

Radial grippers HGRT, heavy-duty



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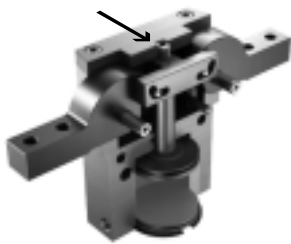
Key features



## At a glance

- Sturdy and precise kinematics for maximum torque resistance and long service life
- The virtually backlash-free plain-bearing guide is realised using ground-in gripper jaws
- Systematic use of high-performance and lightweight materials
- The force generated by the linear motion is translated into the gripper jaw movement via a slotted guide system at the piston rod. This also guarantees synchronous movement of the gripper jaws
- The opening angle of the gripper jaws is freely adjustable up to max. 90° per gripper finger. This reduces the cycle time and prevents possible collisions due to the gripper jaws opening too wide
- Can be used as a double-acting or single-acting gripper
- Compression spring for supplementary or retaining gripping forces
- Suitable for external and internal gripping
- Wide range of options for mounting on drives

## Flexible stroke limitation As radial gripper



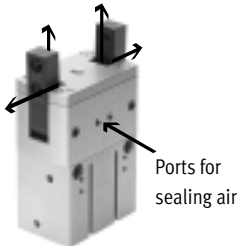
The gripper as delivered features a fixed stop that enables an opening angle of 180°.

## As angle gripper with adjustable stroke



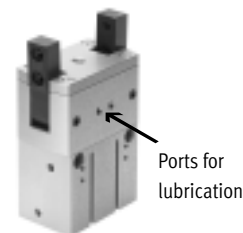
The stroke reducing kit HGRT-HR, which can be ordered as an accessory, enables the opening angle to be reduced by means of an adjustment screw. This provides an easy means of converting the radial gripper into an angle gripper.

## Additional ports For sealing air



Compressed air flows past the gripper jaw when sealing air (max. 0.5 bar) is connected. This prevents particles, for example, from entering the gripper jaw guide.

## For lubrication



The ports can also be used to re-lubricate the guide.

## Position sensing/force control

### With position transmitter SMAT-8M, SDAT



Analogue positional feedback possible

- Analogue output
  - 0 ... 10 V
  - 4 ... 20 mA

### With proportional pressure regulator VPPM



Infinite adjustment of the gripping force possible

- Setpoint input
  - 0 ... 10 V
  - 4 ... 20 mA

### With proximity sensor SMT-8G/-10G



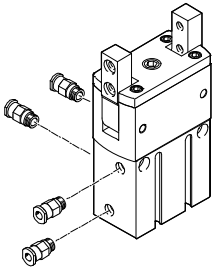
Multiple positions can be sensed:

- Open
- Closed
- Workpiece gripped

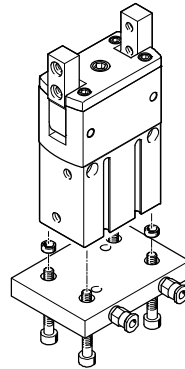
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Key features

Supply ports  
Direct



Via adapter plate

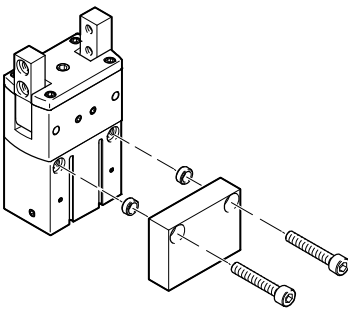


Note

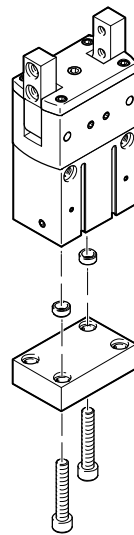
Gripper selection  
sizing software  
→ [www.festo.com](http://www.festo.com)

## Mounting options

Direct mounting  
From the side

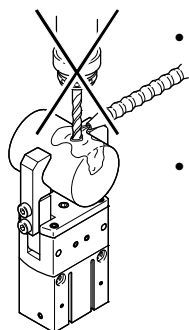


On front face

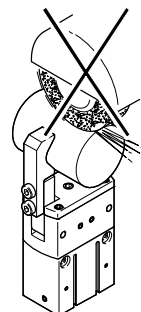


Note

Radial grippers are not designed for the following sample applications:

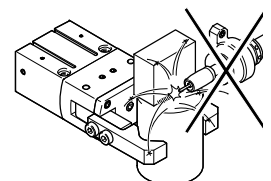


- Machining
- Aggressive media



- Grinding dust

- Welding splashes

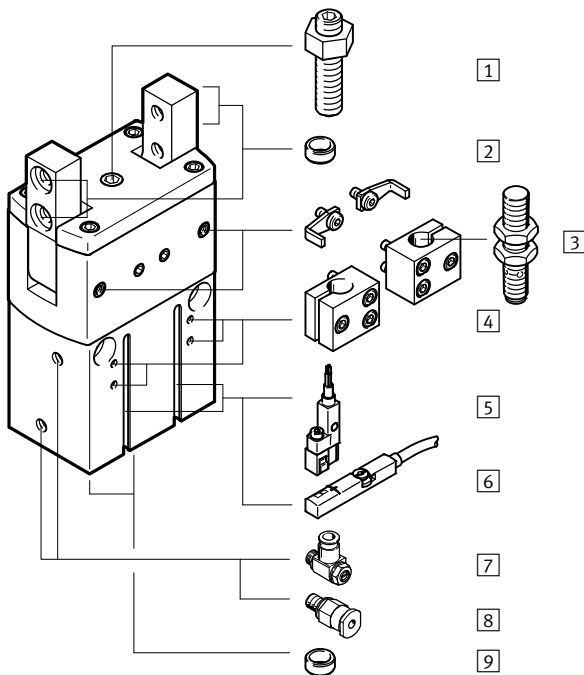


# Radial grippers HGRT, heavy-duty

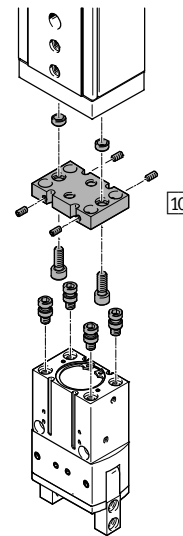
Peripherals overview

FESTO

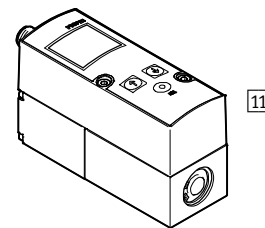
## Peripherals overview



## System product for handling and assembly technology



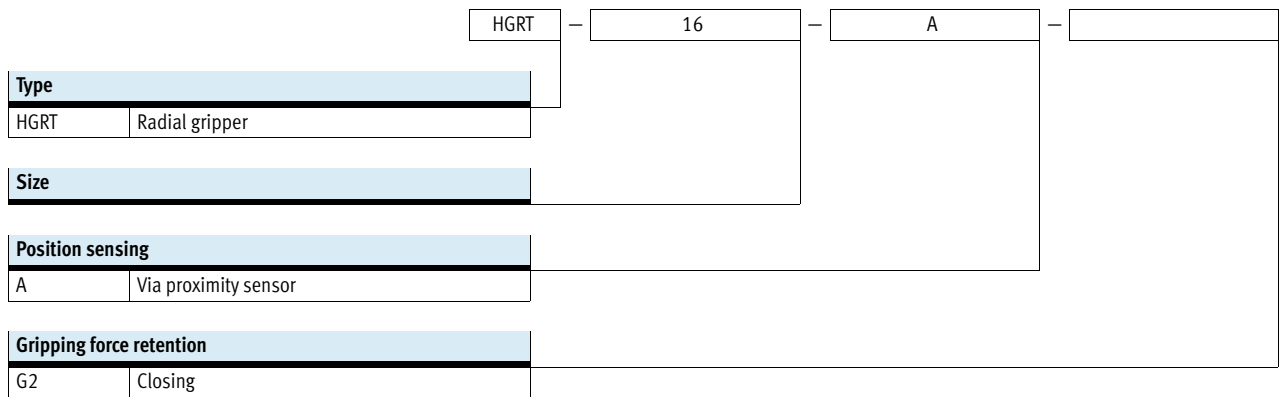
## Proportional pressure regulator VPPM



| Accessories                                |           |   |                 |
|--|-----------|---|-----------------|
| Type                                       | Size      | Description   | → Page/Internet |
| 1 Stroke reducing kit<br>HGRT-HR           | 16 ... 50 | For adjusting the opening angle   | 19              |
| 2 Centring sleeve<br>ZBH                   | 16 ... 50 | <ul style="list-style-type: none"> <li>For centring when attaching gripper fingers</li> <li>4 included in the scope of delivery of the gripper</li> </ul>                                     | 20              |
| 3 Proximity sensor<br>SIEN                 | 16 ... 50 | For sensing the piston position   | 21              |
| 4 Sensor bracket<br>DASI                   | 16 ... 50 | <ul style="list-style-type: none"> <li>For mounting the proximity sensors SIEN on the gripper</li> <li>The scope of delivery of the sensor bracket includes switch lugs</li> </ul>            | 19              |
| 5 Proximity sensor<br>SMT-8G/-10G          | 16 ... 50 | <ul style="list-style-type: none"> <li>For sensing the piston position</li> <li>The proximity sensor is flush with the housing at the bottom</li> </ul>                                       | 20              |
| 6 Position transmitter<br>SMAT-8M          | 40        | <ul style="list-style-type: none"> <li>Continuously senses the position of the piston. It has an analogue output with an output signal that is proportional to the piston position</li> </ul> | 20              |
| Position transmitter<br>SDAT               | 40, 50    |   |                 |
| 7 One-way flow control valve<br>GRLA       | 16 ... 50 | For regulating speed  | grla            |
| 8 Push-in fitting<br>QS                    | 16 ... 50 | For connecting compressed air tubing with standard O.D.   | qs              |
| 9 Centring sleeve<br>ZBH                   | 16 ... 50 | For centring when attaching to a drive or plate   | 20              |
| 10 Adapter kit<br>DHAA, HAPG               | 16 ... 50 | Connecting plate between drive and gripper  | 17              |
| 11 Proportional pressure regulator<br>VPPM | 16 ... 50 | For infinite adjustment of the gripping force   | vppm            |

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Type codes

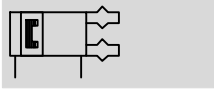


# Radial grippers HGRT, heavy-duty

Technical data

FESTO

Function  
Double-acting  
HGRT...



Function – Variants  
Single-acting or with gripping force retention



⊘ - Size  
12 ... 50 mm

┆ - Opening angle  
180°

Wearing parts kits  
→ page 16



| General technical data                          |                                       |  |         |  |     |  |     |  |      |  |                      |  |      |  |      |  |
|---|---------------------------------------|--|---------|--|-----|--|-----|--|------|--|----------------------|--|------|--|------|--|
| Size  | 16                                    |  | 20      |  | 25  |  | 32  |  | 40   |  | 50                   |  |      |  |      |  |
| Design  | Force-guided motion sequence          |  |         |  |     |  |     |  |      |  |                      |  |      |  |      |  |
| Mode of operation                               | Double-acting                         |  |         |  |     |  |     |  |      |  |                      |  |      |  |      |  |
| Gripper function                                | Radial                                |  |         |  |     |  |     |  |      |  |                      |  |      |  |      |  |
| Number of gripper jaws                          | 2                                     |  |         |  |     |  |     |  |      |  |                      |  |      |  |      |  |
| Max. opening angle                              | [°] 180                               |  |         |  |     |  |     |  |      |  |                      |  |      |  |      |  |
| Pneumatic connection                            | M3                                    |  | M5      |  | M5  |  | M5  |  | G1/8 |  | G1/8                 |  |      |  |      |  |
| Repetition accuracy <sup>1)</sup>               | [mm]                                  |  | ≤ 0.02  |  |     |  |     |  |      |  |                      |  |      |  |      |  |
| Max. interchangeability                         | [mm]                                  |  | ≤ 0.2   |  |     |  |     |  |      |  |                      |  |      |  |      |  |
| Max. gripper jaw backlash <sup>2)</sup>         | [mm]                                  |  | ≤ 0.1   |  |     |  |     |  |      |  |                      |  |      |  |      |  |
| Max. gripper jaw angular backlash <sup>3)</sup> | [°]                                   |  | ≤ 0.1   |  |     |  |     |  |      |  |                      |  |      |  |      |  |
| Max. permitted working frequency                | [Hz]                                  |  | ≤ 3     |  |     |  |     |  | ≤ 2  |  |                      |  |      |  |      |  |
| Rotational symmetry                             | [mm]                                  |  | ≤ ∅ 0.2 |  |     |  |     |  |      |  |                      |  |      |  |      |  |
| Position sensing                                | Via proximity sensor                  |  |         |  |     |  |     |  |      |  |                      |  |      |  |      |  |
|   | -                                     |  |         |  |     |  |     |  |      |  | Position transmitter |  |      |  |      |  |
| Type of mounting                                | Via female thread and centring sleeve |  |         |  |     |  |     |  |      |  |                      |  |      |  |      |  |
| Mounting position                               | Any                                   |  |         |  |     |  |     |  |      |  |                      |  |      |  |      |  |
| Product weight                                  | -                                     |  | [g]     |  | 130 |  | 290 |  | 540  |  | 840                  |  | 1580 |  | 3100 |  |
|   | G2                                    |  | [g]     |  | 150 |  | 320 |  | 610  |  | 940                  |  | 1770 |  | 3500 |  |

- 1) End-position drift under constant conditions of use with 100 consecutive strokes in the direction of movement of the gripper jaws
- 2) Perpendicular to the direction of motion of the gripper jaws
- 3) Preloaded, backlash-free ball bearing guide

| Operating and environmental conditions       |  |  |            |  |         |  |  |  |
|--|--|--|------------|--|---------|--|--|--|
| Operating pressure                           | -  |  | [bar]      |  | 3 ... 8 |  |  |  |
|  | G2   |  | [bar]      |  | 4 ... 8 |  |  |  |
| Operating medium                             | Compressed air in accordance with ISO 8573-1:2010 [7:4:4]  |  |            |  |         |  |  |  |
| Note on operating/pilot medium               | Operation with lubricated medium possible (in which case lubricated operation will always be required) |  |            |  |         |  |  |  |
| Ambient temperature <sup>1)</sup>            | [°C]   |  | +5 ... +60 |  |         |  |  |  |
| Corrosion resistance class CRC <sup>2)</sup> | 2  |  |            |  |         |  |  |  |

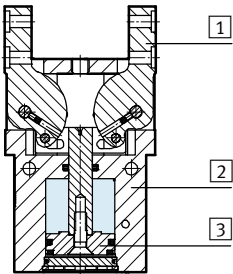
- 1) Note operating range of proximity sensors
- 2) Corrosion resistance class CRC 2 to Festo standard FN 940070  
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

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Technical data

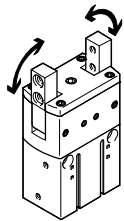
## Materials

Sectional view



| Radial gripper |                   |   |
|----------------|-------------------|---|
| 1              | Gripper jaw       | Hardened steel                            |
| 2              | Housing           | Smooth anodised aluminium                 |
| 3              | Piston            | Anodised aluminium                        |
| -              | Seals             | Polyurethane, nitrile rubber              |
| -              | Note on materials | Free of copper and PTFE<br>RoHS-compliant |

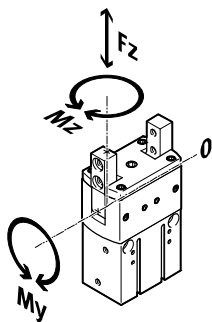
## Total gripping torque at 6 bar



The gripping torque is not constant within the opening angle → page 12.

| Size    | 16    | 20  | 25  | 32   | 40   | 50   |      |
|---------|-------|-----|-----|------|------|------|------|
| Opening | [Ncm] | 188 | 588 | 1348 | 2024 | 3892 | 8424 |
| Closing | [Ncm] | 158 | 516 | 1208 | 1856 | 3526 | 7754 |

## Static characteristic load values at the gripper jaws



The indicated permissible forces and torques apply to a single gripper jaw. The indicated values include the lever arm, additional applied loads caused by the workpiece or external gripper

fingers, as well as forces which occur during movement.

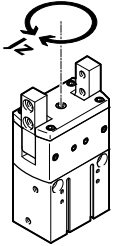
The zero co-ordinate line (gripper jaw guide) must be taken into consideration for the calculation of torques.

| Size                          | 16   | 20  | 25  | 32  | 40   | 50   |      |
|-------------------------------|------|-----|-----|-----|------|------|------|
| Max. permissible force $F_z$  | [N]  | 50  | 100 | 180 | 280  | 400  | 1200 |
| Max. permissible torque $M_y$ | [Nm] | 3.9 | 6.2 | 10  | 13.5 | 17.5 | 35   |
| Max. permissible torque $M_z$ | [Nm] | 0.3 | 0.5 | 1   | 1.3  | 1.6  | 10   |

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Technical data

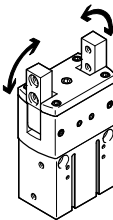
## Mass moment of inertia [kgm<sup>2</sup>x10<sup>-4</sup>]



Mass moment of inertia of the radial gripper referred to the central axis, without external gripper fingers, without load.

| Size |    | 16    | 20   | 25   | 32   | 40    | 50    |
|------|----|-------|------|------|------|-------|-------|
| HGRT | -  | 0.191 | 0.74 | 2.1  | 4.62 | 13.87 | 43.39 |
|      | G2 | 0.21  | 0.81 | 2.33 | 5.03 | 15.26 | 47.70 |

## Opening and closing times [ms] at 6 bar



The indicated opening and closing times [ms] have been measured at room temperature and 6 bar operating pressure with vertically mounted gripper and without external gripper fingers.

The grippers must be throttled for greater applied loads. Opening and closing times must then be adjusted accordingly.

| Size                             |    |         | 16  | 20  | 25  | 32  | 40  | 50  |
|----------------------------------|----|---------|-----|-----|-----|-----|-----|-----|
| Without external gripper fingers |    |         |     |     |     |     |     |     |
| HGRT                             | -  | Opening | 246 | 280 | 309 | 359 | 283 | 350 |
|                                  |    | Closing | 293 | 308 | 343 | 403 | 320 | 403 |
| HGRT                             | G2 | Opening | 233 | 372 | 443 | 503 | 370 | 490 |
|                                  |    | Closing | 185 | 295 | 301 | 337 | 270 | 355 |

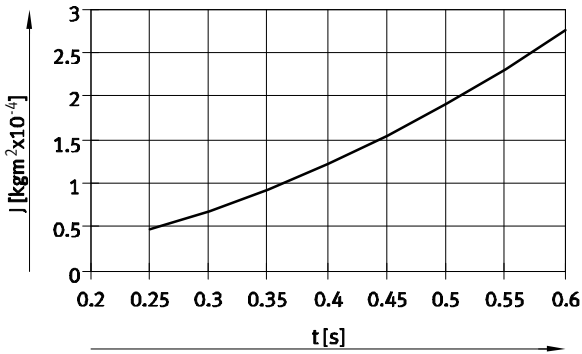


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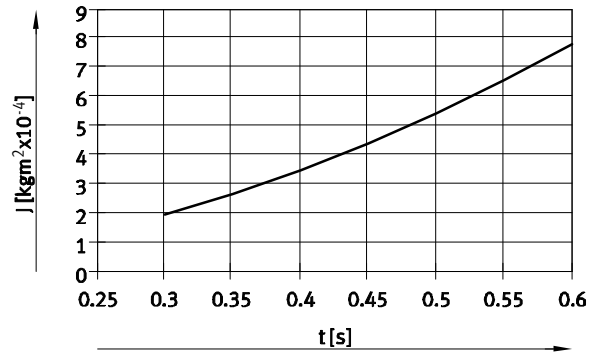
Technical data

Permissible mass moment of inertia  $J$  with external gripper fingers as a function of opening and closing times  $t$  at 6 bar

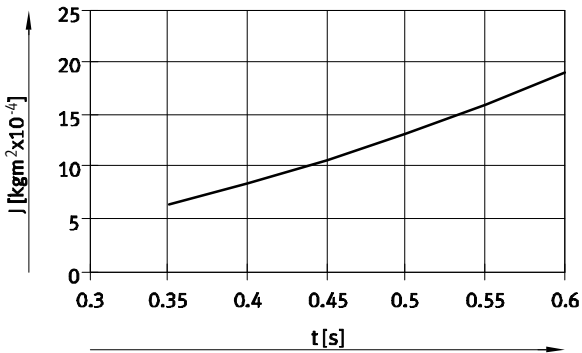
HGRT-16-A



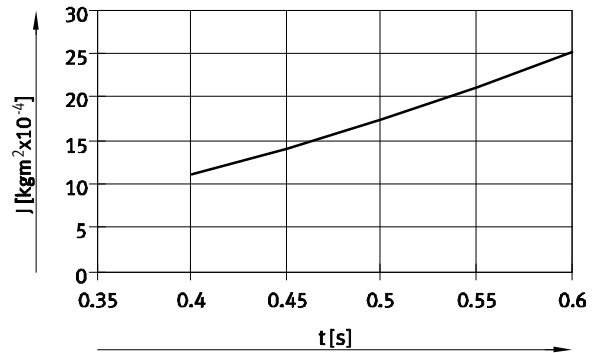
HGRT-20-A



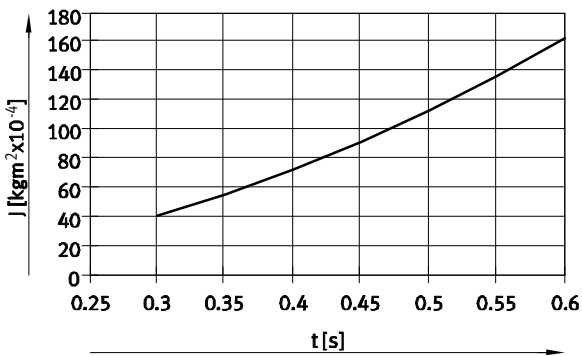
HGRT-25-A



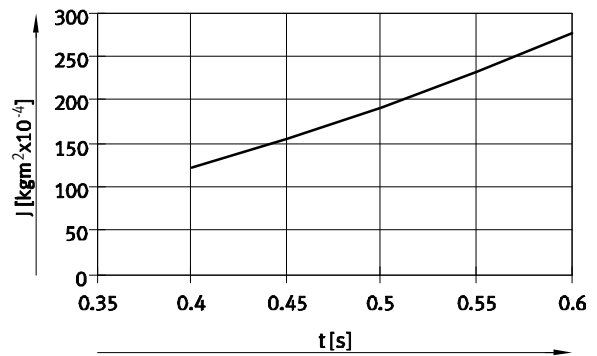
HGRT-32-A



HGRT-40-A



HGRT-50-A



# Radial grippers HGRT, heavy-duty

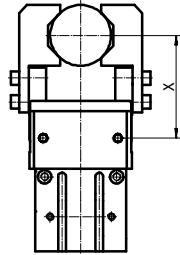
Technical data



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

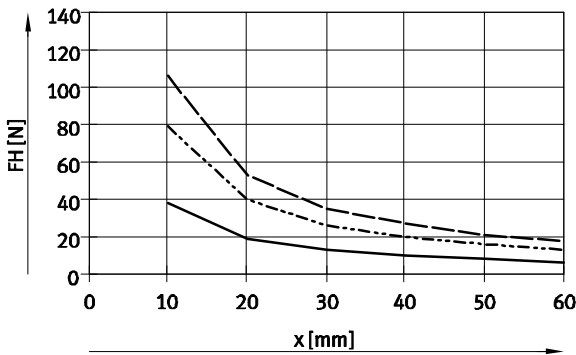
Gripping forces as a function of the operating pressure and the lever arm can be determined for the size using the following graph.

The gripping torque is not constant within the opening angle → page 12.

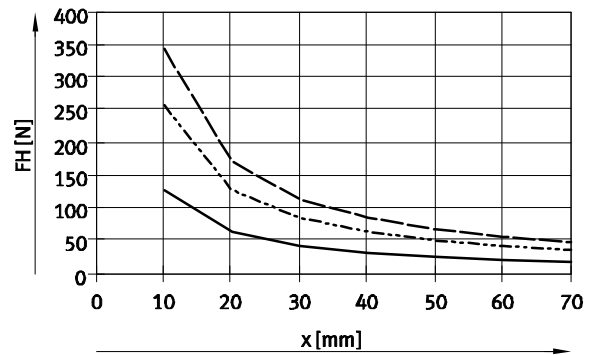


### External gripping (closing)

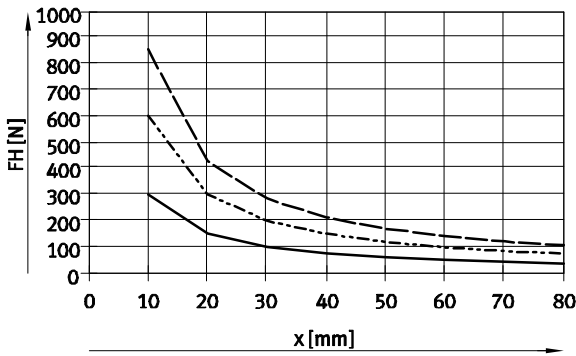
HGRT-16-A



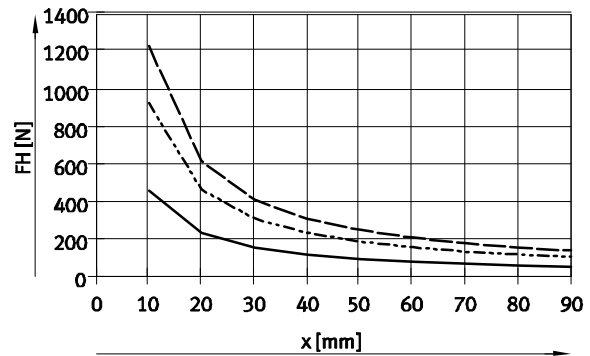
HGRT-20-A



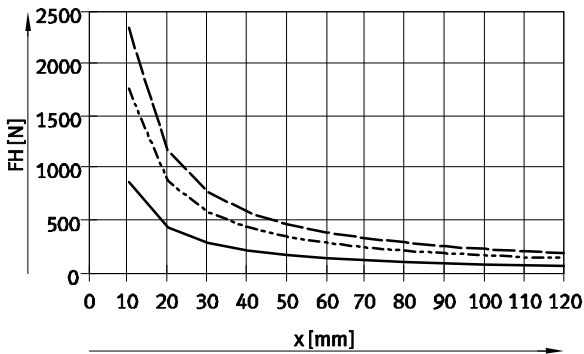
HGRT-25-A



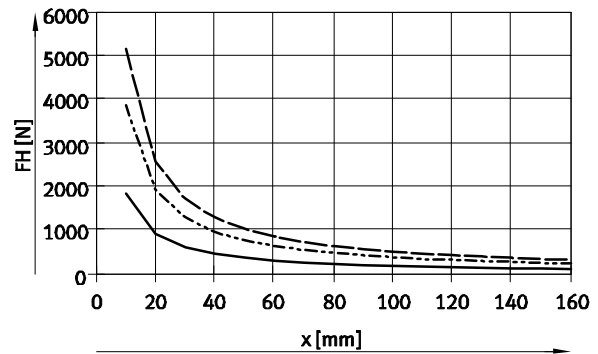
HGRT-32-A



HGRT-40-A



HGRT-50-A



- 3 bar
- - - 6 bar
- · - 8 bar

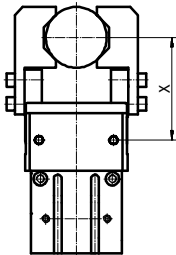
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## Gripping force $F_H$ per gripper jaw as a function of operating pressure and lever arm $x$

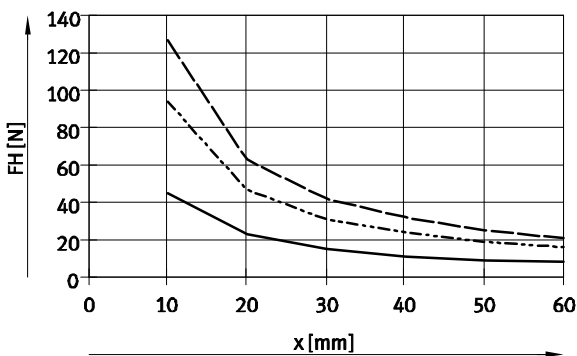
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The gripping torque is not constant within the opening angle → page 12.

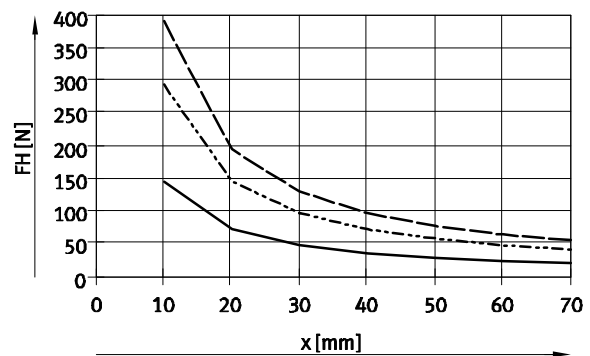


### Internal gripping (opening)

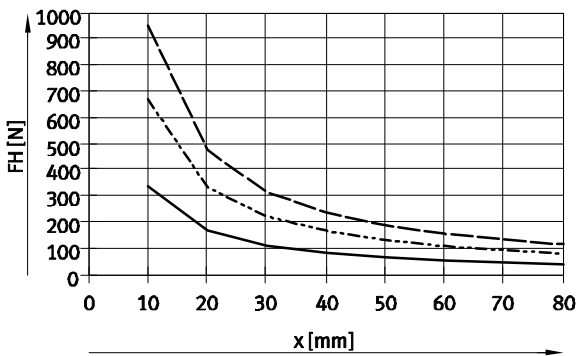
HGRT-16-A



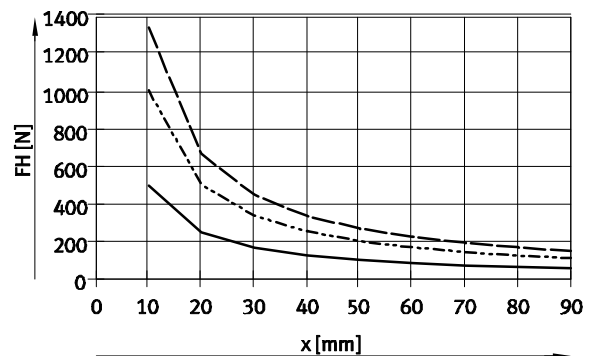
HGRT-20-A



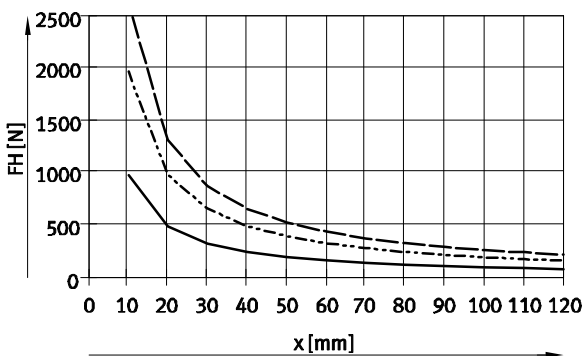
HGRT-25-A



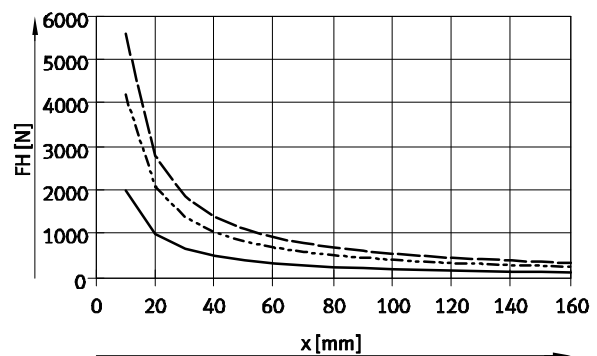
HGRT-32-A



HGRT-40-A



HGRT-50-A



- 3 bar
- - - 6 bar
- · - 8 bar

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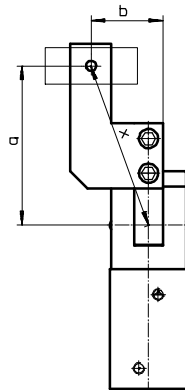
Technical data

## Gripping force $F_H$ per gripper jaw at 6 bar as a function of lever arm $x$ and eccentricity $a$ and $b$

The following formula must be used to calculate the lever arm  $x$  with eccentric gripping:

$$x = \sqrt{a^2 + b^2}$$

The gripping force  $F_H$  can be read from the graphs (→ from page 10) using the calculated value  $x$ .

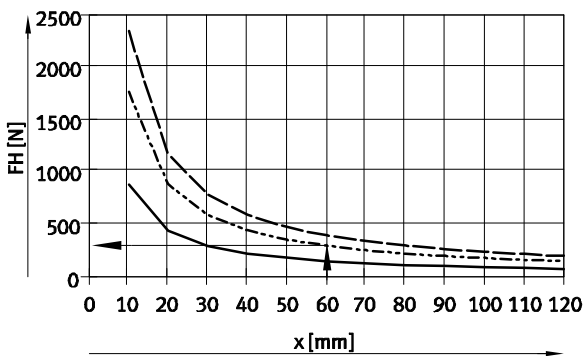


### Calculation example

Given:  
 Distance  $a = 45$  mm  
 Distance  $b = 40$  mm  
 To be calculated:  
 The gripping force at 6 bar,  
 with an HGRT-40,  
 used as an external gripper

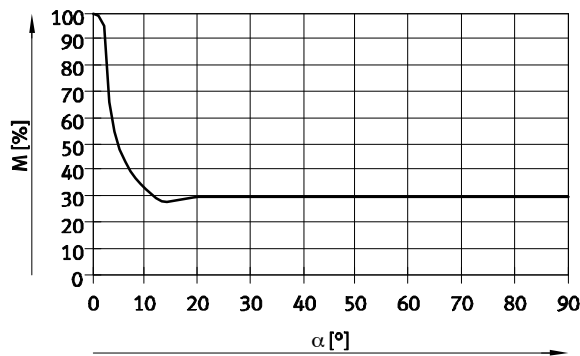
Procedure:  
 Calculating the lever arm  $x$   
 $x = \sqrt{45^2 + 40^2}$   
 $x = 60$  mm

The graph (→ page 10) gives a value of  $F_H = 300$  N for the gripping force.



### Torque curve $M$ as a function of opening angle $\alpha$

The drive principle of the gripper jaws means that the torque is not constant within the opening angle. The percentage of torque available in each case can be seen in the graph. An opening angle of  $0^\circ$  means a parallel gripper jaw position.

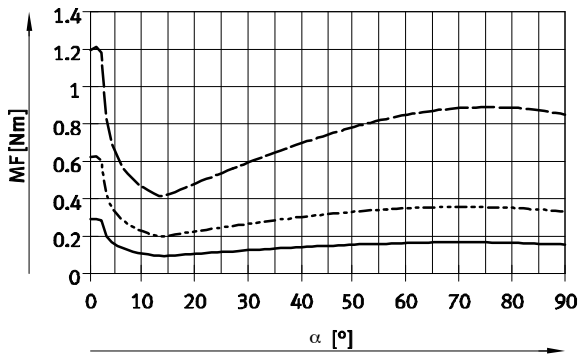


# Radial grippers HGRT, heavy-duty

Technical data

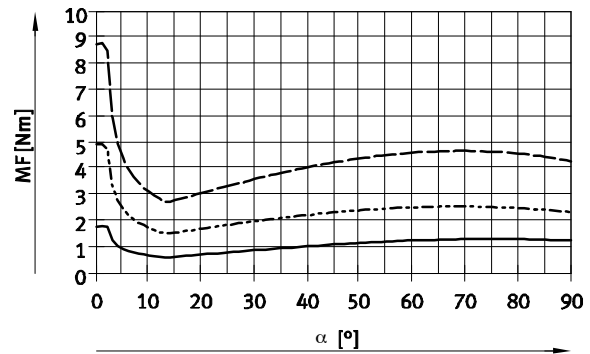
## Spring torque $M_F$ as a function of opening angle $\alpha$

HGRT-16 ... 25



- HGRT-16-A-G2
- - - HGRT-20-A-G2
- · - HGRT-25-A-G2

HGRT-32 ... 40



- HGRT-32-A-G2
- - - HGRT-40-A-G2
- · - HGRT-50-A-G2

## Determining the actual gripping torques $M_{Grtotal}$ for HGRT-...-G2 as a function of the application

The radial gripper with integrated spring, HGRT-...-G2 (closing gripping force retention), can be used as a:

- Single-acting gripper
- Gripper with supplementary gripping force
- Gripper with gripping force retention

To calculate the available gripping torque  $M_{Grtotal}$  (per gripper jaw), the data from the graphs for the gripping force  $F_H$  (→ page 10/11), the torque

curve  $M$  (→ page 12) and the spring torque  $M_F$  (→ page 13) must be combined accordingly.

$$M_{Gr} = F_H * x * M \text{ [%]}$$

- $M_{Gr}$  Gripping torque
- $F_H$  Gripping force
- $x$  Lever arm
- $M$  Torque curve

### Application

#### Single-acting

- Gripping with spring force:  
 $M_{Grtotal} = M_F$
- Gripping with pressure force:  
 $M_{Grtotal} = M_{Gr} - M_F$

#### Supplementary gripping force

- Gripping with pressure and spring force:  
 $M_{Grtotal} = M_{Gr} + M_F$

#### Gripping force retention

- Gripping with spring force:  
 $M_{Grtotal} = M_F$

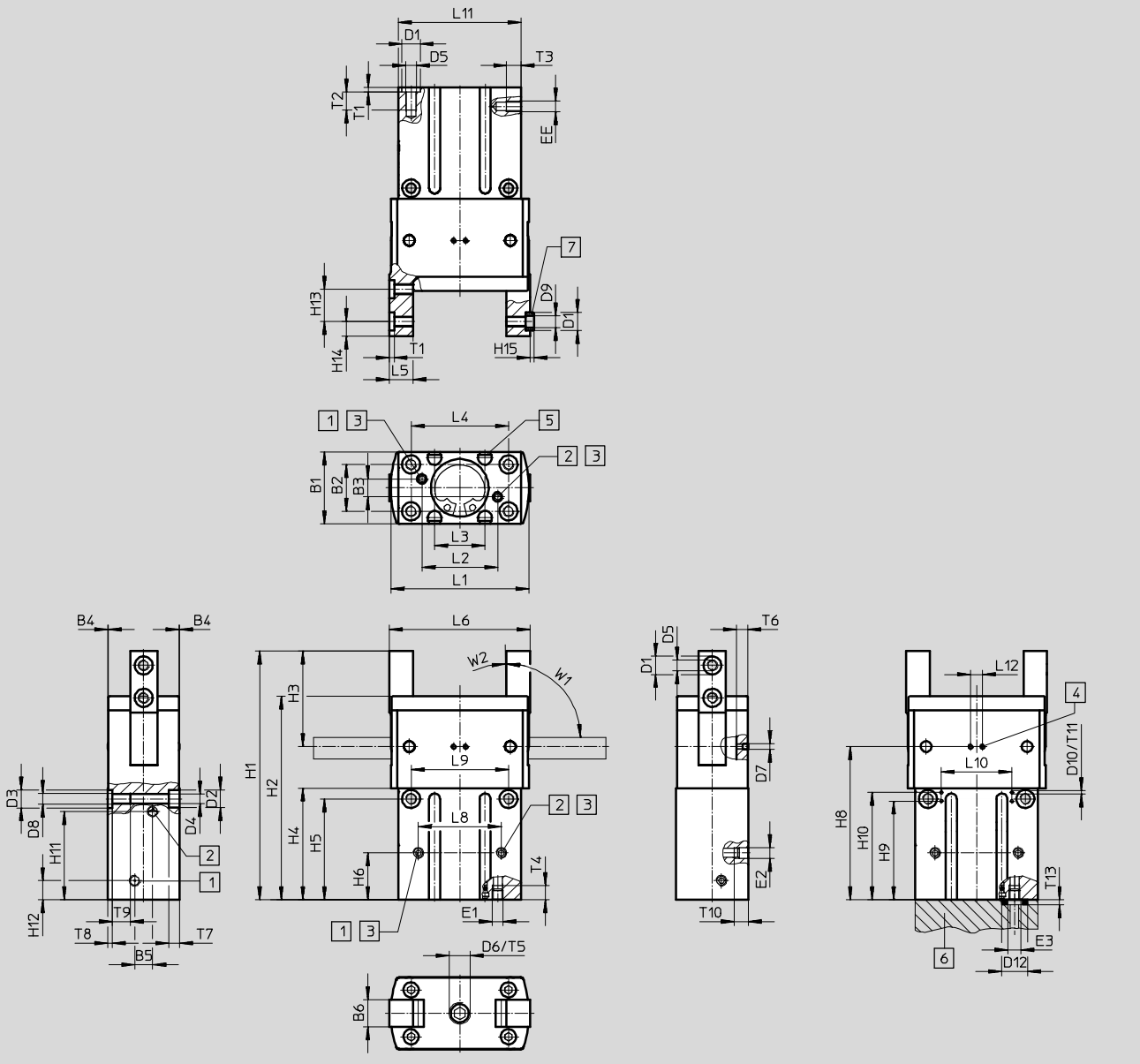
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Technical data

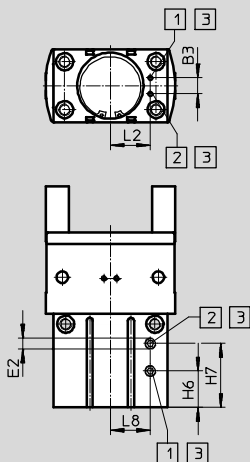
FESTO

## Dimensions

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



### HGRT-32 ... 50



- 1 Supply port, opening
- 2 Supply port, closing
- 3 Alternative supply port, sealed on delivery
- 4 Sealing air, sealed on delivery

- 5 Sensor slot for proximity sensor
- 6 O-ring for radial gripper  
HGRT-16 ... 25:  $\varnothing$  3x1.5  
HGRT-32 ... 50:  $\varnothing$  5x1.5
- 7 Centring sleeves ZBH  
(4 included in the scope of delivery)

# Radial grippers HGRT, heavy-duty

Technical data

| Size | B1    | B2 <sup>1)</sup> | B3   | B4    | B5   | B6    | D1<br>∅ | D2<br>∅ | D3<br>∅ | D4<br>∅ | D5  | D6  | D7 | D8  | D9<br>∅ |
|------|-------|------------------|------|-------|------|-------|---------|---------|---------|---------|-----|-----|----|-----|---------|
| [mm] | ±0.05 |                  | ±0.1 | +0.05 | ±0.1 | ±0.05 | H8      | +0.1    | H8      |         |     |     |    |     |         |
| 16   | 20    | 13               | 5    | 0.2   | 5    | 7.5   | 5       | 4.9     | 5       | 2.6     | M3  | M6  | -  | M3  | 3.2     |
| 20   | 28    | 18               | 6    | 0.2   | 6    | 10    | 7       | 7.4     | 7       | 4.2     | M5  | M6  | M3 | M5  | 5.3     |
| 25   | 35    | 23               | 7    | 0.2   | 7    | 12.5  | 9       | 9.4     | 9       | 5.1     | M6  | M8  | M5 | M6  | 6.4     |
| 32   | 40    | 27               | 10   | 0.2   | 10   | 14.5  | 9       | 9.4     | 9       | 5.1     | M6  | M8  | M5 | M6  | 6.4     |
| 40   | 50    | 33               | 11   | 0.2   | 11   | 18    | 12      | 10.4    | 12      | 6.8     | M8  | M8  | M5 | M8  | 10.3    |
| 50   | 64    | 42               | 14   | 0.2   | 14   | 22.5  | 15      | 13.5    | 15      | 8.5     | M10 | M12 | M5 | M10 | 12.4    |

| Size | D10 | D12 | EE   | E1 | E2   | E3 | H1    |             | H2    |             | H3   | H4   |       | H5         |      |
|------|-----|-----|------|----|------|----|-------|-------------|-------|-------------|------|------|-------|------------|------|
|      |     |     |      |    |      |    | ±0.05 | -G<br>±0.05 | ±0.05 | -G<br>±0.05 |      | ±0.1 | ±0.1  | -G<br>±0.1 | ±0.1 |
| 16   | -   | 6   | M3   | M3 | M3   | M3 | 69    | 77.5        | 56.5  | 65          | 26.5 | 31   | 39.5  | 28         | 36.5 |
| 20   | -   | 6   | M5   | M3 | M3   | M3 | 88.5  | 97.5        | 71    | 80          | 35.1 | 39   | 48    | 34.5       | 43.5 |
| 25   | M3  | 6   | M5   | M3 | M3   | M3 | 109   | 120         | 88    | 99          | 42.5 | 48.3 | 59.3  | 42.5       | 53.5 |
| 32   | M3  | 8   | M5   | M5 | M5   | M5 | 125   | 137         | 102   | 114         | 49   | 54.7 | 66.7  | 49         | 61   |
| 40   | M3  | 8   | G1/8 | M5 | G1/8 | M5 | 154.6 | 172.6       | 122   | 140         | 63.6 | 65.5 | 83.5  | 58         | 76   |
| 50   | M3  | 8   | G1/8 | M5 | G1/8 | M5 | 193.5 | 215.5       | 153   | 175         | 79.5 | 82.4 | 104.4 | 73         | 95   |

| Size | H6   |            | H7   |            | H8   |      | H9   |            | H10  |            | H11  |            | H12  | H13 <sup>1)</sup> |
|------|------|------------|------|------------|------|------|------|------------|------|------------|------|------------|------|-------------------|
|      | ±0.1 | -G<br>±0.1 | ±0.1 | -G<br>±0.1 |      | -G   | ±0.1 | -G<br>±0.1 | ±0.1 | -G<br>±0.1 | ±0.1 | -G<br>±0.1 |      |                   |
| 16   | 13   | 13         | -    | -          | -    | -    | -    | -          | -    | -          | 24.5 | 33         | 5.3  | 9                 |
| 20   | 16   | 16         | -    | -          | 52.5 | 61.5 | -    | -          | -    | -          | 29   | 38         | 6    | 12                |
| 25   | 19.5 | 19.5       | -    | -          | 65.5 | 76.5 | 28   | 39         | 36   | 47         | 36   | 47         | 7.6  | 14                |
| 32   | 20   | 20         | 35.5 | 46.5       | 75.5 | 87.5 | 34.5 | 46.5       | 42.5 | 54.5       | 42.4 | 54.2       | 8.1  | 16                |
| 40   | 26   | 29         | 45   | 56.5       | 90   | 108  | 47   | 65         | 55   | 73         | 48   | 64.5       | 9.7  | 20                |
| 50   | 32   | 32         | 56   | 70         | 113  | 135  | 72   | 94         | 80   | 102        | 62   | 80         | 13.5 | 25                |

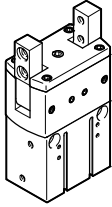
| Size | H14 <sup>1)</sup> | H15  | L1    | L2                   | L3   | L4 <sup>1)</sup> | L5    | L6   | L8   | L9 <sup>1)</sup> | L10  | L11  | L12 | T1   |
|------|-------------------|------|-------|----------------------|------|------------------|-------|------|------|------------------|------|------|-----|------|
| [mm] |                   | -0.3 | ±0.05 |                      | +0.1 |                  | ±0.05 | ±0.5 | ±0.1 |                  | ±0.1 | ±0.1 |     | +0.1 |
| 16   | 4                 | 1.2  | 38.3  | 21±0.1               | 14   | 27               | 6.5   | 39   | 23   | 27               | -    | 34   | -   | 1.3  |
| 20   | 5                 | 1.4  | 49.9  | 30±0.1               | 17   | 34               | 9     | 50.4 | 30   | 34               | -    | 44   | 11  | 1.6  |
| 25   | 6                 | 1.9  | 61.1  | 39±0.1               | 22   | 42               | 11    | 61.2 | 39   | 41               | 33   | 54   | 11  | 2.1  |
| 32   | 7                 | 1.9  | 72.2  | 22.5 <sup>+0.1</sup> | 24   | 51               | 12    | 72.2 | 22.5 | 48               | 41   | 64   | 11  | 2.1  |
| 40   | 9                 | 2.4  | 90.3  | 28 <sup>+0.1</sup>   | 32   | 63               | 16.5  | 90.8 | 28   | 62               | 47   | 80   | 11  | 2.6  |
| 50   | 11                | 2.9  | 113.2 | 35 <sup>+0.1</sup>   | 36   | 80               | 20    | 113  | 35   | 78               | 59   | 100  | 11  | 3.1  |

| Size | T2   |            | T3  | T4  | T5 | T6    | T7  | T8  | T9   | T10 | T11 | T12 | T13 | W1 | W2 |
|------|------|------------|-----|-----|----|-------|-----|-----|------|-----|-----|-----|-----|----|----|
|      | min. | -G<br>min. |     |     |    |       |     |     |      |     |     |     |     |    |    |
| 16   | 5    | 5          | 4   | 4   | 4  | -     | 3.1 | 1.3 | 5    | 4   | -   | -   | 1.2 | 90 | 1  |
| 20   | 8.5  | 8          | 5   | 4   | 5  | 4.3   | 4.1 | 1.6 | 8    | 4   | -   | 4   | 1.2 | 90 | 1  |
| 25   | 10   | 10         | 5   | 4.5 | 6  | 5.8   | 5.1 | 2.1 | 10   | 4.5 | 5.5 | -   | 1.2 | 90 | 1  |
| 32   | 9.5  | 9.5        | 5   | 5   | 7  | 6.3   | 5.2 | 2.1 | 9.5  | 5   | 5.5 | -   | 1.2 | 90 | 1  |
| 40   | 14.5 | 14.5       | 8.5 | 5   | 8  | 7.8   | 6.2 | 2.6 | 12.5 | 8.5 | 5.5 | -   | 1.2 | 90 | 1  |
| 50   | 15   | 15         | 8.5 | 5   | 10 | 10.55 | 8.1 | 3.1 | 15   | 8.5 | 5.5 | -   | 1.2 | 90 | 1  |

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

# Radial grippers HGRT, heavy-duty

Technical data

| Ordering data   |      |   |                  |  |                     |
|---|------|---|------------------|--|---------------------|
|   | Size | Double-acting<br>without compression spring |                  | Single-acting or with gripping force retention,<br>closing |                     |
|   | [mm] | Part No.                                    | Type             | Part No.   | Type                |
|  | 16   | <b>563904</b>                               | <b>HGRT-16-A</b> | <b>563905</b>  | <b>HGRT-16-A-G2</b> |
|   | 20   | <b>563906</b>                               | <b>HGRT-20-A</b> | <b>563907</b>  | <b>HGRT-20-A-G2</b> |
|   | 25   | <b>563908</b>                               | <b>HGRT-25-A</b> | <b>563909</b>  | <b>HGRT-25-A-G2</b> |
|   | 32   | <b>563910</b>                               | <b>HGRT-32-A</b> | <b>563911</b>  | <b>HGRT-32-A-G2</b> |
|   | 40   | <b>563912</b>                               | <b>HGRT-40-A</b> | <b>563913</b>  | <b>HGRT-40-A-G2</b> |
|   | 50   | <b>563914</b>                               | <b>HGRT-50-A</b> | <b>563915</b>  | <b>HGRT-50-A-G2</b> |
|   |      |   |                  |  |                     |

| Ordering data – Wearing parts kits |                |                |
|------------------------------------|----------------|----------------|
| Size                               | Part No.       | Type           |
| [mm]                               |                |                |
| 16                                 | <b>1459481</b> | <b>HGRT-16</b> |
| 20                                 | <b>1459482</b> | <b>HGRT-20</b> |
| 25                                 | <b>1459483</b> | <b>HGRT-25</b> |
| 32                                 | <b>1459484</b> | <b>HGRT-32</b> |
| 40                                 | <b>1459485</b> | <b>HGRT-40</b> |
| 50                                 | <b>1459486</b> | <b>HGRT-50</b> |




# Radial grippers HGRT



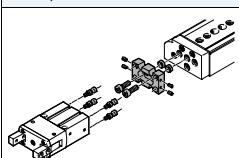
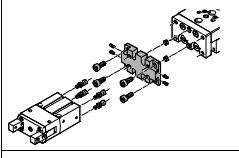
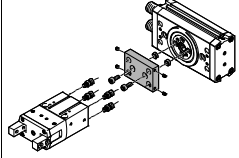
Accessories

FESTO

Adapter kit  
DHAA

Material:  
Wrought aluminium alloy  
Free of copper and PTFE  
RoHS-compliant

 Note  
The kit includes the individual mounting interface as well as the necessary mounting material.

| Permissible drive/gripper combinations with adapter kit                             |            |              |   |   | Download CAD data → <a href="http://www.festo.com">www.festo.com</a> |                              |
|---|------------|--------------|---|---|--|------------------------------|
| Combination   | Drive Size | Gripper Size | Mounting option   |   | Adapter kit  |                              |
|   |            |              |  |  | CRC <sup>1)</sup>  | Part No. Type                |
| DGSL/HGRT   | DGSL       | HGRT         |   |   | DHAA   |                              |
|    | 8, 10      | 16           | ■   | ■   | 2  | 1273902 DHAA-G-G6-8-B11-16   |
|   | 12, 16     | 16           | ■   | ■   |  | 1467524 DHAA-G-G6-12-B11-16  |
|   | 12, 16     | 20           | ■   | ■   |  | 1278364 DHAA-G-G6-12-B11-20  |
|   | 20, 25     | 25           | ■   | ■   |  | 1468307 DHAA-G-G6-20-B11-25  |
|   | 25         | 32           | ■   | ■   |  | 1280494 DHAA-G-G6-25-B11-32  |
| SLT/HGRT  | SLT        | HGRT         |   |   | DHAA   |                              |
|   | 10         | 16           | ■   | –   | 2  | 1274402 DHAA-G-G3-10-B11-16  |
|   | 16         | 20           | ■   | –   |  | 1278980 DHAA-G-G3-16-B11-20  |
|   | 20         | 25           | ■   | –   |  | 1279954 DHAA-G-G3-20-B11-25  |
|   | 25         | 32           | ■   | –   |  | 1280734 DHAA-G-G3-25-B11-32  |
|   | 25         | 40           | ■   | –   |  | 1281448 DHAA-G-G3-25-B11-40  |
| DRRD/HGRT   | DRRD       | HGRT         |   |   | DHAA   |                              |
|  | 16         | 16           | ■   | ■   | 2  | 2185606 DHAA-G-Q11-16-B11-16 |
|   | 20         | 20           | ■   | ■   |  | 2184467 DHAA-G-Q11-20-B11-20 |
|   | 25         | 25           | ■   | ■   |  | 1741183 DHAA-G-Q11-25-B11-25 |
|   | 25         | 32           | ■   | ■   |  | 1743177 DHAA-G-Q11-25-B11-32 |
|   | 32         | 25           | ■   | ■   |  | 2184080 DHAA-G-Q11-32-B11-25 |
|   | 32         | 32           | ■   | ■   |  | 2184322 DHAA-G-Q11-32-B11-32 |
|   | 32         | 40           | ■   | ■   |  | 2184652 DHAA-G-Q11-32-B11-40 |
|   | 35         | 40           | ■   | ■   |  | 2185436 DHAA-G-Q11-35-B11-40 |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070  
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.


# Radial grippers HGRT

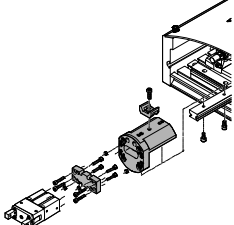
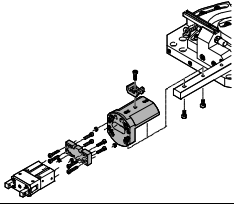
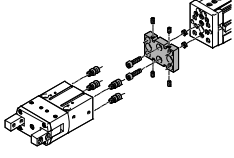
Accessories



**Adapter kit**  
DHAA, HAPG

Material:  
Wrought aluminium alloy  
Free of copper and PTFE  
RoHS-compliant

 Note  
The kit includes the individual mounting interface as well as the necessary mounting material.

| Permissible drive/gripper combinations with adapter kit                             |            |         |   |   |                   |                     | Download CAD data → <a href="http://www.festo.com">www.festo.com</a> |  |
|---|------------|---------|---|---|-------------------|---------------------|--|--|
| Combination   | Drive Size | Gripper |   |   | Adapter kit       |                     |  |  |
|   |            | Size    | Mounting option   |   | CRC <sup>1)</sup> | Part No.            | Type   |  |
|   |            |         |  |  |                   |                     |  |  |
|    | HSP        | HGRT    |   |   | DHAA, HAPG        |                     |  |  |
|   | 16         | 16      | ■   | –   | 2                 | 1274347             | DHAA-G-H4-16-B11-16  |  |
|   |            |         |   |   |                   | 540882              | HAPG-71-B  |  |
|   | 25         | 16      | ■   | –   | 1274347           | DHAA-G-H4-16-B11-16 |  |  |
|   |            |         |   |   | 540883            | HAPG-72-B           |  |  |
|  | HSW        | HGRT    |   |   | DHAA, HAPG        |                     |  |  |
|   | 12, 16     | 16      | ■   | –   | 2                 | 1274347             | DHAA-G-H4-16-B11-16  |  |
|   |            |         |   |   |                   | 540882              | HAPG-71-B  |  |
|  | EGSL       | HGRT    |   |   | DHAA              |                     |  |  |
|   | 45, 55     | 20      | ■   | ■   | 2                 | 1278364             | DHAA-G-G6-12-B11-20  |  |
|   | 45, 55     | 25      | ■   | ■   |                   | 1279418             | DHAA-G-E8-45-B11-25  |  |
|   | 75         | 25      | ■   | ■   |                   | 1468307             | DHAA-G-G6-20-B11-25  |  |
| 75  | 32         | ■       | ■   | 1280494   |                   | DHAA-G-G6-25-B11-32 |  |  |
|  | ERMB       | HGRT    |   |   | DHAA              |                     |  |  |
|   | 20         | 20      | ■   | ■   | 2                 | 1465263             | DHAA-G-Q5-20-B11-20  |  |
|   | 25, 32     | 25      | ■   | ■   |                   | 1279439             | DHAA-G-Q5-25-B11-25  |  |
| 25, 32  | 32         | ■       | ■   | 1468949   |                   | DHAA-G-Q5-25-B11-32 |  |  |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070  
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

# Radial grippers HGRT

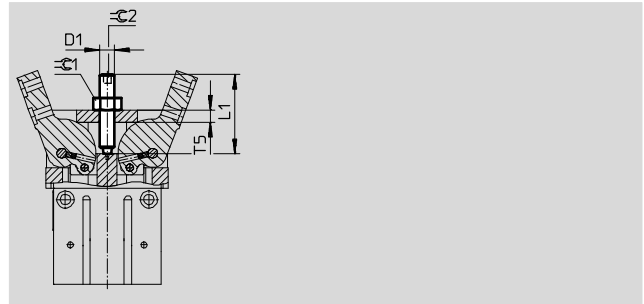
Accessories

## Stroke reducing kit HGRT-HR

Materials:

Screw: Steel

Lock nut: Case-hardened steel



| Dimensions and ordering data |     |    |    |                 |                 |                               |        |          |            |
|------------------------------|-----|----|----|-----------------|-----------------|-------------------------------|--------|----------|------------|
| For size                     | D1  | L1 | T5 | $\varnothing 1$ | $\varnothing 2$ | Adjustable end-position range | Weight | Part No. | Type       |
| [mm]                         |     |    |    |                 |                 | [mm]                          | [g]    |          |            |
| 16                           | M6  | 26 | 4  | 10              | 3               | 20                            | 7      | 564296   | HGRT-HR-16 |
| 20                           | M6  | 31 | 5  | 10              | 3               | 25                            | 9      | 564297   | HGRT-HR-20 |
| 25                           | M8  | 36 | 6  | 13              | 4               | 30                            | 18     | 564298   | HGRT-HR-25 |
| 32                           | M8  | 41 | 7  | 13              | 4               | 35                            | 20     | 564299   | HGRT-HR-32 |
| 40                           | M8  | 51 | 8  | 13              | 4               | 45                            | 24     | 564300   | HGRT-HR-40 |
| 50                           | M12 | 61 | 10 | 19              | 6               | 50                            | 66     | 564301   | HGRT-HR-50 |

## Sensor bracket DASI

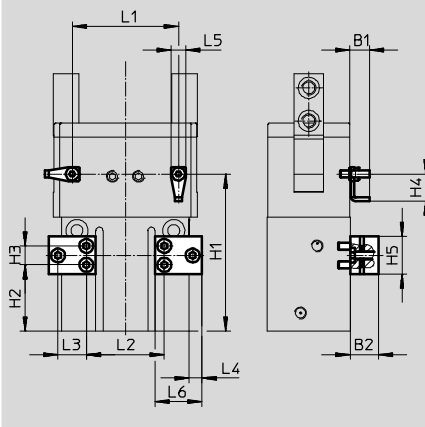
Material:

DASI-B10-25-S8: Polyamide

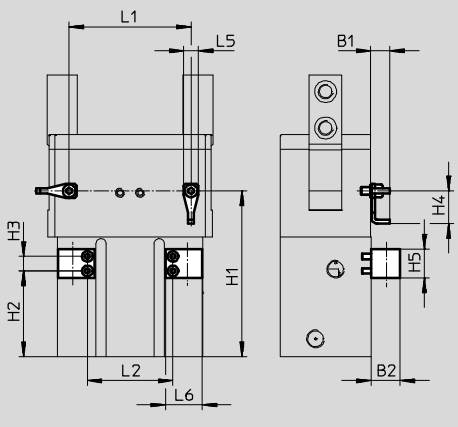
DASI-B10-40-S12: Aluminium



DASI-B10-25-S8



DASI-B10-40-S12




| Dimensions and ordering data |            |           |            |    |
|------------------------------|------------|-----------|------------|----|
| For type                     | H1         | H2        | L1         | L2 |
|                              | $\pm 0.02$ | $\pm 0.1$ | $\pm 0.01$ |    |
| HGRT-25-A                    | 66.5       | 28        | 45         | 33 |
| HGRT-25-A-G2                 | 77.5       | 39        | 45         | 33 |
| HGRT-32-A                    | 76         | 34.5      | 53         | 64 |
| HGRT-32-A-G2                 | 88         | 46.5      | 53         | 64 |
| HGRT-40-A                    | 91         | 47        | 67         | 47 |
| HGRT-40-A-G2                 | 109        | 65        | 67         | 47 |
| HGRT-50-A                    | 114        | 72        | 84         | 59 |
| HGRT-50-A-G2                 | 136        | 94        | 84         | 59 |

| For size | B1   | B2 | H3        | H4   | H5 | L3        | L4  | L5 | L6        | Weight | Part No. | Type            |
|----------|------|----|-----------|------|----|-----------|-----|----|-----------|--------|----------|-----------------|
| [mm]     |      |    | $\pm 0.1$ |      |    | $\pm 0.1$ |     |    | $\pm 0.2$ | [g]    |          |                 |
| 25, 32   | 8.45 | 12 | 8         | 11.5 | 16 | 12        | 5.5 | 6  | 20        | 39     | 564311   | DASI-B10-25-S8  |
| 40, 50   | 10.5 | 16 | 8         | 18   | 16 | -         | -   | 8  | 20        | 18     | 564312   | DASI-B10-40-S12 |


# Radial grippers HGRT


Accessories



FESTO

| Ordering data – Centring sleeves  |               | Technical data → Internet: zbh |        |                  |
|---|---------------|--------------------------------|--------|------------------|
|   | For size [mm] | Part No.                       | Type   | PU <sup>1)</sup> |
|  | 16            | 189652                         | ZBH-5  | 10               |
|   | 20            | 186717                         | ZBH-7  |                  |
|   | 25, 32        | 150927                         | ZBH-9  |                  |
|   | 40            | 189653                         | ZBH-12 |                  |
|   | 50            | 191409                         | ZBH-15 |                  |

1) Packaging unit

| Proximity sensor for size 16 ... 32   |                                   |   |                  |                  | Technical data → Internet: smt |                           |
|---|-----------------------------------|---|------------------|------------------|--------------------------------|---------------------------|
| Ordering data – Proximity sensors for C-slot, magneto-resistive                   |                                   |   |                  |                  |                                |                           |
|   | Type of mounting                  | Electrical connection, connection direction | Switching output | Cable length [m] | Part No.                       | Type                      |
| N/O contact   |                                   |   |                  |                  |                                |                           |
|  | Insertable in the slot lengthwise | Cable, 3-wire, lateral                      | PNP              | 2.5              | 547862                         | SMT-10G-PS-24V-E-2,5Q-OE  |
|   |                                   | Plug M8x1, 3-pin, lateral                   |                  | 0.3              | 547863                         | SMT-10G-PS-24V-E-0,3Q-M8D |
|   |                                   | Cable, 3-wire, lateral                      | NPN              | 2.5              | 8065030                        | SMT-10G-NS-24V-E-2,5Q-OE  |
|   |                                   | Plug M8x1, 3-pin, lateral                   |                  | 0.3              | 8065029                        | SMT-10G-NS-24V-E-0,3Q-M8D |

| Proximity sensor for size 40 ... 50   |                                   |   |                  |                  | Technical data → Internet: smt |                          |
|---|-----------------------------------|---|------------------|------------------|--------------------------------|--------------------------|
| Ordering data – Proximity sensors for T-slot, magneto-resistive                     |                                   |   |                  |                  |                                |                          |
|   | Type of mounting                  | Electrical connection, connection direction | Switching output | Cable length [m] | Part No.                       | Type                     |
| N/O contact   |                                   |   |                  |                  |                                |                          |
|  | Insertable in the slot lengthwise | Cable, 3-wire, lateral                      | PNP              | 2.5              | 547859                         | SMT-8G-PS-24V-E-2,5Q-OE  |
|   |                                   | Plug M8x1, 3-pin, lateral                   |                  | 0.3              | 547860                         | SMT-8G-PS-24V-E-0,3Q-M8D |
|   |                                   | Cable, 3-wire, lateral                      | NPN              | 2.5              | 8065028                        | SMT-8G-NS-24V-E-2,5Q-OE  |
|   |                                   | Plug M8x1, 3-pin, lateral                   |                  | 0.3              | 8065027                        | SMT-8G-NS-24V-E-0,3Q-M8D |

| Ordering data – Connecting cables   |                              |                              |                  | Technical data → Internet: nebu |                     |
|---|------------------------------|------------------------------|------------------|---------------------------------|---------------------|
|   | Electrical connection, left  | Electrical connection, right | Cable length [m] | Part No.                        | Type                |
|  | Straight socket, M8x1, 3-pin | Cable, open end, 3-wire      | 2.5              | 541333                          | NEBU-M8G3-K-2.5-LE3 |
|   |                              |                              | 5                | 541334                          | NEBU-M8G3-K-5-LE3   |
|  | Angled socket, M8x1, 3-pin   | Cable, open end, 3-wire      | 2.5              | 541338                          | NEBU-M8W3-K-2.5-LE3 |
|   |                              |                              | 5                | 541341                          | NEBU-M8W3-K-5-LE3   |

# Radial grippers HGRT

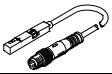
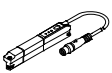
Accessories

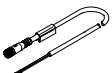
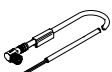
FESTO

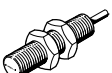
## Position transmitter



The position transmitter continuously senses the position of the piston.

It has an analogue output with an output signal in proportion to the piston position.

| Ordering data – Position transmitters for T-slot                                  |          |                          |                 |          |                               |                           | Technical data → Internet: position transmitter |                |                                    |
|---|----------|--------------------------|-----------------|----------|-------------------------------|---------------------------|---|----------------|------------------------------------|
|   | For size | Position measuring range | Analogue output |          | Type of mounting              | Electrical connection     | Cable length [m]                                | Part No.       | Type                               |
|   |          |                          | [V]             | [mA]     |                               |                           |   |                |                                    |
|  | 40       | 0 ... 40                 | 0 ... 10        | –        | Insertable in slot from above | Plug M8x1, 4-pin, in-line | 0.3   | <b>553744</b>  | <b>SMAT-8M-U-E-0,3-M8D</b>         |
|  | 40, 50   | 0 ... 50                 | –               | 4 ... 20 | Insertable in slot from above | Plug M8x1, 4-pin, in-line | 0.3   | <b>1531265</b> | <b>SDAT-MHS-M50-1L-SA-E-0.3-M8</b> |

| Ordering data – Connecting cables   |                              |                              |                  | Technical data → Internet: nebu |                            |
|---|------------------------------|------------------------------|------------------|---------------------------------|----------------------------|
|   | Electrical connection, left  | Electrical connection, right | Cable length [m] | Part No.                        | Type                       |
|   | Straight socket, M8x1, 4-pin | Cable, open end, 4-wire      | 2.5              | <b>541342</b>                   | <b>NEBU-M8G4-K-2.5-LE4</b> |
|   |                              |                              | 5                | <b>541343</b>                   | <b>NEBU-M8G4-K-5-LE4</b>   |
|  | Angled socket, M8x1, 4-pin   | Cable, open end, 4-wire      | 2.5              | <b>541344</b>                   | <b>NEBU-M8W4-K-2.5-LE4</b> |
|   |                              |                              | 5                | <b>541345</b>                   | <b>NEBU-M8W4-K-5-LE4</b>   |

| Ordering data – Proximity sensors, inductive, for sensor bracket DASI               |                     |              |               | Technical data → Internet: sien |                        |
|---|---------------------|--------------|---------------|---------------------------------|------------------------|
|   | Thread              | Contact      | Connection    | Part No.                        | Type                   |
|  | For DASI-B10-25-S8  |              |               |                                 |                        |
|   | M8                  | N/O contact  | Cable, 2.5 m  | <b>150386</b>                   | <b>SIEN-M8B-PS-K-L</b> |
|   |                     |              | Plug          | <b>150387</b>                   | <b>SIEN-M8B-PS-S-L</b> |
|   | For DASI-B10-40-S12 |              |               |                                 |                        |
| M12   | N/O contact         | Cable, 2.5 m | <b>150402</b> | <b>SIEN-M12B-PS-K-L</b>         |                        |
|   |                     | Plug         | <b>150403</b> | <b>SIEN-M12B-PS-S-L</b>         |                        |

| Ordering data – Connecting cables   |                              |                              |                  | Technical data → Internet: nebu |                            |
|---|------------------------------|------------------------------|------------------|---------------------------------|----------------------------|
|   | Electrical connection, left  | Electrical connection, right | Cable length [m] | Part No.                        | Type                       |
|  | Straight socket, M8x1, 3-pin | Cable, open end, 3-wire      | 2.5              | <b>541333</b>                   | <b>NEBU-M8G3-K-2.5-LE3</b> |
|   |                              |                              | 5                | <b>541334</b>                   | <b>NEBU-M8G3-K-5-LE3</b>   |
|  | Angled socket, M8x1, 3-pin   | Cable, open end, 3-wire      | 2.5              | <b>541338</b>                   | <b>NEBU-M8W3-K-2.5-LE3</b> |
|   |                              |                              | 5                | <b>541341</b>                   | <b>NEBU-M8W3-K-5-LE3</b>   |