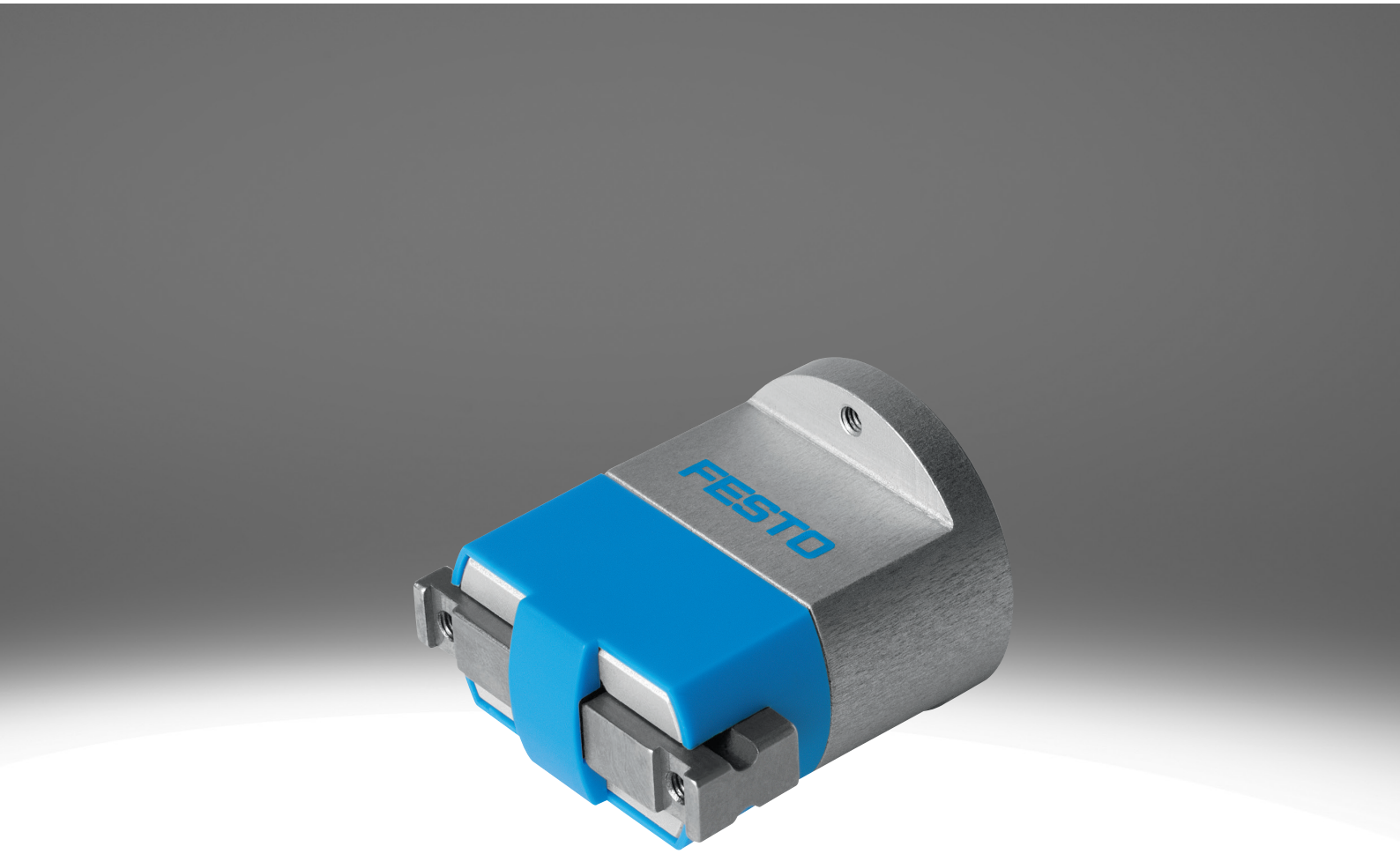
Parallel gripper HGPM

FESTO



Characteristics

At a glance Further information ➔ hgpm

- Small and handy designs
- Choice of open or closed gripper jaws
- Versatile thanks to externally adaptable gripper fingers
- Wide range of adaptation options on the drives
- With stroke compensation when installed
- Choice of mounting via clamping flange or flange mounting

The gripping jaws are returned to their original position by a spring. The spring is not a gripping force protection.

These grippers are not designed for the following or similar application examples:
- Machining
- Aggressive media
- Grinding dust
- Welding spatter

Engineering tools Further information ➔ engineering tools

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Gripper selection:
- This tool helps you to select the right grippers by simply entering the exact parameters for your application

Diagrams Further information ➔ hgpm

The diagrams shown in this document are also available online. These can be used to display precise values.

Gripper function

[EO] Single-acting, open

[EZ] Single-acting, closed

Mounting method

[G6] Flange with stroke compensation

[G8] Clamping shaft

[G9] Flange

Type code

001	Series	
HGPM	Parallel gripper, micro	

002	Size [mm]	
8	8	
12	12	

003	Gripper function	
EO	Single-acting, open	
EZ	Single-acting, closed	

004	Mounting method	
G6	Flange with stroke compensation	
G8	Clamping shaft	
G9	Flange	

Datasheet

General technical data		
Size	8	12
Stroke per gripper jaws	2 mm	3 mm
Design	Wedge-shaped drive	
Mode of operation	Single-acting Closed Open	
Gripper function	Parallel	
Number of gripper jaws	2	
Max. mass per external gripper finger [1]	5 g	15 g
Pneumatic connection	M3	
Repetition accuracy, gripper [2]	≤0.05 mm	
Max. replacement accuracy	0.2 mm	
Max. operating frequency of gripper	4 Hz	
Rotationally symmetrical [3]	0.15 mm	
Position detection	Without	
Type of mounting	Clamped With through-hole Via female thread	

1) Valid for unthrottled operation

2) Under constant exposure to operating conditions, end-position drift occurs in the direction of movement of the gripper jaws, at 100 consecutive strokes
The indicated values are only valid when gripping with compressed air, not with spring force

3) Only valid for HGPM-...-G8 and HGPM-...-G9.
The indicated values are only valid when gripping with compressed air, not with spring force.

Operating and environmental conditions		
Size	8	12
Operating pressure	4 ... 8 bar	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating and pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)	
Ambient temperature	5 ... 60°C	
Corrosion resistance class CRC [1]	1 - Low corrosion stress	

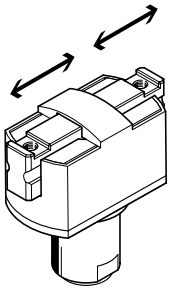
1) More information: www.festo.com/x/topic/crc

Weight						
Size	8			12		
Mounting method	Flange with stroke compensation	Clamping shaft	Flange	Flange with stroke compensation	Clamping shaft	Flange
Product weight	19 g	11 g	18 g	62 g	41 g	62 g

Materials		
Size	8	12
Material housing	Anodised wrought aluminium alloy	
Material gripper jaws	High-alloy steel	
Material cover cap	POM	
Note on materials	RoHS-compliant	
LABS (PWIS) conformity	VDMA24364-B2-L	

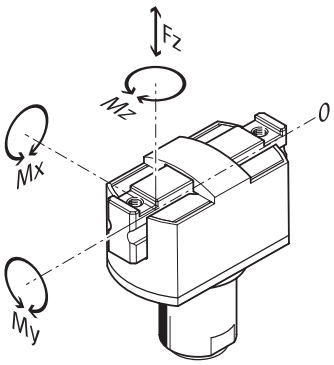
Datasheet

Measured gripping force with a lever arm of 20 mm



Size	8		12	
Mode of operation	Single-acting, Closed	Single-acting, Open	Single-acting, Closed	Single-acting, Open
Total gripping force, closing, 0.6MPa (6bar, 87 psi)	16 N	–	35 N	–
Total gripping force, opening, 0.6MPa (6bar, 87 psi)	–	16 N	–	27 N
Gripper force per gripper jaw, opening, 0.6 MPa (6 bar, 87 psi)	8 N	–	17.5 N	–
Gripper force per gripper jaw, closing, 0.6 MPa (6 bar, 87 psi)	–	8 N	–	13.5 N

Characteristic load values at the gripper jaws

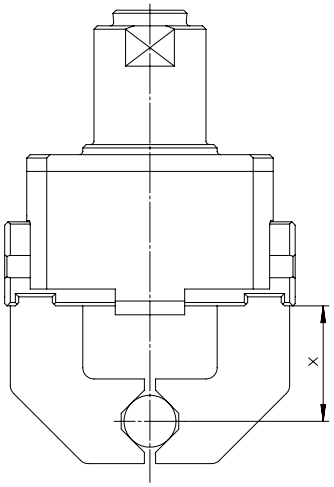


The indicated permissible forces and torques apply to a single gripper jaw. They include the lever arm, additional applied loads created by the workpiece or external gripper fingers and acceleration forces occurring during movement. The zero coordinate line (gripper jaw guide) must be taken into account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

Size	8	12
Max. force on gripper jaw Fz static	10 N	30 N
Max. torque at gripper Mx static	0.1 Nm	0.5 Nm
Max. torque at gripper My static	0.1 Nm	0.5 Nm
Max. torque at gripper Mz static	0.1 Nm	0.5 Nm

Datasheet

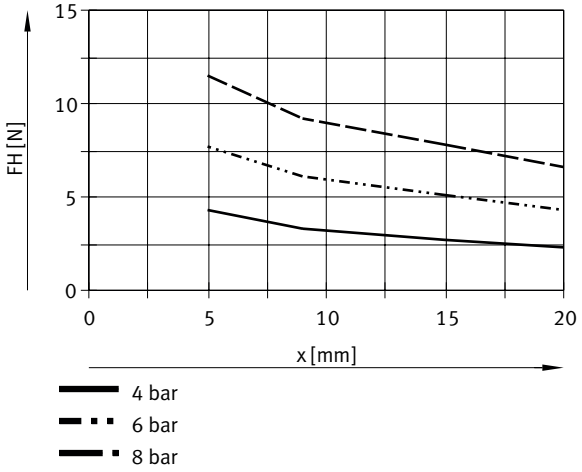
Gripping force FH per gripper jaw as a function of operating pressure and lever arm x



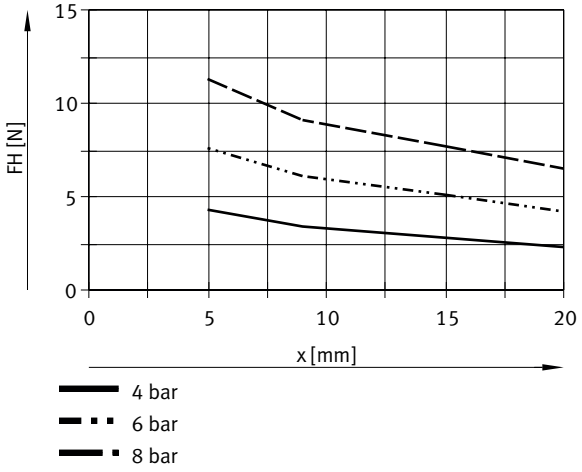
The gripping forces as a function of operating pressure and lever arm can be determined from the following graphs.
The gripping torque is not constant across the opening angle.

Sizing software for gripper selection → https://www.festo.com/x/topic/eng

Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – external gripping (closing), single-acting – HGPM-08-EO-...

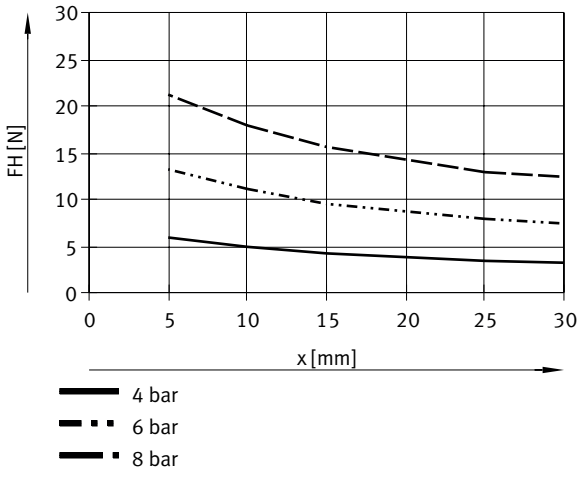


Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – external gripping (closing), single-acting – HGPM-12-EO-...

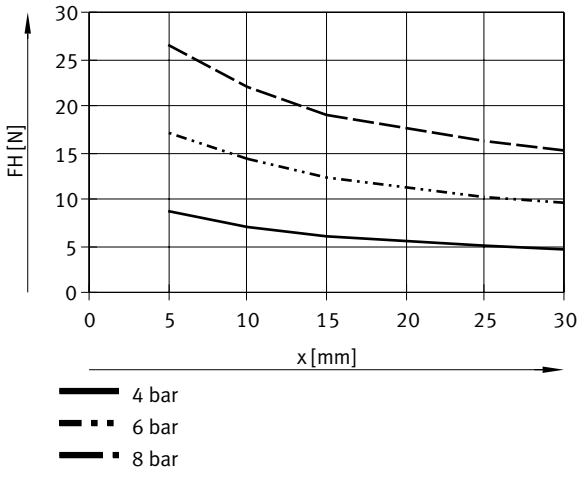


Datasheet

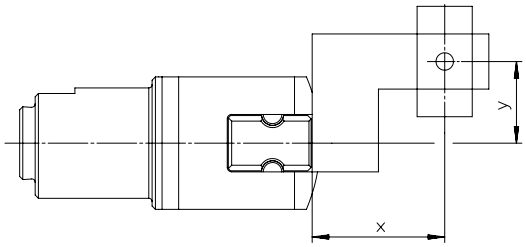
Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – internal gripping (opening), single-acting – HGPM-08-EZ-...



Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – internal gripping (opening), single-acting – HGPM-12-EZ-...



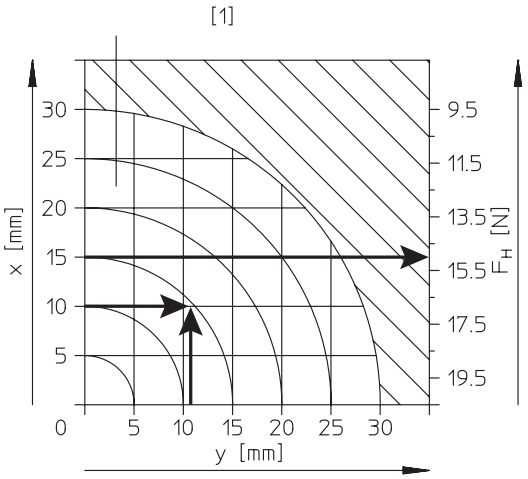
Gripping force FH per gripper jaw at 0.6 MPa (6 bar, 87 psi) as a function of lever arm x and eccentricity y



Gripping forces at 0.6 MPa (6 bar, 87 psi) as a function of eccentric application of force and the maximum permissible off-centre point of force application can be determined for the various sizes using the following graphs.

Datasheet

Gripping force FH per gripper jaw at 0.6 MPa (6 bar, 87 psi) as a function of lever arm x and eccentricity y – calculation example



Assuming:
HGPM-12-EZ-...
Lever arm x = 10 mm
Eccentricity y = 11 mm

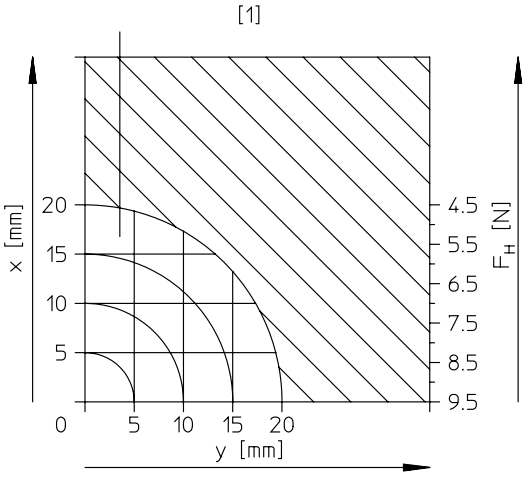
To be determined:
Gripping force at 6 bar

Procedure:
- Determine the intersection xy between lever arm x and eccentricity y in the graph for HGPM-12-EZ
- Draw an arc (with centre at origin) through the intersection xy
- Determine the intersection between the arc and the X-axis
- Reading the gripping force

Results:
Gripping force = approx. 15 N

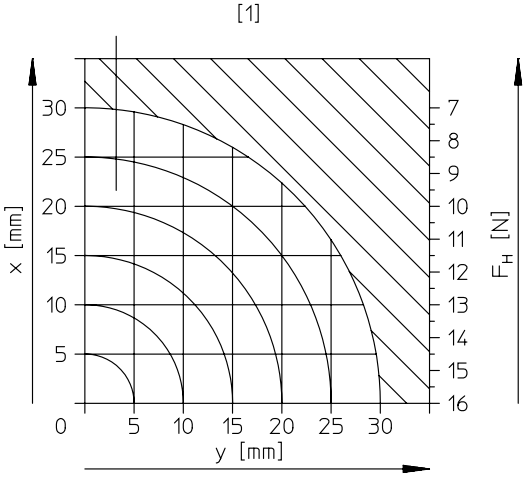
[1] Recommended range

Gripping force FH per gripper jaw at 0.6 MPa (6 bar, 87 psi) as a function of lever arm x and eccentricity y – external gripping (closing), single-acting – HGPM-08-EO-...



[1] Recommended range

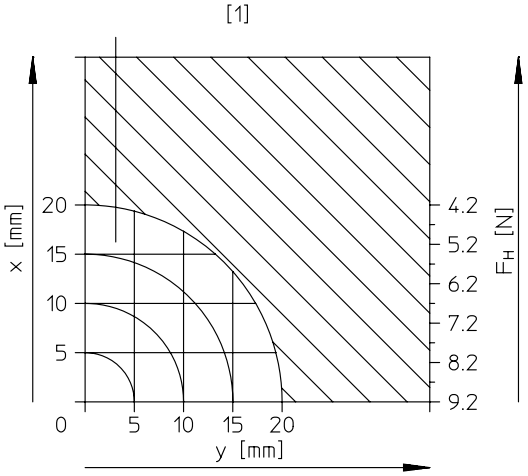
Gripping force FH per gripper jaw at 0.6 MPa (6 bar, 87 psi) as a function of lever arm x and eccentricity y – external gripping (closing), single-acting – HGPM-12-EO-...



[1] Recommended range

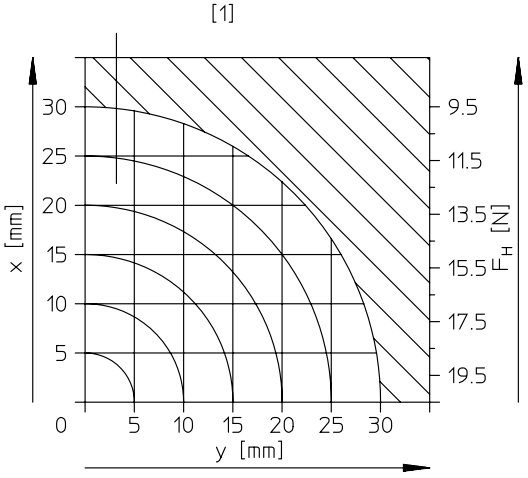
Datasheet

Gripping force FH per gripper jaw at 0.6 MPa (6 bar, 87 psi) as a function of lever arm x and eccentricity y – internal gripping (open), single-acting – HGPM-08-EZ-...



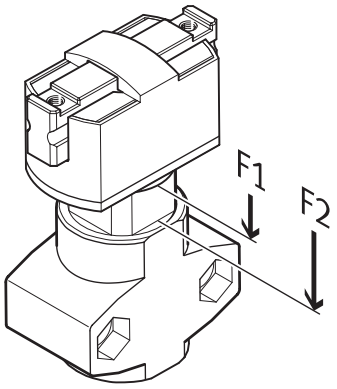
[1] Recommended range

Gripping force FH per gripper jaw at 0.6 MPa (6 bar, 87 psi) as a function of lever arm x and eccentricity y – internal gripping (open), single-acting – HGPM-12-EZ-...



[1] Recommended range

Spring displacement forces



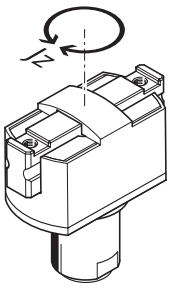
Theoretical actuating force of the stroke compensation for the design variant with stroke compensation.

Size	8	12
Spring force of stroke compensator [1]	4 N; 6 N	10 N; 23 N

1) Spring displacement forces F1; spring displacement forces F2

Datasheet

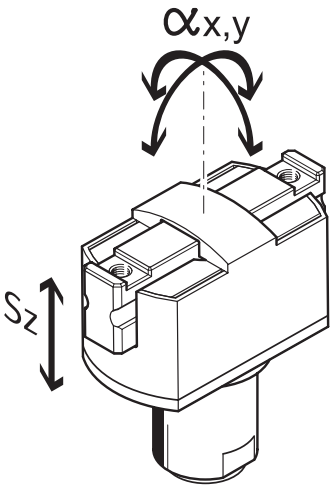
Mass moments of inertia



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

Size	8			12		
Mounting method	Flange with stroke compensation	Clamping shaft	Flange	Flange with stroke compensation	Clamping shaft	Flange
Mass moment of inertia	0.009 kgcm²	0.006 kgcm²	0.017 kgcm²	0.067 kgcm²	0.043 kgcm²	0.079 kgcm²

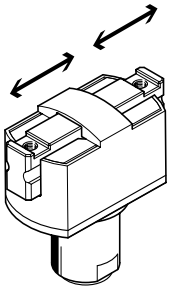
Gripper jaw backlash



Because of the plain-bearing guide used in the grippers, 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 and do not normally occur on the mounted grippers.

Size	8	12
Max. gripper jaw backlash Sz	<0.03 mm	
Max. angular gripper jaw backlash ax, ay	<0.5 deg	

Opening and closing times

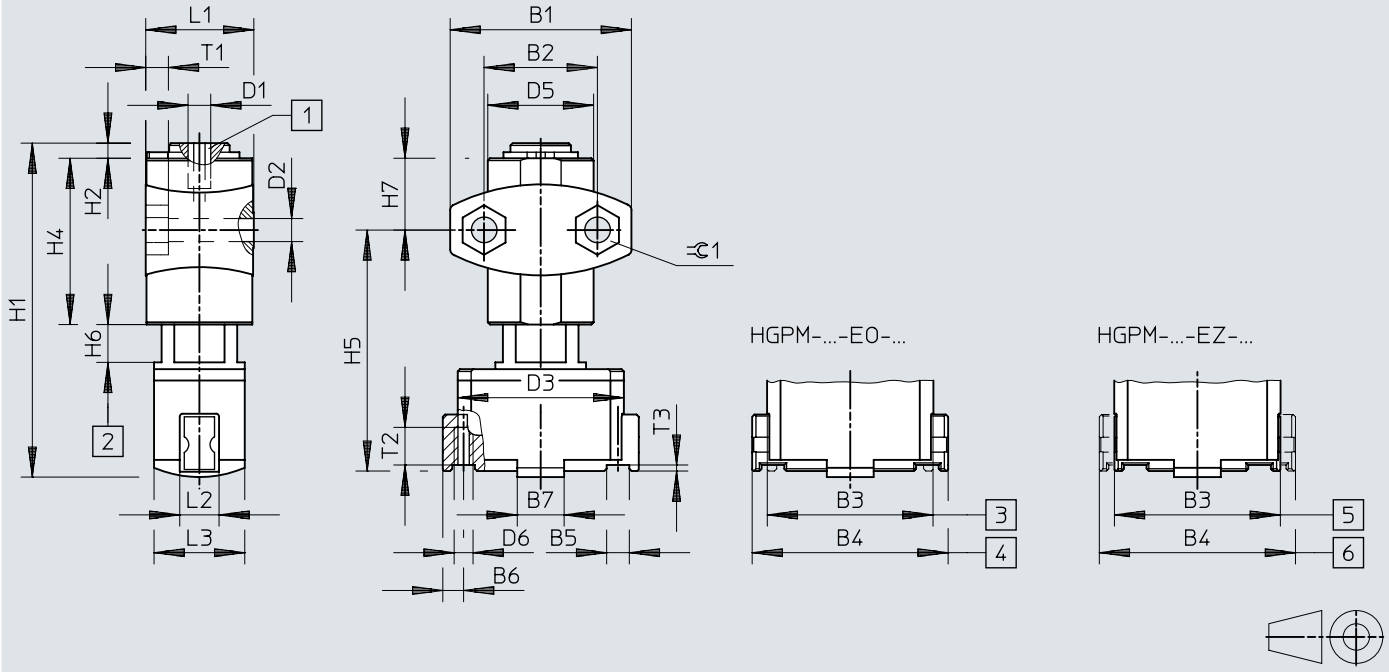


The indicated opening and closing times [ms] were measured at room temperature, at an operating pressure of 0.6 MPa (6 bar, 87 psi) and with the gripper installed vertically without additional gripper fingers. The moving mass is increased if external gripper fingers are attached. This means that the kinetic energy, which is determined by the mass of the gripper fingers and the speed, increases at the same time. If the permissible kinetic energy is exceeded, various parts of the gripper may be damaged. This occurs when the moving mass reaches the end position and the cushioning is only able to partially convert the kinetic energy into potential energy and thermal energy. This shows that the indicated maximum permissible weight force of the external gripper fingers must be checked and adhered to.

Size	8		12	
Mode of operation	Single-acting, Closed	Single-acting, Open	Single-acting, Closed	Single-acting, Open
Min. closing time at 0.6 MPa (6 bar, 87 psi)	4.1 ms	2.3 ms	8.3 ms	3.7 ms
Min. opening time at 0.6 MPa (6 bar, 87 psi)	1.9 ms	4.9 ms	3 ms	11 ms

Dimensions

Dimensions – With stroke compensation – HGPM-...-E...-G6 Download CAD data ➔ www.festo.com



[1] Compressed air supply port
[2] Stroke compensation
[3] Closed
[4] Open (initial position)
[5] Closed (initial position)
[6] Open

	B1	B2	B5	B6 +0,19/–0,23	B7 ±0,1	D1	D2 ø	D3 ø	D5 ø	D6	H1 ±0,3	H2
HGPM-08-EO-G6	24 ±0,1	15 ±0,25	3	2,75	6,2	M3	3,4 +0,2	22	15 ±0,5	M2,5	44,2	2 +0,1/–0,3
HGPM-08-EZ-G6												
HGPM-12-EO-G6	35 ±0,1	24 ±0,25	4	4	9	M3	4,5 +0,2	33	22 ±0,5	M3	63	3 +0,2/–0,3
HGPM-12-EZ-G6												

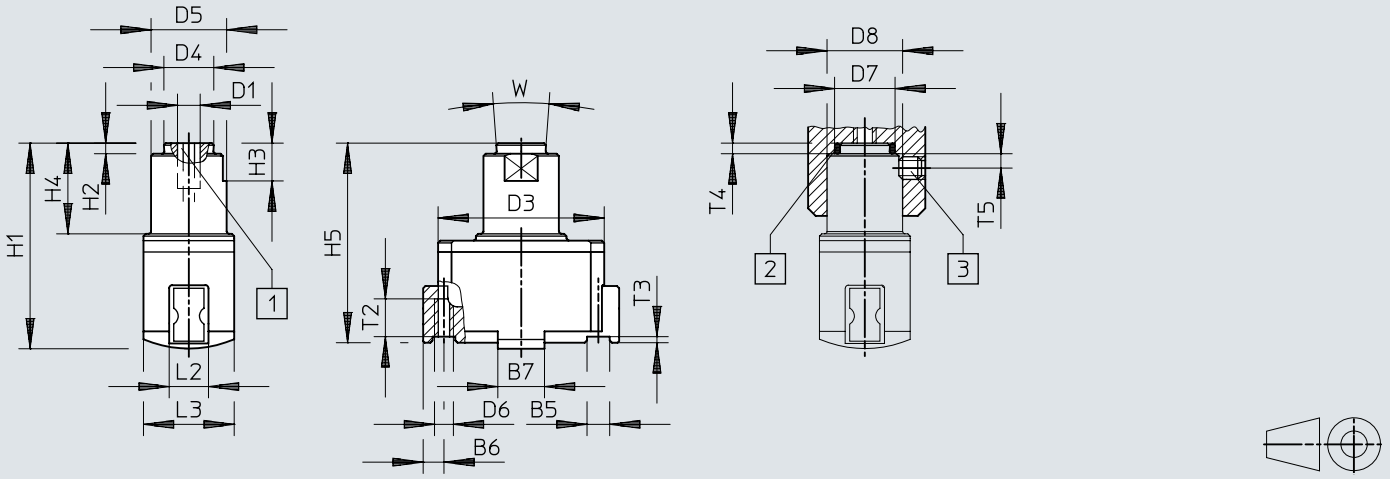
	H4	H5	H6 +0,7/–0,2	H7 ±0,3	L1 +0,1/–0,3	L2 –0,1	L3 ±0,1	T1	T2[1]	T3	⫹1
HGPM-08-EO-G6	22 –0,3	32,4 +0,8/–0,65	0 ... 5	9,5	14,3	5	12	3 –0,2	4	0,8	5,7
HGPM-08-EZ-G6											
HGPM-12-EO-G6	29 –0,3	46,65 +0,9/–0,7	0 ... 8	12,5	20,35	7	18	4 –0,2	6	1	7,5
HGPM-12-EZ-G6											

	B3 ±0,3	B4 ±0,3
HGPM-08-EO-...	22	26
HGPM-08-EZ-...		
HGPM-12-EO-...	33	39
HGPM-12-EZ-...		

1) Do not exceed max. thread screw-in depth

Dimensions

Dimensions – With clamping spigot – HGPM-...-E...-G8 Download CAD data ➔ www.festo.com



[1] Compressed air supply port
[2] O-ring: HGPM-08: 6x1, HGPM-12: 10x1 (not included in the scope of delivery)
[3] Threaded pin M3x3 DIN 913 (not included in the scope of delivery)

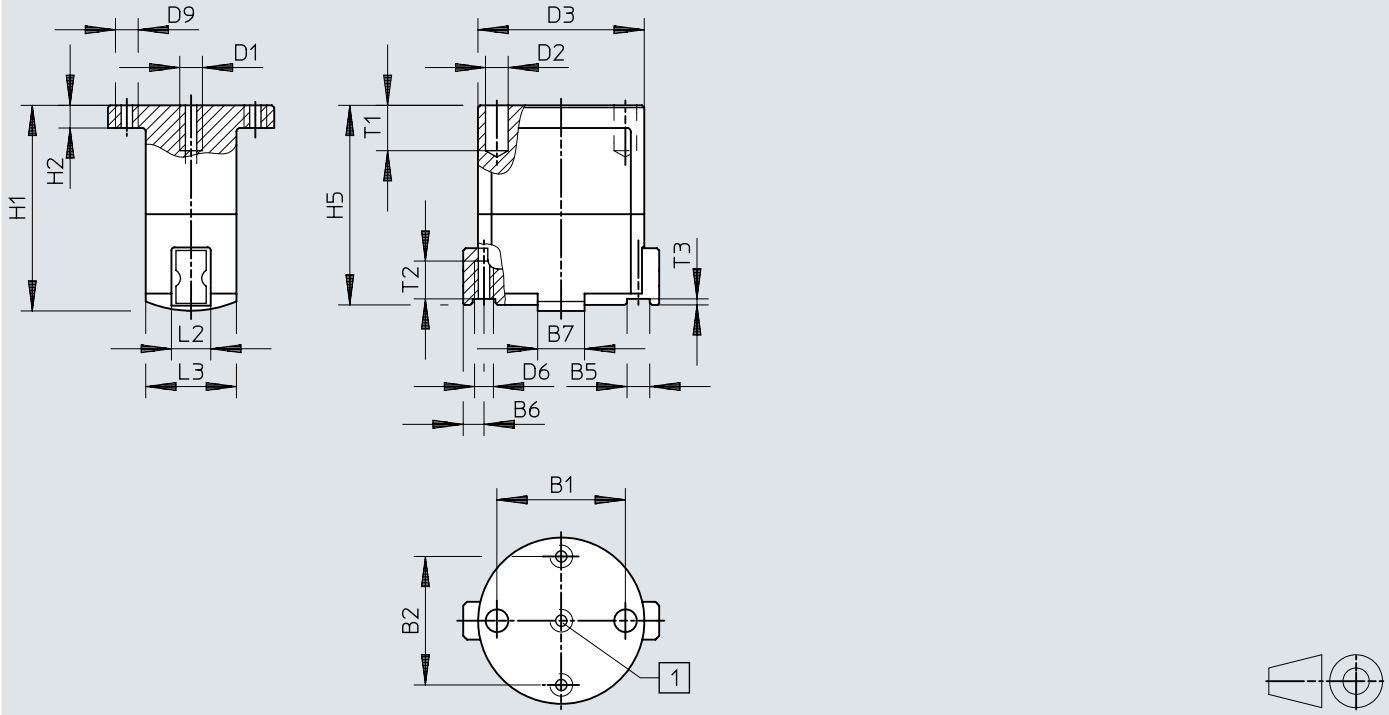
	B5	B6 +0,19/–0,23	B7 ±0,1	D1	D3 ø	D4 ø ±0,1	D5 ø	D6	D7 ø +0,1	D8 ø +0,1
HGPM-08-EO-G8	3	2,75	6,2	M3	22	6,6	10 h8	M2,5	8	10
HGPM-08-EZ-G8										
HGPM-12-EO-G8	4	4	9	M3	33	10,6	15 h8	M3	12	15
HGPM-12-EZ-G8										

	H1 ±0,3	H2	H3	H4	H5	L2 –0,1	L3 ±0,1	T2[1)]	T3	W
HGPM-08-EO-G8	27,2	1,4 –0,1	5	12 ±0,1	26,9 +0,2/–0,25	5	12	4	0,8	8°
HGPM-08-EZ-G8										
HGPM-12-EO-G8	41	1,4 –0,1	7 ±0,1	18 ±0,1	40,15 +0,2/–0,25	7	18	6	1	8°
HGPM-12-EZ-G8										

1) Do not exceed max. thread screw-in depth

Dimensions

Dimensions – With flange mounting – HGPM-...-E...-G9 Download CAD data ➔ www.festo.com



[1] Compressed air supply port

	B1	B2	B5	B6 +0,19/–0,23	B7 ±0,1	D1	D2 ø	D3 ø	D6	D9
HGPM-08-EO-G9 HGPM-08-EZ-G9	17 ±0,02	17 ±0,1	3	2,75	6,2	M3	3 F8	22	M2,5	M3
HGPM-12-EO-G9 HGPM-12-EZ-G9	27 ±0,02	27 ±0,1	4	4	9	M3	3 F8	33	M3	M3

	H1 ±0,3	H2	H5	L2 –0,1	L3 ±0,1	T1	T2[1)]	T3
HGPM-08-EO-G9 HGPM-08-EZ-G9	27,2	3 ±0,2	26,9 +0,2/–0,25	5	12	min. 6	4	0,8
HGPM-12-EO-G9 HGPM-12-EZ-G9	41	5 ±0,2	40,15 +0,2/–0,25	7	18	min. 6	6	1

1) Do not exceed max. thread screw-in depth

Ordering data

with stroke compensation

	Size	Stroke per gripper jaws	Mode of operation	Part no.	Type
	8	2 mm	Single-acting, Closed	**197562**	**HGPM-08-EZ-G6**
			Single-acting, Open	**197559**	**HGPM-08-EO-G6**
	12	3 mm	Single-acting, Closed	**197568**	**HGPM-12-EZ-G6**
			Single-acting, Open	**197565**	**HGPM-12-EO-G6**

With flange mounting

	Size	Stroke per gripper jaws	Mode of operation	Part no.	Type
	8	2 mm	Single-acting, Closed	**197563**	**HGPM-08-EZ-G8**
			Single-acting, Open	**197560**	**HGPM-08-EO-G8**
	12	3 mm	Single-acting, Closed	**197569**	**HGPM-12-EZ-G8**
			Single-acting, Open	**197566**	**HGPM-12-EO-G8**

With clamping spigot

	Size	Stroke per gripper jaws	Mode of operation	Part no.	Type
	8	2 mm	Single-acting, Closed	**197564**	**HGPM-08-EZ-G9**
			Single-acting, Open	**197561**	**HGPM-08-EO-G9**
	12	3 mm	Single-acting, Closed	**197570**	**HGPM-12-EZ-G9**
			Single-acting, Open	**197567**	**HGPM-12-EO-G9**