# Key features

**At a glance**

General

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.

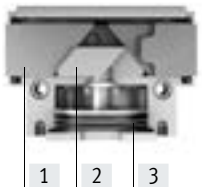
This also guarantees synchronous movement of the gripper jaws. The virtually backlash-free plain-bearing guide is realised using ground-in gripper jaws.

Flexible range of applications

- 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

The technology in detail

Gripper closed




Gripper open

[1] Gripper jaw
[2] Wedge with forced guidance
[3] Piston with magnet

**Note**

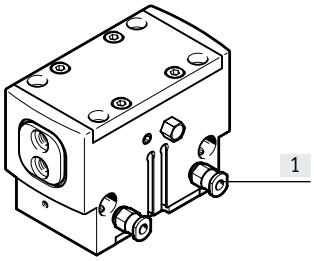
Engineering software

Gripper selection

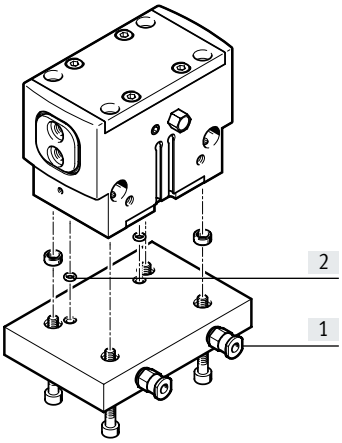
→ www.festo.com

**Wide range of supply ports**

Directly from the front

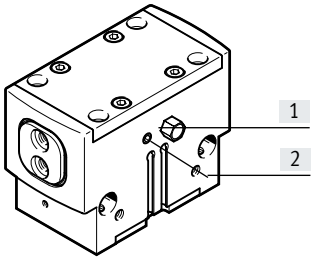



Via adapter plate from underneath



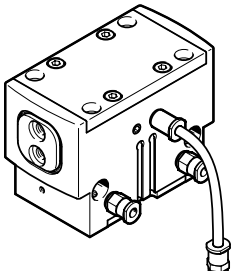

[1] Supply ports
[2] O-rings

Other connections




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

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.

# Type codes and peripherals overview

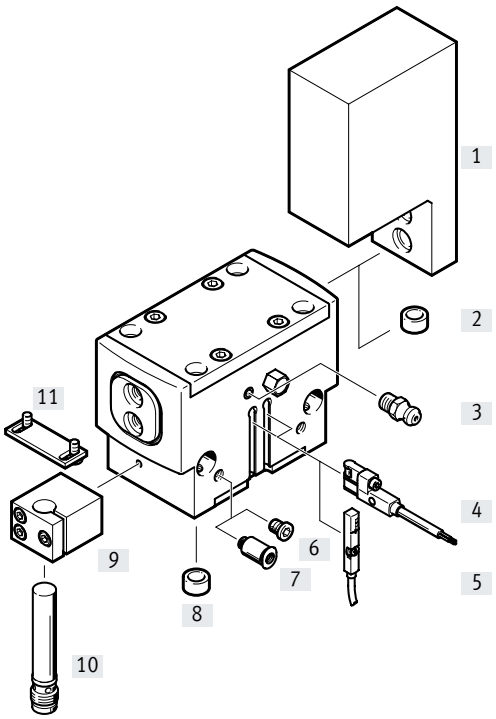
| 001 | Series | |
|---|---|---|
| **HGPD** | Parallel gripper, sealed | |

| 002 | Size | |
|---|---|---|
| **16** | 16 | |
| **20** | 20 | |
| **25** | 25 | |
| **35** | 35 | |
| **40** | 40 | |
| **50** | 50 | |
| **63** | 63 | |
| **80** | 80 | |

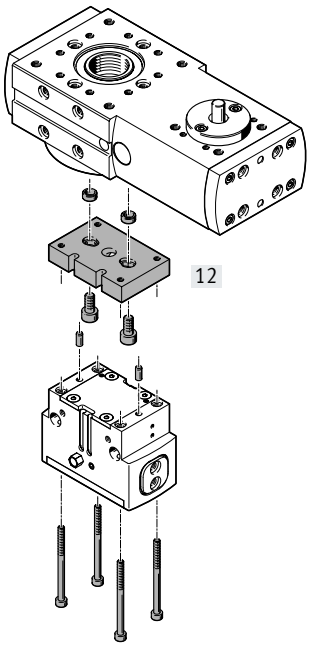
| 003 | Position sensing | |
|---|---|---|
| **A** | For proximity sensor | |

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

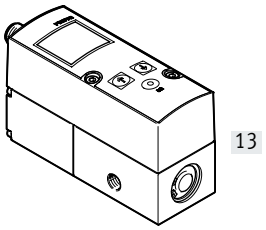
## Peripherals overview




## System product for handling and assembly technology

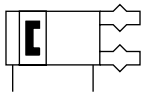



## Proportional-pressure regulator VPPM

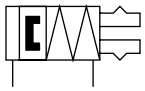


# Data sheet

Double-acting
HGPD-...-A



with gripping force retention
HGPD-...-G1 (opening)



HGPD-...-G2 (closing)

- Ø - Size
16 ... 80

- | - Total stroke
6 ... 40 mm

- www.festo.com

| **General technical data** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size | | 16 | 20 | 25 | 35 | 40 | 50 | 63 | 80 |
| Design | | Wedge mechanism | | | | | | | |
| | | Force-guided motion | | | | | | | |
| Mode of operation | | Double-acting | | | | | | | |
| Gripper function | | Parallel | | | | | | | |
| Number of gripper jaws | | 2 | | | | | | | |
| Max. mass per gripper finger[1] | [g] | 25 | 57 | 138 | 278 | 445 | 813 | 1340 | 2170 |
| Stroke per gripper jaw | [mm] | 3 | 4 | 6 | 8 | 10 | 12 | 16 | 20 |
| Pneumatic connection | | M5 | M5 | M5 | M5 | M5 | G1/8 | G1/8 | G1/4 |
| Pneumatic connection, sealing air | | M3 | M3 | M5 | M5 | M5 | M5 | M5 | M5 |
| Pneumatic connection, lubrication nipple | | M3 | M3 | M5 | M5 | M5 | M5 | M5 | M5 |
| Repetition accuracy[2] | [mm] | ≤ 0.03 | ≤ 0.04 | | ≤ 0.05 | | | | |
| Max. interchangeability | [mm] | ≤ ±0.2 | | | | | | | |
| Max. operating frequency | [Hz] | ≤ 3 | | | | ≤ 2 | | | |
| Rotational symmetry | [mm] | < Ø 0.2 | | | | | | | |
| Position sensing | | Via proximity switch, position transmitter | | | | | | | |
| Type of mounting | | Via through-hole and dowel pin/centring sleeve | | | | | | | |
| | | Via female thread and dowel pin/centring sleeve | | | | | | | |
| Mounting position | | Any | | | | | | | |

1) Applies to 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

| **Operating and environmental conditions** | | |
|---|---|---|
| Min. operating pressure | | |
| HGPD-...-A | [bar] | 3 |
| HGPD-...-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 switches
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.

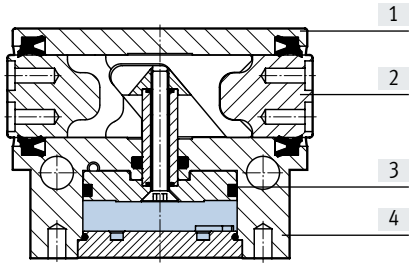
# Data sheet

**Weight [g]**

| Size | 16 | 20 | 25 | 35 | 40 | 50 | 63 | 80 |
|---|---|---|---|---|---|---|---|---|
| HGPD-...-A | 100 | 163 | 327 | 572 | 1044 | 1766 | 3365 | 6252 |
| HGPD-...-A-G | 117 | 182 | 361 | 682 | 1223 | 2150 | 3998 | 7484 |

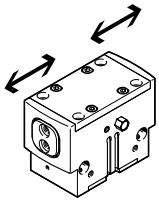
## Materials

Sectional view




| Size | | 16 | 20 | 25 | 35 | 40 | 50 | 63 | 80 |
|---|---|---|---|---|---|---|---|---|---|
| [1] | Cover cap | High-alloy stainless steel | | | | | | | |
| [2] | Gripper jaw | Hardened steel | | | | | | | |
| [3] | Piston | Hard-anodised aluminium | | | | | | | |
| [4] | Housing | Anodised aluminium | | | | | | | |
| – | Seals | Nitrile rubber | | | | | | | |
| – | Note on materials | Free of copper and PTFE | | – | | | | | |
| | | RoHS-compliant | | | | | | | |

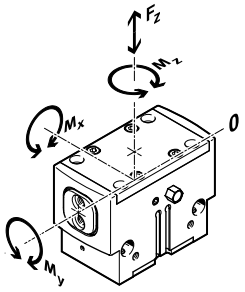
## Gripping force [N] at 6 bar



| Size | | 16 | 20 | 25 | 35 | 40 | 50 | 63 | 80 |
|---|---|---|---|---|---|---|---|---|---|
| **Gripping force per gripper jaw** | | | | | | | | | |
| HGPD-...-A | Opening | 54 | 80 | 144 | 291 | 315 | 472 | 967 | 1961 |
| | Closing | 47 | 75 | 133 | 267 | 267 | 447 | 928 | 1858 |
| **Total gripping force** | | | | | | | | | |
| HGPD-...-A | Opening | 107 | 159 | 288 | 581 | 630 | 944 | 1935 | 3922 |
| | Closing | 94 | 150 | 266 | 534 | 598 | 894 | 1856 | 3716 |

# Data sheet

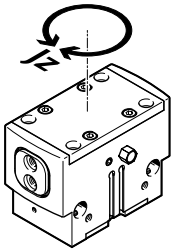
## Characteristic load values at the gripper jaws




The indicated permissible forces and torques apply to a single gripper jaw. They include the lever arm, additional weight forces 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 | | 16 | 20 | 25 | 35 | 40 | 50 | 63 | 80 |
|---|---|---|---|---|---|---|---|---|---|
| Max. permissible force $F_z$ | [N] | 150 | 250 | 500 | 750 | 1200 | 2000 | 3000 | 6000 |
| Max. permissible torque $M_x$ | [Nm] | 8 | 12 | 30 | 40 | 70 | 90 | 120 | 170 |
| Max. permissible torque $M_y$ | [Nm] | 4 | 7 | 25 | 30 | 45 | 60 | 80 | 130 |
| Max. permissible torque $M_z$ | [Nm] | 3 | 6 | 15 | 25 | 35 | 50 | 65 | 110 |

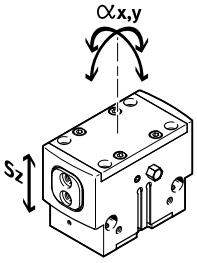
## Mass moments of inertia [kgcm²]




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

| Size | 16 | 20 | 25 | 35 | 40 | 50 | 63 | 80 |
|---|---|---|---|---|---|---|---|---|
| HGPD-...-A | 0.22 | 0.40 | 1.32 | 3.56 | 10.10 | 26.19 | 80.33 | 236.48 |
| HGPD-...-A-G | 0.27 | 0.52 | 1.72 | 4.88 | 14.09 | 36.74 | 116.19 | 319.95 |

## Gripper jaw backlash




The plain-bearing guide used in the grippers means that there is 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 | | 16 | 20 | 25 | 35 | 40 | 50 | 63 | 80 |
|---|---|---|---|---|---|---|---|---|---|
| Max. gripper jaw backlash Sz | [mm] | 0.02 | | | | | | | |
| Max. gripper jaw angular backlash ax, ay | [°] | 0.1 | | | | | | | |