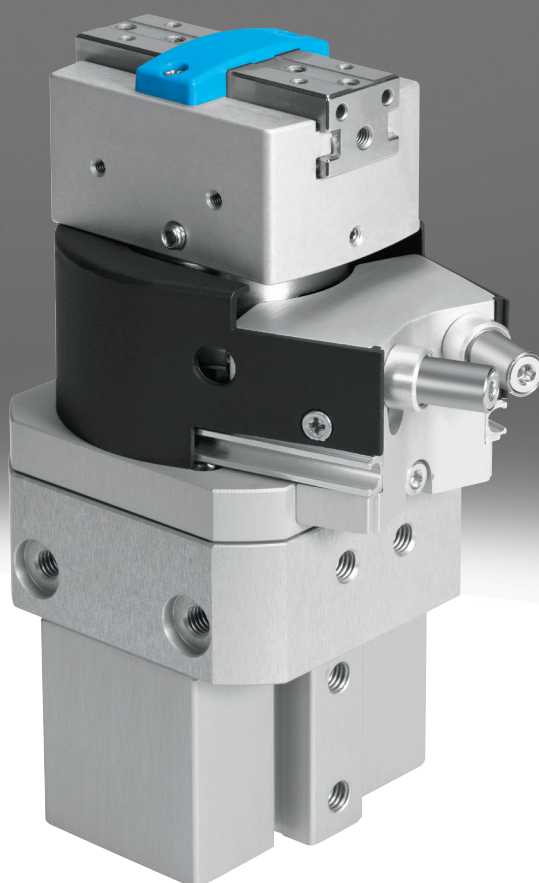


## Swivel/gripper unit HGDS

**FESTO**



## Characteristics

### At a glance

Link [hgds](#)

- A combination of a parallel gripper with T-slot guide and a semi-rotary drive on the basis of semi-rotary drive DSM
- Infinitely adjustable swivel angle (max. 210°)
- Compressed air connections and position sensing outside the swivel range
- High performance (torque, mass moment of inertia)
- All connections are accessible from one side
- Compact design and low weight

This product is not designed for the following application examples:

- Machining
- Aggressive media
- Grinding dust
- Welding spatter

### Diagrams

Link [hgds](#)



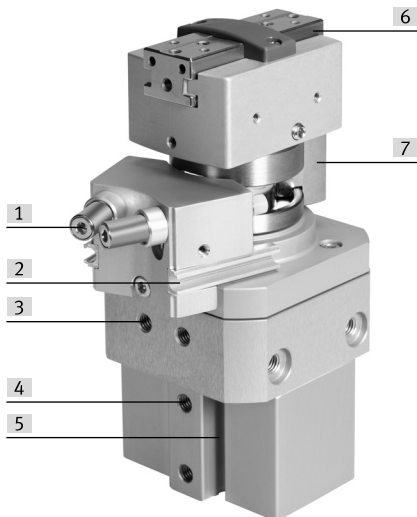
The diagrams shown in this document are also available online. These can be used to display precise values.

### Position sensing

[A] For proximity sensor

By using proximity switches, any position can be detected.

### Overview



[1] Three types of cushioning for swivel motion:

- Elastic cushioning components (P)
- Adjustable, elastic cushioning components with metal fixed stop (P1)
- Shock absorbers with metal fixed stop (YSRT)

[2] Slot for proximity switch for sensing the swivel position

[3] Supply port for swivel function

[4] Compressed air connection, gripping

[5] Slot for proximity switch for sensing the gripping position

[6] Gripper jaw with T-slot guide

[7] Adjustable stop cams for adjusting the swivel motion

## Type code

|      |                     |  |
|------|---------------------|--|
| 001  | Series              |  |
| HGDS | Swivel/gripper unit |  |
| 002  | Gripper version     |  |
| P    | Parallel gripper    |  |
| 003  | Size [mm]           |  |
| 12   | 12                  |  |
| 16   | 16                  |  |
| 20   | 20                  |  |

|      |                                                                 |  |
|------|-----------------------------------------------------------------|--|
| 004  | Cushioning                                                      |  |
| P    | Elastic cushioning rings/plates on both sides                   |  |
| P1   | Elastomer cushioning, adjustable on both sides, with fixed stop |  |
| YSRT | Linear shock absorber, self-adjusting at both ends              |  |
| 005  | Position sensing                                                |  |
| A    | For proximity sensor                                            |  |
| 006  | Generation                                                      |  |
| B    | Series B                                                        |  |

## Datasheet

| General technical data  |                                                                                                                                                                        |        |         |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------|
| Size                    | 12                                                                                                                                                                     | 16     | 20      |
| Stroke per gripper jaws | 2.5 mm                                                                                                                                                                 | 4.5 mm | 7 mm    |
| Design                  | Semi-rotary drive<br>With parallel gripper and gripper drive                                                                                                           |        |         |
| Mode of operation       | Double-acting                                                                                                                                                          |        |         |
| Pneumatic connection    | M5                                                                                                                                                                     |        |         |
| Type of mounting        | Either:<br>Via female thread and centring sleeve<br>Via through-hole and centring sleeve<br>Via dovetail slot                                                          |        |         |
| Cushioning              | Elastic cushioning rings/plates on both sides<br>Elastomer cushioning, adjustable on both sides, with fixed stop<br>Linear shock absorber, self-adjusting at both ends |        |         |
| Mounting position       | optional                                                                                                                                                               |        |         |
| Product weight          | 505 g                                                                                                                                                                  | 730 g  | 1,260 g |

| Technical data, swivelling                       |                                               |                                                             |                                                                    |                                               |                                                             |                                                                    |                                               |                                                             |                                                                    |
|--------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------|
| Size                                             | 12                                            |                                                             |                                                                    | 16                                            |                                                             |                                                                    | 20                                            |                                                             |                                                                    |
| Cushioning                                       | Elastic cushioning rings/ plates at both ends | Elastic cushioning rings/ pads at both ends with fixed stop | Shock absorber at both ends, self-adjusting, with metal fixed stop | Elastic cushioning rings/ plates at both ends | Elastic cushioning rings/ pads at both ends with fixed stop | Shock absorber at both ends, self-adjusting, with metal fixed stop | Elastic cushioning rings/ plates at both ends | Elastic cushioning rings/ pads at both ends with fixed stop | Shock absorber at both ends, self-adjusting, with metal fixed stop |
| Rotation angle adjustment range                  | 0 ... 210 deg                                 |                                                             |                                                                    |                                               |                                                             |                                                                    |                                               |                                                             |                                                                    |
| Theoretical torque at 0.6 MPa (6 bar, 87 psi)    | 0.85 Nm                                       |                                                             |                                                                    | 1.25 Nm                                       |                                                             |                                                                    | 2.5 Nm                                        |                                                             |                                                                    |
| Repetition accuracy of swivel angle              | 0.2 deg                                       | 0.02 deg                                                    |                                                                    | 0.2 deg                                       | 0.02 deg                                                    |                                                                    | 0.2 deg                                       | 0.02 deg                                                    |                                                                    |
| Max. swivel frequency at 0.6 MPa (6 bar, 87 psi) | 2 Hz                                          |                                                             | 1.5 Hz                                                             | 2 Hz                                          |                                                             | 1.5 Hz                                                             | 2 Hz                                          |                                                             | 1.5 Hz                                                             |
| Position detection, swivel drive                 | Via proximity switch                          |                                                             |                                                                    |                                               |                                                             |                                                                    |                                               |                                                             |                                                                    |

| Technical data, gripper                             |                                               |                                                             |                                                                    |                                               |                                                             |                                                                    |                                               |                                                             |                                                                    |
|-----------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------|
| Size                                                | 12                                            |                                                             |                                                                    | 16                                            |                                                             |                                                                    | 20                                            |                                                             |                                                                    |
| Cushioning                                          | Elastic cushioning rings/ plates at both ends | Elastic cushioning rings/ pads at both ends with fixed stop | Shock absorber at both ends, self-adjusting, with metal fixed stop | Elastic cushioning rings/ plates at both ends | Elastic cushioning rings/ pads at both ends with fixed stop | Shock absorber at both ends, self-adjusting, with metal fixed stop | Elastic cushioning rings/ plates at both ends | Elastic cushioning rings/ pads at both ends with fixed stop | Shock absorber at both ends, self-adjusting, with metal fixed stop |
| Gripper function                                    | Parallel                                      |                                                             |                                                                    |                                               |                                                             |                                                                    |                                               |                                                             |                                                                    |
| Number of gripper jaws                              | 2                                             |                                                             |                                                                    |                                               |                                                             |                                                                    |                                               |                                                             |                                                                    |
| Max. mass per external gripper finger <sup>1)</sup> | 30 g                                          |                                                             |                                                                    | 50 g                                          |                                                             |                                                                    | 100 g                                         |                                                             |                                                                    |
| Max. mass per external gripper finger, throttled    | 100 g                                         |                                                             | 150 g                                                              | 100 g                                         |                                                             | 200 g                                                              | 100 g                                         |                                                             | 250 g                                                              |
| Max. gripper jaw backlash Sz                        | 0.02 mm                                       |                                                             |                                                                    |                                               |                                                             |                                                                    |                                               |                                                             |                                                                    |
| Max. angular gripper jaw backlash ax, ay            | 0.1 deg                                       |                                                             |                                                                    |                                               |                                                             |                                                                    |                                               |                                                             |                                                                    |
| Repetition accuracy, gripper                        | 0.01 mm                                       |                                                             |                                                                    |                                               |                                                             |                                                                    | 0.015 mm                                      |                                                             |                                                                    |
| Max. operating frequency of gripper                 | 4 Hz                                          |                                                             |                                                                    |                                               |                                                             |                                                                    |                                               |                                                             |                                                                    |
| Position detection, gripper                         | Via proximity switch                          |                                                             |                                                                    |                                               |                                                             |                                                                    |                                               |                                                             |                                                                    |

1) Applies to unthrottled operation

## Datasheet

### Operating and environmental conditions

|                                              |                                                                                            |    |    |
|----------------------------------------------|--------------------------------------------------------------------------------------------|----|----|
| Size                                         | 12                                                                                         | 16 | 20 |
| Operating pressure                           | 3 ... 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 <sup>1)</sup>            | 5 ... 60°C                                                                                 |    |    |
| Corrosion resistance class CRC <sup>2)</sup> | 2 - Moderate corrosion stress                                                              |    |    |

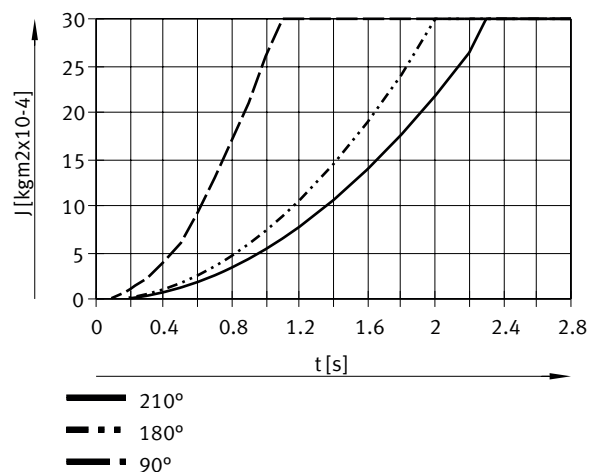
1) Note the application range of the proximity switches

2) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

### Materials

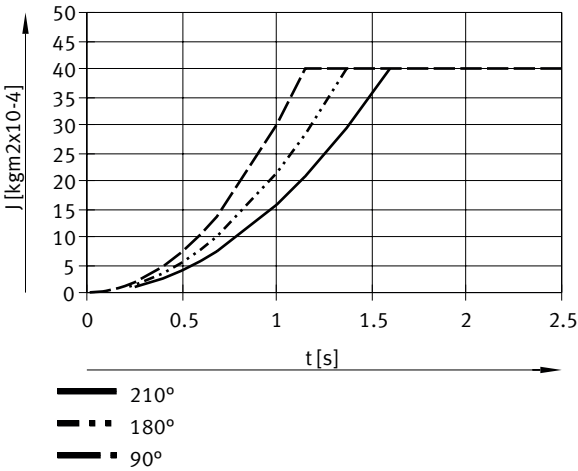
|                        |                            |    |    |
|------------------------|----------------------------|----|----|
| Size                   | 12                         | 16 | 20 |
| Material housing       | Wrought aluminium alloy    |    |    |
| Material cover         | Aluminium<br>POM           |    |    |
| Material gripper jaws  | High-alloy stainless steel |    |    |
| Material drive shaft   | Steel                      |    |    |
| Material seals         | NBR                        |    |    |
| Note on materials      | RoHS-compliant             |    |    |
| LABS (PWIS) conformity | VDMA24364-B2-L             |    |    |

### Mass moments of inertia J at 0.6 MPa (6 bar, 87 psi) as a function of swivel time t and the swivel angle – HGDS-PP-12-P-A-B

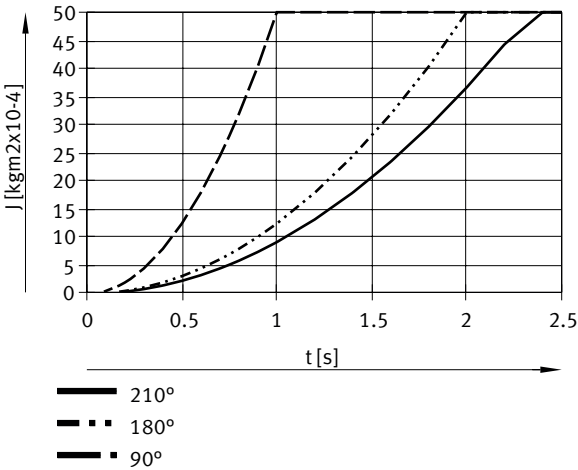


Datasheet

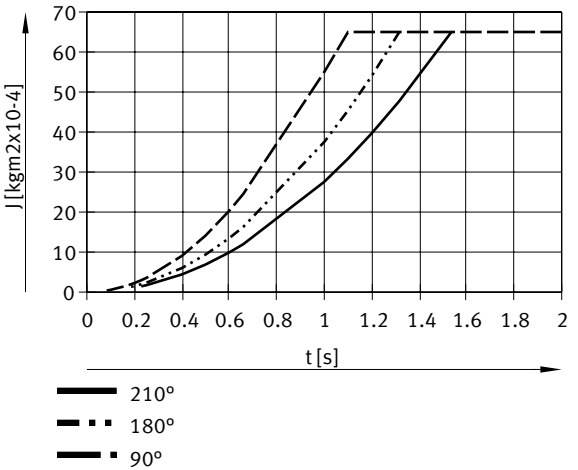
Mass moments of inertia J at 0.6 MPa (6 bar, 87 psi) as a function of swivel time t and the swivel angle – HGDS-PP-12-P1-A-B



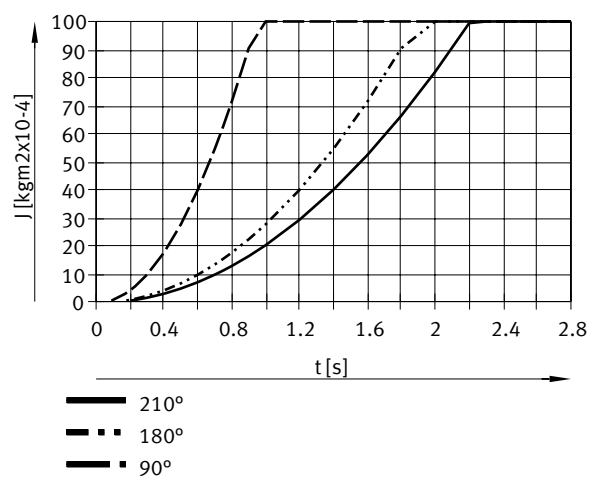
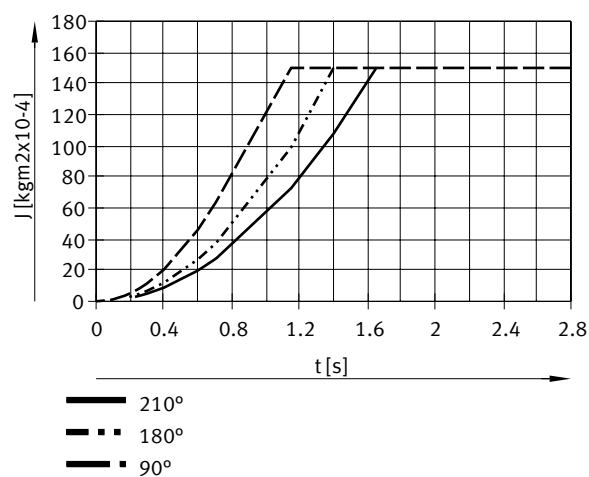
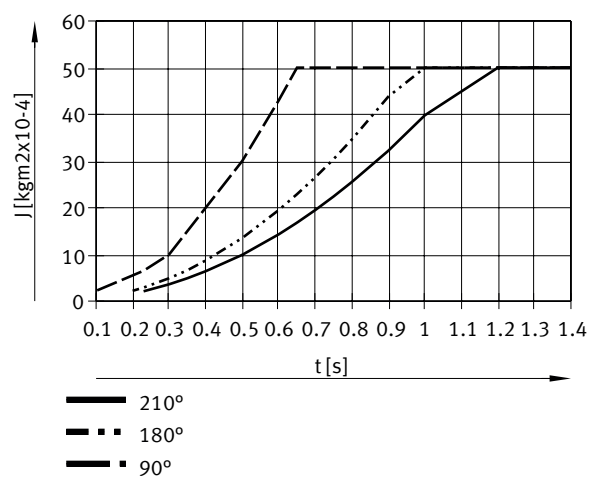
Mass moments of inertia J at 0.6 MPa (6 bar, 87 psi) as a function of the swivelling time t and the swivel angle – HGDS-PP-16-P-A-B



Mass moments of inertia J at 0.6 MPa (6 bar, 87 psi) as a function of the swivelling time t and the swivel angle – HGDS-PP-16-P1-A-B

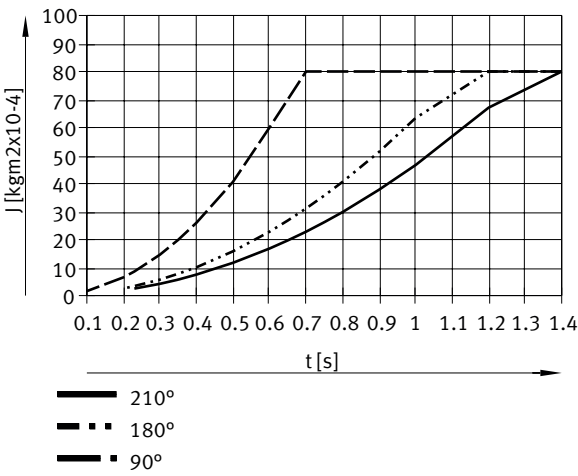


## Datasheet

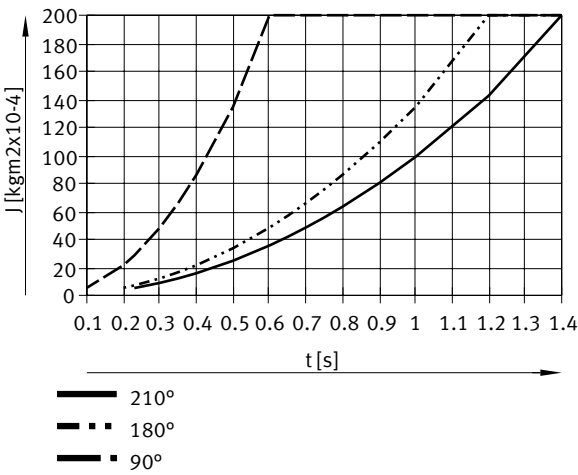
Mass moments of inertia  $J$  at 0.6 MPa (6 bar, 87 psi) as a function of swivel time  $t$  and the swivel angle – HGDS-PP-20-P-A-BMass moments of inertia  $J$  at 0.6 MPa (6 bar, 87 psi) as a function of swivel time and the swivel angle – HGDS-PP-20-P1-A-BMass moments of inertia  $J$  at 0.6 MPa (6 bar, 87 psi) as a function of swivel time  $t$  and the swivel angle – HGDS-PP-12-YSRT-A-B

Datasheet

Mass moments of inertia J at 0.6 MPa (6 bar, 87 psi) as a function of swivel time t and the swivel angle – HGDS-PP-16-YSRT-A-B

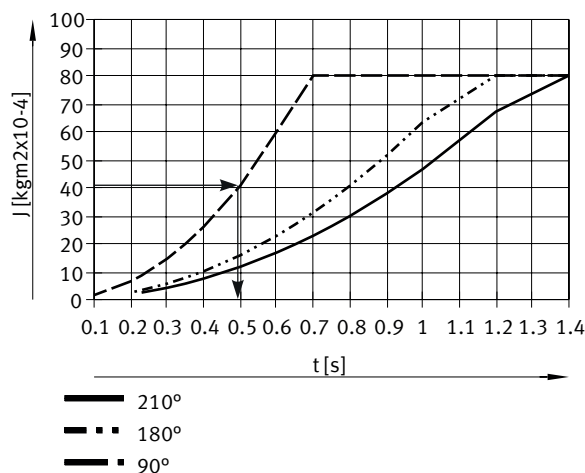


Mass moments of inertia J at 0.6 MPa (6 bar, 87 psi) as a function of the swivel time t and the swivel angle – HGDS-PP-20-YSRT-A-B



## Datasheet

### Dependence between operating pressure and swivelling time



Reducing the operating pressure reduces the gripping force.

To prevent the gripper from opening its gripper jaws when swivelling, the swivelling time must be increased by 15% per bar of operating pressure for the same mass moment of inertia.

Example:

Where:

- HGDS-PP-16-YSRT-A-B
- Operating pressure 0.6 MPa (6 bar, 87 psi)
- Swivel angle 90°
- $J = 40 \text{ kgm}^2 \times 10^{-4}$

To be determined:

- Swivelling time at an operating pressure of 4 bar

Swivelling time at 6 bar = 0.5 s (see diagram on the left)

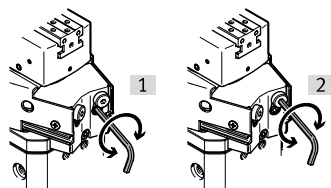
Swivelling time at 4 bar:

$$t = 0.5 + 2 \times 15\% = 0.65 \text{ s}$$

Cushioning time of the shock absorber = 0.1 s

This results in a total swivelling time of  $t_{tot.} = 0.65 \text{ s} + 0.1 \text{ s} = 0.75 \text{ s}$

### Precision adjustment of the swivel angle



[1] Loosen the counter screw underneath the cushioning component.

[2] Adjust the cushioning component as required. Observe the adjustment range.

The swivel angle can be roughly adjusted by moving the stop cams.

The fine adjustment is identical for all cushioning variants (P, P1 and YSRT).

The swivel angle can be precisely adjusted by unscrewing or screwing in the cushioning component.

Swivelling to a metal stop enables high repetition accuracy.

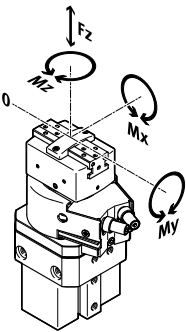
| Size                            | 12                                           |                                                            |                                                                    | 16                                           |                                                            |                                                                    | 20                                           |                                                            |                                                                    |
|---------------------------------|----------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------|
| Cushioning                      | Elastic cushioning rings/plates at both ends | Elastic cushioning rings/pads at both ends with fixed stop | Shock absorber at both ends, self-adjusting, with metal fixed stop | Elastic cushioning rings/plates at both ends | Elastic cushioning rings/pads at both ends with fixed stop | Shock absorber at both ends, self-adjusting, with metal fixed stop | Elastic cushioning rings/plates at both ends | Elastic cushioning rings/pads at both ends with fixed stop | Shock absorber at both ends, self-adjusting, with metal fixed stop |
| Fine adjustment of swivel drive | -6 deg                                       |                                                            | -2.5 deg                                                           | -6 deg                                       |                                                            | -2.5 deg                                                           | -6 deg                                       |                                                            | -2.5 deg                                                           |
| Cushioning adjustment range     | 2 mm                                         |                                                            | 1 mm                                                               | 2.6 mm                                       |                                                            | 1.3 mm                                                             | 2.8 mm                                       |                                                            | 1.4 mm                                                             |

### Measured gripping force with a lever arm of 25 mm

| Size                                                            | 12   | 16    | 20    |
|-----------------------------------------------------------------|------|-------|-------|
| Total gripping force, closing, 0.6 MPa (6 bar, 87 psi)          | 74 N | 102 N | 168 N |
| Total gripping force, opening, 0.6 MPa (6 bar, 87 psi)          | 84 N | 116 N | 192 N |
| Gripper force per gripper jaw, closing, 0.6 MPa (6 bar, 87 psi) | 37 N | 51 N  | 84 N  |
| Gripper force per gripper jaw, opening, 0.6 MPa (6 bar, 87 psi) | 42 N | 58 N  | 96 N  |

Datasheet

Characteristic load values on the gripper jaws

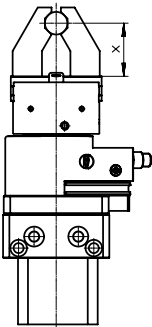


The indicated permissible forces and torques refer to one gripper jaw. They include the lever arm, additional applied loads created by the workpiece or by external gripper fingers and acceleration forces occurring during the movement. The zero coordinate line (guide of the gripper jaws) must be taken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

Collisions of the slides must be avoided. In the event of a collision, the slides can get damaged.  
More information → User documentation

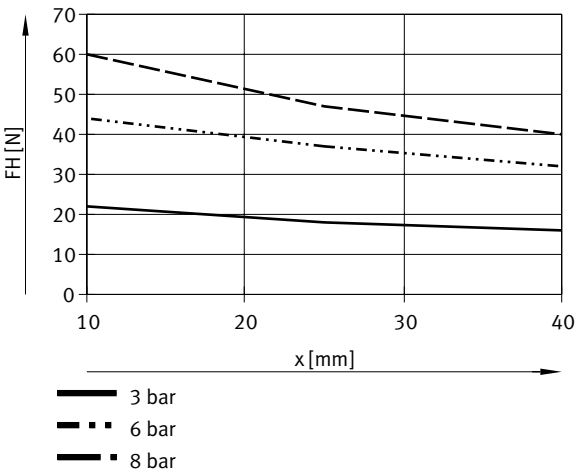
| Size                                   | 12   | 16    | 20    |
|----------------------------------------|------|-------|-------|
| Max. force on gripper jaw $F_z$ static | 90 N | 150 N | 250 N |
| Max. torque at gripper $M_x$ static    | 6 Nm | 11 Nm | 22 Nm |
| Max. torque at gripper $M_y$ static    | 6 Nm | 11 Nm | 22 Nm |
| Max. torque at gripper $M_z$ static    | 6 Nm | 11 Nm | 22 Nm |

Gripping force FH per gripper jaw as a function of operating pressure p



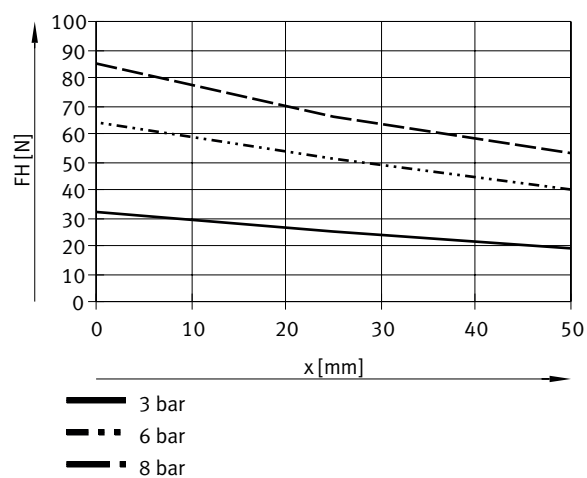
The gripping forces as a function of operating pressure and lever arm can be determined using the following graphs.  
The gripping torque is not constant across the opening angle.

Gripping force FH per gripper jaw as a function of operating pressure p (closing) – HGDS-12

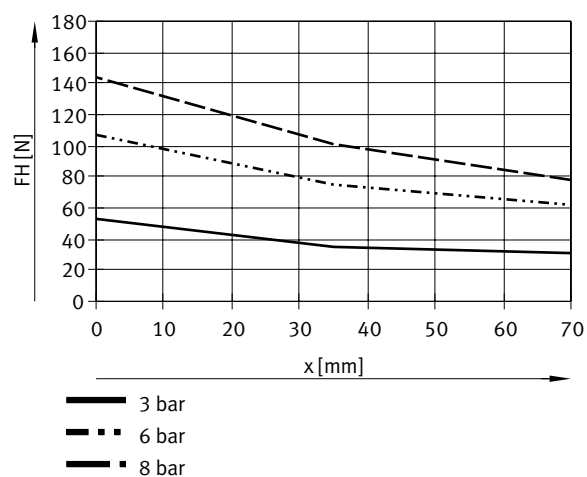


## Datasheet

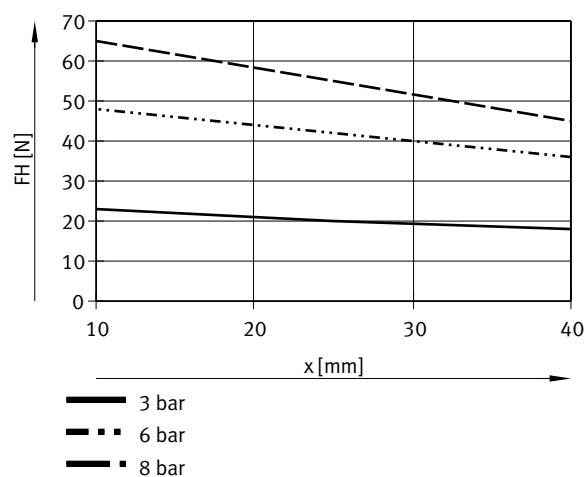
Gripping force FH per gripper jaw as a function of operating pressure p (closing) – HGDS-16



Gripping force FH per gripper jaw as a function of operating pressure p (closing) – HGDS-20

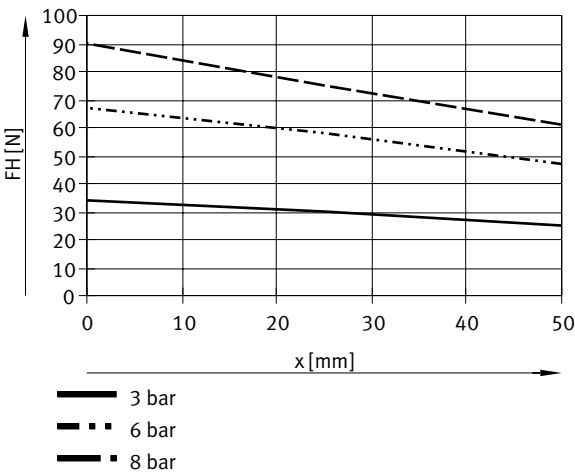


Gripping force FH per gripper jaw as a function of operating pressure p (opening) – HGDS-12

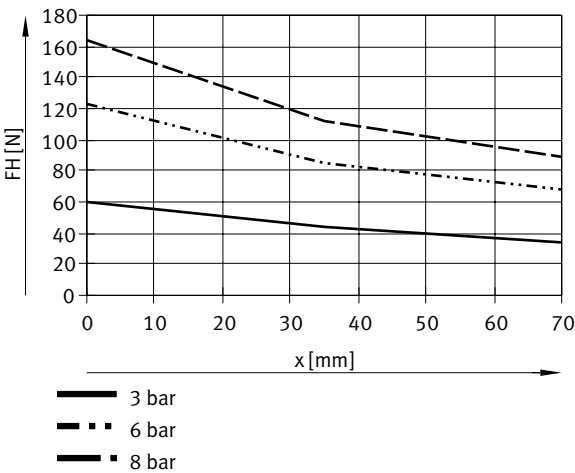


Datasheet

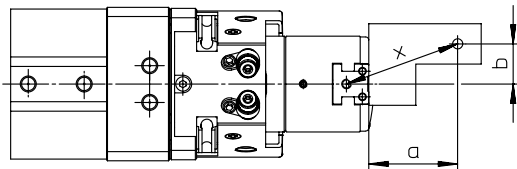
Gripping force FH per gripper jaw as a function of operating pressure p (opening) – HGDS-16



Gripping force FH per gripper jaw as a function of operating pressure p (opening) – HGDS-20



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



Datasheet

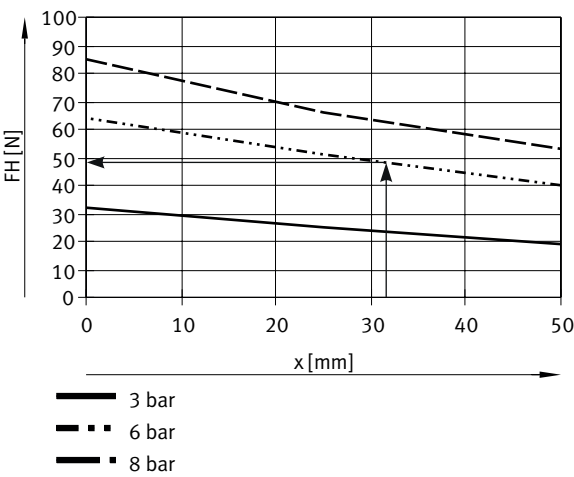
Gripping force FH per gripper jaw at 0.6 MPa (6 bar, 87 psi) as a function of lever arm x and eccentricity a and b

$x = \sqrt{a^2 + b^2} = \sqrt{25^2 + 20^2} = 32 \text{ mm}$

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

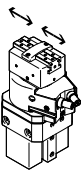
Calculation example:  
Where:  
Distance a = 25 mm  
Distance b = 20 mm  
To be determined:  
The gripping force at 0.6 MPa (6 bar, 87 psi), with an HGDS-16, used as an external gripper.

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 = 47 N for the gripping force.

Opening and closing times



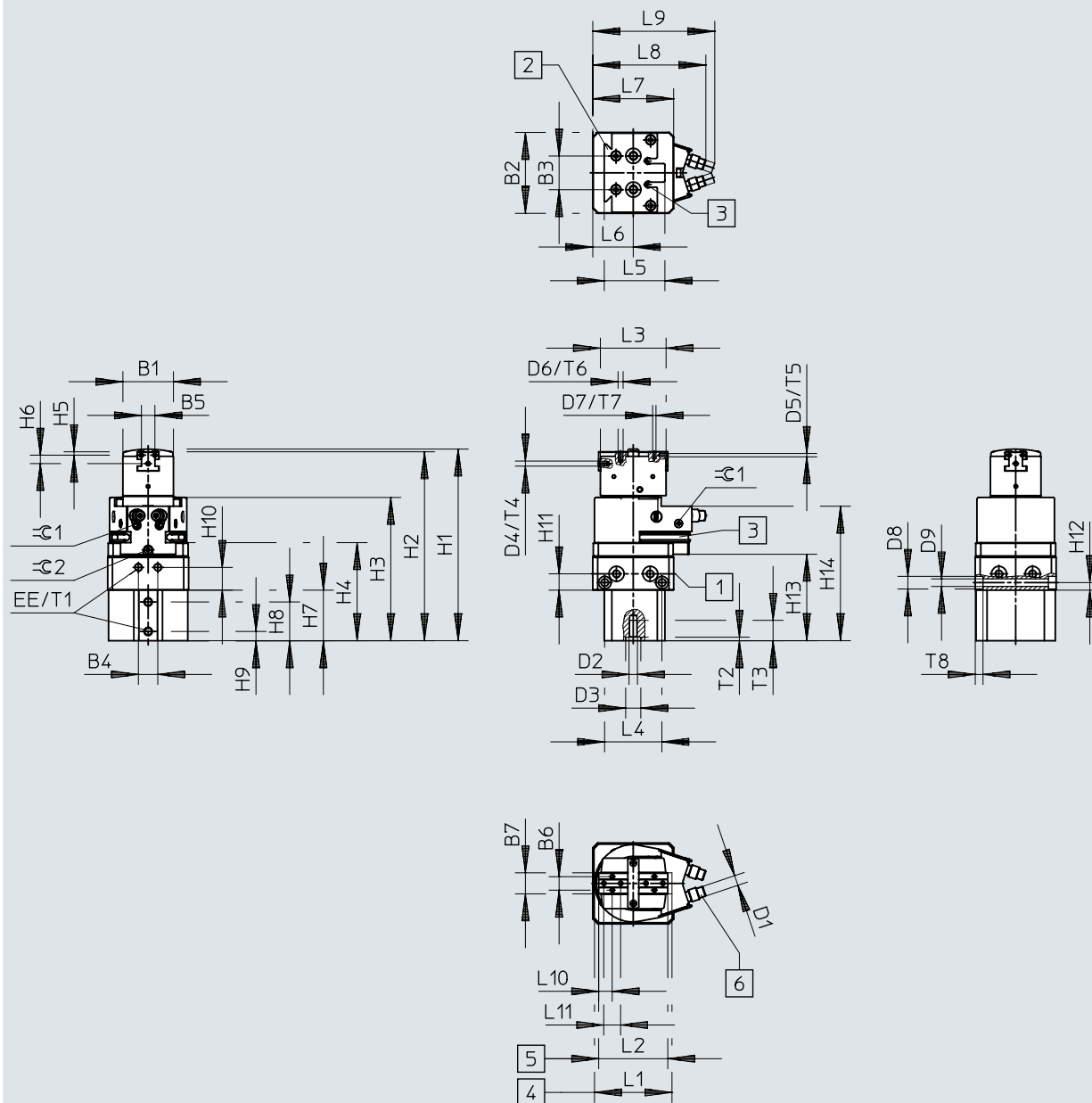
The indicated opening and closing times were measured at room temperature at an operating pressure of 0.6 MPa (6 bar, 87 psi) with a horizontally mounted gripper without additional gripper fingers.  
The grippers must be throttled for masses that are higher than the specified unthrottled maximum mass per external gripper finger. Opening and closing times must then be adjusted accordingly.

| Size                                         | 12    | 16 | 20    |
|----------------------------------------------|-------|----|-------|
| Min. opening time at 0.6 MPa (6 bar, 87 psi) | 40 ms |    | 60 ms |
| Min. closing time at 0.6 MPa (6 bar, 87 psi) | 60 ms |    | 70 ms |

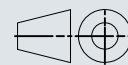
# Dimensions

## Dimensions – Swivel/gripper units HGDS

Download CAD data [www.festo.com](http://www.festo.com)



- [1] Cross-section through mounting holes
- [2] For dovetail connection with HAVB-3
- [3] Sensor slot for SME-/SMT-10
- [4] Gripper jaws open
- [5] Gripper jaws closed
- [6] Cushioning



## Dimensions

|           | B1 | B2<br>±0,03 | B3<br>±0,02 | B4   | B5<br>±0,02 | B6<br>±0,02 | B7<br>±0,1 | D1     | D2 | D3<br>Ø<br>H7 | D4 |
|-----------|----|-------------|-------------|------|-------------|-------------|------------|--------|----|---------------|----|
| HGDS-B-12 | 30 | 48          | 20          | 11,5 | 8           | 8           | 12,5       | M6x0,5 | M5 | 9             | M3 |
| HGDS-B-16 | 34 | 55          | 30          | 13   | 10          | 10          | 16         | M8x1   | M5 | 9             | M3 |
| HGDS-B-20 | 40 | 67,4        | 30          | 16   | 12          | 12          | 20         | M10x1  | M5 | 9             | M4 |

|           | D5<br>Ø<br>H8 | D6 | D7<br>Ø<br>H8 | D8<br>Ø<br>H13 | D9<br>Ø<br>H13 | EE | H1<br>+1/-0,6 | H2<br>+0,8/-0,4 | H3<br>+1,3/-0,2 | H4<br>+0,8/-0,2 | H5<br>±0,02 |
|-----------|---------------|----|---------------|----------------|----------------|----|---------------|-----------------|-----------------|-----------------|-------------|
| HGDS-B-12 | 2             | M3 | 2             | 7,5            | 4,5            | M5 | 113,4         | 111,9           | 85              | 58,2            | 2           |
| HGDS-B-16 | 2             | M3 | 2             | –              | 4,2            | M5 | 121,7         | 120,1           | 92,3            | 64,3            | 3           |
| HGDS-B-20 | 2,5           | M4 | 2,5           | –              | 4,2            | M5 | 154,8         | 152,8           | 112,3           | 81,7            | 3           |

|           | H6<br>±0,12 | H7<br>±0,1 | H8<br>±0,1 | H9  | H10  | H11<br>-0,1 | H12 | H13<br>+1/-0,2 | H14<br>+1/-0,2 | L1<br>±0,5 | L2<br>±0,5 |
|-----------|-------------|------------|------------|-----|------|-------------|-----|----------------|----------------|------------|------------|
| HGDS-B-12 | 5           | 30         | 23         | 7,5 | 13,5 | 9,7         | 4,5 | 51,3           | 79,8           | 46         | 41         |
| HGDS-B-16 | 5           | 34,5       | 26         | 6,3 | 14   | 8           | –   | 58,2           | 86,7           | 58         | 49         |
| HGDS-B-20 | 7           | 43         | 34,6       | 5,3 | 19   | 9           | –   | 73,1           | 105,6          | 78         | 64         |

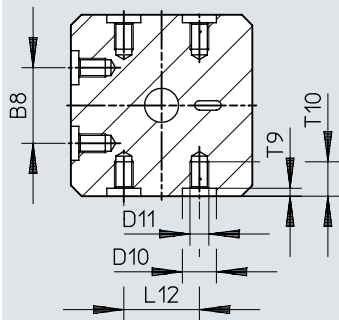
|           | L3<br>±0,5 | L4<br>±0,1 | L5   | L6<br>±0,05 | L7<br>±0,03 | L8<br>±1<br>P | L9<br>±1 |      | L10<br>±0,02 | L11 |
|-----------|------------|------------|------|-------------|-------------|---------------|----------|------|--------------|-----|
|           |            |            |      |             |             |               | P1       | YSRT |              |     |
| HGDS-B-12 | 39         | 34         | 36   | 24          | 48          | 67            | 72,4     | 72,4 | 8            | 10  |
| HGDS-B-16 | 47         | –          | 40,5 | 27,5        | 55          | 80,2          | 81,6     | 81,6 | 8            | 10  |
| HGDS-B-20 | 61         | –          | 40,5 | 34          | 67,4        | 93,3          | 97       | 97   | 12           | 14  |

|           | T1<br>min. | T2<br>+0,1 | T3   | T4<br>±0,4 | T5<br>max. | T6<br>min. | T7<br>max. | T8  | ≈C 1 | ≈C 2 |
|-----------|------------|------------|------|------------|------------|------------|------------|-----|------|------|
| HGDS-B-12 | 5,3        | 2,1        | 12,1 | 6          | 5          | 3,5        | 6          | 4,6 | 2    | 2    |
| HGDS-B-16 | 5          | 2,1        | 12,1 | 6          | 6          | 4,5        | 6          | –   | 2,5  | 2,5  |
| HGDS-B-20 | 6          | 2,1        | 12,1 | 9          | 8          | 6          | 7,5        | –   | 3    | 2,5  |

Dimensions

Dimensions – Swivel/gripper units HGDS-12 – cut at [1] [Download CAD data](#) [www.festo.com](http://www.festo.com)



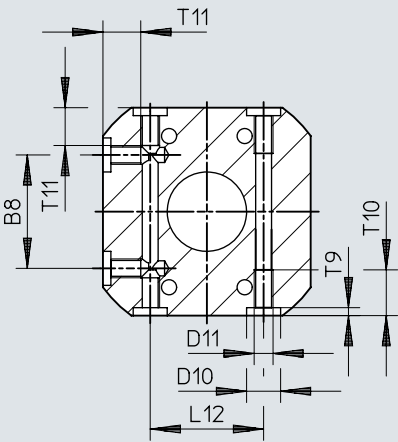
|           | B8 <sup>1)</sup> | D10<br>∅<br>H7 | D11 | L12 <sup>1)</sup> | T9<br>+0,1 | T10 |
|-----------|------------------|----------------|-----|-------------------|------------|-----|
| HGDS-B-12 | 20               | 9              | M5  | 20                | 2,1        | 10  |

1) Tolerance for centring hole ∅9 H7, tolerance for thread M5 ±0.1 mm

Dimensions

Dimensions – Swivel/gripper units HGDS-16 – cut at [1]

Download CAD data [www.festo.com](http://www.festo.com)

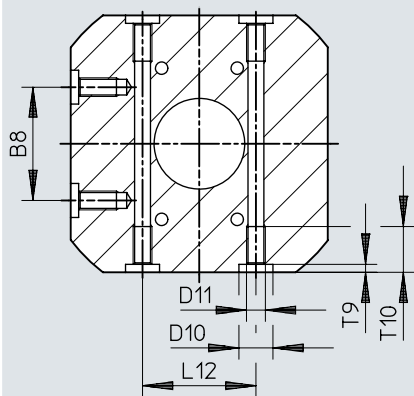


|           | B8 <sup>1)</sup> | D10<br>Ø<br>H7 | D11 | L12 <sup>1)</sup> | T9<br>+0,1 | T10  | T11 |
|-----------|------------------|----------------|-----|-------------------|------------|------|-----|
| HGDS-B-16 | 30               | 9              | M5  | 30                | 2,1        | 12,1 | 10  |

1) Tolerance for centring hole Ø9 H7, tolerance for thread M5 ±0.1 mm

Dimensions

Dimensions – Swivel/gripper units HGDS-20 – cut at [1] Download CAD data [www.festo.com](http://www.festo.com)

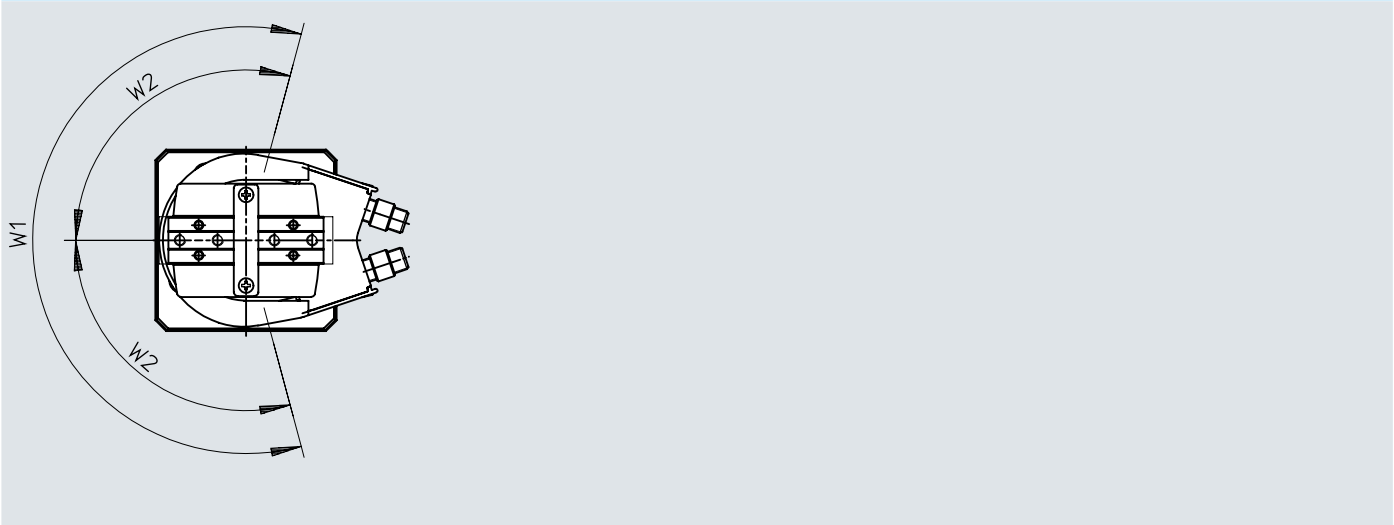


|           | B8 <sup>1)</sup> | D10<br>Ø<br>H7 | D11 | L12 <sup>1)</sup> | T9<br>+0,1 | T10  |
|-----------|------------------|----------------|-----|-------------------|------------|------|
| HGDS-B-20 | 30               | 9              | M5  | 30                | 2,1        | 12,1 |

1) Tolerance for centring hole Ø9 H7, tolerance for thread M5 ±0.1 mm

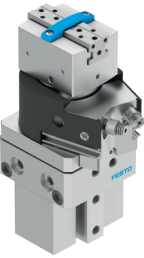
Dimensions

Dimensions – Swivel/gripper units HGDS – swivel angle Download CAD data [www.festo.com](http://www.festo.com)

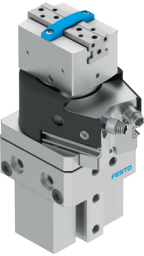


|           | W1   | W2   |
|-----------|------|------|
| HGDS-B-12 | 210° | 105° |
| HGDS-B-16 | 210° | 105° |
| HGDS-B-20 | 210° | 105° |

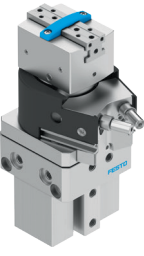
## Ordering data

| With cushioning P                                                                |                                               |                    |                         |          |                  |
|----------------------------------------------------------------------------------|-----------------------------------------------|--------------------|-------------------------|----------|------------------|
|                                                                                  | Cushioning                                    | Size <sup>1)</sup> | Stroke per gripper jaws | Part no. | Type             |
|  | Elastic cushioning rings/plates on both sides | 12                 | 2.5 mm                  | 1187955  | HGDS-PP-12-P-A-B |
|                                                                                  |                                               | 16                 | 4.5 mm                  | 1187958  | HGDS-PP-16-P-A-B |
|                                                                                  |                                               | 20                 | 7 mm                    | 1187961  | HGDS-PP-20-P-A-B |

1) Two centring sleeves are included in the scope of delivery of the swivel/gripper unit.

| With cushioning P1                                                                |                                                                 |                    |                         |          |                   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------|--------------------|-------------------------|----------|-------------------|
|                                                                                   | Cushioning                                                      | Size <sup>1)</sup> | Stroke per gripper jaws | Part no. | Type              |
|  | Elastomer cushioning, adjustable on both sides, with fixed stop | 12                 | 2.5 mm                  | 1187956  | HGDS-PP-12-P1-A-B |
|                                                                                   |                                                                 | 16                 | 4.5 mm                  | 1187959  | HGDS-PP-16-P1-A-B |
|                                                                                   |                                                                 | 20                 | 7 mm                    | 1187962  | HGDS-PP-20-P1-A-B |

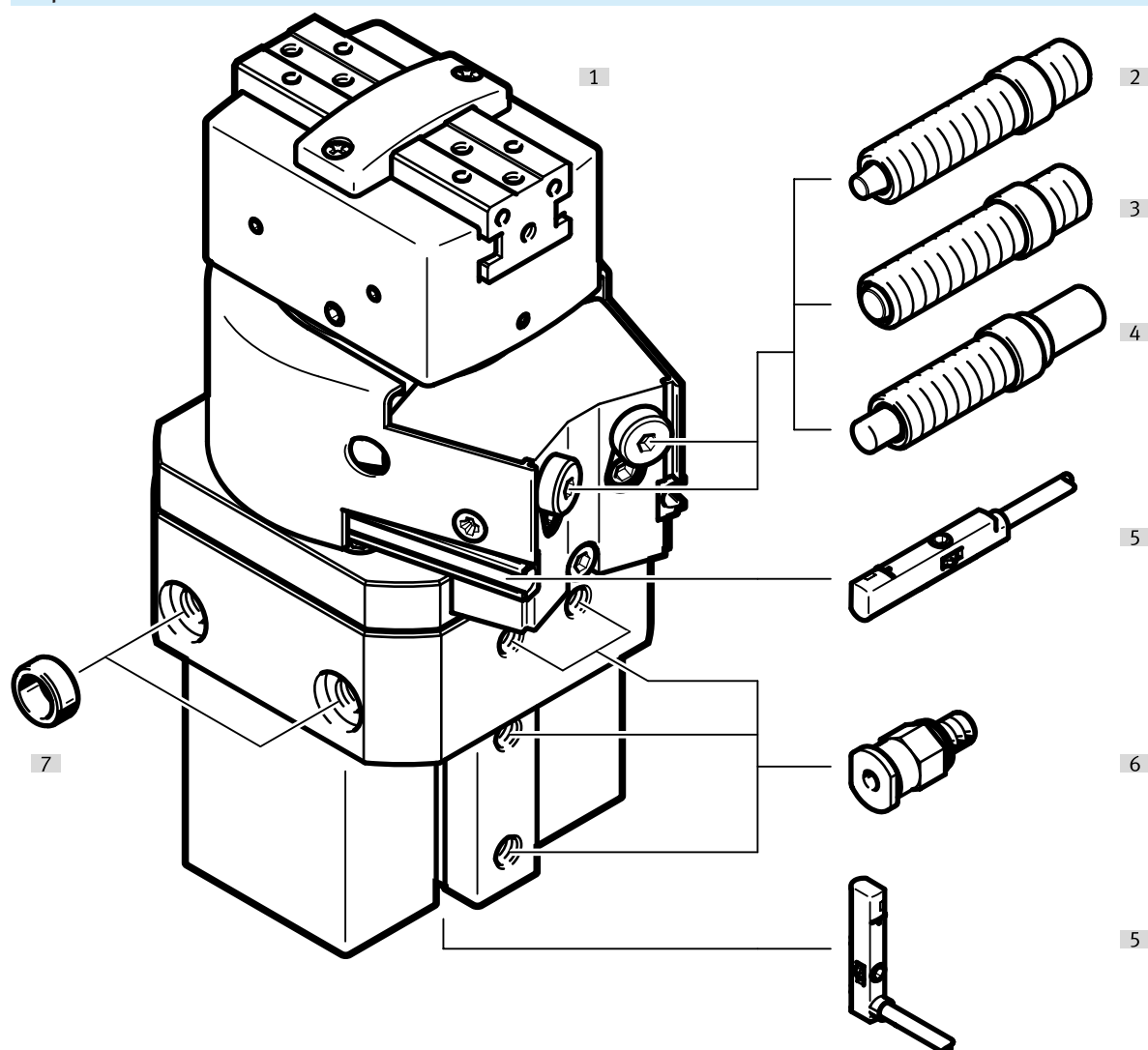
1) Two centring sleeves are included in the scope of delivery of the swivel/gripper unit.

| With cushioning YSRT                                                               |                                                    |                    |                         |          |                     |
|------------------------------------------------------------------------------------|----------------------------------------------------|--------------------|-------------------------|----------|---------------------|
|                                                                                    | Cushioning                                         | Size <sup>1)</sup> | Stroke per gripper jaws | Part no. | Type                |
|  | Linear shock absorber, self-adjusting at both ends | 12                 | 2.5 mm                  | 1187957  | HGDS-PP-12-YSRT-A-B |
|                                                                                    |                                                    | 16                 | 4.5 mm                  | 1187960  | HGDS-PP-16-YSRT-A-B |
|                                                                                    |                                                    | 20                 | 7 mm                    | 1187963  | HGDS-PP-20-YSRT-A-B |

1) Two centring sleeves are included in the scope of delivery of the swivel/gripper unit.

## Peripherals

### Peripherals overview



| Accessories                     |                                                                                                                 |  | → Link               |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------|--|----------------------|
| Type/order code                 | Description                                                                                                     |  |                      |
| [1] Swivel/gripper unit HGDS    | A combination of a parallel gripper with T-slot guide and a swivel module on the basis of the swivel module DSM |  | <a href="#">hgds</a> |
| [2] Cushioning P                | Elastic cushioning components on both sides                                                                     |  | <a href="#">hgds</a> |
| [3] Cushioning P1               | Elastic cushioning components on both sides, adjustable, with metal fixed stop                                  |  | <a href="#">hgds</a> |
| [4] Cushioning YSRT             | Shock absorber on both sides, self-adjusting, with metal fixed stop                                             |  | <a href="#">hgds</a> |
| [5] Proximity switch SME/SMT-10 | For sensing the gripping and swivel position                                                                    |  | <a href="#">22</a>   |
| [6] Push-in fitting QS          | For connecting tubing with standard O.D.                                                                        |  | <a href="#">qs</a>   |
| [7] Centring sleeve ZBH         | For centring the gripper while mounting (2 are included in the scope of delivery)                               |  | <a href="#">22</a>   |
| [8] Adapter kit HMSV            | Drive/gripper connections                                                                                       |  | <a href="#">hmsv</a> |

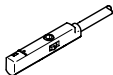
## Accessories

## Centring sleeve ZBH-9

|                                                                                  | Description          | Material sleeve | Size of pack | Product weight | Part no.       | Type           |
|----------------------------------------------------------------------------------|----------------------|-----------------|--------------|----------------|----------------|----------------|
|  | For sizes 12, 16, 20 | Steel           | 10           | 2 g            | <b>8137184</b> | <b>ZBH-9-B</b> |

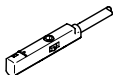
## Proximity switch SMT-10M for round slot, magneto-resistive

Link [smt](#)

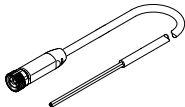
|                                                                                  | Type of mounting                                 | Switching output       | Electrical connection | Cable length | Part no.      | Type                              |
|----------------------------------------------------------------------------------|--------------------------------------------------|------------------------|-----------------------|--------------|---------------|-----------------------------------|
|  | Screw-clamped, Insertable in the slot from above | 3-wire PNP N/O contact | Open end              | 2.5 m        | <b>551374</b> | <b>SMT-10M-PS-24V-E-2,5-Q-OE</b>  |
|                                                                                  |                                                  |                        |                       |              | <b>551373</b> | <b>SMT-10M-PS-24V-E-2,5-L-OE</b>  |
|                                                                                  |                                                  | Plug M8, A-coded       |                       | 0.3 m        | <b>551375</b> | <b>SMT-10M-PS-24V-E-0,3-L-M8D</b> |
|                                                                                  |                                                  |                        |                       |              | <b>551376</b> | <b>SMT-10M-PS-24V-E-0,3-Q-M8D</b> |

## Proximity switch SME-10M for round slot, magnetic reed

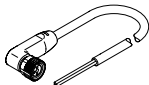
Link [sme](#)

|                                                                                  | Type of mounting                                 | Switching output       | Electrical connection | Cable length | Part no.      | Type                              |
|----------------------------------------------------------------------------------|--------------------------------------------------|------------------------|-----------------------|--------------|---------------|-----------------------------------|
|  | Screw-clamped, Insertable in the slot from above | 3-wire N/O contact     | Open end              | 2.5 m        | <b>551365</b> | <b>SME-10M-DS-24V-E-2,5-L-OE</b>  |
|                                                                                  |                                                  |                        | Plug M8, A-coded      | 0.3 m        | <b>551367</b> | <b>SME-10M-DS-24V-E-0,3-L-M8D</b> |
|                                                                                  |                                                  | 2-wire PNP N/O contact | Open end              | 2.5 m        | <b>551369</b> | <b>SME-10M-ZS-24V-E-2,5-L-OE</b>  |

## 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        | <b>8078223</b> | <b>NEBA-M8G3-U-2.5-N-LE3</b> |
|                                                                                    |                                           |                                           |                                                      | 5 m          | <b>8078224</b> | <b>NEBA-M8G3-U-5-N-LE3</b>   |

## 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        | <b>8078230</b> | <b>NEBA-M8W3-U-2.5-N-LE3</b> |
|                                                                                    |                                           |                                           |                                                      | 5 m          | <b>8078231</b> | <b>NEBA-M8W3-U-5-N-LE3</b>   |