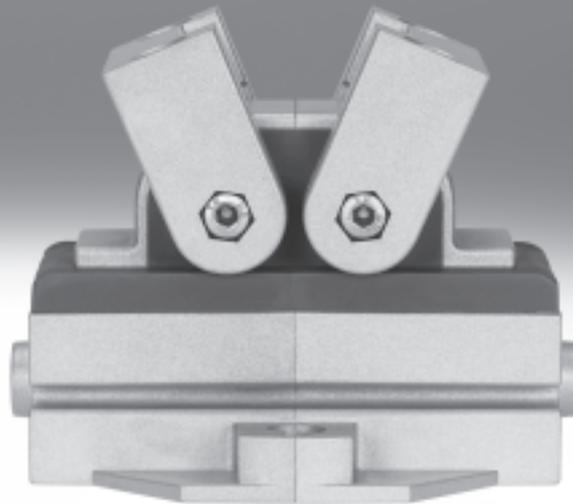


Angle grippers HGWC

FESTO



Angle grippers HGWC

Key features

At a glance

General information

The compact and cost-optimised angle gripper consists of a two-part mirror-symmetrical housing made of die-cast zinc. The force generated by the linear motion of the piston is translated into the gripper jaw movement via a pneumatic piston, which acts directly on the gripper jaws installed in the

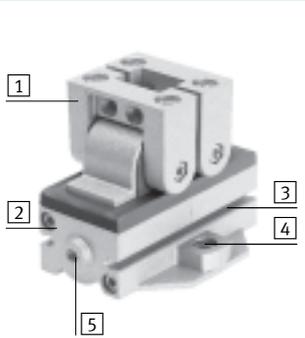
housing by means of a moment compensator in accordance with the rack and pinion principle. To ensure a low-backlash plain-bearing guide for the gripper jaws, appropriate guide elements are fitted in the housing and pretensioned by means of socket head screws.

- Double-acting gripper
- Internal fixed flow control, does away with the need for external flow control in 90% of applications
- High force with minimal volume
- Suitable for external and internal gripping

- Opening angle of 30°, 80°
- Wide range of options for mounting on drives
- Repetition accuracy of 0.05 mm
- Slot for proximity sensor SME/SMT-10

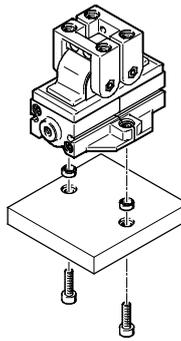
 Note
Sizing software for gripper selection
➔ www.festo.com

Details

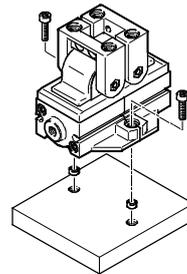


- 1 Gripper jaw
- 2 Housing based on half-shell principle
- 3 Slot for proximity sensor, for sensing the piston position
- 4 Mounting option
- 5 Supply port

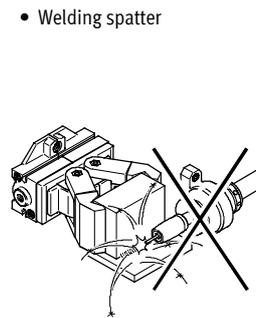
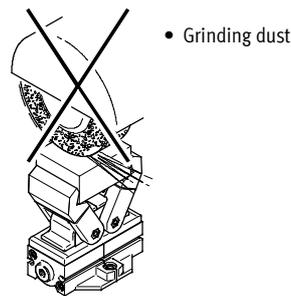
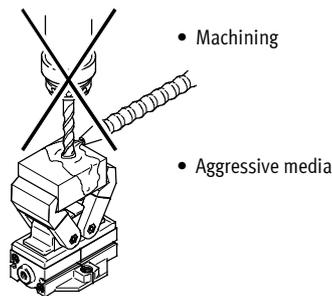
Mounting option from underneath



from above



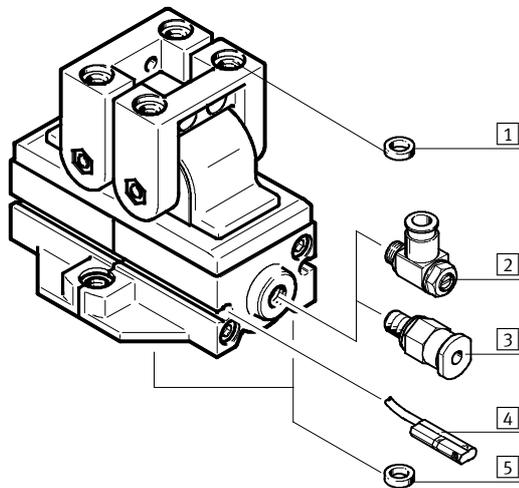
 Note
Angle grippers are not designed for the following sample applications:



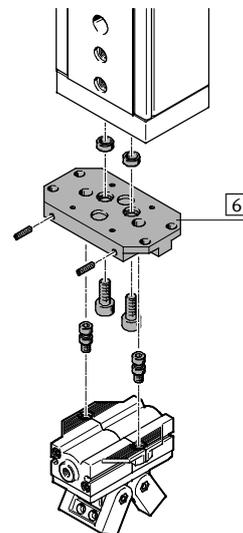
Angle grippers HGWC

Peripherals overview and type codes

Peripherals overview



System product for handling and assembly technology



Accessories		
Type	Brief description	→ Page/Internet
1 Centring sleeve ZBH	<ul style="list-style-type: none"> For centring when attaching gripper fingers 4 included in the scope of delivery of the gripper 	12
2 One-way flow control valve GRLA	For regulating speed	grla
3 Push-in fitting QS	For connecting compressed air tubing with standard O.D.	quick star
4 Proximity sensor SME/SMT-10	For sensing the piston position	12
5 Centring sleeve ZBH	<ul style="list-style-type: none"> For centring when attaching to a drive or plate 2 included in the scope of delivery of the gripper 	12
6 -	Drive/gripper connections	adapter kit

Type codes

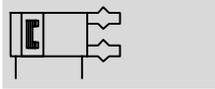
		HGWC	-	12	-	40	-	A
Type								
HGWC	Angle gripper							
Size								
Opening angle per gripper jaw								
15	15°							
40	40°							
Position sensing								
A	Via proximity sensor							

Angle grippers HGWC

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Technical data

Function
Double-acting
HGWC-...-A



-  - Size
12, 16, 20 mm
-  - Opening angle
30° and 80°



General technical data				
Size	12	16	20	
Design	Rack and pinion Force-guided motion sequence			
Mode of operation	Double-acting			
Gripper function	Angle			
Number of gripper jaws	2			
Max. opening angle	[°]	30, 80		
Pneumatic connection	M5			
Repetition accuracy ¹⁾	[mm]	≤ 0.05		
Max. interchangeability	[mm]	≤ 0.2		
Max. gripper jaw backlash ²⁾	[mm]	≤ 0.1		
Max. gripper jaw angular backlash ³⁾	[°]	≤ 0.5		
Max. operating frequency	[Hz]	≤ 4		
Rotational symmetry	[mm]	≤ ∅ 0.2		
Position sensing	Via proximity sensor			
Type of mounting	Via female thread and centring sleeve			
Mounting position	Any			
Product weight	[g]	200	350	700

1) End-position drift under constant operating conditions with 100 consecutive strokes in the direction of movement of the gripper jaws

2) Perpendicular to the direction of motion of the gripper jaws

3) Pretensioned, backlash-free ball bearing guide

Operating and environmental conditions	
Operating pressure	[bar] 2 ... 8
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature ¹⁾	[°C] +5 ... +60
Corrosion resistance class CRC ²⁾	2

1) Note operating range of proximity sensors

2) Corrosion resistance class 2 according to Festo standard 940 070

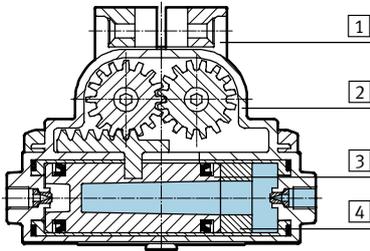
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

Angle grippers HGWC

Technical data

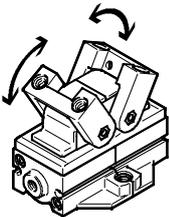
Materials

Sectional view



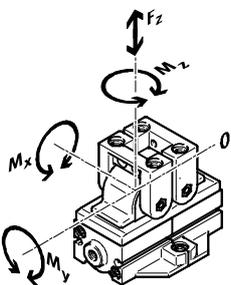
Angle gripper		
1	Gripper jaw	Die-cast zinc, painted
2	Housing	Die-cast zinc, painted
3	Piston	Polyamide
4	Distance sleeve	Polyurethane
-	Seals	Polyurethane, nitrile rubber
-	Note on materials	Free of copper, PTFE and silicone
		RoHS-compliant

Total gripping torque at 6 bar



Size		12	16	20
Opening	[Ncm]	22	72	144
Closing	[Ncm]	22	72	144

Static characteristic load values at the gripper jaws



The indicated permissible forces and torques apply to a single gripper jaw. The indicated values include the lever arm, additional applied loads caused by the workpiece or external gripper

fingers, as well as forces which occur during movement.

The zero co-ordinate line (gripper jaw guide) must be taken into consideration for the calculation of torques.

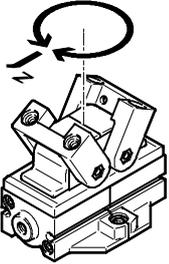
Size		12	16	20
Max. permissible force F_z	[N]	40	60	80
Max. permissible torque M_x	[Nm]	2.5	4	8
Max. permissible torque M_y	[Nm]	0.6	1	1.9
Max. permissible torque M_z	[Nm]	2	3.2	6.7

Angle grippers HGWC

Technical data

FESTO

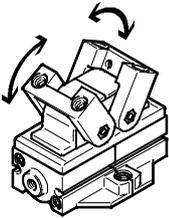
Mass moment of inertia



Mass moment of inertia [$\text{kgm}^2 \times 10^{-4}$] of the angle gripper in relation to the central axis with no load.

Size		12	16	20
HGWC-...-A	[$\text{kgm}^2 \times 10^{-4}$]	0.52	1.35	4.31

Opening and closing times [ms] at 6 bar



The indicated opening and closing times [ms] have been measured at room temperature and an operating pressure of 6 bar with vertically mounted gripper and without additional gripper fingers.

The grippers must be throttled for greater applied loads. Opening and closing times must then be adjusted accordingly.

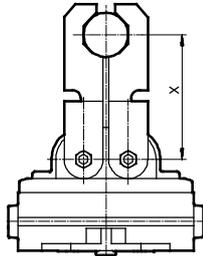
Size		12-15	12-40	16-15	16-40	20-15	20-40
Without external gripper fingers							
HGWC-...-A	Opening	50	70	50	85	50	90
	Closing	35	50	35	70	35	75

Angle grippers HGWC

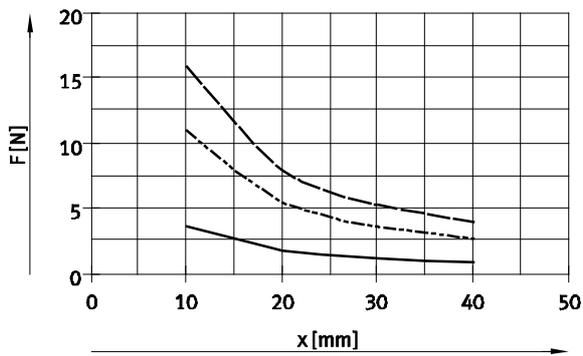
Technical data

Gripping force F_{Grip} per gripper jaw as a function of operating pressure and lever arm x

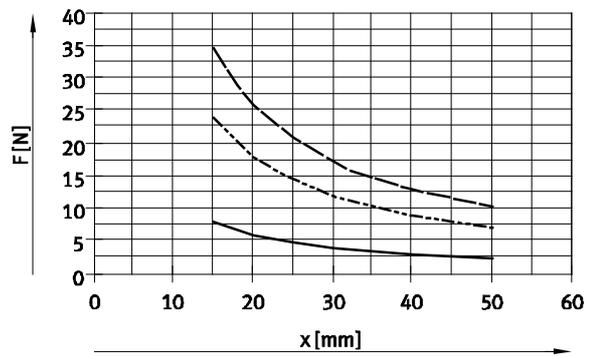
Gripping forces as a function of the operating pressure and the lever arm can be determined for the size using the following graph.



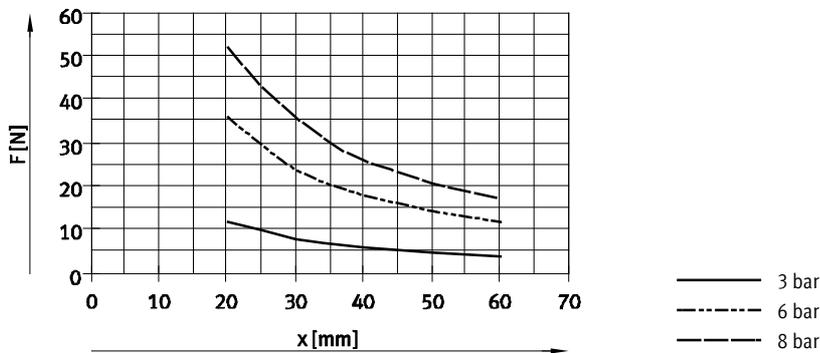
HGWC-12-A



HGWC-16-A



HGWC-20-A



- 3 bar
- - - 6 bar
- · - 8 bar

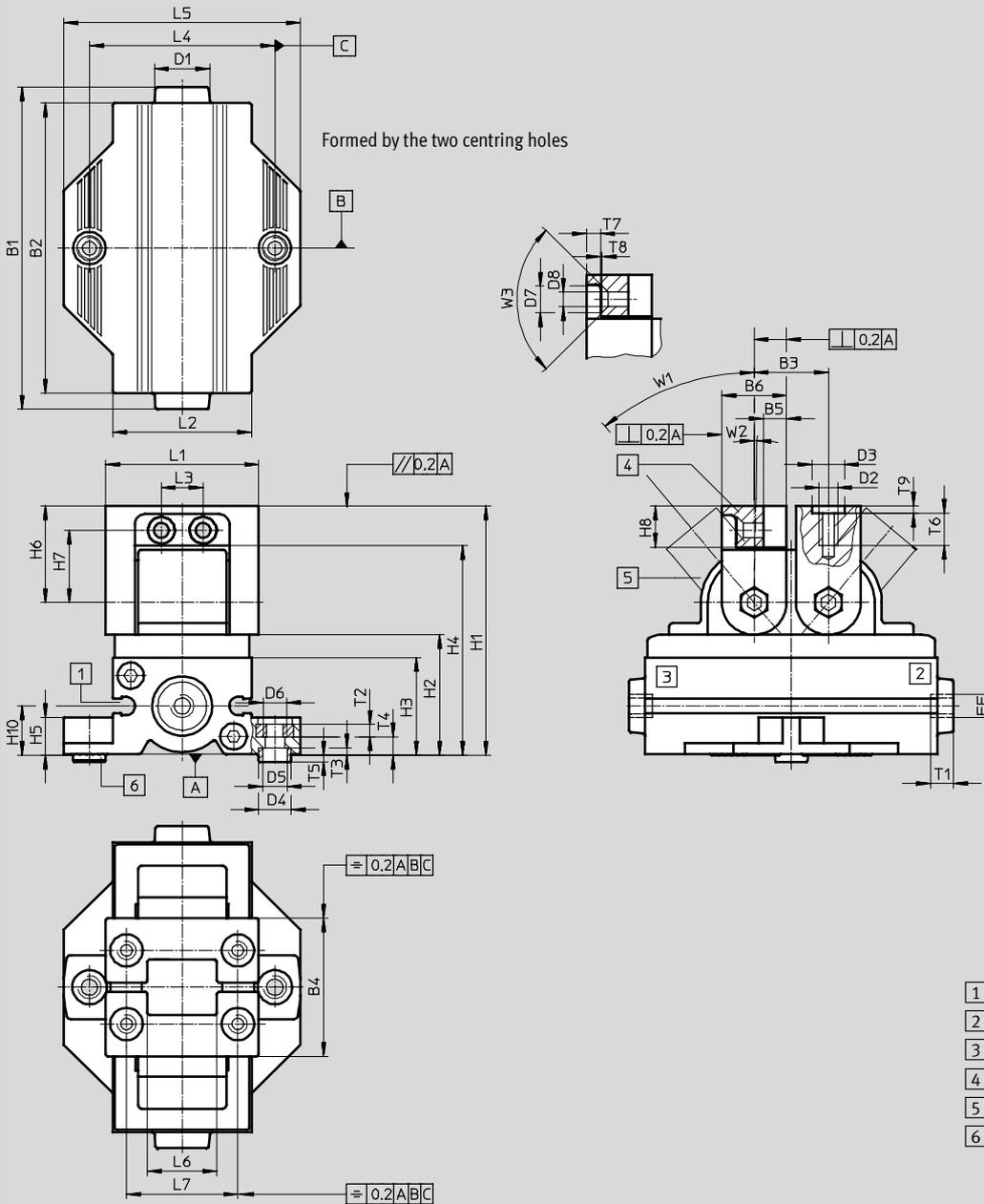
Angle grippers HGWC

Technical data

FESTO

Dimensions

Download CAD data → www.festo.com



Angle grippers HGWC

Technical data

FESTO

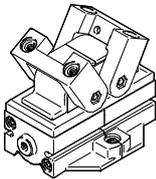
Type	B1	B2	B3 ±0.05	B4 +0.25 -0.05	B5 +0.5	B6 +0.1	D1	D2	D3 +0.05 -0.02	D4 F10/h7	D5
HGWC-12	57	52	12	23	4	11	12	M3	5	7	5.3
HGWC-16	70	63	16	30	5.5	14	12	M4	7	7	5.3
HGWC-20	86	79	20	38	6	18	12	M5	9	9	6.4

Type	D6	D7	D8	EE	H1 ±0.5	H2	H3	H4	H5	H6 ±0.2	H7
HGWC-12	M4	4.8	2.6	M5	43.2	20.7	18.2	35.2	6.9	17	12.5
HGWC-16	M5	5.8	3.2	M5	54.2	26.2	21.2	44.7	8.2	21	15.7
HGWC-20	M6	8.1	4.4	M5	68.2	32.7	27	55.7	10.2	26.5	19.5

Type	H8	H10	L1 ±0.2	L2	L3 ±0.1	L4 ¹⁾	L5	L6 +0.25 -0.05	L7 ¹⁾	T1 min.
HGWC-12	7.5	9.2	27.5	25.5	6	33	42	12	20	4.5
HGWC-16	9	10.7	33	30	9	40	51	15	24	5
HGWC-20	12	13.7	45	38	12	50	65	21	33	5

Type	T2	T3 ±0.1	T4 +0.4 -0.3	T5 +0.1 -0.3	T6 min.	T7 +0.2	T8	T9 +0.1	W1 ±2	W2 ±3	W3
HGWC-12-15	2.2	1.7	3.1	1.3	6	1.7	0.5	1.3	15°	1°	90°
40°											
HGWC-16-15	2.7	1.8	3.8	1.2	7	3	0.3	1.6	15°	1°	90°
HGWC-16-40									40°		
HGWC-20-15	3.2	2.3	5.2	1.7	9	3.5	0.5	2.1	15°	1°	90°
HGWC-20-40									40°		

1) Tolerance for centring hole ±0.03
Tolerance for thread ±0.2

Ordering data			Size	Opening angle [°]	Double-acting Part No. Type
	12	30	565135	HGWC-12-15-A	
		80	565141	HGWC-12-40-A	
	16	30	565137	HGWC-16-15-A	
		80	565143	HGWC-16-40-A	
	20	30	565139	HGWC-20-15-A	
		80	565145	HGWC-20-40-A	

Angle grippers HGWC

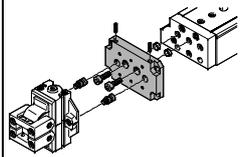
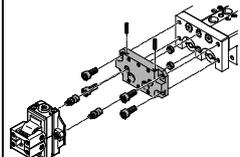
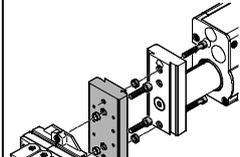
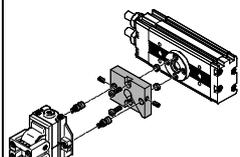
Accessories

FESTO

Adapter kit HAPG

Material:
Wrought aluminium alloy
Free of copper and PTFE
RoHS-compliant

 Note
The kit includes the individual mounting interface as well as the necessary mounting material.

Permissible drive/gripper combinations with adapter kit							Download CAD data → www.festo.com	
Combination	Drive	Gripper	Mounting option		Adapter kit			
			Size	Size	CRC ¹⁾	Part No.	Type	
								
DGSL/HGWC	DGSL	HGWC			DHAA, HAPG			
	12, 16	12	■	■	2	529018	HAPG-58	
	20, 25	16	■	■		191267	HAPG-49	
	20, 25	20	■	■		191269	HAPG-51	
SLT/HGWC	SLT	HGWC			DHAA, HAPG			
	10	12	-	■	2	542670	HAPG-100	
	16	12	-	■		529018	HAPG-58	
	16	16	-	■		542666	HAPG-101	
	20	16	-	■		191267	HAPG-49	
	20	20	-	■		542667	HAPG-102	
	25	20	-	■		191269	HAPG-51	
HMP/HGWC	HMP	HGWC			DHAA, HAPG			
	16	16	■	-	2	191263	HAPG-45	
	20, 25	20	■	-		191264	HAPG-46	
DRQD/HGWC	DRQD-...	HGWC			DHAA, HAPG			
	12, 16	12	■	■	2	542671	HAPG-SD2-41	
	16, 20	16	■	■		542668	HAPG-SD2-42	
	20	20	■	■		542669	HAPG-SD2-43	
	25	20	■	■		542758	HAPG-SD2-44	

1) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Angle grippers HGWC

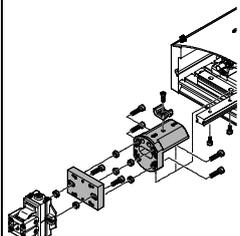
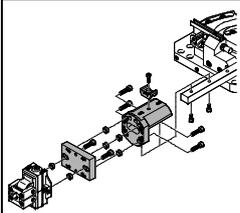
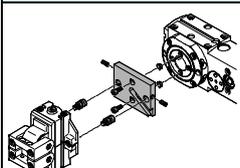
Accessories



Adapter kit HAPG, HMSV

Material:
Wrought aluminium alloy
Free of copper and PTFE
RoHS-compliant

 Note
The kit includes the individual mounting interface as well as the necessary mounting material.

Permissible drive/gripper combinations with adapter kit						Download CAD data → www.festo.com	
Combination	Drive	Gripper	Mounting option		CRC ¹⁾	Part No.	Type
							
HSP/HGWC	HSP	HGWC			DHAA, HAPG		
	16	16	-	■	2	191901	HAPG-55
	25	20	-	■		540882	HAPG-71-B
						191901	HAPG-55
						540883	HAPG-72-B
HSW/HGWC	HSW	HGWC			DHAA, HAPG		
	12	16	-	■	2	191901	HAPG-55
	16	16	-	■		540882	HAPG-71-B
						191901	HAPG-55
						540882	HAPG-71-B
ERMB/HGWC	ERMB	HGWC			DHAA, HAPG		
	20	16	■	■	2	542668	HAPG-SD2-42
	20	20	■	■		542669	HAPG-SD2-43
	25	20	■	■		542758	HAPG-SD2-44

1) Corrosion resistance class 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Angle grippers HGWC

Accessories

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Ordering data – Centring sleeves			Technical data → Internet: zbh	
	For size [mm]	Part No.	Type	PU ¹⁾
	For attachment to a drive or on a plate			
	12, 16	186717	ZBH-7	10
	20	150927	ZBH-9	10
	For attaching gripper fingers			
	12	189652	ZBH-5	10
	16	186717	ZBH-7	10
	20	150927	ZBH-9	10

1) Packaging unit

Ordering data – Proximity sensors for C-slot						
	Type of mounting	Electrical connection, connection direction	Switching output	Cable length [m]	Part No.	Type
	N/O contact, magneto-resistive					Technical data → Internet: smt
	Insertable in slot from above	Cable, 3-wire, in-line	PNP	2.5	551373	SMT-10M-PS-24V-E-2,5-L-OE
		Plug M8x1, 3-pin, in-line		0.3	551375	SMT-10M-PS-24V-E-0,3-L-M8D
	N/O contact, magnetic reed					Technical data → Internet: sme
Insertable in slot length-wise	Cable, 3-wire, in-line	Contacting	2.5	173210	SME-10-KL-LED-24	
	Plug M8x1, 3-pin, in-line		0.3	173212	SME-10-SL-LED-24	

Ordering data – Proximity sensors for C-slot						
	Type of mounting	Electrical connection, connection direction	Switching output	Cable length [m]	Part No.	Type
	N/O contact, magneto-resistive					Technical data → Internet: smt
	Insertable in slot from above	Cable, 3-wire, lateral	PNP	2.5	551374	SMT-10M-PS-24V-E-2,5-Q-OE
		Plug M8x1, 3-pin, lateral		0.3	551376	SMT-10M-PS-24V-E-0,3-Q-M8D
	N/O contact, magnetic reed					Technical data → Internet: sme
Insertable in slot length-wise	Cable, 3-wire, lateral	Contacting	2.5	173211	SME-10-KQ-LED-24	
	Plug M8x1, 3-pin, lateral		0.3	173213	SME-10-SQ-LED-24	

Ordering data – Proximity sensors for C-slot						
	Type of mounting	Electrical connection, connection direction	Switching output	Cable length [m]	Part No.	Type
	N/O contact, magneto-resistive					Technical data → Internet: smt
	Insertable in slot length-wise	Cable, 3-wire, lateral	PNP	2.5	547862	SMT-10G-PS-24V-E-2,5Q-OE
		Plug M8x1, 3-pin, lateral		0.3	547863	SMT-10G-PS-24V-E-0,3Q-M8D

Ordering data – Connecting cables					Technical data → Internet: nebu
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541333	NEBU-M8G3-K-2.5-LE3
			5	541334	NEBU-M8G3-K-5-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541338	NEBU-M8W3-K-2.5-LE3
			5	541341	NEBU-M8W3-K-5-LE3