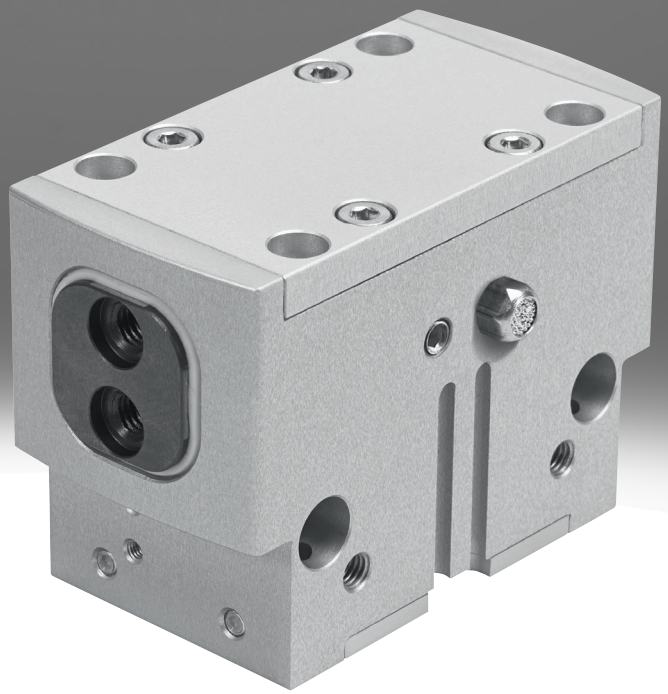
# Parallel gripper HGPD



# Characteristics

## At a glance

Link hgpd

The gripper kinematics are fully encapsulated so they can be used in extremely harsh ambient conditions. The kinematics are sturdy and precise for maximum torque absorption 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 plain-bearing guide is virtually backlash-free thanks to the ground-in gripper jaws.

Flexible range of applications:
- Can be used as a double-acting and single-acting gripper
- Compression spring for supporting or retaining the gripping forces
- Suitable for external and internal gripping

These grippers are not suited or are only of limited suitability for the following application examples:
- Aggressive media: only possible after consultation with Festo
- Grinding dust
- Welding spatter

Compressed air connections for harsh ambient conditions:
- When using the gripper in humid environments or when using liquid/gaseous media, make sure that the filter is installed in a neutral environment. The same applies to compressed air connections that are not required when using the gripper as a single-acting gripper.

## Engineering tools

Link engineering tools

Save time with engineering tools:Smart engineering for the optimal solution.Our goal is to increase your productivity.Our engineering tools play an integral part in achieving this goal.They help you size your system correctly, tap into unimagined productivity reserves and generate additional productivity along the entire value chain.In every phase of your project, from the initial contact to the modernisation of your machine, you will come across a number of different tools that will be of use to you.

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

## Diagrams

Link hgpd

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

## Special material properties

Product:
Metals with more than 5% copper by mass are excluded from use. Exceptions are circuit boards, cables, electrical plug connectors and coils

Accessories:
Please contact your Festo representative for information on which accessories are suitable for manufacturing lithium-ion batteries

## Position sensing

| | |
|---|---|
| [A] | For proximity sensor |

By using proximity switches, any position can be detected.

## Gripping force backup

| | |
|---|---|
| [G1] | Opening |

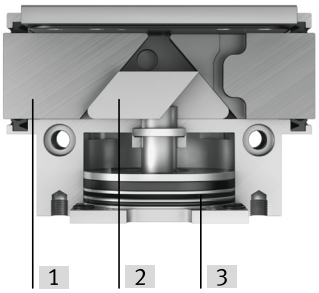
Opened by spring force in depressurised state

| | |
|---|---|
| [G2] | N/O contact |

Closed by spring force in depressurised state

# Characteristics

## Overview




[1] Gripper jaw
[2] Wedge with forced-guided motion
[3] Piston with magnet

# Type code

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

| 002 | Size [mm] | |
|---|---|---|
| **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 | |

# Datasheet

| General technical data | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Size | 16 | 20 | 25 | 35 | 40 | 50 | 63 | 80 |
| Stroke per gripper jaws | 3 mm | 4 mm | 6 mm | 8 mm | 10 mm | 12 mm | 16 mm | 20 mm |
| Design | Wedge-shaped drive<br>Force pilot operated motion sequence | | | | | | | |
| Mode of operation | Double-acting | | | | | | | |
| Gripping force backup | None<br>Opening<br>N/O contact | | | | | | | |
| Gripper function | Parallel | | | | | | | |
| Number of gripper jaws | 2 | | | | | | | |
| Max. mass per external gripper finger [1] | 25 g | 57 g | 138 g | 278 g | 445 g | 318 g, 813 g | 1,340 g | 2,170 g |
| Pneumatic connection | M5 | | | | | G1/8 | | G1/4 |
| Pneumatic connection, blocked air | M3 | | M5 | | | | | |
| Repetition accuracy, gripper [2] | ≤0.03 mm | ≤0.04 mm | | ≤0.05 mm | | | | |
| Max. replacement accuracy | ≤0.2 mm | | | | | | | |
| Max. operating frequency of gripper | ≤3 Hz | | | | ≤2 Hz | | | |
| Rotationally symmetrical | ≤0.2 mm | | | | | | | |
| Position detection | Via proximity switch | | | | | | | |
| Type of mounting | Either:<br>Via female thread and centring sleeve<br>Via through-hole and centring sleeve<br>Via through-hole and dowel pin<br>Via female thread and dowel pin | | | | | | | |
| Mounting position | optional | | | | | | | |

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

| Operating and environmental conditions | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Size | 16 | 20 | 25 | 35 | 40 | 50 | 63 | 80 |
| 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 [1] | 5 ... 60°C | | | | | | | |
| Degree of protection | IP65 | | | | | | | |
| Corrosion resistance class CRC [2] | 2 - Moderate corrosion stress | | | | | | | |
| Lubrication interval for guide components | 5 MioCyc | | | | | | | |

1) Note the operating range of the proximity switches

2) More information www.festo.com/catalogue/crc

| Operating pressure – HGPD-16 ... 35 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | 16 | | | 20 | | | 25 | | | 35 | | |
| Gripping force backup | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact |
| Operating pressure | 3 ... 8 bar | 4 ... 8 bar | | 3 ... 8 bar | 4 ... 8 bar | | 3 ... 8 bar | 4 ... 8 bar | | 3 ... 8 bar | 4 ... 8 bar | |
| Operating pressure of blocked air | 0 ... 0.5 bar | | | | | | | | | | | |

| Operating pressure – HGPD-40 ... 80 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | 40 | | | 50 | | | 63 | | | 80 | | |
| Gripping force backup | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact |
| Operating pressure | 3 ... 8 bar | 4 ... 8 bar | | 3 ... 8 bar | 4 ... 8 bar | | 3 ... 8 bar | 4 ... 8 bar | | 3 ... 8 bar | 4 ... 8 bar | |
| Operating pressure of blocked air | 0 ... 0.5 bar | | | | | | | | | | | |

# Datasheet

## Weight – HGPD-16 ... 35

| Size | 16 | | | 20 | | | 25 | | | 35 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gripping force backup | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact |
| Product weight | 100 g | 117 g | | 163 g | 182 g | | 327 g | 361 g | | 572 g | 682 g | |

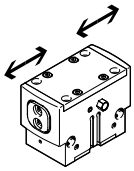
## Weight – HGPD-40 ... 80

| Size | 40 | | | 50 | | | 63 | | | 80 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gripping force backup | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact |
| Product weight | 1,044 g | 1,223 g | | 1,766 g | 2,150 g | | 3,365 g | 3,998 g | | 6,252 g | 7,484 g | |

## Materials

| | |
|---|---|
| Material housing | Anodised aluminium |
| Material gripper jaws | Hardened steel |
| Material cover cap | High-alloy stainless steel |
| Note on materials | RoHS-compliant |
| LABS (PWIS) conformity | VDMA24364-B2-L |
| Suitability for the production of Li-ion batteries | Metals with more than 5% by mass of copper are excluded from use. Exceptions are printed circuit boards, cables, electrical plug connectors and coils |

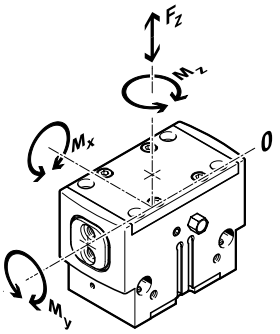
## Measured gripping force with a lever arm of 20 mm



| Size | 16 | 20 | 25 | 35 | 40 | 50 | 63 | 80 |
|---|---|---|---|---|---|---|---|---|
| Total gripping force, closing, 0.6MPa (6bar, 87 psi) | 94 N | 150 N | 266 N | 534 N | 598 N | 894 N | 1,856 N | 3,716 N |
| Total gripping force, opening, 0.6MPa (6bar, 87 psi) | 107 N | 159 N | 288 N | 581 N | 630 N | 944 N | 1,935 N | 3,922 N |
| Gripper force per gripper jaw, closing, 0.6 MPa (6 bar, 87 psi) | 47 N | 75 N | 133 N | 267 N | | 447 N | 928 N | 1,858 N |
| Gripper force per gripper jaw, opening, 0.6 MPa (6 bar, 87 psi) | 54 N | 80 N | 144 N | 291 N | 315 N | 472 N | 967 N | 1,961 N |

# Datasheet

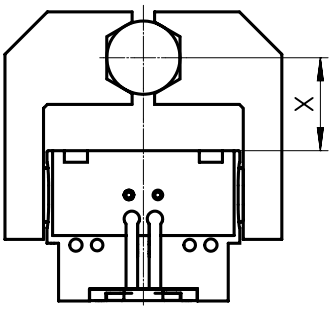
## Characteristic load values at the gripper jaws




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 | 16 | 20 | 25 | 35 | 40 | 50 | 63 | 80 |
|---|---|---|---|---|---|---|---|---|
| Max. force on gripper jaw Fz static | 150 N | 250 N | 500 N | 750 N | 1,200 N | 2,000 N | 3,000 N | 6,000 N |
| Max. torque at gripper Mx static | 8 Nm | 12 Nm | 30 Nm | 40 Nm | 70 Nm | 90 Nm | 120 Nm | 170 Nm |
| Max. torque at gripper My static | 4 Nm | 7 Nm | 25 Nm | 30 Nm | 45 Nm | 60 Nm | 80 Nm | 130 Nm |
| Max. torque at gripper Mz static | 3 Nm | 6 Nm | 15 Nm | 25 Nm | 35 Nm | 50 Nm | 65 Nm | 110 Nm |

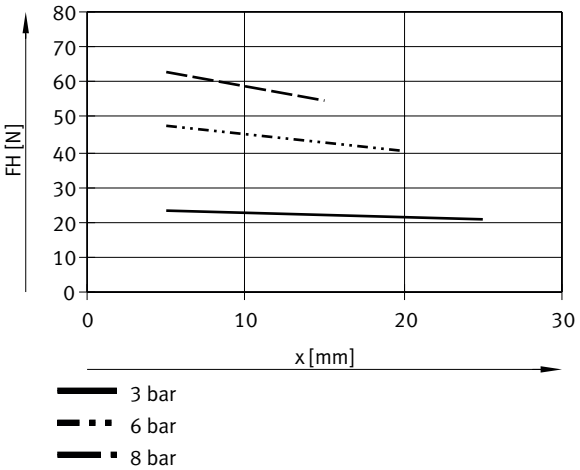
## Gripping force FH per gripper jaw as a function of operating pressure and lever arm x




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.

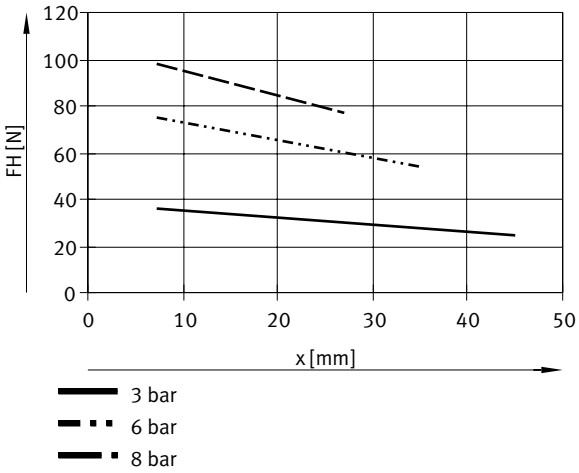
Sizing software for gripper selection → https://www.festo.com/x/topic/eng

## Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – external gripping (closing), double-acting – HGPD-16

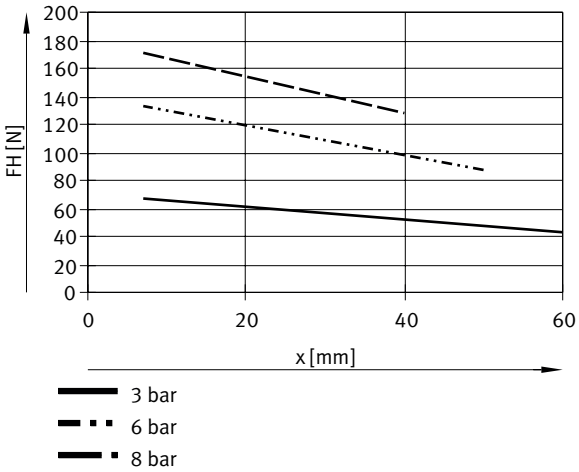


# Datasheet

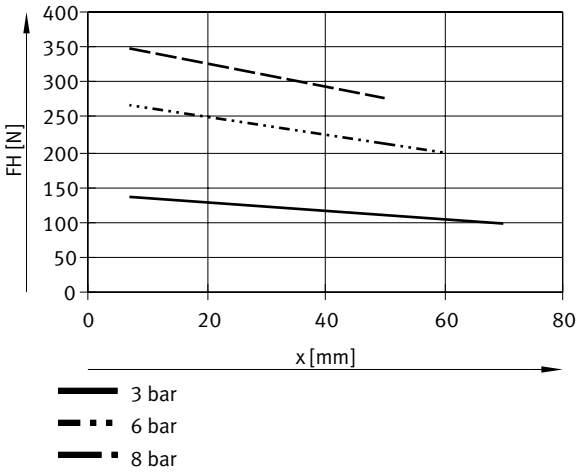
**Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – external gripping (closing), double-acting – HGPD-20**




**Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – external gripping (closing), double-acting – HGPD-25**

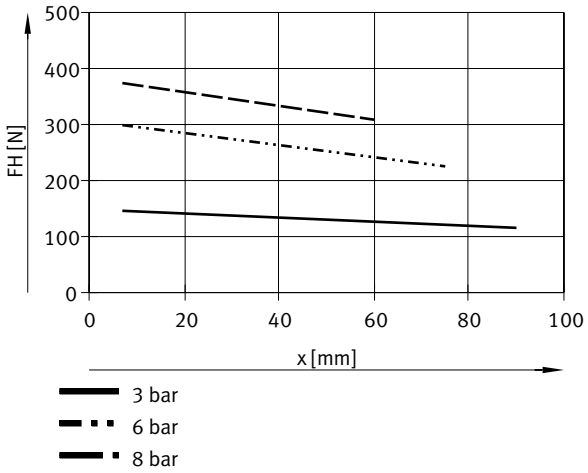



**Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – external gripping (closing), double-acting – HGPD-35**

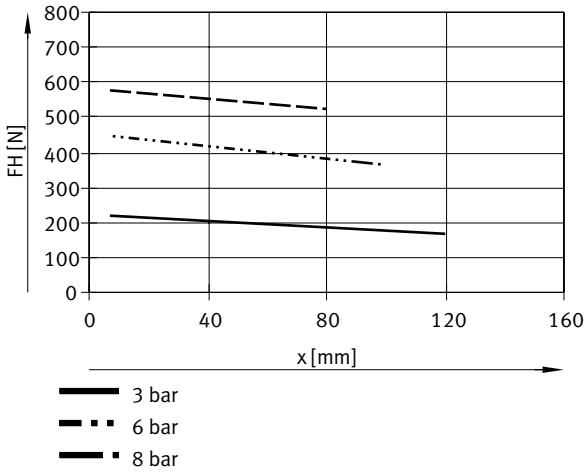


# Datasheet

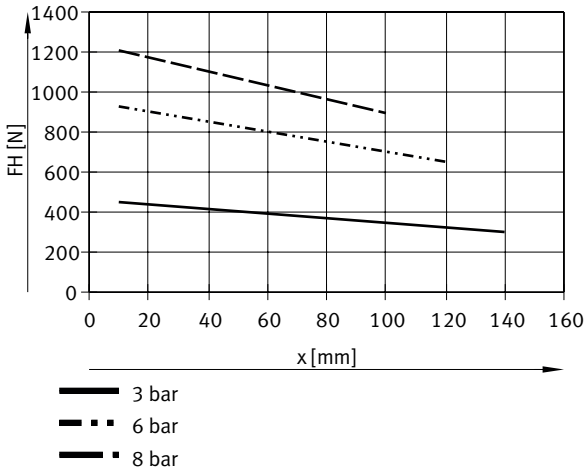
**Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – external gripping (closing), double-acting – HGPD-40**




**Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – external gripping (closing), double-acting – HGPD-50**

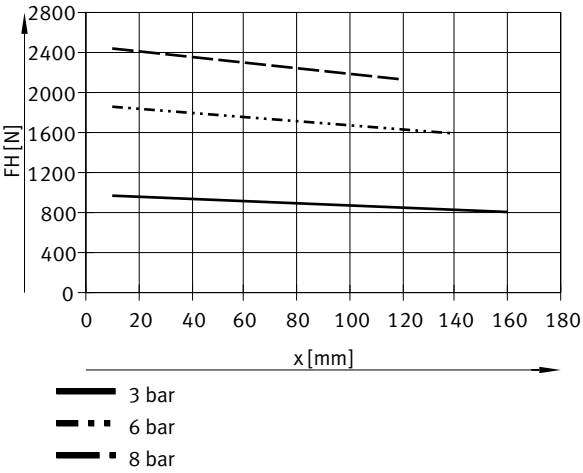



**Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – external gripping (closing), double-acting – HGPD-63**

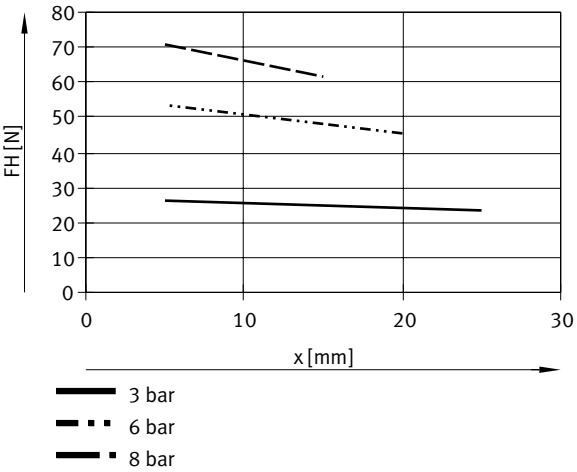


# Datasheet

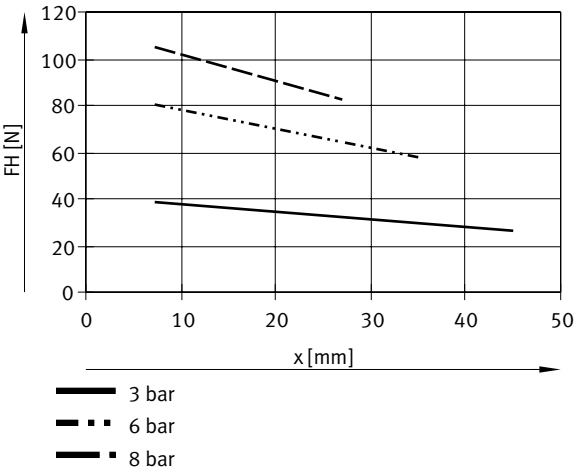
**Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – external gripping (closing), double-acting – HGPD-80**




**Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – internal gripping (opening), double-acting – HGPD-16**

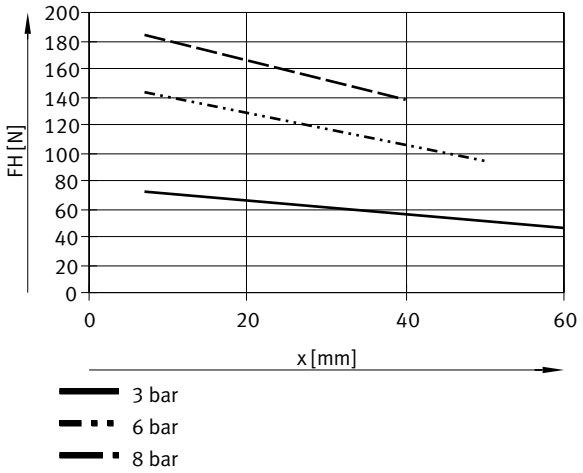



**Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – internal gripping (opening), double-acting – HGPD-20**

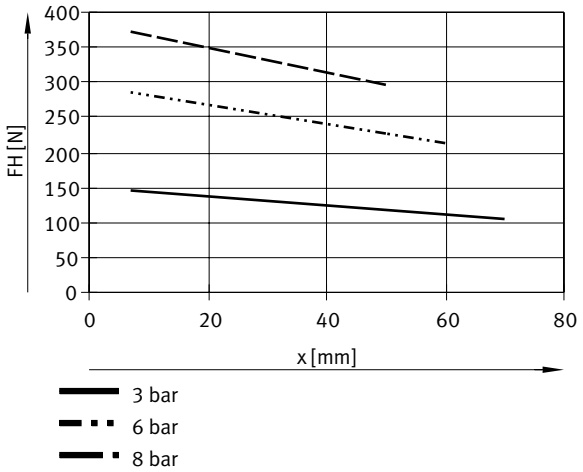


# Datasheet

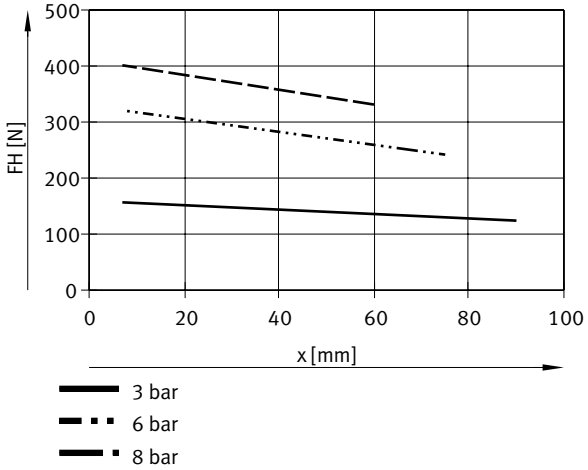
**Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – internal gripping (opening), double-acting – HGPD-25**




**Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – internal gripping (opening), double-acting – HGPD-35**

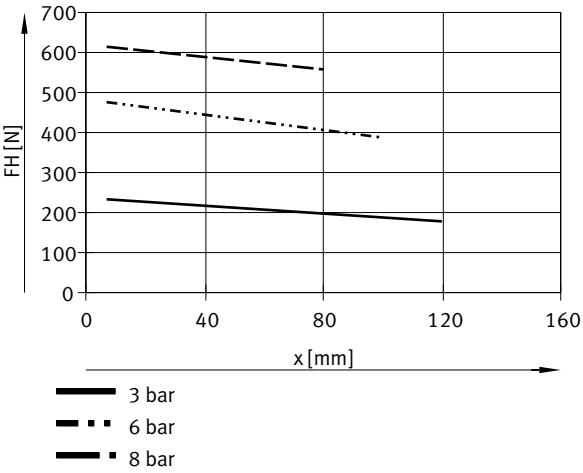



**Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – internal gripping (opening), double-acting – HGPD-40**

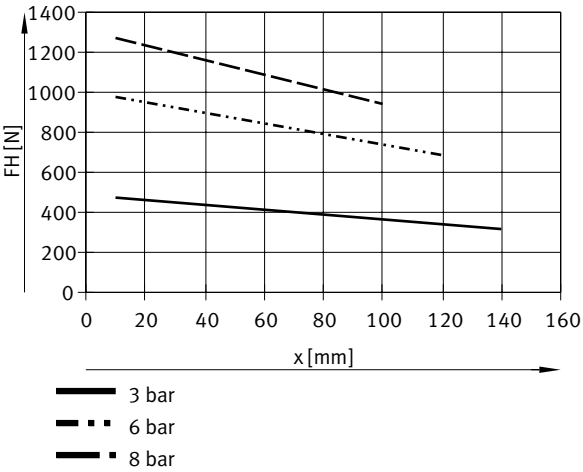


# Datasheet

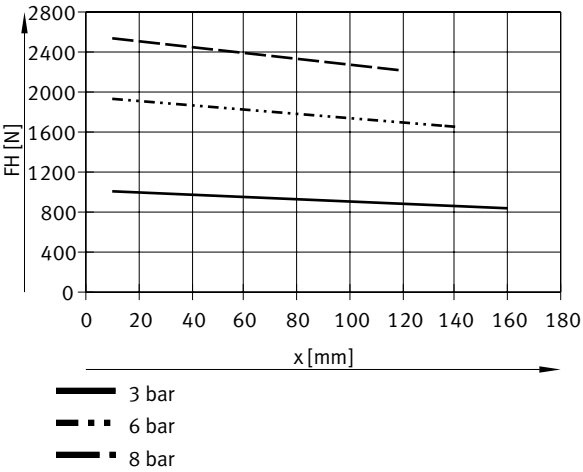
**Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – internal gripping (opening), double-acting – HGPD-50**




**Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – internal gripping (opening), double-acting – HGPD-63**

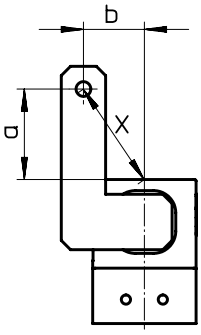



**Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – internal gripping (opening), double-acting – HGPD-80**



# Datasheet

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



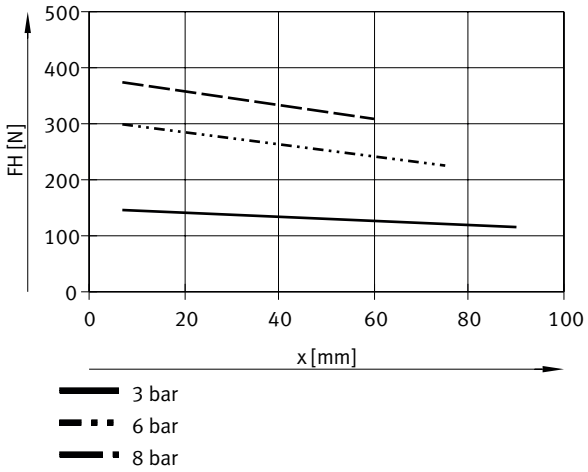

## Gripping force FH per gripper jaw at 0.6 MPa (6 bar, 87 psi) as a function of lever arm x and eccentricity a and b

$x = \sqrt{a^2 + b^2} = \sqrt{45^2 + 40^2} = 60$ mm

The formula (on the left) must be used to calculate the lever arm x with eccentric gripping.
The gripping force FH can then be read from the graphs using the calculated value x.

Calculation example:
Where:
Distance a = 45 mm
Distance b = 40 mm
To be determined:
The gripping force at 6 bar with an HGPD-40, used as an external gripper.

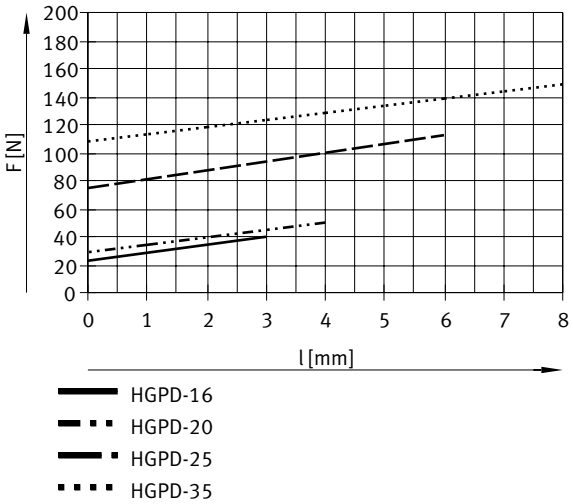
## Gripping force FH per gripper jaw at 0.6 MPa (6 bar, 87 psi) as a function of lever arm x and eccentricity a and b




The graph gives a value of FH = 240 N for the gripping force.

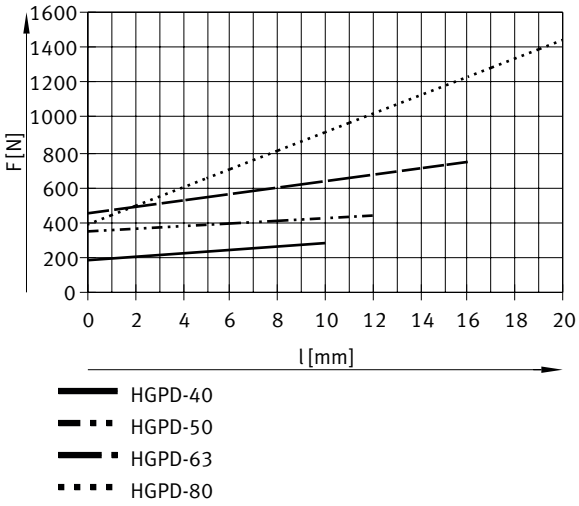
# Datasheet

**Spring force FF as a function of size and gripper jaw stroke l – gripping force retention for HGPD-16 ... 35-G...**




The spring forces FF can be determined from the graph (left) as a function of the gripper jaw stroke l.

**Spring force FF as a function of size and gripper jaw stroke l – gripping force retention for HGPD-40 ... 80-G...**




The spring forces FF can be determined from the graph (left) as a function of the gripper jaw stroke l.

# Datasheet

## Spring force FF as a function of size, gripper jaw stroke l and lever arm x per gripper finger

To determine the actual spring force FFtot, the lever arm x must be taken into account.

Formulas for calculating the spring force FFtot per gripper finger:
HGPD-16-...-G1: -0.25 * x + 0.6 * FF
HGPD-20-...-G1: -0.25 * x + 0.6 * FF
HGPD-25-...-G1: -0.65 * x + 0.6 * FF
HGPD-35-...-G1: -0.75 * x + 0.8 * FF
HGPD-40-...-G1: -0.7 * x + 0.65 * FF
HGPD-50-...-G1: -0.8 * x + 0.5 * FF
HGPD-63-...-G1: -0.8 * x + 0.65 * FF
HGPD-80-...-G1: -1.3 * x + 0.6 * FF

HGPD-16-...-G2: -0.05 * x + 0.6 * FF
HGPD-20-...-G2: -0.5 * x + 0.6 * FF
HGPD-25-...-G2: -0.65 * x + 0.6 * FF
HGPD-35-...-G2: -0.15 * x + 0.8 * FF
HGPD-40-...-G2: -0.6 * x + 0.65 * FF
HGPD-50-...-G2: -0.15 * x + 0.5 * FF
HGPD-63-...-G2: -1 * x + 0.65 * FF
HGPD-80-...-G2: -0.25 * x + 0.6 * FF

## Determining the actual gripping forces FGr per gripper finger for HGPD-...-G1 and HGPD-...-G2 as a function of the application

The parallel grippers with integrated spring type HGPD-...-G1 (gripping force backup, opening) and HGPD-...-G2 (gripping force backup, closing) can be used as:
- Single-acting grippers
- Gripper with gripping force support and
- Grippers with gripping force backup
.

To calculate the available gripping forces FGr (per gripper jaw), the data for gripping force FH and spring force FFtot must be combined accordingly.

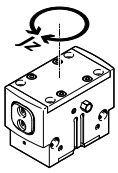
## Determining the actual gripping forces FGr per gripper finger for HGPD-...-G1 and HGPD-...-G2 as a function of the application – application

Single-acting:
- Gripping with spring force: FGr = FFtot
- Gripping with pressure force:: FGr = FH – FFtot

Gripping force support:
- Gripping with pressure and spring force: FGr = FH + FFtot

Gripping force retention
- Gripping with spring force: FGr = FFtot

## Mass moments of inertia – HGPD-16 ... 35



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

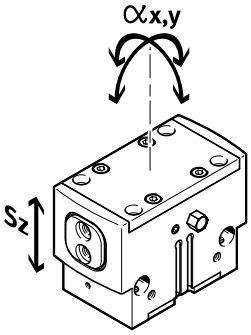
| Size | 16 | | | 20 | | | 25 | | | 35 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gripping force backup | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact |
| Mass moment of inertia | 0.22 kgcm² | 0.27 kgcm² | | 0.4 kgcm² | 0.52 kgcm² | | 1.32 kgcm² | 1.72 kgcm² | | 3.56 kgcm² | 4.88 kgcm² | |

# Datasheet

## Mass moments of inertia – HGPD-40 ... 80

| Size | 40 | | | 50 | | | 63 | | | 80 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gripping force backup | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact |
| Mass moment of inertia | 10.1 kgcm² | 14.09 kgcm² | | 26.19 kgcm² | 36.74 kgcm² | | 80.33 kgcm² | 116.19 kgcm² | | 236.48 kgcm² | 319.95 kgcm² | |

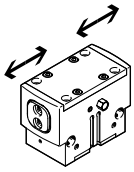
## Gripper jaw backlash




Because of the plain-bearing guide used in the grippers, 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 | 0.02 mm | | | | | | | |
| Max. angular gripper jaw backlash ax, ay | 0.1 deg | | | | | | | |

## Opening and closing times – HGPD-16 ... 35



The indicated opening and closing times [ms] were measured at room temperature, 0.6 MPa (6 bar, 87 psi) operating pressure and with the gripper installed horizontally without additional gripper fingers. The grippers must be throttled for higher masses [g]. Opening and closing times must then be adjusted accordingly.

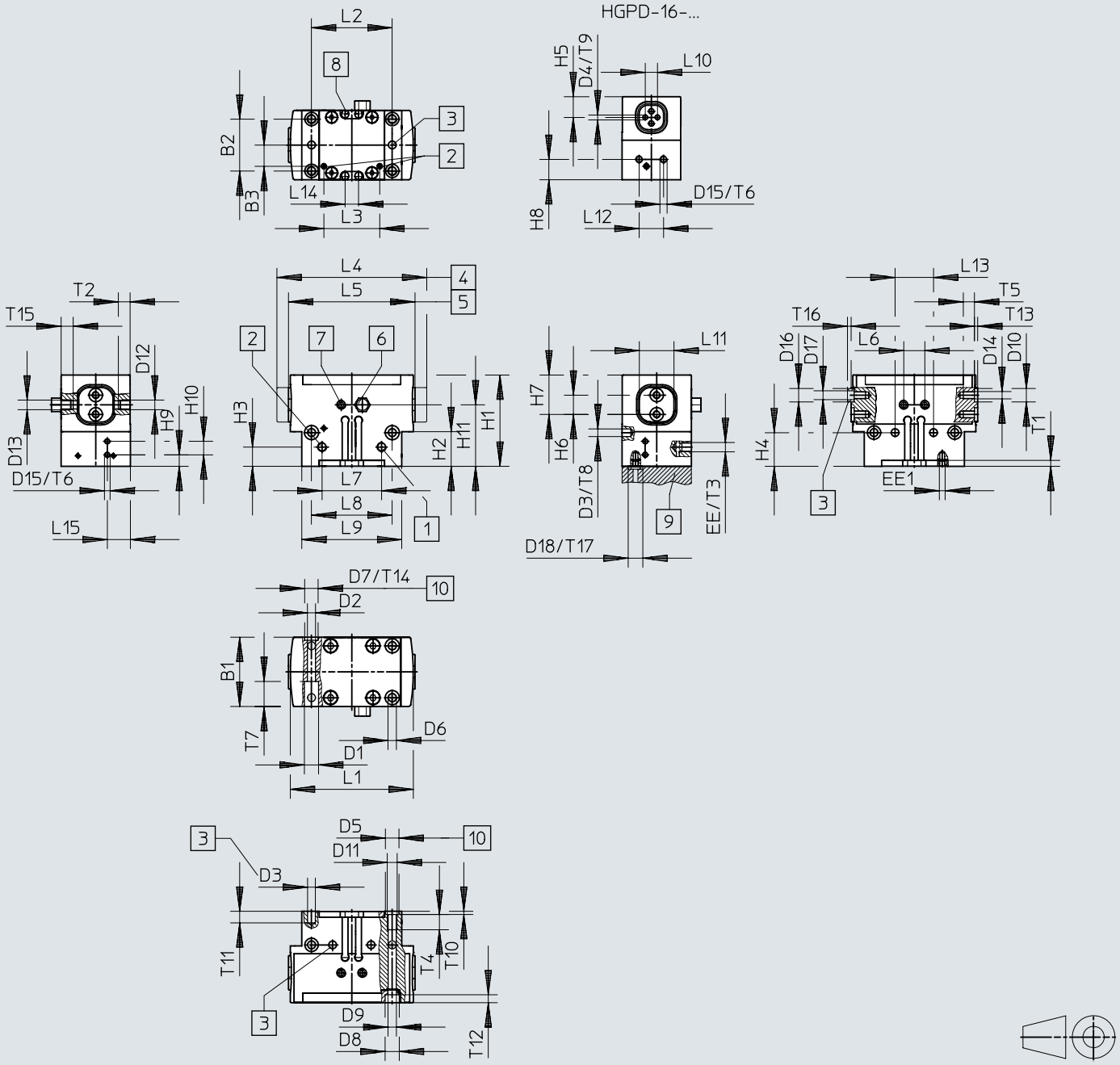
| Size | 16 | | | 20 | | | 25 | | | 35 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gripping force backup | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact |
| Min. closing time at 0.6 MPa (6 bar, 87 psi) | 17 ms | 32 ms | 15 ms | 31 ms | 25 ms | 18 ms | 35 ms | 51 ms | 28 ms | 37 ms | 62 ms | 36 ms |
| Min. opening time at 0.6 MPa (6 bar, 87 psi) | 15 ms | | 30 ms | 28 ms | 13 ms | 35 ms | 29 ms | 24 ms | 48 ms | 33 ms | 31 ms | 50 ms |

## Opening and closing times – HGPD-40 ... 80

| Size | 40 | | | 50 | | | 63 | | | 80 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gripping force backup | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact | None | Opening | N/O contact |
| Min. closing time at 0.6 MPa (6 bar, 87 psi) | 77 ms | 157 ms | 71 ms | 100 ms | 176 ms | 87 ms | 162 ms | 328 ms | 185 ms | 218 ms | 353 ms | 240 ms |
| Min. opening time at 0.6 MPa (6 bar, 87 psi) | 73 ms | | 143 ms | 90 ms | 85 ms | 170 ms | 150 ms | 170 ms | 294 ms | 214 ms | 235 ms | 379 ms |

# Dimensions

**Dimensions – Parallel gripper HGPD** Download CAD data www.festo.com




[1] Compressed air connection opening, either on the side or underneath (delivery status: connection underneath sealed)
[2] Compressed air connection closing, either at the side or underneath (delivery status: connection underneath sealed)
[3] Drilled hole for dowel pin (not included in the scope of delivery)/centring sleeves ZBH (4 pieces included in the scope of delivery)
[4] Gripper jaws open
[5] Gripper jaws closed
[6] Exhaust hole
[7] Lubrication nipple (sealed on delivery)
[8] Slot for proximity switch
[9] O-ring for parallel gripper HGPD-20...35: Ø 3x1 / HGPD-40...80: Ø 5x1.5
[10] Hole for centring sleeve ZBH

# Dimensions

| | B1 | B2[1] | B3 | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 | D11 | D12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ø | ø | ø | ø | ø | ø | ø | ø | ø | ø | | |
| | ±0,05 | | ±0,1 | H13 | | H8 | H8 | H8 | | H8 | H13 | | H8 | | |
| HGPD-16 | 24 | 17 | 4 | 4,6 | 2,6 | 2 | 2 | 5 | 2,6 | – | 4,6 | – | – | M3 | M3 |
| HGPD-20[2] | 28 | 22 | 8,7 | 5,6 | 3,2 | 3 | – | 5 | 3,2 | – | – | – | 5 | M4 | M3 |
| HGPD-25 | 36 | 27 | 11 | 7,4 | 4,2 | 4 | – | 7 | 4,2 | 7 | 7,4 | 4,3 | 7 | M5 | M5 |
| HGPD-35 | 42 | 32 | 13 | 9,2 | 5,2 | 4 | – | 7 | 4,2 | 7 | 7,4 | 4,3 | 9 | M5 | M5 |
| HGPD-40 | 50 | 38 | 17 | 10,4 | 6,2 | 5 | – | 9 | 5,2 | 9 | 9,4 | 5,3 | 9 | M6 | M5 |
| HGPD-50 | 60 | 45 | 20 | 13,5 | 8,2 | 6 | – | 12 | 6,1 | 12 | 10,4 | 6,4 | 12 | M8 | M5 |
| HGPD-63 | 72 | 56 | 24,5 | 13,5 | 8,4 | 6 | – | 12 | 6,4 | 12 | 10,4 | – | 12 | M8 | M5 |
| HGPD-80 | 100 | 70 | 39,5 | 18,5 | 12,2 | 8 | – | 12 | 8,5 | 15 | 13,5 | 8,4 | 15 | M10 | M5 |

| | D13 | D14 | D15 | D16 | D17 | D18 | EE | EE1 | H1 | | H2 | | H3 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ø | ø | ø | | | | -G | | -G | | -G |
| | | | | h7 | | +0,2 | | | ±0,05 | ±0,05 | | | ±0,1 | ±0,1 |
| HGPD-16 | M3 | M2,5 | M3 | – | – | – | M5 | M3 | 34 | 41,5 | 16,2 | 23,6 | 12 | 12 |
| HGPD-20 | M3 | M3 | M3 | 5 | 3,2 | 5 | M5 | M3 | 39 | 46 | 15 | 22 | 10 | 15 |
| HGPD-25 | M5 | M4 | M3 | 7 | 5,3 | 5 | M5 | M3 | 47,5 | 55,5 | 18 | 26 | 10 | 20 |
| HGPD-35 | M5 | M6 | M3 | 9 | 6,4 | 5 | M5 | M3 | 57,5 | 74 | 21,5 | 38 | 12 | 23,5 |
| HGPD-40 | M5 | M6 | M3 | 9 | 6,4 | 8 | M5 | M3 | 67 | 85 | 27 | 45 | 15 | 36 |
| HGPD-50 | G1/8 | M6 | M3 | 12 | 10,3 | 8 | G1/8 | M5 | 77,5 | 102,5 | 32 | 57 | 15 | 30 |
| HGPD-63 | G1/8 | M8 | M3 | 12 | 10,3 | 8 | G1/8 | M5 | 94 | 124 | 39 | 69 | 18 | 26 |
| HGPD-80 | G1/8 | M10 | M3 | 15 | 12,4 | 8 | G1/4 | M5 | 110 | 146 | 48 | 84 | 22 | 33 |

| | H4[1] | | H5 | H6[1] | H7 | H8 | | H9 | | H10 | H11 | | L1 | L2[1] | L3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | -G | | | | | -G | | -G | | | -G | | | |
| | | | –0,02 | | –0,02 | ±0,1 | ±0,1 | ±0,1 | ±0,1 | ±0,1 | ±0,1 | ±0,1 | ±0,05 | | ±0,1 |
| HGPD-16 | 17,5 | 24,5 | 8,5 | 5 | 11 | 8,3 | 15,8 | – | – | – | 25,5 | 33 | 50 | 29 | 22 |
| HGPD-20 | 14,5 | 21,5 | – | 7 | 15 | 6,5 | 13,5 | – | – | – | 27,5 | 34,5 | 50 | 35 | 22,6 |
| HGPD-25 | 17,5 | 26 | – | 10 | 20,5 | – | – | 6 | 14 | 7 | 32 | 40 | 64 | 42 | 29 |
| HGPD-35 | 20 | 37,5 | – | 12 | 24 | – | – | 9,5 | 26 | 7 | 39,5 | 56 | 80 | 52 | 39 |
| HGPD-40 | 25 | 42,5 | – | 15 | 28,5 | – | – | 15 | 33 | 8 | 46 | 64 | 101 | 66 | 47,4 |
| HGPD-50 | 30 | 55 | – | 18 | 32 | – | – | 15,5 | 40,5 | 8 | 54,5 | 79,5 | 126 | 82 | 61 |
| HGPD-63 | 28 | 68 | – | 24 | 40 | – | – | 26 | 56 | 8 | 66 | 96 | 161 | 100 | 75 |
| HGPD-80 | 34 | 76 | – | 24 | 42 | – | – | 35 | 71 | 8 | 80 | 116 | 201 | 130 | 82 |

| | L4 | L5 | L6 | L7 | L8[1] | L9 | L10 | L11 | L12 | L13 | L14 | L15 | T1 | T2 | T3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ±0,5 | ±0,5 | ±0,1 | ±0,1 | | ±0,1 | ±0,05 | –0,02 | ±0,1 | ±0,02 | +0,1 | ±0,1 | min. | min. | min. |
| HGPD-16 | 58 | 52 | 6,5 | 20 | 29 | 36 | 5 | 10 | 10 | 20 | 6 | – | 3 | 5,5 | 5,5 |
| HGPD-20 | 60 | 52 | 7,5 | 24 | 35 | 44 | – | 14 | 10 | 24 | 6 | – | 3 | 5,5 | 5,5 |
| HGPD-25 | 78 | 66 | 11 | 31 | 42 | 52 | – | 18 | – | 20 | 7 | 12 | 3 | 6,7 | 5,5 |
| HGPD-35 | 98 | 82 | 11 | 40 | 52 | 64 | – | 22 | – | 40 | 7 | 15 | 3 | 6,5 | 5,5 |
| HGPD-40 | 122 | 102 | 11 | 49 | 66 | 81 | – | 28 | – | 50 | 10 | 19 | 4 | 6,5 | 6,5 |
| HGPD-50 | 151 | 127 | 11 | 63 | 82 | 101 | – | 32 | – | 60 | 10 | 24 | 4 | 6,5 | 8,5 |
| HGPD-63 | 194 | 162 | 11 | 74 | 100 | 126 | – | 40 | – | 76 | 10 | 42 | 4 | 6,5 | 8,5 |
| HGPD-80 | 242 | 202 | 11 | 82 | 130 | 154 | – | 45 | – | 100 | 10 | 56 | 5,5 | 6,5 | 10 |

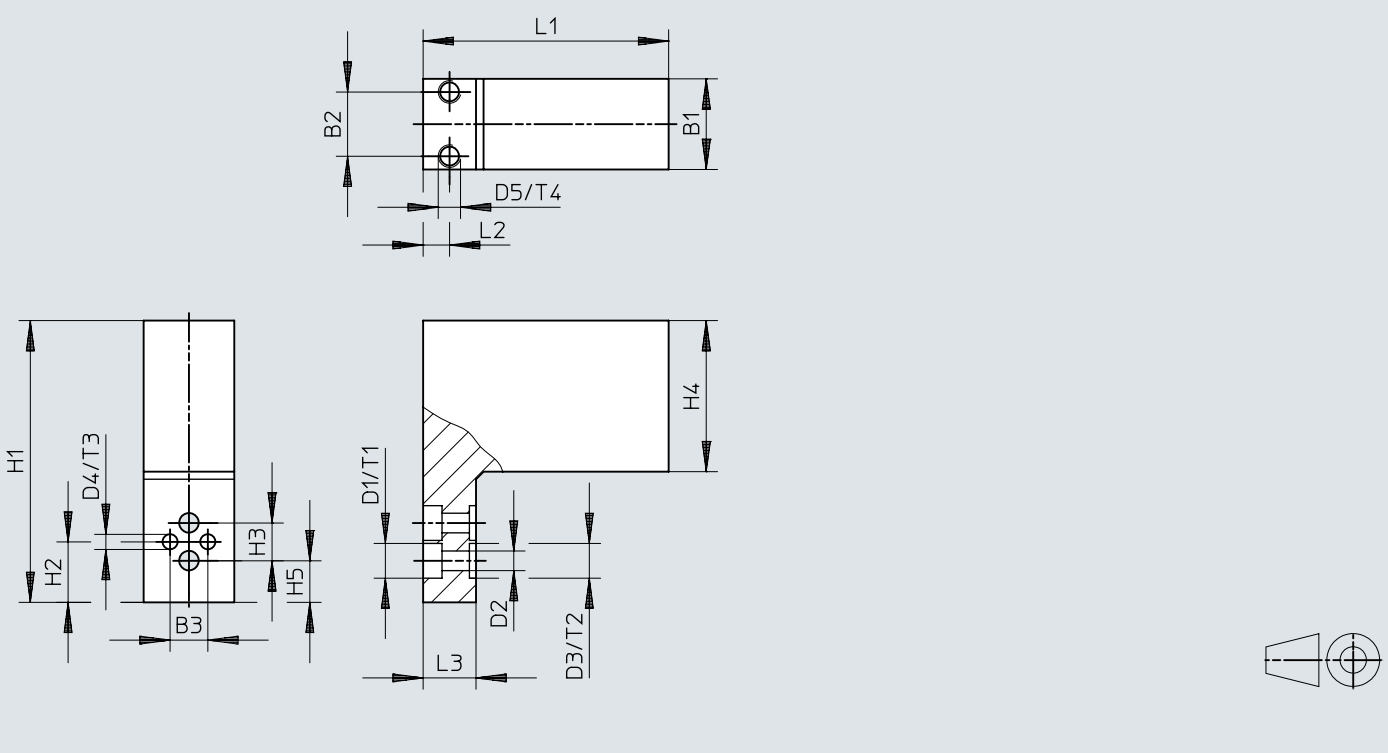
| | T4 | | T5 | T6 | T7 | T8 | T9 | T10 | T11 | T12 | T13 | T14 | T15 | T16 | T17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | -G | | | | | | | | | | | | | |
| | min. | min. | min. | min. | | min. | +0,1 | +0,1 | min. | +0,2 | +0,1 | +0,1 | min. | –0,3 | +0,1 |
| HGPD-16 | 5,5 | – | 5 | 3,5 | 14 | 4,5 | 2,6 | 1,3 | 4 | 19,8 | – | – | 5,5 | – | – |
| HGPD-20 | 6,5 | – | 5 | 5 | 18 | 4 | – | 1,3 | 5 | 3 | 1,3 | – | 5,5 | 1,2 | 0,6 |
| HGPD-25 | 10,5 | – | 6 | 5 | 13 | 4,5 | – | 1,6 | 6 | 4,1 | 1,6 | 1,6 | 6,7 | 1,4 | 0,6 |
| HGPD-35 | 8,5 | – | 7,9 | 5 | 16 | 4,5 | – | 1,6 | 6 | 4,1 | 2,1 | 1,6 | 6,5 | 1,9 | 0,6 |
| HGPD-40 | 12,5 | – | 7,9 | 5 | 28 | 6 | – | 2,1 | 7 | 5,1 | 2,1 | 2,1 | 6,5 | 1,9 | 1,1 |
| HGPD-50 | 12,5 | – | 10 | 5 | 24 | 6 | – | 2,6 | 8 | 6,1 | 2,6 | 2,6 | 6,5 | 2,4 | 1,1 |
| HGPD-63 | 12,5 | – | 12 | 5 | 27 | 6 | – | 2,6 | 8 | 4,5 | 2,6 | 2,6 | 6,5 | 2,4 | 1,1 |
| HGPD-80 | 12,4 | 15 | 15 | 5 | 41 | 10 | – | 2,6 | 10 | 5,5 | 3,1 | 3,1 | 6,5 | 2,9 | 1,1 |

1) Tolerance for centring hole ±0.02 mm Tolerance for thread ±0.1 mm
2) Dowel pins must be used when mounted from below.

# Dimensions

**Dimensions – Gripper jaw blank BUB-HGPD**

Download CAD data www.festo.com



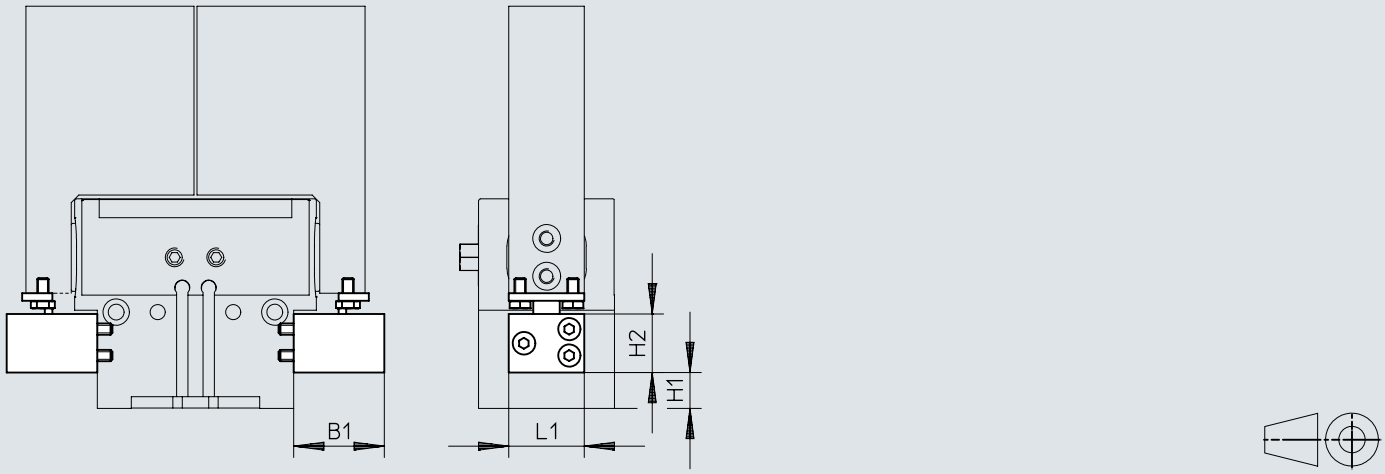

| | B1 ±0,05 | B2 | B3 ±0,01 | D1 ⌀ H13 | D2 ⌀ H13 | D3 ⌀ H8 | D4 ⌀ H7 | D5 | H1 ±0,05 | H2 ±0,02 |
|---|---|---|---|---|---|---|---|---|---|---|
| BUB-HGPD-16 | 12 | 8,5 | 5 | 4,6 | 2,6 | – | 2 | M3 | 37,3 | 8 |
| BUB-HGPD-20 | 14 | 8,5 | – | 5,9 | 3,2 | 5 | – | M3 | 59 | – |
| BUB-HGPD-25 | 20 | 14 | – | 7,4 | 4,3 | 7 | – | M3 | 76 | – |
| BUB-HGPD-35 | 29 | 23 | – | 10,4 | 6,4 | 9 | – | M3 | 92,5 | – |
| BUB-HGPD-40 | 32 | 26 | – | 10,4 | 6,4 | 9 | – | M3 | 110 | – |
| BUB-HGPD-50 | 35 | 26 | – | 10,4 | 6,4 | 12 | – | M3 | 144 | – |
| BUB-HGPD-63 | 40 | 26 | – | 13,5 | 8,4 | 12 | – | M3 | 171,5 | – |
| BUB-HGPD-80 | 44 | 26 | – | 16,5 | 10,5 | 15 | – | M3 | 198 | – |

| | H3 | H4 | H5 | L1 ±0,05 | L2 | L3 | T1 +0,1 | T2 +0,1 | T3 +0,1 | T4 |
|---|---|---|---|---|---|---|---|---|---|---|
| BUB-HGPD-16 | 5±0,1 | 20 | – | 32,5 | 3,5 | 7 | 2,5 | – | 2,1 | 4 |
| BUB-HGPD-20 | 7±0,01[1] | 35 | 8 | 35,5 | 3 | 10 | 3,1 | 1,3 | – | 5 |
| BUB-HGPD-25 | 10±0,01[1] | 49,5 | 4,5 | 44,5 | 4,5 | 12 | 4,2 | 1,6 | – | 5 |
| BUB-HGPD-35 | 12±0,01[1] | 59 | 7,5 | 52,5 | 6 | 12 | 6,2 | 2,1 | – | 5 |
| BUB-HGPD-40 | 15±0,01[1] | 73,5 | 6 | 62,5 | 6 | 12 | 6,2 | 2,1 | – | 5 |
| BUB-HGPD-50 | 18±0,01[1] | 99 | 11 | 78 | 10 | 15 | 6,2 | 2,6 | – | 5 |
| BUB-HGPD-63 | 24±0,01[1] | 119 | 10 | 98,5 | 10,5 | 15 | 8,2 | 2,6 | – | 5 |
| BUB-HGPD-80 | 24±0,01[1] | 139 | 15 | 120,5 | 10 | 20 | 10,2 | 3,1 | – | 5 |

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

# Dimensions

**Dimensions – Sensor bracket DASI** Download CAD data www.festo.com




| | | B1 | H1 | | H2 | L1 |
|---|---|---|---|---|---|---|
| | | | | -G | | |
| HGPD-16 | DASI-B12-16-S3 | 18 | 4,3 | 11,8 | 8 | 18 |
| HGPD-20 | DASI-B12-20-S3 | 18 | 2,5 | 9,5 | 8 | 18 |
| HGPD-25 | DASI-B12-25-S8 | 24 | 1,5 | 9,5 | 15,5 | 20 |
| HGPD-35 | DASI-B12-35-S8 | 24 | 5 | 21,5 | 15,5 | 20 |
| HGPD-40 | DASI-B12-40-S8 | 29 | 11,2 | 29,2 | 15,6 | 20 |
| HGPD-50 | DASI-B12-50-S8 | 34 | 12 | 37 | 16 | 20 |
| HGPD-63 | DASI-B12-63-S8 | 54 | 22 | 52 | 16 | 20 |
| HGPD-80 | DASI-B12-63-S8 | 54 | 31 | 67 | 16 | 20 |

# Ordering data

**Double-acting, without compression spring**

| Size | Stroke per gripper jaws | Product weight | Part no. | Type |
|---|---|---|---|---|
| 16 | 3 mm | 100 g | **1132936** | **HGPD-16-A** |
| 20 | 4 mm | 163 g | **1132939** | **HGPD-20-A** |
| 25 | 6 mm | 327 g | **1132942** | **HGPD-25-A** |
| 35 | 8 mm | 572 g | **1132945** | **HGPD-35-A** |
| 40 | 10 mm | 1,044 g | **1132948** | **HGPD-40-A** |
| 50 | 12 mm | 1,766 g | **1132951** | **HGPD-50-A** |
| 63 | 16 mm | 3,365 g | **1132954** | **HGPD-63-A** |
| 80 | 20 mm | 6,252 g | **1132957** | **HGPD-80-A** |

**Single-acting or with gripping force backup, opening**

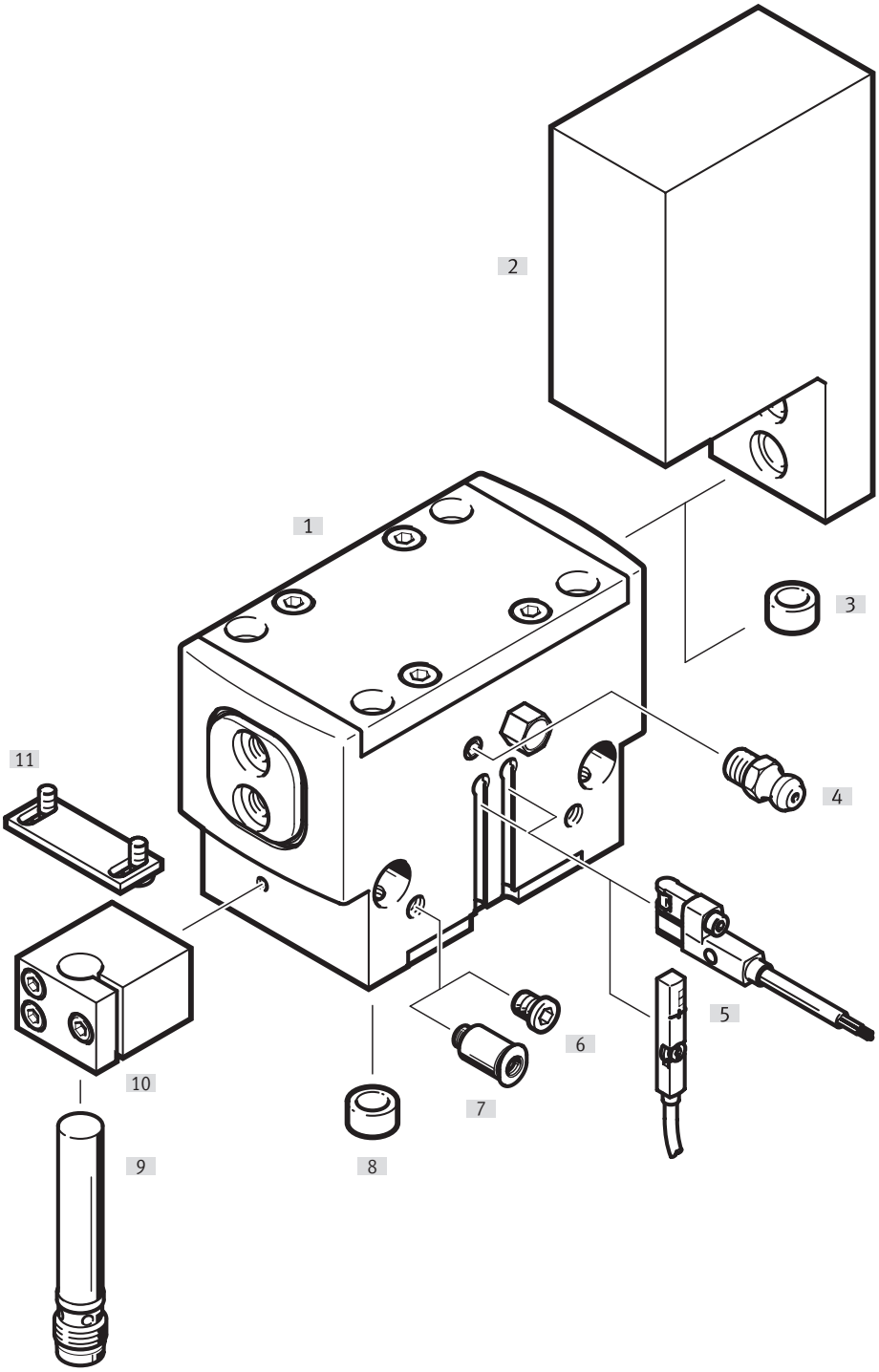
| Size | Stroke per gripper jaws | Product weight | Part no. | Type |
|---|---|---|---|---|
| 16 | 3 mm | 117 g | **1132937** | **HGPD-16-A-G1** |
| 20 | 4 mm | 182 g | **1132940** | **HGPD-20-A-G1** |
| 25 | 6 mm | 361 g | **1132943** | **HGPD-25-A-G1** |
| 35 | 8 mm | 682 g | **1132946** | **HGPD-35-A-G1** |
| 40 | 10 mm | 1,223 g | **1132949** | **HGPD-40-A-G1** |
| 50 | 12 mm | 2,150 g | **1132952** | **HGPD-50-A-G1** |
| 63 | 16 mm | 3,998 g | **1132955** | **HGPD-63-A-G1** |
| 80 | 20 mm | 7,484 g | **1132958** | **HGPD-80-A-G1** |

**Single-acting or with gripping force backup, closing**

| Size | Stroke per gripper jaws | Product weight | Part no. | Type |
|---|---|---|---|---|
| 16 | 3 mm | 117 g | **1132938** | **HGPD-16-A-G2** |
| 20 | 4 mm | 182 g | **1132941** | **HGPD-20-A-G2** |
| 25 | 6 mm | 361 g | **1132944** | **HGPD-25-A-G2** |
| 35 | 8 mm | 682 g | **1132947** | **HGPD-35-A-G2** |
| 40 | 10 mm | 1,223 g | **1132950** | **HGPD-40-A-G2** |
| 50 | 12 mm | 2,150 g | **1132953** | **HGPD-50-A-G2** |
| 63 | 16 mm | 3,998 g | **1132956** | **HGPD-63-A-G2** |
| 80 | 20 mm | 7,484 g | **1132959** | **HGPD-80-A-G2** |

# Peripherals

## Peripherals overview



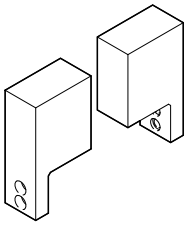

| Accessories | | | → Link |
|---|---|---|---|
| | Type/order code | Description | |
| [1] | Parallel gripper HGPD | Double-acting | hgpd |
| [2] | Gripper jaw blank BUB-HGPD | Blanks specially matched to the gripper jaws for custom manufacturing of gripper fingers | 24 |
| [3] | Centring pin ZBS/centring sleeve ZBH | • For centring the gripper jaw blanks/gripper fingers on the gripper jaws<br>• 4 centring pins/sleeves are included in the scope of delivery of the gripper | 24 |
| [4] | Lubrication nipple | Included in the scope of delivery of the gripper | hgpd |
| [5] | Proximity switch SMT-8G | • For sensing the piston position<br>• Proximity switch does not project underneath the housing | 25 |
| [5] | Proximity switch SMT-10G | • For sensing the piston position<br>• Proximity switch does not project underneath the housing | 25 |
| [6] | Blanking plug B | For sealing the compressed air ports when using the bottom compressed air ports | 25 |

# Peripherals

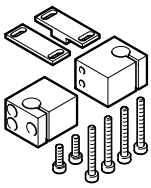
| Accessories | | | → Link |
|---|---|---|---|
| | Type/order code | Description | |
| [7] | Push-in fitting QS | For connecting tubing with standard O.D | qs |
| [8] | Centring sleeve ZBH | For centring the gripper during mounting | 24 |
| [9] | Proximity switch SIEH | For sensing the piston position | 25 |
| [9] | Proximity switch SIEN | For sensing the piston position | 26 |
| [10] | Sensor bracket DASI | Clamping terminal for fixing the proximity switches SIEH or SIEN | 24 |
| [11] | Sensor bracket DASI | Switch lug for sensing the gripper jaw position. It is attached to the gripper jaw blank | 24 |
| [12] | Adapter kit DHAA, HAPG | Connecting plate between drive and gripper | dhaa |
| [13] | Proportional-pressure regulator VPPM | For infinitely variable adjustment of the gripping force | vppm |

# Accessories

**Gripper jaw blank BUB-HGPD**

| | Description | Product weight per gripper jaw | Part no. | Type |
|---|---|---|---|---|
|  | For size 16 | 25 g | **1180947** | **BUB-HGPD-16** |
| | For size 20 | 57 g | **1180948** | **BUB-HGPD-20** |
| | For size 25 | 138 g | **1180949** | **BUB-HGPD-25** |
| | For size 35 | 278 g | **1180950** | **BUB-HGPD-35** |
| | For size 40 | 445 g | **1180951** | **BUB-HGPD-40** |
| | For size 50 | 814 g | **1180952** | **BUB-HGPD-50** |
| | For size 63 | 1,340 g | **1180953** | **BUB-HGPD-63** |
| | For size 80 | 2,170 g | **1180954** | **BUB-HGPD-80** |

**Sensor bracket DASI**

| | Description | Product weight | Part no. | Type |
|---|---|---|---|---|
|  | For size 16 | 25 g | **1435225** | **DASI-B12-16-S3** |
| | For size 20 | 22 g | **1435226** | **DASI-B12-20-S3** |
| | For size 25 | 50 g | **1435227** | **DASI-B12-25-S8** |
| | For size 35 | 55 g | **1435228** | **DASI-B12-35-S8** |
| | For size 40 | 65 g | **1435229** | **DASI-B12-40-S8** |
| | For size 50 | 70 g | **1435230** | **DASI-B12-50-S8** |
| | For size 63, For size 80 | 95 g | **1435231** | **DASI-B12-63-S8** |

**Centring pin ZBS-2**

| | Description | Material sleeve | Size of pack | Product weight | Part no. | Type |
|---|---|---|---|---|---|---|
| | For size 16 | Steel | 10 | 1 g | **525273** | **ZBS-2** |

**Centring sleeve ZBH-5**

| | Description | Material sleeve | Size of pack | Product weight | Part no. | Type |
|---|---|---|---|---|---|---|
| | For size 16, For size 20 | Steel | 10 | 1 g | **8146543** | **ZBH-5-B** |

**Centring sleeve ZBH-7**

| | Description | Material sleeve | Size of pack | Product weight | Part no. | Type |
|---|---|---|---|---|---|---|
| | For size 25, For size 35 | Steel | 10 | 1 g | **8146544** | **ZBH-7-B** |

**Centring sleeve ZBH-9**

| | Description | Material sleeve | Size of pack | Product weight | Part no. | Type |
|---|---|---|---|---|---|---|
| | For size 35, For size 40 | Steel | 10 | 2 g | **8137184** | **ZBH-9-B** |

**Centring sleeve ZBH-12**

| | Description | Material sleeve | Size of pack | Product weight | Part no. | Type |
|---|---|---|---|---|---|---|
| | For sizes 50, 63, 80 | Steel | 10 | 1 g | **8137185** | **ZBH-12-B** |

**Centring sleeve ZBH-15**

| | Description | Material sleeve | Size of pack | Product weight | Part no. | Type |
|---|---|---|---|---|---|---|
| | For size 80 | High-alloy stainless steel | 10 | 3 g | **191409** | **ZBH-15** |

# Accessories

**Blanking plug B-M3-S9**

| | Description | Material blanking plug | Size of pack | Product weight | Part no. | Type |
|---|---|---|---|---|---|---|
| | For size 16, For size 20 | High-alloy stainless steel | 10 | 1 g | **30979** | **B-M3-S9** |

**Blanking plug B-M5**

| | Description | Material blanking plug | Size of pack | Product weight | Part no. | Type |
|---|---|---|---|---|---|---|
| | For size 25, For size 35, For size 40 | Galvanised steel | 10 | 1 g | ★ **174308** | **B-M5-B** |

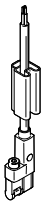
**Blanking plug B-1/8**

| | Description | Material blanking plug | Size of pack | Product weight | Part no. | Type |
|---|---|---|---|---|---|---|
| | For size 50, 63 | Galvanised steel | 10 | 7 g | ★ **3568** | **B-1/8** |

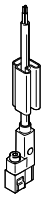
**Blanking plug B-1/4**

| | Description | Material blanking plug | Size of pack | Product weight | Part no. | Type |
|---|---|---|---|---|---|---|
| | For size 80 | Galvanised steel | 10 | 15 g | ★ **3569** | **B-1/4** |

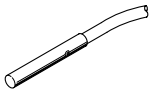
**Proximity switch SMT-10G for round slot, magneto-resistive – for sizes 16 ... 35** Link smt

| | Type of mounting | Switching output | Electrical connection | Cable length | Part no. | Type |
|---|---|---|---|---|---|---|
|  | Clamped in C-slot, Insertable in the slot lengthwise | 3-wire NPN N/O contact | Open end | 2.5 m | **8065030** | **SMT-10G-NS-24V-E-2,5Q-OE** |
| | | | Plug M8, A-coded | 0.3 m | **8065029** | **SMT-10G-NS-24V-E-0,3Q-M8D** |
| | | 3-wire PNP N/O contact | Open end | 2.5 m | **547862** | **SMT-10G-PS-24V-E-2,5Q-OE** |
| | | | Plug M8, A-coded | 0.3 m | **547863** | **SMT-10G-PS-24V-E-0,3Q-M8D** |

**Proximity switch SMT-8G for T-slot, magneto-resistive – for sizes 40 ... 80** Link smt

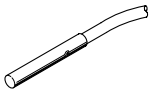
| | Type of mounting | Switching output | Electrical connection | Cable length | Part no. | Type |
|---|---|---|---|---|---|---|
|  | Clamped in T-slot, Insertable in the slot lengthwise | 3-wire NPN N/O contact | Open end | 2.5 m | **8065028** | **SMT-8G-NS-24V-E-2,5Q-OE** |
| | | | Plug M8, A-coded | 0.3 m | **8065027** | **SMT-8G-NS-24V-E-0,3Q-M8D** |
| | | 3-wire PNP N/O contact | Open end | 2.5 m | **547859** | **SMT-8G-PS-24V-E-2,5Q-OE** |
| | | | Plug M8, A-coded | 0.3 m | **547860** | **SMT-8G-PS-24V-E-0,3Q-M8D** |

**Proximity switch SIEH – 3 mm (round design), inductive – for size 16 ... 20** Link sieh

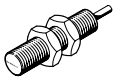
| | Type of mounting | Switching output | Electrical connection | Cable length | Part no. | Type |
|---|---|---|---|---|---|---|
|  | Clamped | PNP | Open end | 2.5 m | **538264** | **SIEH-3B-PS-K-L** |

# Accessories

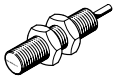
**Proximity switch SIEH – 3 mm (round design), inductive – for size 16 ... 20** Link sieh

| | Type of mounting | Switching output | Electrical connection | Cable length | Part no. | Type |
|---|---|---|---|---|---|---|
|  | Clamped | PNP | Plug M8, A-coded | 0.15 m | **538263** | **SIEH-3B-PS-S-L** |

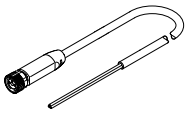
**Proximity switch SIEN, with cable, inductive – for size 25 ... 80** Link sien

| | Type of mounting | Switching output | Electrical connection | Cable length | Part no. | Type |
|---|---|---|---|---|---|---|
|  | Via lock nut | PNP | Open end | 2.5 m | **150386** | **SIEN-M8B-PS-K-L** |

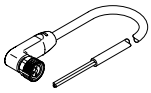
**Proximity switch SIEN, without cable, inductive – for size 25 ... 80** Link sien

| | Type of mounting | Switching output | Electrical connection | Part no. | Type |
|---|---|---|---|---|---|
|  | Via lock nut | PNP | Plug M8, A-coded | **150387** | **SIEN-M8B-PS-S-L** |

**Connecting cables NEBA, straight**

| | Electrical connection 1, connector system | Electrical connection 2, connector system | Electrical connection 2, number of connections/cores | Cable length | Part no. | Type |
|---|---|---|---|---|---|---|
|  | M8x1, A-coded, to EN 61076-2-104 | Open end | 3 | 2.5 m | ★ **8078223** | **NEBA-M8G3-U-2.5-N-LE3** |
| | | | | 5 m | ★ **8078224** | **NEBA-M8G3-U-5-N-LE3** |

**Connecting cables NEBA, angled**

| | Electrical connection 1, connector system | Electrical connection 2, connector system | Electrical connection 2, number of connections/cores | Cable length | Part no. | Type |
|---|---|---|---|---|---|---|
|  | M8x1, A-coded, to EN 61076-2-104 | Open end | 3 | 2.5 m | ★ **8078230** | **NEBA-M8W3-U-2.5-N-LE3** |
| | | | | 5 m | ★ **8078231** | **NEBA-M8W3-U-5-N-LE3** |