

Three-point grippers HGDD, sealed

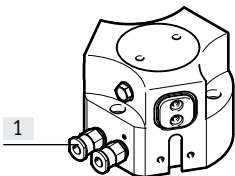
FESTO



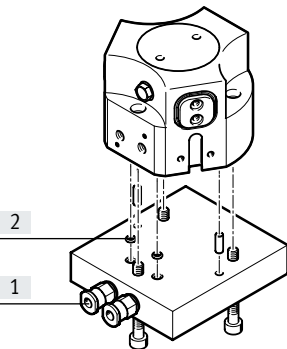
Key features

At a glance	
General	Flexible range of applications
The fully encapsulated gripper kinematics enable the gripper to be used in extremely harsh ambient conditions. The sturdy and precise kinematics provide maximum torque resistance and a long service life. The force generated by the linear motion is translated into the gripper jaw movement via a wedge mechanism with force-guided motion. This also guarantees synchronous movement of the gripper jaws. The virtually backlash-free plain-bearing guide is realised using ground-in gripper jaws.	
 Note Engineering software Gripper selection → www.festo.com	
• Can be used as a double-acting and single-acting gripper • Compression spring for supplementing or retaining the gripping forces • Suitable for external and internal gripping	

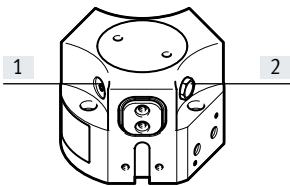
Wide range of supply ports	
Directly from the front	Via adapter plate from underneath



[1] Compressed air supply ports
[2] O-rings

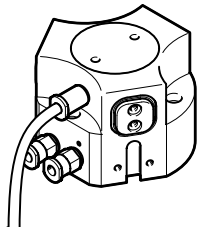


Other connections



[1] Port for lubrication nipple
[2] Exhaust hole or sealing air connection

Use in harsh ambient conditions

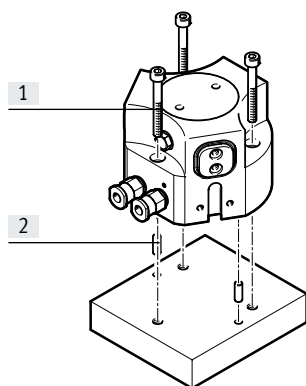


When using the gripper in humid environments or with liquid/gaseous media, make sure that the filter is installed in a neutral environment. The same applies to unused supply ports when operating the gripper as a single-acting gripper.

Key features

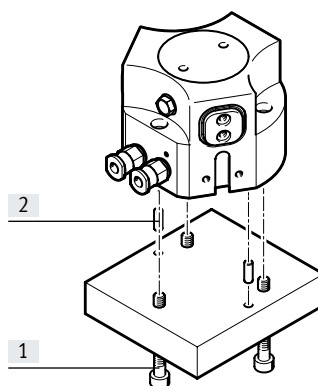
Mounting options

Direct mounting
from above



- [1] Mounting screws
[2] Centring pins

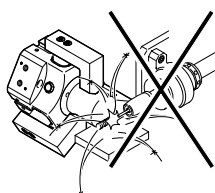
Via adapter plate
from underneath



Note

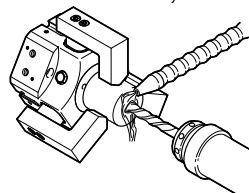
These grippers are not suitable or are of limited suitability for the following application examples:

Not suitable for:

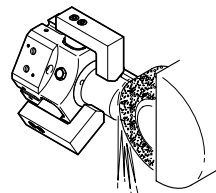


- Welding spatter

Of limited suitability for:



- Aggressive media only possible after consultation with Festo



- Grinding dust

Three-point grippers HGDD, sealed

Type codes

001	Series	
HGDD	Three-point gripper, sealed	

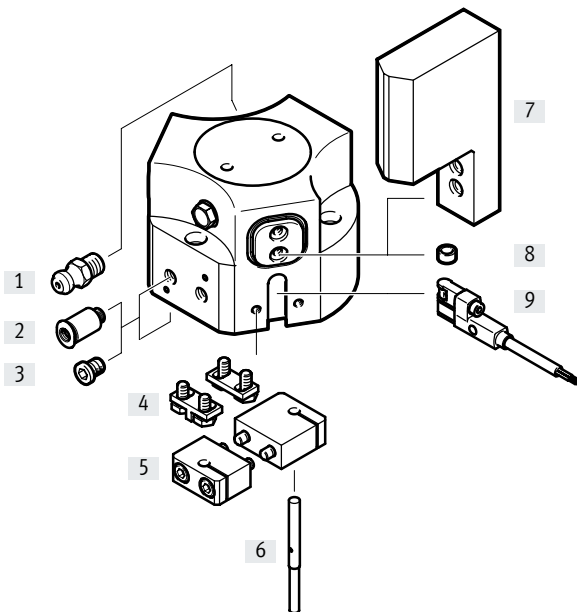
002	Size	
35	35	
40	40	
50	50	
63	63	
80	80	

003	Position sensing	
A	For proximity sensor	

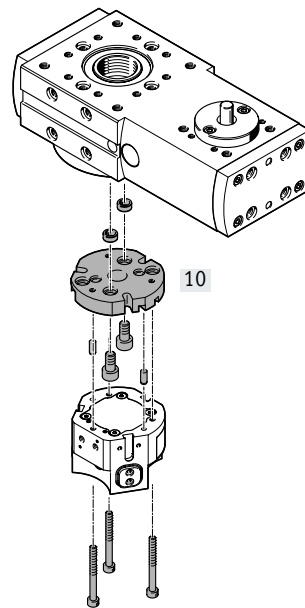
004	Gripping force backup	
	None	
G1	Opening	
G2	N/O contact	

Peripherals overview

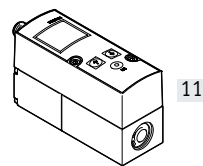
Peripherals overview



System product for handling and assembly technology



Proportional-pressure regulator VPPM



Accessories		
Type	Description	→ Page/Internet
[1] Lubrication nipple	Included in the scope of delivery of the gripper	–
[2] Push-in fitting QS	For connecting tubing with standard O.D.	qs
[3] Blanking plug B	For sealing the compressed air supply ports when using the lower compressed air supply ports	17
[4] Sensor bracket DASI	Switch lug for sensing the gripper jaw position. Mounted on the gripper jaw blank	17
[5] Sensor bracket DASI	Clamping block for securing the proximity sensors SIEH or SIEN	17
[6] Proximity sensor SIEH/SIEN	For sensing the piston position	18
[7] Gripper jaw blank BUB-HGDD	Unmachined part specially matched to the gripper jaws for custom production of gripper fingers	16
[8] Centring sleeve ZBH	- For centring the gripper jaw blanks/gripper fingers on the gripper jaws 6 centring sleeves included in the scope of delivery of the gripper	17
[9] Proximity sensor SMT-8G	- For sensing the piston position, 3 slots available - Proximity sensor does not project past the housing at the bottom	17
[10] Adapter kit DHAA, HAPG	Connecting plate between drive and gripper	14
[11] Proportional-pressure regulator VPPM	For infinite adjustment of the gripping force	vppm

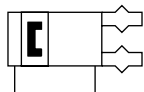
Three-point grippers HGDD, sealed

Data sheet

Function

Double-acting

HGDD-...



Size
35 ... 80 mm

Total stroke
4 ... 12 mm



www.festo.com

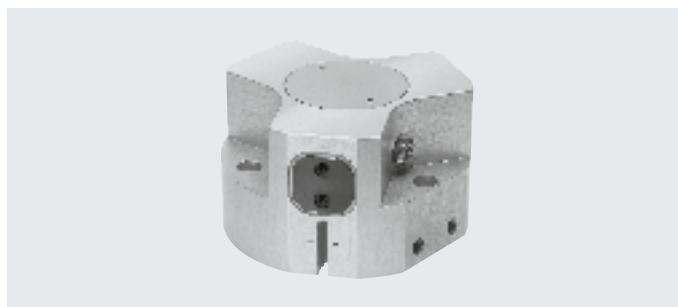
Function – Variant

Single-acting or with gripping force retention

opening: HGDD-...-G1



closing: HGDD-...-G2



General technical data											
Size	35		40		50		63		80		
Design		Wedge-shaped actuator									
		Force-guided motion									
Mode of operation		Double-acting									
Gripper function		3-point									
Number of gripper jaws		3									
Max. load per gripper finger ¹⁾		[g]	57	130	276	440	790				
Stroke per gripper jaw		[mm]	4	6	8	10	12				
Pneumatic connection			M5	M5	G1/8	G1/8	G1/8				
Pneumatic connection for sealing air			M3	M3	M5	M5	G1/8				
Pneumatic connection for lubrication nipple			M3	M3	M5	M5	M5				
Repetition accuracy ²⁾		[mm]	≤ 0.03				≤ 0.05				
Max. interchangeability		[mm]	≤ ±0.2								
Max. operating frequency		[Hz]	≤ 4								
Rotational symmetry		[mm]	< Ø 0.2								
Position sensing		Via proximity sensor									
Type of mounting		With through-hole and dowel pin									
		With female thread and dowel pin									
Mounting position		Any									

1) Applies to unthrottled operation

2) Under constant exposure to operating conditions, end-position drift occurs, concentric to the central shaft, at 100 consecutive strokes

Operating and environmental conditions

Min. operating pressure		
HGDD-...-A	[bar]	3
HGDD-...-A-G	[bar]	4
Max. operating pressure	[bar]	8
Operating pressure for sealing air	[bar]	0 ... 0.5
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⁾	[°C]	+5 ... +60
Degree of protection	IP65	
Corrosion resistance class CRC ²⁾	2	

1) Note operating range of proximity sensors

2) Corrosion resistance class CRC 2 to Festo standard FN 940070

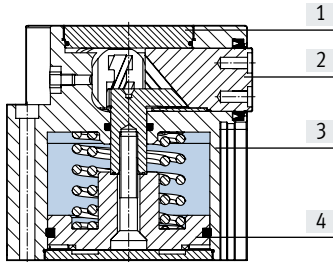
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Data sheet

Weight [g]					
Size	35	40	50	63	80
HGDD-...-A	309	599	1117	2175	3522
HGDD-...-A-G	370	775	1495	2848	4788

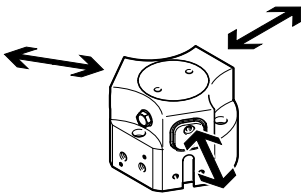
Sectional view

Materials



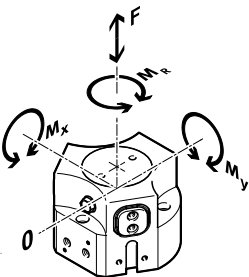
Size	35	40	50	63	80
[1] Cover cap	High-alloy stainless steel				
[2] Gripper jaw	Hardened steel				
[3] Housing	Anodised aluminium				
[4] Piston	Hard-anodised aluminium				
– Seals	Nitrile rubber				
– Note on materials	Free of copper and PTFE			–	
	RoHS-compliant				

Gripping force [N] at 6 bar



Size		35	40	50	63	80
Gripping force per gripper jaw						
HGDD-...-A	Opening	122	216	371	582	943
	Closing	112	200	348	553	915
Total gripping force						
HGDD-...-A	Opening	366	648	1113	1746	2829
	Closing	336	600	1044	1659	2745

Characteristic load values at the gripper jaws



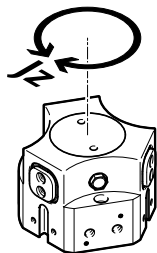
The indicated permissible forces and torques apply to a single gripper jaw. They include the lever arm, additional applied loads due to the workpiece or external gripper fingers and acceleration forces occurring during movement.

The zero coordinate line (gripper jaws point of rotation) must be taken into consideration for the calculation of torques.

Size		35	40	50	63	80
Max. permissible force F_z	[N]	300	700	1300	2300	3600
Max. permissible torque M_x	[Nm]	12	25	45	70	100
Max. permissible torque M_y	[Nm]	8	18	30	45	65
Max. permissible torque M_r	[Nm]	8	20	30	50	75

Data sheet

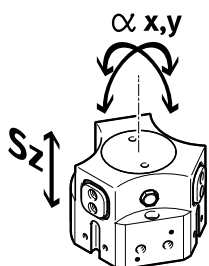
Mass moments of inertia [kgcm²]



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

Size	35	40	50	63	80
HGDD-...-A	1.01	3.31	9.65	29	70.22
HGDD-...-A-G	1.37	5.01	15.07	45.05	109

Gripper jaw backlash



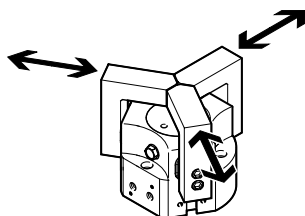
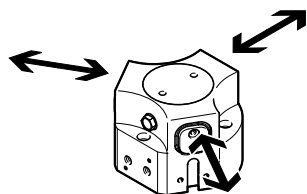
The plain-bearing guide used in the grippers means that there is backlash between the gripper jaws and the guide element. The backlash values listed in the table have been calculated based on the traditional accumulative tolerance method.

Size	35	40	50	63	80
Max. gripper jaw backlash Sz	[mm]	0.05			
Max. gripper jaw angular backlash ax, ay	[°]	0.1			

Opening and closing times [ms] at 6 bar

Without external gripper fingers

With external gripper fingers



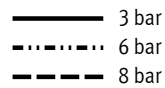
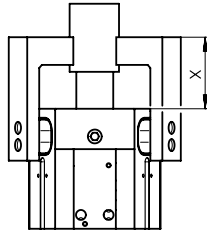
The indicated opening and closing times [ms] were measured at room temperature at an operating pressure of 6 bar with a horizontally mounted gripper without additional gripper fingers. The grippers must be throttled for larger loads [g]. Opening and closing times must then be adjusted accordingly.

Size	35	40	50	63	80
Without external gripper fingers					
HGDD-...-A	Opening	44	78	93	115
	Closing	52	106	128	145
HGDD-...-A-G1	Opening	38	70	25	48
	Closing	85	211	160	190
HGDD-...-A-G2	Opening	81	144	111	135
	Closing	42	110	87	68
With external gripper fingers (as a function of the load per gripper finger)					
HGDD-...	200 g	52	–	–	–
	400 g	74	70	–	–
	500 g	83	78	–	–
	800 g	105	99	106	–
	1000 g	–	111	118	128
	1500 g	–	–	145	157
	1800 g	–	–	–	172
	2000 g	–	–	–	181
	2200 g	–	–	–	–
	2400 g	–	–	–	–
					253
					264

Data sheet

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

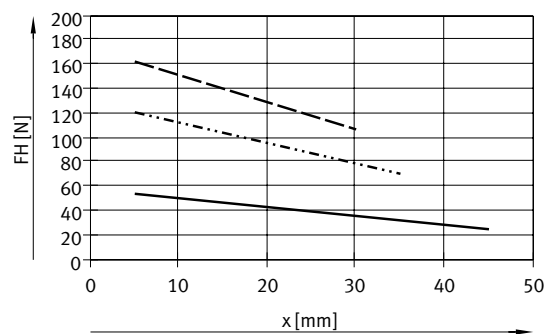
The gripping forces as a function of the operating pressure and lever arm can be determined from the following graphs.



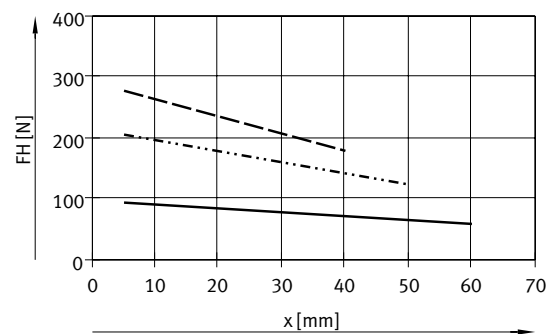
Note
Engineering software
Gripper selection
→ www.festo.com

External gripping (closing)

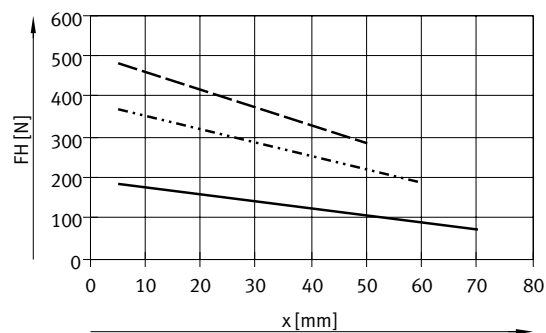
HGDD-35-A



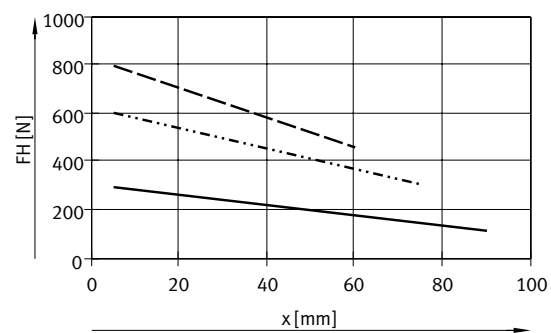
HGDD-40-A



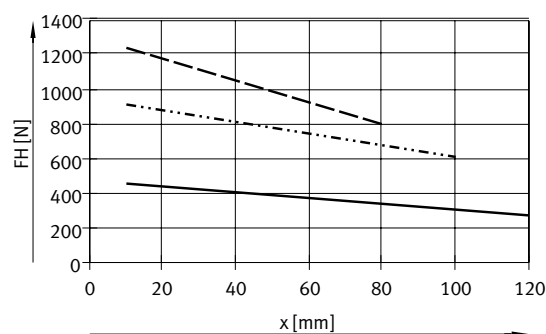
HGDD-50-A



HGDD-63-A



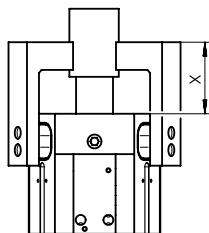
HGDD-80-A



Data sheet

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

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

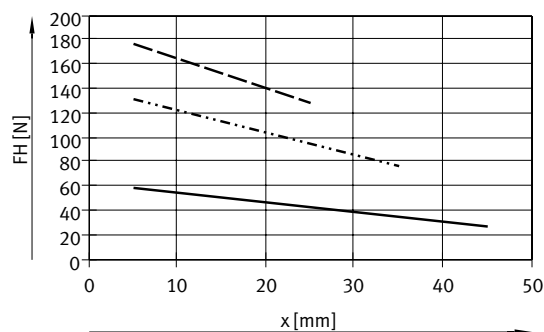


— 3 bar
- · - · 6 bar
- - - 8 bar

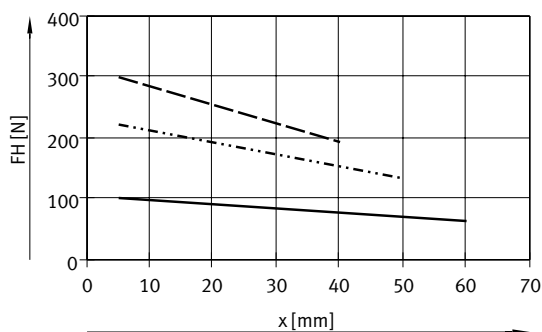
Note
Engineering software
Gripper selection
→ www.festo.com

Internal gripping (opening)

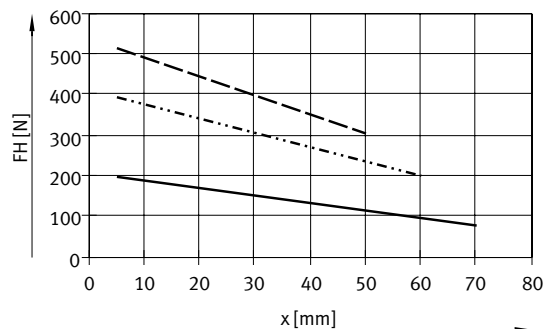
HGDD-35-A



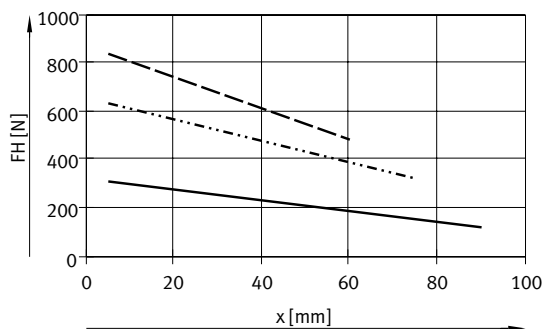
HGDD-40-A



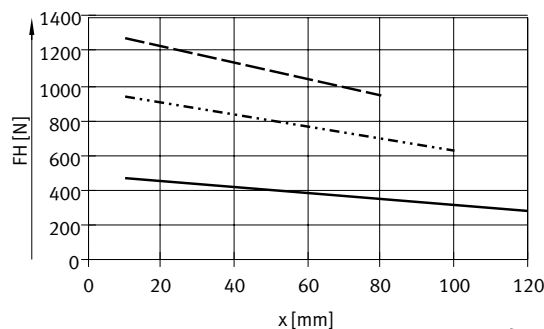
HGDD-50-A



HGDD-63-A



HGDD-80-A

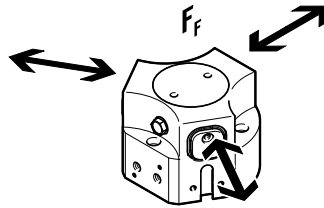


Data sheet

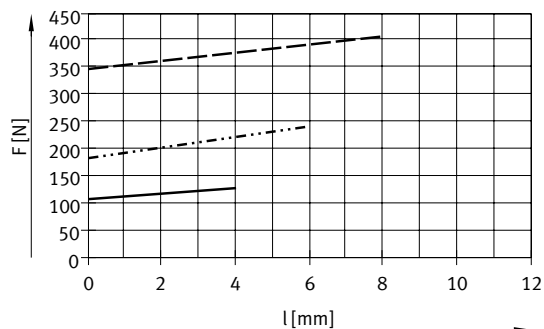
Spring force F_F as a function of size and gripper jaw stroke l per gripper finger

Gripping force retention for HGDD-...-G...

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

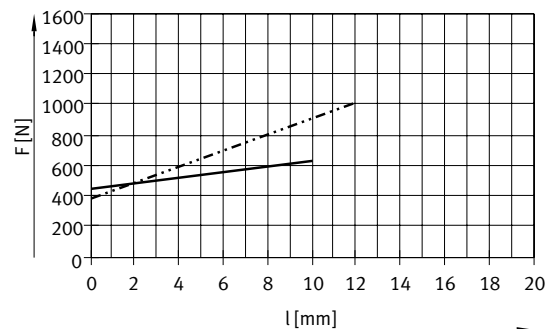


Size 35 ... 50



— HGDD-35-A-G
 HGDD-40-A-G
 - - - - - HGDD-50-A-G

Size 63 ... 80



— HGDD-63-A-G
 HGDD-80-A-G

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	Gripping force retention	Size	F_{Total} per gripper finger
G1	35	$-0.85 \cdot x + 0.45 \cdot F_F$	G2	35	$-0.6 \cdot x + 0.45 \cdot F_F$
	40	$-0.55 \cdot x + 0.35 \cdot F_F$		40	$-0.55 \cdot x + 0.35 \cdot F_F$
	50	$-2.5 \cdot x + 0.75 \cdot F_F$		50	$-2.5 \cdot x + 0.6 \cdot F_F$
	63	$-0.2 \cdot x + 0.4 \cdot F_F$		63	$-1.0 \cdot x + 0.4 \cdot F_F$
	80	$-1.5 \cdot x + 0.35 \cdot F_F$		80	$-4.0 \cdot x + 0.85 \cdot F_F$

Determining the actual gripping forces F_{Gr} per gripper finger for HGDD-...-G1 and HGDD-...-G2 as a function of application

The three-point grippers with integrated spring type HGDD-...-G1 (opening gripping force retention) and HGDD-...-G2 (closing gripping force retention) can be used as

- single-acting grippers
- grippers with supplementary gripping force and
- grippers with gripping force retention

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

Application forces per gripper finger

Single-acting

- Gripping with spring force:
 $F_{\text{Gr}} = F_{\text{Total}}$
- Gripping with pressure force:
 $F_{\text{Gr}} = F_H - F_{\text{Total}}$

Supplementary gripping force

- Gripping with pressure and spring force:
 $F_{\text{Gr}} = F_H + F_{\text{Total}}$

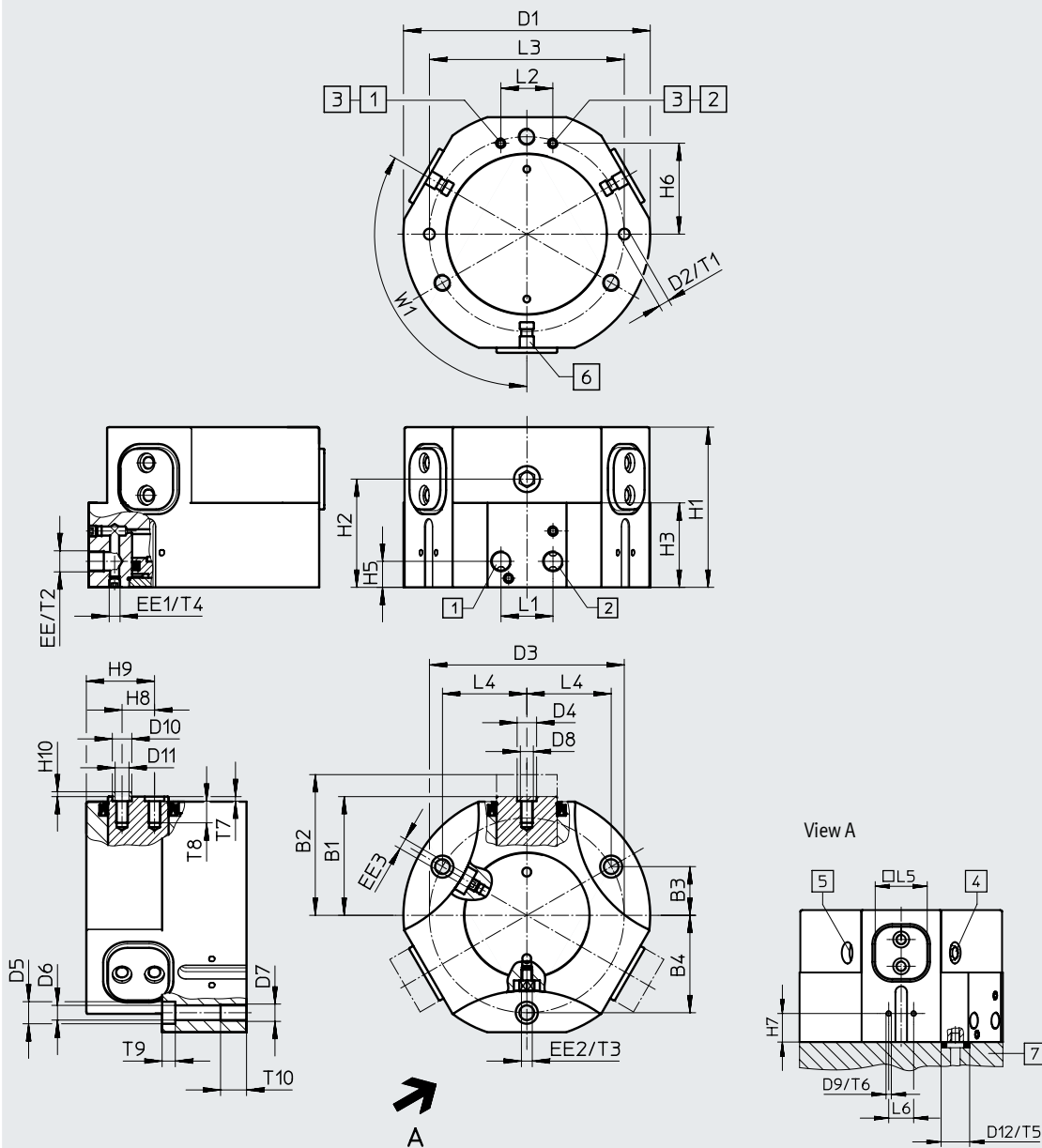
Gripping force retention

- Gripping with spring force:
 $F_{\text{Gr}} = F_{\text{Total}}$

Data sheet

Dimensions

Download CAD data → www.festo.com



- [1] Supply port, opening
 - [2] Supply port, closing
 - [3] Alternative air supply port (supplied sealed)
 - [4] Exhaust hole (filter integrated)
 - [5] Lubrication nipple (supplied sealed)
 - [6] Slot for proximity sensor
 - [7] O-ring for three-point gripper
- HGDD-35: $\varnothing 3 \times 1.5$
 HGDD-40 ... 80: $\varnothing 5 \times 1.5$

Data sheet

Size	B1	B2	B3	B4	D1 Ø	D2 Ø	D3 Ø	D4 Ø	D5 Ø	D6 Ø	D7	D8	D9
[mm]	±0.5	±0.5			±0.1	H8	±0.1	H8	H13	H13			
35	28	32	11	22	58	3	44	5	5.9	3.3	M4	M3	M3
40	36	42	14	28	74	4	56	7	9.4	5.1	M6	M4	M3
50	44.5	52.5	17.5	35	93	5	70	9	10.2	6.8	M8	M6	M3
63	55	65	22.5	45	114	5	90	9	10.2	6.8	M8	M6	M3
80	68	80	28	56	139	6	112	9	13.5	8.4	M10	M6	M3

Size	D10 Ø	D11 Ø	D12 Ø	EE	EE1	EE2	EE3	H1		H2	
[mm]	H7		+0.2					±0.05	-G ±0.05		-G
35	5	3.2	6	M5	M3	M3	M3	41	51	29	39
40	7	5.3	8	M5	M5	M3	M3	48.5	66	34.5	52
50	9	6.4	8	G1/8	M5	M5	M5	58.5	83.5	40.4	65.4
63	9	6.4	8	G1/8	M5	M5	M5	74	104	50	80
80	9	6.4	8	G1/8	M5	G1/8	M5	83.5	120.5	55.5	92.5

Size	H3		H5	H6	H7		H8 ¹⁾	H9	H10	L1	L2	L3	L4
[mm]	-0.2	-G -0.2	±0.1	±0.1	±0.1	-G ±0.1		-0.02	-0.3	±0.1	±0.1	±0.02	
35	23	33	9	18.5	7	17	7	15.5	1.2	12	15	45	19.05
40	27.5	45	9	25	10	27.5	10	19	1.4	12	18	56	24.25
50	32.5	57.5	12	32	12.5	37.5	12	24.1	1.9	24	18	70	30.31
63	39	69	12	42	16	46	15	31.5	1.9	24	24	90	38.97
80	43	80	12	53	21	58	18	37	1.9	30	30	112	48.5

Size	L5	L6	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	W1
[mm]	-0.02	±0.1	min.	min.	min.	min.	+0.1	min.	+0.1	min.	+0.2	min.	
35	14	12	5	5	3	3	1.2	4	1.3	5	3.2	8	120°
40	18	12	6	6	3	5	1.2	5	1.6	6	5	10	120°
50	22	12	8	7	6	5	1.2	5	2.1	10	6.1	12	120°
63	28	14	8	7	6	5	1.2	5	2.1	10	6.1	12	120°
80	32	14	10	8	10	5	1.2	5	2.1	10	8	15	120°

1) Tolerance for centring hole ±0.02 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
35	1163037	HGDD-35-A	1163038	HGDD-35-A-G1	1163039	HGDD-35-A-G2
40	1163040	HGDD-40-A	1163041	HGDD-40-A-G1	1163042	HGDD-40-A-G2
50	1163043	HGDD-50-A	1163044	HGDD-50-A-G1	1163045	HGDD-50-A-G2
63	1163046	HGDD-63-A	1163047	HGDD-63-A-G1	1163048	HGDD-63-A-G2
80	1163049	HGDD-80-A	1163050	HGDD-80-A-G1	1163051	HGDD-80-A-G2

Accessories

Adapter kit DHAA, HAPG

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

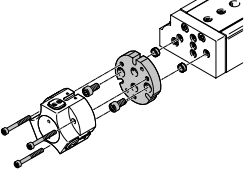
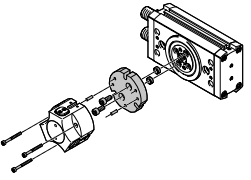


Note

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	Actuator Size	Grippers Size	Adapter kit		
			CRC ¹⁾	Part no.	Type
	DGSL	HGDD	DHAA		
	16, 20, 25	35	2	2371422	DHAA-G-G3-20-B13-35
	20, 25	40		2373773	DHAA-G-H2-16-B13-40
	25	50		2377625	DHAA-G-H2-20-B13-50
	DGSL	HGDD-G1/G2	DHAA, HAPG		
	16, 20, 25	35	2	542436	HAPG-94
	20, 25	40		542437	HAPG-95
	25	50		2378415	DHAA-G-H2-20-B13G-50
	DRRD	HGDD	DHAA		
	20	35	2	2075498	DHAA-G-Q11-20-B13-35
	25	35		1718041	DHAA-G-Q11-25-B13-35
	25	40		1718564	DHAA-G-Q11-25-B13-40
	32	40		2077119	DHAA-G-Q11-32-B13-40
	32	50		2078975	DHAA-G-Q11-32-B13-50
	35	50		2079171	DHAA-G-Q11-35-B13-50
	35, 40	63		2079579	DHAA-G-Q11-3 5/40-B13-63
	DRRD	HGDD-G1/G2	DHAA		
	20	35	2	2837144	DHAA-G-Q11-20-B13G-35
	25	35		2837169	DHAA-G-Q11-25-B13G-35
	25	40		2837182	DHAA-G-Q11-25-B13G-40
	32	40		2837254	DHAA-G-Q11-32-B13G-40
	32	50		2837269	DHAA-G-Q11-32-B13G-50
	35	50		2837283	DHAA-G-Q11-35-B13G-50
	35, 40	63		2837337	DHAA-G-Q11-3 5/40-B13G-63

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Accessories

Adapter kit
DHAA/HAPG

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

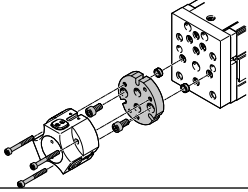
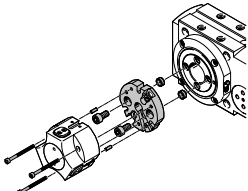
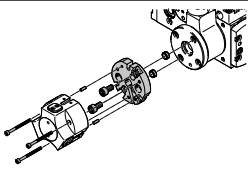


Note

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

Permissible drive/gripper combinations with adapter kit

Download CAD data → www.festo.com

Combination	Actuator Size	Grippers Size	Adapter kit		
			CRC ¹⁾	Part no.	Type
	EGSL/HGDD	EGSL	2	DHAA	
	45, 55, 75	35		2371422	DHAA-G-G3-20-B13-35
	75	40		2373773	DHAA-G-H2-16-B13-40
	75	50	2	2377625	DHAA-G-H2-20-B13-50
	EGSL	HGDD-G1/G2		DHAA, HAPG	
	45, 55, 75	35		542436	HAPG-94
	75	40		542437	HAPG-95
	75	50		2378415	DHAA-G-H2-20-B13G-50
	ERMB/HGDD	ERMB	2	DHAA	
	20, 25, 32	35		2376297	DHAA-G-Q5-20-B13-35
	25, 32	40		2376728	DHAA-G-Q5-25-B13-40
	32	50	2	2377625	DHAA-G-H2-20-B13-50
	ERMB	HGDD-G1/G2		DHAA, HAPG	
	20, 25, 32	35		542441	HAPG-SD2-34
	25, 32	40		542442	HAPG-SD2-35
	32	50		2378415	DHAA-G-H2-20-B13G-50
	EHMB/HGDD	EHMB	2	DHAA	
	20	35		2376297	DHAA-G-Q5-20-B13-35
	20	40		2376728	DHAA-G-Q5-25-B13-40
	20	50	2	2377625	DHAA-G-H2-20-B13-50
	EHMB	HGDD-G1/G2		DHAA, HAPG	
	20	35		542441	HAPG-SD2-34
	20	40		542442	HAPG-SD2-35
	20	50		2378415	DHAA-G-H2-20-B13G-50

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Accessories

Gripper jaw blank BUB-HGDD

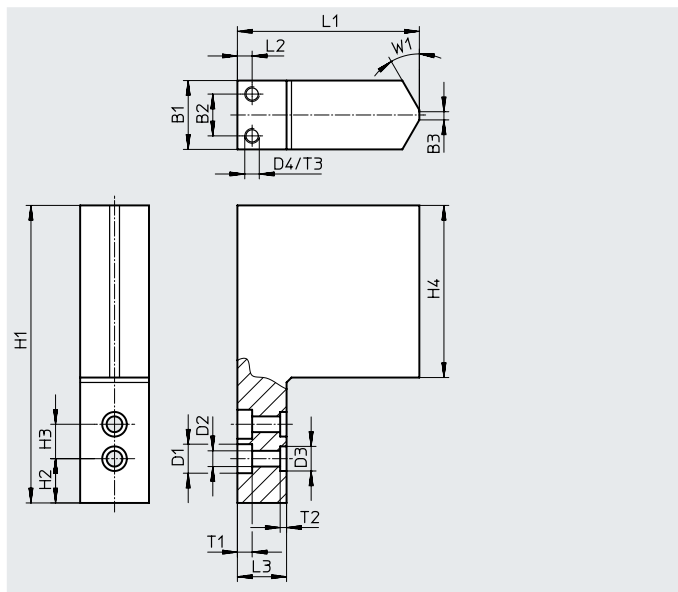
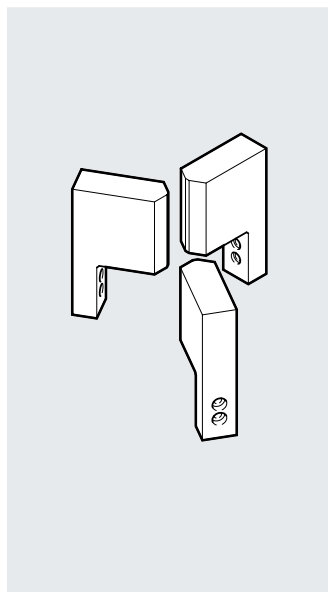
(3 included in the scope of delivery)

Material:

Wrought aluminium alloy

Free of copper and PTFE

RoHS-compliant



Dimensions and ordering data							
For size	B1	B2	B3	D1 Ø	D2 Ø	D3 Ø	D4
[mm]	±0.05			H13	H13	H8	
35	14	8.5	2	5.9	3.2	5	M3
40	20	14	2	7.4	4.3	7	M3
50	29	23	2	10.4	6.4	9	M3
63	32	26	2	10.4	6.4	9	M3
80	35	26	2	10.4	6.4	9	M3

For size	H1	H2	H3 ¹⁾	H4	L1	L2	L3
[mm]	±0.05	±0.02			±0.05		
35	60.5	9	7	35	37	3	10
40	77	7	10	50	45	5	10
50	96	11	12	60	55	6	12
63	121	13.5	15	75	64	6	12
80	153.5	15.5	18	100	79.4	10	15

For size	T1	T2	T3	W1	Weight per blank [g]	Part no.	Type
[mm]		+0.1					
35	3 ^{+0.2}	1.3	5	30°	57	1180955	BUB-HGDD-35
40	4 ^{+0.2}	1.6	5	30°	131	1180956	BUB-HGDD-40
50	6.1 ^{+0.1}	2.1	5	30°	276	1180957	BUB-HGDD-50
63	6.1 ^{+0.1}	2.1	5	30°	440	1180958	BUB-HGDD-63
80	6.1 ^{+0.1}	2.1	5	30°	793	1180959	BUB-HGDD-80

1) ±0.02 and ±0.01 apply to the centring hole D3
±0.1 applies to the through-holes D1 and D2

Accessories

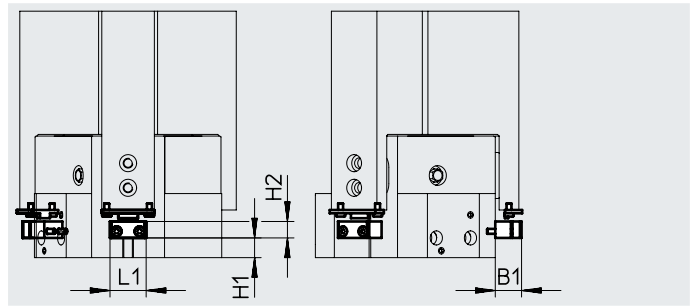
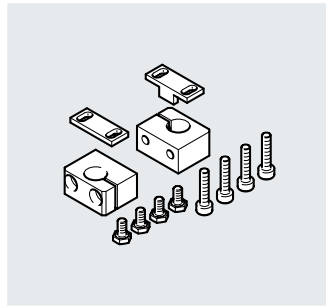
Sensor bracket DASI

(1 included in the scope of delivery)

Material:

Wrought aluminium alloy

RoHS-compliant



Dimensions and ordering data								
For size	B1	H1		H2	L1	Weight	Part no.	Type
[mm]			-G			[g]		
35	13	3	13	8	21	20	1435236	DASI-B13-35-S3
40	16	6	23.5	10	20	27	1435232	DASI-B13-40-S8
50	16	8.5	33.5	10	20	30	1435233	DASI-B13-50-S8
63	16	10	36	10	22	35	1435234	DASI-B13-63-S8
80	22	10	47	15	22	45	1435235	DASI-B13-80-S8

Ordering data							PU ¹⁾
	For size [mm]	Comment	Weight [g]	Part no.	Type		
Centring sleeve ZBH							Data sheets → Internet: zbh
	35	For centring the gripper jaw blanks/gripper fingers on the gripper jaws	1	189652	ZBH-5	10	
	40		1	186717	ZBH-7		
	50, 63, 80		1	8137184	ZBH-9-B		
Blanking plug B							Data sheets → Internet: blanking plug
	35, 40	For sealing the compressed air supply ports	1	174308	B-M5-B	10	
	50, 63, 80		5	3568	B-1/8		

1) Packaging unit

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 lengthwise	Cable, 3-wire, lateral	PNP	2.5	547859	SMT-8G-PS-24V-E-2.5Q-OE	
		Plug M8x1, 3-pin, lateral		0.3	547860	SMT-8G-PS-24V-E-0.3Q-M8D	
		Cable, 3-wire, lateral	NPN	2.5	8065028	SMT-8G-NS-24V-E-2.5Q-OE	
		Plug M8x1, 3-pin, lateral		0.3	8065027	SMT-8G-NS-24V-E-0.3Q-M8D	

Ordering data – Connecting cables						Data sheets → Internet: nebu
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type	
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541333	NEBU-M8G3-K-2.5-LE3	
			5	541334	NEBU-M8G3-K-5-LE3	
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541338	NEBU-M8W3-K-2.5-LE3	
			5	541341	NEBU-M8W3-K-5-LE3	

Accessories

Proximity sensor for size 35

Ordering data – Proximity sensor 3 mm (round design), inductive

Data sheets → Internet: sieh

	Electrical connection	LED	Switching output	Cable length [m]	Part no.	Type
N/O contact						
	Cable, 3-wire	■	PNP	2.5	538264	SIEH-3B-PS-K-L
	Plug M8x1, 3-pin	■		–	538263	SIEH-3B-PS-S-L

Proximity sensor for size 40 ... 80

Ordering data – Proximity sensor M8 (round design), inductive

Data sheets → Internet: sien

	Electrical connection	LED	Switching output	Cable length [m]	Part no.	Type
N/O contact						
	Cable, 3-wire	■	PNP	2.5	150386	SIEN-M8B-PS-K-L
	Plug M8x1, 3-pin	■		–	150387	SIEN-M8B-PS-S-L

Ordering data – Connecting cables

Data sheets → Internet: nebu

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