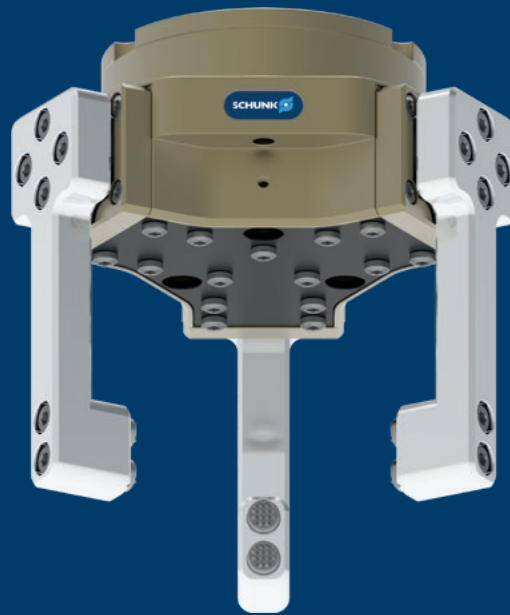




Hand in hand for tomorrow



Product data sheet

Sealed universal gripper DPZ-plus 50

DPZ-plus

Sealed universal gripper

Fully encapsulated. Reliable. Precise.

Sealed gripper DPZ-plus

Despite the high moment load of the base jaws, this sealed 3-finger centric gripper meets the requirements of IP67 and does not permit the ingress of any substances from the working environment into the interior of the component.

Field of application

The gripper is ideally suitable for handling of rough or dirty workpieces. Its field of application extends from the loading and unloading of machines, such as in the case of sanitary blocks, grinding machines, lathes or milling machines, to handling tasks in painting plants, in powder-processing or underwater.

Advantages – Your benefits

Robust interior multi-tooth guidance for the precise handling of different workpieces

Lip seal at the outside round guidance for permanent, secure gripper sealing

High maximum moments possible suitable for using long gripper fingers

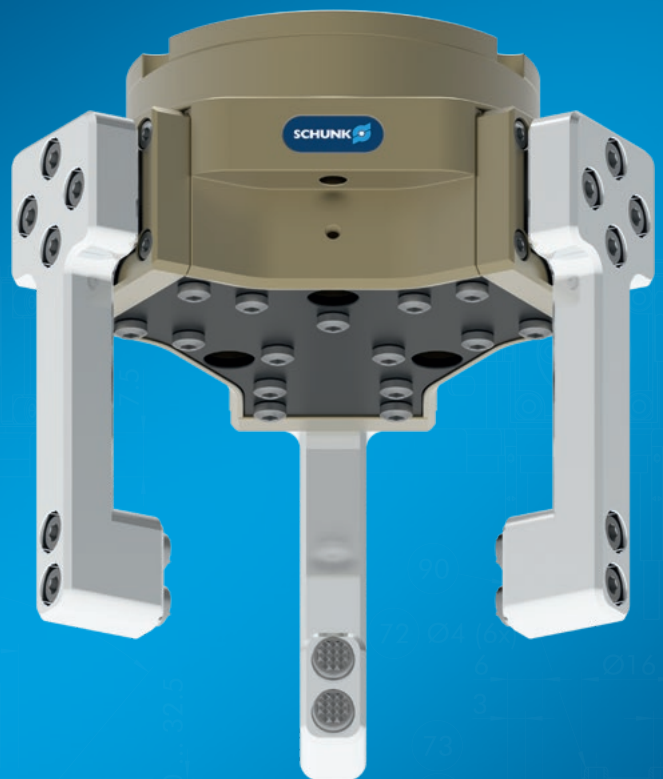
Sealed 3-finger centric gripper complies to IP67 requirements despite a high moment load

Fastening at one gripper side in two screw directions for universal and flexible gripper assembly

Maximum gripping forces at a compact design for a wide range of applications

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

Compact dimensions for minimal interfering contours in handling



Sizes
Quantity: 8



Weight
0.2 .. 20.1 kg



Gripping force
230 .. 16500 N



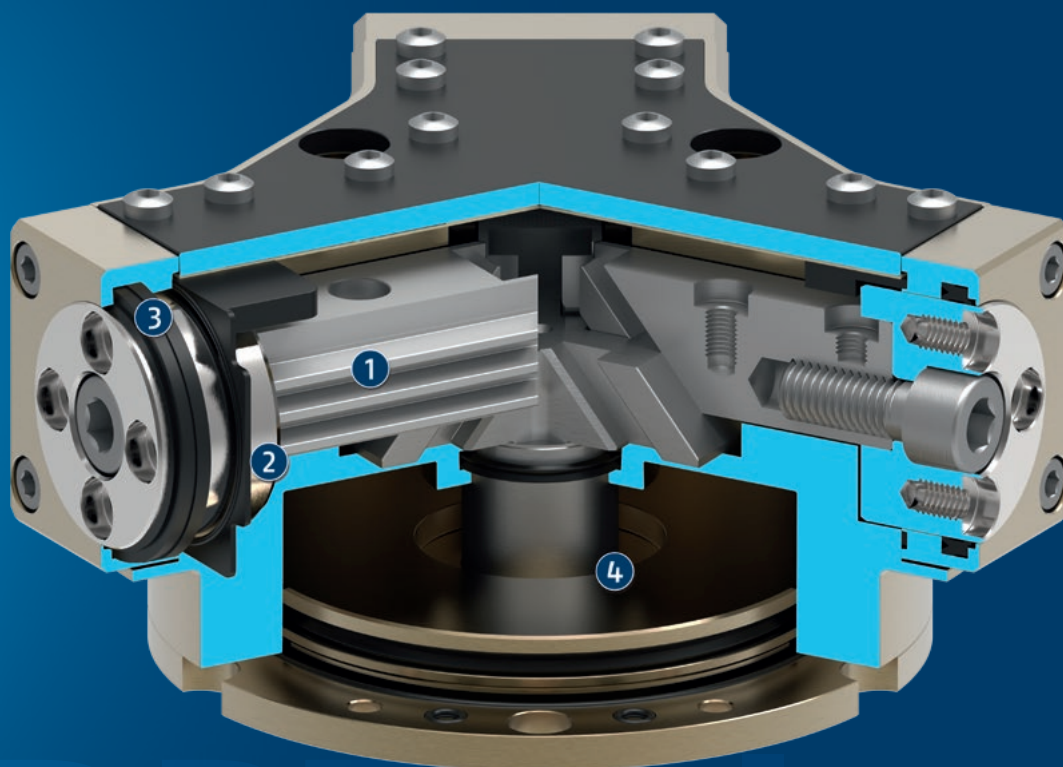
Stroke per jaw
2 .. 25 mm



Workpiece weight
1.15 .. 60 kg

Functional description

The piston is moved up and down by compressed air.
The angled active surfaces of the wedge-hook produce a synchronized, centric jaw movement.



- ① **Inner base jaw with multi-tooth guidance**
for high moment loads
- ② **External round base jaw**
providing a sealable, round surface
- ③ **Lip seal**
for permanent, secure gripper sealing
- ④ **Round piston with rod and wedge-hook**
for power generation

General notes about the series

Operating principle: Wedge-hook kinematics

Housing material: Aluminum alloy, anodized

Base jaw material: Steel

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

Warranty: 36 months

Service life characteristics: on request

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

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

Finger length: is measured from the reference surface as the distance P in direction to the main axis. The maximum permissible finger length applies until the nominal operating pressure is achieved. With higher pressures, the finger length must be reduced proportionally to the nominal operating pressure.

Note – tightness: Please note that to achieve an IP 67 protection class, the gripper requires an additional hose for ventilation or a switchable air purge connection. For detailed information, please refer to the assembly and operating manual. Alternatively, a sinter filter (supplied) mounted on the air purge connection can prevent the penetration of dirt particles > 0.12 mm. However, this reduces the protection class to IP 54.

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

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

Insertion tool for assembly of small to medium-sized workpieces. The tool can be used in both clean and dirty environments. Due to its quick-change system, other tools can alternately be fixed to the robot flange.

- ❶ 3-finger centric gripper DPZ-plus
- ❷ Automatic tool changers CPS



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



Tolerance compensation unit



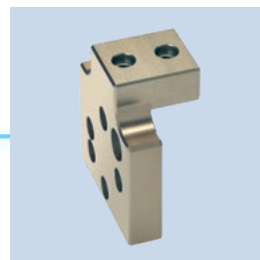
Pressure maintenance valve



Universal intermediate jaw



Magnetic switches



Intermediate jaw



Jaw quick-change system

① For more information on these products can be found on the following product pages or at [schunk.com](https://www.schunk.com).

Options and special information

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

Power booster version KVZ: if higher gripping forces are required

ATEX version EX: for explosive environments

Additional versions: Various options can be combined with each other. Numerous additional options are also available – just tell us what your task is!

Integrated air purge connection: impedes the ingress of dirt into the inside of the gripper

Please note that to achieve an IP 67 protection class, the gripper requires an additional hose for ventilation or a switchable air purge connection. For detailed information, please refer to the assembly and operating manual. Alternatively, a sinter filter (supplied) mounted on the air purge connection can prevent the penetration of dirt particles > 0.12 mm. However, this reduces the protection class to IP 54.

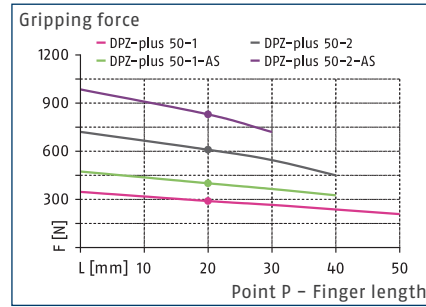
Food-grade lubrication: The product contains food-compliant lubricants as standard. The requirements of EN 1672-2:2020 are not fully met. The relevant NSF certificates are available at <https://info.nsf.org/USDA/Listings.asp> using the lubricant information in the operating manual.

DPZ-plus 50

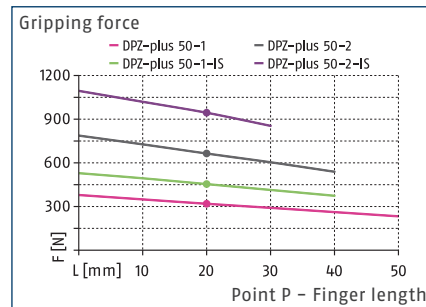
Sealed universal gripper



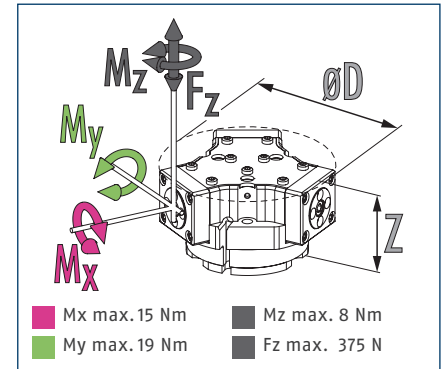
Gripping force O.D. gripping



Gripping force I.D. gripping



Dimensions and maximum loads



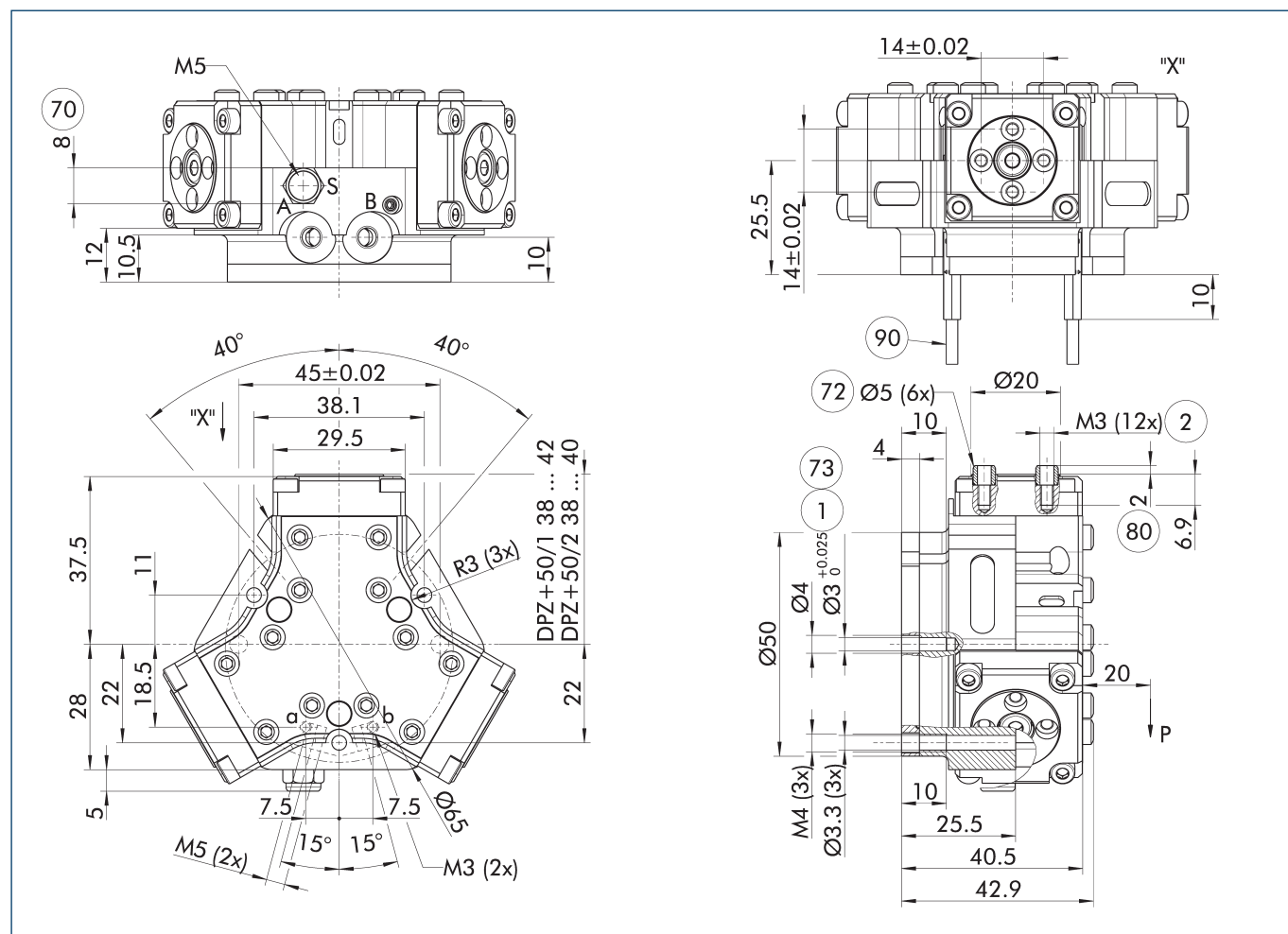
① The indicated moments and forces are static values, apply for each base jaw and may appear simultaneously. Loads may additionally occur to the moment produced by the gripping force itself.

Technical data

Description		DPZ-plus 50-1	DPZ-plus 50-2	DPZ-plus 50-1-AS	DPZ-plus 50-2-AS	DPZ-plus 50-1-IS	DPZ-plus 50-2-IS
ID		1316268	1316271	1316272	1316275	1316276	1316277
Stroke per jaw	[mm]	4	2	4	2	4	2
Closing/opening force	[N]	290/320	610/665	400/-	830/-	-/455	-/945
Min. spring force	[N]			110	220	135	280
Weight	[kg]	0.37	0.37	0.45	0.45	0.45	0.45
Recommended workpiece weight	[kg]	1.45	3.06	1.45	3.06	1.45	3.06
Cylinder volume per double stroke	[cm³]	9	9	18	18	18	18
Min./nom./max. operating pressure	[bar]	2.5/6/8	2.5/6/8	4/6/6.5	4/6/6.5	4/6/6.5	4/6/6.5
Min./max. air purge pressure	[bar]	0.2/0.5	0.2/0.5	0.2/0.5	0.2/0.5	0.2/0.5	0.2/0.5
Closing/opening time	[s]	0.03/0.03	0.03/0.03	0.03/0.05	0.03/0.05	0.05/0.03	0.05/0.03
Max. permissible finger length	[mm]	50	40	40	30	40	30
Max. permissible weight per finger	[kg]	0.15	0.15	0.15	0.15	0.15	0.15
IP protection class		67	67	67	67	67	67
Min./max. ambient temperature	[°C]	5/90	5/90	5/90	5/90	5/90	5/90
Repeat accuracy	[mm]	0.01	0.01	0.01	0.01	0.01	0.01
Cleanroom class ISO 14644-1		5	5	5	5	5	5
Dimensions Ø D x Z	[mm]	80.6 x 40.5	80.6 x 40.5	80.6 x 50.9	80.6 x 50.9	80.6 x 50.9	80.6 x 50.9
Options and their characteristics							
High-temperature version		1321294	1321296	1321297	1321299	1321301	1321302
Min./max. ambient temperature	[°C]	5/130	5/130	5/130	5/130	5/130	5/130

① Please note that to achieve an IP 67 protection class, the gripper requires an additional hose for ventilation or a switchable air purge connection. For detailed information, please refer to the assembly and operating manual. Alternatively, a sinter filter (supplied) mounted on the air purge connection can prevent the penetration of dirt particles > 0.12 mm. However, this reduces the protection class to IP 54.
It may take a few 100 gripping cycles until the full gripping force (as indicated in the data table) will be available.

Main view



For finger connection, we recommend only to use two of the four centering bores for each finger. The drawing shows the gripper in the basic version with closed jaws, the dimensions do not include the options described below.

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

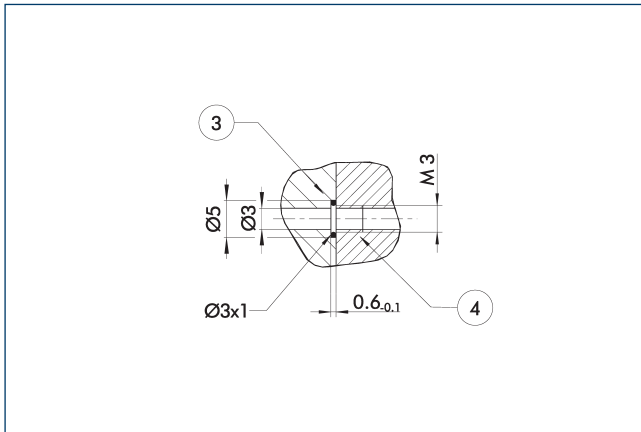
- A, a Main / direct connection, gripper opening
 B, b Main / direct connection, gripper closing
 S, E Air purge connection, or deaeration bore
 ① Gripper connection

- ② Finger connection
 70 Wrench size
 72 Fit for centering sleeves
 73 Fit for centering pins
 80 Depth of the centering sleeve hole in the counter part
 90 Sensor MMS 22..

DPZ-plus 50

Sealed universal gripper

Hose-free direct connection M3

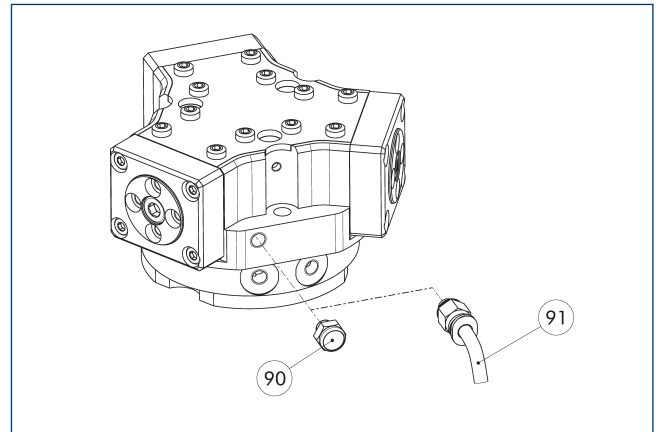


③ Adapter

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.

Connect the air purge connection

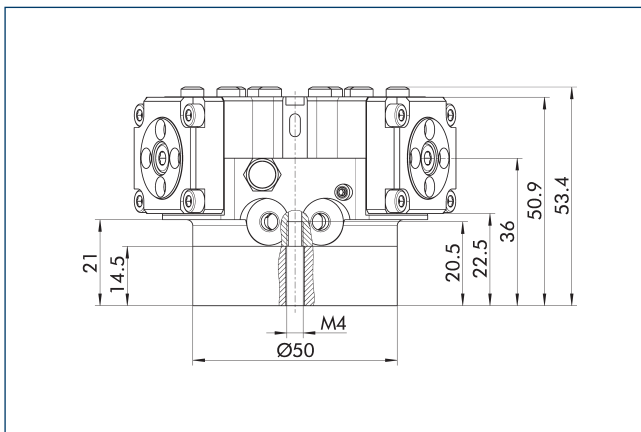


⑨⑩ Sinter filter

⑨① Hose for ventilation or air purge connection

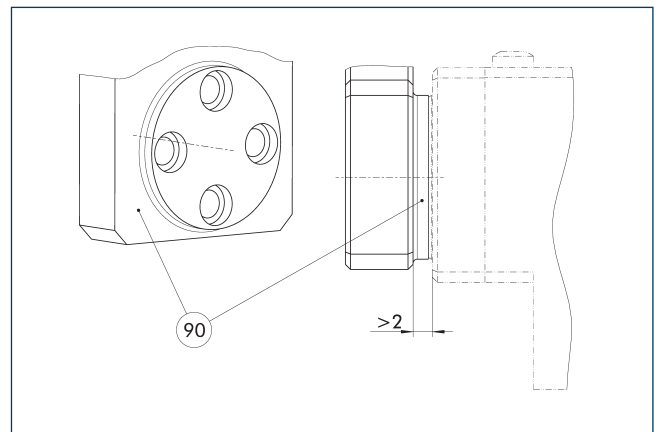
Please note that to achieve an IP 67 protection class, the gripper requires an additional hose for ventilation or a switchable air purge connection. For detailed information, please refer to the assembly and operating manual. Alternatively, a sinter filter (supplied) mounted on the air purge connection can prevent the penetration of dirt particles > 0.12 mm. However, this reduces the protection class to IP 54.

Gripping force maintenance version AS/IS



The mechanical gripping force maintenance device ensures that a minimum clamping force will be applied even if there is a drop in pressure. In the AS/S variant this acts as a closing force, in the IS variant as an opening force. Besides this, gripping force maintenance can be used to increase gripping force or for single actuated gripping.

Proposed jaw design



⑨⑩ Step

In order to avoid impairment of the stroke due to contamination or chips, there should be a sufficient distance between the top jaws and the gripper.

Technical drawing of the 3-way valve showing top and side views with dimensions:

- Top View Dimensions:**
 - Top horizontal distance: 13.4
 - Bottom horizontal distance: 13.4
 - Left vertical distance: 7.8
 - Right vertical distance: 27
 - Bottom-left vertical distance: 15.5
 - Bottom-right horizontal distance: 10
 - Bottom-left hole diameter: $\varnothing 6.5 (3x)$
- Side View Dimensions:**
 - Top horizontal distance: 17.2
 - Bottom horizontal distance: 50.3
 - Bottom-left horizontal distance: 2.8 ... 5.8
 - Right vertical distance: 4
 - Right vertical distance with tolerance: $5.5^{+0.08}_{-0.10}$
 - Right vertical distance with tolerance in circle: $90^{+0.08}_{-0.10}$

Description	ID	Stroke	Min. force
		[mm]	[N]
Spring-loaded pressure piece			
A-DP7-plus 50	0303731	3	18

A diagram showing the connection of the 4-pin connector to the 90-pin connector. The 4-pin connector is shown with two pins labeled 'A' and 'B'. The 90-pin connector is shown with two pins labeled 'P1' and 'P2'. The diagram indicates that the 'A' pin of the 4-pin connector connects to the 'P1' pin of the 90-pin connector, and the 'B' pin of the 4-pin connector connects to the 'P2' pin of the 90-pin connector. The 4-pin connector is also labeled with a circled '4' and the 90-pin connector is labeled with a circled '90'.

Description	ID	Recommended hose diameter
		[mm]
Pressure maintenance valve		
SDV-P 04	0403130	6
Pressure maintenance valve with air bleed screw		
SDV-P 04-F	0300120	6

Technical drawing of a mounting bracket. The left view shows a side profile with dimensions: total width 80, top flange thickness 2, main body height 6, base width 10, and two M2.5 screws spaced 16 apart. A dimension of 4 indicates the distance from the top edge to the first screw. A note specifies a tolerance of 8 ± 0.02 . The right view shows a front perspective of the L-shaped bracket with dimensions: top flange width 10, vertical leg height 26, horizontal leg length 27, and overall height 36.5. Four circular holes are arranged in a square pattern. Dimensions 24.3 and 9 indicate specific hole positions.

Part / Feature	Dimensions
DPG+50/1	33.5 ... 37.5
DPG+50/2	33.5 ... 35.5
DPZ+50/1	36.0 ... 40.0
DPZ+50/2	36.0 ... 38.0

Description	ID	Material	Finger interface	Scope of delivery
Intermediate jaw				
ZBA-DPG-DPZ-plus 50-40	0300191	Aluminum	PGN-plus 40	1

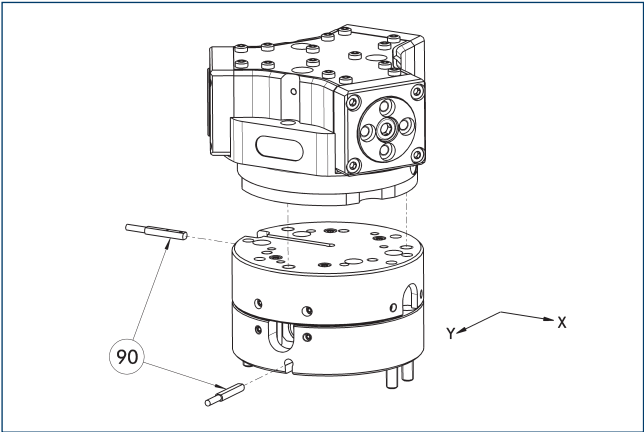
Diagram illustrating the assembly of the upper and lower parts of the robot's base. The upper part is being lowered onto the lower part. A coordinate system (X, Y, Z) is shown with angles α and β . A callout '90' indicates a 90-degree rotation.

Description	ID	Locking	Deflection
Compensation unit			
TCU-Z-050-3-0V	0324749	no	±1°/±1°/±1.5°

DPZ-plus 50

Sealed universal gripper

Compensation unit AGE-F

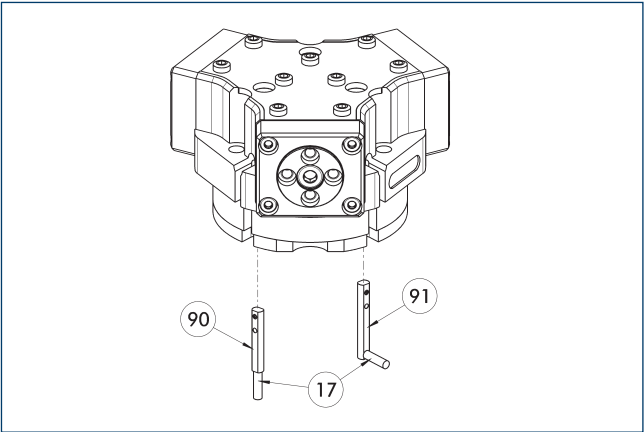


90 Monitoring

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-040-1	0324920	± 2	3	
AGE-F-XY-040-2	0324921	± 2	4	
AGE-F-XY-040-3	0324922	± 2	4.5	●

Electronic magnetic switch MMS



17 Cable outlet

91 Sensor MMS 22...-SA

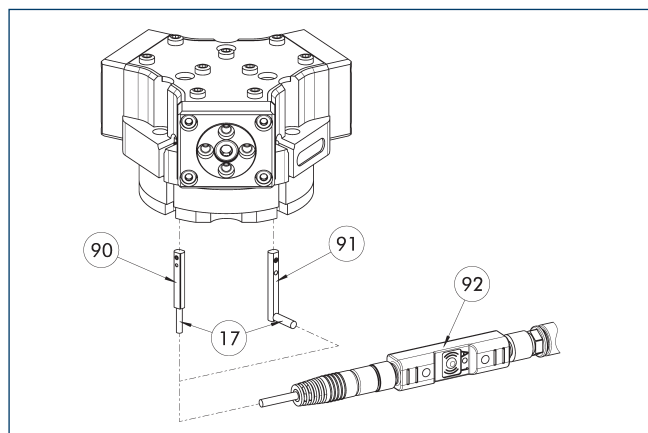
90 Sensor MMS 22..

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	

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

Programmable magnetic switch MMS 22-PI1



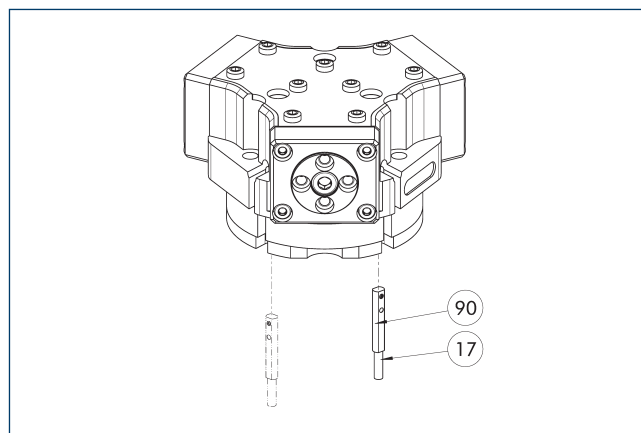
- 17 Cable outlet
 90 Sensor MMS 22 PI1-...
 91 Sensor MMS 22 ...-PI1-...-SA
 92 Connector teaching tool ST

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	
Plug teaching tool		
ST-MMS 22-PI1-PNP	0301025	

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

Programmable magnetic switch MMS 22-PI2



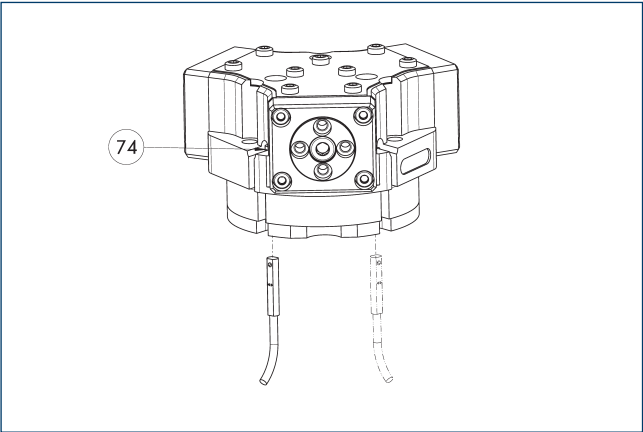
- 17 Cable outlet
 90 MMS 22...-PI2-... sensor

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	
Plug teaching tool		
ST-MMS 22-PI2-PNP	0301026	

- ① 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 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		
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	

- ① 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.



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