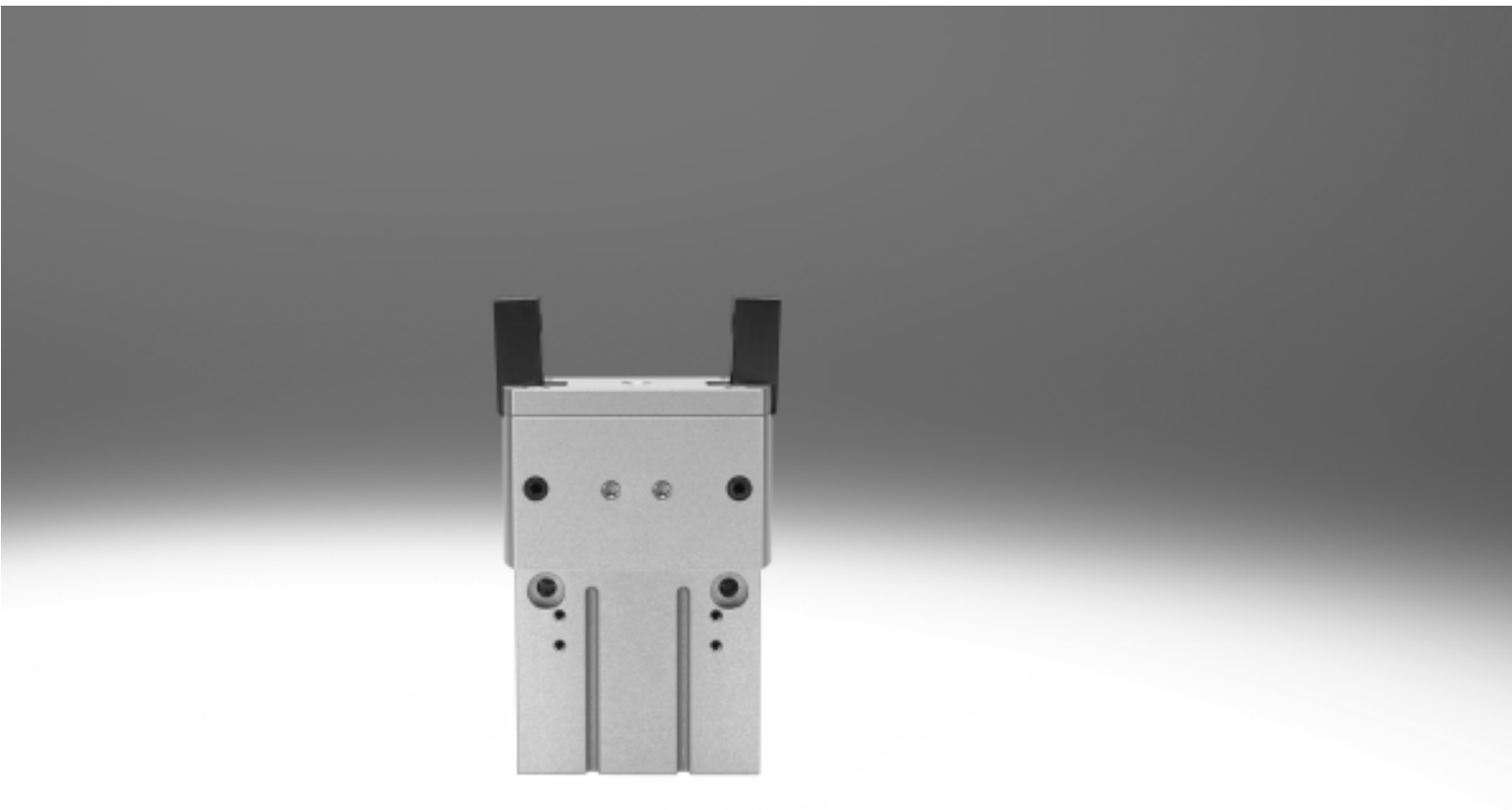
# Radial grippers HGRT, heavy-duty

FESTO



# Radial grippers HGRT, heavy-duty

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

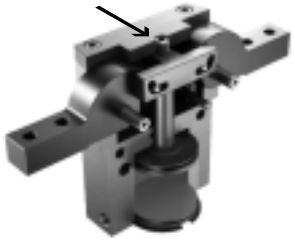
- The force generated by the linear motion is translated into the gripper jaw movement via a slotted guide system at the piston rod. This also guarantees synchronous movement of the gripper jaws

- 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



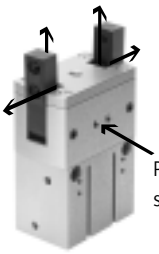
The gripper as delivered features a fixed stop that enables an opening angle of 180°.

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.

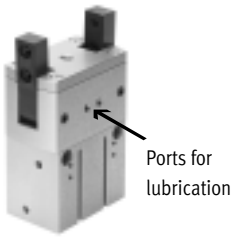
### Additional ports

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:

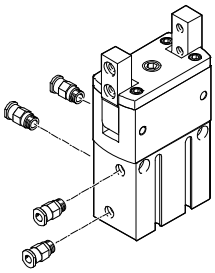
- Open
- Closed
- Workpiece gripped

# Radial grippers HGRT, heavy-duty

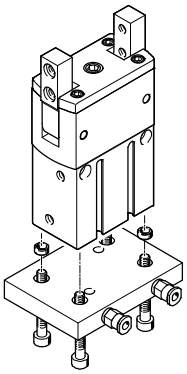
Key features

Supply ports

Direct



Via adapter plate



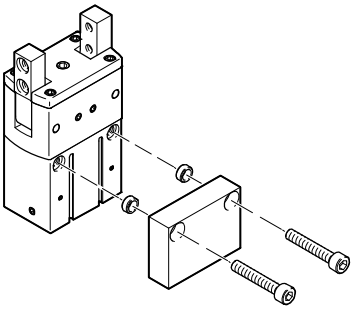
- Note

Gripper selection
sizing software
➔ www.festo.com

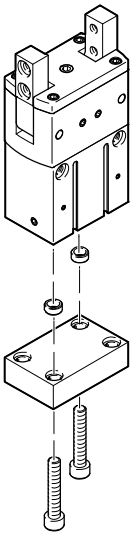
**Mounting options**

Direct mounting

From the side

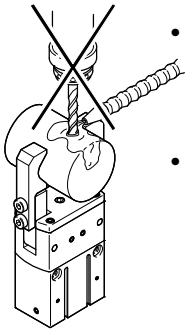


On front face

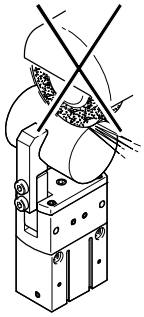


- Note

Radial grippers are not designed for the following sample applications:

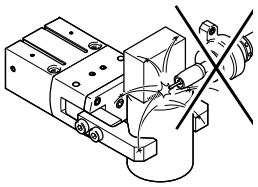


- Machining
- Aggressive media



- Grinding dust

- Welding splashes



# Radial grippers HGRT, heavy-duty

Peripherals overview

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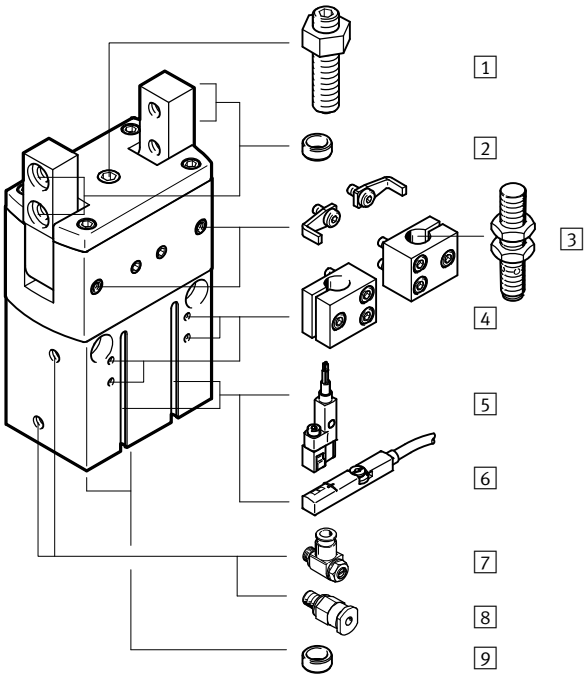
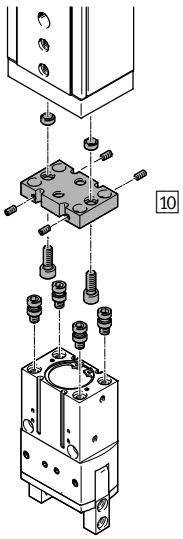
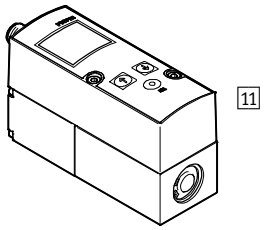
## Peripherals overview




## System product for handling and assembly technology




## Proportional pressure regulator VPPM

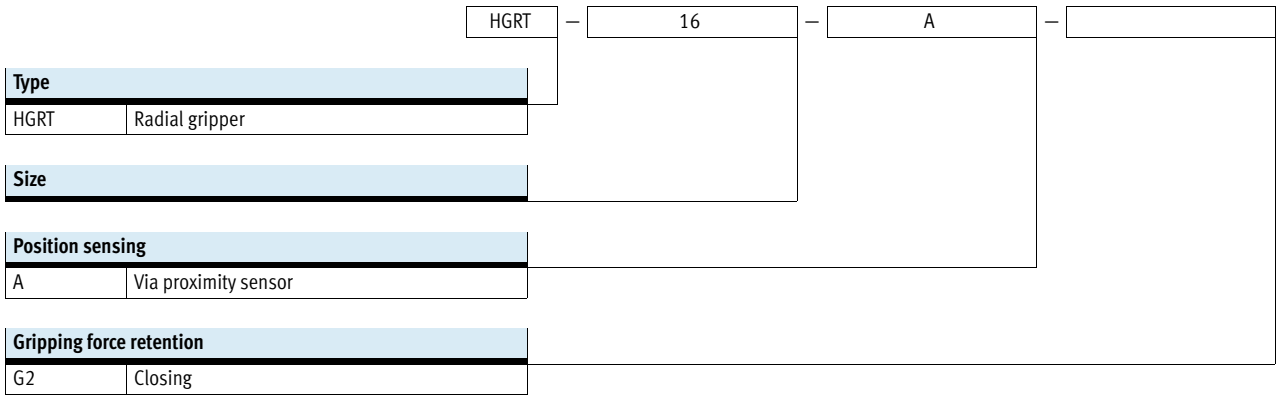



**Accessories**

| | 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 | • For centring when attaching gripper fingers<br>• 4 included in the scope of delivery of the gripper | 20 |
| 3 | Proximity sensor<br>SIEN | 16 … 50 | For sensing the piston position | 21 |
| 4 | Sensor bracket<br>DASI | 16 … 50 | • For mounting the proximity sensors SIEN on the gripper<br>• The scope of delivery of the sensor bracket includes switch lugs | 19 |
| 5 | Proximity sensor<br>SMT-8G/-10G | 16 … 50 | • For sensing the piston position<br>• The proximity sensor is flush with the housing at the bottom | 20 |
| 6 | Position transmitter<br>SMAT-8M | 40 | • Continuously senses the position of the piston. It has an analogue output with an output signal that is proportional to the piston position. | 20 |
| | Position transmitter<br>SDAT | 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 |

# Radial grippers HGRT, heavy-duty

Type codes




| Type | |
|---|---|
| HGRT | Radial gripper |

| Size |
|---|

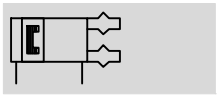
| Position sensing | |
|---|---|
| A | Via proximity sensor |

| Gripping force retention | |
|---|---|
| G2 | Closing |

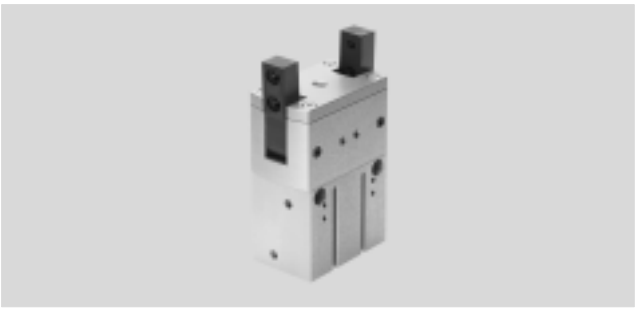
# Radial grippers HGRT, heavy-duty

Technical data

Function
Double-acting
HGRT-...



Function – Variants
Single-acting or with gripping force retention



- Ø - Size
  12 ... 50 mm
- I - 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[1] | | [mm] | ≤ 0.02 | | | | | |
| Max. interchangeability | | [mm] | ≤ 0.2 | | | | | |
| Max. gripper jaw backlash[2] | | [mm] | ≤ 0.1 | | | | | |
| Max. gripper jaw angular backlash[3] | | [°] | ≤ 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 |

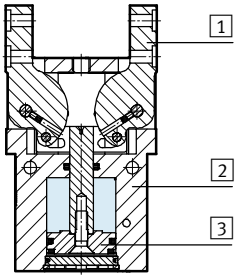
1) End-position drift under constant conditions of use with 100 consecutive strokes in the direction of movement of the gripper jaws
2) Perpendicular to the direction of motion of the gripper jaws
3) Preloaded, backlash-free ball bearing guide

| 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[1] | | [°C] | +5 ... +60 |
| Corrosion resistance class CRC[2] | | | 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.

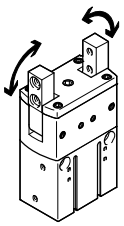
## Materials

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 |
| | | RoHS-compliant |

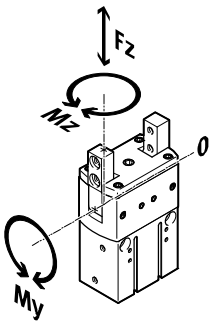
## Total gripping torque at 6 bar



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 | 8,24 |
| 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 |

# Radial grippers HGRT, heavy-duty

Technical data

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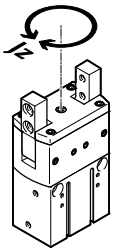
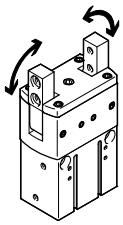
## Mass moment of inertia [kgm²x10⁻⁴]



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



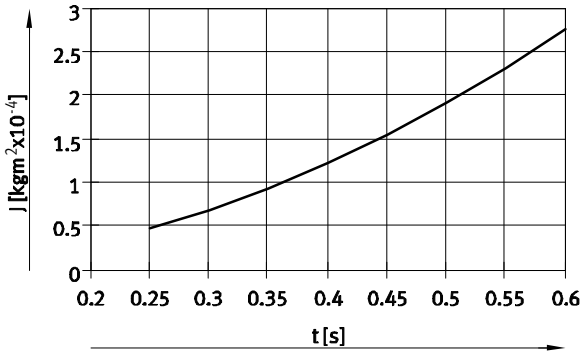
The indicated opening and closing times [ms] have been measured at room temperature and 6 bar operating pressure with vertically mounted gripper and without external gripper fingers.

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

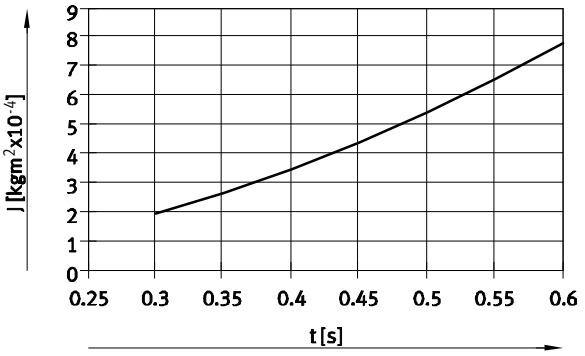
| Size | | | 16 | 20 | 25 | 32 | 40 | 50 |
|---|---|---|---|---|---|---|---|---|
| Without external gripper fingers | | | | | | | | |
| HGRT | – | Opening | 246 | 280 | 309 | 359 | 283 | 350 |
| | – | Closing | 293 | 308 | 343 | 403 | 320 | 403 |
| HGRT | G2 | Opening | 233 | 372 | 443 | 503 | 370 |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

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

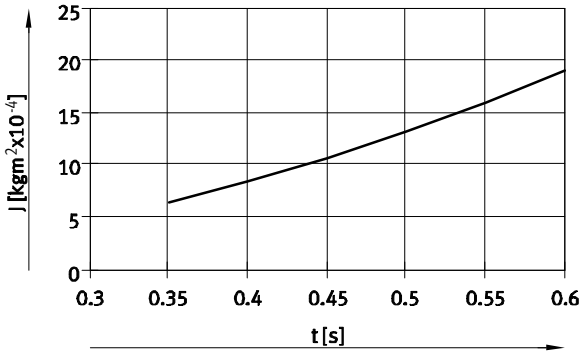
HGRT-16-A



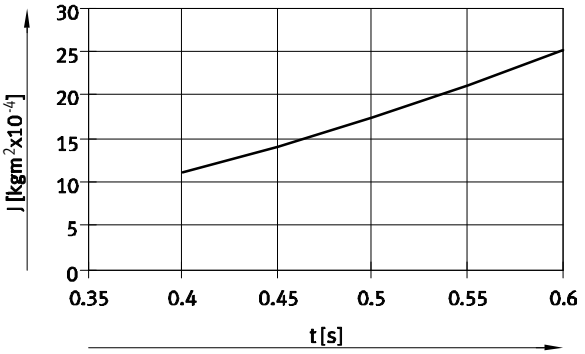

HGRT-20-A



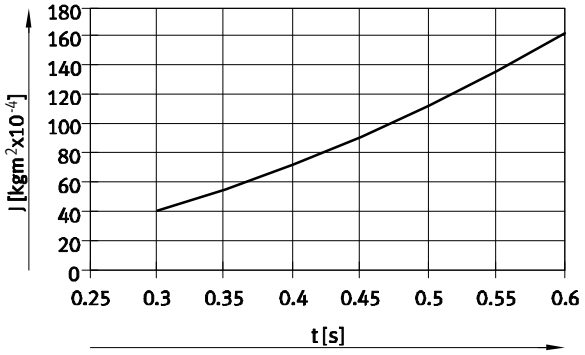

HGRT-25-A



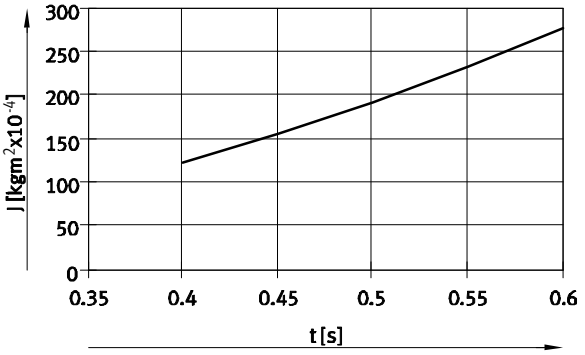

HGRT-32-A




HGRT-40-A




HGRT-50-A



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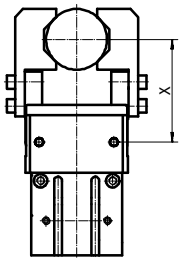
Technical data

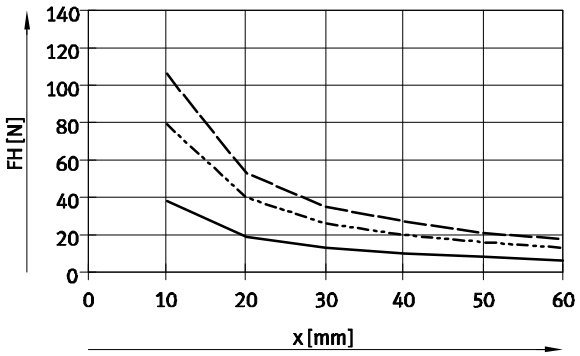
## Gripping force $F_H$ per gripper jaw as a function of operating pressure and lever arm x

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.

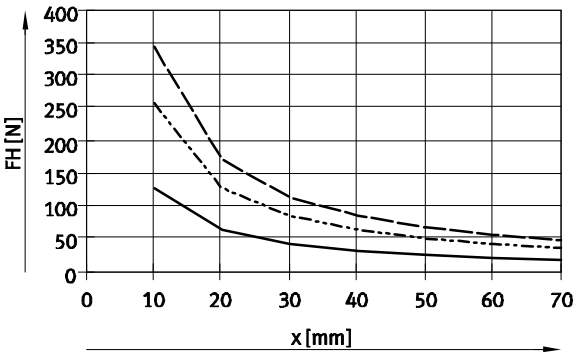



## External gripping (closing)

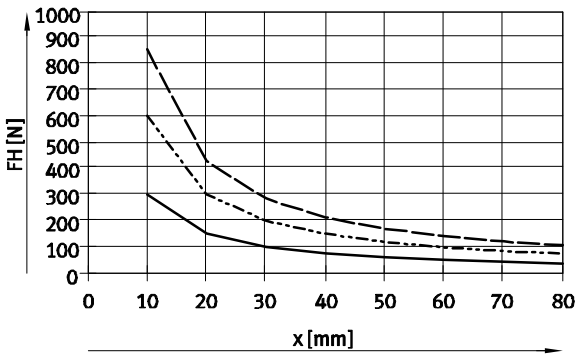
HGRT-16-A



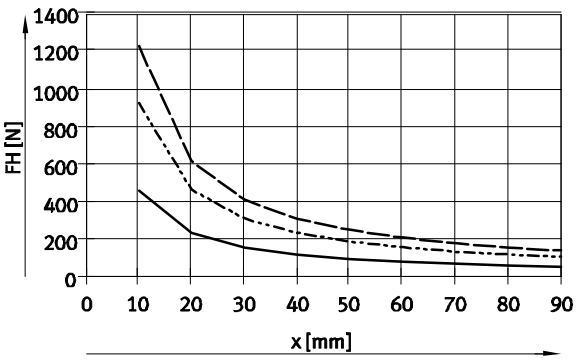

HGRT-20-A



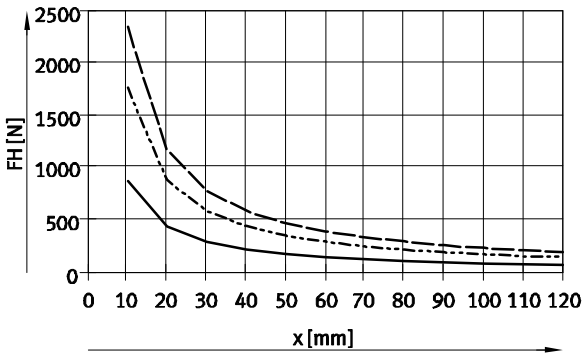

HGRT-25-A



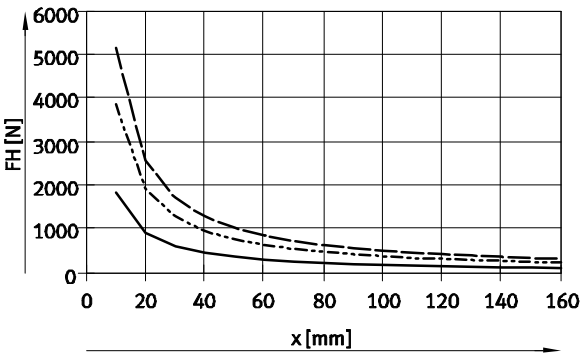

HGRT-32-A




HGRT-40-A



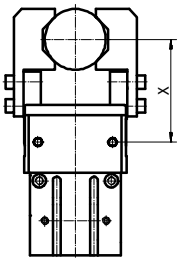

HGRT-50-A




3 bar
6 bar
8 bar

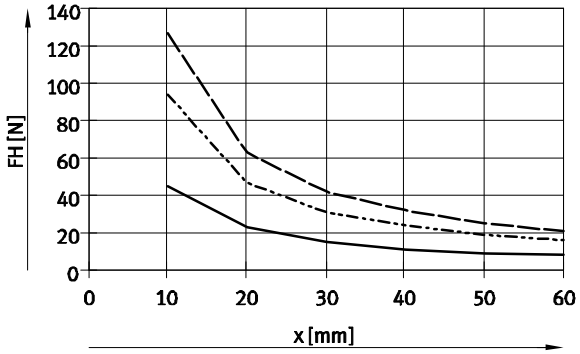
## Gripping force $F_H$ per gripper jaw as a function of operating pressure and lever arm x

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.

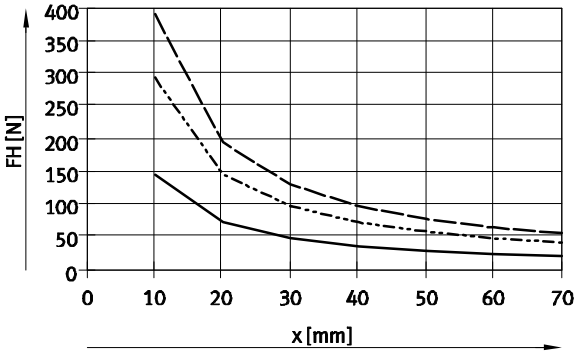



## Internal gripping (opening)

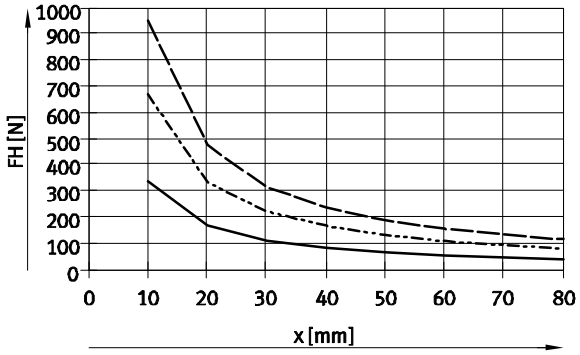
HGRT-16-A



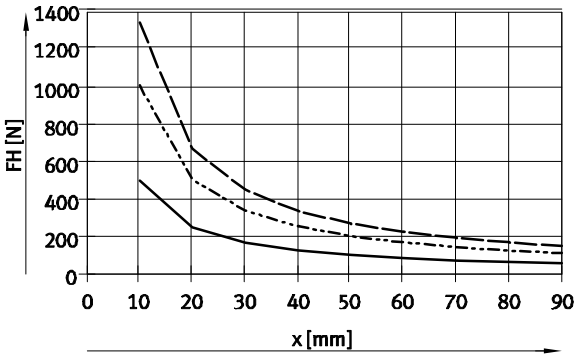

HGRT-20-A



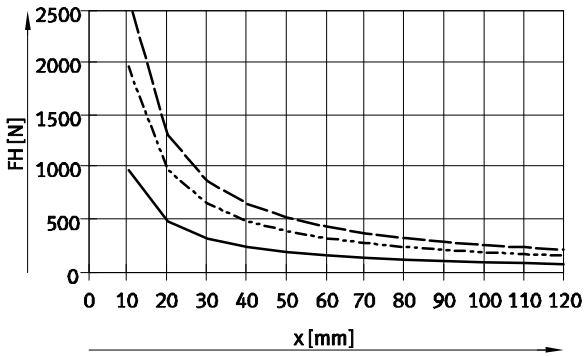

HGRT-25-A



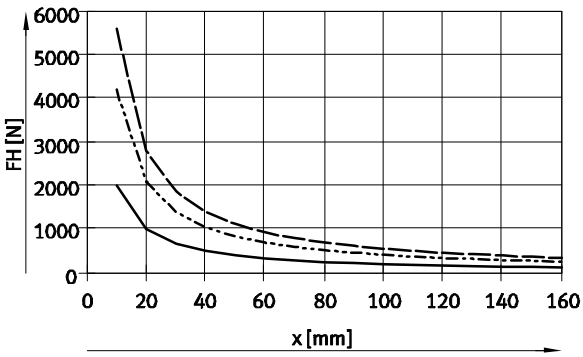

HGRT-32-A




HGRT-40-A




HGRT-50-A



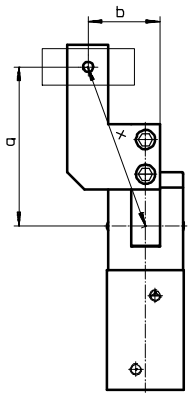

3 bar
6 bar
8 bar

## 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

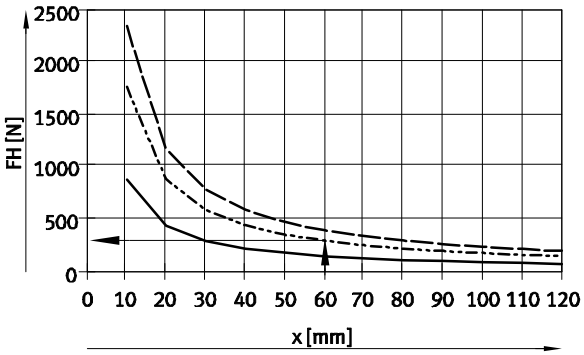
Given:
Distance a = 45 mm
Distance b = 40 mm
To be calculated:
The gripping force at 6 bar,
with an HGRT-40,
used as an external gripper

Procedure:
Calculating the lever arm x

$$x = \sqrt{45^2 + 40^2}$$

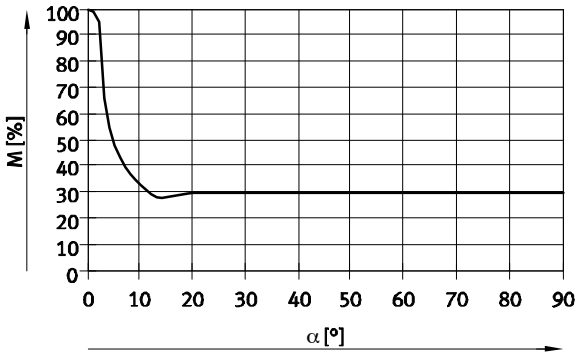
x = 60 mm

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



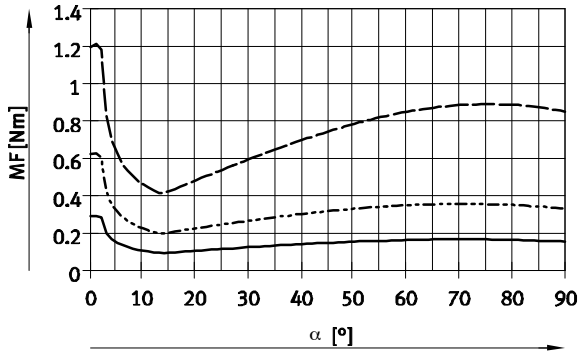

## Torque curve M as a function of opening angle α

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° means a parallel gripper jaw position.



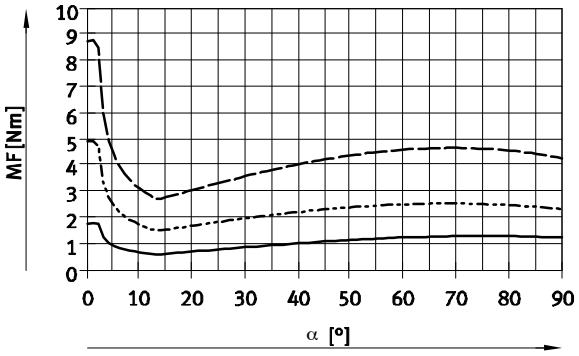
## Spring torque $M_F$ as a function of opening angle α

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.

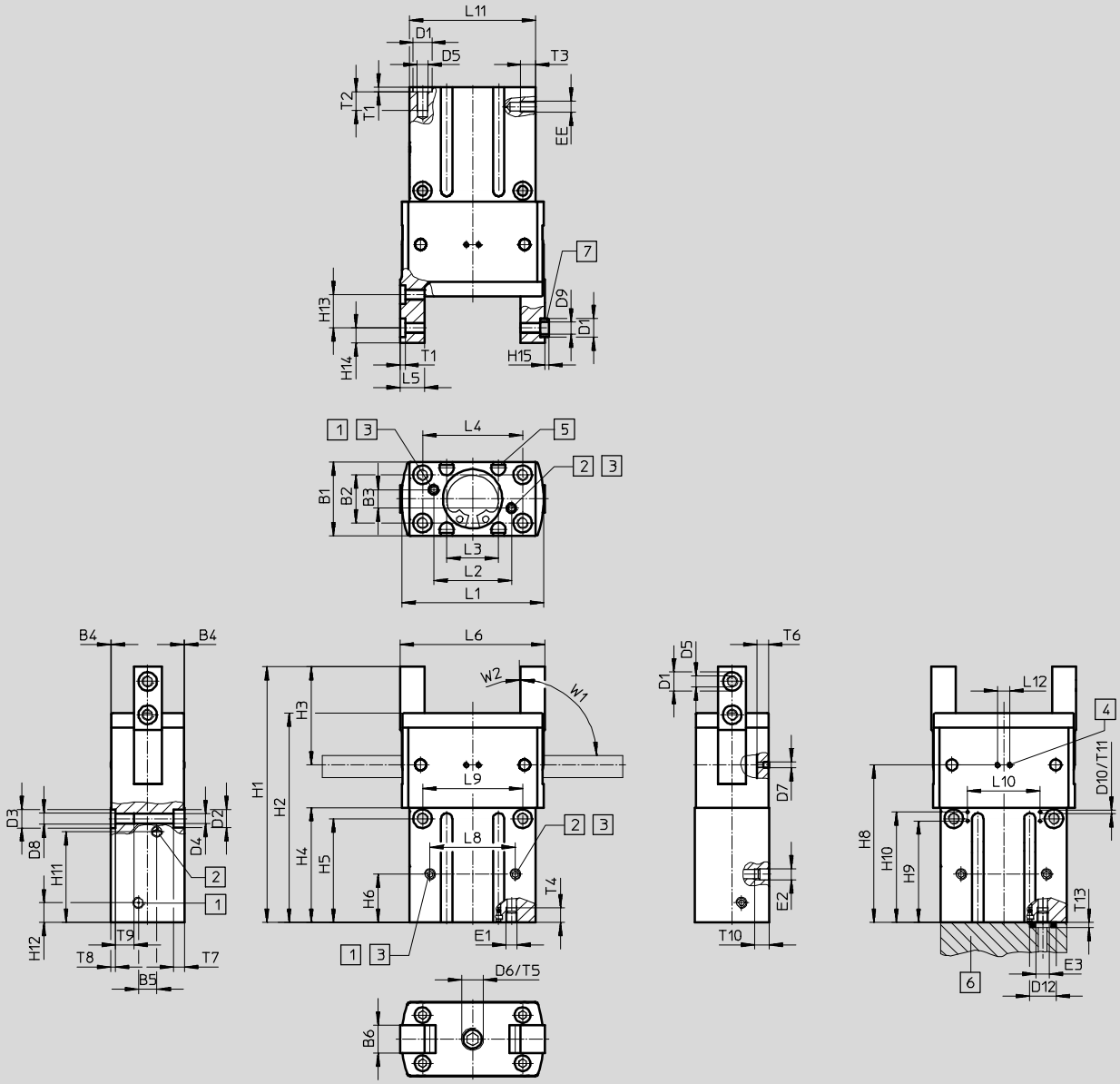
$M_{Gr} = F_H * x * M$ [%]

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

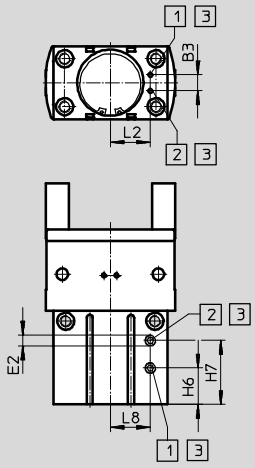
## Application

| Single-acting | Supplementary gripping force | Gripping force retention |
|---|---|---|
| • Gripping with spring force: $M_{Grtotal} = M_F$<br>• Gripping with pressure force: $M_{Grtotal} = M_{Gr} - M_F$ | • Gripping with pressure and spring force: $M_{Grtotal} = M_{Gr} + M_F$ | • Gripping with spring force: $M_{Grtotal} = M_F$ |

**Dimensions** Download CAD data ➔ **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: ∅ 3x1.5
HGRT-32 … 50: ∅ 5x1.5
7 Centring sleeves ZBH
(4 included in the scope of delivery)

# Radial grippers HGRT, heavy-duty

Technical data

| Size | B1 | B2[1] | B3 | B4 | B5 | B6 | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ∅ | ∅ | ∅ | ∅ | | | | | ∅ |
| [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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | -G | | -G | | | -G | | -G |
| [mm] | | +0.2 | | | | | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.1 | ±0.1 | ±0.1 | ±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 | G⅛ | M5 | G⅛ | M5 | 154.6 | 172.6 | 122 | 140 | 63.6 | 65.5 | 83.5 | 58 | 76 |
| 50 | M3 | 8 | G⅛ | M5 | G⅛ | M5 | 193.5 | 215.5 | 153 | 175 | 79.5 | 82.4 | 104.4 | 73 | 95 |

| Size | H6 | | H7 | | H8 | | H9 | | H10 | | H11 | | H12 | H13[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | -G | | -G | | -G | | -G | | -G | | -G | | |
| [mm] | ±0.1 | ±0.1 | ±0.1 | ±0.1 | | | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±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[1] | H15 | L1 | L2 | L3 | L4[1] | L5 | L6 | L8 | L9[1] | 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 | $21_{\pm 0.1}$ | 14 | 27 | 6.5 | 39 | 23 | 27 | – | 34 | – | 1.3 |
| 20 | 5 | 1.4 | 49.9 | $30_{\pm 0.1}$ | 17 | 34 | 9 | 50.4 | 30 | 34 | – | 44 | 11 | 1.6 |
| 25 | 6 | 1.9 | 61.1 | $39_{\pm 0.1}$ | 22 | 42 | 11 | 61.2 | 39 | 41 | 33 | 54 | 11 | 2.1 |
| 32 | 7 | 1.9 | 72.2 | $22.5^{+0.1}$ | 24 | 51 | 12 | 72.2 | 22.5 | 48 | 41 | 64 | 11 | 2.1 |
| 40 | 9 | 2.4 | 90.3 | $28^{+0.1}$ | 32 | 63 | 16.5 | 90.8 | 28 | 62 | 47 | 80 | 11 | 2.6 |
| 50 | 11 | 2.9 | 113.2 | $35^{+0.1}$ | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | -G | | | | | | | | | | | | | |
| [mm] | min. | min. | min. | min. | | | +0.1 | +0.1 | min. | min. | min. | min. | +0.1 | ±2° | +3° |
| 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 |

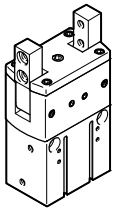
1) Tolerance for centring hole ±0.02 mm
Tolerance for thread ±0.1 mm

# Radial grippers HGRT, heavy-duty

Technical data

FESTO

**Ordering data**

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

**Ordering data – Wearing parts kits**

| Size [mm] | Part No. | Type |
|---|---|---|
| 16 | **1459481** | **HGRT-16** |
| 20 | **1459482** | **HGRT-20** |
| 25 | **1459483** | **HGRT-25** |
| 32 | **1459484** | **HGRT-32** |
| 40 | **1459485** | **HGRT-40** |
| 50 | **1459486** | **HGRT-50** |

**Adapter kit**
**DHAA**

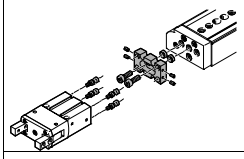
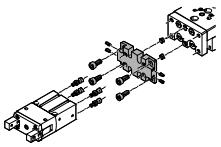
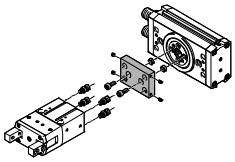
Material:
Wrought aluminium alloy
Free of copper and PTFE
RoHS-compliant

- 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 ➔ **www.festo.com**

| Combination | Drive Size | Gripper Size | Mounting option | | Adapter kit CRC[1] | 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 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

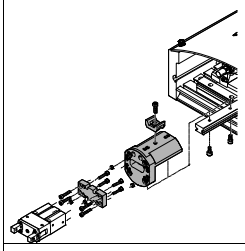
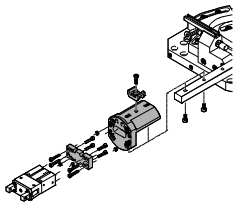
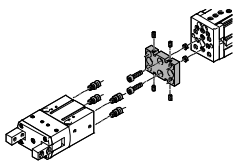
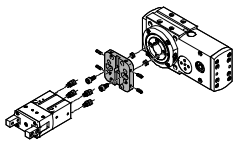
**Adapter kit**
**DHAA, HAPG**

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.

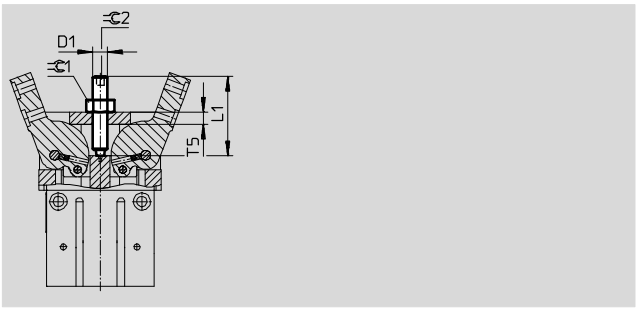
**Permissible drive/gripper combinations with adapter kit**

Download CAD data ➔ **www.festo.com**

| Combination | Drive Size | Gripper Size | Mounting option | | Adapter kit CRC[1] | Part No. | Type |
|---|---|---|---|---|---|---|---|
| HSP/HGRT | 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 | HSW | HGRT | | | DHAA, HAPG | | |
|  | 12, 16 | 16 | ■ | – | 2 | **1274347** | **DHAA-G-H4-16-B11-16** |
| | | | | | | **540882** | **HAPG-71-B** |
| EGSL/HGRT | 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 | 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 2 according to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

**Stroke reducing kit HGRT-HR**
Materials:
Screw: Steel
Lock nut: Case-hardened steel

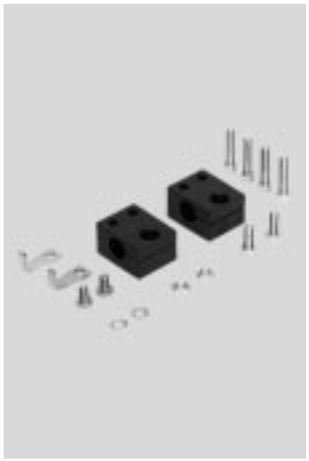



**Dimensions and ordering data**

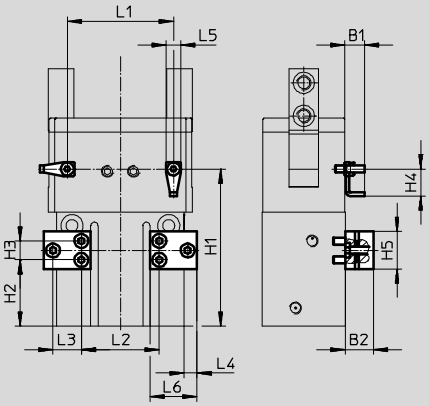
| For size [mm] | D1 | L1 | T5 | ⌀1 | ⌀2 | Adjustable end-position range [mm] | Weight [g] | Part No. | Type |
|---|---|---|---|---|---|---|---|---|---|
| 16 | M6 | 26 | 4 | 10 | 3 | 20 | 7 | **564296** | **HGRT-HR-16** |
| 20 | M6 | 31 | 5 | 10 | 3 | 25 | 9 | **564297** | **HGRT-HR-20** |
| 25 | M8 | 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**

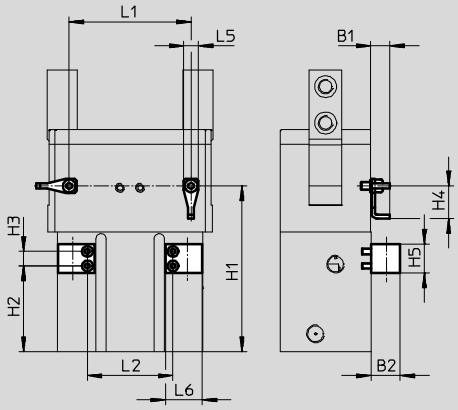
Material:
DASI-B10-25-S8: Polyamide
DASI-B10-40-S12: Aluminium



DASI-B10-25-S8




DASI-B10-40-S12




**Dimensions and ordering data**

| For type | H1 ±0.02 | H2 ±0.1 | L1 ±0.01 | L2 |
|---|---|---|---|---|
| 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 [mm] | B1 | B2 | H3 ±0.1 | H4 | H5 | L3 ±0.1 | L4 | L5 | L6 ±0.2 | Weight [g] | Part No. | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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** |

**Ordering data – Centring sleeves** — Technical data ➔ Internet: zbh

| | For size [mm] | Part No. | Type | PU[1] |
|---|---|---|---|---|
|  | 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**

**Ordering data – Proximity sensors for C-slot, magneto-resistive** — Technical data ➔ Internet: smt

| | 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**

**Ordering data – Proximity sensors for T-slot, magneto-resistive** — Technical data ➔ Internet: smt

| | 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

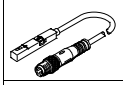
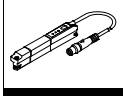
| | Electrical connection, left | Electrical connection, right | Cable length [m] | Part No. | Type |
|---|---|---|---|---|---|
|  | Straight socket, M8x1, 3-pin | Cable, open end, 3-wire | 2.5 | **541333** | **NEBU-M8G3-K-2.5-LE3** |
| | | | 5 | **541334** | **NEBU-M8G3-K-5-LE3** |
|  | Angled socket, M8x1, 3-pin | Cable, open end, 3-wire | 2.5 | **541338** | **NEBU-M8W3-K-2.5-LE3** |
| | | | 5 | **541341** | **NEBU-M8W3-K-5-LE3** |

## Position transmitter

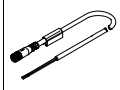
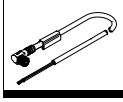
The position transmitter continuously senses the position of the piston.

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

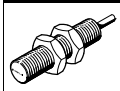
**Ordering data – Position transmitters for T-slot** — Technical data ➔ Internet: position transmitter

| | For size | Position measuring range | Analogue output [V] | Analogue output [mA] | Type of mounting | Electrical connection | Cable length [m] | Part No. | Type |
|---|---|---|---|---|---|---|---|---|---|
|  | 40 | 0 ... 40 | 0 ... 10 | – | Insertable in slot from above | Plug M8x1, 4-pin, in-line | 0.3 | **553744** | **SMAT-8M-U-E-0,3-M8D** |
|  | 50 | 0 ... 50 | – | 4 ... 20 | Insertable in slot from above | Plug M8x1, 4-pin, in-line | 0.3 | **1531265** | **SDAT-MHS-M50-1L-SA-E-0.3-M8** |

**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 | **541342** | **NEBU-M8G4-K-2.5-LE4** |
| | | | 5 | **541343** | **NEBU-M8G4-K-5-LE4** |
|  | Angled socket, M8x1, 4-pin | Cable, open end, 4-wire | 2.5 | **541344** | **NEBU-M8W4-K-2.5-LE4** |
| | | | 5 | **541345** | **NEBU-M8W4-K-5-LE4** |

**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 | **150386** | **SIEN-M8B-PS-K-L** |
| | | | Plug | **150387** | **SIEN-M8B-PS-S-L** |
| | For DASI-B10-40-S12 | | | | |
| | M12 | N/O contact | Cable, 2.5 m | **150402** | **SIEN-M12B-PS-K-L** |
| | | | Plug | **150403** | **SIEN-M12B-PS-S-L** |

**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** |