

Parallel grippers DHPS

FESTO

 **New**

Parallel grippers DHPS

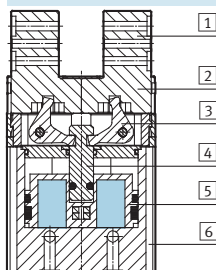
Technical data

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Weight [g]						
Size	6	10	16	20	25	35
DHPS-...-A	19	67	184	380	700	1,285
DHPS-...-A-N	–	68	188	387	713	1,345

Materials

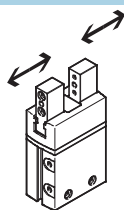
Sectional view



Parallel gripper

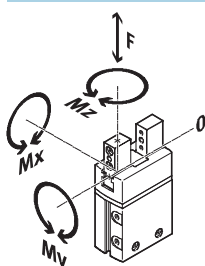
1	Gripper jaw	High-alloy stainless steel
2	Cover cap	Polyamide
3	Reversing lever	Hardened sintered steel
4	Piston rod	Tempered steel
5	Piston	Polyacetal
6	Housing	Hard anodised wrought aluminium alloy
–	Seals	Nitrile rubber
–	Note on materials	Free of copper and PTFE RoHS-compliant

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
	Closing	13.5	34.5	96	147	228
Total gripping force						
DHPS-...-A	Opening	30	80	210	320	500
	Closing	25	70	190	290	450

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
Max. permissible torque M_x	[Nm]	0.5	3	8	14	30
Max. permissible torque M_y	[Nm]	0.5	3	8	14	30
Max. permissible torque M_z	[Nm]	0.5	3	8	14	30

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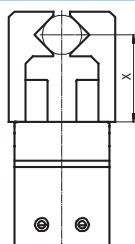
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Gripping force F_H per gripper jaw as a function of operating pressure and lever arm x

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



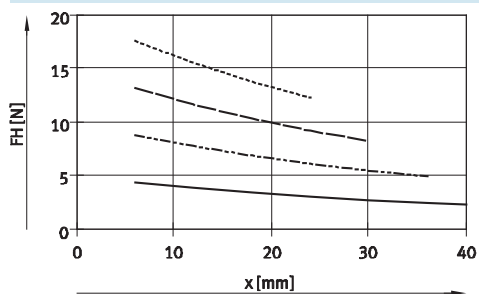
— 2 bar
 - - - 4 bar
 — 6 bar
 - - - 8 bar

Note

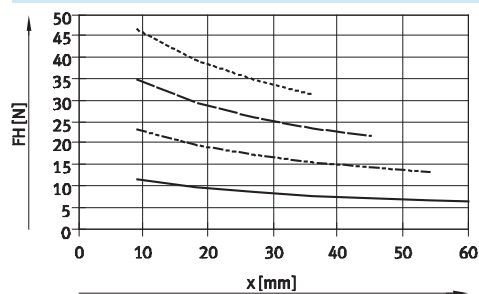
Gripper selection
 sizing software
 → www.festo.com

External gripping (closing)

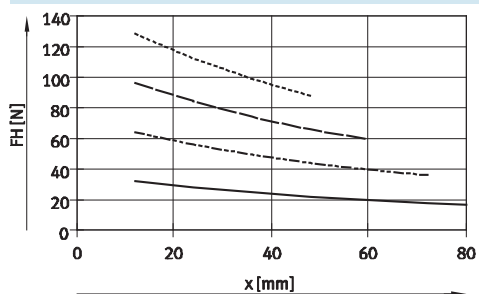
DHPS-06



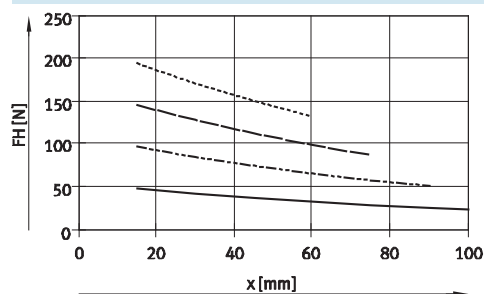
DHPS-10



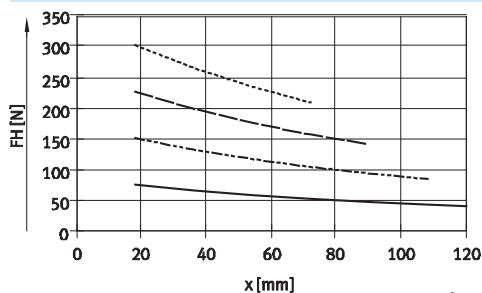
DHPS-16



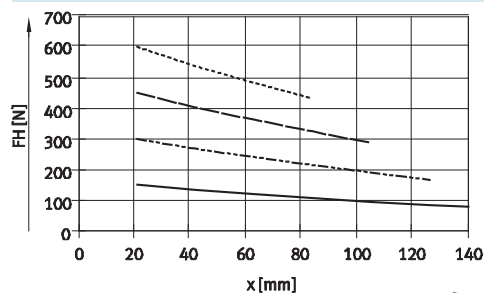
DHPS-20



DHPS-25



DHPS-35



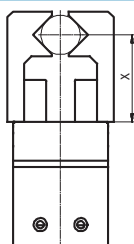
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Technical data

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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.



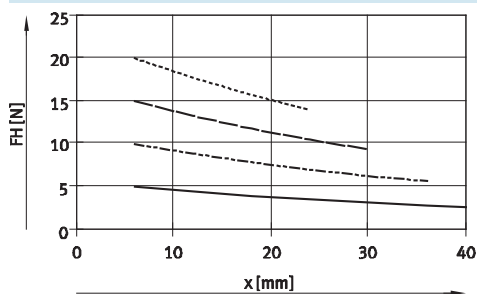
— 2 bar
- - - 4 bar
- · - 6 bar
- · - · 8 bar

Note

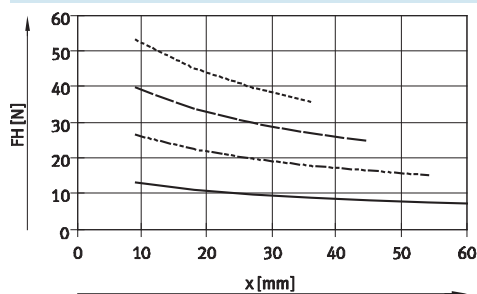
Gripper selection
sizing software
→ www.festo.com

Internal gripping (opening)

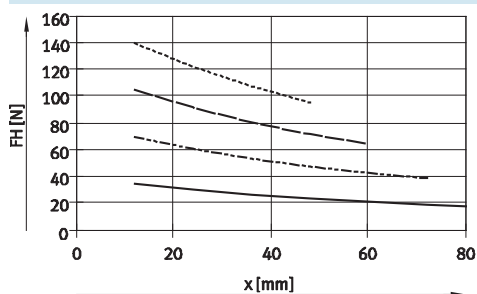
DHPS-06



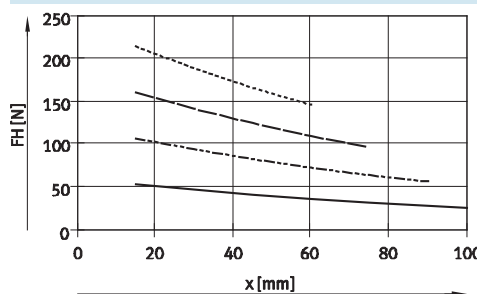
DHPS-10



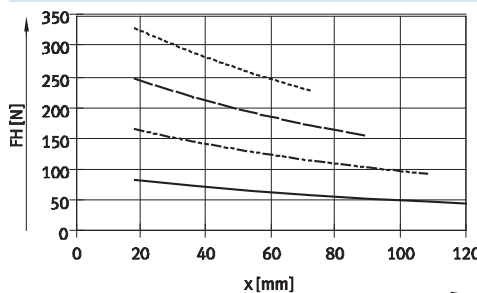
DHPS-16



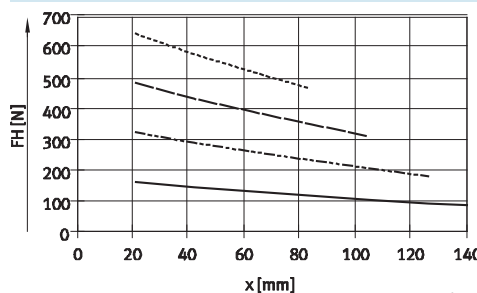
DHPS-20



DHPS-25



DHPS-35




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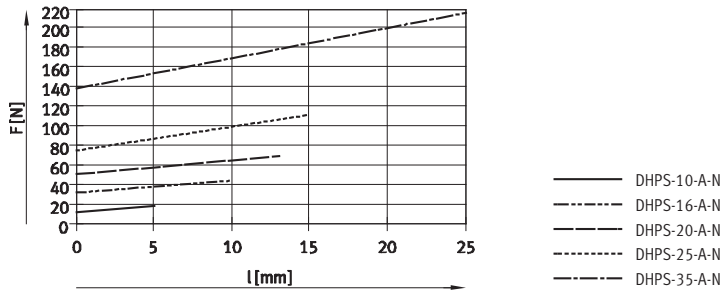
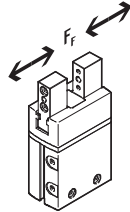
Parallel grippers DHPS

Technical data

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_{Total} .

The formulae for calculating the spring force are provided in the table below.

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

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_{Total}) must be combined accordingly.

Application

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

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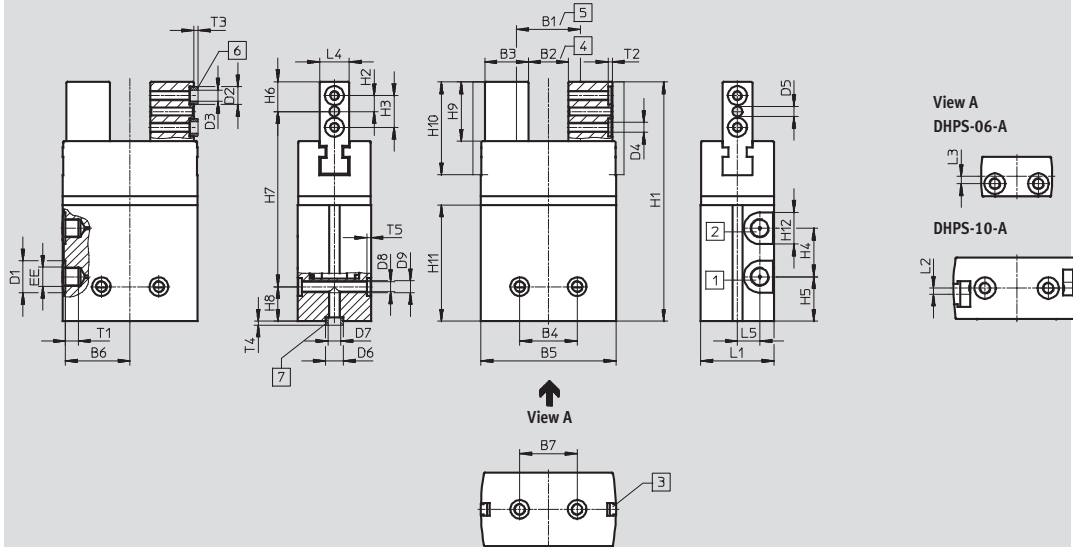
Parallel grippers DHPS

Technical data

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Dimensions

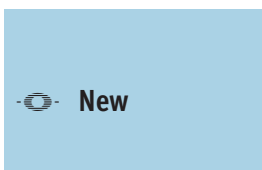
Download CAD Data → www.festo.com/us/cad



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

Size	B1	B2	B3	B4 ¹⁾	B5	B6	B7 ¹⁾	D1	D2	D3	D4	D5	D6	D7
[mm]	±0.5	±0.5	-0.03		±0.1			Ø	Ø H8/h7	Ø		Ø H8	Ø H8/h7	Ø
6	10	6	5.5	11	18	8.65	11	7	—	—	M2	1.5	5	—
10	21.8	15.8	7	16	32	15.4	16	7	5	3.2	M3	2	5	3.2
16	27.8	17.8	13	25	47	22.65	25	7	7	5.3	M4	3	7	5.3
20	30	17	17.5	25	55.6	26.65	25	10	7	5.3	M4	4	7	5.3
25	32.4	20.4	22	29	68.2	32.65	29	16	9	6.4	M5	4	9	6.4
35	56	31	27	33	88	42.25	33	16	9	6.4	M6	5	12	10.3

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



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Size [mm]	D8 Ø +0.1	D9	EE	H1	H2	H3 ¹⁾	H4	H5	H6	H7 ±0.2	H8 ¹⁾	H9
6	2.5	M3	M3	45.5	2.9	5.8	15	4	5	33	7.5	9.55
10	2.5	M3	M3	66	4	8	15.5	10.5	7.5	51	7.5	15.2
16	3.3	M4	M3	80	5.5	11	18	11	10	62.5	7.5	20
20	3.3	M4	M5	101	7	14	23	16	12.5	81	7.5	25
25	5.1	M6	G½	121	8	16	24.5	22.5	15	88.5	17.5	30
35	6.4	M8	G¾	142	8.5	17	29	24	16	108.5	17.5	32

Size [mm]	H10	H11	H12	L1 ±0.05	L2	L3 ¹⁾	L4 -0.05	L5	T1 +0.5	T2 +0.1	T3 -0.2	T4 -0.2	T5 +0.1
6	15.8	25.3	7	10	–	1.8	5	1.5	3.5	–	–	1.2	1.2
10	23	35	7	15.5	1.5	–	7	5	5	1.2	1.2	1.2	1.2
16	32.5	38.1	7	22	–	–	10	7	6	1.6	1.4	1.4	1.6
20	39.5	50	10	30	–	–	12	9	6	1.6	1.4	1.4	1.6
25	47	58.8	16	37	–	–	15	11.3	6.5	2.1	1.9	1.9	2.1
35	53	65.3	16	45	–	–	20	13.5	6.5	2.1	1.9	2.4	2.6

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

Ordering data					
Size [mm]	Double-acting without compression spring		Single-acting or with gripping force retention		
	Part No.	Type	Opening Part No.	Type	Closing Part No. Type
6	1254039	DHPS-06-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



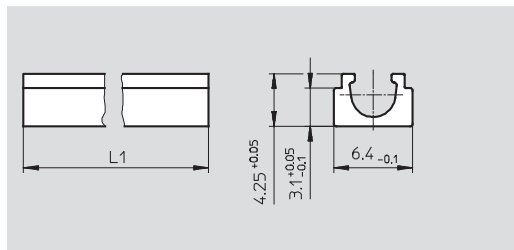
Parallel grippers DHPS

Accessories

FESTO

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

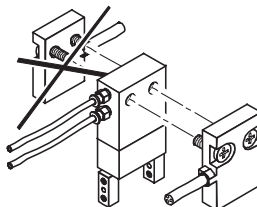
Ordering data						
	For size [mm]	Description	Weight [g]	Part No.	Type	PU ¹⁾
Centring sleeve ZBH						
	10	For centring the gripper fingers on the gripper jaws	1	189652	ZBH-5	10
	16, 20		1	186717	ZBH-7	
	25, 35		1	150927	ZBH-9	
	6, 10	For centring the gripper when mounting	1	189652	ZBH-5	
	16, 20		1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



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Accessories

FESTO

Signal converter/evaluation unit for position sensor SMH-S1

Signal converter SVE4

Evaluation unit SMH-AE1

- Converts analogue signals into switching points
- Switching function freely programmable with teach-in
- Threshold value, hysteresis or window comparator
- Converts analogue signals into switching points
- With 3 potentiometers for setting 3 switching points

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
Evaluation unit SMH-AE1						Technical data → Internet: smh-ae	
	6	Socket M8x1, 4-pin	Plug M12x1, 5-pin	3x PNP	170	175708	SMH-AE1-PS3-M12
				3x NPN		175709	SMH-AE1-NS3-M12

Ordering data – Connecting cables

Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type
Connection between position sensor and signal converter/evaluation unit				
	Straight socket, M8x1, 4-pin	Straight plug, M8x1, 4-pin	2.5	554035 NEBU-M8G4-K-2.5-M8G4
Connection between evaluation unit and controller				
	Straight socket, M12x1, 5-pin	Cable, open end, 5-wire	2.5	541330 NEBU-M12G5-K-2.5-LE5
			5	541331 NEBU-M12G5-K-5-LE5
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



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SCAN TO CHAT ON WHATSAPP

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