

Parallel grippers DHPG

FESTO



Key features

At a glance

General

- Resilient and precise ball guide
- High gripping forces with compact dimensions
- Max. repetition accuracy
- Wide range of mounting and connection options
- Compressed air regulation

Flexible range of applications

- Sensor technology:
 - Proximity sensors for sensing piston position at the end positions
 - Position transmitter for sensing the piston position at any location
 - Large sizes have T-slots and C-slots
- Can be used as a double-acting or single-acting gripper
- Suitable for external and internal gripping

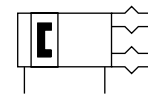
Gripper characteristic

[L] Long stroke

- available in sizes 10, 16

Position sensing

[A] Via proximity sensor



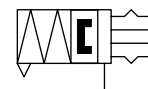
Gripping force backup

[NC] Normally closed



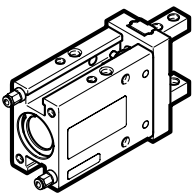
Gripping force backup

[NO] Normally open



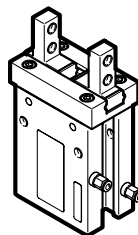
Pneumatic connection

[B] Underneath



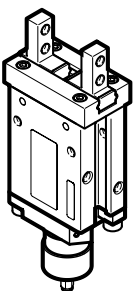
Pneumatic connection

[S] On the side



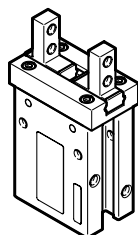
Pneumatic connection

[Z] Via mounting support



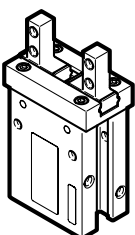
Type of mounting gripper finger

[] Standard



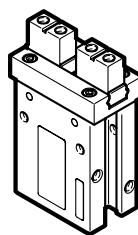
Type of mounting gripper finger

[1] Mounting holes on the side



Type of mounting gripper finger

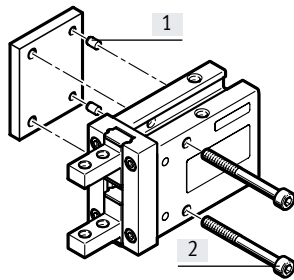
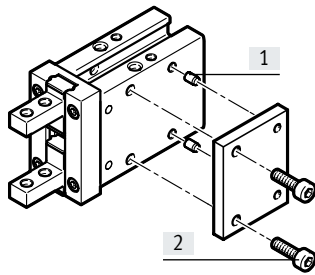
[2] Flat gripper fingers



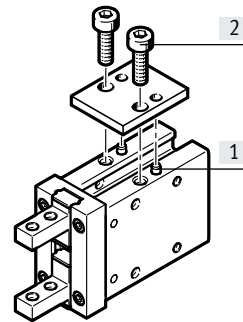
Key features

Mounting options

On the side

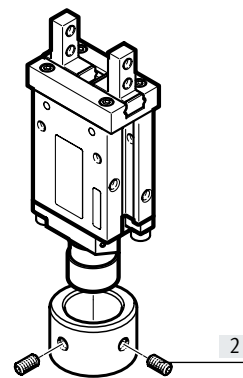
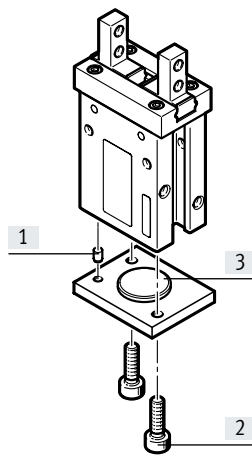
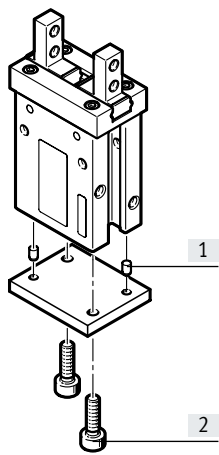


Vertical



- [1] Centring sleeves
- [2] Retaining screws

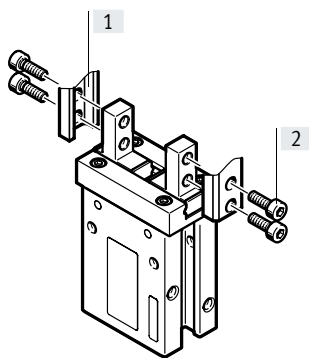
From underneath



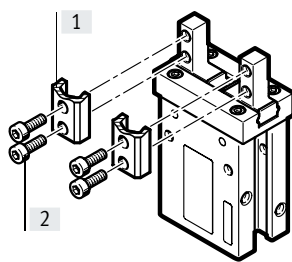
- [1] Centring sleeves
- [2] Retaining screws
- [3] Base

Mounting external gripper fingers

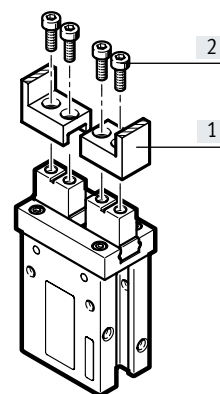
Standard



Mounting holes on the side



Flat gripper fingers

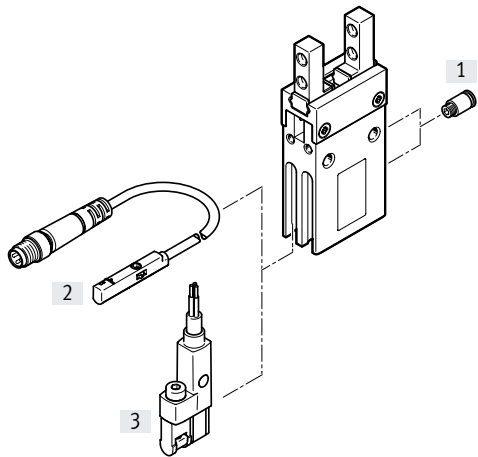


- [1] External gripper fingers
- [2] Retaining screws

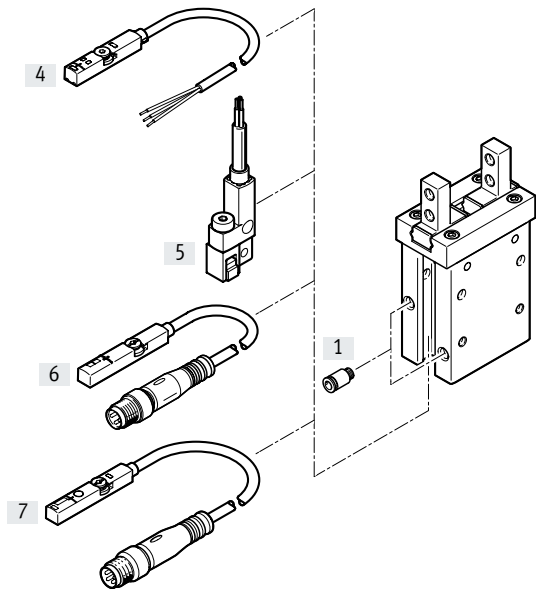
Peripherals overview

Peripherals overview

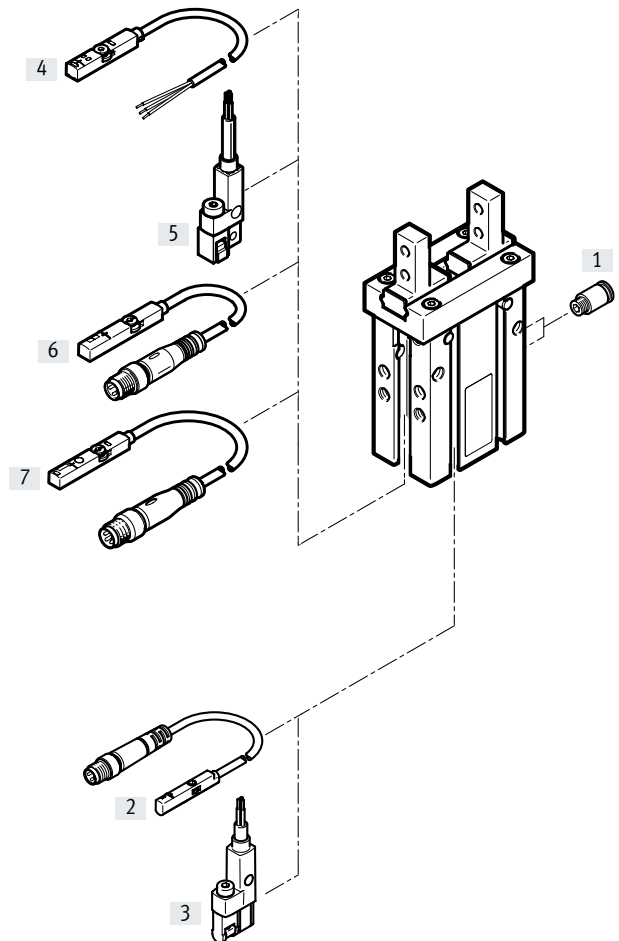
Size: 6



Size: 10



Size: 16



Peripherals overview

Accessories				
	Type/Order code	For size	Description	→ Page/Internet
[1]	Push-in fitting QS	6, 10, 16	For connecting tubing with standard O.D.	qs
[2]	Proximity sensor SMT-10M	6, 16	For sensing the piston position at the end positions	30
[3]	Proximity sensor SMT-10G	6, 16	For sensing the piston position at the end positions	30
[4]	Proximity sensor SMT-8M	10, 16	For sensing the piston position at the end positions	30
[5]	Proximity sensor SMT-8G	10, 16	For sensing the piston position at the end positions	30
[6]	Position transmitter SMAT-8M	10, 16	For sensing the piston position at any location	31
[7]	Position transmitter SDAS-MHS	10, 16	For sensing the piston position at any location	31

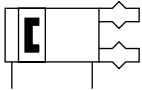
Type code

001	Series	
DHPC	Parallel gripper	
002	Gripper characteristic	
	Standard	
L	Long stroke	
003	Size	
6	6	
10	10	
16	16	
004	Position sensing	
A	For proximity sensor	

005	Gripping force backup	
	None	
NC	N/O contact	
NO	Opening	
006	Pneumatic connection	
B	Bottom	
S	On the side	
Z	Via mounting spigot	
007	Type of mounting gripper finger	
	None	
1	Mounting holes at the side	
2	Flat gripper fingers	

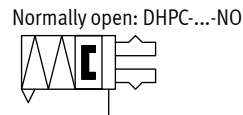
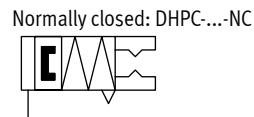
Data sheet

Function
Double-acting
DHPC-...-A



- Size
6 ... 16 mm
- Total stroke
4 ... 12 mm

Function
Single-acting with gripping force retention



General technical data				
Size		6	10	16
Design	Lever			
	Force pilot operated motion sequence			
	Connection direction underneath			
	Connection direction on the side			
	Connection via mounting spigot			
	Standard mounting of gripper fingers			
	Sideways mounting of gripper fingers			
	Flat mounting of gripper fingers			
Mode of operation	Double-acting			
	Single-acting			
	Closed			
	Open			
Gripper function	Parallel			
Guide	Ball guide			
Number of gripper jaws		2		
Max. load per gripper finger ¹⁾	[g]	18	120	360
Stroke per gripper jaw				
Standard gripper characteristic	[mm]	2	2	3
Long stroke gripper characteristic	[mm]	-	4	6
Pneumatic connection				
Gripper repetition accuracy ²⁾	[mm]	≤ 0.02		
Max. interchangeability	[mm]	0.2		
Max. operating frequency of gripper	[Hz]	3		
Rotational symmetry	[mm]	≤ 0.2		
Position sensing		Via proximity sensor		
Type of mounting	Direct mounting via through-hole			
	Direct mounting via thread			
	-		With through-hole and dowel pin	
	-		With female thread and dowel pin	
		On mounting frame		
Mounting position		optional		

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

Data sheet

Operating and environmental conditions				
Size		6	10	16
Min. operating pressure				
Double-acting	[MPa]	0.15	0.2	0.1
Single-acting	[MPa]	0.35	0.35	0.25
Double-acting	[bar]	1.5	2	1
Single-acting	[bar]	3.5	3.5	2.5
Max. operating pressure				
	[MPa]	0.8	0.8	0.8
	[bar]	8	8	8
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Ambient temperature ¹⁾		-10 ... +60		

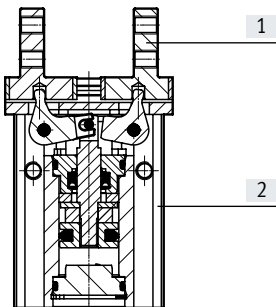
1) Note operating range of proximity sensors

Weight [g]				
Size		6	10	16
Double-acting				
DHPC...A		25	49	110
DHPC...A-S-1		25	49	110
DHPC...A-S-2		25	49	113
DHPC...A-B		25	49	111
DHPC...A-B-1		25	49	111
DHPC...A-B-2		25	49	114
DHPC-L...A-S		-	59	121
DHPC-L...A-S-1		-	59	121
DHPC-L...A-S-2		-	59	124
DHPC-L...A-B		-	59	124
DHPC-L...A-B-1		-	59	124
DHPC-L...A-B-2		-	59	127
Single-acting				
DHPC...A...S		27	57	111
DHPC...A...S-1		27	57	111
DHPC...A...S-2		27	57	114
DHPC...A...B		27	57	112
DHPC...A...B-1		27	57	112
DHPC...A...B-2		27	57	115
DHPC...A...Z		31	66	136
DHPC...A...Z-1		31	66	136
DHPC...A...Z-2		31	66	139
DHPC-L...A...S		-	66	126
DHPC-L...A...S-1		-	66	126
DHPC-L...A...S-2		-	66	129
DHPC-L...A...B		-	66	126
DHPC-L...A...B-1		-	66	126
DHPC-L...A...B-2		-	66	129
DHPC-L...A...Z		-	74	151
DHPC-L...A...Z-1		-	74	151
DHPC-L...A...Z-2		-	74	154

Data sheet

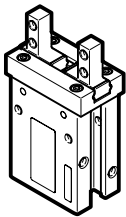
Materials

Sectional view



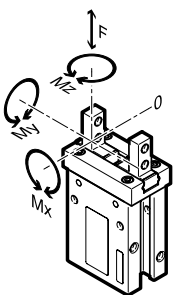
Parallel gripper	
[1] Gripper jaw	High-alloy stainless steel
[2] Housing	Anodised aluminium
- Note on materials	PWIS-free
	RoHS-compliant

Gripping force [N] at 6 bar



Size		6	10	16
Gripping force per gripper jaw				
DHPC...-A	Opening	7.3	25.6	64.7
	Closing	5.5	21.5	53.9
DHPC...-NO	Opening	-	-	-
	Closing	3.9	16.4	43.4
DHPC...-NC	Opening	-	-	-
	Closing	5.2	19.6	50.5

Characteristic load values at the gripper jaws



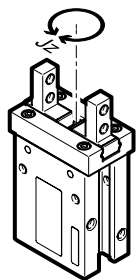
The indicated permissible forces and torques apply to a single gripper jaw. They include the lever arm, additional applied loads due to the workpiece or external gripper fingers and acceleration forces occurring during movement.

The zero coordinate line (gripper jaw guide) must be taken into consideration when calculating torques.

Size		6	10	16
Max. permitted force F	[N]	5	29	49
Max. permissible torque M_x	[Nm]	0.02	0.13	0.34
Max. permissible torque M_y	[Nm]	0.04	0.15	0.68
Max. permissible torque M_z	[Nm]	0.02	0.13	0.34

Data sheet

Mass moments of inertia [kgm²x10⁻⁴]

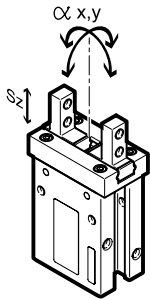


Mass moment of inertia of the parallel gripper in relation to the central axis, without external gripper fingers, with no load.

Size	6	10	16
Double-acting			
DHPC...A	0.011	0.04	0.146
DHPC...A-S-1	0.011	0.04	0.146
DHPC...A-S-2	0.011	0.04	0.147
DHPC...A-B	0.011	0.04	0.148
DHPC...A-B-1	0.011	0.04	0.148
DHPC...A-B-2	0.011	0.04	0.149
DHPC-L...A-S	-	0.057	0.214
DHPC-L...A-S-1	-	0.057	0.214
DHPC-L...A-S-2	-	0.057	0.219
DHPC-L...A-B	-	0.057	0.215
DHPC-L...A-B-1	-	0.057	0.215
DHPC-L...A-B-2	-	0.057	0.220
Single-acting			
DHPC...A...S	0.012	0.045	0.146
DHPC...A...S-1	0.012	0.045	0.146
DHPC...A...S-2	0.012	0.045	0.150
DHPC...A...B	0.012	0.045	0.148
DHPC...A...B-1	0.012	0.045	0.148
DHPC...A...B-2	0.012	0.045	0.152
DHPC...A...Z	0.013	0.049	0.167
DHPC...A...Z-1	0.013	0.049	0.167
DHPC...A...Z-2	0.013	0.049	0.171
DHPC-L...A...S	-	0.062	0.215
DHPC-L...A...S-1	-	0.062	0.215
DHPC-L...A...S-2	-	0.062	0.220
DHPC-L...A...B	-	0.062	0.216
DHPC-L...A...B-1	-	0.062	0.216
DHPC-L...A...B-2	-	0.062	0.221
DHPC-L...A...Z	-	0.069	0.258
DHPC-L...A...Z-1	-	0.069	0.258
DHPC-L...A...Z-2	-	0.069	0.263

Data sheet

Gripper jaw backlash

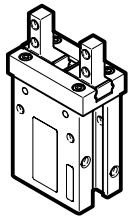


The gripper has a ball guide, which eliminates any possible backlash between the gripper jaws and the housing. The backlash values listed in the table have been calculated based on the traditional accumulative tolerance method.

Size	6	10	16
Max. gripper jaw backlash Sz [mm]	0		
Max. gripper jaw angular backlash α , y [°]	0		

Opening and closing times [ms] at 6 bar

Without external gripper fingers



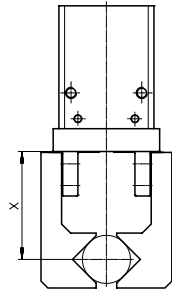
The indicated opening and closing times [ms] were measured at room temperature at an operating pressure of 6 bar with a horizontally mounted gripper without additional gripper fingers. The grippers must be throttled for larger loads [g]. Opening and closing times must then be adjusted accordingly.

Size		6	10	16
DHPC...-A	Opening	9	12	29
	Closing	11	14	31
DHPC...-A-NO	Opening	8	28	29
	Closing	6	26	11
DHPC...-A-NC	Opening	16	12	30
	Closing	16	26	65
DHPC-L...-A	Opening	-	15	40
	Closing	-	15	40
DHPC-L...-A-NO	Opening	-	22	18
	Closing	-	12	17
DHPC-L...-A-NC	Opening	-	25	50
	Closing	-	26	52

Data sheet

Gripping force F_{Gr} per gripper jaw as a function of the 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.



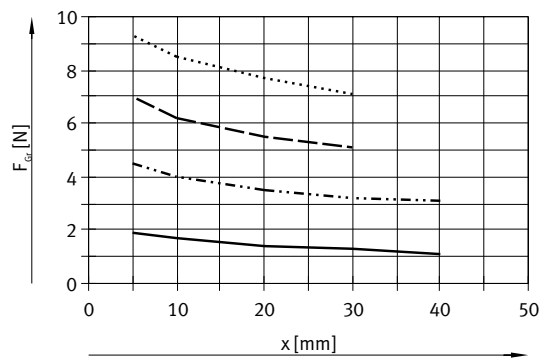
- 2 bar
- - - 4 bar
- - - 6 bar
- 8 bar

Note
 Engineering software
 Gripper selection
 → www.festo.com

External gripping (closing)

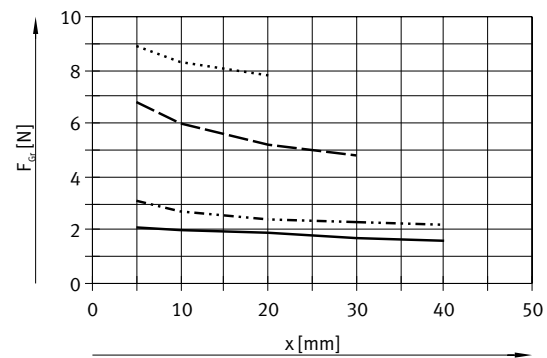
Double-acting

DHPC-6-A

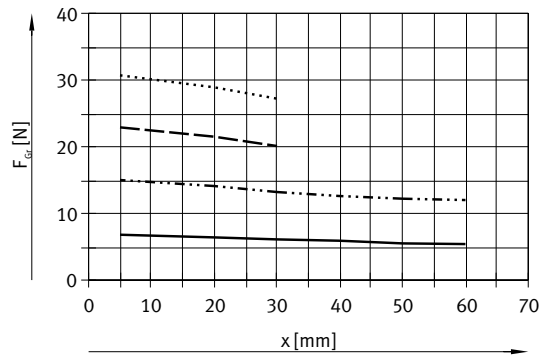


Single-acting

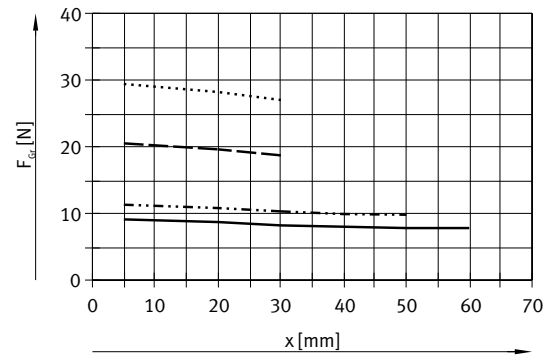
DHPC-6-A-NC



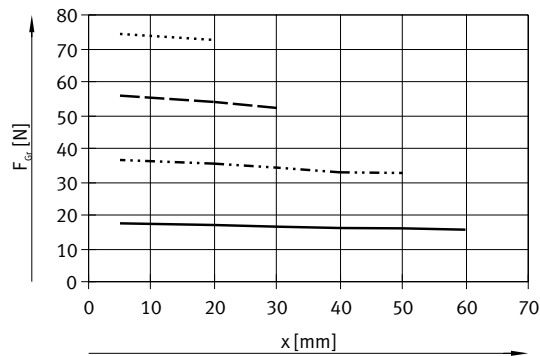
DHPC-10-A/DHPC-L-10-A



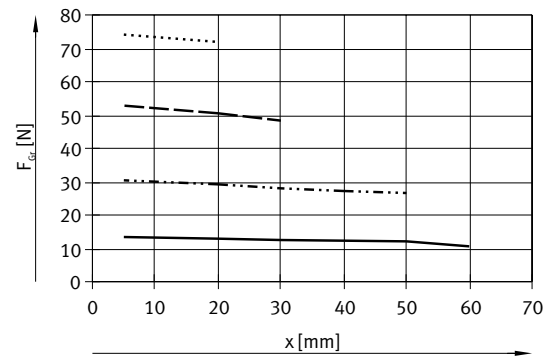
DHPC-10-A-NC/DHPC-L-10-A-NC



DHPC-16-A/DHPC-L-16-A



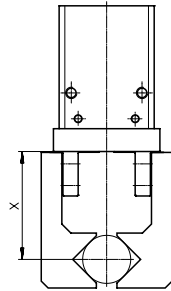
DHPC-16-A-NC/DHPC-L-16-A-NC



Data sheet

Gripping force F_{Gr} per gripper jaw as a function of the 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.



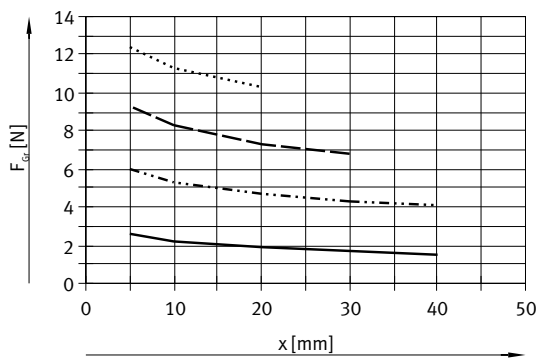
- 2 bar
- - - 4 bar
- - - 6 bar
- 8 bar

Note
 Engineering software
 Gripper selection
 → www.festo.com

Internal gripping (opening)

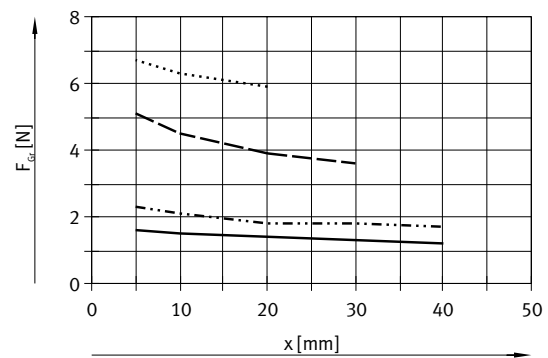
Double-acting

DHPC-6-A

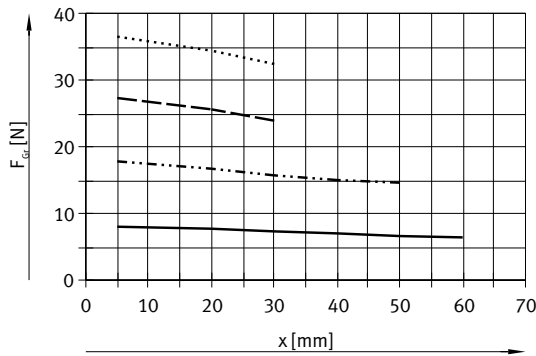


Single-acting

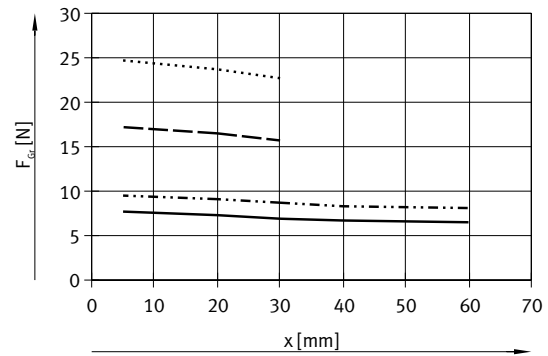
DHPC-6-A-NO



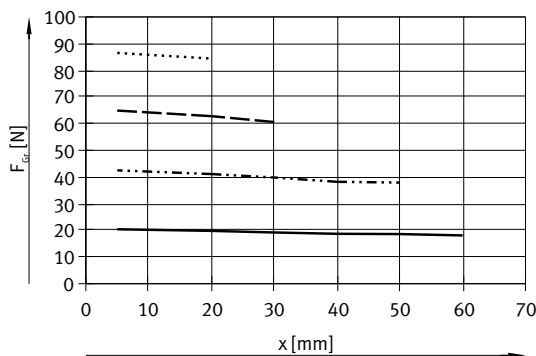
DHPC-10-A/DHPC-L-10-A



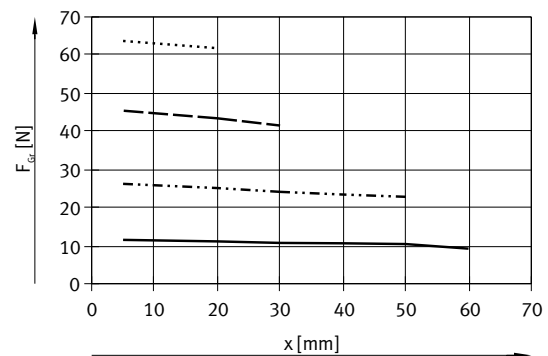
DHPC-10-A-NO/DHPC-L-10-A-NO



DHPC-16-A/DHPC-L-16-A



DHPC-16-A-NO/DHPC-L-16-A-NO

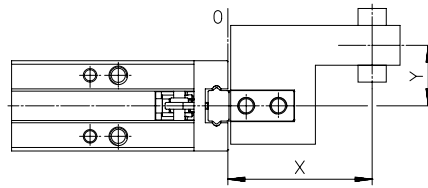


Data sheet

Gripping force F_{Gr} per gripper jaw at 6 bar as a function of lever arm x and eccentricity y

External and internal gripping (closing and opening)

The gripping forces at 6 bar as a function of eccentric application of force (distance from the zero co-ordinate line shown opposite to the pressure point at which the fingers grip the workpiece) and the maximum permissible off-centre point at which force is applied can be determined for the various sizes using the following graphs (→ page 15/16).



Calculation example

Assuming:

DHPC-16-A

Lever arm $x = 10$ mmEccentricity $y = 11$ mm

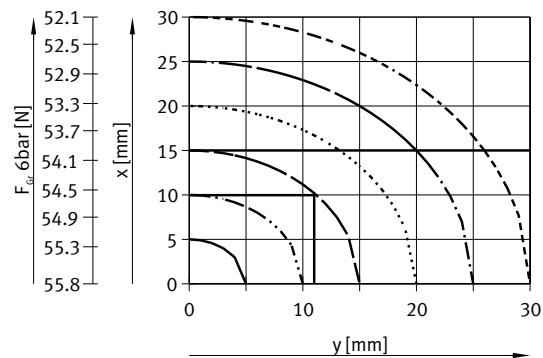
To be calculated:

Gripping force at 6 bar

Procedure:

- Determining the intersection xy between the lever arm x and eccentricity y in the graph

- Draw an arc (with centre at origin) through intersection xy
 - Determine the intersection between the arc and X-axis
 - Read the gripping force
- Result:
gripping force $F_{Gr} = \text{approx. } 53.9$ N

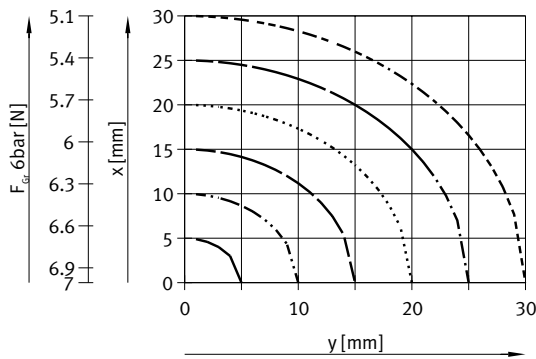


Data sheet

External gripping (closing)

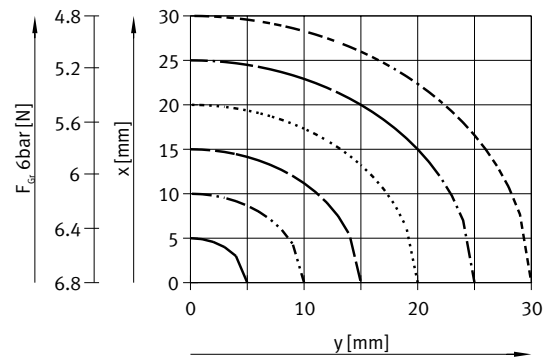
Double-acting

DHPC-6-A

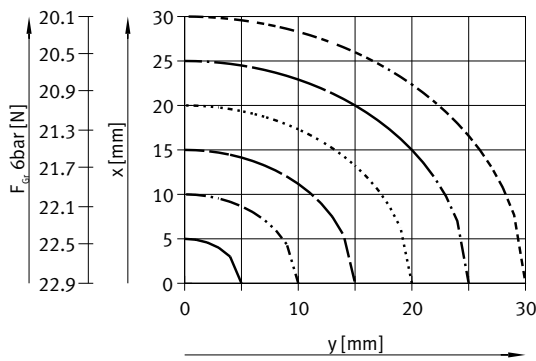


Single-acting

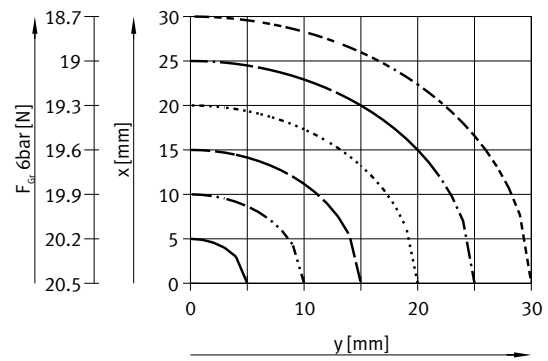
DHPC-6-A-NC



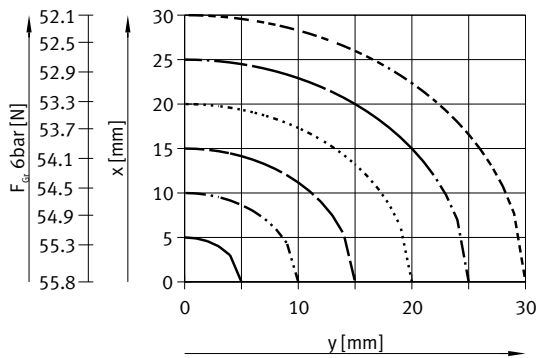
DHPC-10-A/DHPC-L-10-A



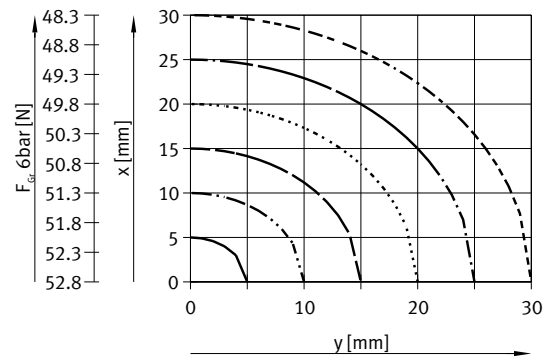
DHPC-10-A-NC/DHPC-L-10-A-NC



DHPC-16-A/DHPC-L-16-A



DHPC-16-A-NC/DHPC-L-16-A-NC

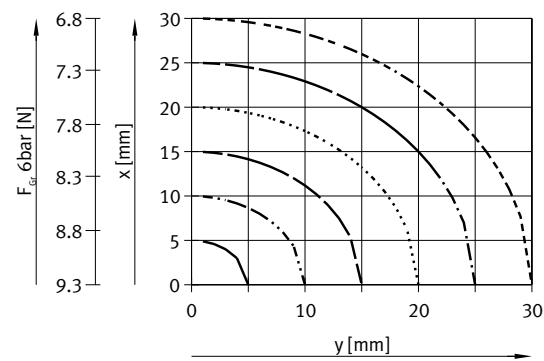


Data sheet

Internal gripping (opening)

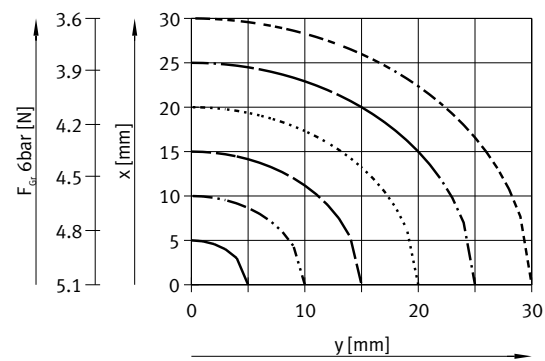
Double-acting

DHPC-6-A

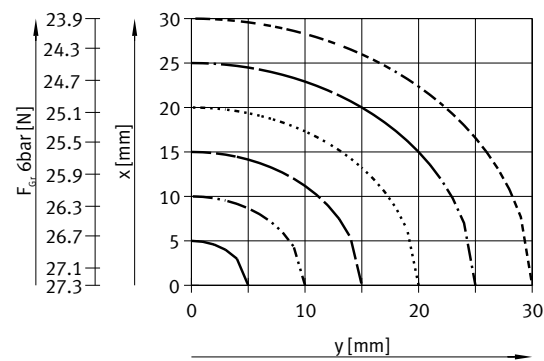


Single-acting

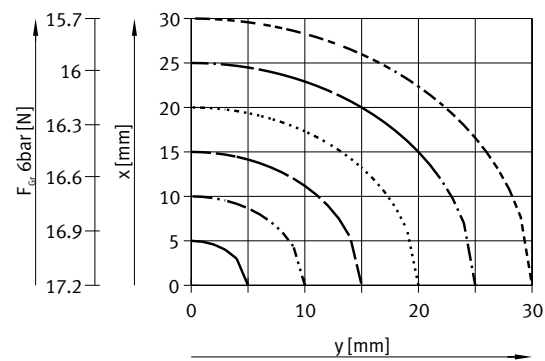
DHPC-6-A-NO



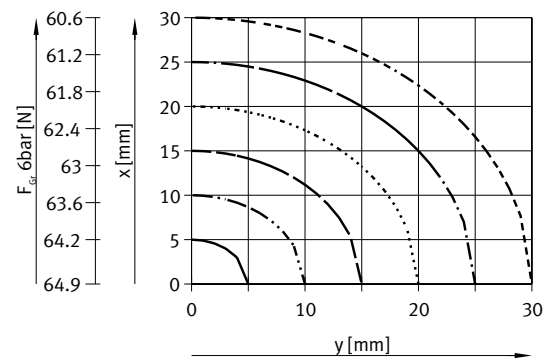
DHPC-10-A/DHPC-L-10-A



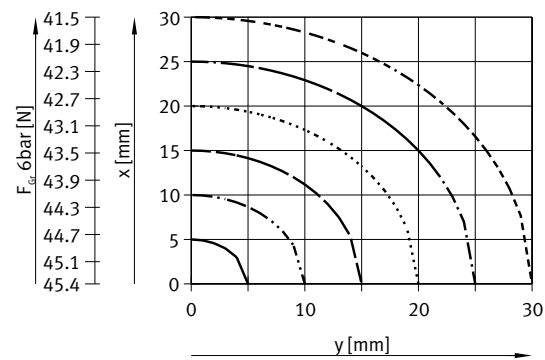
DHPC-10-A-NO/DHPC-L-10-A-NO



DHPC-16-A/DHPC-L-16-A



DHPC-16-A-NO/DHPC-L-16-A-NO

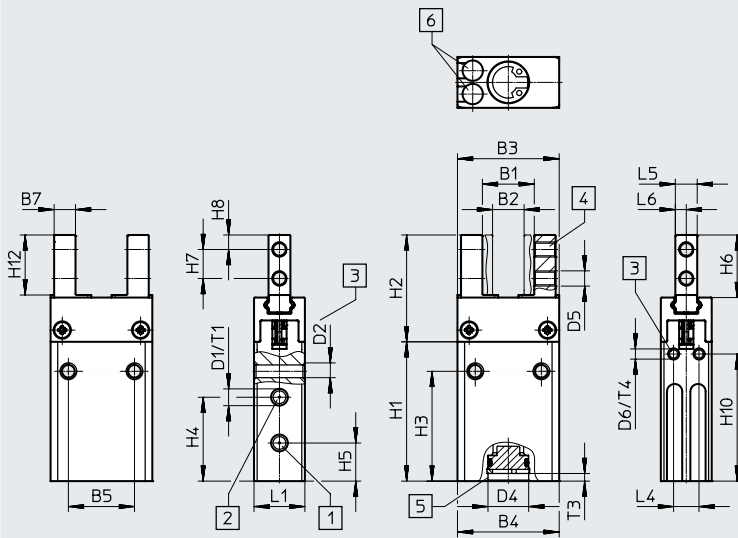


Data sheet

Dimensions

Download CAD data → www.festo.com

DHPC-6-...-S: pneumatic port on the side



- [1] Pneumatic port, opening
- [2] Pneumatic port, closing
- [3] Threaded hole for mounting the gripper
- [4] Threaded hole for mounting gripper fingers
- [5] Centring hole
- [6] C-slot for proximity sensor

Size	B1	B2	B3	B4	B5	B7	D1	D2	D4 ∅ H9	D5	D6	H1	H2	H3
[mm]						-0.1								
DHPC-6-A-S	10.2	6.2	20	20	13	4.2	M3	M3	8	M3	M2	27.4	21	21.6
DHPC-6-A-NO/NC-S												32		24.8

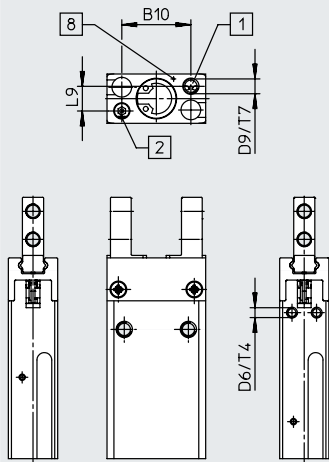
Size	H4	H5	H6	H7	H8	H10	H12	L1	L4	L5	L6	T1	T3	T4
[mm]										-0.05				
DHPC-6-A-S	16.5	7.5	12.3	5.7	2.85	25	11.8	10	5	4.3	2.15	4.5	1.5	4.5
DHPC-6-A-NO/NC-S						28								

Data sheet

Dimensions

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DHPC-6-...-B: pneumatic port underneath



- [1] Pneumatic port, opening
- [2] Pneumatic port, closing
- [8] Marking: pneumatic port, opening

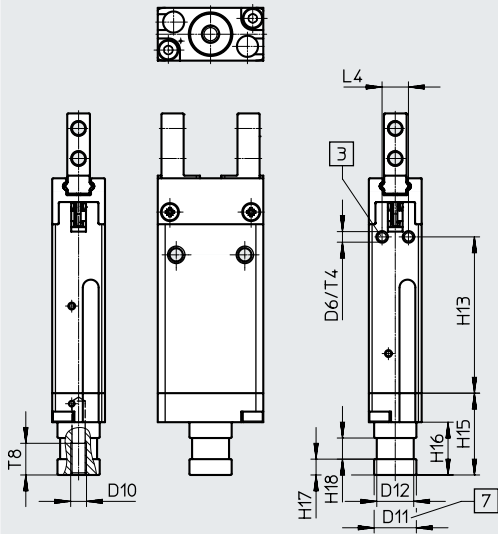
Size	B10	D6	D9	L9	T4	T7
[mm]						
DHPC-6-A-B	14	M2	M3	5	4.5	4
DHPC-6-A-NO/NC-B						

Data sheet

Dimensions

Download CAD data → www.festo.com

DHPC-6-...-Z: pneumatic port via mounting spigot



[3] Threaded hole for mounting the gripper

[7] Mounting spigot

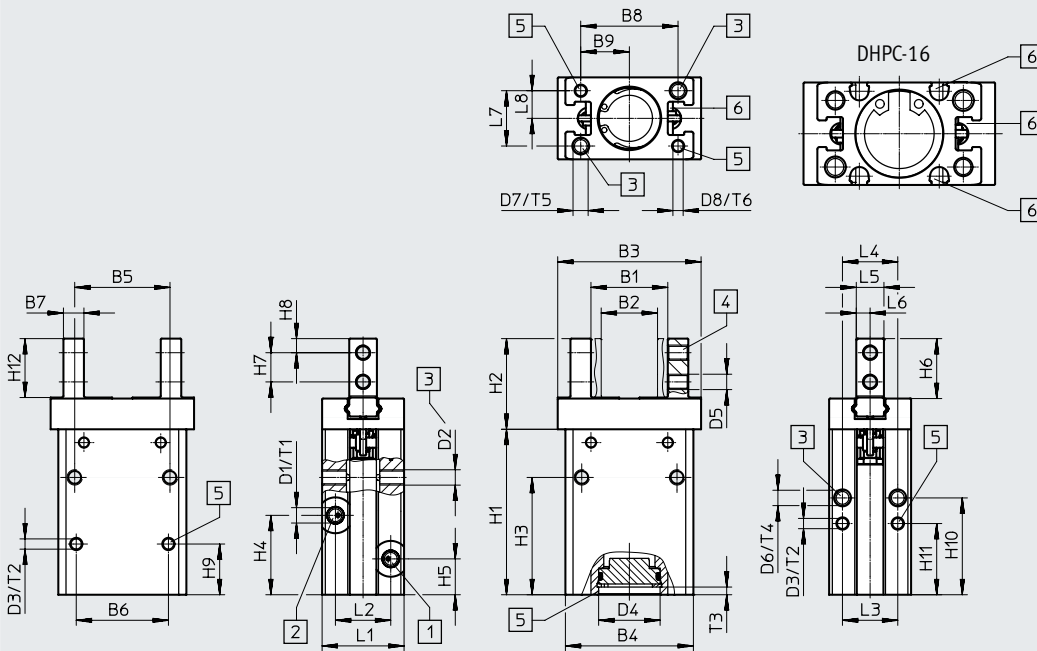
Size	D6	D10	D11 ∅ f8	D12 ∅	H13	H15	H16	H17	H18	L4	T4	T8
[mm]												
DHPC-6-A-NO/NC-Z	M2	M3	8	7	28	15.5	10	3	4	5	4.5	6

Data sheet

Dimensions

Download CAD data → www.festo.com

DHPC-10/16-...S: pneumatic port on the side



- [1] Pneumatic port, opening
- [2] Pneumatic port, closing
- [3] Threaded hole for mounting the gripper
- [4] Threaded hole for mounting gripper fingers
- [5] Centring hole
- [6] DHPC-10: T-slot for proximity sensor
DHPC-16: C-slot for proximity sensor

Data sheet

Size [mm]	B1	B2	B3	B4	B5	B6 ±0.02	B7 -0.1	B8 ±0.02	B9 ±0.02	D1	D2	D3 ∅ H9	D4 ∅	D5		
DHPC-10-A-S	15	11	28	25	18.6	18	4	19	9.5	M3	M3	2	12 H9	M3		
DHPC-L-10-A-S	19		34													
DHPC-10-A-NO/NCS	15		28													
DHPC-L-10-A-NO/NCS	19		34													
DHPC-16-A-S	19.8	13.8	37.4	32	27	24.4	5	25	12.5		M4	M4	3		17 H8	M3
DHPC-L-16-A-S	25.8		46.4													
DHPC-16-A-NO/NCS	19.8		37.4													
DHPC-L-16-A-NO/NCS	25.8		46.4													

Size [mm]	D6	D7	D8 ∅ H9	H1	H2	H3	H4	H5	H6	H7	H8	H9 +0.1	H10	H11 +0.1
DHPC-10-A-S	M3	M3	2	32.3	17.7	22.9	15.5	7	11.7	5.7	2.75	9.9	18.9	13.9
DHPC-L-10-A-S				39.9		26	18.9					12	21	16
DHPC-10-A-NO/NCS				41.4		32	21					19	28	23
DHPC-L-10-A-NO/NCS				48.06		34.16	21					20.16	29.16	24.16
DHPC-16-A-S	M4	M4	3	43.1	24.3	31.7	26.5	9	16.3	7	4	14	25.6	19
DHPC-L-16-A-S				46.8		34.3	30.2					29.3		
DHPC-16-A-NO/NCS				43.1		31.7	26.5					25.6		
DHPC-L-16-A-NO/NCS				51.1		38.6	33.4					18.3	33.6	

Size [mm]	H12	L1	L2	L3 ±0.02	L4	L5	L6	L7 ¹⁾ ±0.02	L8 ±0.02	T1	T2	T3	T4	T5	T6	
DHPC-10-A-S	11.5	16	10.8	10.8	10.8	5.4	2.7	10.8	5.4	4	3	1.5	4	4	3	
DHPC-L-10-A-S																
DHPC-10-A-NO/NCS																
DHPC-L-10-A-NO/NCS																
DHPC-16-A-S	15	20	11.9	12	12	7	3.5	13	6.5	4.5		2	4.5	6		3
DHPC-L-16-A-S																
DHPC-16-A-NO/NCS																
DHPC-L-16-A-NO/NCS																

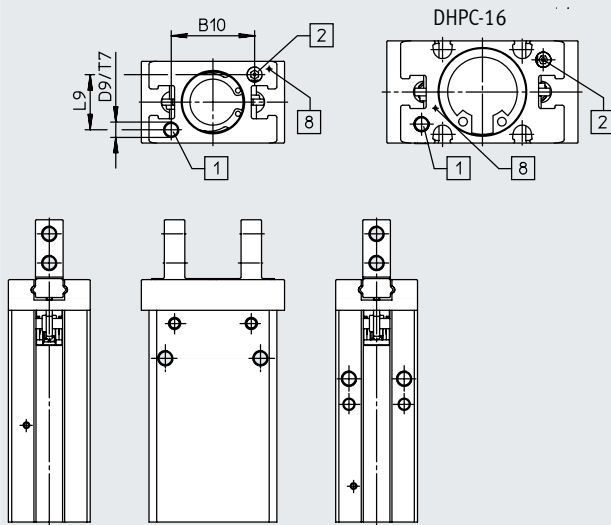
1) Dimension L7 refers exclusively to the distance between the centring hole [5] and the threaded hole for mounting the gripper [3]

Data sheet

Dimensions

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DHPC-10/16-...-B: pneumatic port underneath



- [1] Pneumatic port, opening
- [2] Pneumatic port, closing
- [8] Marking: close pneumatic port

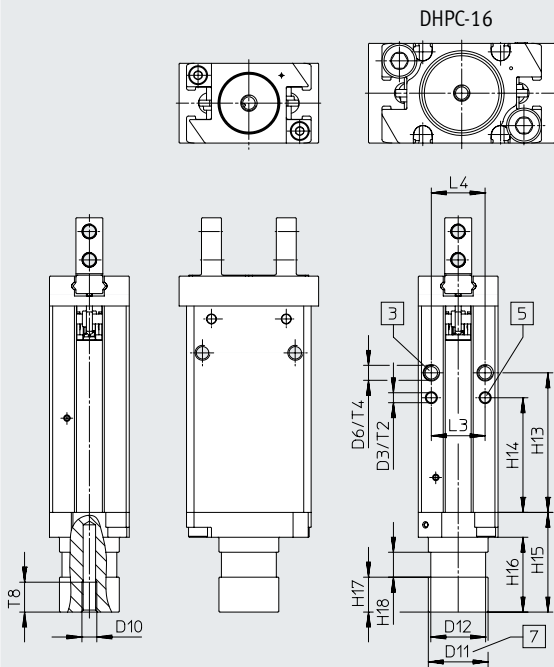
Size	B10	D9	L9	T7	
[mm]					
DHPC-10-A-B	16.3	M3	10.8	4	
DHPC-L-10-A-B					
DHPC-10-A-NO/NC-B					
DHPC-L-10-A-NO/NC-B					
DHPC-16-A-B	23.8		M3	12.6	4.5
DHPC-L-16-A-B					
DHPC-16-A-NO/NC-B					
DHPC-L-16-A-NO/NC-B					

Data sheet

Dimensions

Download CAD data → www.festo.com

DHPC-10/16-...-Z: pneumatic port via mounting spigot



- [3] Threaded hole for mounting the gripper
- [5] Centring hole
- [7] Mounting spigot

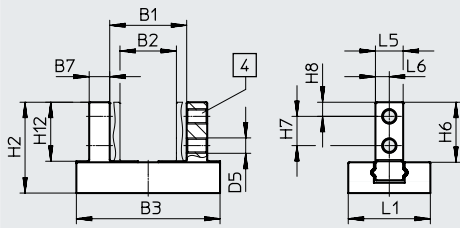
Size	D3	D6	D10	D11	D12	H13	H14	H15	H16	H17	H18	L3	L4	T2	T4	T8				
[mm]	∅ H9			∅ f8	∅							±0.02								
DHPC-10-A-Z	2	M3	-	-	-	-	-	-	-	-	-	10.8	10.8	3	4	-				
DHPC-L-10-A-Z			M3	12	11	28	23	20.5	15	7	5					6				
DHPC-10-A-NO/NC-Z							29.16	24.16												
DHPC-L-10-A-NO/NC-Z																				
DHPC-16-A-Z	3	M4	-	-	-	-	-	-	-	-	-	12	12	3	4.5	-				
DHPC-L-16-A-Z			M3	16	14	25.6	19	28	18	8	5					6				
DHPC-16-A-NO/NC-Z							33.6	23.3												
DHPC-L-16-A-NO/NC-Z																				

Data sheet

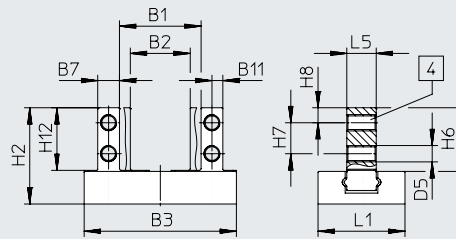
Dimensions – gripper finger mounting

Download CAD data → www.festo.com

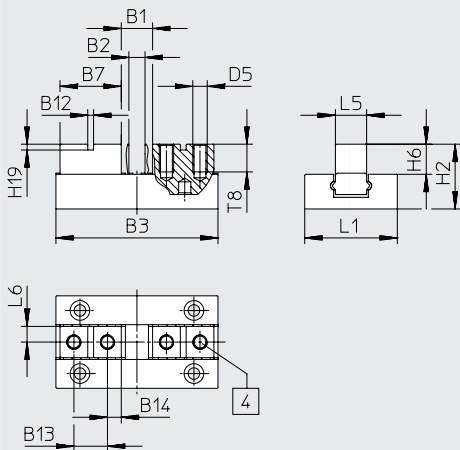
DHPC-...-A: standard



DHPC-...-A-...-1: mounting holes on the side



DHPC-...-A-...-2: flat gripper fingers



[4] Threaded hole for mounting gripper fingers

Data sheet

Size	B1	B2	B3	B7	B11	B12	B13	B14	D5	H2
[mm]				-0.1		H9				
DHPC-6-A	10.2	6.2	20	4.2	-	-	-	-	M3	21
DHPC-6-A...-1	10.2	6.2	20	4.2	2.1	-	-	-	M3	21
DHPC-6-A...-2	5.4	1.4	20	6.6	-	-	3.8	1.4	M2	15.1
DHPC-10-A	15	11	28	4	-	-	-	-	M3	17.7
DHPC-10-A...-1	15	11	28	4	2	-	-	-	M3	17.7
DHPC-10-A...-2	5.4	1.4	28	10.6	-	2	6	2.3	M2.5	11.2
DHPC-L-10-A	19	11	34	4	-	-	-	-	M3	17.7
DHPC-L-10-A...-1	19	11	34	4	2	-	-	-	M3	17.7
DHPC-L-10-A...-2	9.4	1.4	34	11.6	-	2	7	2.3	M2.5	11.2
DHPC-16-A	19.8	13.8	37.4	5	-	-	-	-	M3	24.3
DHPC-16-A...-1	19.8	13.8	37.4	5	2.5	-	-	-	M3	24.3
DHPC-16-A...-2	7.4	1.4	37.4	14.3	-	2.5	8	3.15	M3	16.3
DHPC-L-16-A	25.8	13.8	46.4	5	-	-	-	-	M3	24.3
DHPC-L-16-A...-1	25.8	13.8	46.4	5	2.5	-	-	-	M3	24.3
DHPC-L-16-A...-2	13.4	1.4	46.4	15.8	-	3	9	3.4	M3	16.3

Size	H6	H7	H8	H12	H19	L1	L5	L6	T8
[mm]							-0.05		
DHPC-6-A	12.3	5.7	2.85	11.8	-	10	4.3	2.15	-
DHPC-6-A...-1	12.3	5.7	2.85	11.8	-	10	4.3	-	-
DHPC-6-A...-2	6.4	-	-	-	-	10	4.3	2.15	4
DHPC-10-A	11.7	5.7	2.75	11.5	-	16	5.4	2.7	-
DHPC-10-A...-1	11.7	5.7	2.75	11.5	-	16	5.4	-	-
DHPC-10-A...-2	5.2	-	-	-	2	16	5.4	2.7	5
DHPC-L-10-A	11.7	5.7	2.75	11.5	-	16	5.4	2.7	-
DHPC-L-10-A...-1	11.7	5.7	2.75	11.5	-	16	5.4	-	-
DHPC-L-10-A...-2	5.2	-	-	-	2	16	5.4	2.7	5
DHPC-16-A	16.3	7	4	15	-	20	7	3.5	-
DHPC-16-A...-1	16.3	7	4	15	-	20	7	-	-
DHPC-16-A...-2	8.28	-	-	-	2.5	20	7	3.5	6
DHPC-L-16-A	16.3	7	4	15	-	20	7	3.5	-
DHPC-L-16-A...-1	16.3	7	4	15	-	20	7	-	-
DHPC-L-16-A...-2	8.28	-	-	-	3	20	7	3.5	6

Data sheet

Ordering data - pneumatic port underneath						
Size [mm]	Double-acting		Single-acting with gripping force retention		Closing	
	Part no.	Type	Part no.	Type	Part no.	Type
6	Standard gripper characteristic					
	Standard mounting of gripper fingers					
	8116738	DHPC-6-A-B	-	-	-	-
	Mounting of gripper fingers, mounting holes on the side					
	8116739	DHPC-6-A-B-1	-	-	-	-
	Mounting of flat gripper fingers					
	8116740	DHPC-6-A-B-2	-	-	-	-
10	Standard gripper characteristic					
	Standard mounting of gripper fingers					
	8116756	DHPC-10-A-B	-	-	-	-
	Mounting of gripper fingers, mounting holes on the side					
	8116757	DHPC-10-A-B-1	-	-	-	-
	Mounting of flat gripper fingers					
	8116758	DHPC-10-A-B-2	-	-	-	-
	Long stroke gripper characteristic					
	Standard mounting of gripper fingers					
	8116774	DHPC-L-10-A-B	-	-	-	-
	Mounting of gripper fingers, mounting holes on the side					
	8116775	DHPC-L-10-A-B-1	-	-	-	-
Mounting of flat gripper fingers						
8116776	DHPC-L-10-A-B-2	-	-	-	-	
16	Standard gripper characteristic					
	Standard mounting of gripper fingers					
	8116788	DHPC-16-A-B	-	-	-	-
	Mounting of gripper fingers, mounting holes on the side					
	8116789	DHPC-16-A-B-1	-	-	-	-
	Mounting of flat gripper fingers					
	8116790	DHPC-16-A-B-2	-	-	-	-
	Long stroke gripper characteristic					
	Standard mounting of gripper fingers					
	8116806	DHPC-L-16-A-B	-	-	-	-
	Mounting of gripper fingers, mounting holes on the side					
	8116807	DHPC-L-16-A-B-1	-	-	-	-
Mounting of flat gripper fingers						
8116808	DHPC-L-16-A-B-2	-	-	-	-	

Data sheet

Ordering data - pneumatic port on the side						
Size [mm]	Double-acting		Single-acting with gripping force retention		Closing	
	Part no.	Type	Part no.	Type	Part no.	Type
6	Standard gripper characteristic					
	Standard mounting of gripper fingers					
	8116735	DHPC-6-A-S	8116741	DHPC-6-A-NO-S	8116747	DHPC-6-A-NC-S
	Mounting of gripper fingers, mounting holes on the side					
	8116736	DHPC-6-A-S-1	8116742	DHPC-6-A-NO-S-1	8116748	DHPC-6-A-NC-S-1
	Mounting of flat gripper fingers					
	8116737	DHPC-6-A-S-2	8116743	DHPC-6-A-NO-S-2	8116749	DHPC-6-A-NC-S-2
10	Standard gripper characteristic					
	Standard mounting of gripper fingers					
	8116753	DHPC-10-A-S	8116759	DHPC-10-A-NO-S	8116765	DHPC-10-A-NC-S
	Mounting of gripper fingers, mounting holes on the side					
	8116754	DHPC-10-A-S-1	8116760	DHPC-10-A-NO-S-1	8116766	DHPC-10-A-NC-S-1
	Mounting of flat gripper fingers					
	8116755	DHPC-10-A-S-2	8116761	DHPC-10-A-NO-S-2	8116767	DHPC-10-A-NC-S-2
	Long stroke gripper characteristic					
	Standard mounting of gripper fingers					
	8116771	DHPC-L-10-A-S	8116777	DHPC-L-10-A-NO-S	8116780	DHPC-L-10-A-NC-S
	Mounting of gripper fingers, mounting holes on the side					
	8116772	DHPC-L-10-A-S-1	8116778	DHPC-L-10-A-NO-S-1	8116781	DHPC-L-10-A-NC-S-1
Mounting of flat gripper fingers						
8116773	DHPC-L-10-A-S-2	8116779	DHPC-L-10-A-NO-S-2	8116782	DHPC-L-10-A-NC-S-2	
16	Standard gripper characteristic					
	Standard mounting of gripper fingers					
	8116785	DHPC-16-A-S	8116791	DHPC-16-A-NO-S	8116797	DHPC-16-A-NC-S
	Mounting of gripper fingers, mounting holes on the side					
	8116786	DHPC-16-A-S-1	8116792	DHPC-16-A-NO-S-1	8116798	DHPC-16-A-NC-S-1
	Mounting of flat gripper fingers					
	8116787	DHPC-16-A-S-2	8116793	DHPC-16-A-NO-S-2	8116799	DHPC-16-A-NC-S-2
	Long stroke gripper characteristic					
	Standard mounting of gripper fingers					
	8116803	DHPC-L-16-A-S	8116809	DHPC-L-16-A-NO-S	8116812	DHPC-L-16-A-NC-S
	Mounting of gripper fingers, mounting holes on the side					
	8116804	DHPC-L-16-A-S-1	8116810	DHPC-L-16-A-NO-S-1	8116813	DHPC-L-16-A-NC-S-1
Mounting of flat gripper fingers						
8116805	DHPC-L-16-A-S-2	8116811	DHPC-L-16-A-NO-S-2	8116814	DHPC-L-16-A-NC-S-2	

Data sheet

Ordering data – pneumatic port via mounting spigot						
Size [mm]	Double-acting		Single-acting with gripping force retention Opening		Closing	
	Part no.	Type	Part no.	Type	Part no.	Type
6	Standard gripper characteristic					
	Standard mounting of gripper fingers					
	–		8116744	DHPC-6-A-NO-Z	8116750	DHPC-6-A-NC-Z
	Mounting of gripper fingers, mounting holes on the side					
	–		8116745	DHPC-6-A-NO-Z-1	8116751	DHPC-6-A-NC-Z-1
10	Standard gripper characteristic					
	Standard mounting of gripper fingers					
	–		8116762	DHPC-10-A-NO-Z	8116768	DHPC-10-A-NC-Z
	Mounting of gripper fingers, mounting holes on the side					
	–		8116763	DHPC-10-A-NO-Z-1	8116769	DHPC-10-A-NC-Z-1
16	Standard gripper characteristic					
	Standard mounting of gripper fingers					
	–		8116794	DHPC-16-A-NO-Z	8116800	DHPC-16-A-NC-Z
	Mounting of gripper fingers, mounting holes on the side					
	–		8116795	DHPC-16-A-NO-Z-1	8116801	DHPC-16-A-NC-Z-1
16	Mounting of flat gripper fingers					
	–		8116796	DHPC-16-A-NO-Z-2	8116802	DHPC-16-A-NC-Z-2


Ordering data – Modular product system


Ordering table						
Size	6	10	16	Conditions	Code	Enter code
Module no.	8116728	8116729	8116730			
Design	Parallel gripper				DHPC	DHPC
Gripper characteristic	Standard					
	-	Long stroke			-L	
Size [mm]	6	10	16		-...	
Position sensing	Via proximity sensor				-A	-A
Gripping force backup	None					
	Closing			[1]	-NC	
	Opening			[1]	-NO	
Pneumatic connection	Underneath				-B	
	On the side				-S	
	Via mounting spigot				-Z	
Type of mounting gripper finger	Standard					
	Mounting holes on the side				-1	
	Flat gripper fingers				-2	

1) Mandatory data with pneumatic port via mounting spigot


Accessories


Proximity sensor for size 6, 16


Ordering data – Proximity sensor for C-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							
	Inserted into the slot from above	Cable, 3-wire, lengthwise	PNP	2.5	551373	SMT-10M-PS-24V-E-2.5-L-OE	
		Plug M8x1, 3-pin, in-line		0.3	551375	SMT-10M-PS-24V-E-0.3-L-M8D	
		Cable, 3-wire, lateral	NPN	2.5	551374	SMT-10M-PS-24V-E-2.5-Q-OE	
		Plug M8x1, 3-pin, lateral		0.3	551376	SMT-10M-PS-24V-E-0.3-Q-M8D	



Ordering data – Proximity sensor for C-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							
	Inserted into slot from the side	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	

Proximity sensor for size 10, 16

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							
	Inserted in the slot from above, short design	Cable, 3-wire, lengthwise	PNP	2.5	574335	SMT-8M-A-PS-24V-E-2.5-OE	
		Plug M8x1, 3-pin, in-line		0.3	574334	SMT-8M-A-PS-24V-E-0.3-M8	
		Plug M12x1, 3-pin, in-line		0.3	574337	SMT-8M-A-PS-24V-E-0.3-M12	
		Cable, 3-wire, lengthwise	NPN	2.5	574338	SMT-8M-A-NS-24V-E-2.5-OE	
		Plug M8x1, 3-pin, in-line		0.3	574339	SMT-8M-A-NS-24V-E-0.3-M8	

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/C contact							
	Inserted in the slot from above, short design	Cable, 3-wire, lengthwise	PNP	7.5	574340	SMT-8M-A-PO-24V-E-7.5-OE	


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							
	Inserted into slot from the side	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	
	Straight socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541363	NEBU-M12G5-K-2.5-LE3	
			5	541364	NEBU-M12G5-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	
	Angled socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541367	NEBU-M12W5-K-2.5-LE3	
			5	541370	NEBU-M12W5-K-5-LE3	



Accessories

Position transmitter for size 10, 16

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

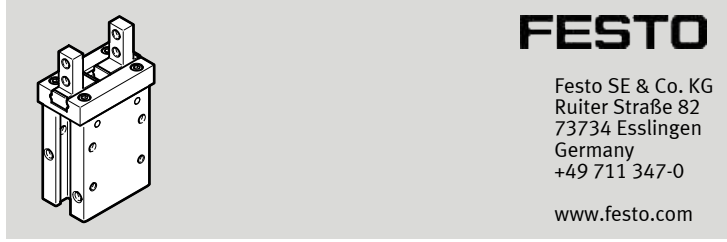
Ordering data – Position transmitters for T-slot								Data sheets → Internet: position transmitter
	Position measuring range	Analogue output [V]	Analogue output [mA]	Type of mounting	Electrical connection	Cable length [m]	Part no.	Type
	0 ... 40	0 ... 10	–	Inserted into the slot from above	Plug M8x1, 4-pin, in-line	0.3	553744	SMAT-8M-U-E-0.3-M8D

Ordering data – Position transmitters for T-slot							Data sheets → Internet: sdas
	Description	Type of mounting	Electrical connection	Cable length [m]	Part no.	Type	
	Choice of two operating modes: • Two adjustable switching outputs • IO-Link®	Inserted into the slot from above	Plug M8x1, 4-pin, in-line	0.3	8063974	SDAS-MHS-M40-1L-PNLK-PN-E-0.3-M8	
			Cable, open end	2.5	8063975	SDAS-MHS-M40-1L-PNLK-PN-E-2.5-LE	

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	

DHPC

Parallel gripper



Operating instructions

8137232
 2020-08
 [8137234]



Translation of the original instructions

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1 About this document

1.1 Applicable Documents

All available documents for the product → www.festo.com/sp.

2 Safety

2.1 Safety Instructions

- Take into consideration the ambient conditions at the location of use.
- Only use the product in original status without unauthorised modifications.
- Observe labelling on the product.
- Store the product in a cool, dry, UV-protected and corrosion-protected environment. Ensure that storage times are kept to a minimum.
- Prior to mounting, installation and maintenance work: Switch off compressed air supply and secure it from being switched back on.
- Observe tightening torques. Unless otherwise specified, the tolerance is $\pm 20\%$.

2.2 Intended use

The intended use of the product is to grip and hold payloads (workpieces) using custom-designed gripper fingers attached by the customer.

The gripper fingers are not included in the delivery.

2.3 Training of qualified personnel

Installation, commissioning, maintenance and disassembly should only be conducted by qualified personnel. The specialized personnel must be familiar with the installation and operation of electrical and pneumatic control systems.

3 Further information

- Accessories → www.festo.com/catalogue.
- Spare parts → www.festo.com/spareparts.

4 Service

Contact your regional Festo contact person if you have technical questions → www.festo.com.

5 Product overview

5.1 Function

- Alternating pressurisation of the supply ports causes a piston in the gripper to move (double-acting).
- A gripper with integrated spring return can be used for gripping force retention or for single-acting applications. When exhausting the single-acting gripper: the spring return moves the gripper jaws to the initial position
 - N/O contact: NO (normally open)
 - N/C contact: NC (normally closed)
- The piston movement is transmitted mechanically to the gripper jaws. Gripper fingers are fastened to the gripper jaws. Closing or opening the gripper fingers clamps the payload to the outer contour (external gripping) or the inner contour (internal gripping).
- The gripping force is adjusted by external regulation of the operating pressure.
- The gripper has integrated fixed flow restrictors. If the maximum gripper finger weights and lengths are in compliance, external flow control is not required.

5.2 Design

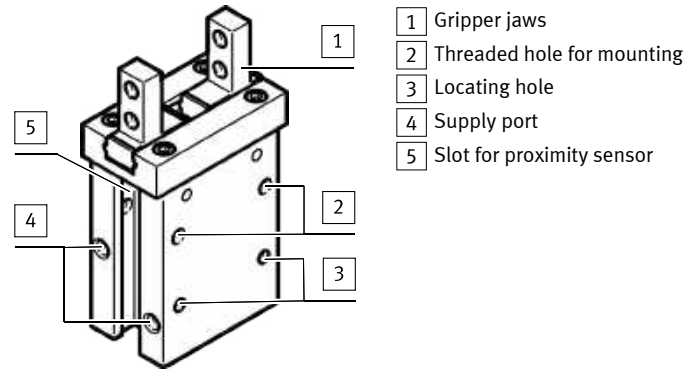


Fig. 1 Design

6 Assembly

6.1 Preparing the gripper fingers

The gripper fingers are not included in the delivery.

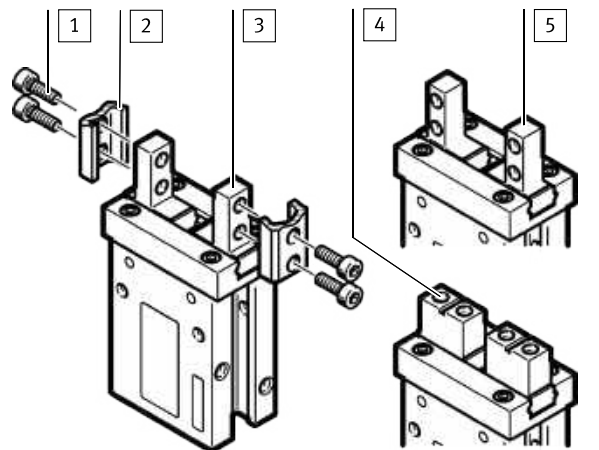
Requirements for gripper fingers:

- Observe maximum permitted forces and torques on the gripper jaws.
- Use gripper fingers that are as short and lightweight as possible.
- Observe maximum length and weight.
- Manufacture gripper fingers that are suitable for the payload and type of gripping action.

Size	6	10	16
Width at gripper jaws [mm]	4.3 _{-0.05}	5.4 _{-0.05}	7 _{-0.05}

Tab. 1 Width of gripper jaws

6.2 Mounting the gripper fingers



- 1 Screw
- 2 Gripper finger
- 3 Gripper jaw A
- 4 Gripper jaw A-...-2
- 5 Gripper jaw A-...-1

Fig. 2 Mounting the gripper fingers

- Position the prepared gripper fingers [2] on the gripper jaws [3], [4], [5] and fasten each one with two screws [1]. Fix gripper jaws in place during mounting and use the specified tightening torque.

Size	6-...		10-...			
	A	A-...-1	A-...-2	A	A-...-1	A-...-2
Screw	M3		M2	M3		M2.5
Tightening torque [Nm]	0.59		0.15	0.59		0.31

Tab. 2 Dimensions and tightening torque

Size	16-...		
	A	A-...-1	A-...-2
Screw	M3		
Tightening torque [Nm]	0.59		

Tab. 3 Dimensions and tightening torque

6.3 Mounting gripper

i

If necessary, mount the proximity sensor before mounting the gripper.
When using proximity sensors for sensing the end position, take the following into account:

- Interference from ferritic attachments, e.g. retaining screws made of ferritic steel
- Projecting proximity sensors, if applicable
- Cable outlet direction of the proximity sensors
- Sufficient space for the connection components
- When sensing from both end positions: use separate slots for the proximity sensors.

Vertical mounting

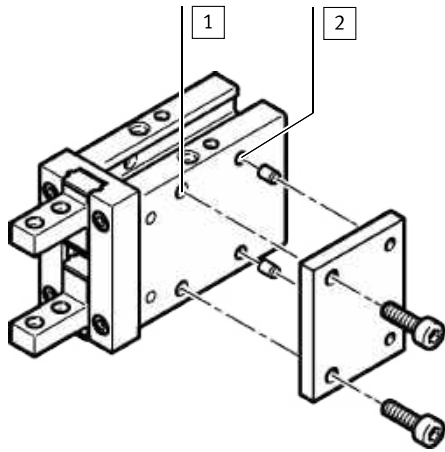


Fig. 3 Direct mounting via thread in the housing

Size	6	10	16
Thread [1]	M3	M3	M4
Depth of thread	10	4.75	6.75
Tightening torque [Nm]	0.88	0.69	2.1
Locating hole \varnothing for centring pin [2]	–	2 ^{H9}	3 ^{H9}
Depth of locating hole [mm]	–	3	3

Tab. 4 Direct mounting via thread in the housing

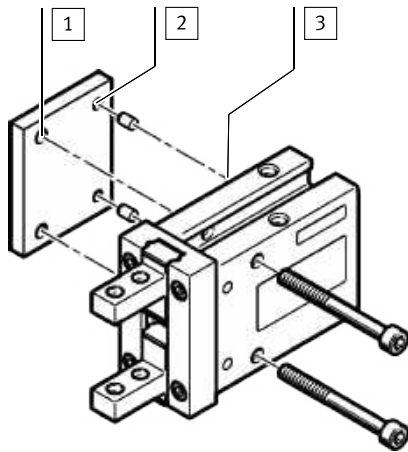


Fig. 4 Direct mounting via through-hole

Size	6	10	16
Thread [1]	M2.5	M2.5	M3
Tightening torque [Nm]	0.49	0.49	0.88
Locating hole \varnothing for centring pin [2]	–	2 ^{H9}	3 ^{H9}
Depth of locating hole [3]	–	3	3

Tab. 5 Direct mounting via through-hole

Horizontal mounting

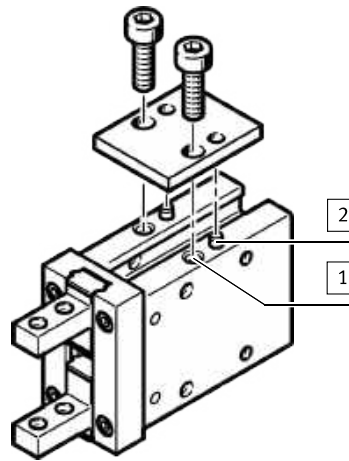


Fig. 5 Horizontal mounting

Size	6	10	16
Thread [1]	M2	M3	M4
Thread depth [mm]	4.5	4	4.5
Tightening torque [Nm]	0.15	0.9	1.6
Locating hole \varnothing for centring pin [2]	–	2 ^{H9}	3 ^{H9}
Depth of locating hole [mm]	–	3	3

Tab. 6 Horizontal mounting

Mounting on the bottom

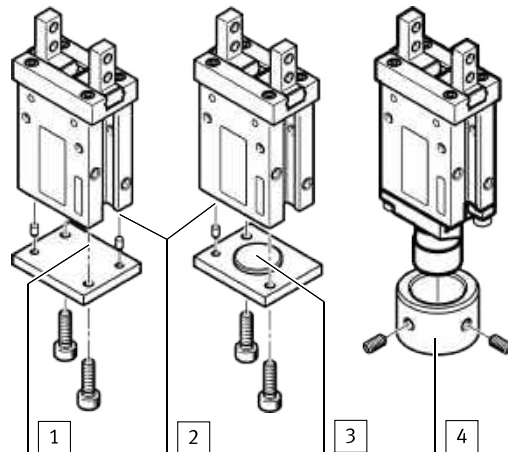


Fig. 6 Mounting on the bottom

Size	6	10	16
Thread [1]	–	M3	M4
Thread depth [mm]	–	4	6
Tightening torque [Nm]	–	0.88	2.1
Locating hole \varnothing for centring pin [2]	–	2 ^{H9}	3 ^{H9}
Depth of locating hole [mm]	–	3	3
Positioning via base provided by customer [3]			
Locating hole \varnothing [mm]	–	12 ^{H9}	17 ^{H8}
Depth of locating hole [mm]	–	1.5	2
Axial mounting by customer [4]			
Clamping surface \varnothing [mm]	8 _{f8}	12 _{f8}	16 _{f8}
Clamping surface height [mm]	10	15	18

Tab. 7 Mounting on the bottom

7 Installation

7.1 Pneumatic installation

NOTICE!

Loss of function due to contamination in the connections.

- Keep ports and tubing lines free from dirt particles and foreign matter.



The use of a check valve prevents the payload from dropping in the event of a sudden pressure drop. The use of a one-way flow control valve also permits adjustment of the opening and closing time.

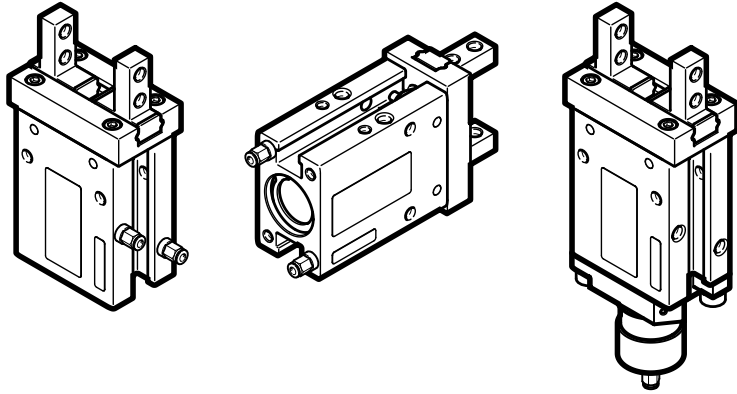


Fig. 7 Connection options

- Connect the compressed air supply to the supply port.

8 Commissioning

⚠ WARNING!

Risk of injury due to falling loads.

- Before exhausting remove the payload.

1. Pressurise gripper slowly.
2. Set the opening and closing time with an upstream one-way flow control valve: screw in the flow control screw completely and then unscrew it one turn.
3. Perform a test run without payload. Check the following:
 - Allocation of supply ports
 - Reliable function of the proximity sensors (if installed)
 - Stop noise of the piston: the piston stop must be soft, that means not audibly hard or metallic.

Piston stop	Insight/conclusion
soft	The gripper speed is correct or can be increased. With upstream one-way flow control valve: unscrew the flow control screw slightly. → The gripper speed increases.
hard/metallic	The gripper speed is too high. With an upstream one-way flow control valve: screw in the flow control screw until the piston stop is no longer audibly hard or metallic. → The gripper speed is reduced.

Tab. 8 Piston stop

4. Perform a test run with payload.
 - ↳ The gripper must hold the payload securely.
5. After successful test runs:
 - Remove payload or lock to prevent it from falling.
 - Exhaust the grippers.

9 Maintenance

9.1 Safety

⚠ WARNING!

Risk of injury due to unexpected movement of the gripper fingers or falling payload.

- Before exhausting: remove the payload at the gripper.
- Disconnect gripper from the compressed air supply.

9.2 Cleaning

Clean product only with non-abrasive cleaning agents and soft cloths.

10 Malfunctions

10.1 Fault clearance

Fault description	Cause	Remedy
Gripper does not hold payload securely.	Insufficient operating pressure.	Increase operating pressure, observe max. permitted value.
	Pressure point of gripper fingers is too far outwards.	Move pressure point inwards.
	Payload is too heavy.	Select a larger gripper.
	Gripping only with return spring force with incorrect gripping direction.	Use the intended gripping direction.

Fault description	Cause	Remedy
Gripper does not open/close.	No compressed air.	Check supply ports.
	Gripper is faulty.	Replace wearing parts → www.festo.com/spareparts or replace grippers → 10.2 Repair.
Proximity sensor does not indicate gripper status.	Proximity sensor is incorrectly adjusted.	Check and adjust position of the proximity sensor. → www.festo.com/sp .
	Connecting cable is disconnected.	Replace connecting cable/proximity sensor. → www.festo.com/sp .

Tab. 9

10.2 Repair

Send the product to the Festo repair service for repair.

11 Disassembly

⚠ WARNING!

Risk of injury due to unexpected movement of the gripper fingers or falling payload.

- Before exhausting: remove the payload at the gripper.
- Disconnect gripper from the compressed air supply.

1. Disconnect gripper from the compressed air supply.
2. Remove supply ports and retaining screws.

12 Disposal

♻ ENVIRONMENT!

Send the packaging and product for environmentally sound recycling in accordance with the current regulations → www.festo.com/sp.

13 Technical data

Size		6	10	16
Pneumatic port		M3	M3	M3
Mounting position		any		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Notes on the operating/pilot medium		lubricated operation possible (in which case lubricated operation will always be required)		
Ambient temperature	[°C]	-10 ... +60		
Storage temperature	[°C]	-10 ... +80		
Operating pressure				
DHPC-...-A	[MPa]	0.15 ... 0.8	0.2 ... 0.8	0.1 ... 0.8
	[psi]	22 ... 116	30 ... 116	15 ... 116
	[bar]	1.5 ... 8	2 ... 8	1 ... 8
DHPC-L-...-A	[MPa]	–	0.2 ... 0.8	0.1 ... 0.8
	[psi]	–	30 ... 116	15 ... 116
	[bar]	–	2 ... 8	1 ... 8
DHPC-...-A-NO/-NC	[MPa]	0.35 ... 0.8	0.35 ... 0.8	0.25 ... 8
	[psi]	51 ... 116	51 ... 116	37 ... 116
	[bar]	3.5 ... 8	3.5 ... 8	2.5 ... 8
Total gripping force at 0.6 MPa (90 psi; 6 bar)				
DHPC-...-A	[N]	14.6 (open) 11 (close)	51.2 (open) 43 (close)	129.4 (open) 107.8 (close)
		7.8 (close)	32.8 (close)	86.8 (close)
DHPC-...-A-NC	[N]	10.4 (open)	39.2 (open)	101 (open)

Tab. 10 Technical data