

## Parallel gripper DHPS

**FESTO**



## Characteristics

### At a glance

[Link](#) [dhps](#)

General information:

- Resilient and precise T-slot guidance of the gripper jaws
- Oval piston for high gripping forces
- High gripping forces with compact dimensions
- Gripper jaw centring options
- Max. repetition accuracy
- Gripping force backup
- Internal fixed flow control
- Wide range of adaptation options on the drives

Sensors:

- Adaptable position sensor for small gripper sizes
- Integrated proximity switches for medium and large gripper sizes

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 designed for the following or similar application examples:

- Machining
- Aggressive media
- Grinding dust
- Welding spatter

### 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](#) [dhps](#)



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.

## Characteristics

### Gripping force backup

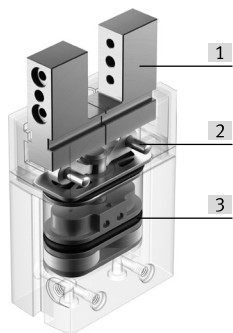
[NC] Closing

Closed by spring force in depressurised state

[NO] Opening

Opened by spring force in depressurised state

### Overview



[1] Gripper jaw

[2] Reversing lever

[3] Piston with magnet

Type code

|      |                  |  |
|------|------------------|--|
| 001  | Series           |  |
| DHPS | Parallel gripper |  |
| 002  | Size [mm]        |  |
| 6    | 6                |  |
| 10   | 10               |  |
| 16   | 16               |  |
| 20   | 20               |  |
| 25   | 25               |  |
| 35   | 35               |  |

|     |                       |  |
|-----|-----------------------|--|
| 003 | Position sensing      |  |
| A   | For proximity sensor  |  |
| 004 | Gripping force backup |  |
|     | None                  |  |
| NC  | Closing               |  |
| NO  | Opening               |  |

## Datasheet

| General technical data                              |                                                                                          |                            |       |        |        |         |
|-----------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------|-------|--------|--------|---------|
| Size                                                | 6                                                                                        | 10                         | 16    | 20     | 25     | 35      |
| Stroke per gripper jaws                             | 2 mm                                                                                     | 3 mm                       | 5 mm  | 6.5 mm | 7.5 mm | 12.5 mm |
| Design                                              | Lever<br>Force pilot operated motion sequence                                            |                            |       |        |        |         |
| Mode of operation                                   | Double-acting                                                                            |                            |       |        |        |         |
| Gripping force backup                               | None                                                                                     | None<br>Closing<br>Opening |       |        |        |         |
| Gripper function                                    | Parallel                                                                                 |                            |       |        |        |         |
| Guide                                               | Plain-bearing guide                                                                      |                            |       |        |        |         |
| Number of gripper jaws                              | 2                                                                                        |                            |       |        |        |         |
| Max. mass per external gripper finger <sup>1)</sup> | 10 g                                                                                     | 60 g                       | 150 g | 250 g  | 350 g  | 450 g   |
| Pneumatic connection                                | M3                                                                                       |                            |       | M5     | G1/8   |         |
| Repetition accuracy, gripper <sup>2)</sup>          | 0.02 mm                                                                                  |                            |       |        |        |         |
| Max. replacement accuracy                           | 0.2 mm                                                                                   |                            |       |        |        |         |
| Max. operating frequency of gripper                 | 4 Hz                                                                                     |                            | 3 Hz  |        | 2 Hz   |         |
| Rotationally symmetrical                            | 0.2 mm                                                                                   |                            |       |        |        |         |
| Position detection                                  | Via Hall sensor                                                                          | Via proximity switch       |       |        |        |         |
| Type of mounting                                    | Either:<br>Via female thread and centring sleeve<br>Via through-hole and centring sleeve |                            |       |        |        |         |
| 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                                         | 6                                                                                          | 10   | 16   | 20     | 25     | 35      |
| Stroke per gripper jaws                      | 2 mm                                                                                       | 3 mm | 5 mm | 6.5 mm | 7.5 mm | 12.5 mm |
| 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> | 1 - Low corrosion stress                                                                   |      |      |        |        |         |
| Lubrication interval for guide components    | 10 MioCyc                                                                                  |      |      |        |        |         |

1) Note the operating range of the proximity switches

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

| Operating pressure – DHPS-6 ... 16 |                 |    |                 |         |                 |                 |         |
|------------------------------------|-----------------|----|-----------------|---------|-----------------|-----------------|---------|
| Size                               | 6               | 10 | 16              |         |                 |                 |         |
| Gripping force backup              | None            |    | Closing         | Opening | None            | Closing         | Opening |
| Operating pressure                 | 0.2 ... 0.8 MPa |    | 0.4 ... 0.8 MPa |         | 0.2 ... 0.8 MPa | 0.4 ... 0.8 MPa |         |
| Operating pressure                 | 29 ... 116 psi  |    | 58 ... 116 psi  |         | 29 ... 116 psi  | 58 ... 116 psi  |         |
| Operating pressure                 | 2 ... 8 bar     |    | 4 ... 8 bar     |         | 2 ... 8 bar     | 4 ... 8 bar     |         |

| Operating pressure – DHPS-20 ... 35 |                 |                 |         |                 |                 |         |                 |                 |         |
|-------------------------------------|-----------------|-----------------|---------|-----------------|-----------------|---------|-----------------|-----------------|---------|
| Size                                | 20              |                 |         | 25              |                 |         | 35              |                 |         |
| Gripping force backup               | None            | Closing         | Opening | None            | Closing         | Opening | None            | Closing         | Opening |
| Operating pressure                  | 0.2 ... 0.8 MPa | 0.4 ... 0.8 MPa |         | 0.2 ... 0.8 MPa | 0.4 ... 0.8 MPa |         | 0.2 ... 0.8 MPa | 0.4 ... 0.8 MPa |         |
| Operating pressure                  | 29 ... 116 psi  | 58 ... 116 psi  |         | 29 ... 116 psi  | 58 ... 116 psi  |         | 29 ... 116 psi  | 58 ... 116 psi  |         |
| Operating pressure                  | 2 ... 8 bar     | 4 ... 8 bar     |         | 2 ... 8 bar     | 4 ... 8 bar     |         | 2 ... 8 bar     | 4 ... 8 bar     |         |

| Weights – DHPS-6 ... 16 |      |      |         |         |       |         |
|-------------------------|------|------|---------|---------|-------|---------|
| Size                    | 6    | 10   | 16      |         |       |         |
| Gripping force backup   | None |      | Closing | Opening | None  | Closing |
| Product weight          | 19 g | 67 g | 68 g    |         | 184 g | 188 g   |

# Datasheet

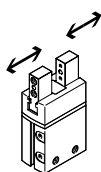
## Weights – DHPS-20 ... 35

| Size                  | 20    |         |         | 25    |         |         | 35      |         |         |
|-----------------------|-------|---------|---------|-------|---------|---------|---------|---------|---------|
| Gripping force backup | None  | Closing | Opening | None  | Closing | Opening | None    | Closing | Opening |
| Product weight        | 380 g | 387 g   |         | 700 g | 713 g   |         | 1,285 g | 1,345 g |         |

## Materials

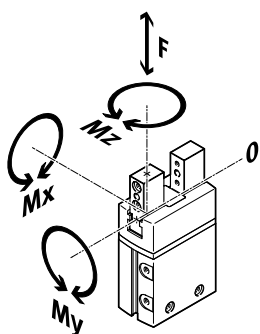
| Size                                               | 6                                                                                                                                                     | 10 | 16 | 20 | 25 | 35 |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|----|
| Material housing                                   | Hard anodised wrought aluminium alloy                                                                                                                 |    |    |    |    |    |
| Material gripper jaws                              | High-alloy stainless steel                                                                                                                            |    |    |    |    |    |
| Material cover cap                                 | PA                                                                                                                                                    |    |    |    |    |    |
| 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                                                            | 6      | 10     | 16    | 20    | 25    | 35    |
|-----------------------------------------------------------------|--------|--------|-------|-------|-------|-------|
| Total gripping force, closing, 0.6MPa (6bar, 87 psi)            | 25 N   | 70 N   | 190 N | 290 N | 450 N | 910 N |
| Total gripping force, opening, 0.6MPa (6bar, 87 psi)            | 30 N   | 80 N   | 210 N | 320 N | 500 N | 970 N |
| Gripper force per gripper jaw, closing, 0.6 MPa (6 bar, 87 psi) | 13.5 N | 34.5 N | 96 N  | 147 N | 228 N | 450 N |
| Gripper force per gripper jaw, opening, 0.6 MPa (6 bar, 87 psi) | 15 N   | 39 N   | 105 N | 162 N | 249 N | 483 N |

## Characteristic load values at the gripper jaws

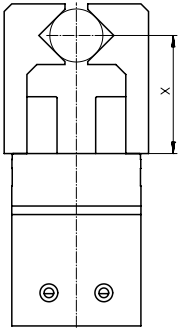


The indicated permissible forces and torques apply to a single gripper jaw. They include the lever arm, additional applied loads created by the workpiece or external gripper fingers and acceleration forces occurring during movement. The zero coordinate line (gripper jaw guide) must be taken into account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

| Size                                | 6      | 10   | 16    | 20    | 25    | 35    |
|-------------------------------------|--------|------|-------|-------|-------|-------|
| Max. force on gripper jaw Fz static | 10 N   | 60 N | 150 N | 250 N | 350 N | 450 N |
| Max. torque at gripper Mx static    | 0.5 Nm | 3 Nm | 8 Nm  | 14 Nm | 30 Nm | 50 Nm |
| Max. torque at gripper My static    | 0.5 Nm | 3 Nm | 8 Nm  | 14 Nm | 30 Nm | 50 Nm |
| Max. torque at gripper Mz static    | 0.5 Nm | 3 Nm | 8 Nm  | 14 Nm | 30 Nm | 50 Nm |

## Datasheet

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

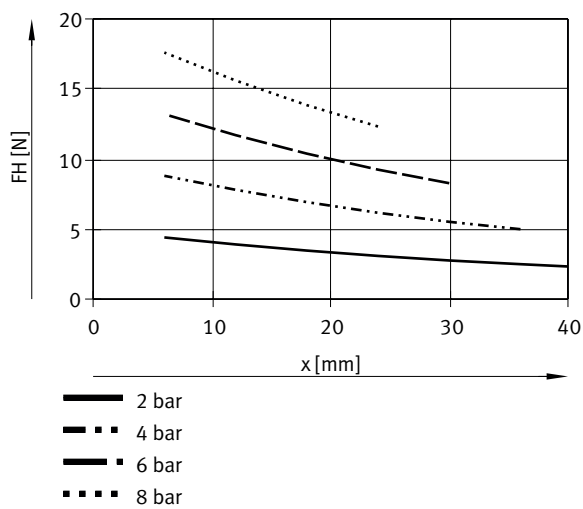


The gripping forces as a function of operating pressure and lever arm can be determined from the following graphs.

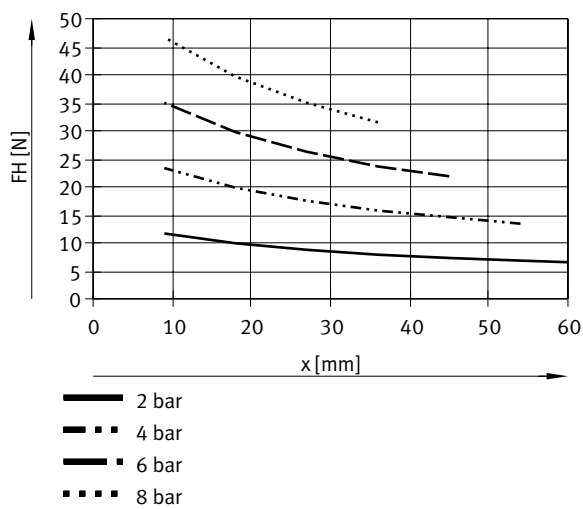
The gripping torque is not constant across the opening angle.

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

## Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – external gripping (closing), double-acting – DHPS-6

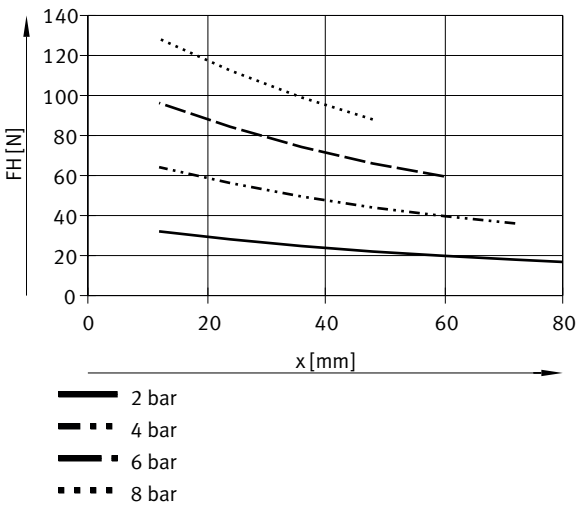


## Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – external gripping (closing), double-acting – DHPS-10

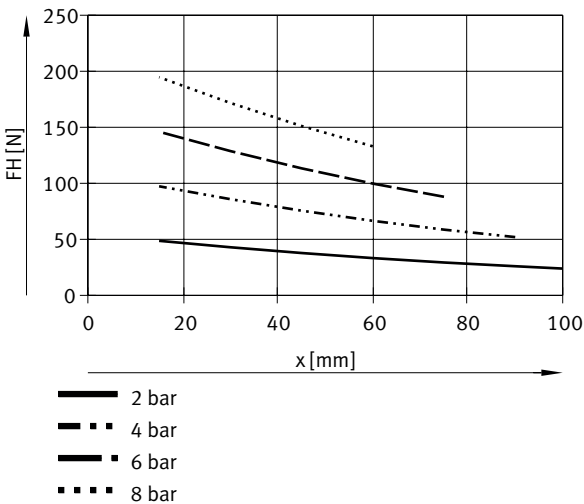


Datasheet

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

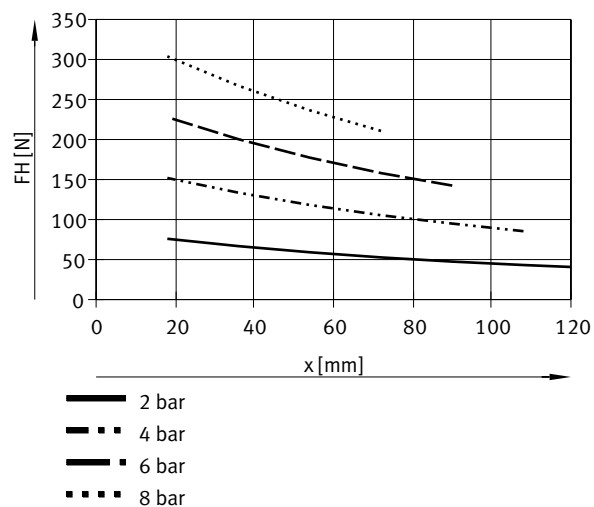


Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – external gripping (closing), double-acting – DHPS-20

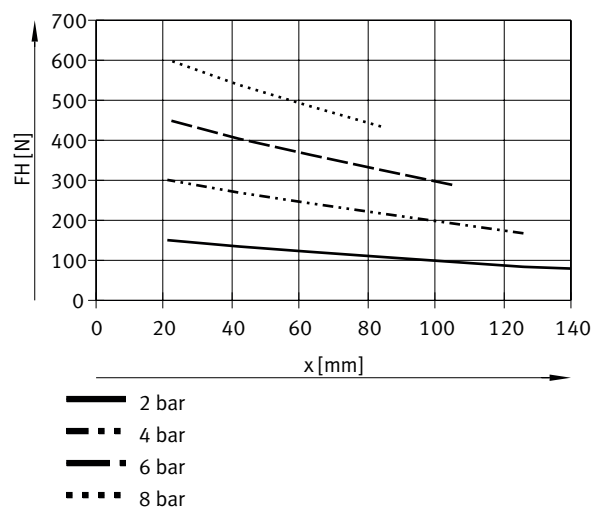


## Datasheet

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

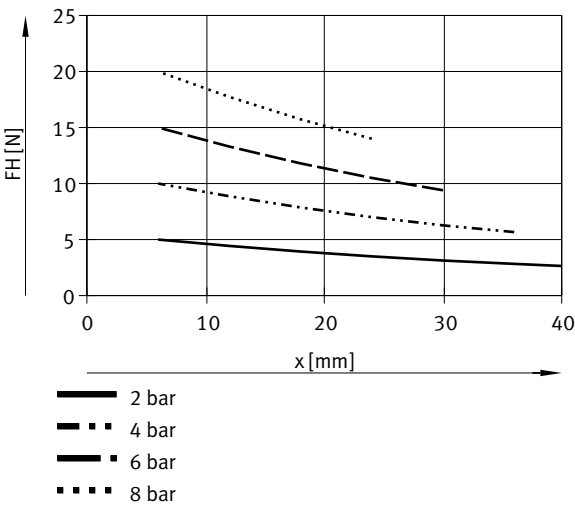


Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – external gripping (closing), double-acting – DHPS-35

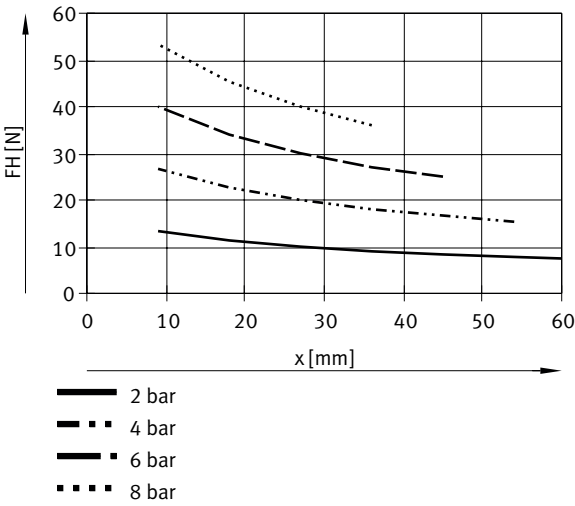


Datasheet

Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – internal gripping (opening), double-acting – DHPS-6

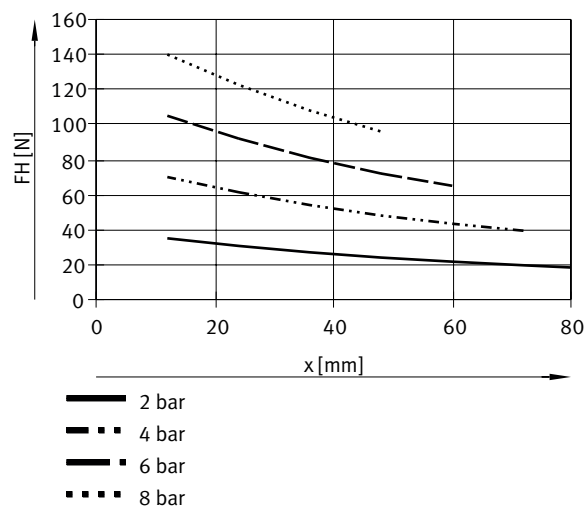


Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – internal gripping (opening), double-acting – DHPS-10

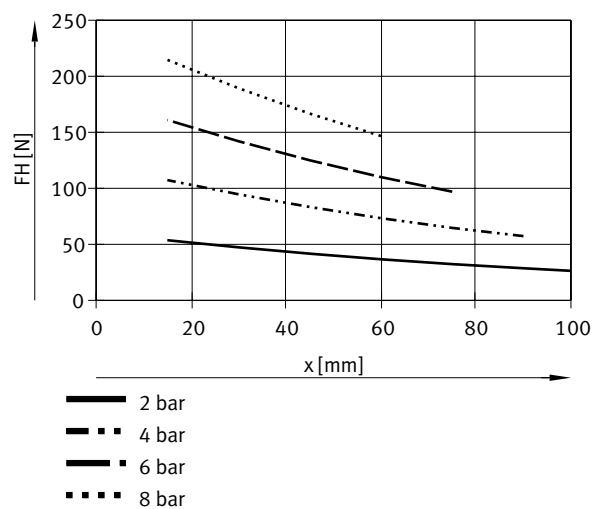


## Datasheet

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

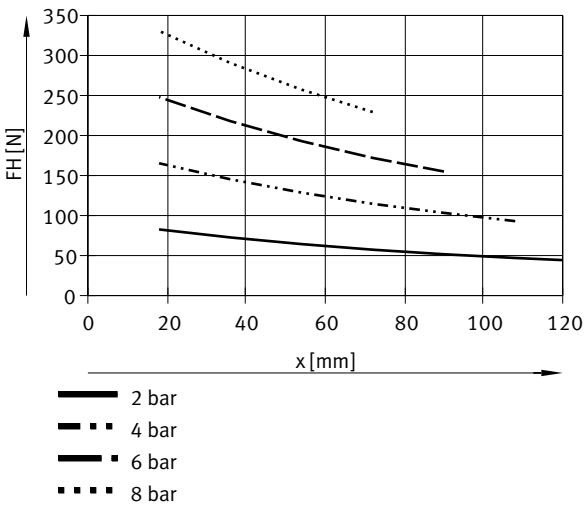


Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – internal gripping (opening), double-acting – DHPS-20

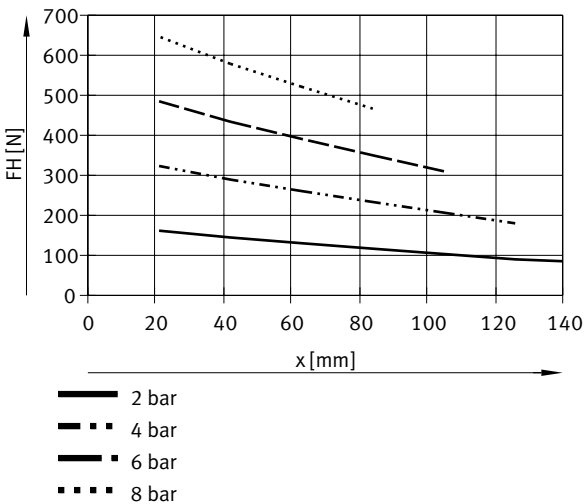


Datasheet

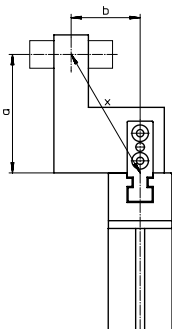
Gripping force FH per gripper jaw as a function of operating pressure and lever arm x – internal gripping (opening), double-acting – DHPS-25



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



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 with eccentric gripping.

The gripping force F can then be read from the graphs using the calculated value x.

Calculation example:

Assuming:

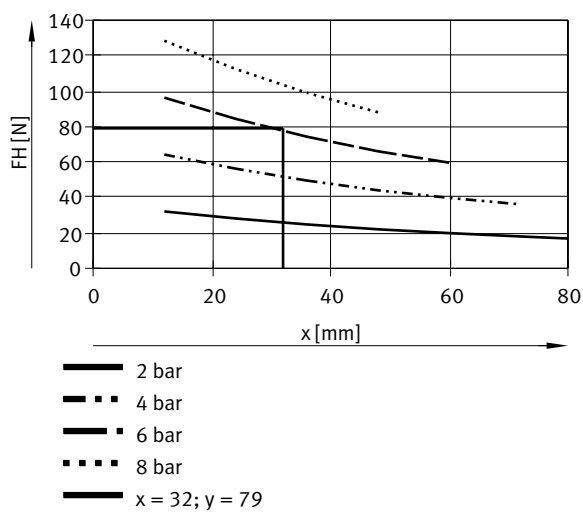
Distance a = 25 mm

Distance b = 20 mm

To be determined:

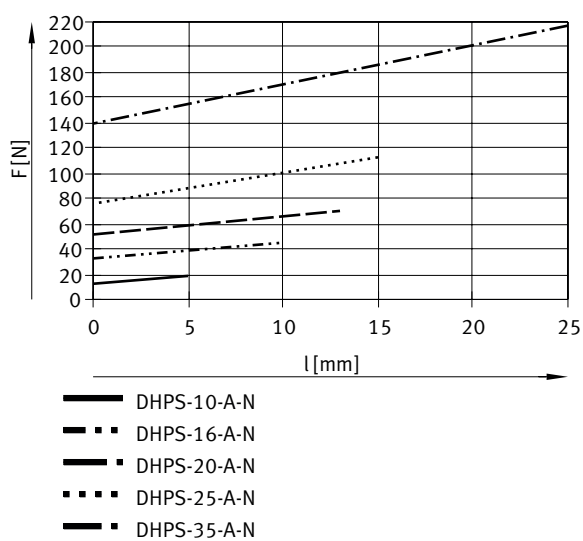
The gripping force at 6 bar, with a DHPS-16 used as an external gripper.

## 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 F = 79 N for the gripping force.

## Spring force F as a function of size and gripper jaw stroke l – gripping force retention for DHPS-...-N...



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

## Datasheet

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

To determine the actual spring force  $F_{tot}$ , the lever arm  $x$  must be taken into account.

Formulas for calculating the spring force  $F_{tot}$  per gripper finger:

DHPS-10:  $-0.02 \cdot x + 0.5 \cdot F$

DHPS-16:  $-0.08 \cdot x + 0.5 \cdot F$

DHPS-20:  $-0.1 \cdot x + 0.5 \cdot F$

DHPS-25:  $-0.12 \cdot x + 0.5 \cdot F$

DHPS-35:  $-0.19 \cdot x + 0.5 \cdot F$

### Determining the actual gripping forces $F_{Gr}$ for DHPS-...-NO and DHPS-...-NC as a function of application

The parallel grippers with integrated spring, type DHPS-...-NO (opening gripping force retention) and DHPS-...-NC (closing gripping force retention) can be used as:

- Single-acting grippers
- Gripper with gripping force support and
- Grippers with gripping force retention

To calculate available gripping forces  $F_{Gr}$  (per gripper jaw), the data for gripping force  $F_H$  and spring force  $F_{tot}$  must be combined accordingly.

### Determining the actual gripping forces $F_{Gr}$ for DHPS-...-NO and DHPS-...-NC as a function of the application – application

Single-acting:

- Gripping with spring force:  $F_{Gr} = F_{tot}$
- Gripping with pressure force:  $F_{Gr} = F_H - F_{tot}$

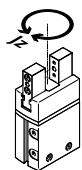
Gripping force support:

- Gripping with pressure and spring force:  $F_{Gr} = F_H + F_{tot}$

Gripping force backup

- Gripping with spring force:  $F_{Gr} = F_{tot}$

### Mass moments of inertia – DHPS-6 ... 16



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

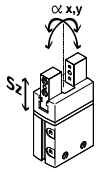
| Size                   | 6                       |                         | 10                      |                         | 16                      |                         |                         |
|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Gripping force backup  | None                    |                         | Closing                 | Opening                 | None                    | Closing                 | Opening                 |
| Mass moment of inertia | 0.008 kgcm <sup>2</sup> | 0.079 kgcm <sup>2</sup> | 0.081 kgcm <sup>2</sup> | 0.082 kgcm <sup>2</sup> | 0.465 kgcm <sup>2</sup> | 0.468 kgcm <sup>2</sup> | 0.472 kgcm <sup>2</sup> |

### Mass moments of inertia – DHPS-20 ... 35

| Size                   | 20                      |                         |                         | 25                      |                         |                        | 35                     |                          |                          |
|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|------------------------|------------------------|--------------------------|--------------------------|
| Gripping force backup  | None                    | Closing                 | Opening                 | None                    | Closing                 | Opening                | None                   | Closing                  | Opening                  |
| Mass moment of inertia | 1.489 kgcm <sup>2</sup> | 1.494 kgcm <sup>2</sup> | 1.521 kgcm <sup>2</sup> | 3.831 kgcm <sup>2</sup> | 3.835 kgcm <sup>2</sup> | 3.92 kgcm <sup>2</sup> | 12.7 kgcm <sup>2</sup> | 12.726 kgcm <sup>2</sup> | 12.832 kgcm <sup>2</sup> |

## Datasheet

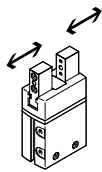
### Gripper jaw backlash



The plain-bearing guide used in the grippers means that there is backlash between the gripper jaws and the housing. The backlash values listed in the table have been calculated based on the traditional accumulative tolerance method.

| Size                                                   | 6       | 10 | 16      | 20 | 25 | 35 |
|--------------------------------------------------------|---------|----|---------|----|----|----|
| Max. gripper jaw backlash Sz                           | 0.02 mm |    |         |    |    |    |
| Max. angular gripper jaw backlash $\alpha_x, \alpha_y$ | 1 deg   |    | 0.5 deg |    |    |    |

### Opening and closing times – DHPS-6 ... 16



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                                         | 6     |       | 10    |       | 16      |         |       |
|----------------------------------------------|-------|-------|-------|-------|---------|---------|-------|
| Gripping force backup                        | None  |       |       |       | Closing | Opening |       |
| Min. closing time at 0.6 MPa (6 bar, 87 psi) | 17 ms | 28 ms | 24 ms | 30 ms | 41 ms   | 37 ms   | 50 ms |
| Min. opening time at 0.6 MPa (6 bar, 87 psi) | 8 ms  | 21 ms | 58 ms | 19 ms | 33 ms   | 48 ms   | 32 ms |

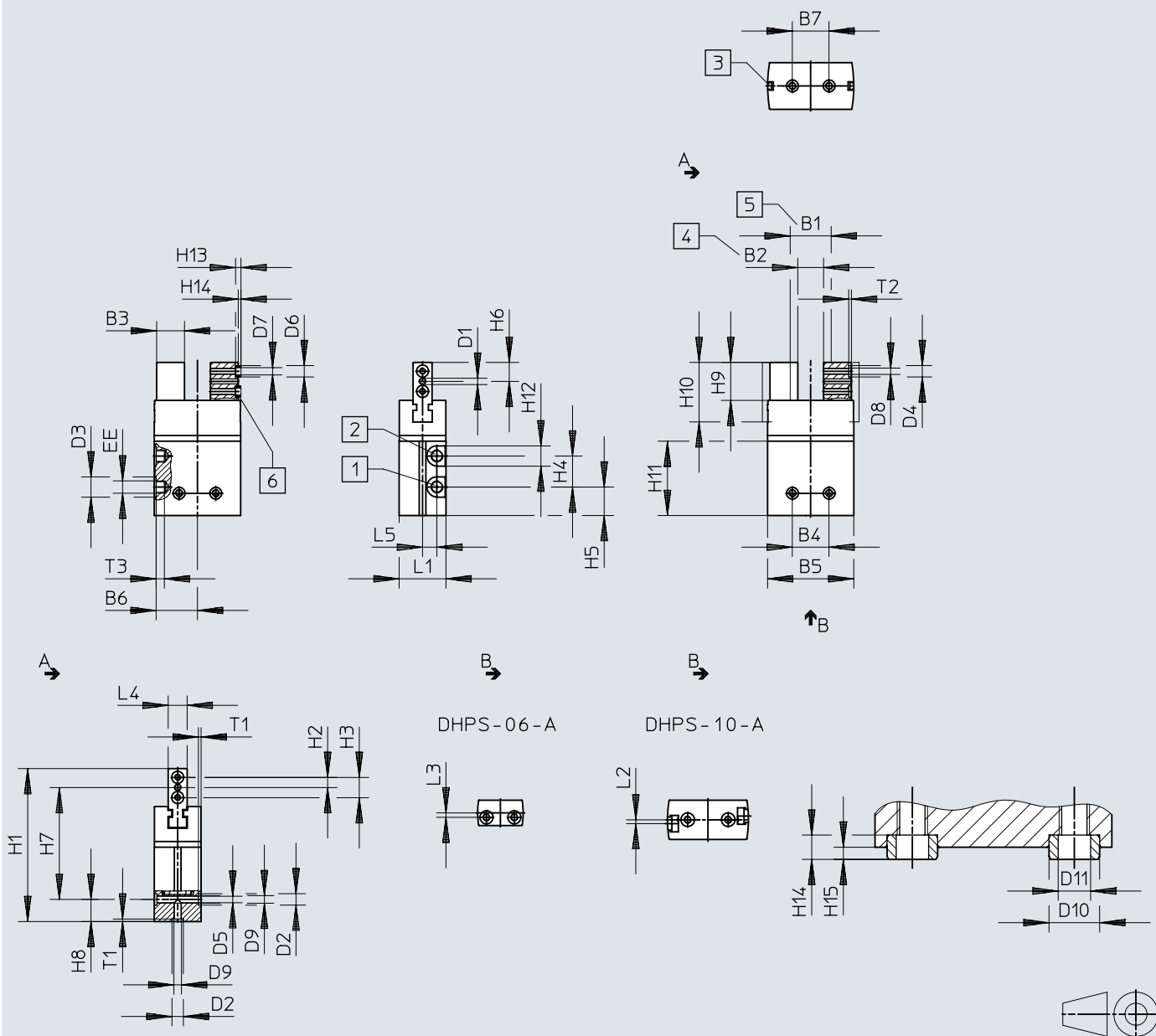
### Opening and closing times – DHPS-20 ... 35

| Size                                         | 20    |         |         | 25    |         |         | 35     |         |         |
|----------------------------------------------|-------|---------|---------|-------|---------|---------|--------|---------|---------|
| Gripping force backup                        | None  | Closing | Opening | None  | Closing | Opening | None   | Closing | Opening |
| Min. closing time at 0.6 MPa (6 bar, 87 psi) | 87 ms | 62 ms   | 97 ms   | 63 ms | 52 ms   | 78 ms   | 123 ms | 99 ms   | 151 ms  |
| Min. opening time at 0.6 MPa (6 bar, 87 psi) | 59 ms | 72 ms   | 58 ms   | 48 ms | 68 ms   | 45 ms   | 95 ms  | 131 ms  | 88 ms   |

## Dimensions

### Dimensions – Parallel gripper DHPS

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



- [1] Open compressed air supply port
- [2] Close compressed air supply port
- [3] Slot for proximity switch
- [4] Initial position for DHPS-...-A and DHPS-...-A-NC
- [5] Initial position for DHPS-...-A-NO
- [6] Centring sleeves ZBH (size 10 and larger: 4 included in the scope of delivery)

## Dimensions

|         | B1<br>±0,5 | B2<br>±0,5 | B3<br>−0,03 | B4 <sup>1)</sup> | B5<br>±0,1 | B6    | B7 <sup>1)</sup> | D1<br>∅<br>H8 | D2<br>∅<br>H8 | D3<br>∅ | D4<br>∅<br>H8 | D5<br>∅<br>+0,1 | D6<br>∅<br>h7 | D7<br>∅ | D8 |
|---------|------------|------------|-------------|------------------|------------|-------|------------------|---------------|---------------|---------|---------------|-----------------|---------------|---------|----|
| DHPS-6  | 10         | 6          | 5,5         | 11               | 18         | 8,65  | 11               | 1,5           | 5             | 7       | −             | 2,5             | −             | −       | M2 |
| DHPS-10 | 21,8       | 15,8       | 7           | 16               | 32         | 15,4  | 16               | 2             | 5             | 7       | 5             | 2,5             | 5             | 3,2     | M3 |
| DHPS-16 | 27,8       | 17,8       | 13          | 25               | 47         | 22,65 | 25               | 3             | 7             | 7       | 7             | 3,3             | 7             | 5,3     | M4 |
| DHPS-20 | 30         | 17         | 17,5        | 25               | 55,6       | 26,25 | 25               | 4             | 7             | 10      | 7             | 3,3             | 7             | 5,3     | M4 |
| DHPS-25 | 35,4       | 20,4       | 22          | 29               | 68,2       | 32,65 | 29               | 4             | 9             | 16      | 9             | 5,1             | 9             | 6,4     | M5 |
| DHPS-35 | 56         | 31         | 27          | 33               | 88         | 42,25 | 33               | 5             | 12            | 16      | 9             | 6,4             | 9             | 6,4     | M6 |

|         | D9 | D10<br>∅<br>h7 | D11<br>∅ | EE   | H1   | H2  | H3 <sup>1)</sup> | H4   | H5   | H6   | H7<br>±0,2 | H8 <sup>2)</sup> | H9   | H10  | H11  |
|---------|----|----------------|----------|------|------|-----|------------------|------|------|------|------------|------------------|------|------|------|
| DHPS-6  | M3 | −              | −        | M3   | 45,5 | 2,9 | 5,8              | 15   | 4    | 5    | 33         | 7,5              | 9,55 | 15,8 | 25,3 |
| DHPS-10 | M3 | 5              | 3,2      | M3   | 66   | 4   | 8                | 15,5 | 10,5 | 7,5  | 51         | 7,5              | 15,2 | 23   | 35   |
| DHPS-16 | M4 | 7              | 5,3      | M3   | 80   | 5,5 | 11               | 18   | 11   | 10   | 62,5       | 7,5              | 20   | 32,5 | 38,1 |
| DHPS-20 | M4 | 7              | 5,3      | M5   | 101  | 7   | 14               | 23   | 16   | 12,5 | 81         | 7,5              | 25   | 39,5 | 50   |
| DHPS-25 | M6 | 9              | 6,4      | G1/8 | 121  | 8   | 16               | 24,5 | 22,5 | 15   | 88,5       | 17,5             | 30   | 47   | 58,8 |
| DHPS-35 | M8 | 9              | 6,4      | G1/8 | 142  | 8,5 | 17               | 29   | 24   | 16   | 108,5      | 17,5             | 32   | 53   | 65,3 |

|         | H12 | H13<br>−0,2 | H14  |                 |                 |                 | H15<br>−0,3 | L1                   | L2  | L3 <sup>1)</sup> | L4<br>−0,05 | L5   | T1<br>+0,1 | T2<br>+0,1 | T3<br>+0,5 |
|---------|-----|-------------|------|-----------------|-----------------|-----------------|-------------|----------------------|-----|------------------|-------------|------|------------|------------|------------|
|         |     |             | −0,3 | [ZBH-5]<br>−0,2 | [ZBH-7]<br>−0,2 | [ZBH-9]<br>−0,2 |             |                      |     |                  |             |      |            |            |            |
| DHPS-6  | 7   | −           | −    | −               | −               | −               | −           | 10 <sup>+0,1</sup>   | −   | 1,8              | 5           | 1,5  | 1,2        | −          | 3,5        |
| DHPS-10 | 7   | 2,4         | 1,2  | 2,4             | −               | −               | 2,4         | 15,5 <sup>+0,1</sup> | 1,5 | −                | 7           | 5    | 1,2        | 1,2        | 5          |
| DHPS-16 | 7   | 3           | 1,4  | −               | 3               | −               | 3           | 22 <sup>+0,1</sup>   | −   | −                | 10          | 7    | 1,6        | 1,6        | 6          |
| DHPS-20 | 10  | 3           | 1,4  | −               | 3               | −               | 3           | 30±0,1               | −   | −                | 12          | 9    | 1,6        | 1,6        | 6          |
| DHPS-25 | 16  | 4           | 1,9  | −               | −               | 4               | 4           | 37±0,1               | −   | −                | 15          | 11,3 | 2,1        | 2,1        | 6,5        |
| DHPS-35 | 16  | 4           | 1,9  | −               | −               | 4               | 4           | 45 <sup>+0,1</sup>   | −   | −                | 20          | 13,5 | 2,6        | 2,1        | 6,5        |

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

2) Tolerance for centring hole ±0.05 mm/tolerance for thread ±0.1 mm

## Ordering data

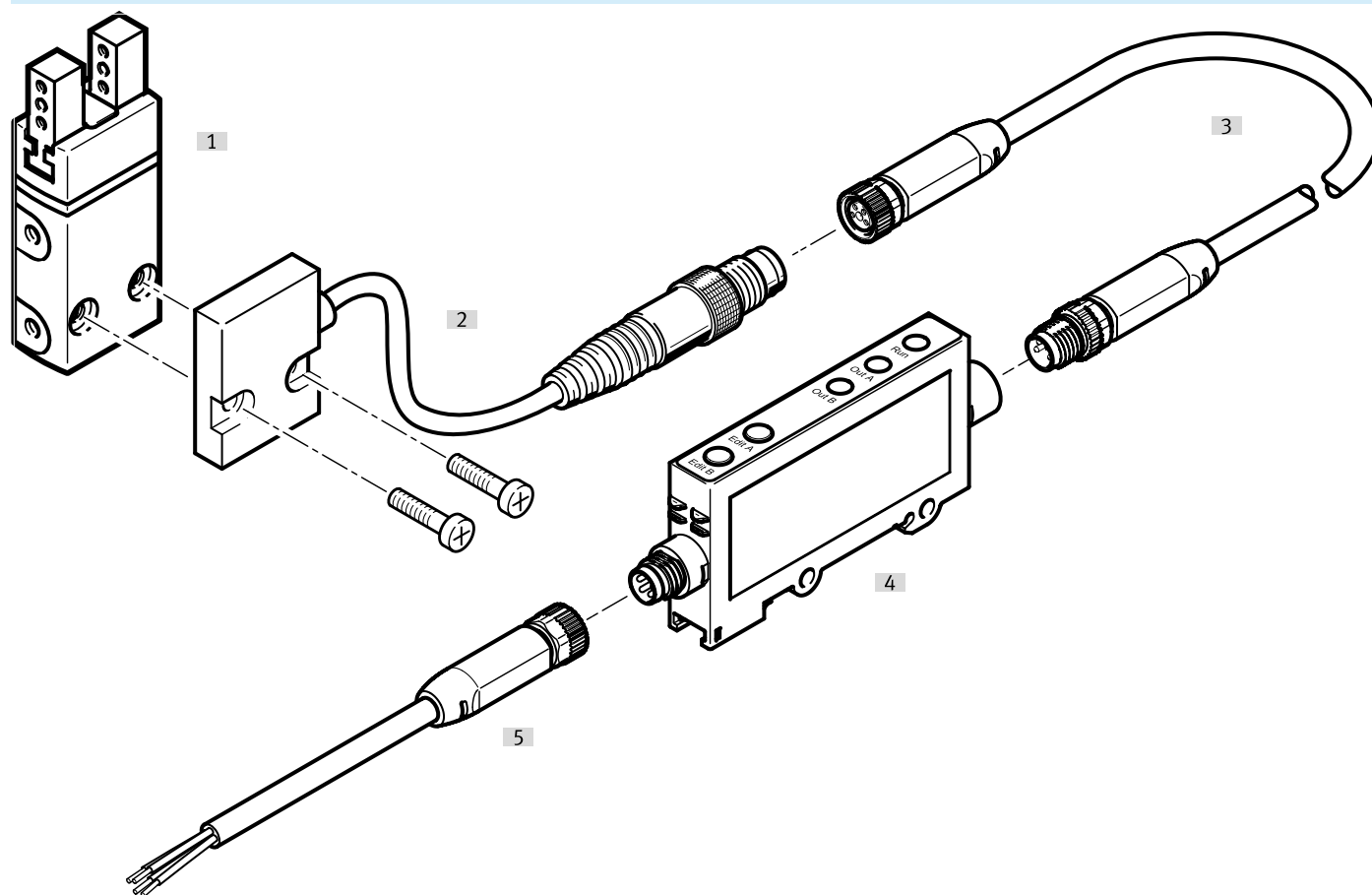
| Double-acting, without compression spring                                        |      |                         |                |          |           |
|----------------------------------------------------------------------------------|------|-------------------------|----------------|----------|-----------|
|                                                                                  | Size | Stroke per gripper jaws | Product weight | Part no. | Type      |
|  | 6    | 2 mm                    | 19 g           | 1254039  | DHPS-6-A  |
|                                                                                  | 10   | 3 mm                    | 67 g           | 1254040  | DHPS-10-A |
|                                                                                  | 16   | 5 mm                    | 184 g          | 1254043  | DHPS-16-A |
|                                                                                  | 20   | 6.5 mm                  | 380 g          | 1254046  | DHPS-20-A |
|                                                                                  | 25   | 7.5 mm                  | 700 g          | 1254049  | DHPS-25-A |
|                                                                                  | 35   | 12.5 mm                 | 1,285 g        | 1254052  | DHPS-35-A |

| Single-acting or with gripping force retention, opening                          |      |                         |                |          |              |
|----------------------------------------------------------------------------------|------|-------------------------|----------------|----------|--------------|
|                                                                                  | Size | Stroke per gripper jaws | Product weight | Part no. | Type         |
|  | 10   | 3 mm                    | 68 g           | 1254041  | DHPS-10-A-NO |
|                                                                                  | 16   | 5 mm                    | 188 g          | 1254044  | DHPS-16-A-NO |
|                                                                                  | 20   | 6.5 mm                  | 387 g          | 1254047  | DHPS-20-A-NO |
|                                                                                  | 25   | 7.5 mm                  | 713 g          | 1254050  | DHPS-25-A-NO |
|                                                                                  | 35   | 12.5 mm                 | 1,345 g        | 1254053  | DHPS-35-A-NO |

| Single-acting or with closing gripping force retention                             |      |                         |                |          |              |
|------------------------------------------------------------------------------------|------|-------------------------|----------------|----------|--------------|
|                                                                                    | Size | Stroke per gripper jaws | Product weight | Part no. | Type         |
|  | 10   | 3 mm                    | 68 g           | 1254042  | DHPS-10-A-NC |
|                                                                                    | 16   | 5 mm                    | 188 g          | 1254045  | DHPS-16-A-NC |
|                                                                                    | 20   | 6.5 mm                  | 387 g          | 1254048  | DHPS-20-A-NC |
|                                                                                    | 25   | 7.5 mm                  | 713 g          | 1254051  | DHPS-25-A-NC |
|                                                                                    | 35   | 12.5 mm                 | 1,345 g        | 1254054  | DHPS-35-A-NC |

## Peripherals

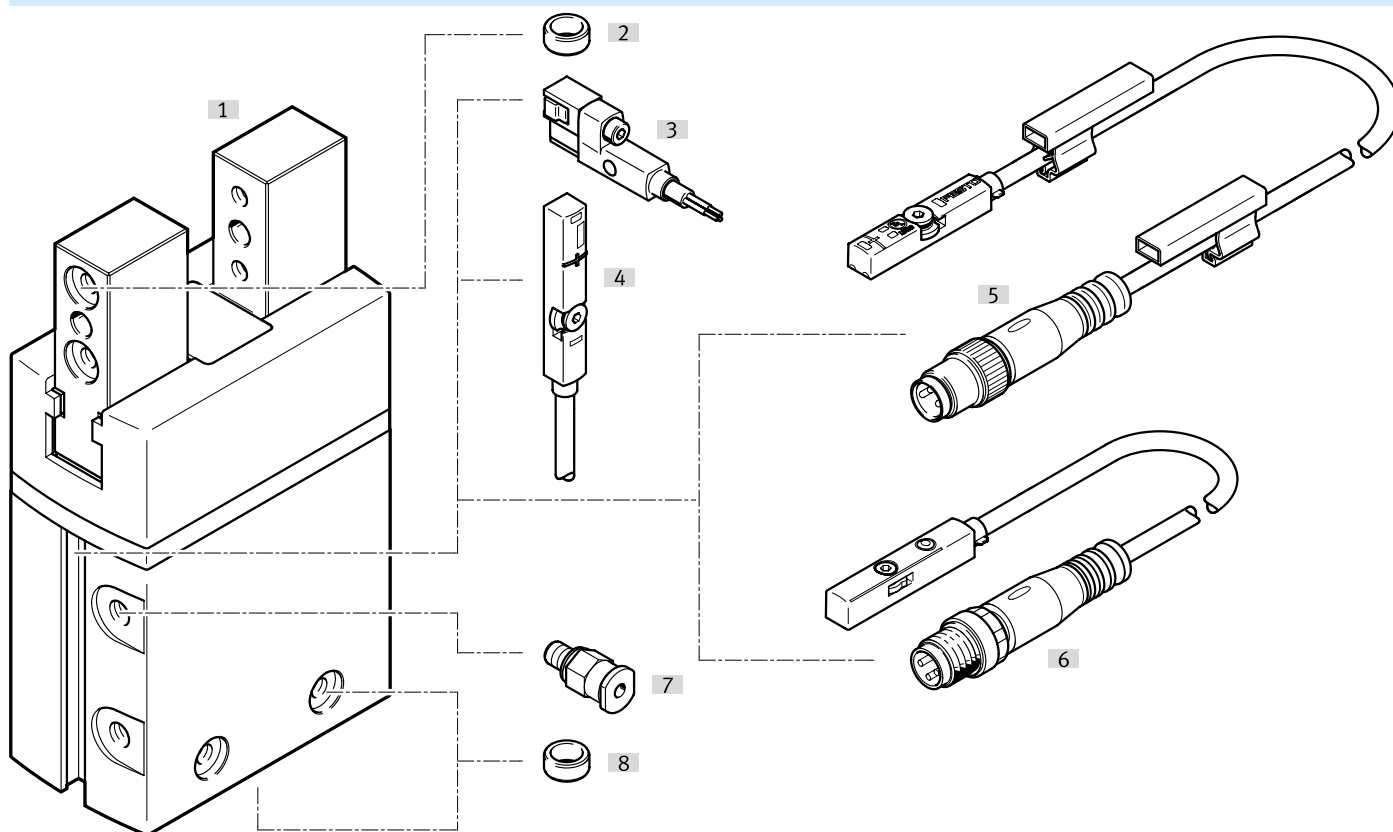
## DHPS-6



| Accessories                              |                                                                  |  | → Link                  |
|------------------------------------------|------------------------------------------------------------------|--|-------------------------|
| Type/order code                          | Description                                                      |  |                         |
| [1] Parallel gripper DHPS                | Double-acting                                                    |  | <a href="#">dhps</a>    |
| [2] Position sensor SMH-S1               | Adaptable and integrable sensors for sensing the piston position |  | <a href="#">21</a>      |
| [3] Connecting cable NEBA                | Connection between position sensor and signal converter          |  | <a href="#">21</a>      |
| [4] Signal converter SVE4                | For evaluating signals for position sensor SMH-S1                |  | <a href="#">21</a>      |
| [5] Connecting cable NEBA                | Connection between position sensor and signal converter          |  | <a href="#">23</a>      |
| [6] Adapter kit DHAA, HAPG               | Connecting plate between drive and gripper                       |  | <a href="#">adapter</a> |
| [7] Proportional-pressure regulator VPPM | For stepless adjustment of the gripping force                    |  | <a href="#">vppm</a>    |

## Peripherals

DHPS-10 ... 35



| Accessories                               |                                                                                                                                                                                                             | → Link                  |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Type/order code                           | Description                                                                                                                                                                                                 |                         |
| [1] Parallel gripper DHPS                 | Double-acting                                                                                                                                                                                               | <a href="#">dhps</a>    |
| [2] Centring sleeve ZBH                   | <ul style="list-style-type: none"> <li>For centring the gripper fingers on the gripper jaws</li> <li>4 centring sleeves are included in the scope of delivery of the gripper from size 10 onward</li> </ul> | <a href="#">21</a>      |
| [3] Proximity switch SMT-8G               | <ul style="list-style-type: none"> <li>For sensing the piston position</li> <li>Proximity switch does not project underneath the housing</li> </ul>                                                         | <a href="#">22</a>      |
| [4] Position transmitter SMAT-8M          | Continuously detects the position of the piston. It has an analogue output with an output signal that is proportional to the piston position                                                                | <a href="#">23</a>      |
| [4] Position transmitter SDAT             | Continuously detects the position of the piston. It has an analogue output with an output signal proportional to the piston position                                                                        | <a href="#">23</a>      |
| [5] Proximity switch SMT-8M               | <ul style="list-style-type: none"> <li>For sensing the piston position</li> <li>Inserted in the slot from above</li> </ul>                                                                                  | <a href="#">22</a>      |
| [6] Proximity switch SDBT-MSX             | <ul style="list-style-type: none"> <li>Contactless feedback of the piston position</li> <li>Auto teach-in and programmable</li> </ul>                                                                       | <a href="#">22</a>      |
| [7] Push-in fitting QS                    | For connecting tubing with standard O.D.                                                                                                                                                                    | <a href="#">qs</a>      |
| [8] Centring sleeve ZBH                   | <ul style="list-style-type: none"> <li>For centring the gripper during mounting</li> <li>2 centring sleeves are included in the scope of delivery of the gripper</li> </ul>                                 | <a href="#">21</a>      |
| [9] Adapter kit DHAA, HAPG                | Connecting plate between drive and gripper                                                                                                                                                                  | <a href="#">adapter</a> |
| [10] Proportional-pressure regulator VPPM | For stepless adjustment of the gripping force                                                                                                                                                               | <a href="#">vppm</a>    |

## Accessories

## Centring sleeve ZBH-5

|                                                                                   | Description     | Material sleeve | Size of pack | Product weight | Part no.       | Type           |
|-----------------------------------------------------------------------------------|-----------------|-----------------|--------------|----------------|----------------|----------------|
|  | For sizes 6, 10 | Steel           | 10           | 1 g            | <b>8146543</b> | <b>ZBH-5-B</b> |

## Centring sleeve ZBH-7

|                                                                                   | Description      | Material sleeve | Size of pack | Product weight | Part no.       | Type           |
|-----------------------------------------------------------------------------------|------------------|-----------------|--------------|----------------|----------------|----------------|
|  | For sizes 16, 20 | Steel           | 10           | 1 g            | <b>8146544</b> | <b>ZBH-7-B</b> |

## Centring sleeve ZBH-9

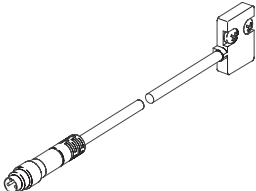
|                                                                                   | Description      | Material sleeve | Size of pack | Product weight | Part no.       | Type           |
|-----------------------------------------------------------------------------------|------------------|-----------------|--------------|----------------|----------------|----------------|
|  | For sizes 25, 35 | Steel           | 10           | 2 g            | <b>8137184</b> | <b>ZBH-9-B</b> |

## Centring sleeve ZBH-12

|                                                                                   | Description | Material sleeve | Size of pack | Product weight | Part no.       | Type            |
|-----------------------------------------------------------------------------------|-------------|-----------------|--------------|----------------|----------------|-----------------|
|  | For size 35 | Steel           | 10           | 1 g            | <b>8137185</b> | <b>ZBH-12-B</b> |

## Position sensor SMH-S1 for direct mounting, magnetic Hall – for size 6

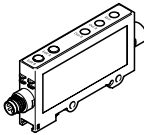
Link [smh](#)

|                                                                                     | Type of mounting <sup>1)</sup> | Output signal | Electrical connection | Cable length | Part no.      | Type                |
|-------------------------------------------------------------------------------------|--------------------------------|---------------|-----------------------|--------------|---------------|---------------------|
|  | Screwed to gripper             | Analogue      | Plug M8, A-coded      | 0.5 m        | <b>175710</b> | <b>SMH-S1-HGP06</b> |

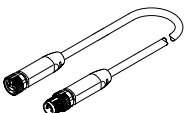
1) Installation note: To ensure the functionality of the position sensor, the cable outlet and the outlet of the compressed air tube must point in the same direction during installation.

## Signal converter SVE4 – for size 6

Link [sve](#)

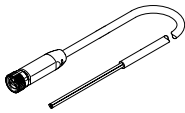
|                                                                                     | analog input                           | Electrical connection (signal input) | Electrical connection (switching output) | Switching output | Part no.      | Type                       |
|-------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------|------------------------------------------|------------------|---------------|----------------------------|
|  | Adapted for position sensors SMH-S1-HG | Socket M8x1, 4-pin                   | Plug M8x1, 4-pin                         | 2xNPN            | <b>544219</b> | <b>SVE4-HS-R-HM8-2N-M8</b> |
|                                                                                     |                                        |                                      |                                          | 2xPNP            | <b>544216</b> | <b>SVE4-HS-R-HM8-2P-M8</b> |

## Connecting cables NEBA, straight – connection between position sensor and signal converter

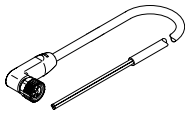
|                                                                                     | Electrical connection 1, connector system | Electrical connection 2, connector system | Electrical connection 2, number of connections/cores | Cable length | Part no.       | Type                          |
|-------------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------|------------------------------------------------------|--------------|----------------|-------------------------------|
|  | M8x1, A-coded, to EN 61076-2-104          | M8x1, A-coded to EN 61076-2-104           | 4                                                    | 2.5 m        | <b>8078295</b> | <b>NEBA-M8G4-U-2.5-N-M8G4</b> |

## Accessories

## Connecting cables NEBA, straight – connection between signal converter and controller

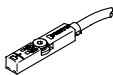
|                                                                                  | Electrical connection 1, connector system | Electrical connection 2, connector system | Electrical connection 2, number of connections/cores | Cable length | Part no. | Type                  |
|----------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------|------------------------------------------------------|--------------|----------|-----------------------|
|  | M8x1, A-coded, to EN 61076-2-104          | Open end                                  | 4                                                    | 2.5 m        | 8078227  | NEBA-M8G4-U-2.5-N-LE4 |
|                                                                                  |                                           |                                           |                                                      | 5 m          | 8078228  | NEBA-M8G4-U-5-N-LE4   |

## Connecting cables NEBA, angled – connection between signal converter and controller

|                                                                                  | 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                                  | 4                                                    | 2.5 m        | 8078233  | NEBA-M8W4-U-2.5-N-LE4 |
|                                                                                  |                                           |                                           |                                                      | 5 m          | 8078234  | NEBA-M8W4-U-5-N-LE4   |

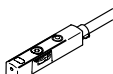
## Proximity switch SMT-8G for T-slot, magneto-resistive – for sizes 10 ... 35

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 | Plug M8, A-coded      | 0.3 m        | 574334   | SMT-8M-A-PS-24V-E-0,3-M8D |

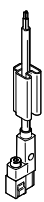
## Proximity switch SDBT-MSX for T-slot, magnetic reed – for size 10 ... 35

Link [sdbt](#)

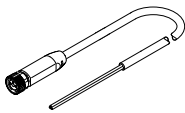
|                                                                                    | Switching output    | Switching element function     | Electrical connection | Cable length | Part no. | Type                      |
|------------------------------------------------------------------------------------|---------------------|--------------------------------|-----------------------|--------------|----------|---------------------------|
|  | PNP/NPN, switchable | N/C or N/O contact, switchable | Plug M8, A-coded      | 0.3 m        | 8059120  | SDBT-MSX-1L-PU-E-0.3-N-M8 |

## Proximity switch SMT-8G for T-slot, magneto-resistive – for sizes 10 ... 35

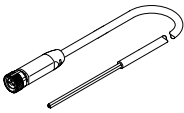
Link [smt](#)

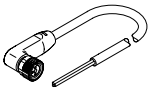
|                                                                                    | Type of mounting                                     | Switching output       | Electrical connection | Cable length | Part no. | Type                     |
|------------------------------------------------------------------------------------|------------------------------------------------------|------------------------|-----------------------|--------------|----------|--------------------------|
|  | 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 |

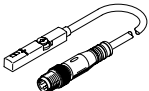
## Connecting cables NEBA, straight

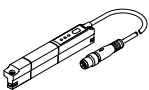
|                                                                                    | Electrical connection 1, connector system | Electrical connection 2, connector system | Electrical connection 2, number of connections/cores | Cable length | Part no. | Type                  |
|-----------------------------------------------------------------------------------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

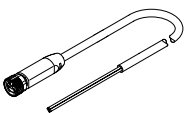
## Accessories

| 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                                                    | 5 m          | 8078224  | NEBA-M8G3-U-5-N-LE3 |

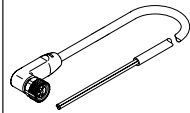
| Connecting cables NEBA, angled                                                    |                                           |                                           |                                                      |              |          |                       |
|-----------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------|------------------------------------------------------|--------------|----------|-----------------------|
|                                                                                   | 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   |

| Position transmitter SMAT-8M for T-slot, plug M8, A-coded – for size 10 ... 35      |               |                 |                                                      |              |          | Link <a href="#">smat</a> |
|-------------------------------------------------------------------------------------|---------------|-----------------|------------------------------------------------------|--------------|----------|---------------------------|
|                                                                                     | Sensing range | Analogue output | Electrical connection 1, number of connections/cores | Cable length | Part no. | Type                      |
|  | 52 mm         | 0 - 10 V        | 4                                                    | 0.3 m        | 553744   | SMAT-8M-U-E-0,3-M8D       |

| Position transmitter SDAT for T-slot, M8 plug, A-coded – For size 35                |                 |                 |                                                      |              |          | Link <a href="#">sdatt</a>  |
|-------------------------------------------------------------------------------------|-----------------|-----------------|------------------------------------------------------|--------------|----------|-----------------------------|
|                                                                                     | Sensing range   | Analogue output | Electrical connection 1, number of connections/cores | Cable length | Part no. | Type                        |
|  | 0 ... 50.000 mm | 4 - 20 mA       | 4                                                    | 0.3 m        | 1531265  | SDAT-MHS-M50-1L-SA-E-0.3-M8 |

| 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                                  | 4                                                    | 2.5 m        | 8078227  | NEBA-M8G4-U-2.5-N-LE4 |
|                                                                                     |                                           |                                           |                                                      | 5 m          | 8078228  | NEBA-M8G4-U-5-N-LE4   |

Accessories

| 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                                  | 4                                                    | 2.5 m        | 8078233  | NEBA-M8W4-U-2.5-N-LE4 |
|                                                                                  |                                           |                                           |                                                      | 5 m          | 8078234  | NEBA-M8W4-U-5-N-LE4   |