Angle grippers DHWS

FESTO

Key features

At a glance

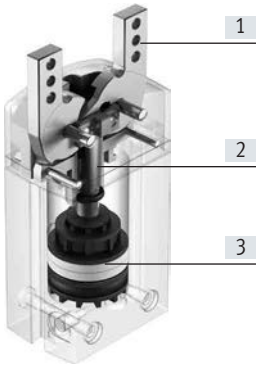
General information

- Improved gripper jaw guide
- Slotted guide
- Max. repetition accuracy
- Gripping force retention
- Internal fixed flow control
- Wide range of adaptation options on the drives
- Sensor technology:
  - Adaptable position sensor for the small gripper sizes
  - Integrated proximity sensors for the medium and large gripper sizes

Flexible range of applications

- Can be used as a double-acting and single-acting gripper
- Compression spring for supplementing or retaining the gripping forces
- Suitable for external and internal gripping

The technology in detail



[1] Gripper jaws
[2] Link
[3] Piston with magnet

Note

Engineering software
for gripper selection
➔ www.festo.com

Position sensing/force control

With position transmitter SMAT-8M/SDAT

Analogue position feedback possible

- Analogue output
  - 0 ... 10 V
  - 4 ... 20 mA

With proportional pressure regulator VPPM

Infinite adjustment of the gripping force possible

- Setpoint input
  - 0 ... 10 V
  - 4 ... 20 mA

With proximity sensor SMT-8G/-10G

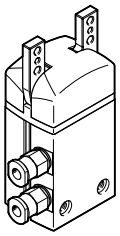
Detecting multiple positions:

- Open
- Closed
- Workpiece gripped

Key features

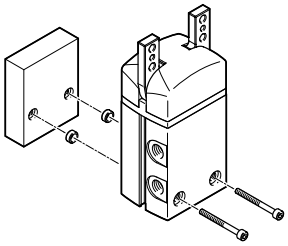
Supply ports

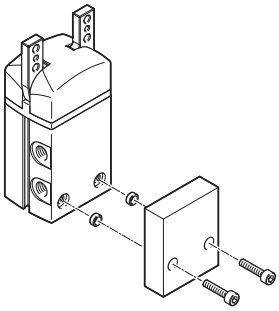
From the side



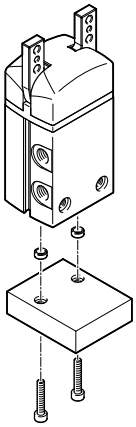
Mounting options

From the side

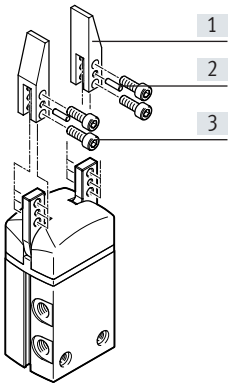




From underneath



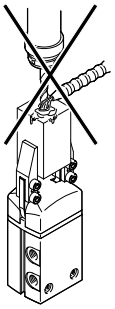
Mounting options for external gripper fingers



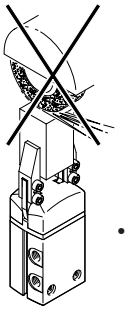
[1] Gripper fingers
[2] Centring pins
[3] Retaining screws

Note

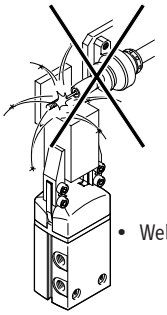
Angle grippers are not designed for the following application examples:



- Machining
- Aggressive media



- Grinding dust

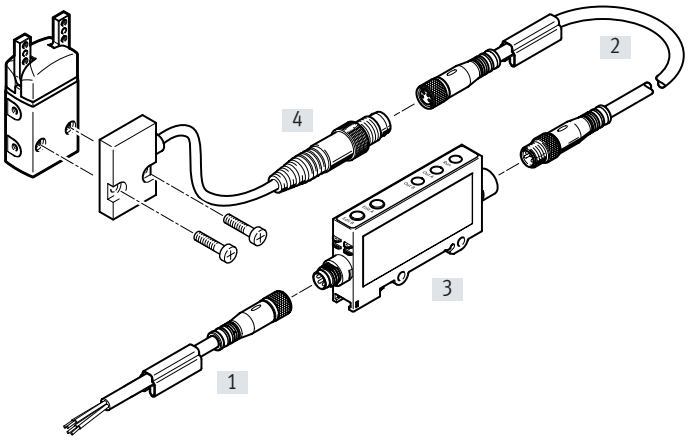


- Welding spatter

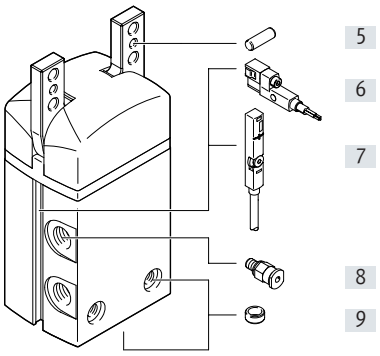
Peripherals overview

Peripherals overview

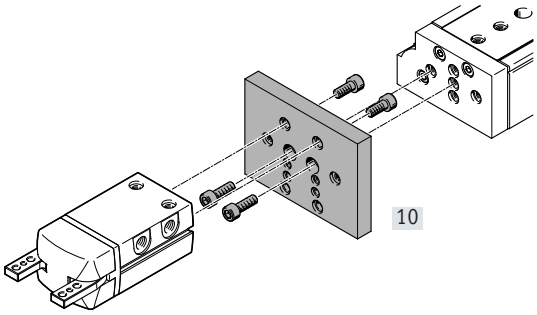
DHWS-10



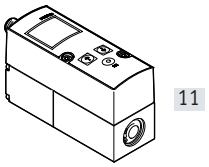
DHWS-16 ... 40



System product for handling and assembly technology



Proportional-pressure regulator VPPM



Peripherals overview

Accessories

	Type	For size	Description	→ Page/Internet
[1]	Connecting cable NEBU	10	• Connection between signal converter and controller	19
[2]	Connecting cable NEBU	10	• Connection between position sensor and signal converter	19
[3]	Signal converter SVE4	10	• For evaluating signals for position sensor SMH-S1	19
[4]	Position sensor SMH-S1	10	• Adaptable and integratable sensor technology for sensing the piston position	19
[5]	Centring pin	10 ... 40	• For centring the gripper fingers on the gripper jaws	–
[6]	Proximity sensor SMT-8G	16 ... 40	• For sensing the piston position • Proximity sensor does not project past the housing at the bottom	20
[7]	Position transmitter SMAT-8M	16 ... 40	• Continuously senses the position of the piston. It has an analogue output with an output signal relative to the piston position.	20
	Position transmitter SDAT	32, 40		
[8]	Push-in fitting QS	10 ... 40	• For connecting compressed air tubing with standard O.D.	qs
[9]	Centring sleeve ZBH	10 ... 40	• For centring the gripper during mounting • 2 centring sleeves included in the scope of delivery of the gripper	19
[10]	Adapter kit DHAA, HMSV, HAPG, HAPS, HMVA	10 ... 40	• Connecting plate between drive and gripper	17
[11]	Proportional-pressure regulator VPPM	10 ... 40	• For infinite adjustment of the gripping force	vppm

Type codes

001	Series	
DHWS	Angle gripper	

002	Size	
10	10	
16	16	
25	25	
32	32	
40	40	

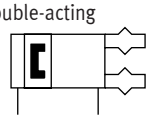
003	Position sensing	
A	For proximity sensor	

004	Gripping force backup	
	None	
NC	N/O contact	

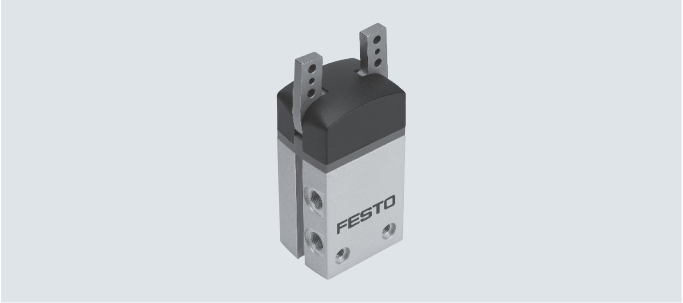
Data sheet

- Size
  10 ... 40 mm
- Opening angle
  40°
- www.festo.com

Double-acting



Single-acting or with gripping force retention



General technical data						
Size		10	16	25	32	40
Design		Lever				
Mode of operation		Double-acting				
Gripper function		Angular				
Guide		Plain-bearing guide				
Gripping force retention		–	NC	NC	NC	NC
Number of gripper jaws		2				
Opening angle per gripper jaw	[°]	20				
Pneumatic connection		M3	M3	M5	G1/8	G1/8
Repetition accuracy[1]	[mm]	≤ 0.04				
Max. interchangeability	[mm]	≤ ±0.2				
Max. operating frequency	[Hz]	4		3		
Rotational symmetry	[mm]	< Ø 0.2				
Position sensing		Via position sensor	Via proximity sensor, position transmitter			
Type of mounting		Via through-hole and centring sleeve				
		Via female thread and centring sleeve				
Mounting position		Any				

1) Under constant exposure to operating conditions, end-position drift occurs in the direction of movement of the gripper jaws, at 100 consecutive strokes

Operating and environmental conditions						
Size		10	16	25	32	40
Min. operating pressure						
DHWS-...-A	[bar]	2				
DHWS-...-A-NC	[bar]	–	4			
Max. operating pressure	[bar]	8				
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]				
Note on operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)				
Ambient temperature[1]	[°C]	+5 ... +60				
Corrosion resistance class CRC[2]		1				

1) Note operating range of proximity sensors

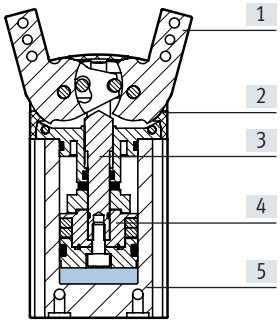
2) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Weight [g]					
Size	10	16	25	32	40
DHWS-...-A	40	110	258	452	775
DHWS-...-A-NC	–	114	265	462	790

Data sheet

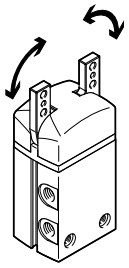
Materials

Sectional view



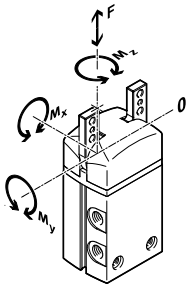
Angle gripper		
[1]	Gripper jaws	High-alloy stainless steel
[2]	Cover cap	Polyamide
[3]	Link	Tempered steel
[4]	Piston	Polyacetal
[5]	Housing	Hard anodised wrought aluminium alloy
–	Seals	Nitrile rubber
–	Note on materials	Free of copper and PTFE
		RoHS-compliant

Total gripping torque [Ncm] at 6 bar



Size		10	16	25	32	40
DHWS-...-A	Opening	43	129	386	810	1497
	Closing	30	114	356	746	1362

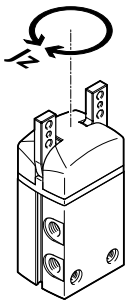
Static characteristic load values at the gripper jaws



The indicated permissible forces and torques apply to a single gripper jaw. They include the lever arm, additional weight forces created by the workpiece or external gripper fingers and acceleration forces during movement.
The zero coordinate line (gripper jaw guide) must be taken into consideration when calculating torques.

Size		10	16	25	32	40
Max. permissible force F_z	[N]	25	50	90	120	200
Max. permissible torque M_x	[Nm]	0.6	1.6	3.6	6	13
Max. permissible torque M_y	[Nm]	0.6	1.6	3.6	6	13
Max. permissible torque M_z	[Nm]	0.6	1.6	3.6	6	13

Mass moments of inertia [kgm^2x10^{-4}]



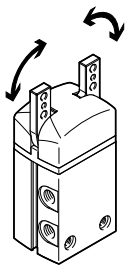
Mass moment of inertia of the angle gripper in relation to the central axis, without external gripper fingers, without load.

Size	10	16	25	32	40
DHWS-...-A	0.03	0.14	0.62	1.60	3.81
DHWS-...-A-NC	–	0.15	0.64	1.63	3.87

Data sheet

Opening and closing times [ms] at 6 bar

Without external gripper fingers

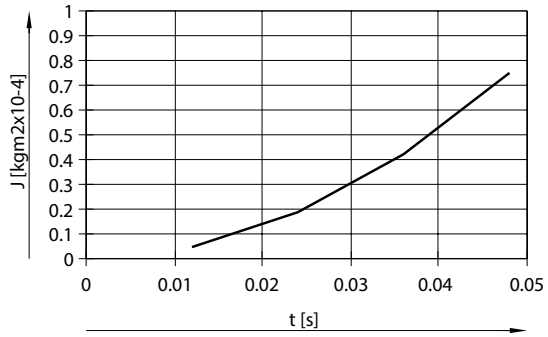


The indicated opening and closing times [ms] were measured at room temperature at an operating pressure of 6 bar with the gripper horizontally mounted and without additional gripper fingers (mean values shown). The grippers must be throttled for greater applied loads. Opening and closing times must then be adjusted accordingly.

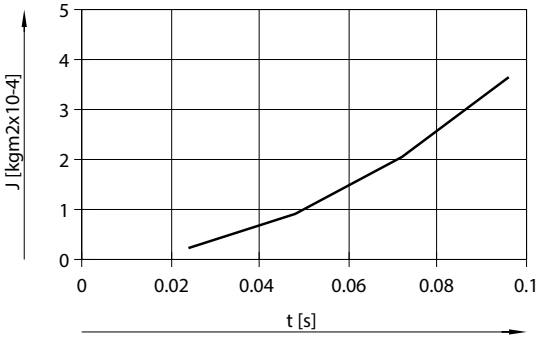
Size		10	16	25	32	40
Without external gripper fingers						
DHWS-...-A	Opening	10	44	64	46	63
	Closing	22	52	80	77	96
DHWS-...-A-NC	Opening	–	62	106	88	99
	Closing	–	36	59	55	69

Opening and closing times t to be set at 6 bar as a function of mass moment of inertia of the gripper fingers

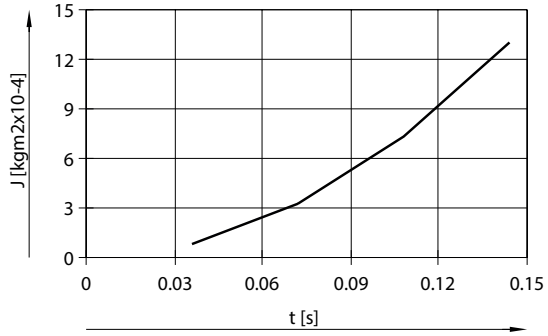
DHWS-10



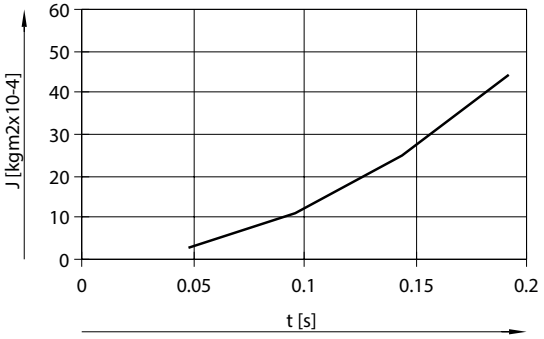
DHWS-16



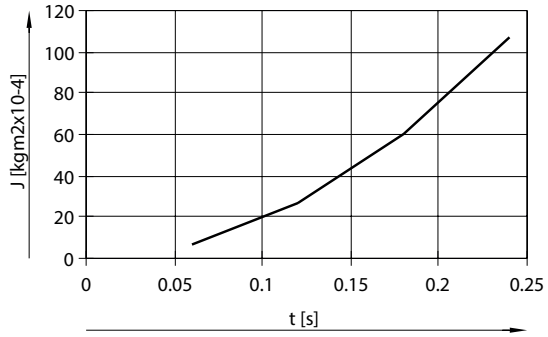
DHWS-25



DHWS-32



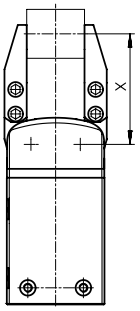
DHWS-40



Data sheet

Gripping force F_H per gripper jaw as a function of operating pressure and lever arm x

The gripping forces as a function of the operating pressure and lever arm can be determined from the following graphs.



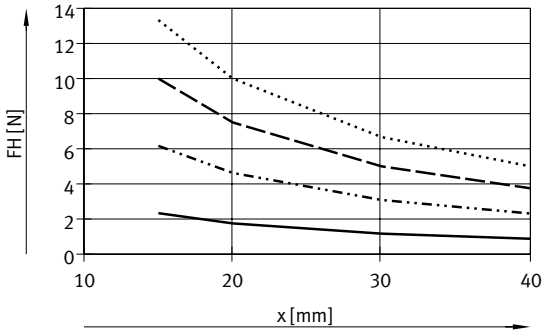
Note

Engineering software for gripper selection
➔ www.festo.com

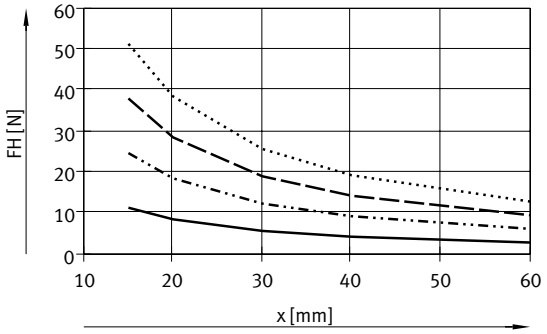
2 bar
4 bar
6 bar
8 bar

External gripping (closing)

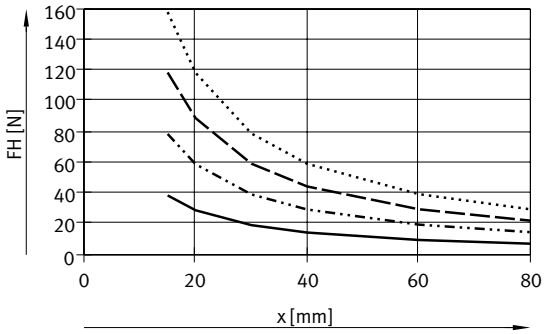
DHWS-10



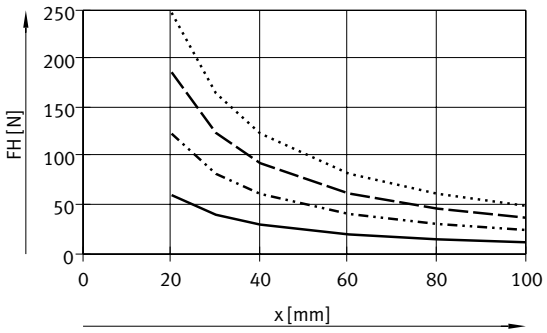
DHWS-16



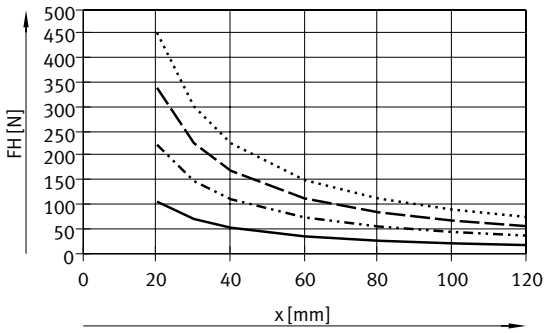
DHWS-25



DHWS-32



DHWS-40



Data sheet

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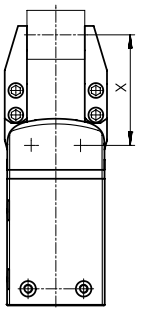
The gripping forces as a function of the operating pressure and lever arm can be determined from the following graphs.



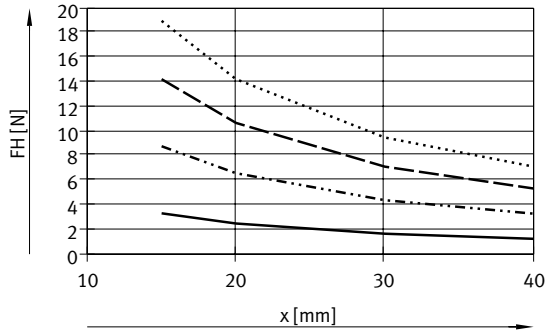
Note

Engineering software for gripper selection
➔ www.festo.com

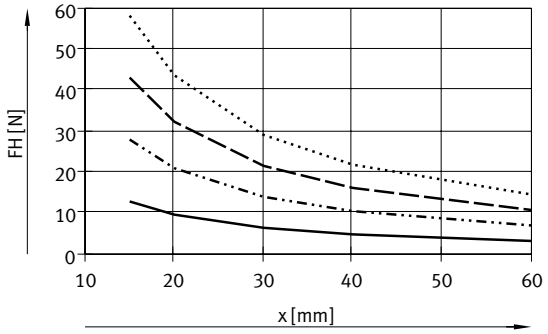
2 bar
4 bar
6 bar
8 bar

Internal gripping (opening)

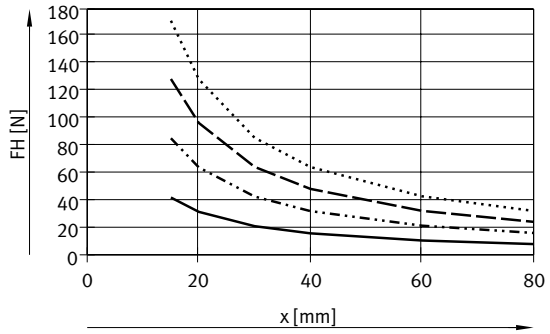
DHWS-10



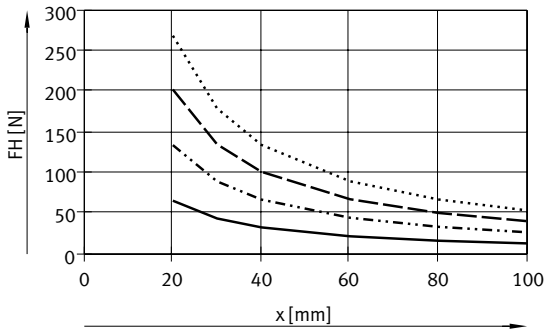
DHWS-16



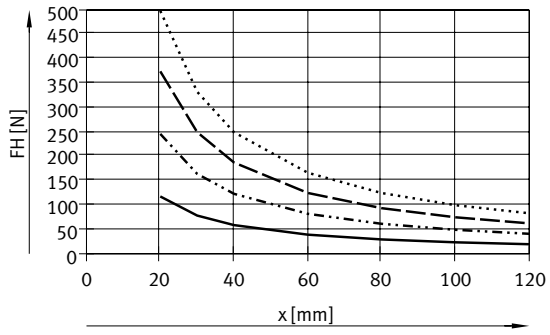
DHWS-25



DHWS-32



DHWS-40



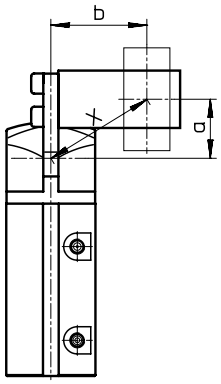
Data sheet

Gripping force F_H per gripper jaw at 6 bar as a function of lever arm x and eccentricity a and b

The following formula must be used to calculate the lever arm x with eccentric gripping:

$$X = \sqrt{a^2 + b^2}$$

The gripping force F_H can be read from the graphs (➔ page 10) using the calculated value x.



Calculation example

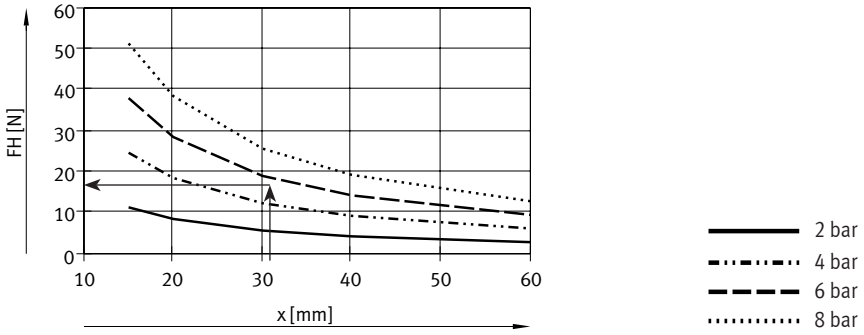
Given:
Distance a = 20 mm
Distance b = 25 mm
To be calculated:
The gripping force at 6 bar
with a DHWS-16,
used as an external gripper

Procedure: calculating the lever arm x

$$x = \sqrt{20^2 + 25^2}$$

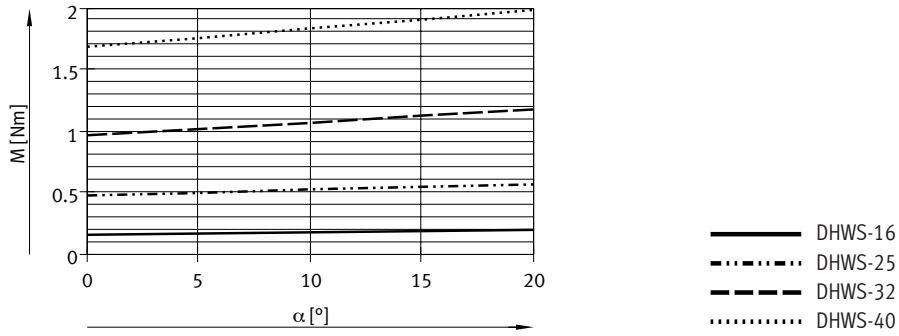
x = 32 mm

The graph (➔ page 10) gives a value of F_H = 18 N for the gripping force.



Data sheet

Spring torque M_F as a function of opening angle α



Determining the actual gripping torques $M_{Grtotal}$ for DHWS-...-NC as a function of application

The angle gripper with integrated spring type DHWS-...-NC (closing gripping force retention) can be used as:

- Single-acting gripper
- Gripper with supplementary gripping force
- Gripper with gripping force retention

To calculate the available gripping torque $M_{Grtotal}$ (per gripper jaw), the data from the graphs for the gripping force F_H (→ page 10) and the spring torque M_F (→ page 13) must be combined accordingly.

$M_{Gr} = F_H * x$

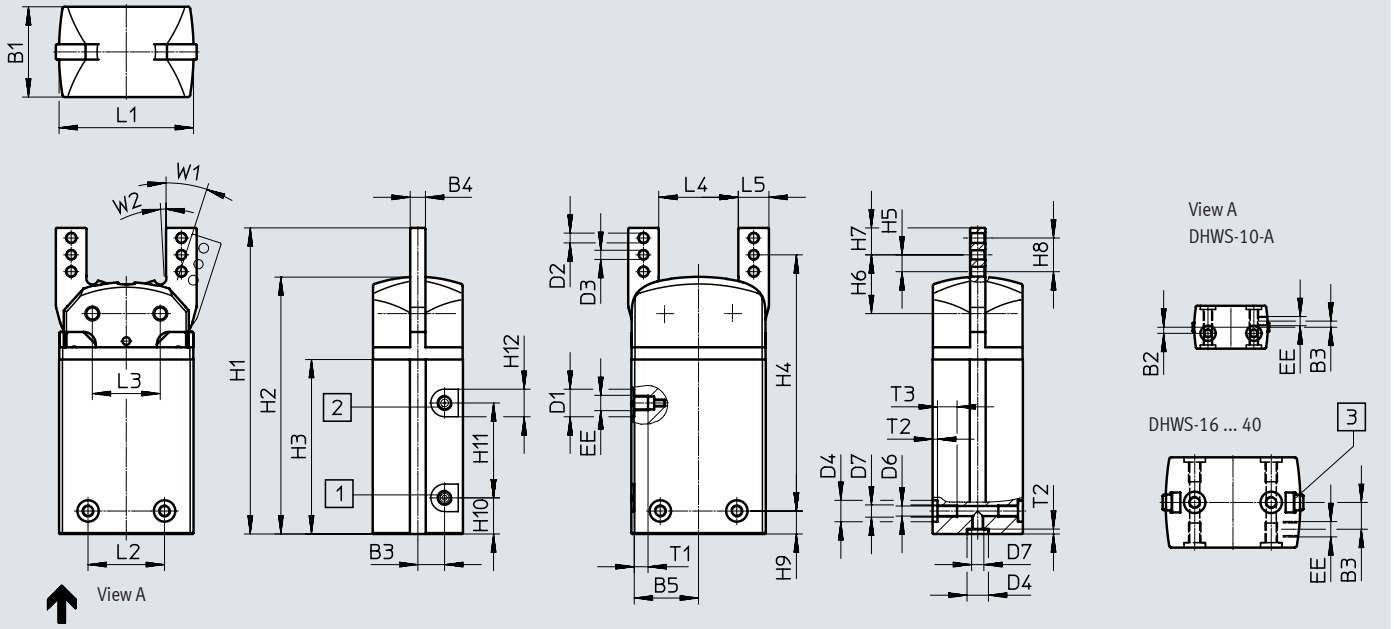
M_{Gr} Gripping torque
F_H Gripping force
x Lever arm

Application

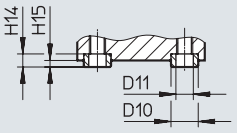
Single-acting	Supplementary gripping force	Gripping force retention
• Gripping with spring force: $M_{Grtotal} = M_F$ • Gripping with pressure force: $M_{Grtotal} = M_{Gr} - M_F$	• Gripping with pressure and spring force: $M_{Grtotal} = M_{Gr} + M_F$	• Gripping with spring force: $M_{Grtotal} = M_F$

Data sheet

Dimensions Download CAD data ➔ www.festo.com



[1] Supply port, opening
[2] Supply port, closing
[3] Slot for proximity sensor
[7] Mounting interface: centring sleeves ZBH for mounting the gripper (2 included in the scope of delivery)



Size	B1	B2[1)]	B3	B4	B5	D1	D2	D3	D4	D6	D7
				–0.03/		ø	ø	ø	ø	ø	
[mm]	±0.05			–0.05			±0.1	H8	H8/h7	+0.1	
10	14	2	2	3	11.6	7	2.2	2	5	2.4	M3
16	19	–	5.8	4	16	–	3.2	2.5	5	2.5	M3
25	29.5	–	8.75	5	21	9	3.2	3	7	3.3	M4
32	38	–	11	6	24	15	4.3	3	9	5.1	M6
40	49	–	11	8	28.4	15	5.3	4	12	6.4	M8

Size	D10	D11	EE	H1	H2	H3	H4	H5	H6	H7
	ø	ø								
[mm]	h7						±0.2		±0.05	
10	5	3.2	M3	56.3	46	30.8	38.25	3.5	10.95	5.75
16	5	3.2	M3	81	67	45.5	66	4.5	15.5	7.5
25	7	5.3	M5	100	84	57	83.7	5.5	19.2	8.8
32	9	6.4	G1/8	116	96.2	65	100.5	6.5	22.5	11
40	12	10.3	G1/8	129	108.4	71.5	99.5	7	24.5	12

1) Tolerance for centring hole ±0.02 mm; tolerance for thread ±0.1 mm

Data sheet

Size [mm]	H8	H9[2]	H10	H11	H12	H14 −0.2	H15 −0.3	L1 ±0.05	L2[1]
10	7	12.3	8.8	16	7	2.4	1.2	24	15
16	9	7.5	12.25	23	7	2.4	1.2	34	16
25	11	7.5	11.8	31	9	3	1.4	44	25
32	13	11	20	25	15	4	1.9	53	29
40	14	17.5	9	46	15	5	2.4	59	33

Size [mm]	L3 ±0.02	L4	L5 −0.02/ −0.05	T1 +0.5	T2 +0.1	T3 +1	W1 +3°/−1°	W2 ±1°
10	12.4	14	5.5	3.5	1.2	through	18	3
16	17	18	8	4.5	1.2	5.8	18	3
25	22.2	26	10	4.5	1.6	6.4	18	3
32	25.8	29	12	7.5	2.1	12.9	18	3
40	30	32	15	6	2.6	13.4	18	3

1) Tolerance for centring hole ±0.02 mm; tolerance for thread ±0.1 mm

2) Tolerance for centring hole −0.05 mm; tolerance for thread ±0.1 mm

Ordering data

Size	Double-acting without compression spring		Single-acting or with gripping force retention closing	
[mm]	Part no.	Type	Part no.	Type
10	**1310177**	**DHWS-10-A**	**–**	
16	**1310178**	**DHWS-16-A**	**1310179**	**DHWS-16-A-NC**
25	**1310180**	**DHWS-25-A**	**1310181**	**DHWS-25-A-NC**
32	**1310182**	**DHWS-32-A**	**1310183**	**DHWS-32-A-NC**
40	**1310184**	**DHWS-40-A**	**1310185**	**DHWS-40-A-NC**

Accessories

Adapter kit
HAPG, HAPS, HMSV

Material:
Wrought alumi

nium 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

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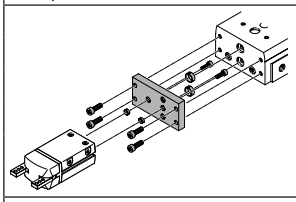
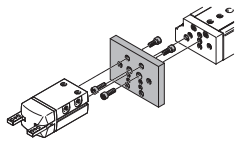
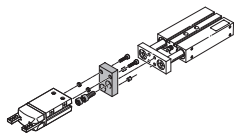
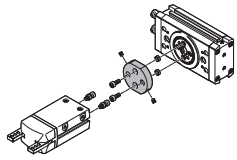
Combination	Drive	Gripper	Mounting option		Adapter kit		
	Size	Size			CRC[1]	Part no.	Type
DGST/DHWS	**DGST**	**DHWS**			**DHAA**		
	10	10	■	■	2	**8161907**	**DHAA-G-G8-10-B20-10**
	12	16	■	■		**8161909**	**DHAA-G-G8-12-B20-16**
	16	16	■	■		**8161908**	**DHAA-G-G8-16-B20-16**
	20	25	■	■		**8161905**	**DHAA-G-G8-20-B20-25**
	25	32	■	■		**8161906**	**DHAA-G-G8-25-B20-32**
DGSL/DHWS	**DGSL**	**DHWS**			**HMSV**		
	8, 10	10	■	■	2	**548784**	**HMSV-54**
	12, 16	16	■	■		**548785**	**HMSV-55**
	20, 25	25, 32	■	■		**548786**	**HMSV-56**
DPZ/DHWS	**DPZ**	**DHWS**			**HAPG**		
	10, 16	16	■	–	2	**163250**	**HAPG-1**
	16	25	■	–		**163251**	**HAPG-2**
	20	25	■	–		**163252**	**HAPG-3**
	25, 32	32	■	–		**163253**	**HAPG-4**
DRRD/DHWS	**DRRD**	**DHWS**			**DHAA**		
	8	10	■	■	2	**2816591**	**DHAA-G-Q11-8-B2/B3-10**
	10	10	■	■		**2816068**	**DHAA-G-Q11-10-B2/B3-10**
	12	10	■	■		**2814790**	**DHAA-G-Q11-12-B2/B3-10**
	12	16	■	■		**2811183**	**DHAA-G-Q11-12-B2/B3-16**
	16	16	■	■		**1979085**	**DHAA-G-Q11-16-B2/B3-16**
	16	25	■	■		**1978889**	**DHAA-G-Q11-16-B2/B3-25**
	20	25	■	■		**1978443**	**DHAA-G-Q11-20-B2/B3-25**
	20	32	■	■		**1979912**	**DHAA-G-Q11-20-B2/B3-32**
	25	25	■	■		**1801802**	**DHAA-G-Q11-25-B2/B3-25**
	25	32	■	■		**1802969**	**DHAA-G-Q11-25-B2/B3-32**
	32	32	■	■		**1979992**	**DHAA-G-Q11-32-B2/B3-32**
	32	40	■	■		**1980014**	**DHAA-G-Q11-32-B2/B3-40**
	35, 40	40	■	■		**1980059**	**DHAA-G-Q11-3 5/40-B2/B3-40**

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Accessories

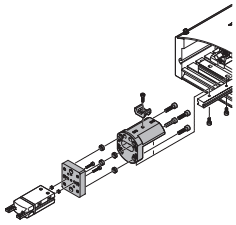
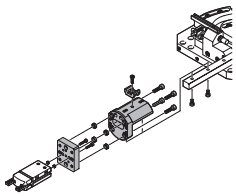
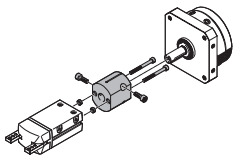
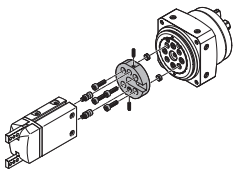
Adapter kit
DHAA, HAPG

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			Adapter kit		
	Size	Size	Mounting option		CRC[1]	Part no.	Type
							
HSP/DHWS	**HSP**	**DHWS**			**HAPG**		
	12	10	■	–	2	**192709**	**HAPG-60-S1**
						540881	**HAPG-70-B**
	16	10	■	–		**192706**	**HAPG-37-S1**
						540882	**HAPG-71-B**
	16	16	■	–		**192705**	**HAPG-36-S1**
						540882	**HAPG-71-B**
	25	16	■	–		**192705**	**HAPG-36-S1**
						540883	**HAPG-72-B**
	25	25	■	–		**193922**	**HAPG-37-S4**
						540883	**HAPG-72-B**
HSW/DHWS	**HSW**	**DHWS**			**HAPG**		
	12, 16	10	■	–	2	**192706**	**HAPG-37-S1**
						540882	**HAPG-71-B**
	12, 16	16	■	–		**192705**	**HAPG-36-S1**
						540882	**HAPG-71-B**
DSM/DHWS	**DSM-...-FW**	**DHWS**			**HAPG**		
	6, 8, 10	10	■	■	2	**187568**	**HAPG-34**
	DSM-...	**DHWS**			**HAPG**		
	12	16	■	■	2	**163266**	**HAPG-17**
	16	16	■	■		**163267**	**HAPG-18**
	16	25	■	■		**163268**	**HAPG-19**
	25	25	■	■		**163269**	**HAPG-20**
	25	32	■	■		**163270**	**HAPG-21**
	32	32	■	■		**163271**	**HAPG-22**
DSM-...-HD/DHWS	**DSM-...-HD**	**DHWS**			**DHAA**		
	12	16	■	■	2	**8072157**	**DHAA-G-R3-12-B18-10**
	12	10	■	■		**8072172**	**DHAA-G-R3-12-B20-10**
	16	16	■	■		**8071917**	**DHAA-G-R3-16-B18-10**
	16	25	■	■		**8079173**	**DHAA-G-R3-16-B18-16**
	25	25	■	■		**8071956**	**DHAA-G-R3-25-B18-16**
	25	32	■	■		**8079201**	**DHAA-G-R3-25-B20-32**
	32	32	■	■		**8079208**	**DHAA-G-R3-32-B18-25**
	32	40	■	■		**8079212**	**DHAA-G-R3-32-B20-40**

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Accessories

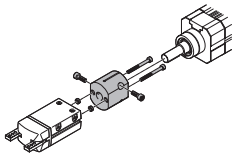
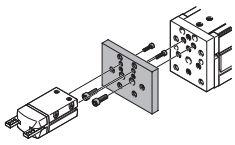
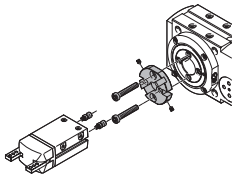
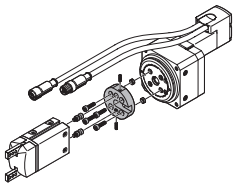
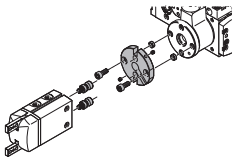
Adapter kit
DHAA, HAPG, HMSV

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 Size	Gripper Size	Mounting option		Adapter kit CRC[1]	Part no.	Type
DSL/DHWS	**DSL**	**DHWS**			**HAPG**		
	16	16	■	■	2	**163266**	**HAPG-17**
	20	16	■	■		**163267**	**HAPG-18**
	20	25	■	■		**163268**	**HAPG-19**
	25	25	■	■		**163269**	**HAPG-20**
	25	32	■	■		**163270**	**HAPG-21**
	32	32	■	■		**163271**	**HAPG-22**
EGSL/DHWS	**EGSL**	**DHWS**			**HMSV**		
	35	10	■	■	2	**548784**	**HMSV-54**
						1088262	**HMSV-70**
	45, 55	16	■	■		**548785**	**HMSV-55**
	75	25, 32	■	■		**548786**	**HMSV-56**
ERMB/DHWS	**ERMB**	**DHWS**			**HAPG**		
	20	25	■	■	2	**184479**	**HAPG-SD2-3**
	25	25	■	■		**184482**	**HAPG-SD2-6**
	20	32	■	■		**184480**	**HAPG-SD2-4**
	25	32	■	■		**184483**	**HAPG-SD2-7**
	32	32	■	■		**184485**	**HAPG-SD2-9**
	32	40	■	■		**184486**	**HAPG-SD2-10**
ERMO/DHWS	**ERMO**	**DHWS**			**DHAA**		
	12	16	■	■	2	**8072157**	**DHAA-G-R3-12-B18-10**
	12	10	■	■		**8072172**	**DHAA-G-R3-12-B20-10**
	16	16	■	■		**8071917**	**DHAA-G-R3-16-B18-10**
	16	25	■	■		**8079173**	**DHAA-G-R3-16-B18-16**
	25	25	■	■		**8071956**	**DHAA-G-R3-25-B18-16**
	25	32	■	■		**8079201**	**DHAA-G-R3-25-B20-32**
	32	32	■	■		**8079208**	**DHAA-G-R3-32-B18-25**
	32	40	■	■		**8079212**	**DHAA-G-R3-32-B20-40**
EHMB/DHWS	**EHMB**	**DHWS**			**HAPG**		
	20	32	■	■	2	**184485**	**HAPG-SD2-9**
	20	40	■	■		**184486**	**HAPG-SD2-10**
	25, 32	40	■	■		**526027**	**HAPG-SD2-21**

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

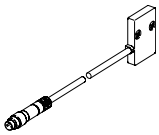
Accessories

Ordering data

	For size [mm]	Description	Weight [g]	Part no.	Type	PU[1]
Centring sleeve ZBH						Data sheets ➔ Internet: zbh
	10, 16	For centring the gripper during mounting	1	**189652**	**ZBH-5**	10
	25		1	**186717**	**ZBH-7**	
	32		1	**8137184**	**ZBH-9-B**	
	40		1	**8137185**	**ZBH-12-B**	

1) Packaging unit

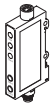
Ordering data

Type	For size	Weight [g]	Part no.	Type
Position sensor SMH-S1				Data sheets ➔ Internet: smh-s1
	10	20	**175711**	**SMH-S1-HGW10**

Signal converter SVE4 for position sensor SMH-S1

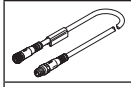
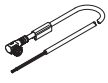
- Converts analogue signals into switching points
- Switching function freely programmable with teach-in
- Threshold value, hysteresis or window comparator

Ordering data

Type	For size	Input connection	Output connection	Switching output	Weight [g]	Part no.	Type
Signal converter SVE4							Data sheets ➔ Internet: sve4
	10	Socket M8x1, 4-pin	Plug M8x1, 4-pin	2x PNP	19	**544216**	**SVE4-HS-R-HM8-2P-M8**
				2x NPN		**544219**	**SVE4-HS-R-HM8-2N-M8**

Ordering data – Connecting cables

Data sheets ➔ Internet: nebu

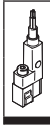
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type
Connection between position sensor and signal converter					
	Straight socket, M8x1, 4-pin	Straight plug, M8x1, 4-pin	2.5	**554035**	**NEBU-M8G4-K-2.5-M8G4**
Connection between signal converter and controller					
	Straight socket, M8x1, 4-pin	Cable, open end, 4-wire	2.5	**541342**	**NEBU-M8G4-K-2.5-LE4**
			5	**541343**	**NEBU-M8G4-K-5-LE4**
	Angled socket, M8x1, 4-pin	Cable, open end, 4-wire	2.5	**541344**	**NEBU-M8W4-K-2.5-LE4**
			5	**541345**	**NEBU-M8W4-K-5-LE4**

Accessories

Proximity sensor for size 16 ... 40

Ordering data – Proximity sensor for T-slot, magneto-resistive

Data sheets ➔ Internet: smt

	Type of mounting	Electrical connection, outlet direction of connection	Switching output	Cable length [m]	Part no.	Type
N/O contact						
	Insertable in the slot lengthwise	Cable, 3-wire, lateral	PNP	2.5	**547859**	**SMT-8G-PS-24V-E-2.5Q-OE**
		Plug M8x1, 3-pin, lateral		0.3	**547860**	**SMT-8G-PS-24V-E-0.3Q-M8D**
		Cable, 3-wire, lateral	NPN	2.5	**8065028**	**SMT-8G-NS-24V-E-2.5Q-OE**
		Plug M8x1, 3-pin, lateral		0.3	**8065027**	**SMT-8G-NS-24V-E-0.3Q-M8D**

Ordering data – Connecting cables

Data sheets ➔ Internet: nebu

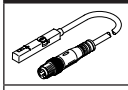
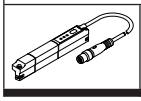
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	**541333**	**NEBU-M8G3-K-2.5-LE3**
			5	**541334**	**NEBU-M8G3-K-5-LE3**
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	**541338**	**NEBU-M8W3-K-2.5-LE3**
			5	**541341**	**NEBU-M8W3-K-5-LE3**

Position transmitter

The position transmitter continuously senses the position of the piston.
It has an analogue output with an output signal relative to the piston position.

Ordering data – Position transmitter for T-slot

Data sheets ➔ Internet: position transmitter

	For size	Position measuring range	Analogue output [V]	Analogue output [mA]	Type of mounting	Electrical connection	Cable length [m]	Part no.	Type
	16 ... 40	0 ... 40	0 ... 10	–	Insertable in the slot from above	Plug M8x1, 4-pin, in-line	0.3	**553744**	**SMAT-8M-U-E-0.3-M8D**
	32, 40	0 ... 50	–	4 ... 20	Insertable in the slot from above	Plug M8x1, 4-pin, in-line	0.3	**1531265**	**SDAT-MHS-M50-1L-SA-E-0.3-M8**

Ordering data – Connecting cables

Data sheets ➔ Internet: nebu

	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type
	Straight socket, M8x1, 4-pin	Cable, open end, 4-wire	2.5	**541342**	**NEBU-M8G4-K-2.5-LE4**
			5	**541343**	**NEBU-M8G4-K-5-LE4**
	Angled socket, M8x1, 4-pin	Cable, open end, 4-wire	2.5	**541344**	**NEBU-M8W4-K-2.5-LE4**
			5	**541345**	**NEBU-M8W4-K-5-LE4**

Festo - Your Partner in Automation

1 Festo Inc.

5300 Explorer Drive
Mississauga, ON L4W 5G4
Canada

Festo Customer Interaction Center
Tel: 1 877 463 3786
Fax: 1 877 393 3786
Email: customer.service.ca@festo.com

2 Festo Pneumatic

Av. Ceylán 3,
Col. Tequesquináhuac
54020 Tlalnepantla,
Estado de México

Multinational Contact Center
01 800 337 8669

ventas.mexico@festo.com

3 Festo Corporation

1377 Motor Parkway
Suite 310
Islandia, NY 11749

4 Regional Service Center

7777 Columbia Road
Mason, OH 45040

Festo Customer Interaction Center
1 800 993 3786
1 800 963 3786
customer.service.us@festo.com

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