

## Radial grippers DHRS

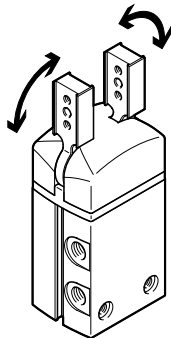
**FESTO**



## Characteristics

### At a glance

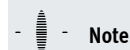
General



- Lateral gripper jaw support for high torque loads
- Self-centring
- Gripper jaw centring options
- Max. repetition accuracy
- Gripping force retention
- Internal fixed flow control
- Wide range of adaptation options on the drives
- Sensor technology:
  - Adaptable position sensor for the small gripper sizes
  - Integrated proximity switches for the medium and large gripper sizes

### Flexible range of applications

- Can be used as a double-acting and single-acting gripper
- Compression spring for supporting or backing up the gripping forces
- Suitable for external and internal gripping



#### Note

Engineering software for gripper selection → [www.festo.com](http://www.festo.com)

### Position sensing/force control

With position transmitter SMAT-8M, SDAT



Analogue position feedback possible

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

With proportional-pressure regulator VPPM



Infinite adjustment of the gripping force possible

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

With proximity switch SMT-8G



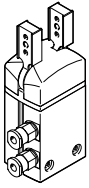
Detecting multiple positions:

- Open
- Closed
- Workpiece gripped

## Characteristics

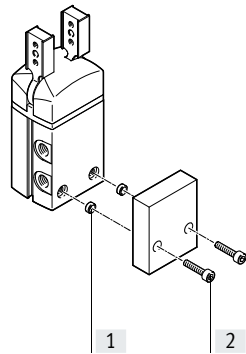
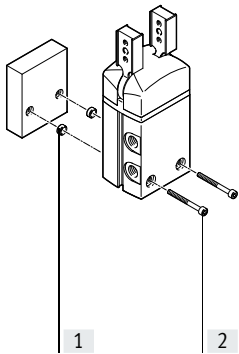
### Supply ports

At the side

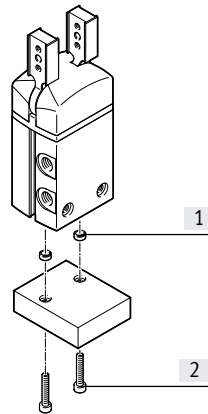


### Mounting options

At the side

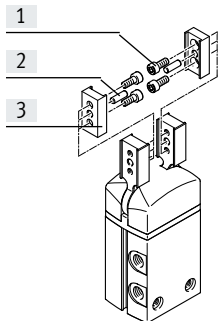


From underneath



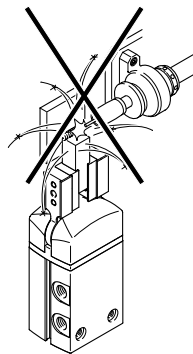
- [1] Centring sleeves
- [2] Retaining screws

### Mounting options for external gripper fingers

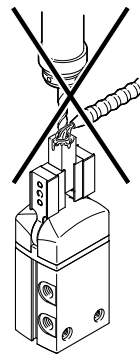


- [1] Retaining screws
- [2] Centring pins
- [3] Gripper finger

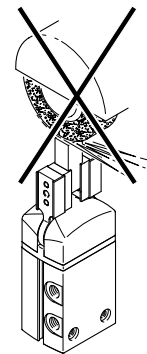
**Note**  
These grippers are not designed for the following or similar applications:



- Welding spatter



- Machining
- Aggressive media

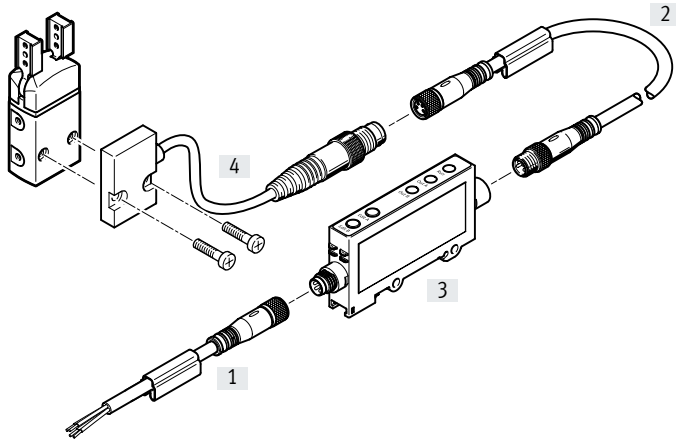


- Grinding dust

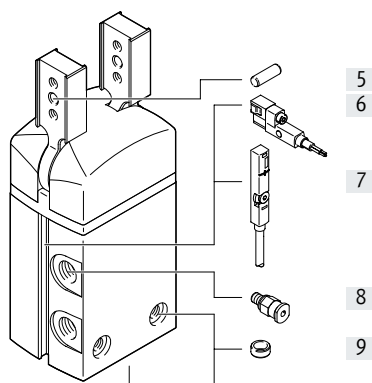
## Peripherals overview

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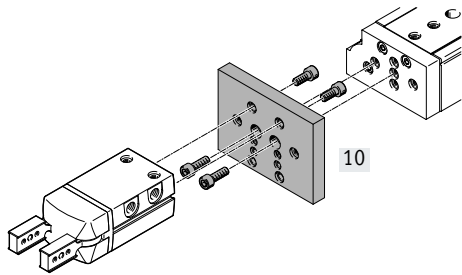
DHRS-10



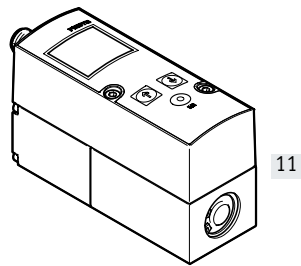
DHRS-16 ... 40



### System product for handling and assembly technology



### Proportional-pressure regulator VPPM



## Peripherals overview

| Accessories |   |           |  |                 |
|-------------|---|-----------|--|-----------------|
|             | Type  | For size  | Description  | → Page/Internet |
| [1]         | Connecting cable<br>NEBU                    | 10        | <ul style="list-style-type: none"> <li>Connection between signal converter and controller</li> </ul>   | 19              |
| [2]         | Connecting cable<br>NEBU                    | 10        | <ul style="list-style-type: none"> <li>Connection between position sensor and signal converter</li> </ul>  | 19              |
| [3]         | Signal converter<br>SVE4                    | 10        | <ul style="list-style-type: none"> <li>For evaluating signals for position sensor SMH-S1</li> </ul>  | 19              |
| [4]         | Position sensor<br>SMH-S1                   | 10        | <ul style="list-style-type: none"> <li>Adaptable sensors for sensing the piston position, can be integrated</li> </ul>   | 19              |
| [5]         | Centring pin                                | 10... 40  | <ul style="list-style-type: none"> <li>For centring the gripper fingers on the gripper jaws</li> </ul>   | -               |
| [6]         | Proximity switch<br>SMT-8G                  | 16 ... 40 | <ul style="list-style-type: none"> <li>For sensing the piston position</li> <li>Proximity switch does not project past the housing at the bottom</li> </ul>                        | 20              |
| [7]         | Position transmitter<br>SMAT-8M             | 16 ... 40 | <ul style="list-style-type: none"> <li>Continuously senses the position of the piston. It has an analogue output with an output signal relative to the piston position.</li> </ul> | 20              |
|             | Position transmitter<br>SDAT                | 32, 40    |  |                 |
| [8]         | Push-in fitting<br>QS                       | 10... 40  | <ul style="list-style-type: none"> <li>For connecting compressed air tubing with standard O.D.</li> </ul>  | qs              |
| [9]         | Centring sleeve<br>ZBH                      | 10... 40  | <ul style="list-style-type: none"> <li>For centring the gripper during mounting</li> <li>2 centring sleeves included in the scope of delivery of the gripper</li> </ul>            | 19              |
| [10]        | Adapter kit<br>DHAA, HMSV, HAPG, HAPS, HMVA | 10... 40  | <ul style="list-style-type: none"> <li>Connecting plate between drive and gripper</li> </ul>   | 16              |
| [11]        | Proportional-pressure regulator<br>VPPM     | 10... 40  | <ul style="list-style-type: none"> <li>For infinite adjustment of the gripping force</li> </ul>  | vppm            |

Type codes

| 001  | Series         |
|------|----------------|
| DHRS | Radial gripper |

| 002 | Size |
|-----|------|
| 10  | 10   |
| 16  | 16   |
| 25  | 25   |
| 32  | 32   |
| 40  | 40   |

| 003 | Position sensing     |
|-----|----------------------|
| A   | For proximity sensor |

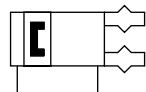

| 004 | Gripping force backup |
|-----|-----------------------|
|     | None                  |
| NC  | N/O contact           |

## Data sheet


## Function

Double-acting

DHRS-...-A

-  Size

10 ... 40 mm

-  Opening angle  
180°

www.festo.com

## Function variants

Single-acting or  
with gripping force retention ...

... closing DHRS-...-NC



| General technical data            |      | 10                                     | 16 | 25   | 32   | 40   |
|-----------------------------------|------|--|----|--|------|------|
| Size                              |      | 10                                     | 16 | 25   | 32   | 40   |
| Design                            |      | Force-guided motion sequence           |    |  |      |      |
| Mode of operation                 |      | Double-acting                          |    |  |      |      |
| Gripper function                  |      | Radial                                 |    |  |      |      |
| Guide                             |      | Plain-bearing guide                    |    |  |      |      |
| Gripping force retention          |      | -                                      | NC | NC   | NC   | NC   |
| Number of gripper jaws            |      | 2                                      |    |  |      |      |
| Opening angle per gripper jaw     | [°]  | 90                                     |    |  |      |      |
| Pneumatic connection              |      | M3                                     | M3 | M5   | G1/8 | G1/8 |
| Repetition accuracy <sup>1)</sup> | [mm] | ≤ 0.1                                  |    |  |      |      |
| Max. interchangeability           | [mm] | ≤ ±0.2                                 |    |  |      |      |
| Max. operating frequency          | [Hz] | 4                                      |    |  | 3    |      |
| Rotational symmetry               | [mm] | < ∅ 0.2                                |    |  |      |      |
| Position sensing                  |      | Via position sensor                    |    | Via proximity switch, position transmitter |      |      |
| Type of mounting                  |      | With through-hole and centring sleeve  |    |  |      |      |
|                                   |      | With female thread and centring sleeve |    |  |      |      |
| Mounting position                 |      | Any                                    |    |  |      |      |

1) Under constant exposure to operating conditions, end-position drift occurs, in the direction of movement of the gripper jaws, at 100 consecutive strokes

| Operating and environmental conditions |       | 10   | 16 | 25 | 32 | 40 |
|--|-------|--|----|----|----|----|
| Size                                   |       | 10   | 16 | 25 | 32 | 40 |
| Min. operating pressure                |       |  |    |    |    |    |
| DHRS-...-A                             | [bar] | 2  |    |    |    |    |
| DHRS-...-A-NC                          | [bar] | -  | 4  |    |    |    |
| Max. operating pressure                | [bar] | 8  |    |    |    |    |
| Operating medium                       |       | Compressed air to ISO 8573-1:2010 [7:4:4]  |    |    |    |    |
| Note on operating/pilot medium         |       | Lubricated operation possible (in which case lubricated operation will always be required) |    |    |    |    |
| Ambient temperature <sup>1)</sup>      | [°C]  | +5 ... +60   |    |    |    |    |
| Corrosion resistance CRC <sup>2)</sup> |       | 1  |    |    |    |    |

1) Note operating range of proximity switches

2) Corrosion resistance class CRC 1 to Festo standard FN 940070

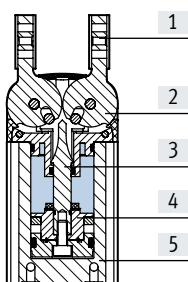
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

| Weight [g]    |  | 10 | 16  | 25  | 32  | 40  |
|---------------|--|----|-----|-----|-----|-----|
| Size          |  | 10 | 16  | 25  | 32  | 40  |
| DHRS-...-A    |  | 44 | 114 | 270 | 480 | 829 |
| DHRS-...-A-NC |  | -  | 118 | 277 | 490 | 844 |

## Data sheet

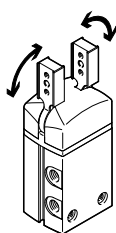
### Materials

Sectional view



| Radial grippers |                   |   |
|-----------------|-------------------|---|
| [1]             | Gripper jaws      | High-alloy stainless steel                |
| [2]             | Cover cap         | Polyamide                                 |
| [3]             | Link              | Tempered steel                            |
| [4]             | Piston            | Polyacetal                                |
| [5]             | Housing           | Hard anodised wrought aluminium alloy     |
| -               | Seals             | NBR                                       |
| -               | Note on materials | Free of copper and PTFE<br>RoHS-compliant |

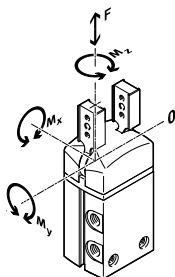
### Total gripping torque [Ncm] at 6 bar



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

| Size      |         | 10 | 16 | 25  | 32  | 40  |
|-----------|---------|----|----|-----|-----|-----|
| DHRS-...A | Opening | 21 | 62 | 233 | 423 | 725 |
|           | Closing | 15 | 55 | 215 | 390 | 660 |

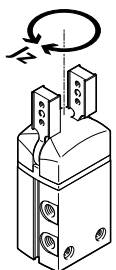
### Static characteristic load values at the gripper jaws



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

| Size                          |      | 10  | 16  | 25  | 32  | 40  |
|-------------------------------|------|-----|-----|-----|-----|-----|
| Max. permissible force $F_z$  | [N]  | 30  | 40  | 75  | 120 | 200 |
| Max. permissible torque $M_x$ | [Nm] | 0.8 | 1.3 | 3.2 | 6.2 | 14  |
| Max. permissible torque $M_y$ | [Nm] | 0.8 | 1.3 | 3.2 | 6.2 | 14  |
| Max. permissible torque $M_z$ | [Nm] | 0.8 | 1.3 | 3.2 | 6.2 | 14  |

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



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

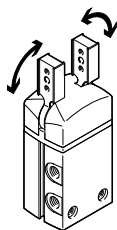
| Size         |  | 10   | 16   | 25   | 32   | 40   |
|--------------|--|------|------|------|------|------|
| DHRS-...A    |  | 0.03 | 0.14 | 0.69 | 1.66 | 4.18 |
| DHRS-...A-NC |  | -    | 0.15 | 0.71 | 1.69 | 4.24 |



## Data sheet

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

Without external gripper fingers

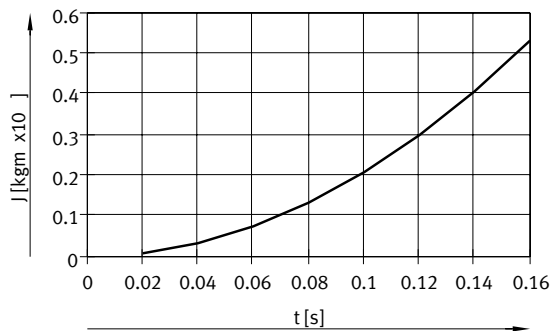


The indicated opening and closing times [ms] were measured at room temperature at an operating pressure of 6 bar with the gripper horizontally mounted and without additional gripper fingers (mean values shown). The grippers must be throttled for greater applied loads. Opening and closing times must then be adjusted accordingly.

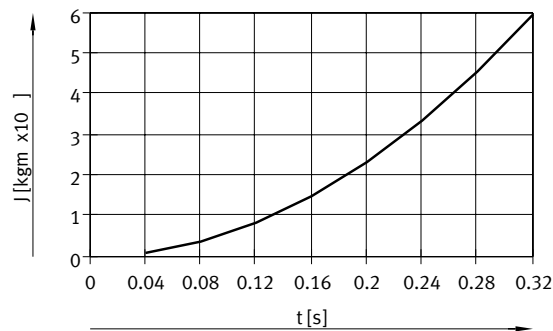
| Size                                    |         | 10 | 16 | 25  | 32  | 40  |
|---|---------|----|----|-----|-----|-----|
| <b>Without external gripper fingers</b> |         |    |    |     |     |     |
| DHRS-...-A                              | Opening | 35 | 61 | 102 | 111 | 113 |
|   | Closing | 91 | 63 | 105 | 119 | 142 |
| DHRS-...-A-NC                           | Opening | -  | 75 | 150 | 131 | 151 |
|   | Closing | -  | 43 | 96  | 88  | 110 |

### Opening and closing times $t$ to be set at 6 bar as a function of mass moment of inertia of the gripper fingers

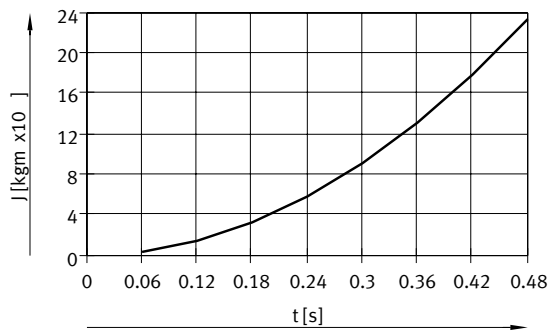
DHRS-10



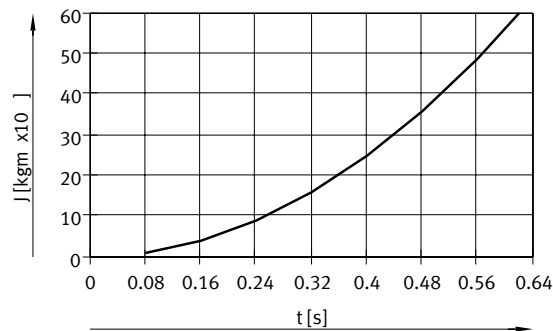
DHRS-16



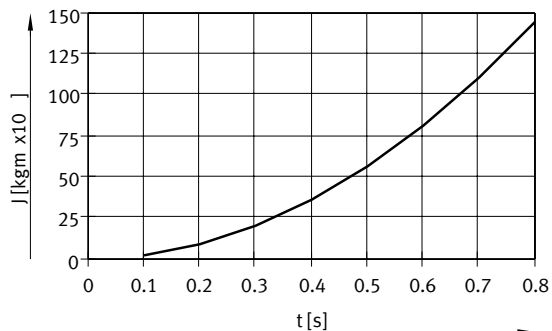
DHRS-25



DHRS-32



DHRS-40



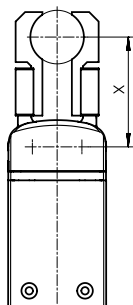
Data sheet


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

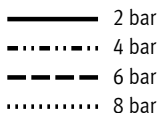
The gripping forces as a function of the operating pressure and lever arm can be determined from the following graphs.

The gripping torque is not constant across the opening angle

→ page 12.

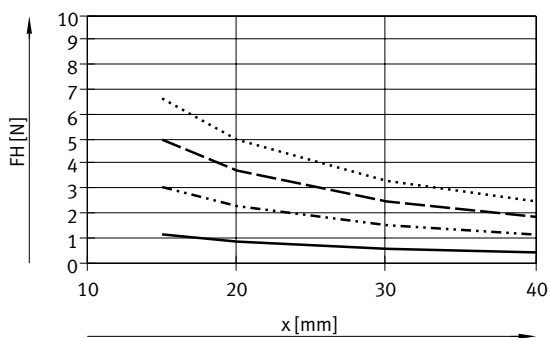


 **Note**  
 Engineering software  
 for gripper selection  
 → [www.festo.com](http://www.festo.com)

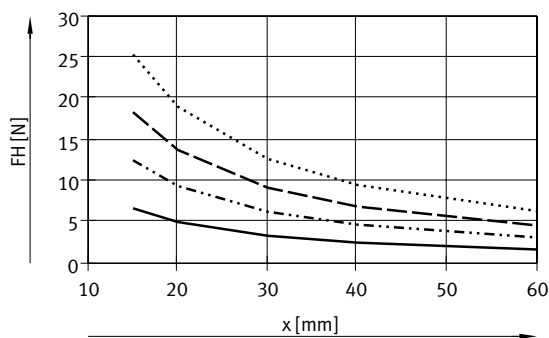


External gripping (closing)

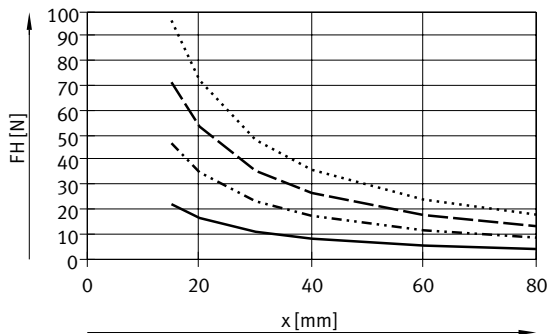
DHRS-10



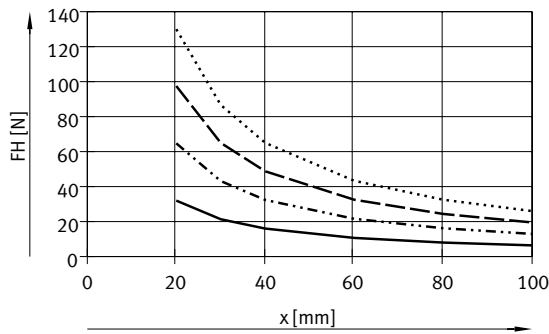
DHRS-16



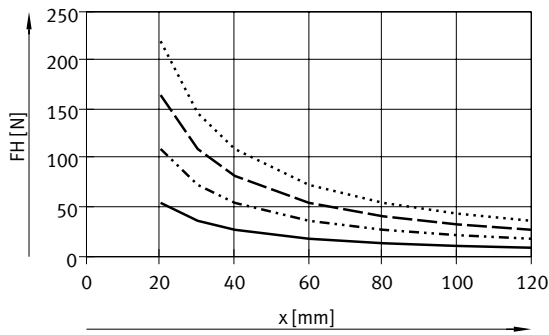
DHRS-25



DHRS-32



DHRS-40



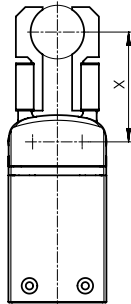
## Data sheet


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

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

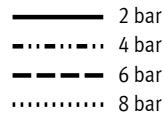
The gripping torque is not constant across the opening angle

→ page 12.



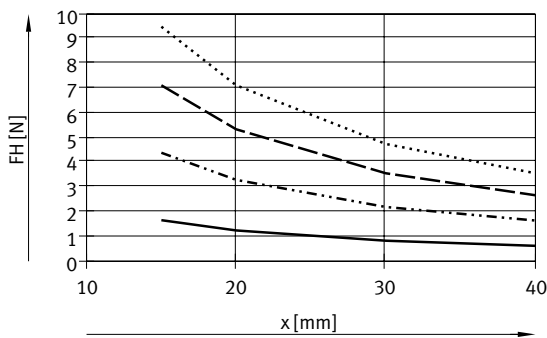
 **Note**

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for gripper selection  
→ [www.festo.com](http://www.festo.com)

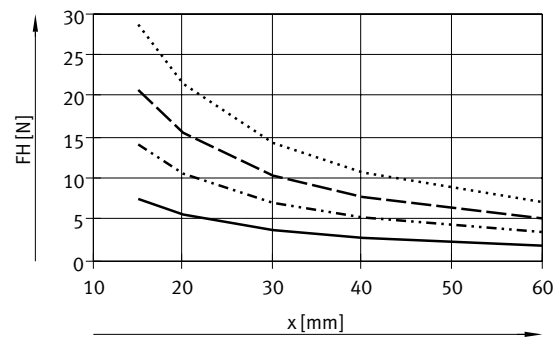


### Internal gripping (opening)

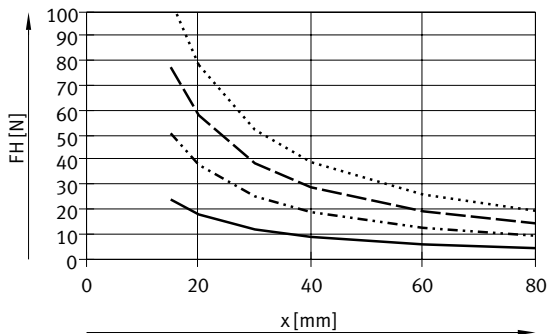
DHRS-10



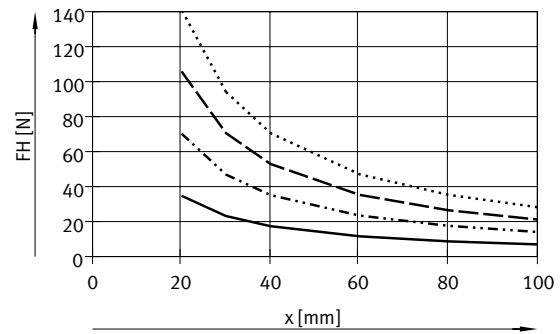
DHRS-16



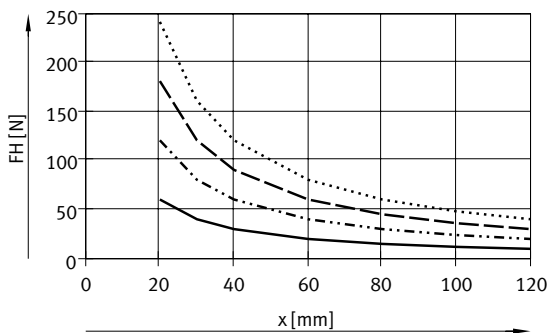
DHRS-25



DHRS-32



DHRS-40



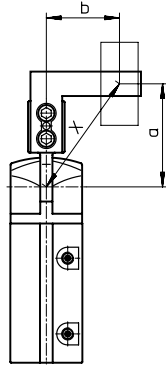
Data sheet

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 then be read from the graphs (→ page 10/11) using the calculated value  $x$ .

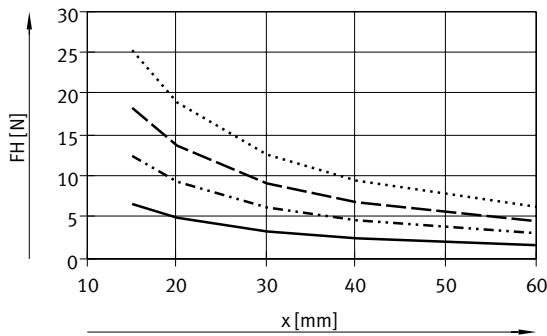


Calculation example

Given:  
 Distance  $a = 25$  mm  
 Distance  $b = 20$  mm  
 To be calculated:  
 The gripping force at 6 bar with a DHRS-16, used as an external gripper

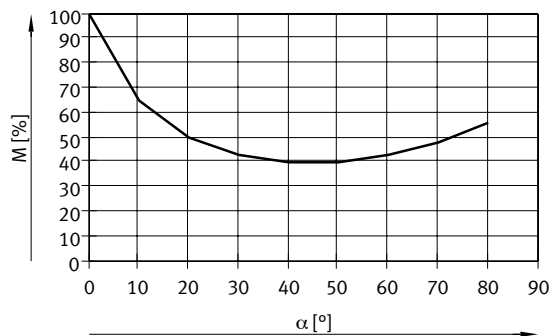
Approach:  
 Calculating the lever arm  $x$   
 $x = \sqrt{25^2 + 20^2}$   
 $x = 32$  mm

The graph (→ page 10) gives a value for the gripping force of  $F_H = 8$  N.



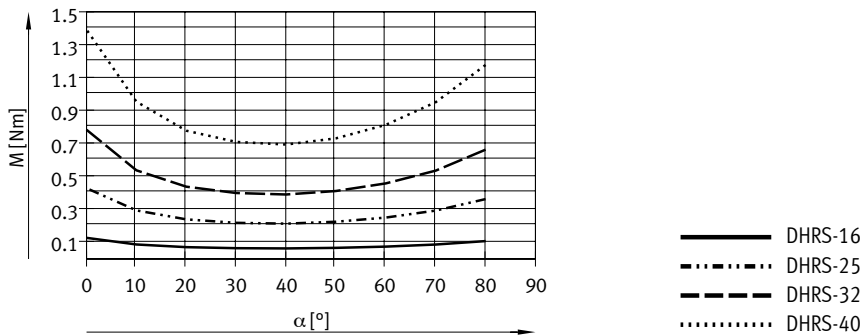
Torque curve  $M$  as a function of opening angle  $\alpha$

The drive principle of the gripper jaws means that the torque is not constant across the opening angle. The percentage of torque available in each case can be determined from the graph. Opening angle of  $0^\circ$  means: parallel gripper jaw position



Data sheet

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



Determining the actual gripping torques  $M_{Grtotal}$  for DHRS-...-NC as a function of application

The radial gripper with integrated spring, type DHRS-...-NC (closing gripping force retention), can be used as:

- 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 gripping force  $F_H$  (→ page 10/11),

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

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

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

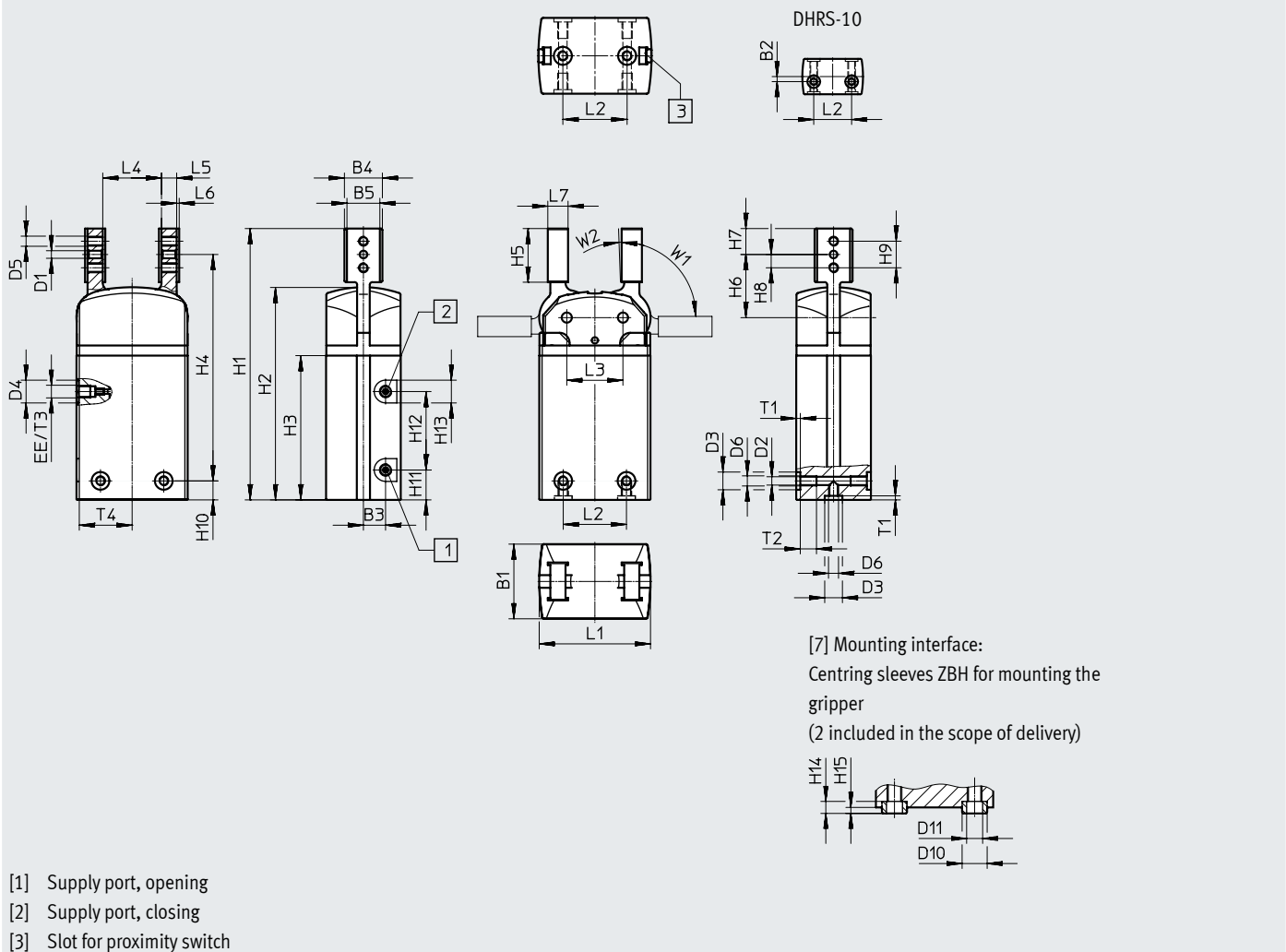
Application

| Single-acting   | Supplementary gripping force   | Gripping force retention   |
|---|--|--|
| <ul style="list-style-type: none"> <li>• Gripping with spring force:<br/><math>M_{Grtotal} = M_F</math></li> <li>• Gripping with pressure force:<br/><math>M_{Grtotal} = M_{Gr} - M_F</math></li> </ul> | <ul style="list-style-type: none"> <li>• Gripping with pressure and spring force:<br/><math>M_{Grtotal} = M_{Gr} + M_F</math></li> </ul> | <ul style="list-style-type: none"> <li>• Gripping with spring force:<br/><math>M_{Grtotal} = M_F</math></li> </ul> |

Data sheet

Dimensions

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



| Size | B1    | B2 <sup>1)</sup> | B3   | B4  | B5<br>+0.03/<br>+0.01 | D1<br>∅<br>H8 | D2<br>∅<br>+0.1 | D3<br>∅<br>H8/h7 | D4<br>∅ | D5   | D6 |
|------|-------|------------------|------|-----|-----------------------|---------------|-----------------|------------------|---------|------|----|
| [mm] | ±0.05 |                  |      |     |                       |               |                 |                  |         |      |    |
| 10   | 14    | 2                | 2    | 8.5 | 6.5                   | 2             | 2.4             | 5                | 7       | M2.5 | M3 |
| 16   | 19    | –                | 5.8  | 14  | 10                    | 2             | 2.5             | 5                | –       | M3   | M3 |
| 25   | 29.5  | –                | 8.75 | 15  | 13                    | 3             | 3.3             | 7                | 9       | M4   | M4 |
| 32   | 38    | –                | 11   | 16  | 14                    | 4             | 5.1             | 9                | 15      | M5   | M6 |
| 40   | 49    | –                | 11   | 24  | 20                    | 5             | 6.4             | 12               | 15      | M6   | M8 |

| Size | D10<br>∅<br>h7 | D11<br>∅ | EE   | H1    | H2    | H3   | H4<br>±0.25 | H5<br>±0.2 | H6<br>±0.05 | H7<br>–0.1 |
|------|----------------|----------|------|-------|-------|------|-------------|------------|-------------|------------|
| [mm] |                |          |      |       |       |      |             |            |             |            |
| 10   | 5              | 3.2      | M3   | 60.8  | 46    | 30.8 | 42.25       | 13.8       | 14.95       | 6.25       |
| 16   | 5              | 3.2      | M3   | 88.2  | 70.5  | 49   | 73.7        | 16.5       | 19.7        | 7          |
| 25   | 7              | 5.3      | M5   | 107.2 | 84    | 57   | 89.45       | 21.2       | 24.95       | 10.25      |
| 32   | 9              | 6.4      | G1/8 | 128.5 | 96.2  | 65   | 103.5       | 29.5       | 32          | 14         |
| 40   | 12             | 10.3     | G1/8 | 140   | 108.4 | 71.5 | 108.7       | 29.5       | 33.7        | 13.8       |

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

## Data sheet

| Size | H8   | H9   | H10 <sup>2)</sup> | H11   | H12 | H13 | H14  | H15  | L1    | L2 <sup>1)</sup> | L3    |
|------|------|------|-------------------|-------|-----|-----|------|------|-------|------------------|-------|
| [mm] |      |      |                   |       |     |     | -0.2 | -0.3 | ±0.05 |                  | ±0.02 |
| 10   | 4    | 8    | 12.3              | 8.8   | 16  | 7   | 2.4  | 1.2  | 24    | 15               | 12.4  |
| 16   | 4    | 8    | 7.5               | 12.25 | 23  | 7   | 2.4  | 1.2  | 33.4  | 16               | 17    |
| 25   | 5.25 | 10.5 | 7.5               | 11.8  | 31  | 9   | 3    | 1.4  | 44    | 25               | 22.2  |
| 32   | 7    | 14   | 11                | 20    | 25  | 15  | 4    | 1.9  | 51    | 29               | 25.8  |
| 40   | 8    | 16   | 17.5              | 9     | 46  | 15  | 5    | 2.4  | 59    | 33               | 30    |

| Size | L4   | L5    | L6  | L7 | T1   | T2      | T3   | T4   | W1  | W2  |
|------|------|-------|-----|----|------|---------|------|------|-----|-----|
| [mm] |      | ±0.05 |     |    | +0.1 | +1      | +0.5 |      | ±2° | +3° |
| 10   | 12   | 4     | 0.5 | 5  | 1.2  | through | 3.5  | 11.6 | 90  | 2   |
| 16   | 21   | 4     | 1   | 6  | 1.2  | 5.8     | 4.5  | 16   | 90  | 2   |
| 25   | 23.2 | 6     | 1   | 8  | 1.6  | 6.4     | 4.5  | 21   | 90  | 2   |
| 32   | 24.8 | 8     | 1   | 10 | 2.1  | 12.9    | 6.5  | 24   | 90  | 2   |
| 40   | 29.6 | 10    | 1   | 12 | 2.6  | 13.4    | 6    | 28.4 | 90  | 2   |

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

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


## Ordering data

| Size<br>[mm] | Double-acting<br>without compression spring |                  | Single-acting or with gripping force retention |                     |
|--------------|---|------------------|--|---------------------|
|              | Part no.                                    | Type             | Closing  |                     |
|              |   |                  | Part no.                                       | Type                |
| 10           | <b>1310159</b>                              | <b>DHRS-10-A</b> | -  |                     |
| 16           | <b>1310160</b>                              | <b>DHRS-16-A</b> | <b>1310161</b>                                 | <b>DHRS-16-A-NC</b> |
| 25           | <b>1310162</b>                              | <b>DHRS-25-A</b> | <b>1310163</b>                                 | <b>DHRS-25-A-NC</b> |
| 32           | <b>1310164</b>                              | <b>DHRS-32-A</b> | <b>1310165</b>                                 | <b>DHRS-32-A-NC</b> |
| 40           | <b>1310166</b>                              | <b>DHRS-40-A</b> | <b>1310167</b>                                 | <b>DHRS-40-A-NC</b> |

Accessories



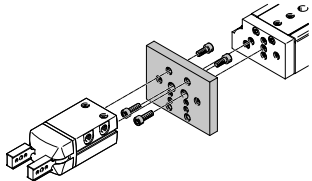
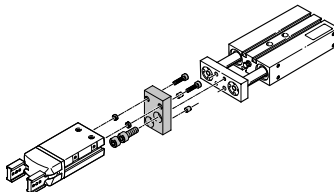
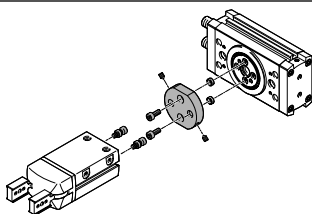
Adapter kit  
HMSV, HAPG, DHAA

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](http://www.festo.com)

| Combination  | Drive size  | Gripper size | Mounting option   |   | Adapter kit CRC <sup>1)</sup> |         | Type                      |
|--|-------------|--------------|---|---|-------------------------------|---------|---------------------------|
|  |             |              |  |  | Part no.                      |         |                           |
|    | <b>DGSL</b> | <b>DHRS</b>  |   |   | <b>HMSV</b>                   |         |                           |
|  | 8, 10       | 10           | ■   | ■   | 2                             | 548784  | HMSV-54                   |
|  | 12, 16      | 16           | ■   | ■   |                               | 548785  | HMSV-55                   |
|  | 20, 25      | 25, 32       | ■   | ■   |                               | 548786  | HMSV-56                   |
|   | <b>DPZ</b>  | <b>DHRS</b>  |   |   | <b>HAPG</b>                   |         |                           |
|  | 10, 16      | 16           | ■   | –   | 2                             | 163250  | HAPG-1                    |
|  | 16          | 25           | ■   | –   |                               | 163251  | HAPG-2                    |
|  | 20          | 25           | ■   | –   |                               | 163252  | HAPG-3                    |
|  | 25, 32      | 32           | ■   | –   |                               | 163253  | HAPG-4                    |
|  | <b>DRRD</b> | <b>DHRS</b>  |   |   | <b>DHAA</b>                   |         |                           |
|  | 8           | 10           | ■   | ■   | 2                             | 2816591 | DHAA-G-Q11-8-B2/B3-10     |
|  | 10          | 10           | ■   | ■   |                               | 2816068 | DHAA-G-Q11-10-B2/B3-10    |
|  | 12          | 10           | ■   | ■   |                               | 2814790 | DHAA-G-Q11-12-B2/B3-10    |
|  | 12          | 16           | ■   | ■   |                               | 2811183 | DHAA-G-Q11-12-B2/B3-16    |
|  | 16          | 16           | ■   | ■   |                               | 1979085 | DHAA-G-Q11-16-B2/B3-16    |
|  | 16          | 25           | ■   | ■   |                               | 1978889 | DHAA-G-Q11-16-B2/B3-25    |
|  | 20          | 25           | ■   | ■   |                               | 1978443 | DHAA-G-Q11-20-B2/B3-25    |
|  | 20          | 32           | ■   | ■   |                               | 1979912 | DHAA-G-Q11-20-B2/B3-32    |
|  | 25          | 25           | ■   | ■   |                               | 1801802 | DHAA-G-Q11-25-B2/B3-25    |
|  | 25          | 32           | ■   | ■   |                               | 1802969 | DHAA-G-Q11-25-B2/B3-32    |
|  | 32          | 32           | ■   | ■   |                               | 1979992 | DHAA-G-Q11-32-B2/B3-32    |
|  | 32          | 40           | ■   | ■   |                               | 1980014 | DHAA-G-Q11-32-B2/B3-40    |
|  | 35, 40      | 40           | ■   | ■   |                               | 1980059 | DHAA-G-Q11-35/40-B2/B3-40 |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.



## Accessories



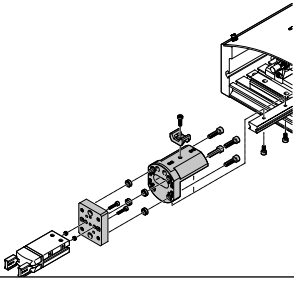
Adapter kit  
HAPG, DHAA

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   |  |
|   |                   |              |  |  |                               |                     |  |  |
| <b>HSP/DHRS</b>   | <b>HSP</b>        | <b>DHRS</b>  |   |   | <b>HAPG</b>                   |                     |  |  |
|  | 12                | 10           | ■   | –   | 2                             | 192709              | HAPG-60-S1   |  |
|   | 16                | 10           | ■   | –   |                               | 540881              | HAPG-70-B  |  |
|   | 16                | 16           | ■   | –   |                               | 192706              | HAPG-37-S1   |  |
|   | 25                | 16           | ■   | –   |                               | 540882              | HAPG-71-B  |  |
|   | 25                | 16           | ■   | –   |                               | 192705              | HAPG-36-S1   |  |
|   | 25                | 25           | ■   | –   |                               | 540882              | HAPG-71-B  |  |
| <b>HSW/DHRS</b>   | 12, 16            | 10           | ■   | –   | 2                             | 192706              | HAPG-37-S1   |  |
|   |                   | 16           | ■   | –   |                               | 540882              | HAPG-71-B  |  |
|   | 12, 16            | 16           | ■   | –   |                               | 192705              | HAPG-36-S1   |  |
|   |                   |              |   |   |                               | 540882              | HAPG-71-B  |  |
| <b>DSM/DHRS</b>   | <b>DSM-...-FW</b> | <b>DHRS</b>  |   |   | <b>HAPG</b>                   |                     |  |  |
|   | 6, 8, 10          | 10           | ■   | ■   | 2                             | 187568              | HAPG-34  |  |
|   | <b>DSM-...</b>    | <b>DHRS</b>  |   |   | <b>HAPG</b>                   |                     |  |  |
|   | 12                | 16           | ■   | ■   | 2                             | 163266              | HAPG-17  |  |
|   | 16                | 16           | ■   | ■   |                               | 163267              | HAPG-18  |  |
|   | 16                | 25           | ■   | ■   |                               | 163268              | HAPG-19  |  |
|   | 25                | 25           | ■   | ■   |                               | 163269              | HAPG-20  |  |
|   | 25                | 32           | ■   | ■   |                               | 163270              | HAPG-21  |  |
| 32  | 32                | ■            | ■   | 163271  |                               | HAPG-22             |  |  |
| <b>DSM-...-HD/DHRS</b>  | <b>DSM-...-HD</b> | <b>DHRS</b>  |   |   | <b>DHAA</b>                   |                     |  |  |
|   | 12                | 16           | ■   | ■   | 2                             | 8072157             | DHAA-G-R3-12-B18-10  |  |
|   | 12                | 10           | ■   | ■   |                               | 8072172             | DHAA-G-R3-12-B20-10  |  |
|   | 16                | 16           | ■   | ■   |                               | 8071917             | DHAA-G-R3-16-B18-10  |  |
|   | 16                | 25           | ■   | ■   |                               | 8079173             | DHAA-G-R3-16-B18-16  |  |
|   | 25                | 25           | ■   | ■   |                               | 8071956             | DHAA-G-R3-25-B18-16  |  |
|   | 25                | 32           | ■   | ■   |                               | 8079201             | DHAA-G-R3-25-B20-32  |  |
|   | 32                | 32           | ■   | ■   |                               | 8079208             | DHAA-G-R3-32-B18-25  |  |
| 32  | 40                | ■            | ■   | 8079212   |                               | DHAA-G-R3-32-B20-40 |  |  |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070  
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Accessories



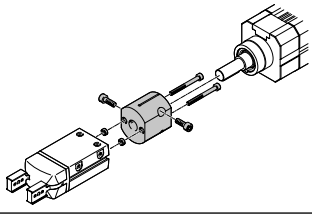
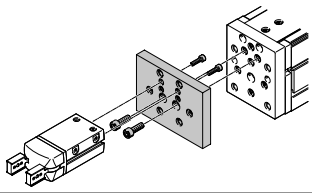
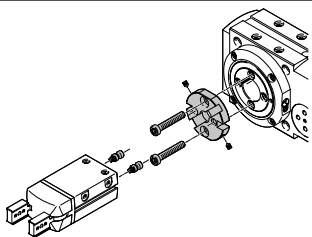
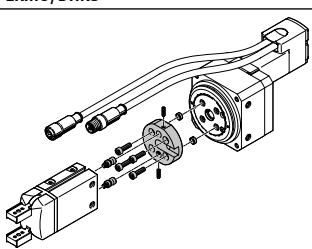
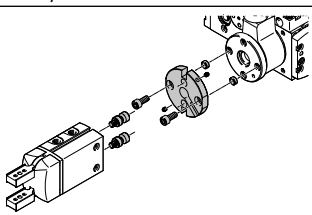
Adapter kit  
HAPG, HMSV, DHAA

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](http://www.festo.com)

| Combination  | Drive size  | Gripper size | Mounting option   |   | Adapter kit CRC <sup>1)</sup> | Part no. | Type                |
|--|-------------|--------------|---|---|-------------------------------|----------|---------------------|
|  |             |              |  |  |                               |          |                     |
|    | <b>DSL</b>  | <b>DHRS</b>  |   |   | <b>HAPG</b>                   |          |                     |
|  | 16          | 16           | ■   | ■   | 2                             | 163266   | HAPG-17             |
|  | 20          | 16           | ■   | ■   |                               | 163267   | HAPG-18             |
|  | 20          | 25           | ■   | ■   |                               | 163268   | HAPG-19             |
|  | 25          | 25           | ■   | ■   |                               | 163269   | HAPG-20             |
|  | 25          | 32           | ■   | ■   |                               | 163270   | HAPG-21             |
|  | 32          | 32           | ■   | ■   |                               | 163271   | HAPG-22             |
|   | <b>EGSL</b> | <b>DHRS</b>  |   |   | <b>HMSV</b>                   |          |                     |
|  | 35          | 10           | ■   | ■   | 2                             | 548784   | HMSV-54             |
|  | 45, 55      | 16           | ■   | ■   |                               | 1088262  | HMSV-70             |
|  | 75          | 25, 32       | ■   | ■   |                               | 548785   | HMSV-55             |
|  |             |              |   |   |                               | 548786   | HMSV-56             |
|  | <b>ERMB</b> | <b>DHRS</b>  |   |   | <b>HAPG</b>                   |          |                     |
|  | 20          | 25           | ■   | ■   | 2                             | 184479   | HAPG-SD2-3          |
|  | 25          | 25           | ■   | ■   |                               | 184482   | HAPG-SD2-6          |
|  | 20          | 32           | ■   | ■   |                               | 184480   | HAPG-SD2-4          |
|  | 25          | 32           | ■   | ■   |                               | 184483   | HAPG-SD2-7          |
|  | 32          | 32           | ■   | ■   |                               | 184485   | HAPG-SD2-9          |
|  | 32          | 40           | ■   | ■   |                               | 184486   | HAPG-SD2-10         |
|  | <b>ERMO</b> | <b>DHRS</b>  |   |   | <b>DHAA</b>                   |          |                     |
|  | 12          | 16           | ■   | ■   | 2                             | 8072157  | DHAA-G-R3-12-B18-10 |
|  | 12          | 10           | ■   | ■   |                               | 8072172  | DHAA-G-R3-12-B20-10 |
|  | 16          | 16           | ■   | ■   |                               | 8071917  | DHAA-G-R3-16-B18-10 |
|  | 16          | 25           | ■   | ■   |                               | 8079173  | DHAA-G-R3-16-B18-16 |
|  | 25          | 25           | ■   | ■   |                               | 8071956  | DHAA-G-R3-25-B18-16 |
|  | 25          | 32           | ■   | ■   |                               | 8079201  | DHAA-G-R3-25-B20-32 |
|  | 32          | 32           | ■   | ■   |                               | 8079208  | DHAA-G-R3-32-B18-25 |
|  | 32          | 40           | ■   | ■   |                               | 8079212  | DHAA-G-R3-32-B20-40 |
|  | <b>EHMB</b> | <b>DHRS</b>  |   |   | <b>HAPG</b>                   |          |                     |
|  | 20          | 32           | ■   | ■   | 2                             | 184485   | HAPG-SD2-9          |
|  | 20          | 40           | ■   | ■   |                               | 184486   | HAPG-SD2-10         |
|  | 25, 32      | 40           | ■   | ■   |                               | 526027   | HAPG-SD2-21         |

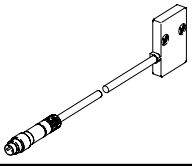
1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

## Accessories

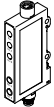
| Ordering data   |               |  |            |          |        |                             |
|---|---------------|--|------------|----------|--------|-----------------------------|
|   | For size [mm] | Description                              | Weight [g] | Part no. | Type   | PU <sup>1)</sup>            |
| Centring sleeve ZBH   |               |  |            |          |        | Data sheets → Internet: zbh |
|  | 10, 16        | For centring the gripper during mounting | 1          | 189652   | ZBH-5  | 10                          |
|   | 25            |  | 1          | 186717   | ZBH-7  |                             |
|   | 32            |  | 1          | 150927   | ZBH-9  |                             |
|   | 40            |  | 1          | 189653   | ZBH-12 |                             |


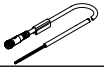

1) Packaging unit

| Ordering data   |          |            |          |              |                                |
|---|----------|------------|----------|--------------|--------------------------------|
| Type  | For size | Weight [g] | Part no. | Type         |                                |
| Position sensor SMH-S1  |          |            |          |              |                                |
|  | 10       | 20         | 175712   | SMH-S1-HGR10 | Data sheets → Internet: smh-s1 |

## Signal converter SVE4 for position sensor SMH-S1

- Converts analogue signals into switching points
- Switching function freely programmable with teach-in
- Threshold value, hysteresis or window comparator

| Ordering data   |          |                    |                   |                  |            |          |                     |
|---|----------|--------------------|-------------------|------------------|------------|----------|---------------------|
| Type  | For size | Input connection   | Output connection | Switching output | Weight [g] | Part no. | Type                |
| Signal converter SVE4   |          |                    |                   |                  |            |          |                     |
|  | 10       | Socket M8x1, 4-pin | Plug M8x1, 4-pin  | 2x PNP           | 19         | 544216   | SVE4-HS-R-HM8-2P-M8 |
|   |          |                    |                   | 2x NPN           |            | 544219   | SVE4-HS-R-HM8-2N-M8 |

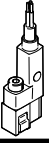
| Ordering data – Connecting cables   |                              |                              |                  |          |                      |
|---|------------------------------|------------------------------|------------------|----------|----------------------|
|   | Electrical connection, left  | Electrical connection, right | Cable length [m] | Part no. | Type                 |
| Connection between position sensor and signal converter                             |                              |                              |                  |          |                      |
|  | Straight socket, M8x1, 4-pin | Straight plug M8x1, 4-pin    | 2.5              | 554035   | NEBU-M8G4-K-2.5-M8G4 |
| Connection between signal converter and controller                                  |                              |                              |                  |          |                      |
|  | 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    |

## Accessories

## Proximity switch for size 16 ... 40



## Ordering data – Proximity switch for T-slot, magneto-resistive

Data sheets → Internet: smt

|  | Type of mounting                     | Electrical connection,<br>outlet direction of connection | Switching output | Cable length<br>[m] | Part no. | Type                     |
|--|--------------------------------------|--|------------------|---------------------|----------|--------------------------|
| <b>N/O contact</b>   |                                      |  |                  |                     |          |                          |
|  | Insertable in the<br>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

Data sheets → Internet: nebu

|  | Electrical connection, left  | Electrical connection, right | Cable length<br>[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 relative to the piston position.



## Ordering data – Position transmitter for T-slot

Data sheets → Internet: position transmitter

|  | For size  | Position<br>measuring<br>range | Analogue<br>output<br>[V]   [mA] |             | Type of<br>mounting                     | Electrical<br>connection     | Cable length<br>[m] | Part no. | Type                        |
|--|-----------|--------------------------------|----------------------------------|-------------|---|------------------------------|---------------------|----------|-----------------------------|
|  | 16 ... 40 | 0 ... 40                       | 0 ...<br>10                      | –           | Insertable in<br>the slot from<br>above | Plug M8x1,<br>4-pin, in-line | 0.3                 | 553744   | SMAT-8M-U-E-0,3-M8D         |
|  | 32, 40    | 0 ... 50                       | –                                | 4 ...<br>20 | Insertable in<br>the slot from<br>above | Plug M8x1,<br>4-pin, in-line | 0.3                 | 1531265  | SDAT-MHS-M50-1L-SA-E-0.3-M8 |

## Ordering data – Connecting cables

Data sheets → Internet: nebu

|  | Electrical connection, left  | Electrical connection, right | Cable length<br>[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   |