



- Free and independent positioning of the individual gripper jaws
- Flexible gripping forces possible
- Wide range of applications
- Simple commissioning



Parallel grippers HGPPi, precise and positionable

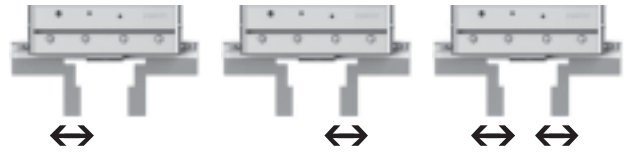


Key features

General information

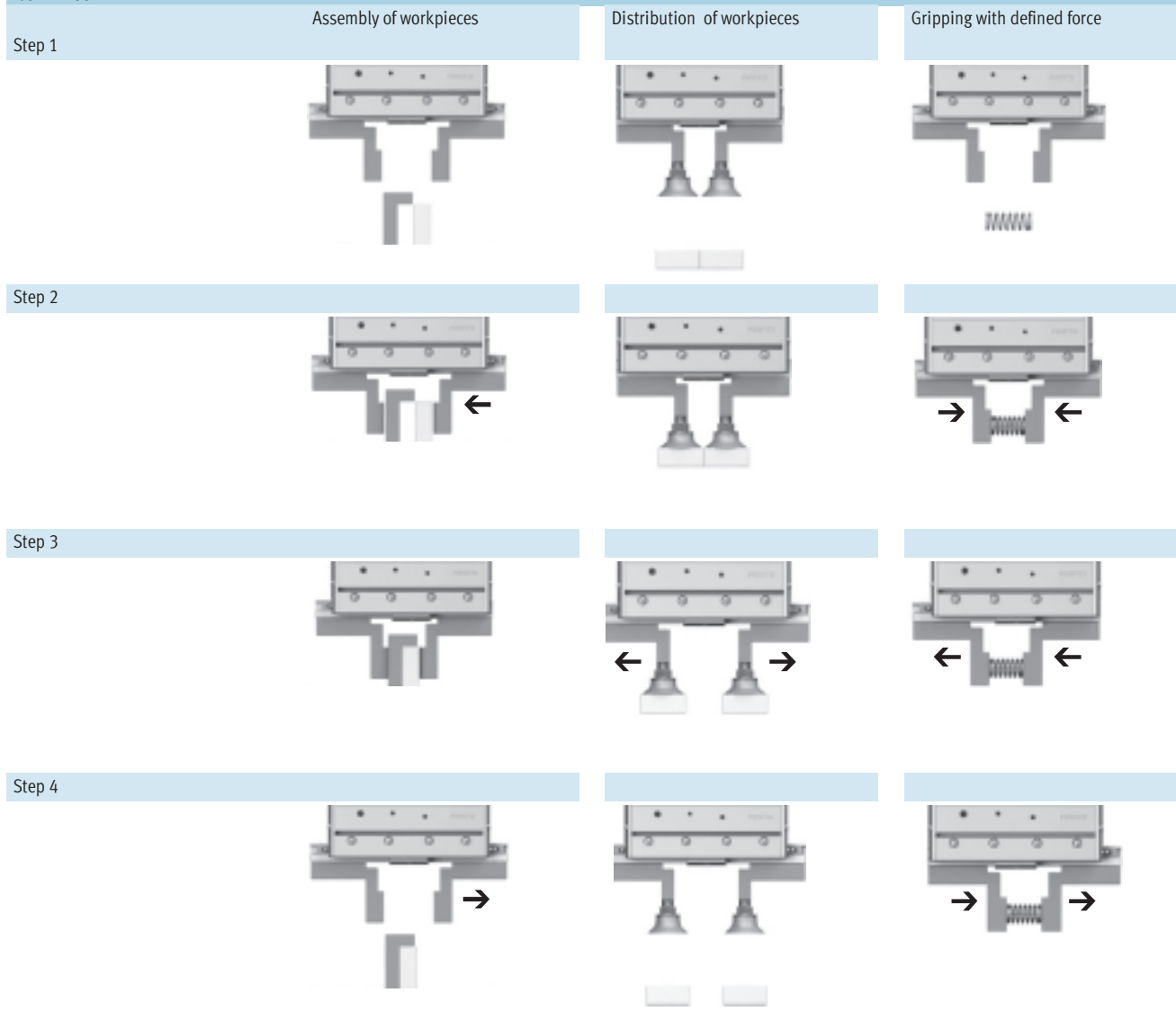
The parallel gripper HGPPi is a servopneumatic proportional gripper. It permits free and independent positioning of the gripper jaws, force/displacement regulation as well as speed regulation and metering of the gripping force.

The parallel gripper enables flexible equipping tasks involving different workpiece sizes and shapes. It is smaller, lighter and yet more powerful than electrical grippers.



Gripper selection software
www.festo.com/en/engineering

Typical applications

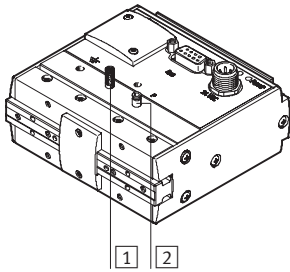


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Key features

Pneumatic connections

From above

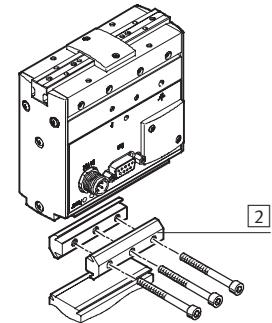
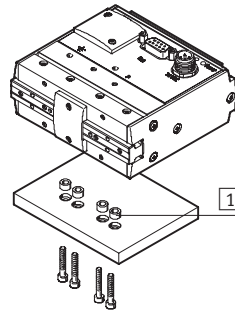


- 1 Pneumatic connection: Exhaust air
- 2 Pneumatic connection: Supply air

Mounting options

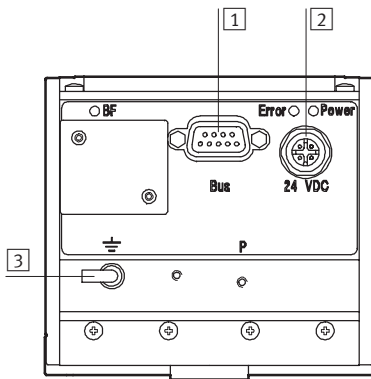
Direct mounting

Dovetail mounting



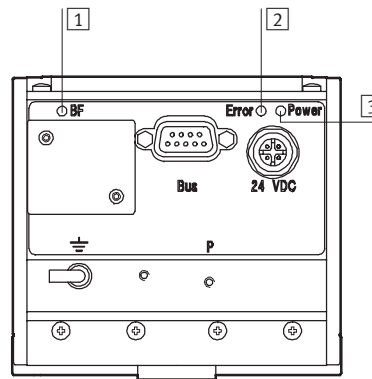
- 1 Centring sleeves ZBH-7
- 2 Connecting kit HAVB-3, HAVB-7

Electrical connections



- 1 Fieldbus interface
- 2 Power supply
- 3 Earth terminal

On-site diagnosis

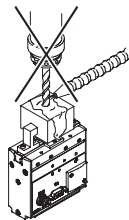


- 1 BF LED (red)
- 2 Error LED (red)
- 3 Power LED (green)

 Note

Parallel grippers are not designed for the following applications:

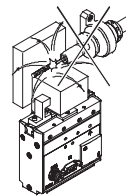
- Machining
- Aggressive media



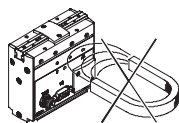
- Grinding dust



- Welding spatter



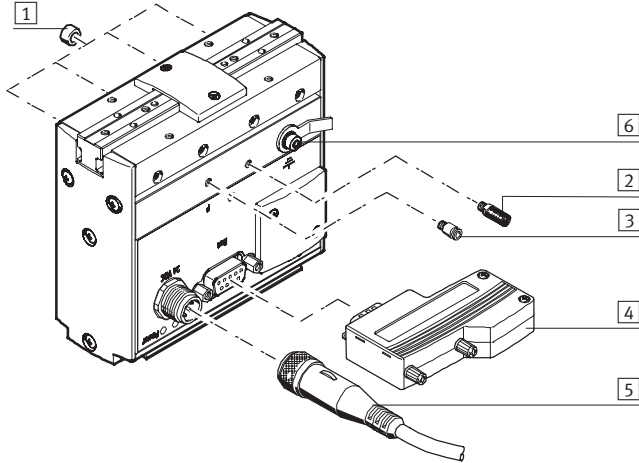
- Magnetic field



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Peripherals overview and type codes

Peripherals overview



Accessories

Type	Brief description	→ Page
1 Centring sleeve ZBH-7	For centring when mounting	1 / 7.6-9
2 Silencer U-M3	For damping the noise level	Volume 3
3 Push-in fitting QSM-M3-4	For connecting compressed air tubing with standard external diameters	Volume 3
4 Plug FBS-...	Profibus connector with 9-pin Sub-D plug	1 / 7.6-9
5 Plug socket with cable SIM-M12-...	For connecting the voltage supply	1 / 7.6-9
6 Earth terminal	Included in the scope of delivery of the gripper	-
7 -	Drive/gripper combinations	Volume 5

7.6

Type codes

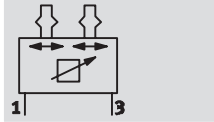
		HGPPI	-	12	-	10	-	PB
Type								
HGPPI	Parallel gripper							
Size								
Stroke								
Interface								
PB	Profibus DP							

Parallel grippers HGPPi, precise and positionable

Technical data

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Function



-  - Size
12
-  - Total stroke
20 mm



General technical data		
Size		12
Mechanical data		
Design		Twin pistons
		Ball bearing cage guide
		With integrated directly actuated poppet valves
		With integrated sequence controller
		With integrated displacement encoder
		With integrated pressure sensors
		With integrated closed-loop control
Mode of operation		Double-acting
Gripper function		Parallel
Number of gripper jaws		2
Variable stroke range per gripper jaw	[mm]	0 ... 10
Pneumatic connection		M3
Repetition accuracy	[mm]	± 0.1
Max. interchangeability	[mm]	≤ 0.2
Max. gripper jaw backlash	[mm]	0
Max. gripper jaw angular play	[°]	0
Position sensing		With hall sensor
Typical positioning time	[ms]	150 ... 250
Type of mounting		Via female thread and centring sleeve
		With dovetail-groove
Assembly position		Any
Minimum positioning stroke	[mm]	0.2
Min. positioning speed	[mm/s]	1
Weight	[g]	650
Electrical data		
Nominal voltage, load supply	[V DC]	24 ±10%
Nominal voltage, logic supply	[V DC]	24 ±10%
Residual ripple		5%
Max. current consumption, load	[A]	0.07
Max. current consumption, logic	[A]	0.2
Electrical connection		Plug, M12x1, 4-pin
Fieldbus		
Fieldbus coupling		Profibus DP
Version		RS 485 with electrical isolation
Addressing range		0 ... 125 with DIL switches
Electrical connection		Sub-D socket, 9-pin

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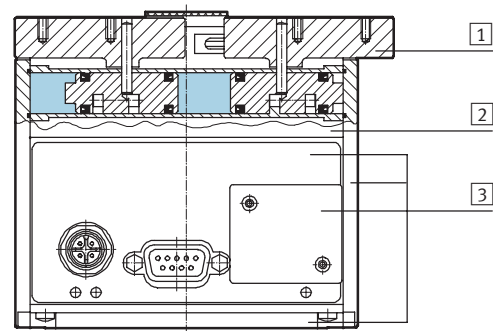
Technical data

Operating and environmental conditions		
Operating pressure	[bar]	5 ... 6
Operating medium		Filtered compressed air, lubricated or unlubricated
Ambient temperature	[°C]	+5 ... +40
Relative air humidity		0 ... 95%, non-condensing
Corrosion resistance class CRC ¹⁾		2
Protection class		IP40
CE symbol (declaration of conformity)		In accordance with EU EMC directive

1) Corrosion resistance class 2 as per Festo standard 940 070
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

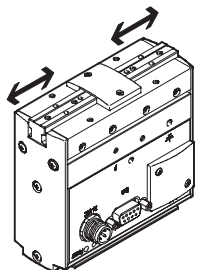
Materials

Sectional view



Parallel gripper		
1	Gripper jaws	High-strength wrought aluminium alloy, smooth-anodised
2	Housing	Smooth anodised aluminium
3	Cover plates	Wrought aluminium alloy, anodised

Gripping force [N] at 6 bar

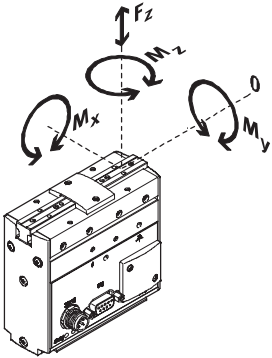


Size	12
Variable gripping force per gripper jaw	
Opening	10 ... 60
Closing	10 ... 60
Controllable total gripping force	
Opening	20 ... 120
Closing	20 ... 120
Maximum deviation from the desired gripping force	
Per gripper jaw	< 6

Parallel grippers HGPPI, precise and positionable

Technical data

Characteristic load values at the gripper jaws



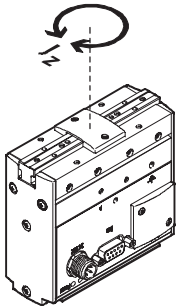
The indicated permissible forces and torques refer to a single gripper jaw. They include the lever arm, additional applied loads caused by the work-piece or external gripper fingers, as

well as forces which occur during movement.

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

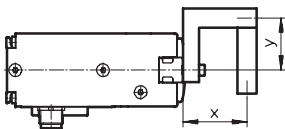
Size		12
Max. permissible force F_z	[N]	70
Max. permissible torque M_x	[Nm]	3
Max. permissible torque M_y	[Nm]	3
Max. permissible torque M_z	[Nm]	3

Mass moment of inertia [kgcm²]



Inherent mass moment of inertia of the parallel gripper: 7.8 kgcm², specific to the central axis, without external gripper fingers, without load.

Maximum permissible lever arm x and eccentricity y



When gripping eccentrically, it is important to ensure that the following condition is observed with regard to the maximum gripping point:

$$\sqrt{(\text{Lever arm } x)^2 + (\text{Eccentricity } y)^2} < 70 \text{ mm}$$

Calculation example

Given:

Lever arm $x = 35 \text{ mm}$

Eccentricity $y = 45 \text{ mm}$

$$\sqrt{(35 \text{ mm})^2 + (45 \text{ mm})^2} = 57 \text{ mm}$$

$$57 \text{ mm} < 70 \text{ mm}$$

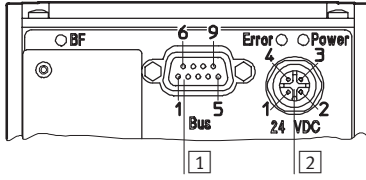
Result:

The calculated value is less than 70 mm. Thus the 35 mm lever arm is permitted in conjunction with the 45 mm eccentricity.

Parallel grippers HGPPi, precise and positionable

Technical data

Pin allocation



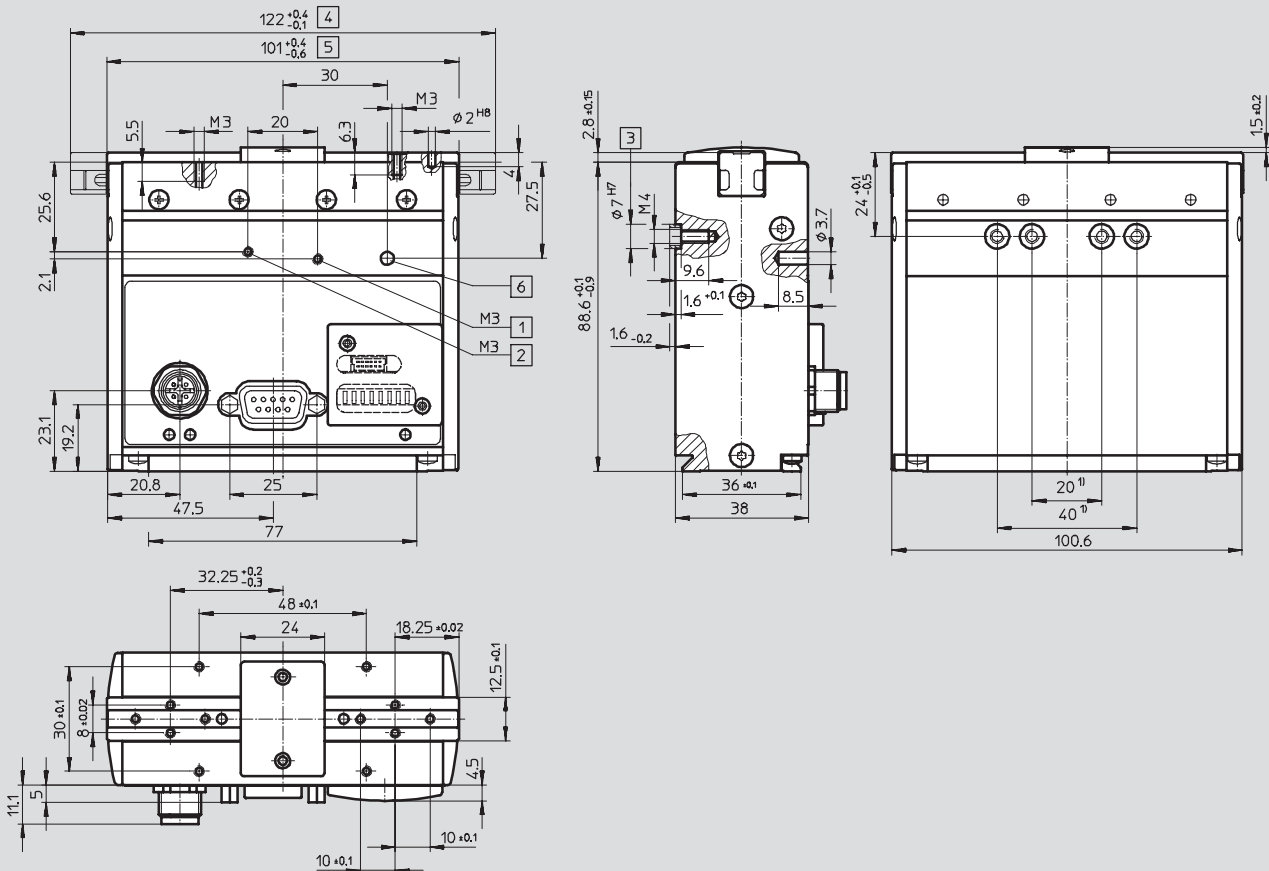
1 Profibus interface, 9-pin SUB-D socket	
Pin	Function
1	Earth
2	-
3	RxD/TxD-P
4	CNTR-P
5	DGND
6	VP
7	-
8	RxD/TxD-N
9	-

2 Voltage supply, 4-pin, M12x1 plug	
Pin	Function
1	24 V (logic)
2	24 V (load)
3	0 V (Logik)
4	Screen ¹⁾

1) Connection to housing via a 1 MΩ resistor

Dimensions

Download CAD data → www.festo.com/en/engineering



- 1) Pneumatic connection: Supply air (QSM-M3-4)
- 2) Pneumatic connection: Exhaust air (QSM-M3-4 or U-M3)

- 3) Hole for side-mounting with centring ring and non-ferromagnetic screws.

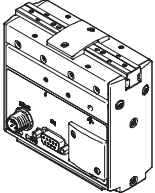
- 4) Gripper jaw open
- 5) Gripper jaw closed
- 6) Earth terminal (kit with M4x8 screw and cable lug enclosed)


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

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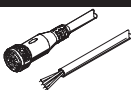
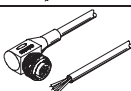
Technical data and accessories

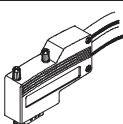
FESTO

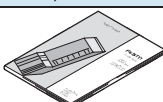

Piston	
	Part No. Type
	539 054 HGPPI-12-10-PB

Ordering data – Accessories				
	For size [mm]	Remarks	Part No. Type	PU ¹⁾
Centring sleeve ZBH				Technical data → 1 / 10.1-3
	12	For centring the gripper when mounting	186 717 ZBH-7	10

1) Packaging unit quantity

Ordering data – Plug sockets with cable				
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No. Type
	Straight socket, M12x1, 4-pin	Cable, open end, 3-pin	5	164 259 SIM-M12-4GD-5-PU
	Angled socket, M12x1, 4-pin	Cable, open end, 3-pin	5	164 258 SIM-M12-4WD-5-PU

Ordering data – Plug		
	Brief description	Part No. Type
	Profibus connector with 9-pin Sub-D plug	533 780 FBS-SUB-9-WS-PB-K

Ordering data – Documentation				
	Brief description	Language	Part No. Type	
Description				
	User documentation in paper form is not included in the scope of delivery.	DE	543 299 P.BE-HGPPI-PB-DE	
		EN	543 300 P.BE-HGPPI-PB-EN	
		ES	543 301 P.BE-HGPPI-PB-ES	
		FR	543 302 P.BE-HGPPI-PB-FR	
		IT	543 303 P.BE-HGPPI-PB-IT	
		SV	543 304 P.BE-HGPPI-PB-SV	
Documentation package				
	User documentation on CD-ROM is included in the scope of delivery for the parallel gripper HGPPI.	DE, EN, ES, FR, IT, SV	549 199 P.BE-HGPPI-PB-UDOK	

