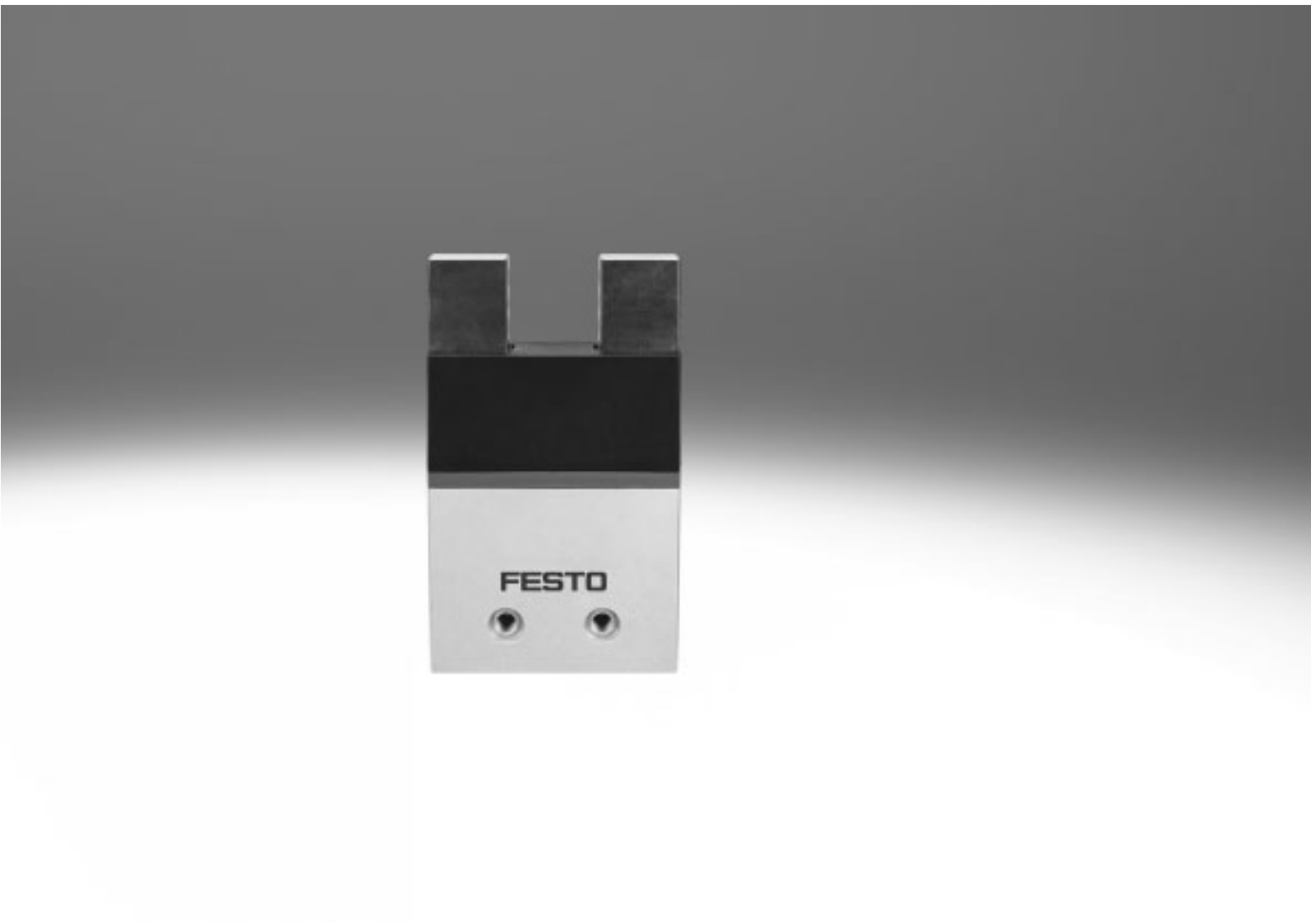
Parallel grippers DHPS



Parallel grippers DHPS

Key features

At a glance

General information

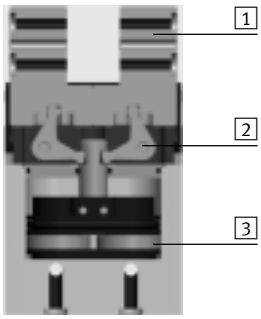
- Resilient and precise T-slot guide of the gripper jaws
- Oval piston for high gripping forces
- High gripping forces with compact dimensions
- Gripper jaw centring options
- Max. repetition accuracy
- Gripping force retention
- Internal fixed flow control
- Wide range of options for mounting on drive units
- Sensor technology:
  - Adaptable position sensor for the small grippers
  - Integratable proximity sensors for the medium and large grippers

Flexible range of applications

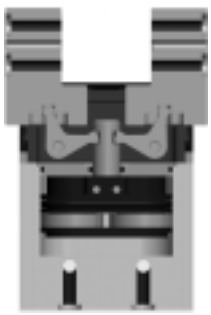
- Can be used as a double-acting and single-acting gripper
- Compression spring for supplementary or retaining gripping forces
- Suitable for external and internal gripping

The technology in detail

Gripper closed



Gripper open



1 Gripper jaw
2 Reversing lever
3 Piston with magnet

Note

Gripper selection sizing software
➔ www.festo.com

Position sensing/force control

With position transmitter SMAT-8M, SDAT

Analogue positional 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

Multiple positions can be sensed:

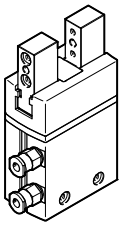
- Open
- Closed
- Workpiece gripped

Parallel grippers DHPS

Key features

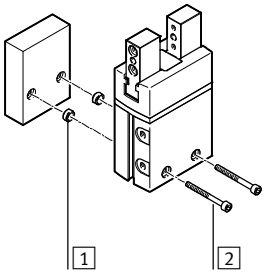
Supply ports

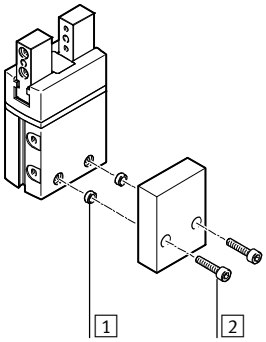
At the side



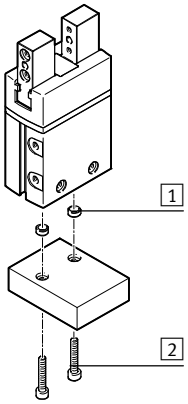
Mounting options

At the side



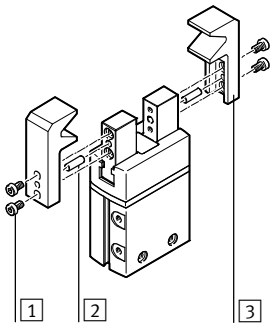


From underneath



1 Centring sleeves
2 Mounting screws

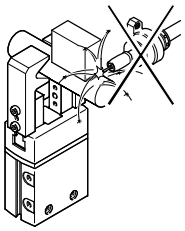
Mounting options for external gripper fingers



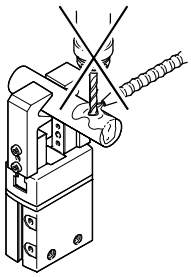
1 Mounting screws
2 Centring pins
3 Gripper fingers

Note

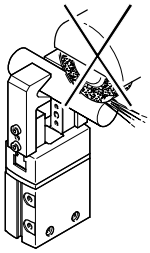
These grippers are not designed for the following or similar sample applications:



- Welding spatter



- Machining
- Aggressive media



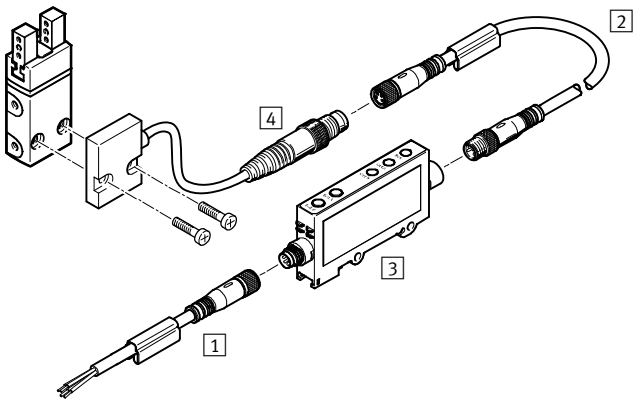
- Grinding dust

Parallel grippers DHPS

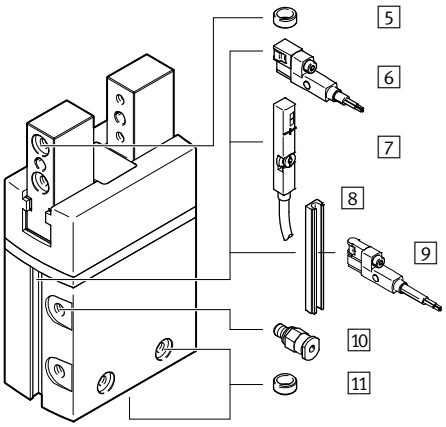
Peripherals overview

Peripherals overview

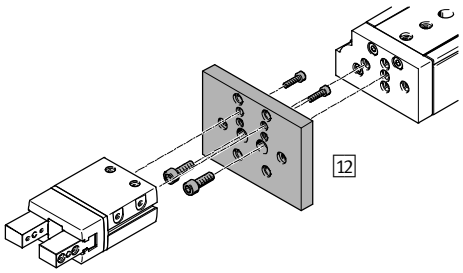
DHPS-6



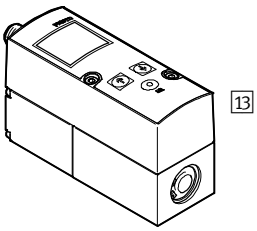
DHPS-10 ... 35



System product for handling and assembly technology



Proportional pressure regulator VPPM



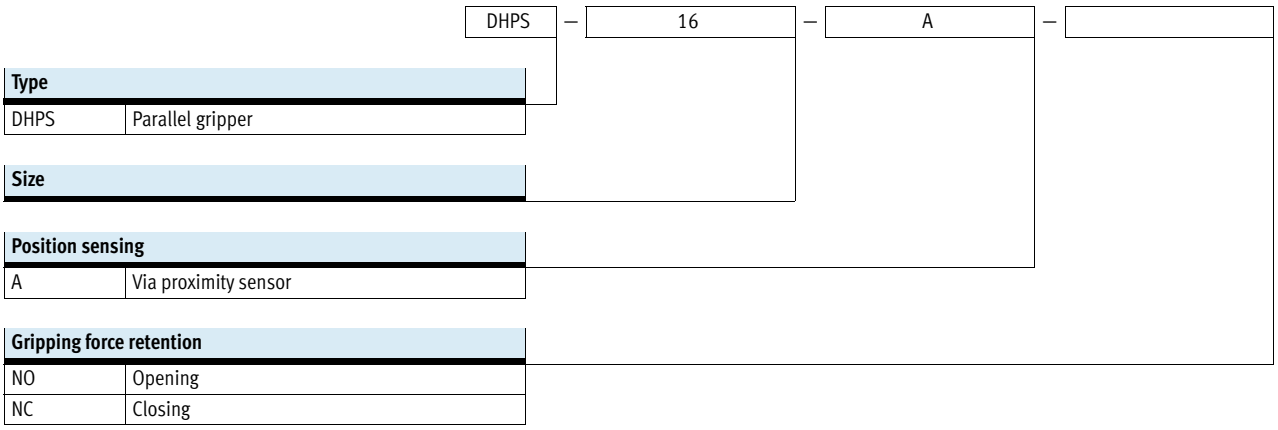
Parallel grippers DHPS

Peripherals overview

Accessories				
	Type	Size	Description	➔ Page/Internet
1	Connecting cable NEBU	6	• Connection between signal converter and controller	22
2	Connecting cable NEBU	6	• Connection between position sensor and signal converter	22
3	Signal converter SVE4	6	• For evaluating signals for position sensor SMH-S1	22
4	Position sensor SMH-S1	6	• Adaptable and integratable sensor technology, for sensing the piston position	22
5	Centring sleeve ZBH	6 ... 35	• For centring the gripper fingers on the gripper jaws • The delivery scope of the gripper for size 10 and above includes 4 centring sleeves	21
6	Proximity sensor SMT-8G	10 ... 35	• For sensing the piston position • Proximity sensor does not project past the housing at the bottom	23
7	Position transmitter SMAT-8M	10 ... 35	• Continuously senses the position of the piston. Has an analogue output with an output signal in proportion to the piston position.	23
	Position transmitter SDAT	35		
8	Bondable sensor rail HGP-SL	10 ... 35	• Enables the use of proximity sensors SME/SMT-10	21
9	Proximity sensor SMT-10G	10 ... 35	• For sensing the piston position • Proximity sensor does not project past the housing at the bottom • With sensor rail HGP-SL10-...	23
10	Push-in fitting QS	6 ... 35	• For connecting compressed air tubing with standard O.D.	qs
11	Centring sleeve ZBH	6 ... 35	• For centring the gripper when mounting • The scope of delivery of the gripper includes 2 centring sleeves	21
12	Adapter kit DHAA, HMSV, HAPG, HAPS, HMVA	6 ... 35	• Connecting plate between drive and gripper	16
13	Proportional pressure regulator VPPM	6 ... 35	• For infinite adjustment of the gripping force	vppm

Parallel grippers DHPS

Type codes



Type	
DHPS	Parallel gripper

Size

Position sensing	
A	Via proximity sensor

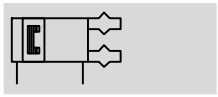
Gripping force retention	
NO	Opening
NC	Closing

Parallel grippers DHPS

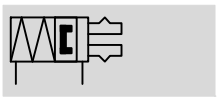
Technical data

FESTO

Function
Double-acting
DHPS-...-A



Function – Variants
Single-acting or
with gripping force retention ...
... opening DHPS-...-NO



... closing DHPS-...-NC

Size
6 ... 35 mm

Total stroke
4 ... 25 mm

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General technical data							
Size		6	10	16	20	25	35
Design		Lever					
		Forced motion sequence					
Mode of operation		Double-acting					
Gripper function		Parallel					
Guide		Plain-bearing guide					
Gripping force retention		–	NO, NC	NO, NC	NO, NC	NO, NC	NO, NC
Number of gripper jaws		2					
Max. load per external gripper finger[1]	[g]	10	60	150	250	350	450
Stroke per gripper jaw	[mm]	2	3	5	6.5	7.5	12.5
Pneumatic connection		M3	M3	M3	M5	G1/8	G1/8
Repetition accuracy[2]	[mm]	≤ 0.02					
Max. interchangeability	[mm]	≤ ±0.2					
Max. operating frequency	[Hz]	4		3		2	
Rotational symmetry	[mm]	< ∅ 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) Valid for unthrottled operation
2) End-position drift under constant conditions of use with 100 consecutive strokes in the direction of movement of the gripper jaws

Operating and environmental conditions							
Size		6	10	16	20	25	35
Min. operating pressure							
DHPS-...-A	[bar]	2					
DHPS-...-A-N	[bar]	–	4				
Max. operating pressure	[bar]	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]		1					

1) Note operating range of proximity sensors
2) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Parallel grippers DHPS

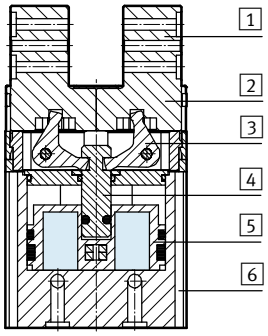
Technical data

FESTO

Weight [g]						
Size	6	10	16	20	25	35
DHPS-...-A	19	67	184	380	700	1285
DHPS-...-A-N	–	68	188	387	713	1345

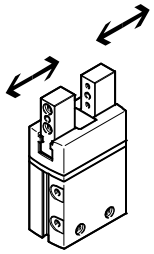
Materials

Sectional view



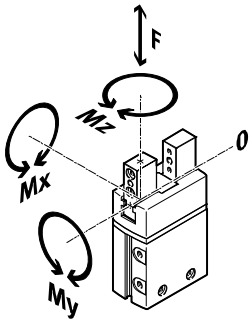
Parallel gripper		
1	Gripper jaw	High-alloy stainless steel
2	Cover cap	Polyamide
3	Reversing lever	Hardened sintered steel
4	Piston rod	Tempered steel
5	Piston	Polyacetal
6	Housing	Hard anodised wrought aluminium alloy
–	Seals	Nitrile rubber
–	Note on materials	Free of copper and PTFE
		RoHS-compliant

Gripping force [N] at 6 bar



Size		6	10	16	20	25	35
Gripping force per gripper jaw							
DHPS-...-A	Opening	15	39	105	162	249	483
	Closing	13.5	34.5	96	147	228	450
Total gripping force							
DHPS-...-A	Opening	30	80	210	320	500	970
	Closing	25	70	190	290	450	910

Characteristic load values at the gripper jaws

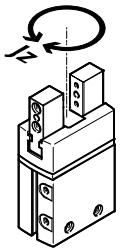


The indicated permissible forces and torques apply to a single gripper jaw. They include the lever arm, additional applied loads due to the workpiece or external gripper fingers and acceleration forces occurring during movement.

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

Size		6	10	16	20	25	35
Max. permissible force F_z	[N]	10	60	150	250	350	450
Max. permissible torque M_x	[Nm]	0.5	3	8	14	30	50
Max. permissible torque M_y	[Nm]	0.5	3	8	14	30	50
Max. permissible torque M_z	[Nm]	0.5	3	8	14	30	50

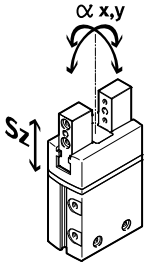
Mass moment of inertia [kgm²x10⁻⁴]



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

Size	6	10	16	20	25	35
DHPS-...-A	0.01	0.08	0.47	1.49	3.83	12.70
DHPS-...-A-NO	–	0.08	0.47	1.52	3.92	12.83
DHPS-...-A-NC	–	0.08	0.47	1.49	3.84	12.73

Gripper jaw backlash

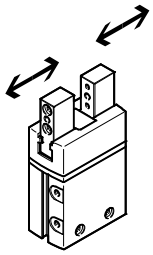


The plain-bearing guide used in the grippers means that there is backlash between the gripper jaws and the housing. The values entered in the table for the backlash were calculated in accordance with the traditional accumulative tolerance method.

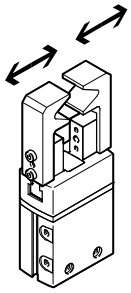
Size		6	10	16	20	25	35
Max. gripper jaw backlash Sz	[mm]	≤ 0.02					
Max. gripper jaw angular backlash ax, ay	[°]	≤ 1	≤ 0.5				

Opening and closing times [ms] at 6 bar

Without external gripper fingers



With external gripper fingers

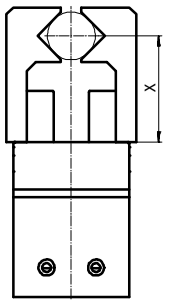


The indicated opening and closing times [ms] were measured at room temperature at an operating pressure of 6 bar with horizontally mounted grippers without additional gripper fingers. The grippers must be throttled for greater loads [g]. Opening and closing times must then be adjusted accordingly.

Size		6	10	16	20	25	35
Without external gripper fingers							
DHPS-...-A	Opening	8	21	33	59	48	95
	Closing	17	28	41	87	63	123
DHPS-...-A-NO	Opening	–	19	32	58	45	88
	Closing	–	30	50	97	78	151
DHPS-...-A-NC	Opening	–	58	48	72	68	131
	Closing	–	24	37	62	52	99
With external gripper fingers (as a function of the load per gripper finger)							
DHPS-...	20 g	50	–	–	–	–	–
	100 g	–	50	–	–	–	–
	125 g	–	100	–	–	–	–
	150 g	–	200	–	–	–	–
	200 g	–	–	100	–	–	–
	250 g	–	–	200	–	–	–
	300 g	–	–	300	100	–	–
	350 g	–	–	–	200	–	–
	400 g	–	–	–	300	100	–
	500 g	–	–	–	–	200	–
	600 g	–	–	–	–	300	200
	750 g	–	–	–	–	–	300

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

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



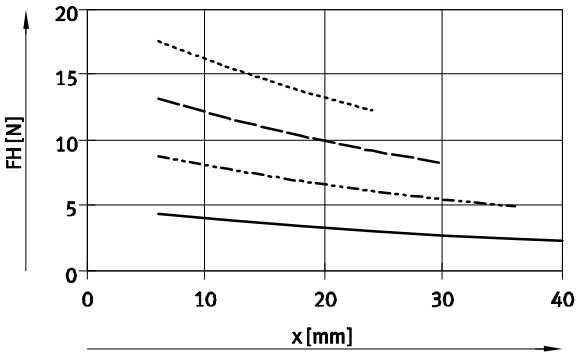
2 bar
4 bar
6 bar
8 bar

Note

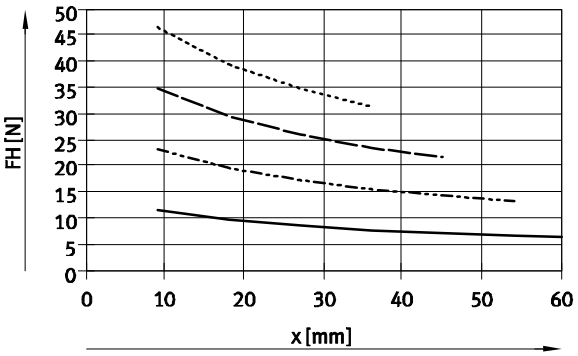
Gripper selection sizing software
➔ www.festo.com

External gripping (closing)

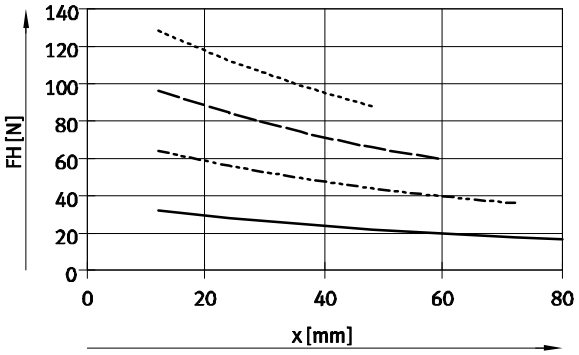
DHPS-6



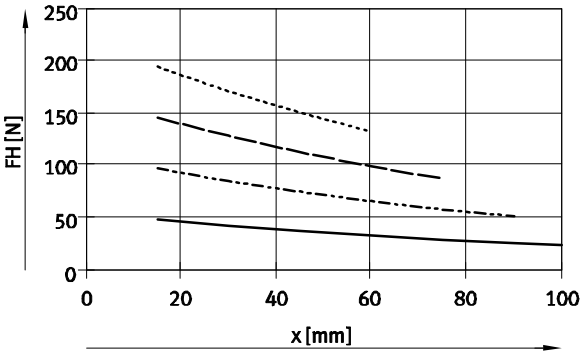
DHPS-10



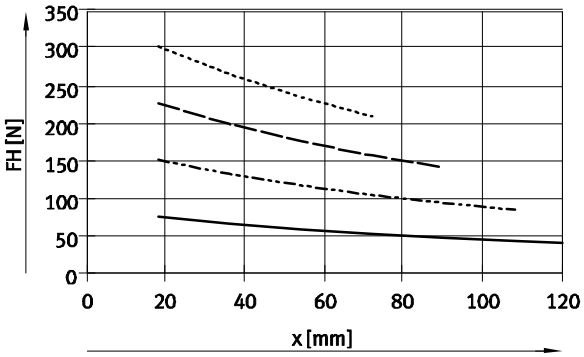
DHPS-16



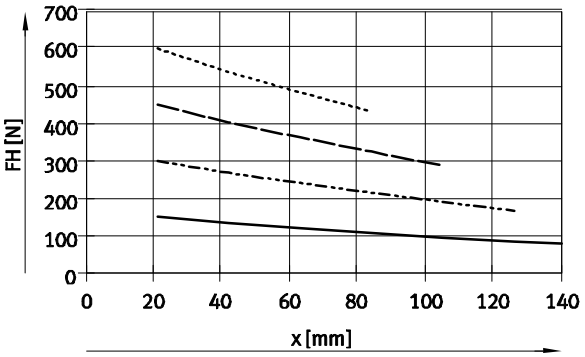
DHPS-20



DHPS-25

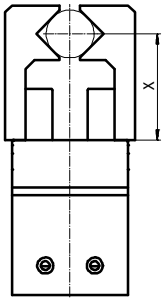


DHPS-35



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

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



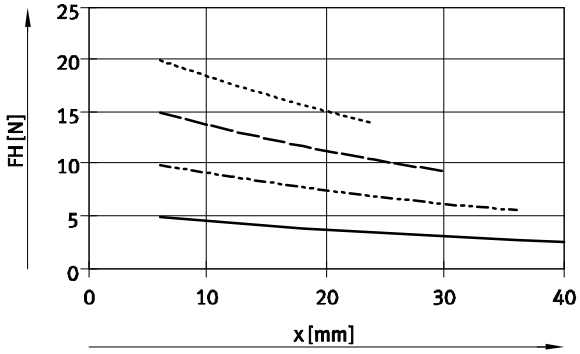
2 bar
4 bar
6 bar
8 bar

- Note

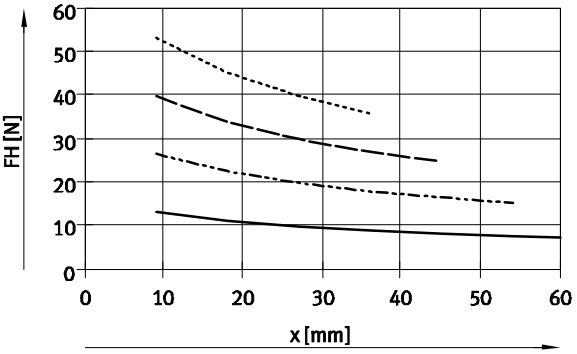
Gripper selection sizing software
➔ www.festo.com

Internal gripping (opening)

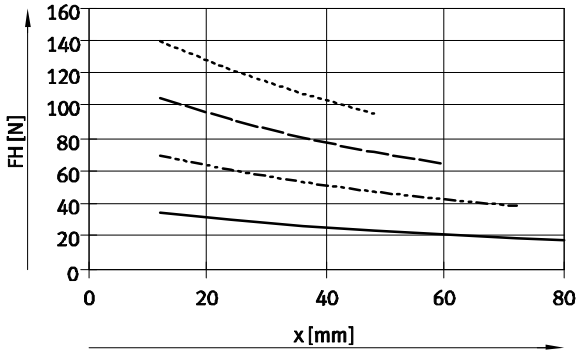
DHPS-6



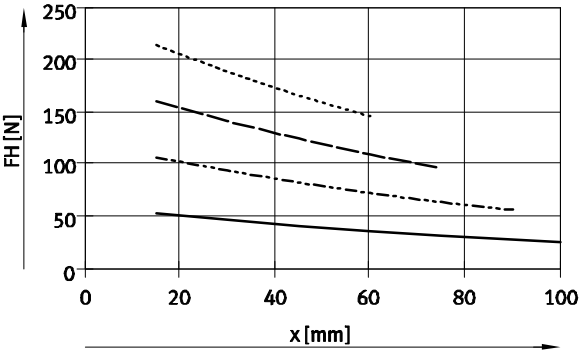
DHPS-10



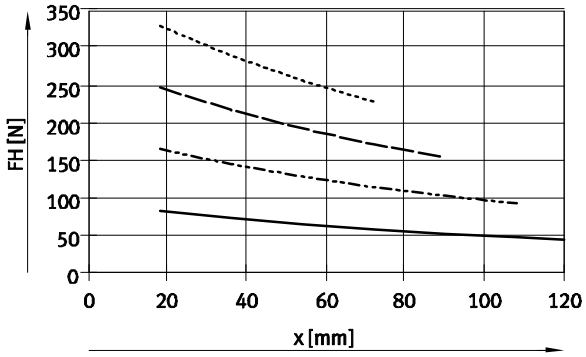
DHPS-16



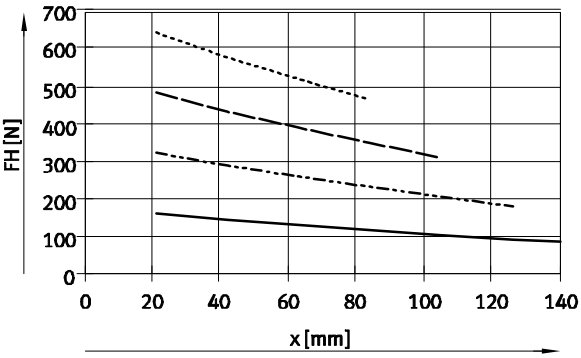
DHPS-20



DHPS-25



DHPS-35

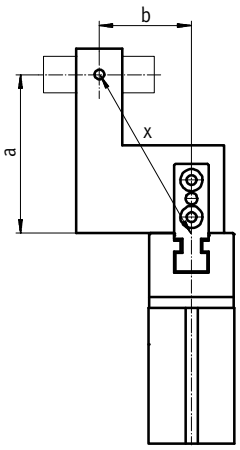


Gripping force F_H per gripper jaw at 6 bar as a function of lever arm x and eccentricity a and b

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 10/11) using the calculated value x.



Calculation example

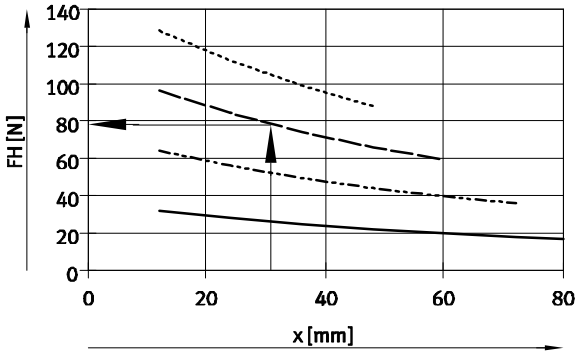
Given:
Distance a = 25 mm
Distance b = 20 mm
To be calculated:
The gripping force at 6 bar,
with a DHPS-16,
used as an external gripper

Procedure:
Calculating the lever arm x

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

x = 32 mm

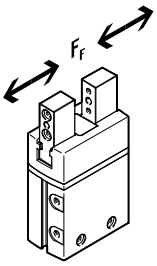
The graph (➔ page 10) gives a value of F_H = 79 N for the gripping force.

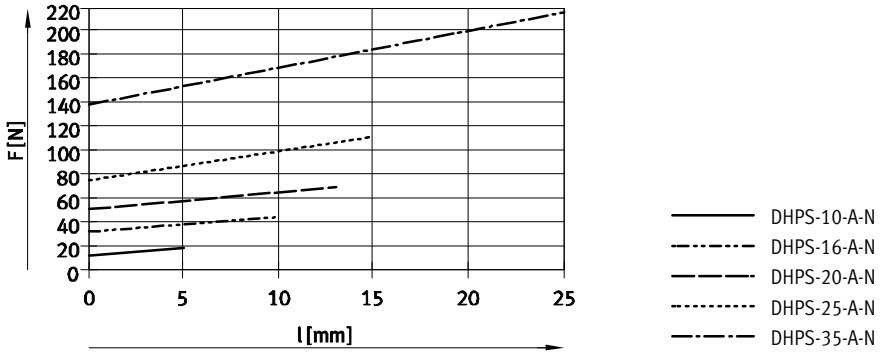


Spring force F_F as a function of size and total gripper jaw stroke l

Gripping force retention for DHPS-...-N...

The spring forces F_F as a function of gripper jaw stroke l can be determined from the following graph.





Spring force F_F as a function of size, gripper jaw stroke l and lever arm x per gripper finger

The lever arm x must be taken into consideration when determining the actual spring force F_{Ftotal}.
The formulae for calculating the spring force are provided in the table below.

Gripping force retention	Size	F_{Ftotal} per gripper finger
NO, NC	10	$-0.02^* x+0.5^* F_F$
	16	$-0.08^* x+0.5^* F_F$
	20	$-0.1^* x+0.5^* F_F$
	25	$-0.12^* x+0.5^* F_F$
	35	$-0.19^* x+0.5^* F_F$

Determination of the actual gripping forces F_{Gr} for DHPS-...-NO and DHPS-...-NC as a function of application

The parallel grippers with integrated spring type DHPS-...-NO (opening gripping force retention) and DHPS-...-NC (closing gripping force retention) can be used as
- single-acting grippers
- grippers with supplementary gripping force and
- grippers with gripping force retention

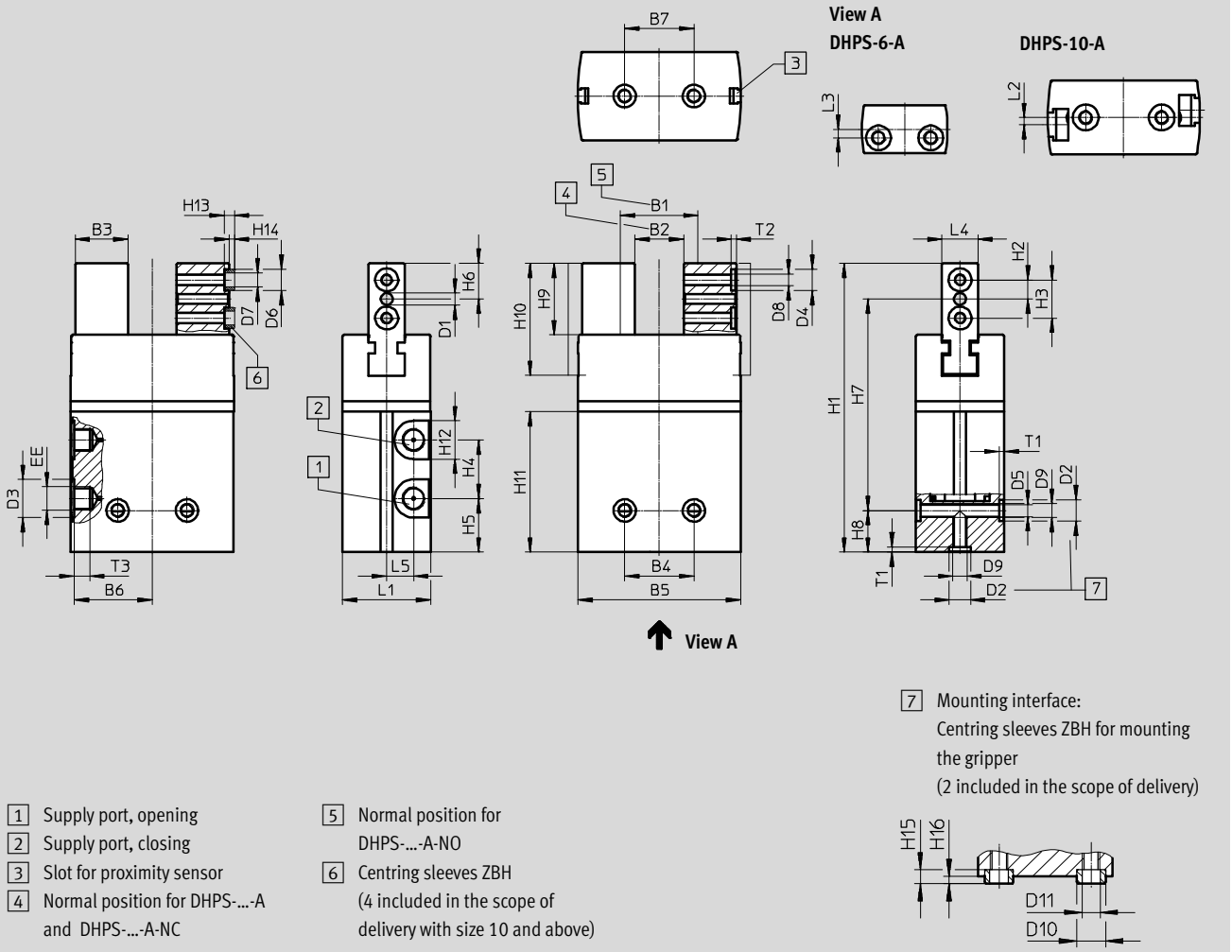
depending on requirements.

In order to calculate the available gripping forces F_{Gr} (per gripper jaw), the gripping force (F_H) and spring force (F_{Ftotal}) must be combined accordingly.

Application

Single-acting	Supplementary gripping force	Gripping force retention
• Gripping with spring force: $F_{Gr} = F_{Ftotal}$	• Gripping with pressure and spring force: $F_{Gr} = F_H + F_{Ftotal}$	• Gripping with spring force: $F_{Gr} = F_{Ftotal}$
• Gripping with pressure force: $F_{Gr} = F_H - F_{Ftotal}$		

Dimensions Download CAD data ➔ **www.festo.com**



1 Supply port, opening
2 Supply port, closing
3 Slot for proximity sensor
4 Normal position for DHPS-...-A and DHPS-...-A-NC
5 Normal position for DHPS-...-A-NO
6 Centring sleeves ZBH (4 included in the scope of delivery with size 10 and above)
7 Mounting interface: Centring sleeves ZBH for mounting the gripper (2 included in the scope of delivery)

Size [mm]	B1 ±0.5	B2 ±0.5	B3 −0.03	B4[1]	B5 ±0.1	B6	B7[1]	D1 ∅ H8	D2 ∅ H8	D3 ∅	D4 ∅ H8
6	10	6	5.5	11	18	8.65	11	1.5	5	7	–
10	21.8	15.8	7	16	32	15.4	16	2	5	7	5
16	27.8	17.8	13	25	47	22.65	25	3	7	7	7
20	30	17	17.5	25	55.6	26.65	25	4	7	10	7
25	35.4	20.4	22	29	68.2	32.65	29	4	9	16	9
35	56	31	27	33	88	42.25	33	5	12	16	9

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

Parallel grippers DHPS

Technical data

Size [mm]	D5 ∅ +0.1	D6 ∅ h7	D7 ∅	D8	D9	D10 ∅ h7	D11 ∅	EE	H1	H2	H3[1]
6	2.5	–	–	M2	M3	–	–	M3	45.5	2.9	5.8
10	2.5	5	3.2	M3	M3	5	3.2	M3	66	4	8
16	3.3	7	5.3	M4	M4	5	3.2	M3	80	5.5	11
20	3.3	7	5.3	M4	M4	7	5.3	M5	101	7	14
25	5.1	9	6.4	M5	M6	9	6.4	G1/8	121	8	16
35	6.4	9	6.4	M6	M8	12	10.3	G1/8	142	8.5	17

Size [mm]	H4	H5	H6	H7 ±0.2	H8[2]	H9	H10	H11	H12	H13 –0.2	H14 –0.3
6	15	4	5	33	7.5	9.55	15.8	25.3	7	–	–
10	15.5	10.5	7.5	51	7.5	15.2	23	35	7	2.4	1.2
16	18	11	10	62.5	7.5	20	32.5	38.1	7	3	1.4
20	23	16	12.5	81	7.5	25	39.5	50	10	3	1.4
25	24.5	22.5	15	88.5	17.5	30	47	58.8	16	4	1.9
35	29	24	16	108.5	17.5	32	53	65.3	16	4	1.9

Size [mm]	H15 –0.2	H16 –0.3	L1	L2	L3[1]	L4 –0.05	L5	T1 +0.1	T2 +0.1	T3 +0.5
6	–	–	$10^{+0.1}$	–	1.8	5	1.5	1.2	–	3.5
10	2.4	1.2	$15.5^{+0.1}$	1.5	–	7	5	1.2	1.2	5
16	3	1.4	$22^{+0.1}$	–	–	10	7	1.6	1.6	6
20	3	1.4	$30_{\pm 0.1}$	–	–	12	9	1.6	1.6	6
25	4	1.9	$37_{\pm 0.1}$	–	–	15	11.3	2.1	2.1	6.5
35	4	1.9	$45^{+0.1}$	–	–	20	13.5	2.6	2.1	6.5

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

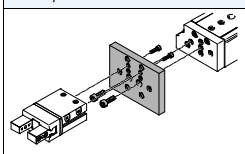
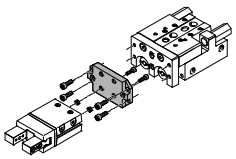
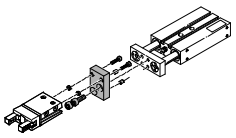
Size	Double-acting		Single-acting or with gripping force retention			
	without compression spring		Opening		Closing	
[mm]	Part No.	Type	Part No.	Type	Part No.	Type
6	**1254039**	**DHPS-6-A**	**–**		**–**	
10	**1254040**	**DHPS-10-A**	**1254041**	**DHPS-10-A-NO**	**1254042**	**DHPS-10-A-NC**
16	**1254043**	**DHPS-16-A**	**1254044**	**DHPS-16-A-NO**	**1254045**	**DHPS-16-A-NC**
20	**1254046**	**DHPS-20-A**	**1254047**	**DHPS-20-A-NO**	**1254048**	**DHPS-20-A-NC**
25	**1254049**	**DHPS-25-A**	**1254050**	**DHPS-25-A-NO**	**1254051**	**DHPS-25-A-NC**
35	**1254052**	**DHPS-35-A**	**1254053**	**DHPS-35-A-NO**	**1254054**	**DHPS-35-A-NC**

Adapter kit
HAPG, HAPS, 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		Adapter kit		
	Size	Size			CRC[1]	Part No.	Type
DGSL/DHPS	DGSL	DHPS			HMSV		
	4, 6	6	■	■	2	**548783**	**HMSV-53**
	8, 10	10	■	■		**548784**	**HMSV-54**
	12, 16	16	■	■		**548785**	**HMSV-55**
	20, 25	20, 25	■	■		**548786**	**HMSV-56**
SLT/DHPS	SLT	DHPS			HAPS		
	6	6	■	–	2	**178447**	**HAPS-1**
	16	10	■	–		**178449**	**HAPS-3**
	20	16, 20	■	–		**178450**	**HAPS-4**
	25	25	■	–		**178451**	**HAPS-5**
DPZ/DHPS	DPZ	DHPS			HAPG		
	10, 16	10	■	–	2	**163250**	**HAPG-1**
	16	16, 20	■	–		**163251**	**HAPG-2**
	20	16, 20	■	–		**163252**	**HAPG-3**
	25, 32	25	■	–		**163253**	**HAPG-4**

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

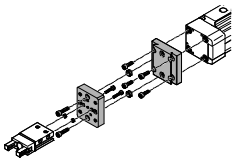
Adapter kit
HAPG, HMSV, HMVA

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
DGPL , DGE-..., DGEA/DHPS	DG...	DHPS			HMVA, HAPG, HMSV		
	Direct mounting						
	18[2], 25, 32[3]	6	■	■	2	**196788**	**HMVA-DLA18/25**
						192706	**HAPG-37-S1**
	40	6	■	■		**196790**	**HMVA-DLA40**
						192706	**HAPG-37-S1**
	18[2], 25, 32[3]	10	■	■		**196788**	**HMVA-DLA18/25**
						192705	**HAPG-36-S1**
	40	10	■	■		**196790**	**HMVA-DLA40**
						192705	**HAPG-36-S1**
	18[2], 25, 32[3]	16	■	■		**196788**	**HMVA-DLA18/25**
						193922	**HAPG-37-S4**
	40	16	■	■		**196790**	**HMVA-DLA40**
						193922	**HAPG-37-S4**
	Dovetail mounting						
	18[2], 25	10	■	■	2	**196788**	**HMVA-DLA18/25**
						177767	**HMSV-27**
	32[3]	10	■	■		**196789**	**HMVA-DL32**
						177767	**HMSV-27**
	40	10	■	■		**196790**	**HMVA-DLA40**
						177767	**HMSV-27**
	18[2], 25	16	■	■		**196788**	**HMVA-DLA18/25**
						177768	**HMSV-28**
	32[3]	16	■	■		**196789**	**HMVA-DL32**
						177768	**HMSV-28**
	40	16	■	■		**196790**	**HMVA-DLA40**
						177768	**HMSV-28**
	32[3]	25	■	■		**196790**	**HMVA-DL32**
						177769	**HMSV-29**
	40	25	■	■		**196790**	**HMVA-DLA40**
						177769	**HMSV-29**
	40	35	■	■		**196790**	**HMVA-DLA40**
						177770	**HMSV-30**

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
2) Only for DGEA-...
3) Only for DGPL

Parallel grippers DHPS

Accessories

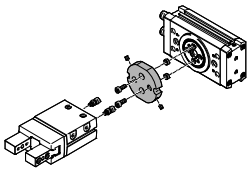
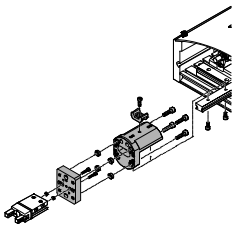
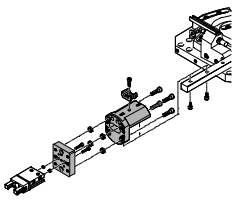
Adapter kit
DHAA, HAPG

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	Mounting option		Adapter kit		
	Size	Size			CRC[1]	Part No.	Type
DRRD/DHPS	DRRD	DHPS			DHAA		
	8	6	■	■	2	**2808892**	**DHAA-G-Q11-8-B1-6**
	10	6	■	■		**2807644**	**DHAA-G-Q11-10-B1-6**
	12	6	■	■		**2805783**	**DHAA-G-Q11-12-B1-6**
	12	10	■	■		**2802687**	**DHAA-G-Q11-12-B1-10**
	16	10	■	■		**2190504**	**DHAA-G-Q11-16-B1-10**
	16	16	■	■		**2190393**	**DHAA-G-Q11-16-B1-16**
	16	20	■	■		**2187838**	**DHAA-G-Q11-16-B1-20**
	20	16	■	■		**2190284**	**DHAA-G-Q11-20-B1-16**
	20	20	■	■		**2187713**	**DHAA-G-Q11-20-B1-20**
	20	25	■	■		**2185820**	**DHAA-G-Q11-20-B1-25**
	25	16	■	■		**1471634**	**DHAA-G-Q11-25-B1-16**
	25	20	■	■		**1722652**	**DHAA-G-Q11-25-B1-20**
	25	25	■	■		**1725707**	**DHAA-G-Q11-25-B1-25**
	32	25	■	■		**2186909**	**DHAA-G-Q11-32-B1-25**
	32	35	■	■		**2187316**	**DHAA-G-Q11-32-B1-35**
	35, 40	35	■	■		**2187606**	**DHAA-G-Q11-35/40-B1-35**
HSP/DHPS	HSP	DHPS			HAPG		
	12	6	■	–	2	**192709**	**HAPG-60-S1**
						540881	**HAPG-70-B**
	16	6	■	–		**192706**	**HAPG-37-S1**
						540882	**HAPG-71-B**
	16	10	■	–		**192705**	**HAPG-36-S1**
						540882	**HAPG-71-B**
	25	10	■	–		**192705**	**HAPG-36-S1**
						540883	**HAPG-72-B**
	25	16	■	–		**193922**	**HAPG-37-S4**
						540883	**HAPG-72-B**
HSW/DHPS	HSW	DHPS			HAPG		
	12, 16	6	■	–	2	**192706**	**HAPG-37-S1**
						540882	**HAPG-71-B**
	12, 16	10	■	–		**192705**	**HAPG-36-S1**
						540882	**HAPG-71-B**

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Adapter kit
HAPG

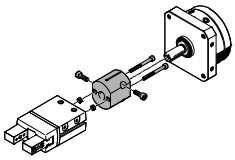
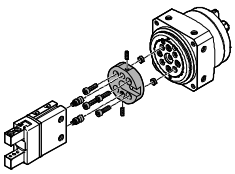
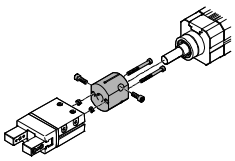
Material:
Wrought aluminium alloy
Free of copper and PTFE
RoHS-compliant

- 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
DSM/DHPS	DSM-...-FW	DHPS			HAPG		
	6, 8, 10	6	■	■	2	**187568**	**HAPG-34**
	DSM-...	DHPS			HAPG		
	12	10	■	■	2	**163266**	**HAPG-17**
	16	10	■	■		**163267**	**HAPG-18**
	16	16, 20	■	■		**163268**	**HAPG-19**
	25	16, 20	■	■		**163269**	**HAPG-20**
	25	25	■	■		**163270**	**HAPG-21**
	32	25	■	■		**163271**	**HAPG-22**
DSM-...-HD/DHPS	DSM-...-HD	DHPS			DHAA		
	12	6	■	■	2	**8071899**	**DHAA-G-R3-12-B18-6**
	12	10	■	■		**8072157**	**DHAA-G-R3-12-B18-10**
	16	10	■	■		**8071917**	**DHAA-G-R3-16-B18-10**
	16	16	■	■		**8079173**	**DHAA-G-R3-16-B18-16**
	25	16, 20	■	■		**8071956**	**DHAA-G-R3-25-B18-16**
	32	25	■	■		**8079208**	**DHAA-G-R3-32-B18-25**
DSL/DHPS	DSL	DHPS			HAPG		
	16	10	■	■	2	**163266**	**HAPG-17**
	20	10	■	■		**163267**	**HAPG-18**
	20	16, 20	■	■		**163268**	**HAPG-19**
	25	16, 20	■	■		**163269**	**HAPG-20**
	25	25	■	■		**163270**	**HAPG-21**
	32	25	■	■		**163271**	**HAPG-22**

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Parallel grippers DHPS

Accessories

Adapter kit
DHAA, HAPG, HMSV

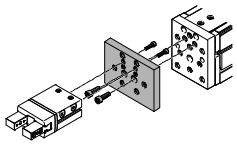
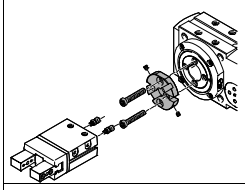
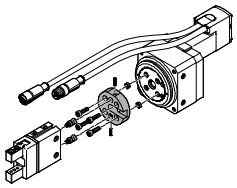
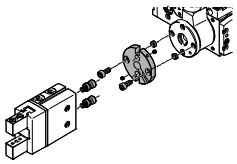
Material:
Wrought aluminium alloy
Free of copper and PTFE
RoHS-compliant

Note

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

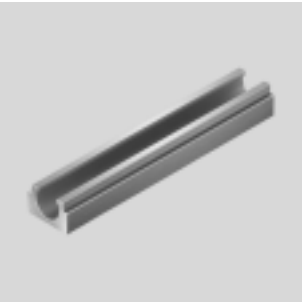
Permissible drive/gripper combinations with adapter kit

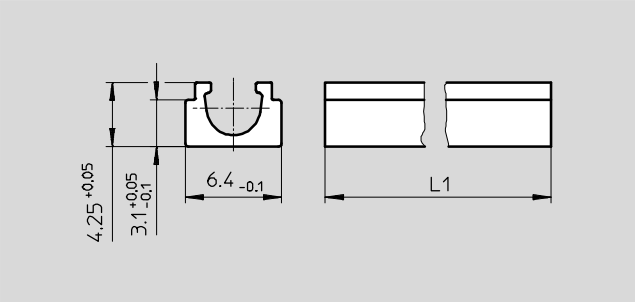
Download CAD data ➔ **www.festo.com**

Combination	Drive	Gripper	Mounting option		Adapter kit		
	Size	Size			CRC[1)]	Part No.	Type
EGSL/DHPS	EGSL	DHPS			HMSV		
	35	6	■	■	2	**548783**	**HMSV-53**
						1088262	**HMSV-70**
	35	10	■	■		**548784**	**HMSV-54**
						1088262	**HMSV-70**
	45, 55	16	■	■		**548785**	**HMSV-55**
	75	20, 25	■	■		**548786**	**HMSV-56**
ERMB/DHPS	ERMB	DHPS			HAPG		
	20	16, 20	■	■	2	**184479**	**HAPG-SD2-3**
	25	16, 20	■	■		**184482**	**HAPG-SD2-6**
	20	25	■	■		**184480**	**HAPG-SD2-4**
	25	25	■	■		**184483**	**HAPG-SD2-7**
	32	25	■	■		**184485**	**HAPG-SD2-9**
	32	35	■	■		**184486**	**HAPG-SD2-10**
ERMO/DHPS	ERMO	DHPS			DHAA		
	12	6	■	■	2	**8071899**	**DHAA-G-R3-12-B18-6**
	12	10	■	■		**8072157**	**DHAA-G-R3-12-B18-10**
	16	10	■	■		**8071917**	**DHAA-G-R3-16-B18-10**
	16	16	■	■		**8079173**	**DHAA-G-R3-16-B18-16**
	25	16, 20	■	■		**8071956**	**DHAA-G-R3-25-B18-16**
	32	25	■	■		**8079208**	**DHAA-G-R3-32-B18-25**
EHMB/DHPS	EHMB	DHPS			HAPG		
	20	25	■	■	2	**184485**	**HAPG-SD2-9**
	20	35	■	■		**184486**	**HAPG-SD2-10**
	25, 32	35	■	■		**526027**	**HAPG-SD2-21**

Sensor rail HGP-SL
can be glued into place

Material:
Wrought aluminium alloy





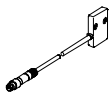
Dimensions and ordering data

For size [mm]	L1	Weight [g]	Part No.	Type
10	35	1.4	**535582**	**HGP-SL-10-10**
16	38	1.5	**535583**	**HGP-SL-10-16**
20	50	2.0	**535584**	**HGP-SL-10-20**
25	58	2.3	**535585**	**HGP-SL-10-25**
35	65	2.6	**535586**	**HGP-SL-10-35**

Ordering data

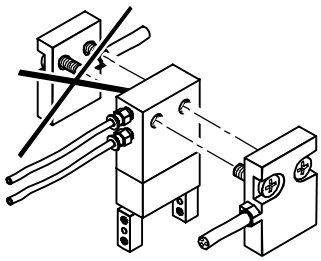
	For size [mm]	Description	Weight [g]	Part No.	Type	PU[1]
Centring sleeve ZBH					Technical data ➔ Internet: zbh	
	10	For centring the gripper fingers on the gripper jaws	1	**189652**	**ZBH-5**	10
	16, 20		1	**186717**	**ZBH-7**	
	25, 35		1	**150927**	**ZBH-9**	
	6, 10	For centring the gripper when mounting	1	**189652**	**ZBH-5**	
	16, 20		1	**186717**	**ZBH-7**	
	25		1	**150927**	**ZBH-9**	
	35		1	**189653**	**ZBH-12**	

1) Packaging unit

Ordering data				
Type	For size	Weight [g]	Part No.	Type
Position sensor SMH-S1				Technical data ➔ Internet: smh-s1
	6	20	**175710**	**SMH-S1-HGP06**

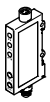
Installation instructions for position sensor SMH-S1

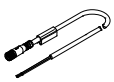
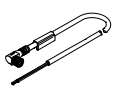
To guarantee the functionality of the position sensor, the outlet for the cable and the compressed air tubing must be facing the same direction during installation.



Signal converter SVE4 for position sensor SMH-S1

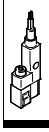
- Converts analogue signals into switching points
- Switching function freely programmable with teach-in
- Threshold value, hysteresis or window comparator

Ordering data							
Type	For size	Input connection	Output connection	Switching output	Weight [g]	Part No.	Type
Signal converter SVE4							Technical data ➔ Internet: sve4
	6	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						Technical data ➔ 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**	

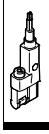
Proximity sensor for size 10 … 35

Ordering data – Proximity sensors for T-slot, magneto-resistive — Technical data ➔ Internet: smt

	Type of mounting	Electrical connection, connection direction	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**

Proximity sensor for size 10 … 35, with sensor rail HGP-SL10-…

Ordering data – Proximity sensors for C-slot, magneto-resistive — Technical data ➔ Internet: smt

	Type of mounting	Electrical connection, connection direction	Switching output	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot lengthwise	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**
		Cable, 3-wire, lateral	NPN	2.5	**8065030**	**SMT-10G-NS-24V-E-2,5Q-OE**
		Plug M8x1, 3-pin, lateral		0.3	**8065029**	**SMT-10G-NS-24V-E-0,3Q-M8D**

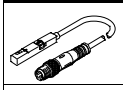
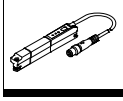
Ordering data – Connecting cables — Technical data ➔ Internet: nebu

	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**

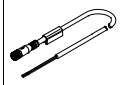
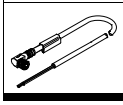
Position transmitter

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

Ordering data – Position transmitters for T-slot — Technical data ➔ 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
	10 … 35	0 … 40	0 … 10	–	Insertable in slot from above	Plug M8x1, 4-pin, in-line	0.3	**553744**	**SMAT-8M-U-E-0,3-M8D**
	35	0 … 50	–	4 … 20	Insertable in 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 — Technical data ➔ 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**