

# 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.

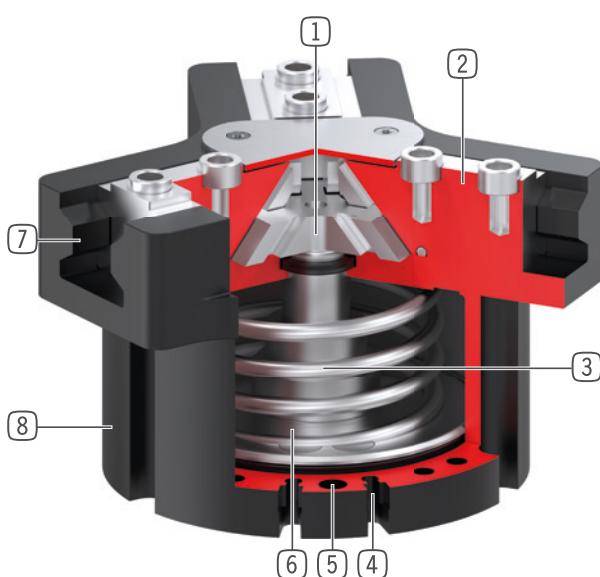
##### ► Extensive accessories

Offers you products that perfectly match your grippers. Highlights include the adjustable jaws for tool-free adjustment of the gripping range, exchangeable jaws for quick jaw changes and a precise sensor system that reliably monitors the entire stroke range via IO-Link or an analog signal.

##### ► The value promise – Consistent and without fine print

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 attachment of long gripper fingers

##### ⑧ Robust, lightweight housing

- Hard-coated aluminum alloy



## ► SERIES CHARACTERISTICS

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

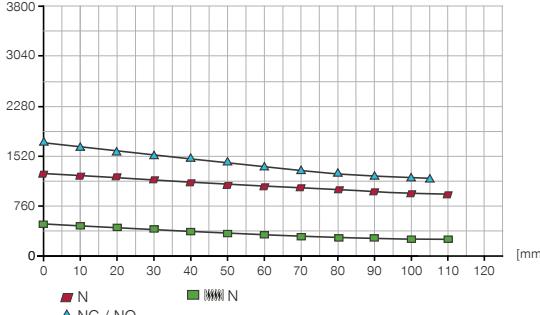
## ► TECHNICAL DATA

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 GPD5008AL

### ► PRODUCT SPECIFICATIONS

<b>-AL-A</b>																																								
<b>Steel / aluminum guide</b>																																								
<b>► Gripping force diagram</b>																																								
<p>[N] Shows the arithmetic total of the individual forces that occur on the gripper fingers, depending on the gripper finger length</p>  <table border="1"><caption>Data points estimated from Gripping force diagram</caption><thead><tr><th>Finger Length [mm]</th><th>N [N]</th><th>NC / NO [N]</th></tr></thead><tbody><tr><td>0</td><td>1400</td><td>1600</td></tr><tr><td>10</td><td>1350</td><td>1550</td></tr><tr><td>20</td><td>1300</td><td>1500</td></tr><tr><td>30</td><td>1250</td><td>1450</td></tr><tr><td>40</td><td>1200</td><td>1400</td></tr><tr><td>50</td><td>1150</td><td>1350</td></tr><tr><td>60</td><td>1100</td><td>1300</td></tr><tr><td>70</td><td>1050</td><td>1250</td></tr><tr><td>80</td><td>1000</td><td>1200</td></tr><tr><td>90</td><td>950</td><td>1150</td></tr><tr><td>100</td><td>900</td><td>1100</td></tr><tr><td>110</td><td>850</td><td>1050</td></tr></tbody></table>	Finger Length [mm]	N [N]	NC / NO [N]	0	1400	1600	10	1350	1550	20	1300	1500	30	1250	1450	40	1200	1400	50	1150	1350	60	1100	1300	70	1050	1250	80	1000	1200	90	950	1150	100	900	1100	110	850	1050	
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<b>► Forces and moments</b>																																								
<p>Displays static forces and moments that can also have an effect, besides the gripping force.</p>  <p>Diagram illustrating the static forces and moments acting on the gripper. The gripper is shown from a side perspective. A force vector <math>F_a</math> is applied at the center of the gripper. Three moment vectors are shown: <math>M_x</math> acting around the horizontal axis, <math>M_y</math> acting around the vertical axis, and <math>M_r</math> acting around the depth axis.</p>																																								
Mr [Nm]	55																																							
Mx [Nm]	95																																							
My [Nm]	60																																							
Fa [N]	1800																																							

### ► VARIANTS

<b>-AL-A</b>	
<b>Steel / aluminum guide</b>	
	

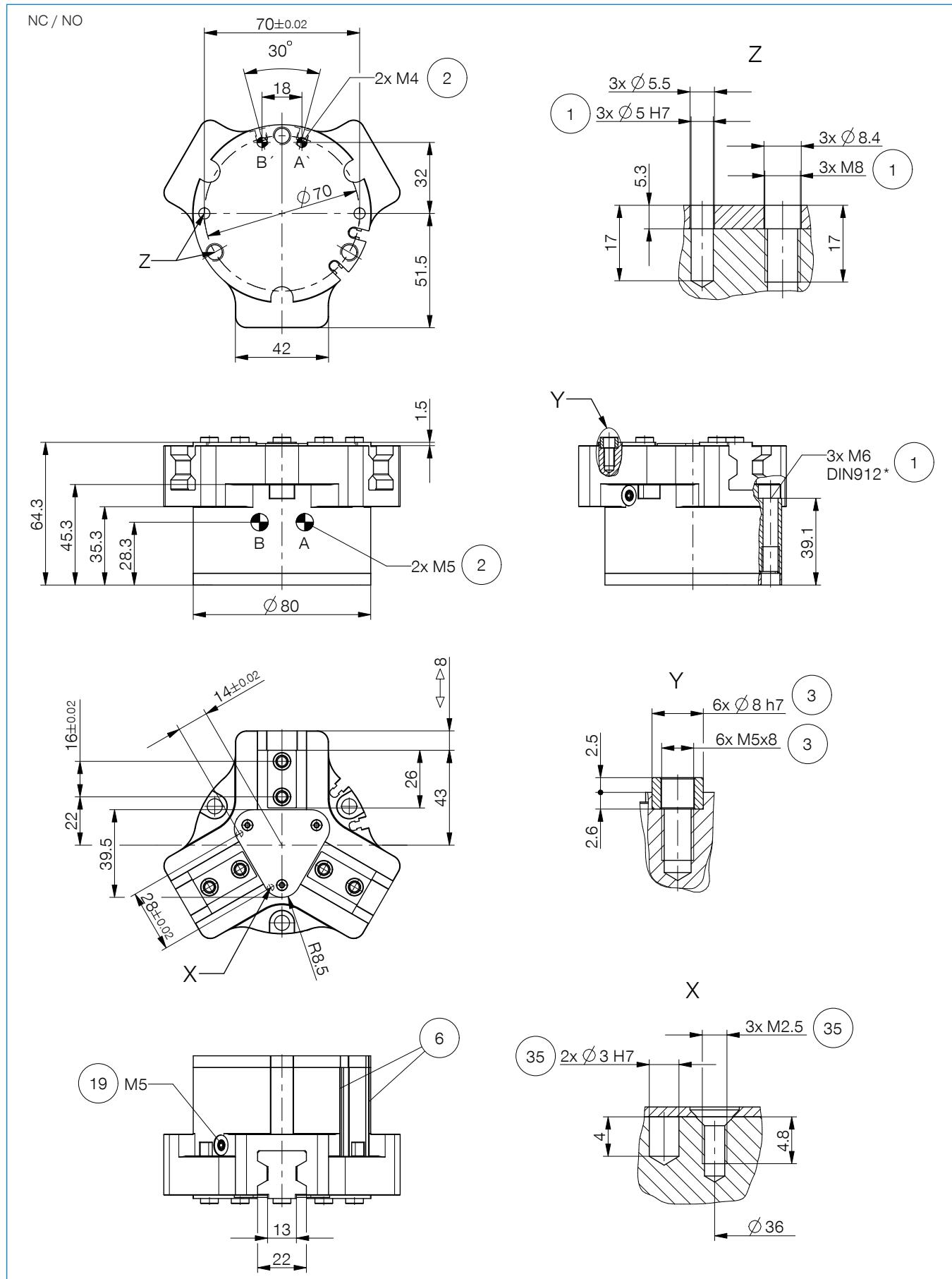
## ► TECHNICAL DATA

Order no.	► Technical data		
	GPD5008N-AL-A	GPD5008NC-AL-A	GPD5008NO-AL-A
Stroke per jaw [mm]	8	8	8
Gripping force in closing [N]	1260	1690	
Gripping force in opening [N]	1340		1770
Gripping force secured by spring min. [N]		430	430
Closing time [s]	0.048	0.035	0.055
Opening time [s]	0.048	0.055	0.035
Dead weight of mounted gripper finger max. [kg]	0.6	0.6	0.6
Length of the gripper fingers max. [mm]	110	105	105
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> ]	51	90	90
Certifications	LABS / REACH / RoHS	LABS / REACH / RoHS	LABS / REACH / RoHS
Protection to IEC 60529	IP40	IP40	IP40
Weight [kg]	0.88	1.1	1.1

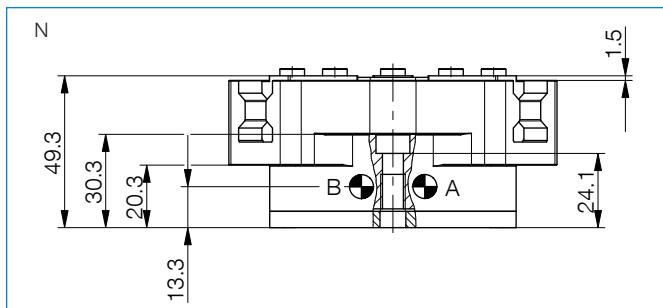
# 3-JAW CONCENTRIC GRIPPERS

## INSTALLATION SIZE GPD5008AL

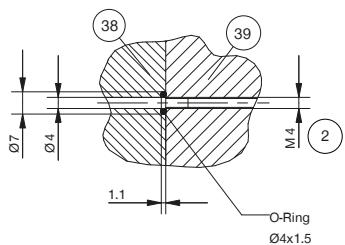
## ► TECHNICAL DRAWINGS



## ► 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

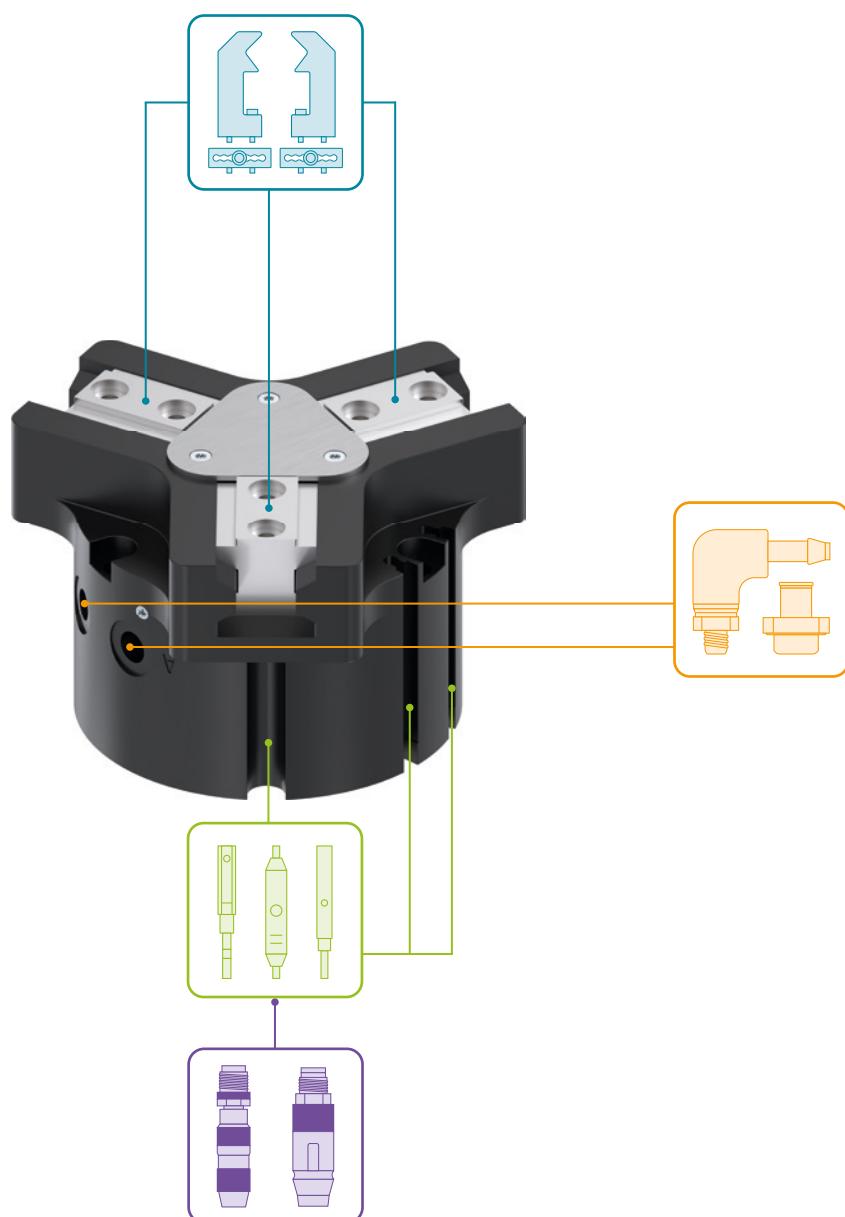
- ⑨ Gripper
- ⑭ Clamping sensor (not for variant AL-A)
- ⑮ Switch cam adjustment (not for variant AL-A)
- Ⓐ Air connection (close)
- Ⓑ Air connection (open)
- Ⓐ Air connection, alternative (close)
- Ⓑ Air connection, alternative (open)



# 3-JAW CONCENTRIC GRIPPERS

## INSTALLATION SIZE GPD5008AL

### ► ACCESORIES



### ► INCLUDED IN DELIVERY



6 [piece]  
Centering Disc

024231

## ► RECOMMENDED ACCESSORIES



### GRIPPING COMPONENTS



**UB5008AL**  
Universal jaw aluminium



**UB5008ST**  
Universal jaw steel



**EB5008AL**  
Aluminum adjustment jaw



**EB5008ST**  
Steel adjustment jaw



**WB5008L**  
Changeable jaw, loose-part-set



**WB5008F**  
Changeable jaw, fix-part



**ADS5008-01**  
Pressure piece N / S



**ADS5008-02**  
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)



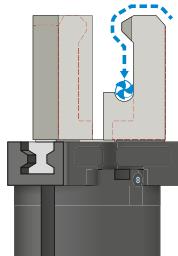
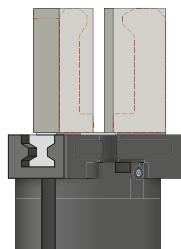
**S8-G-4**  
Plug-in connector customizable Straight - Connector M8

# 3-JAW CONCENTRIC GRIPPERS

## SERIES GPD5000AL FUNCTIONAL DESCRIPTION



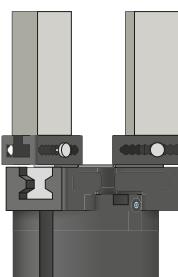
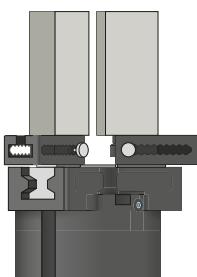
### GRIPPING COMPONENTS



#### Universal jaws – UB5000

Can be used immediately or for individual reprocessing

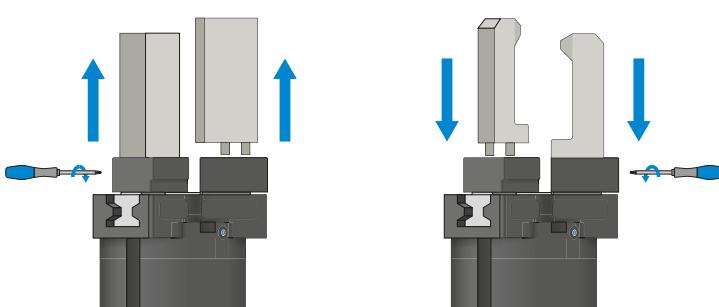
The gripper blanks are available in aluminum (AL) and steel (ST) versions and are installed directly on the gripper using the screws in the scope of delivery. The fits for the centering sleeves are already in place for this purpose. One universal jaw is required for each gripper jaw.



#### 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.

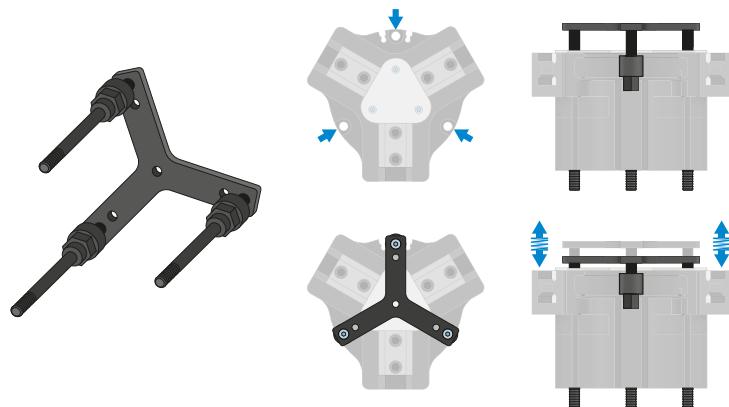


#### THE GRIPPING COMPONENTS CAN BE COMBINED!

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

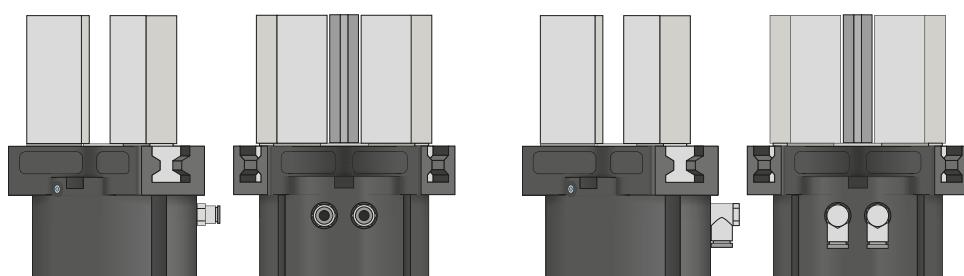


### Pressure piece – ADS5000

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

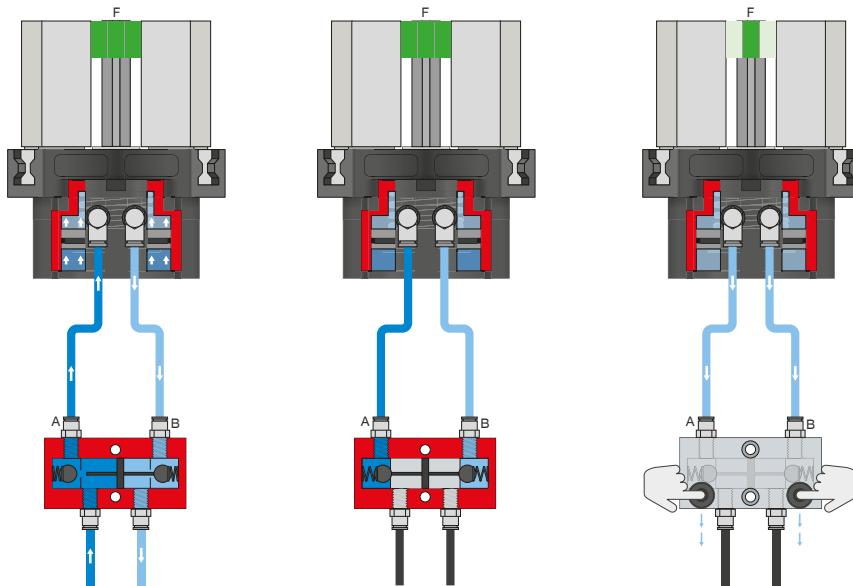
Available in straight and angled design. Can be chosen freely depending on the space conditions or installation situation.

# 3-JAW CONCENTRIC GRIPPERS

## SERIES GPD5000AL FUNCTIONAL DESCRIPTION



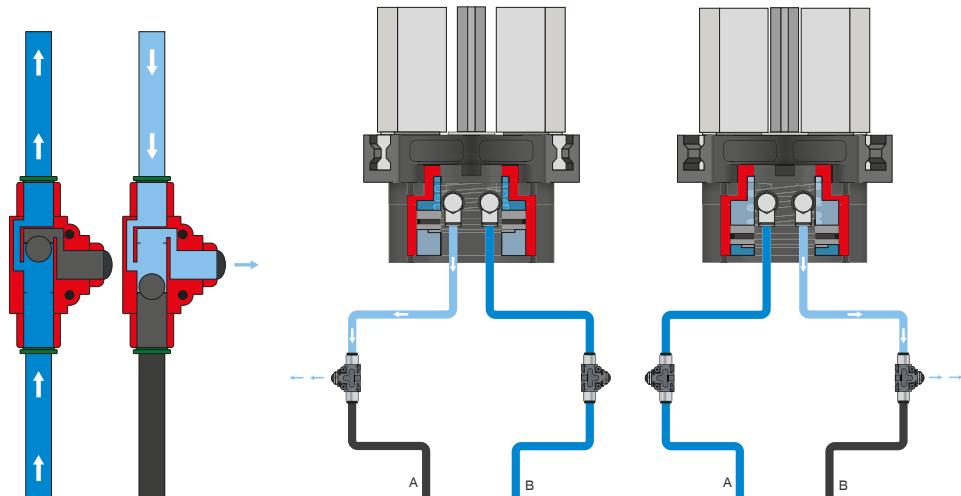
### ENERGY SUPPLY



#### 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

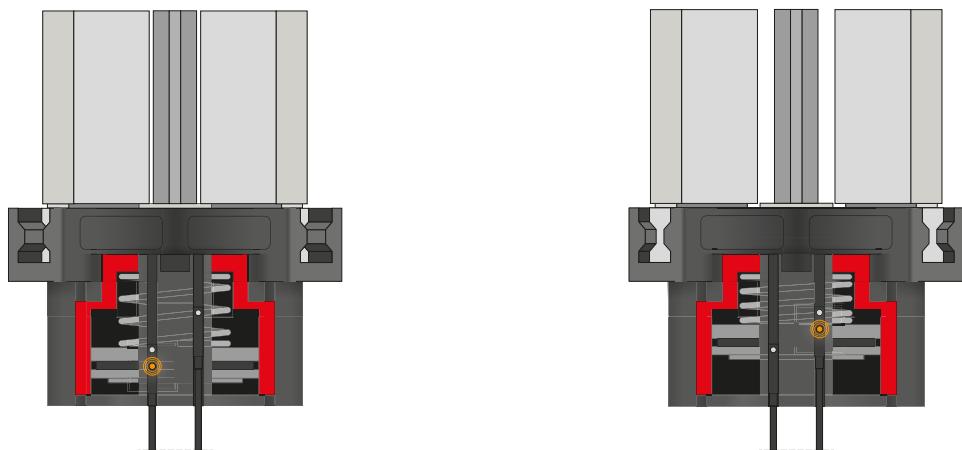
For rapid bleeding of the compressed air and preventing back pressure

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.

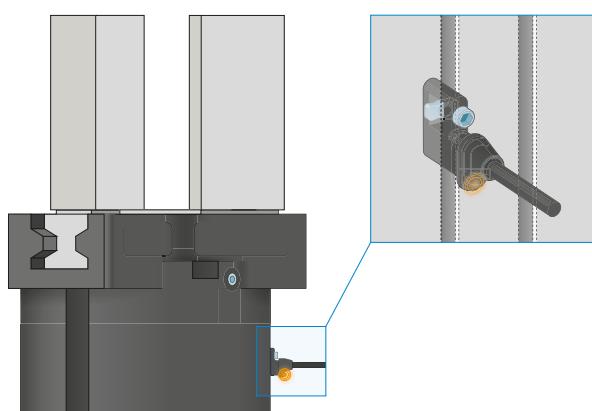


## SENSORS

MFS02



MFS01



### 1-point magnetic field sensors – MFS

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

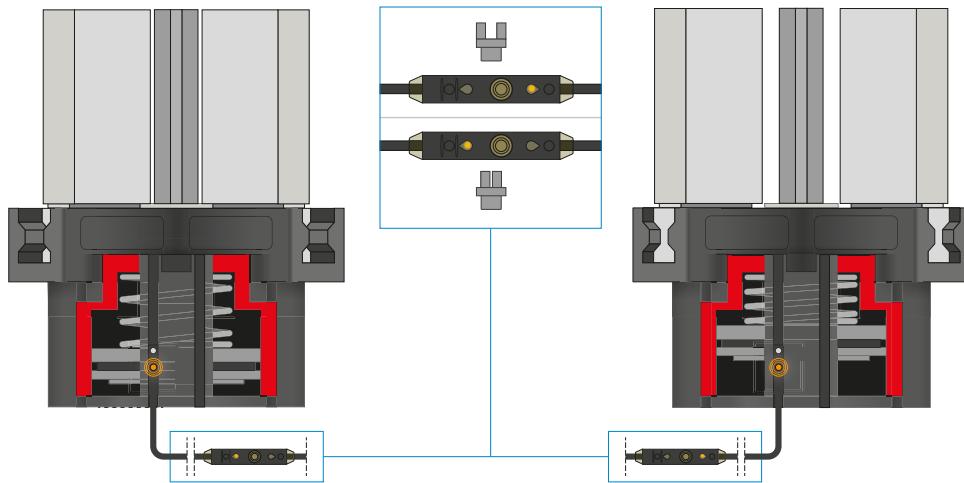
These sensors are installed in the C-groove of the gripper and detect the magnet attached to the piston of the gripper. To ensure use in a wide variety of space conditions, the sensors are available in two variants. While the horizontal MFS02, with straight cable outlet, disappears into the C-groove 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



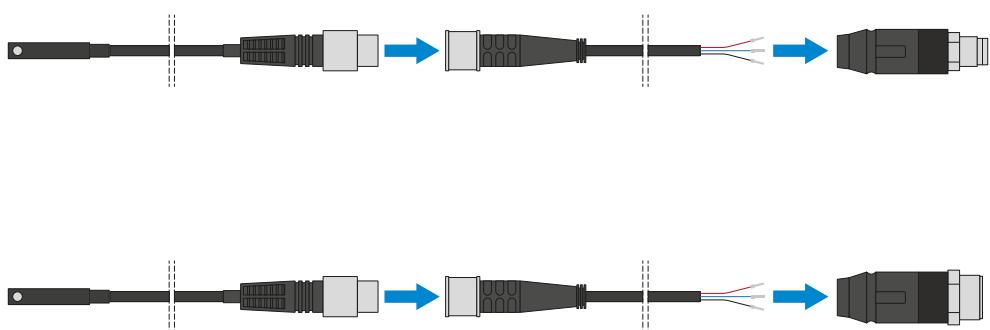
#### 2-point magnetic field sensors – MFS

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



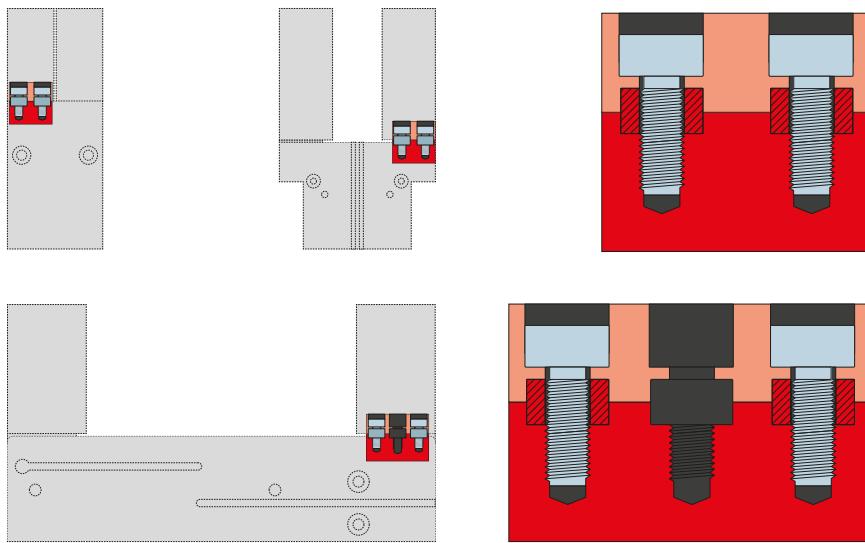
#### Plug-in connectors

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.