

# 3-JAW CONCENTRIC GRIPPERS

## SERIES GPD5000AL

### ► PRODUCT ADVANTAGES



#### “The ALternative”

##### ► Aluminum Linear Guide – The alternative

Reduced to those aspects which are the most important, the steel / aluminum guide variant offers significantly better performance when compared to a similar gripper with a T-groove travel guide, and is on par with the best principles of toothed guidance systems.

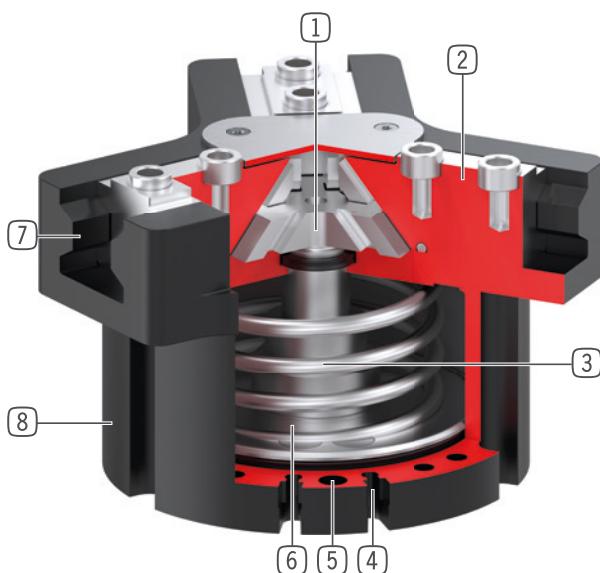
##### ► Extensive range of accessories

Offers you products that are optimally matched to the grippers. Particularly noteworthy are the adjusting jaws for tool-free adjustment of the gripping range, interchangeable jaws for quick jaw changes and precise sensor technology that reliably monitors the entire stroke range via IO-Link or analog.

##### ► The value proposition - consistent and without asterisks

Rely on the Zimmer Group and benefit from an exclusive 24-month warranty for your GPP and GPD5000 grippers - without restrictions, even for parts that come into contact with the workpiece and wear parts. Maximum reliability, maximum productivity - 24/7!

### ► BENEFITS IN DETAIL



##### ① Wedge hook mechanism

- high forces and moments capacity
- Synchronized gripper jaw movement

##### ② Gripper jaw

- Gripper fingers mounted using removable centering sleeves
- Lubricated for life via incorporated lubrication slots

##### ③ Integrated gripping force safety device

- Spring built into cylinder chamber as an energy store

##### ④ Sensing slot

- mounting and positioning of magnetic field sensors

##### ⑤ Mounting and positioning

- Alternatively, on several sides for customized mounting

##### ⑥ Drive

- Double-acting pneumatic rotor cylinder

##### ⑦ Aluminum Linear Guide

- Robust prismatic guide
- Enables the attachment of long gripper jaws

##### ⑧ Robust, lightweight housing

- Hard-coated aluminum alloy



## ► SERIES CHARACTERISTICS

Installation size		Variants		
GPD50XX		N-AL-A	NC-AL-A	NO-AL-A
<b>N</b>	Long stroke	●		
<b>NC</b>	Long stroke / Spring closing		●	
<b>NO</b>	Long stroke / Spring opening			●
	Magnetic field sensor	●	●	●
	Purged air	●	●	●
	Cleanroom-certified	●	●	●
<b>IP 40</b>	IP40	●	●	●

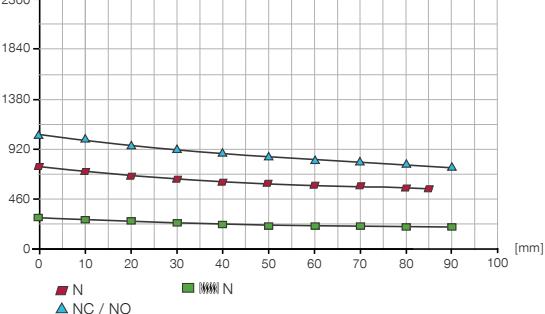
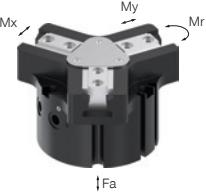
## ► TECHNICAL DATA

Installation size	Stroke per jaw	Gripping force	Weight	IP class
	[mm]	[N]	[kg]	
<b>GPD5003AL</b>	2,5	310 - 465	0,14 - 0,17	IP40
<b>GPD5004AL</b>	4	460 - 690	0,26 - 0,32	IP40
<b>GPD5006AL</b>	6	740 - 1080	0,47 - 0,57	IP40
<b>GPD5008AL</b>	8	1260 - 1770	0,88 - 1,1	IP40
<b>GPD5010AL</b>	10	2290 - 3250	1,5 - 1,9	IP40
<b>GPD5013AL</b>	13	3770 - 5200	2,8 - 3,6	IP40
<b>GPD5016AL</b>	16	6870 - 9490	6,1 - 7,7	IP40

# 3-JAW CONCENTRIC GRIPPERS

## INSTALLATION SIZE GPD5006AL

### ► PRODUCT SPECIFICATIONS

-AL-A																																		
Steel / aluminum guide																																		
► Gripping force diagram	Shows the arithmetic total of the individual forces that occur on the gripper fingers, depending on the gripper finger length [N]																																	
	 <p>The graph plots the total gripping force in Newtons (N) against the gripper finger length in millimeters (mm). The x-axis ranges from 0 to 100 mm, and the y-axis ranges from 0 to 2300 N. Two data series are shown: 'N' (represented by red squares) and 'NC / NO' (represented by blue triangles). Both series show a slight decrease in force as the finger length increases from 0 to 100 mm. The 'N' series starts at approximately 920 N and ends at 680 N. The 'NC / NO' series starts at approximately 1020 N and ends at 750 N.</p> <table border="1"><thead><tr><th>Finger Length [mm]</th><th>N [N]</th><th>NC / NO [N]</th></tr></thead><tbody><tr><td>0</td><td>920</td><td>1020</td></tr><tr><td>10</td><td>880</td><td>980</td></tr><tr><td>20</td><td>850</td><td>950</td></tr><tr><td>30</td><td>820</td><td>920</td></tr><tr><td>40</td><td>790</td><td>890</td></tr><tr><td>50</td><td>760</td><td>860</td></tr><tr><td>60</td><td>730</td><td>830</td></tr><tr><td>70</td><td>700</td><td>800</td></tr><tr><td>80</td><td>680</td><td>780</td></tr><tr><td>90</td><td>660</td><td>750</td></tr></tbody></table>	Finger Length [mm]	N [N]	NC / NO [N]	0	920	1020	10	880	980	20	850	950	30	820	920	40	790	890	50	760	860	60	730	830	70	700	800	80	680	780	90	660	750
Finger Length [mm]	N [N]	NC / NO [N]																																
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50	760	860																																
60	730	830																																
70	700	800																																
80	680	780																																
90	660	750																																
► Forces and moments	Displays static forces and moments that can also have an effect, besides the gripping force.																																	
	 <p>A 3D perspective view of the gripper showing various force and moment vectors. A force vector <math>F_a</math> is shown acting on the gripper. Moment vectors <math>M_x</math>, <math>M_y</math>, and <math>M_r</math> are shown acting around different axes.</p>																																	
Mr [Nm]	40																																	
Mx [Nm]	60																																	
My [Nm]	45																																	
Fa [N]	1200																																	

### ► VARIANTS

-AL-A	
Steel / aluminum guide	
	

## ► TECHNICAL DATA

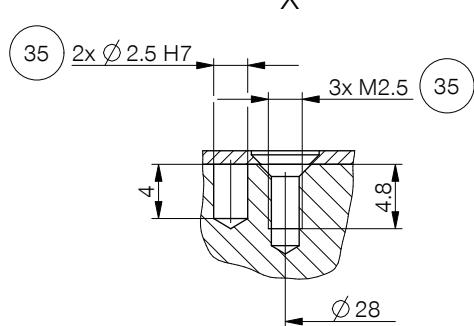
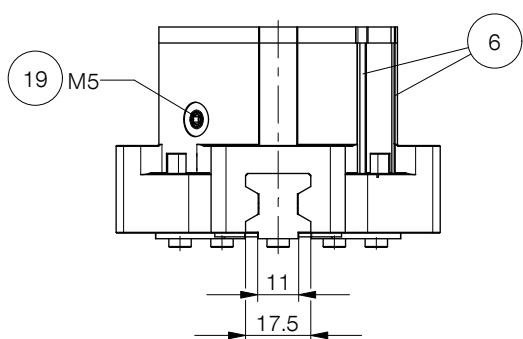
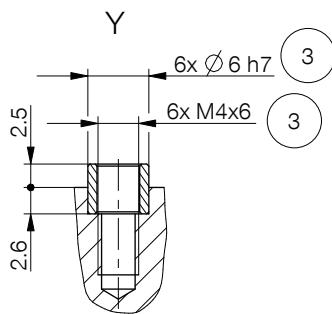
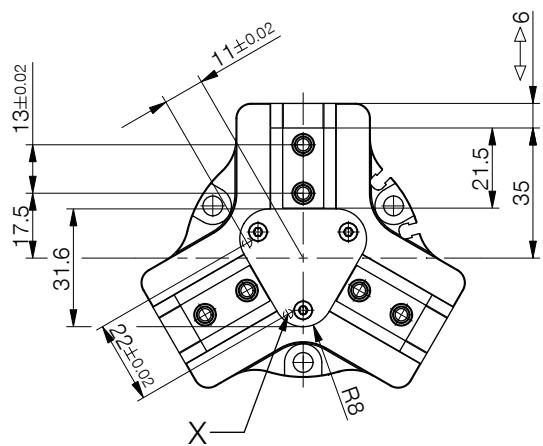
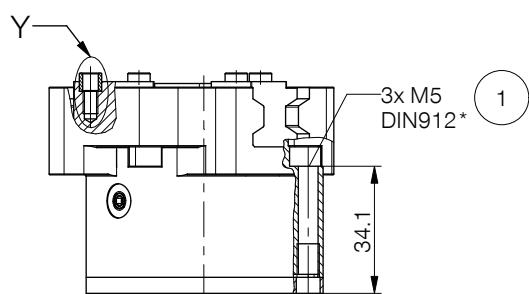
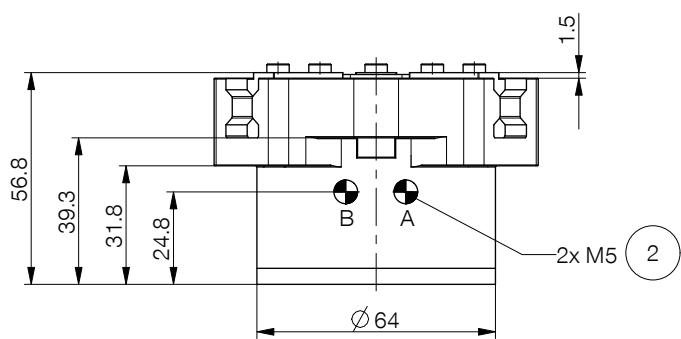
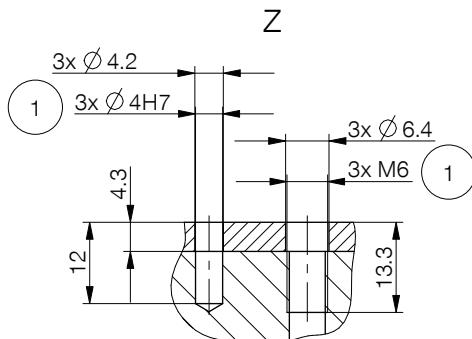
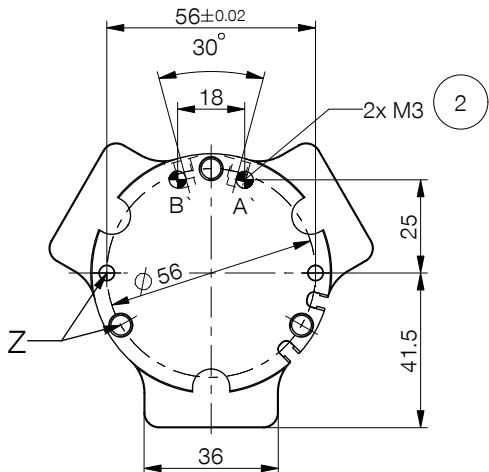
Order no.	► Technical data		
	GPD5006N-AL-A	GPD5006NC-AL-A	GPD5006NO-AL-A
Stroke per jaw [mm]	6	6	6
Gripping force in closing [N]	740	1020	
Gripping force in opening [N]	800		1080
Gripping force secured by spring min. [N]		280	280
Closing time [s]	0.028	0.018	0.038
Opening time [s]	0.028	0.038	0.018
Dead weight of mounted gripper finger max. [kg]	0.35	0.35	0.35
Length of the gripper fingers max. [mm]	90	85	85
Repetition accuracy +/- [mm]	0.01	0.01	0.01
Operating pressure min. [bar]	3	4	4
Operating pressure max. [bar]	8	7	7
Nominal operating pressure [bar]	6	6	6
Operating temperature [°C]	-10 ... +90	-10 ... +90	-10 ... +90
Air volume per cycle [cm <sup>3</sup> ]	22	43	43
Approvals	LABS / REACH / RoHS	LABS / REACH / RoHS	LABS / REACH / RoHS
Protection to IEC 60529	IP40	IP40	IP40
Weight [kg]	0.47	0.57	0.56

# 3-JAW CONCENTRIC GRIPPERS

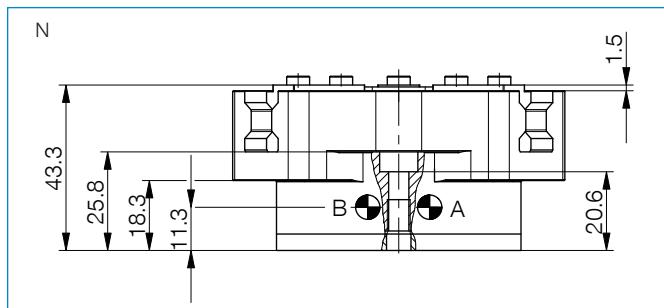
## INSTALLATION SIZE GPD5006AL

### ► TECHNICAL DRAWINGS

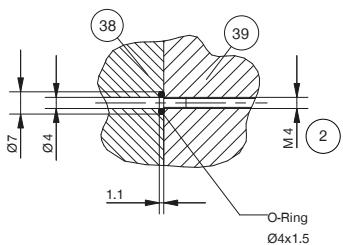
NC / NO



## ► TECHNICAL DRAWINGS



Hoseless air feed-through M4



- ① Gripper attachment
- ② Energy supply
- ③ Fixing for gripper finger
- ⑥ Integrated slot for magnetic field sensor
- ⑦ Mounting block (not for variant AL-A)
- ⑯ Air purge connection option (max. 0.5 bar)
- ⑯ Attachment option for customer-specific fittings
- ⑯ Adapter

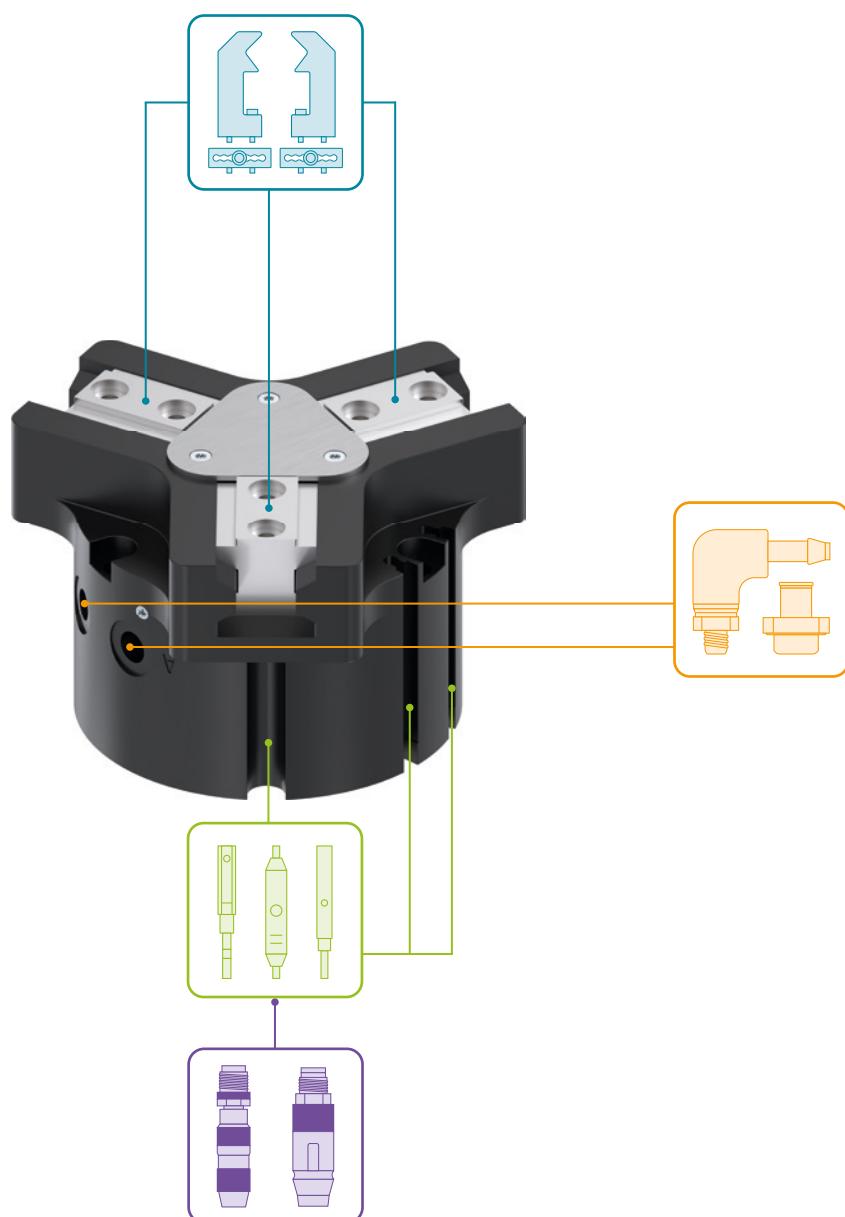
- ⑨ Gripper
- ⑭ Clamping sensor (not for variant AL-A)
- ⑮ Switch cam adjustment (not for variant AL-A)
- Ⓐ Air connection (close)
- Ⓑ Air connection (open)
- Ⓐ Air connection, alternative (close)
- Ⓑ Air connection, alternative (open)



# 3-JAW CONCENTRIC GRIPPERS

## INSTALLATION SIZE GPD5006AL

### ► ACCESORIES



### ► INCLUDED IN DELIVERY



6 [piece]  
Centering Disc

024230

## ► RECOMMENDED ACCESSORIES



### GRIPPING COMPONENTS



**UB5006AL**  
Universal jaw aluminium



**UB5006ST**  
Universal jaw steel



**EB5006AL**  
Aluminum adjustment jaw



**EB5006ST**  
Steel adjustment jaw



**WB5006L**  
Changeable jaw, loose-part-set



**WB5006F**  
Changeable jaw, fix-part



**ADS5006-01**  
Pressure piece N / S



**ADS5006-02**  
Pressure piece NC / NO / SC / SO



### ENERGY SUPPLY



**WVM5**  
Angled Fittings - Quick Connect Style



**DSV1-8**  
Pressure safety valve



**DSV1-8E**  
Pressure safety valve with quick exhaust



### SENSORS



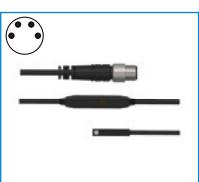
**MFS01-S-KHC-P1-PNP**  
Magnetic field sensor angled, cable 0.3 m - M8 connector



**MFS02-S-KHC-P1-PNP**  
Magnetic field sensor straight, cable 0.3 m - M8 connector



**MFS01-S-KHC-P2-PNP**  
2-point sensor angled, cable 0.3 m - M8 connector



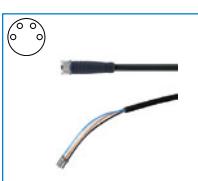
**MFS02-S-KHC-P2-PNP**  
2-point sensor straight, cable 0.3 m - M8 connector



**MFS02-S-KHC-IL**  
Straight position sensor, cable 0.3 m - M8 plug



### CONNECTIONS / OTHER



**KAG500B4**  
Plug-in connector Straight Cable 5m - Socket M8 (female)



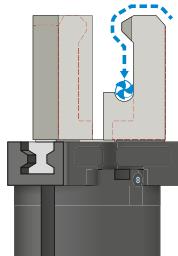
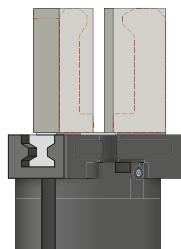
**S8-G-4**  
Plug-in connector customizable Straight - Connector M8

# 3-JAW CONCENTRIC GRIPPERS

## SERIES GPD5000AL FUNCTIONAL DESCRIPTION



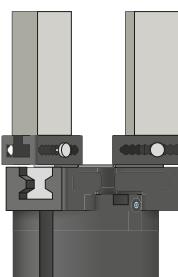
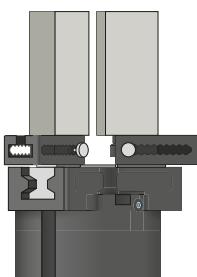
### GRIPPING COMPONENTS



#### Universal jaws – UB5000

Can be used immediately or for individual reprocessing

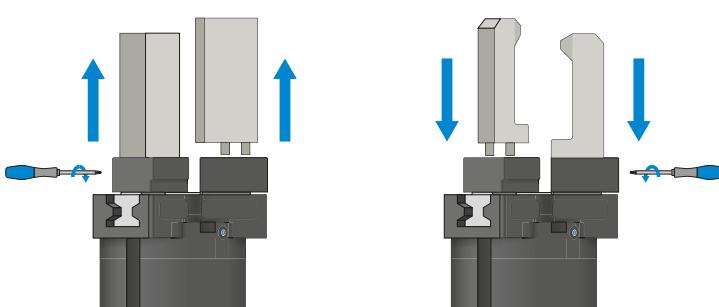
The gripper blanks are available in aluminum (AL) and steel (ST) versions and are installed directly on the gripper using the screws in the scope of delivery. The fits for the centering sleeves are already in place for this purpose. One universal jaw is required for each gripper jaw.



#### Adjustment jaws – EB5000

For tool-free adaptation of the gripper range

By manually activating the locking mechanism, which is pre-tensioned by a spring, the adjustment jaw can be moved within a grid of detent notches that has a number scale. Depending on the forces and torques that apply, the adjustment jaws are available in aluminum (AL) and steel (ST) versions. One adjustment jaw is required for each gripper jaw.



#### Interchangeable jaws – WB5000

Enable fast change of individual gripper fingers

For each gripper jaw, a fixed part and at least one loose part set is needed, depending on the number of gripper fingers to be changed. Manual locking via the Torx wrench included in the scope of delivery of the fixed part can take place from two sides.

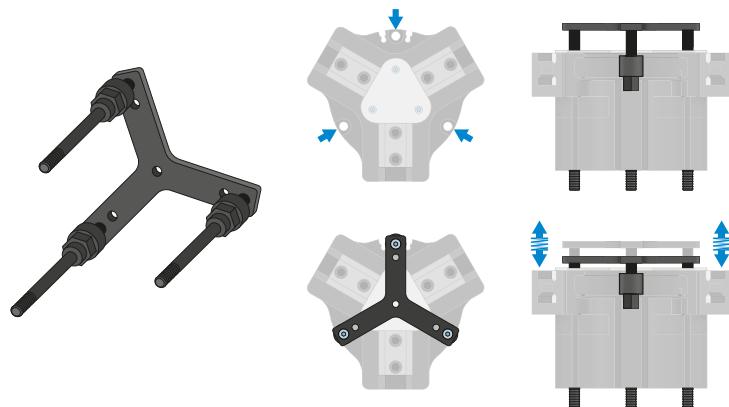


#### THE GRIPPING COMPONENTS CAN BE COMBINED!

The gripper components listed above can be combined with each other and are compatible with the various series of the 5000 gripper family.



## GRIPPING COMPONENTS

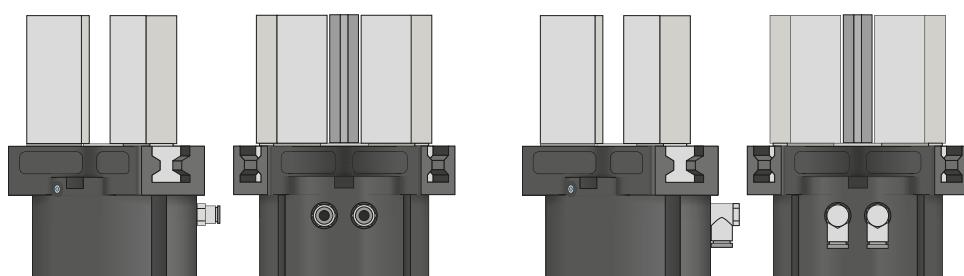


### Pressure piece – ADS5000

When the gripper fingers are open, the pressure piece is used for spring-supported positioning of the workpiece against a limit stop. This greatly reduces the loads on the gripper that arise during joining.



## ENERGY SUPPLY



### Pneumatic threaded connections

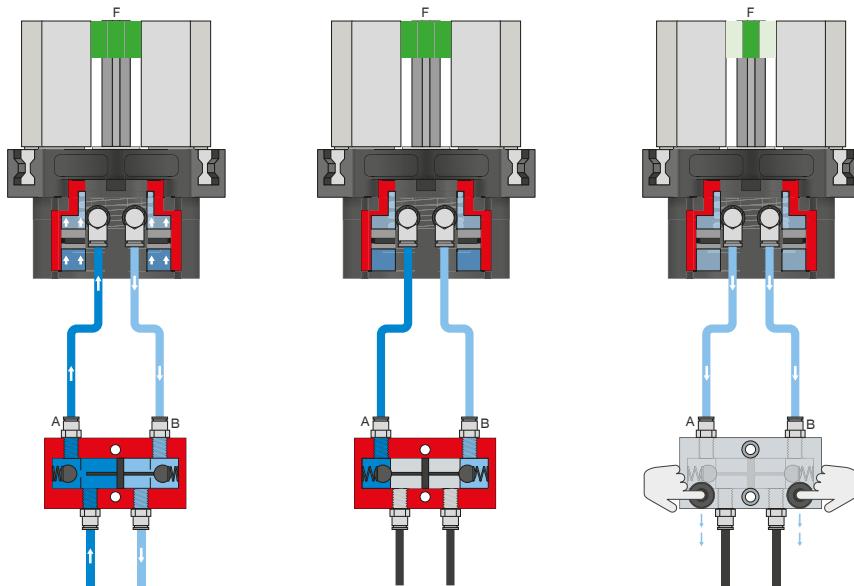
Available in straight and angled design. Can be chosen freely depending on the space conditions or installation situation.

# 3-JAW CONCENTRIC GRIPPERS

## SERIES GPD5000AL FUNCTIONAL DESCRIPTION



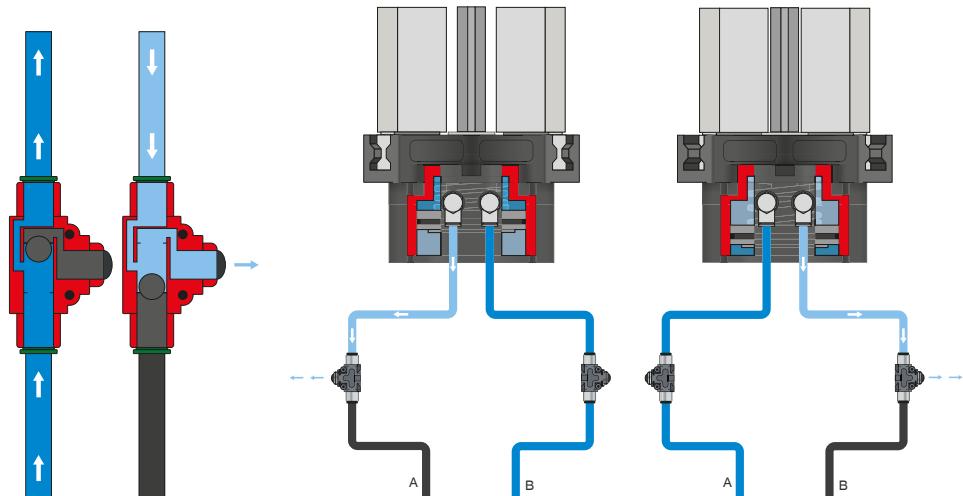
### ENERGY SUPPLY



#### Pressure safety valve – DSV

Ensures safe retention of force and position if the system pressure drops

The integrated double check valve, which can be unlocked, retains the system pressure of the gripper in case of EMERGENCY STOP. To ensure the function, the valve must be installed as close to the gripper's air connection as possible. In variant E, two pushbuttons are installed that allow for controlled bleeding of the gripper.



#### Quick exhaust valve – DEV

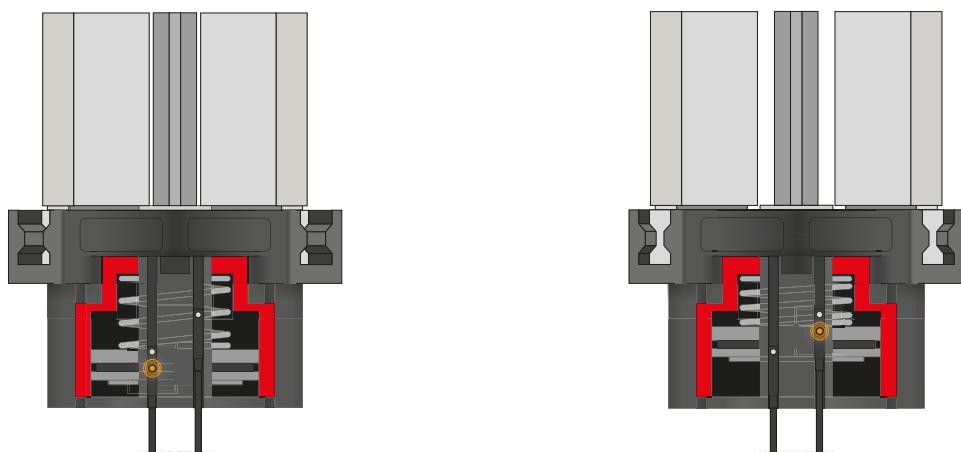
For rapid bleeding of the compressed air and preventing back pressure

The inline valves make a faster cycle time possible and prevent the formation of condensate in grippers with a small cylinder volume. To ensure the function, the valve must be installed as close to the gripper's air connection as possible.

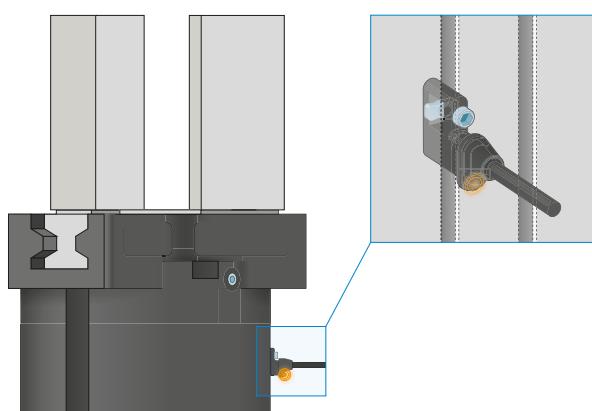


## SENSORS

MFS02



MFS01



### 1-point magnetic field sensors – MFS

#### For non-contact sensing of the piston position

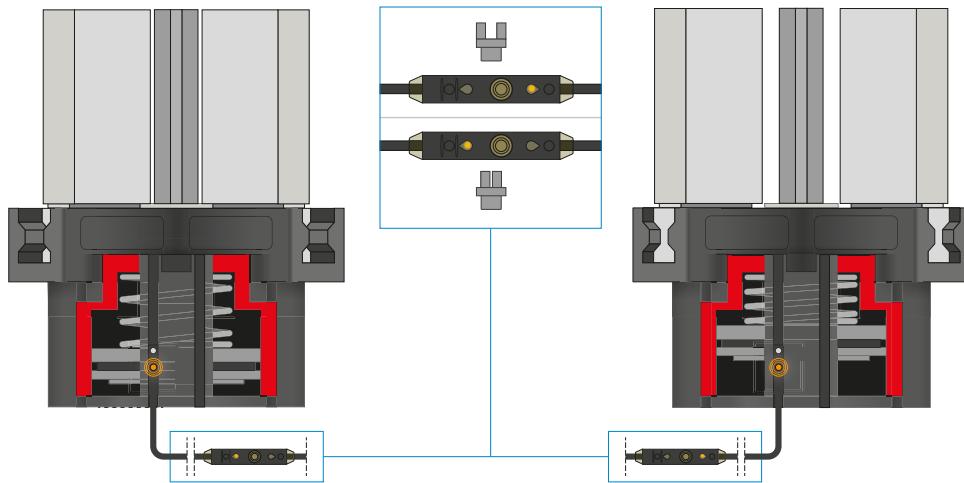
These sensors are installed in the C-groove of the gripper and detect the magnet attached to the piston of the gripper. To ensure use in a wide variety of space conditions, the sensors are available in two variants. While the horizontal MFS02, with straight cable outlet, disappears into the C-groove of the gripper almost completely, the vertical MFS01 is taller, but has a cable outlet that is offset at an angle of 90°. The variants are available in versions with 5 m cables with exposed leads and 0,3 m cable with connector.

# 3-JAW CONCENTRIC GRIPPERS

## SERIES GPD5000AL FUNCTIONAL DESCRIPTION



### SENSORS



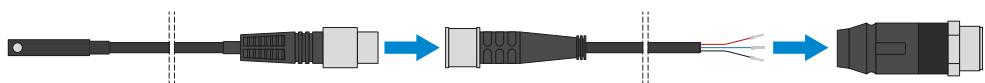
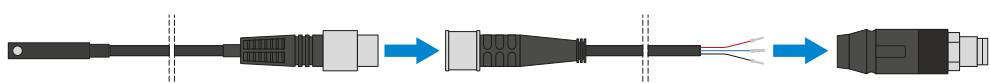
#### 2-point magnetic field sensors – MFS

With two freely programmable switching points

Using the programming unit integrated in the cable, two switch points can be freely defined for this sensor. To do so, the sensor is clamped in the C-groove, the gripper approaches position one and the position is taught in using the teach button. Afterwards, the second position is approached with the gripper and programmed. To ensure use in a wide variety of space conditions, the sensors are available in two variants. While the horizontal MFS02, with straight cable outlet, disappears into the C-groove of the gripper almost completely, the vertical MFS01 is taller, but has a cable outlet that is offset at an angle of 90°. The sensors are available in versions with 5 m cables with exposed leads and 0,3 m cable with connector.



### CONNECTIONS / OTHER



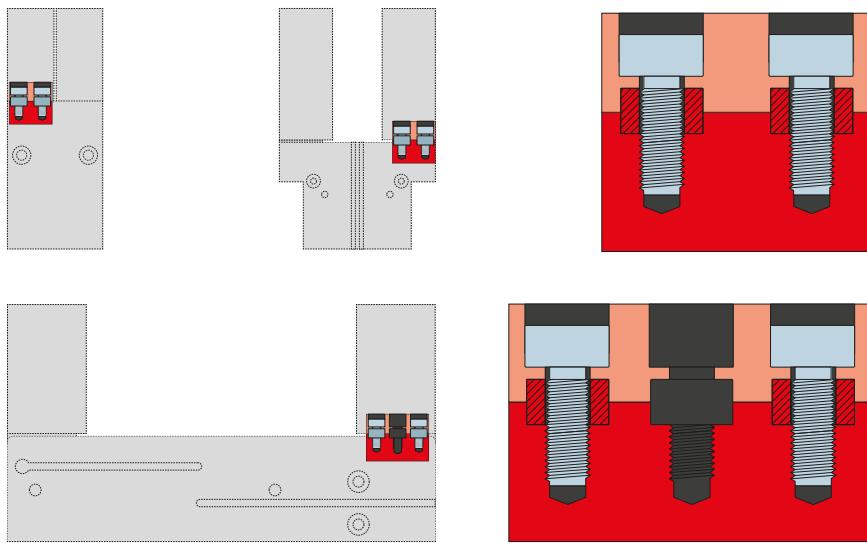
#### Plug-in connectors

For extending and fabricating the connection lines for the sensors

Cables with a length of 5 m with exposed leads are available. Depending on the specific needs, the cables can be shortened or fabricated with connectors in sizes M8 and M12.



## CONNECTIONS / OTHER



### Centering sleeves

#### For defined position measurement of the gripper fingers

The centering sleeves are inserted into the fits of the gripper jaws to define the position of the gripper fingers. The centering sleeves are comparable to a pin connection.