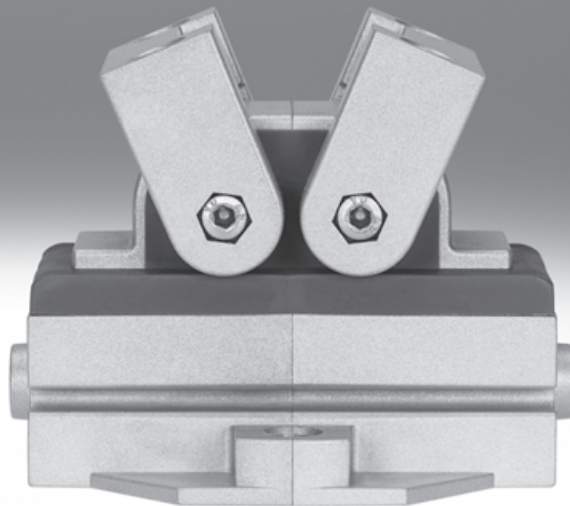


## Angle grippers HGWC

**FESTO**



-  - Type discontinued  
Available up until 2018

## Angle grippers HGWC

Key features

FESTO

### At a glance

#### General information

The compact and cost-optimised angle gripper consists of a two-part mirror-symmetrical housing made of die-cast zinc. The force generated by the linear motion of the piston is translated into the gripper jaw movement via a pneumatic piston, which acts directly on the gripper jaws installed in the

housing by means of a moment compensator in accordance with the rack and pinion principle. To ensure a low-backlash plain-bearing guide for the gripper jaws, appropriate guide elements are fitted in the housing and pretensioned by means of socket head screws.

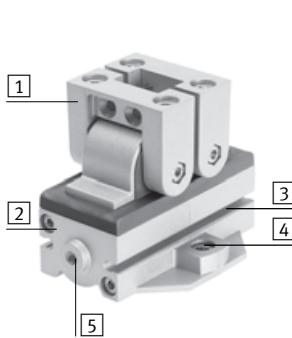
- Double-acting gripper
- Internal fixed flow control, does away with the need for external flow control in 90% of applications
- High force with minimal volume
- Suitable for external and internal gripping

- Opening angle of 30°, 80°
- Wide range of options for mounting on drives
- Repetition accuracy of 0.05 mm
- Slot for proximity sensor SME/SMT-10

-  - Note

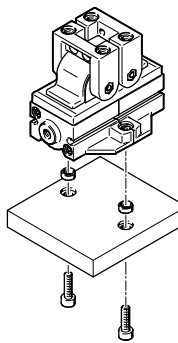
Sizing software for gripper selection  
→ [www.festo.com](http://www.festo.com)

### Details

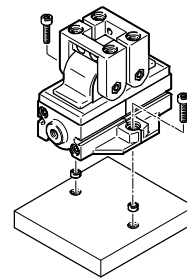


- 1 Gripper jaw
- 2 Housing based on half-shell principle
- 3 Slot for proximity sensor, for sensing the piston position
- 4 Mounting option
- 5 Supply port

### Mounting option from underneath

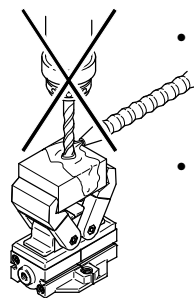


### from above



-  - Note

Angle grippers are not designed for the following sample applications:



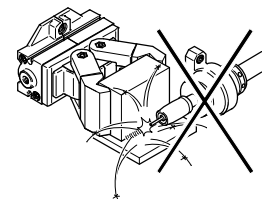
• Machining

• Aggressive media



• Grinding dust

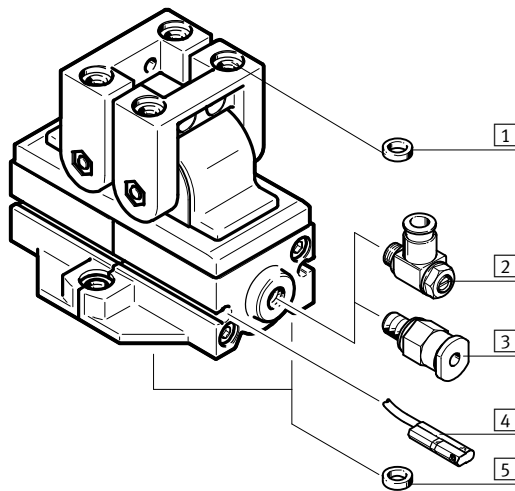
• Welding spatter



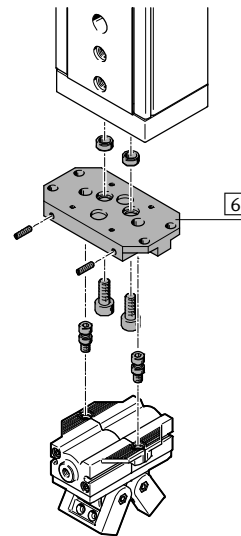
## Angle grippers HGWC

Peripherals overview and type codes

### Peripherals overview



### System product for handling and assembly technology



| Accessories                       |   |                 |
|-----------------------------------|---|-----------------|
| Type                              | Description   | → Page/Internet |
| 1 Centring sleeve ZBH             | <ul style="list-style-type: none"> <li>For centring when attaching gripper fingers</li> <li>4 included in the scope of delivery of the gripper</li> </ul>     | 11              |
| 2 One-way flow control valve GRLA | For regulating speed  | grla            |
| 3 Push-in fitting QS              | For connecting compressed air tubing with standard O.D.   | qs              |
| 4 Proximity sensor SME/SMT-10     | For sensing the piston position   | 11              |
| 5 Centring sleeve ZBH             | <ul style="list-style-type: none"> <li>For centring when attaching to a drive or plate</li> <li>2 included in the scope of delivery of the gripper</li> </ul> | 11              |
| 6 Adapter kit HAPG                | Drive/gripper connections   | adapter kit     |

### Type codes

|                                      |                      |      |   |    |   |    |   |   |
|--------------------------------------|----------------------|------|---|----|---|----|---|---|
|                                      |                      | HGWC | - | 12 | - | 40 | - | A |
| <b>Type</b>                          |                      |      |   |    |   |    |   |   |
| HGWC                                 | Angle gripper        |      |   |    |   |    |   |   |
| <b>Size</b>                          |                      |      |   |    |   |    |   |   |
| <b>Opening angle per gripper jaw</b> |                      |      |   |    |   |    |   |   |
| 15                                   | 15°                  |      |   |    |   |    |   |   |
| 40                                   | 40°                  |      |   |    |   |    |   |   |
| <b>Position sensing</b>              |                      |      |   |    |   |    |   |   |
| A                                    | Via proximity sensor |      |   |    |   |    |   |   |

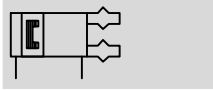
- 1 - Type discontinued  
Available up until 2018

FESTO

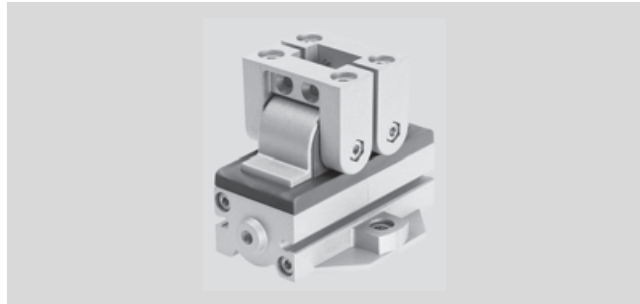
## Angle grippers HGWC

Technical data

Function  
Double-acting  
HGWC-...-A



-  - Size  
12, 16, 20 mm
-  - Opening angle  
30° and 80°



| General technical data                          |   |         |     |     |
|---|---|---------|-----|-----|
| Size  | 12  | 16      | 20  |     |
| Design  | Rack and pinion<br>Force-guided motion sequence |         |     |     |
| Mode of operation                               | Double-acting                                   |         |     |     |
| Gripper function                                | Angle   |         |     |     |
| Number of gripper jaws                          | 2   |         |     |     |
| Max. opening angle                              | [°]   | 30, 80  |     |     |
| Pneumatic connection                            | M5  |         |     |     |
| Repetition accuracy <sup>1)</sup>               | [mm]  | ≤ 0.05  |     |     |
| Max. interchangeability                         | [mm]  | ≤ 0.2   |     |     |
| Max. gripper jaw backlash <sup>2)</sup>         | [mm]  | ≤ 0.1   |     |     |
| Max. gripper jaw angular backlash <sup>3)</sup> | [°]   | ≤ 0.5   |     |     |
| Max. operating frequency                        | [Hz]  | ≤ 4     |     |     |
| Rotational symmetry                             | [mm]  | ≤ ∅ 0.2 |     |     |
| Position sensing                                | Via proximity sensor                            |         |     |     |
| Type of mounting                                | Via female thread and centring sleeve           |         |     |     |
| Mounting position                               | Any   |         |     |     |
| Product weight                                  | [g]   | 200     | 350 | 700 |

1) End-position drift under constant operating conditions 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) Pretensioned, backlash-free ball bearing guide

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

1) Note operating range of proximity sensors

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

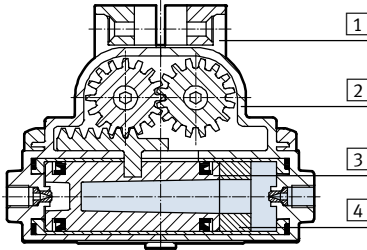
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

## Angle grippers HGWC

Technical data

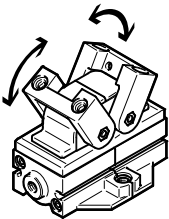
### Materials

Sectional view



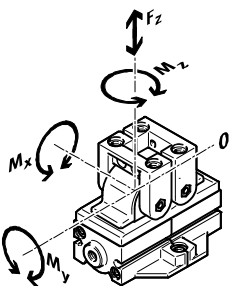
| Angle gripper |                   |   |
|---------------|-------------------|---|
| 1             | Gripper jaw       | Die-cast zinc, painted                    |
| 2             | Housing           | Die-cast zinc, painted                    |
| 3             | Piston            | Polyamide                                 |
| 4             | Distance sleeve   | Polyurethane                              |
| -             | Seals             | Polyurethane, nitrile rubber              |
| -             | Note on materials | Free of copper and PTFE<br>RoHS-compliant |

### Total gripping torque at 6 bar



| Size    |       | 12 | 16 | 20  |
|---------|-------|----|----|-----|
| Opening | [Ncm] | 22 | 72 | 144 |
| Closing | [Ncm] | 22 | 72 | 144 |

### 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                          |      | 12  | 16  | 20  |
|-------------------------------|------|-----|-----|-----|
| Max. permissible force $F_z$  | [N]  | 40  | 60  | 80  |
| Max. permissible torque $M_x$ | [Nm] | 2.5 | 4   | 8   |
| Max. permissible torque $M_y$ | [Nm] | 0.6 | 1   | 1.9 |
| Max. permissible torque $M_z$ | [Nm] | 2   | 3.2 | 6.7 |

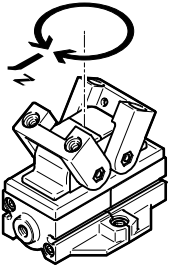
**- 1 - Type discontinued**  
**Available up until 2018**

## Angle grippers HGWC

Technical data

**FESTO**

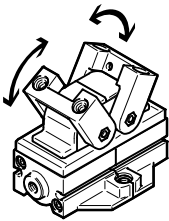
### Mass moment of inertia



Mass moment of inertia [ $\text{kgm}^2 \times 10^{-4}$ ] of the angle gripper in relation to the central axis with no load.

| Size       | 12                                     | 16   | 20   |
|------------|--|------|------|
| HGWC-...-A | [ $\text{kgm}^2 \times 10^{-4}$ ] 0.52 | 1.35 | 4.31 |

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



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

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

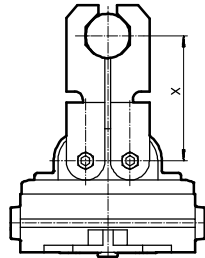
| Size                             |         | 12-15 | 12-40 | 16-15 | 16-40 | 20-15 | 20-40 |
|----------------------------------|---------|-------|-------|-------|-------|-------|-------|
| Without external gripper fingers |         |       |       |       |       |       |       |
| HGWC-...-A                       | Opening | 50    | 70    | 50    | 85    | 50    | 90    |
|                                  | Closing | 35    | 50    | 35    | 70    | 35    | 75    |

# Angle grippers HGWC

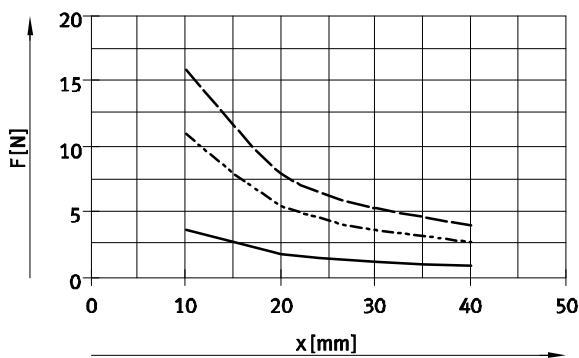
Technical data

## Gripping force $F_{Grip}$ per gripper jaw as a function of operating pressure and lever arm $x$

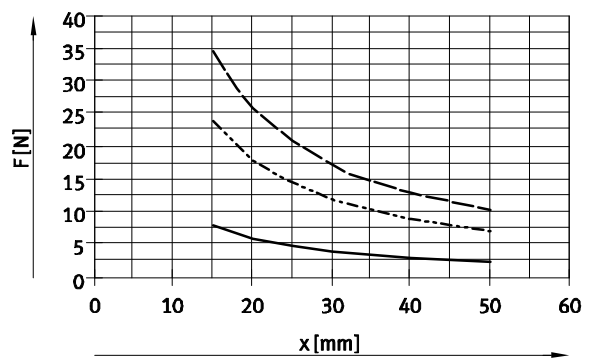
Gripping forces as a function of the operating pressure and the lever arm can be determined for the size using the following graph.



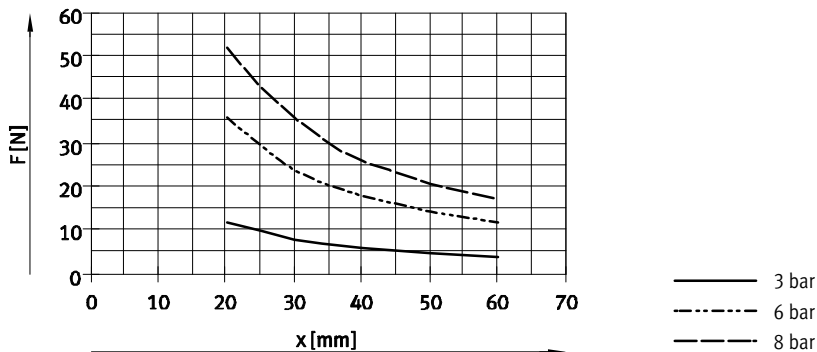
HGWC-12-A




HGWC-16-A



HGWC-20-A



— 3 bar  
- - - 6 bar  
- · - 8 bar

-  - Type discontinued  
Available up until 2018

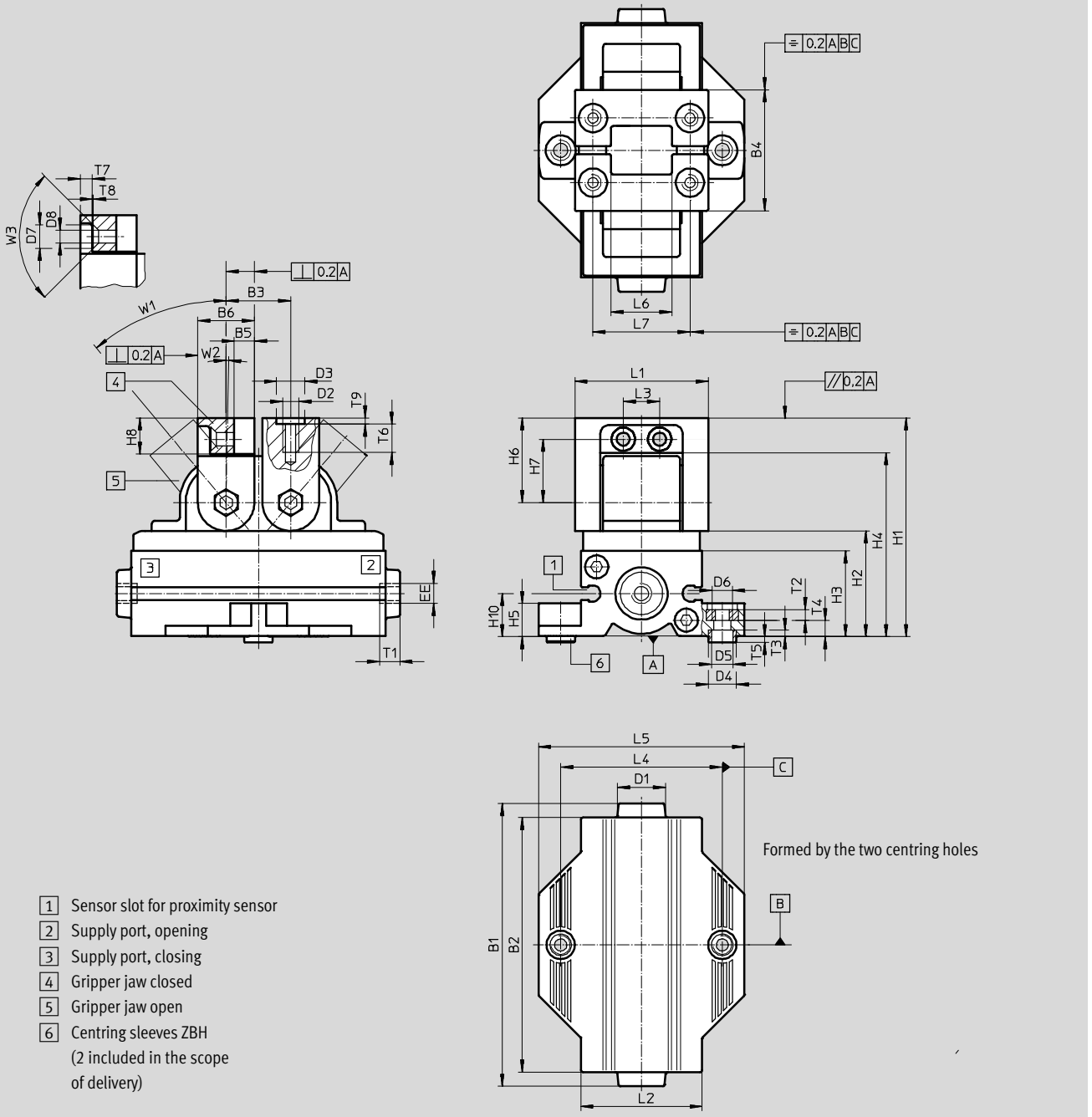
# Angle grippers HGWC

Technical data

FESTO

## Dimensions

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





- 2 - Type discontinued  
Available up until 2018

FESTO

## Angle grippers HGWC

Technical data

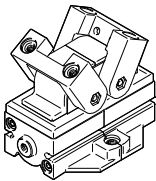
| Type    | B1 | B2 | B3<br>±0.05 | B4<br>+0.25<br>-0.05 | B5<br>+0.5 | B6<br>+0.1 | D1 | D2 | D3<br>+0.05<br>-0.02 | D4<br>F10/h7 | D5  |
|---------|----|----|-------------|----------------------|------------|------------|----|----|----------------------|--------------|-----|
| HGWC-12 | 57 | 52 | 12          | 23                   | 4          | 11         | 12 | M3 | 5                    | 7            | 5.3 |
| HGWC-16 | 70 | 63 | 16          | 30                   | 5.5        | 14         | 12 | M4 | 7                    | 7            | 5.3 |
| HGWC-20 | 86 | 79 | 20          | 38                   | 6          | 18         | 12 | M5 | 9                    | 9            | 6.4 |

| Type    | D6 | D7  | D8  | EE | H1<br>±0.5 | H2   | H3   | H4   | H5   | H6<br>±0.2 | H7   |
|---------|----|-----|-----|----|------------|------|------|------|------|------------|------|
| HGWC-12 | M4 | 4.8 | 2.6 | M5 | 43.2       | 20.7 | 18.2 | 35.2 | 6.9  | 17         | 12.5 |
| HGWC-16 | M5 | 5.8 | 3.2 | M5 | 54.2       | 26.2 | 21.2 | 44.7 | 8.2  | 21         | 15.7 |
| HGWC-20 | M6 | 8.1 | 4.4 | M5 | 68.2       | 32.7 | 27   | 55.7 | 10.2 | 26.5       | 19.5 |

| Type    | H8  | H10  | L1<br>±0.2 | L2   | L3<br>±0.1 | L4 <sup>1)</sup> | L5 | L6<br>+0.25<br>-0.05 | L7 <sup>1)</sup> | T1<br>min. |
|---------|-----|------|------------|------|------------|------------------|----|----------------------|------------------|------------|
| HGWC-12 | 7.5 | 9.2  | 27.5       | 25.5 | 6          | 33               | 42 | 12                   | 20               | 4.5        |
| HGWC-16 | 9   | 10.7 | 33         | 30   | 9          | 40               | 51 | 15                   | 24               | 5          |
| HGWC-20 | 12  | 13.7 | 45         | 38   | 12         | 50               | 65 | 21                   | 33               | 5          |

| Type       | T2  | T3<br>±0.1 | T4<br>+0.4<br>-0.3 | T5<br>+0.1<br>-0.3 | T6<br>min. | T7<br>+0.2 | T8  | T9<br>+0.1 | W1<br>±2 | W2<br>±3 | W3  |
|------------|-----|------------|--------------------|--------------------|------------|------------|-----|------------|----------|----------|-----|
| HGWC-12-15 | 2.2 | 1.7        | 3.1                | 1.3                | 6          | 1.7        | 0.5 | 1.3        | 15°      | 1°       | 90° |
| 40°        |     |            |                    |                    |            |            |     |            |          |          |     |
| HGWC-16-15 | 2.7 | 1.8        | 3.8                | 1.2                | 7          | 3          | 0.3 | 1.6        | 15°      | 1°       | 90° |
| HGWC-16-40 |     |            |                    |                    |            |            |     |            | 40°      |          |     |
| HGWC-20-15 | 3.2 | 2.3        | 5.2                | 1.7                | 9          | 3.5        | 0.5 | 2.1        | 15°      | 1°       | 90° |
| HGWC-20-40 |     |            |                    |                    |            |            |     |            | 40°      |          |     |

1) Tolerance for centring hole ±0.03  
Tolerance for thread ±0.2

| Ordering data   |      |                      |                            |
|---|------|----------------------|----------------------------|
|   | Size | Opening angle<br>[°] | Double-acting              |
|   |      |                      | Part No. Type              |
|  | 12   | 30                   | <b>565135</b> HGWC-12-15-A |
|   |      | 80                   | <b>565141</b> HGWC-12-40-A |
|   | 16   | 30                   | <b>565137</b> HGWC-16-15-A |
|   |      | 80                   | <b>565143</b> HGWC-16-40-A |
|   | 20   | 30                   | <b>565139</b> HGWC-20-15-A |
|   |      | 80                   | <b>565145</b> HGWC-20-40-A |

**- I - Type discontinued**  
**Available up until 2018**

## Angle grippers HGWC

Accessories

**FESTO**



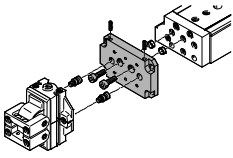
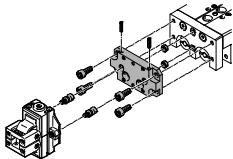
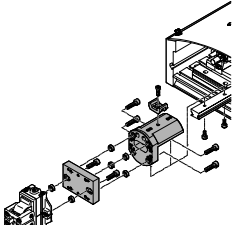
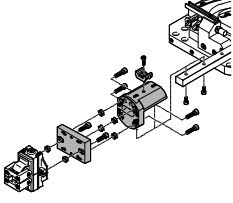
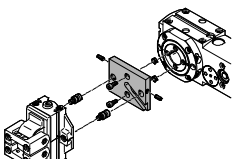
### Adapter kit HAPG

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



Note


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

| Permissible drive/gripper combinations with adapter kit                             |               |         |   |   |                   | Download CAD data → <a href="http://www.festo.com">www.festo.com</a> |  |
|---|---------------|---------|---|---|-------------------|--|--|
| Combination   | Drive<br>Size | Gripper |   | Adapter kit   |                   |  |  |
|   |               | Size    | Mounting option   |   | CRC <sup>1)</sup> | Part No. Type  |  |
|   |               |         |  |  |                   |  |  |
|    | DGSL          | HGWC    |   | HAPG  |                   |  |  |
|   | 12, 16        | 12      | ■   | ■   | 2                 | 529018 HAPG-58   |  |
|   | 20, 25        | 16      | ■   | ■   |                   | 191267 HAPG-49   |  |
|   | 20, 25        | 20      | ■   | ■   |                   | 191269 HAPG-51   |  |
|   | SLT           | HGWC    |   | HAPG  |                   |  |  |
|   | 10            | 12      | -   | ■   | 2                 | 542670 HAPG-100  |  |
|   | 16            | 12      | -   | ■   |                   | 529018 HAPG-58   |  |
|   | 16            | 16      | -   | ■   |                   | 542666 HAPG-101  |  |
|   | 20            | 16      | -   | ■   |                   | 191267 HAPG-49   |  |
|   | 20            | 20      | -   | ■   |                   | 542667 HAPG-102  |  |
|   | 25            | 20      | -   | ■   |                   | 191269 HAPG-51   |  |
|  | HSP           | HGWC    |   | HAPG  |                   |  |  |
|   | 16            | 16      | -   | ■   | 2                 | 191901 HAPG-55   |  |
|   | 25            | 20      | -   | ■   |                   | 540882 HAPG-71-B   |  |
|   |               |         |   |   |                   | 191901 HAPG-55   |  |
| 540883 HAPG-72-B  |               |         |   |   |                   |  |  |
|  | HSW           | HGWC    |   | HAPG  |                   |  |  |
|   | 12            | 16      | -   | ■   | 2                 | 191901 HAPG-55   |  |
|   | 16            | 16      | -   | ■   |                   | 540882 HAPG-71-B   |  |
|   |               |         |   |   |                   | 191901 HAPG-55   |  |
| 540882 HAPG-71-B  |               |         |   |   |                   |  |  |
|  | ERMB          | HGWC    |   | HAPG  |                   |  |  |
|   | 20            | 16      | ■   | ■   | 2                 | 542668 HAPG-SD2-42   |  |
|   | 20            | 20      | ■   | ■   |                   | 542669 HAPG-SD2-43   |  |
|   | 25            | 20      | ■   | ■   |                   | 542758 HAPG-SD2-44   |  |
|   |               |         |   |   |                   |  |  |


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


## Angle grippers HGWC


Accessories



| Ordering data – Centring sleeves  |   |          | Technical data → Internet: zbh |                  |
|---|---|----------|--------------------------------|------------------|
|   | For size<br>[mm]                        | Part No. | Type                           | PU <sup>1)</sup> |
|  | For attachment to a drive or on a plate |          |                                |                  |
|   | 12, 16                                  | 186717   | ZBH-7                          | 10               |
|   | 20                                      | 150927   | ZBH-9                          | 10               |
|   | For attaching gripper fingers           |          |                                |                  |
|   | 12                                      | 189652   | ZBH-5                          | 10               |
|   | 16                                      | 186717   | ZBH-7                          | 10               |
|   | 20                                      | 150927   | ZBH-9                          | 10               |

1) Packaging unit

| Ordering data – Proximity sensors for C-slot                                      |                                  |  |                     |                     |                  |                                |
|---|----------------------------------|--|---------------------|---------------------|------------------|--------------------------------|
|   | Type of mounting                 | Electrical connection,<br>connection direction | Switching<br>output | Cable length<br>[m] | Part No.         | Type                           |
|  | N/O contact, magneto-resistive   |  |                     |                     |                  | Technical data → Internet: smt |
|   | Insertable in slot from<br>above | Cable, 3-wire, in-line                         | PNP                 | 2.5                 | 551373           | SMT-10M-PS-24V-E-2,5-L-OE      |
|   |                                  | Plug M8x1, 3-pin, in-line                      |                     | 0.3                 | 551375           | SMT-10M-PS-24V-E-0,3-L-M8D     |
|   | N/O contact, magnetic reed       |  |                     |                     |                  | Technical data → Internet: sme |
| Insertable in slot length-<br>wise  | Cable, 3-wire, in-line           | Contacting                                     | 2.5                 | 173210              | SME-10-KL-LED-24 |                                |
|   | Plug M8x1, 3-pin, in-line        |  | 0.3                 | 173212              | SME-10-SL-LED-24 |                                |

| Ordering data – Proximity sensors for C-slot  |                                  |  |                     |                     |                  |                                |
|---|----------------------------------|--|---------------------|---------------------|------------------|--------------------------------|
|   | Type of mounting                 | Electrical connection,<br>connection direction | Switching<br>output | Cable length<br>[m] | Part No.         | Type                           |
|  | N/O contact, magneto-resistive   |  |                     |                     |                  | Technical data → Internet: smt |
|   | Insertable in slot from<br>above | Cable, 3-wire, lateral                         | PNP                 | 2.5                 | 551374           | SMT-10M-PS-24V-E-2,5-Q-OE      |
|   |                                  | Plug M8x1, 3-pin, lateral                      |                     | 0.3                 | 551376           | SMT-10M-PS-24V-E-0,3-Q-M8D     |
|   | N/O contact, magnetic reed       |  |                     |                     |                  | Technical data → Internet: sme |
| Insertable in slot length-<br>wise  | Cable, 3-wire, lateral           | Contacting                                     | 2.5                 | 173211              | SME-10-KQ-LED-24 |                                |
|   | Plug M8x1, 3-pin, lateral        |  | 0.3                 | 173213              | SME-10-SQ-LED-24 |                                |

| Ordering data – Proximity sensors for C-slot  |                                    |  |                     |                     |          |                                |
|---|------------------------------------|--|---------------------|---------------------|----------|--------------------------------|
|   | Type of mounting                   | Electrical connection,<br>connection direction | Switching<br>output | Cable length<br>[m] | Part No. | Type                           |
|  | N/O contact, magneto-resistive     |  |                     |                     |          | Technical data → Internet: smt |
|   | Insertable in slot length-<br>wise | 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      |

| Ordering data – Connecting cables   |                              |                              |                     | Technical data → 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   |

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