMSK 22-PI2-S-PNP-SA	0301188	
Programmable magnetic switch with stainless steel housing		
MMS 22-PI2-S-M8-PNP-HD	0301130	●
MMSK 22-PI2-S-PNP-HD	0301132	

ⓘ One sensor is required per unit for monitoring two positions. Extension cables and sensor distributors are optionally available. Additional product variants of the sensor, and further information and technical data can be found in the catalog chapter sensor systems.

MMS-P programmable magnetic switch



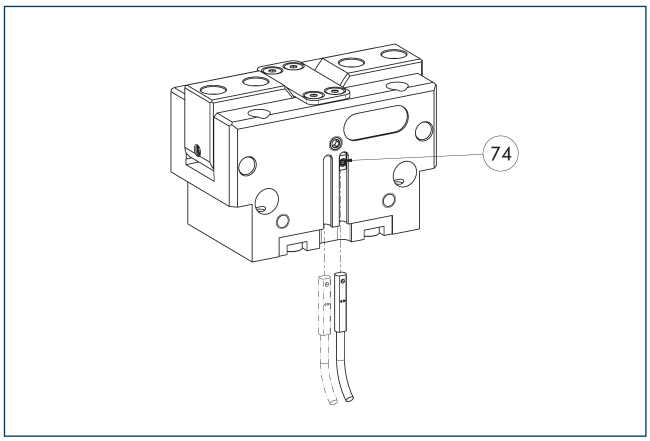
74 Limit stop for sensor

Position monitoring with two programmable positions per sensor. End position monitoring for mounting in the C-slot.

Description	ID	Often combined
Programmable magnetic switch		
MMSK-P 22-S-PNP	0301371	
MMS-P 22-S-M8-PNP	0301370	●
Connection cables		
KA GLN0804-LK-00500-A	0307767	●
KA GLN0804-LK-01000-A	0307768	
KA WLN0804-LK-00500-A	0307765	
KA WLN0804-LK-01000-A	0307766	
Clip for connector/socket		
CLI-M8	0301463	
Sensor distributor		
V2-M8-4P-2XM8-3P	0301380	

ⓘ One sensor is required per unit for monitoring two positions. Extension cables and sensor distributors are optionally available. Additional product variants of the sensor, and further information and technical data can be found in the catalog chapter sensor systems.

Programmable magnetic switch MMS-IO-Link



74 Limit stop for sensor

Sensor for multi-position monitoring through detection of the complete gripper stroke. The sensor is mounted directly in the C-slot of the gripper. The sensor is programmed for the gripper via the IO-Link interface, Magnet teaching tool MT (included in scope of delivery; ID 0301030) or the ST plug teaching tool (not included in scope of delivery; ID 0301026). An IO-Link master is required for operation.

Description	ID	
Programmable magnetic switch		
MMS 22-IOL-M08	0315830	
MMS 22-IOL-M12	0315835	

ⓘ One sensor is required for each gripper. No additional mounting kit is required – the gripper is equipped for use of the sensor by default. Further information and technical data can be found in the catalog chapter sensor systems.

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