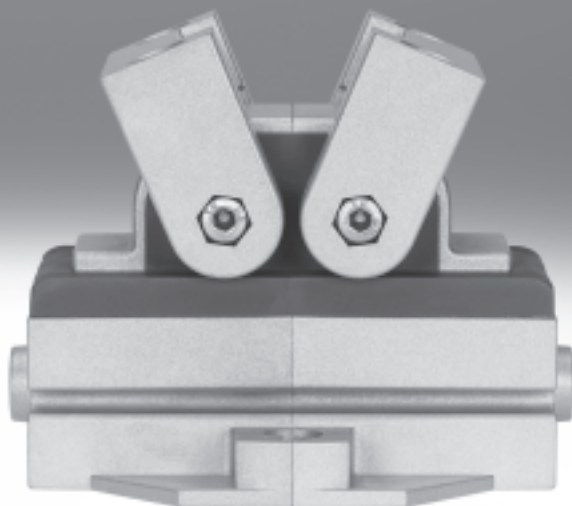


Angle grippers HGWC

FESTO



Angle grippers HGWC

Key features

FESTO

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.

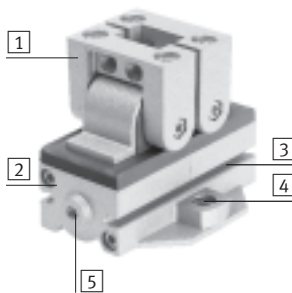
- Double-acting gripper
- Internal fixed flow control, does away with the need for external flow control in 90% of applications
- High force with minimal volume
- Suitable for external and internal gripping

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

Note

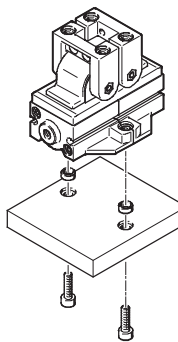
Sizing software for gripper selection
→ www.festo.com

Details

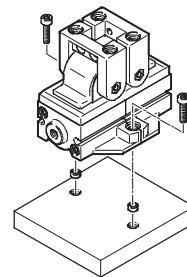


- 1 Gripper jaw
- 2 Housing based on half-shell principle
- 3 Slot for proximity sensor, for sensing the piston position
- 4 Mounting option
- 5 Supply port

Mounting option from underneath

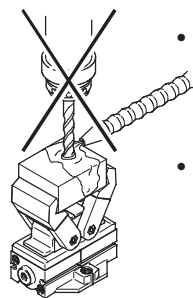


from above



Note

Angle grippers are not designed for the following sample applications:



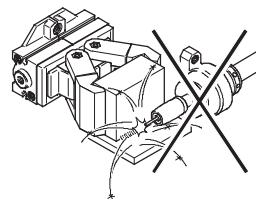
• Machining

• Aggressive media



• Grinding dust

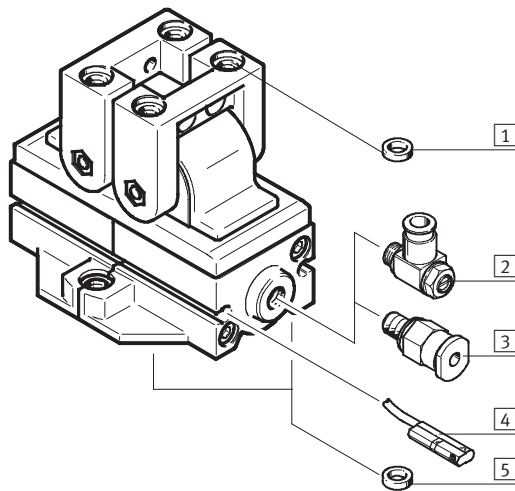
• Welding spatter



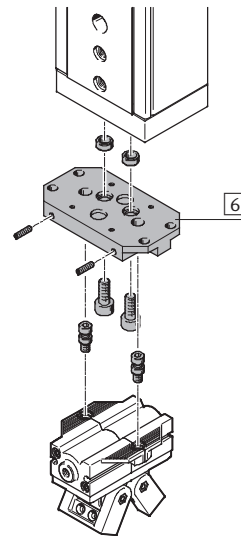
Angle grippers HGWC

Peripherals overview and type codes

Peripherals overview



System product for handling and assembly technology



Accessories			
Type	Brief description		→ Page/Internet
1 Centring sleeve ZBH	- 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		gria
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	- 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							

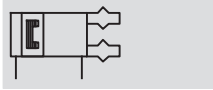
Angle grippers HGWC

Technical data

FESTO

Function
Double-acting
HGWC-...-A

-N- Size
12, 16, 20 mm
-T- 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]	≤ Ø 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	Filtered compressed air, lubricated or unlubricated
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

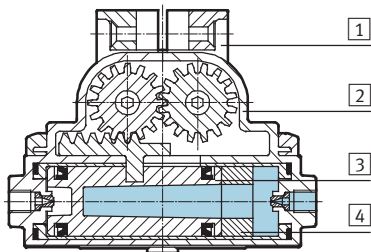
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

Angle grippers HGWC

Technical data

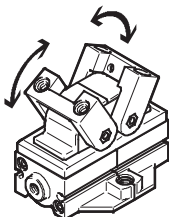
Materials

Sectional view



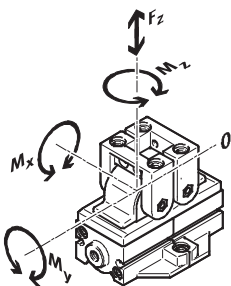
Angle gripper		
1	Gripper jaw	Die-cast zinc, painted
2	Housing	Die-cast zinc, painted
3	Piston	Polyamide
4	Distance sleeve	Polyurethane
–	Seals	Polyurethane, nitrile rubber
–	Note on materials	Free of copper, PTFE and silicone
		RoHS-compliant

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.

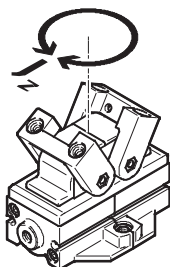
Size		12	16	20
Max. permissible force F_z	[N]	40	60	80
Max. permissible torque M_x	[Nm]	2.5	4	8
Max. permissible torque M_y	[Nm]	0.6	1	1.9
Max. permissible torque M_z	[Nm]	2	3.2	6.7

Angle grippers HGWC

Technical data

FESTO

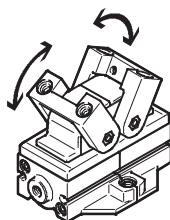
Mass moment of inertia



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.

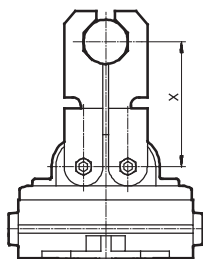
Size		12-15	12-40	16-15	16-40	20-15	20-40
Without external gripper fingers							
HGWC-...-A	Opening	50	70	50	85	50	90
	Closing	35	50	35	70	35	75

Angle grippers HGWC

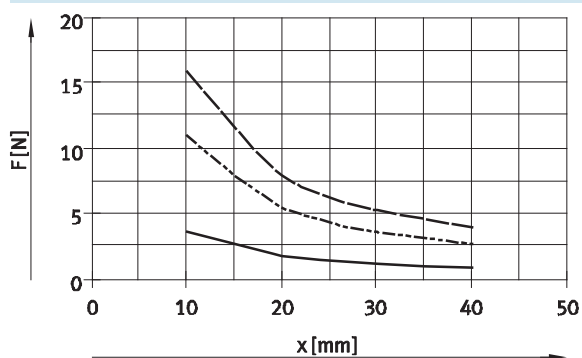
Technical data

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

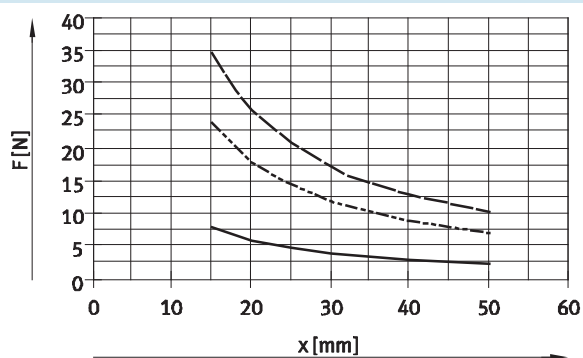
Gripping forces as a function of the operating pressure and the lever arm can be determined for the size using the following graph.



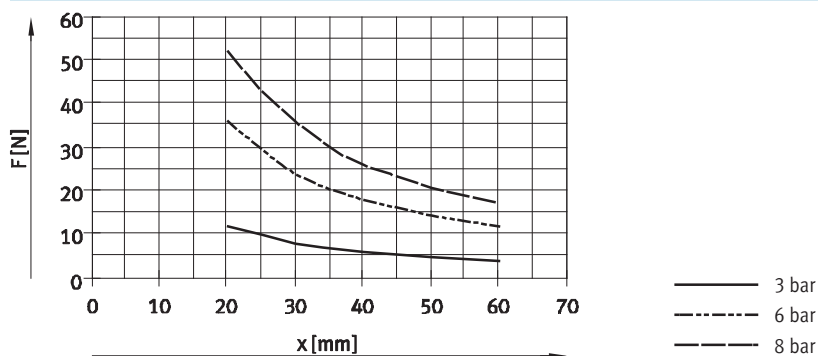
HGWC-12-A



HGWC-16-A



HGWC-20-A



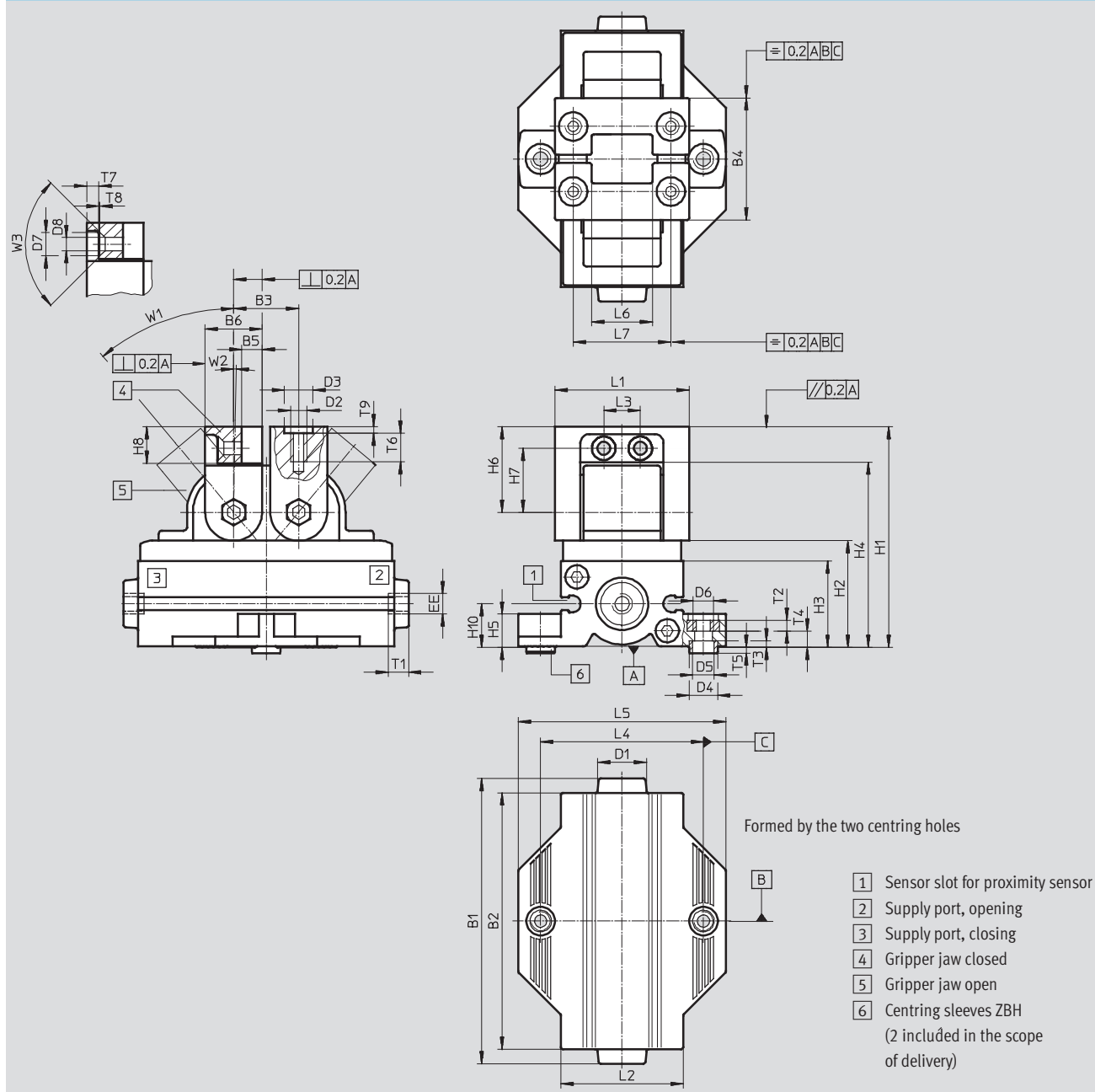
— 3 bar
 - - - 6 bar
 - · - 8 bar

Angle grippers HGWC

Technical data

Dimensions

Download CAD Data → www.festo.com/us/cad



Angle grippers HGWC

Technical data

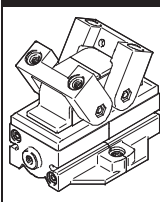
Type	B1	B2	B3 ±0.05	B4 +0.25 -0.05	B5 +0.5	B6 +0.1	D1	D2	D3 +0.05 -0.02	D4 F10/h7	D5
HGWC-12	57	52	12	23	4	11	12	M3	5	7	5.3
HGWC-16	70	63	16	30	5.5	14	12	M4	7	7	5.3
HGWC-20	86	79	20	38	6	18	12	M5	9	9	6.4

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°
HGWC-12-40									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

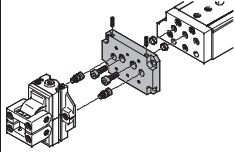
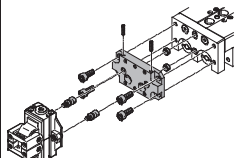
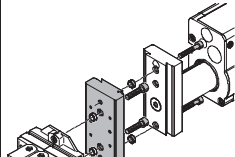
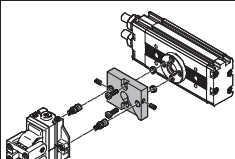
FESTO

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/us/cad		
Combination	Drive	Gripper			Adapter kit		
	Size	Size	Mounting option		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

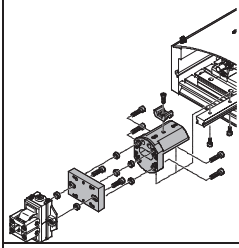
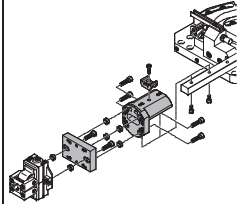
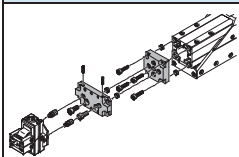
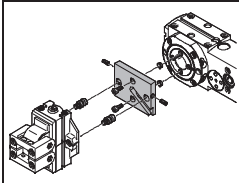
Accessories

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/us/cad	
Combination	Drive	Gripper			Adapter kit	
	Size	Size	Mounting option		CRC ¹⁾	Part No. Type
						
HSP/HGWC	HSP	HGWC			DHAA, HAPG	
	16	16	—	■	2	191901 HAPG-55
						540882 HAPG-71-B
	25	20	—	■		191901 HAPG-55
						540883 HAPG-72-B
HSW/HGWC	HSW	HGWC			DHAA, HAPG	
	12	16	—	■	2	191901 HAPG-55
						540882 HAPG-71-B
	16	16	—	■		191901 HAPG-55
						540882 HAPG-71-B
EGSA/HGWC	EGSA	HGWC			DHAA, HAPG, HMSV	
	50	12	■	■	2	560017 HMSV-61
						529018 HAPG-58
	60	16	■	■		560018 HMSV-62
						191267 HAPG-49
	60	20	■	■		560018 HMSV-62
						191269 HAPG-51
ERMB/HGWC	ERMB	HGWC			DHAA, HAPG	
	20	16	■	■	2	542668 HAPG-SD2-42
						542669 HAPG-SD2-43
	20	20	■	■		542758 HAPG-SD2-44
	25	20	■	■		

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

FESTO

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, in-line connecting cable						
	Assembly	Electrical connection		Cable length [m]	Part No.	Type
		Cable	Plug M8			
	N/O contact, magneto-resistive				Technical data → Internet: smt	
	Insertable in slot from above	3-wire	–	2.5	551373	SMT-10M-PS-24V-E-2,5-L-OE
		–	3-pin	0.3	551375	SMT-10M-PS-24V-E-0,3-L-M8D
	N/O contact, magnetic reed				Technical data → Internet: sme	
	Insertable in slot lengthwise	3-wire	–	2.5	173210	SME-10-KL-LED-24
		–	3-pin	0.3	173212	SME-10-SL-LED-24

Ordering data – Proximity sensors for C-slot, lateral connecting cable						
	Assembly	Electrical connection		Cable length [m]	Part No.	Type
		Cable	Plug M8			
	N/O contact, magneto-resistive				Technical data → Internet: smt	
	Insertable in slot from above	3-wire	–	2.5	551374	SMT-10M-PS-24V-E-2,5-Q-OE
		–	3-pin	0.3	551376	SMT-10M-PS-24V-E-0,3-Q-M8D
	N/O contact, magnetic reed				Technical data → Internet: sme	
	Insertable in slot lengthwise	3-wire	–	2.5	173211	SME-10-KQ-LED-24
		–	3-pin	0.3	173213	SME-10-SQ-LED-24

Ordering data – Proximity sensors for C-slot, short design						
	Assembly	Electrical connection		Cable length [m]	Part No.	Type
		Cable	Plug M8			
	N/O contact, magneto-resistive					Technical data → Internet: smt
	Insertable in slot lengthwise	3-wire	–	2.5	547862	SMT-10G-PS-24V-E-2,5Q-OE
		–	3-pin	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	

Product Range and Company Overview

A Complete Suite of Automation Services

Our experienced engineers provide complete support at every stage of your development process, including: conceptualization, analysis, engineering, design, assembly, documentation, validation, and production.



Custom Automation Components
Complete custom engineered solutions



Custom Control Cabinets
Comprehensive engineering support and on-site services



Complete Systems
Shipment, stocking and storage services

The Broadest Range of Automation Components

With a comprehensive line of more than 30,000 automation components, Festo is capable of solving the most complex automation requirements.



Electromechanical
Electromechanical actuators, motors, controllers & drives



Pneumatics
Pneumatic linear and rotary actuators, valves, and air supply



PLCs and I/O Devices
PLC's, operator interfaces, sensors and I/O devices

Supporting Advanced Automation... As No One Else Can!

Festo is a leading global manufacturer of pneumatic and electromechanical systems, components and controls for industrial automation, with more than 12,000 employees in 56 national headquarters serving more than 180 countries. For more than 80 years, Festo has continuously elevated the state of manufacturing with innovations and optimized motion control solutions that deliver higher performing, more profitable automated manufacturing and processing equipment. Our dedication to the advancement of automation extends beyond technology to the education and development of current and future automation and robotics designers with simulation tools, teaching programs, and on-site services.

Quality Assurance, ISO 9001 and ISO 14001 Certifications

Festo Corporation is committed to supply all Festo products and services that will meet or exceed our customers' requirements in product quality, delivery, customer service and satisfaction.

To meet this commitment, we strive to ensure a consistent, integrated, and systematic approach to management that will meet or exceed the requirements of the ISO 9001 standard for Quality Management and the ISO 14001 standard for Environmental Management.



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