

Holding brakes DACS

FESTO



Key features

At a glance

Holding brakes are generally used to dynamically brake a movement or to prevent round rods of different lengths from starting up at any position. The piston rod can be braked or clamped by attaching a holding brake to a pneumatic cylinder. The round rod

or piston rod is securely locked during clamping so that the application of external force does not produce any relative motion. A rod can be locked at any position along the stroke, whether in the end positions or the intermediate positions. This provides

protection in the event of a pressure failure and secures the round rod or piston rod during intermediate stops for process operations.

- The clamping force is released when compressed air is supplied to the holding brake

- Static holding force up to 17000 N

Note

The holding brakes DACS-...-S are a safety device as defined in the Machinery Directive 2006/42/EC and have been tested and certified to relevant standards. More information www.festo.com/sp → Certificates.

The holding brakes DACS-...-S are suitable for use in ATEX zones in "static holding" mode.

Possible safety functions:

- Holding function: retaining a round rod by clamping with frictional locking
- Emergency braking function: the movement of the piston rod is stopped by clamping with frictional locking

The safety functions are triggered by switching off the compressed air supply or by the failure of the compressed air supply.

Position sensing

[A] Via proximity switch

- For monitoring the switching status

Certification

[S] Safety device

- To Machinery Directive 2006/42/EC

Corrosion protection

[R3] High corrosion protection

- Protects the holding brake against corrosion

Type codes

| 001 | Series |
|-------------|---------------|
| DACS | Holding brake |

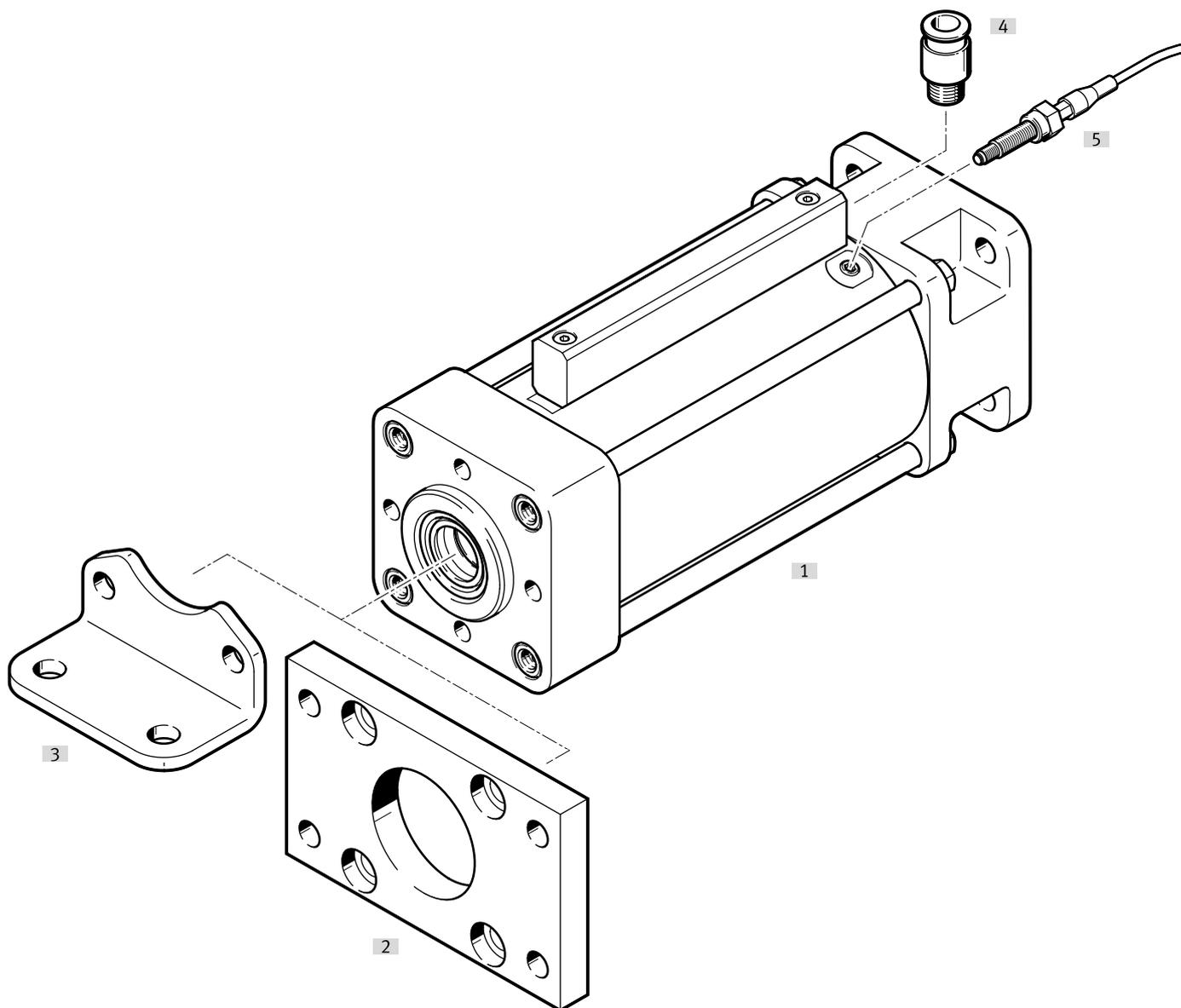
| 002 | Piston rod diameter [mm] |
|-----------|--------------------------|
| 16 | 16 |
| 20 | 20 |
| 25 | 25 |
| 40 | 40 |

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

| 004 | Corrosion protection |
|-----------|---------------------------|
| | Standard |
| R3 | High corrosion protection |

| 005 | Certification |
|----------|--|
| S | Safety component to Machinery Directive 2006/42/EC |

Peripherals overview



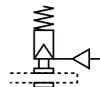
| Accessories | | | |
|-------------|----------------------------------|---|-----------------|
| | Type/order code | Description | → Page/Internet |
| [1] | Holding brakes DACs | Holding brakes are generally used to dynamically brake a movement or to prevent round rods of different lengths from starting up at any position. | 5 |
| [2] | Flange mounting FNG/FNC/CRFNG | <ul style="list-style-type: none"> • For bearing cap • Suitable for emergency stop applications/dynamic braking | 10/11 |
| [3] | Foot mounting HNG/HNC/CRHNC | For bearing cap | 9 |
| [4] | Push-in fitting QS | For connecting tubing with standard O.D | qs |
| [5] | Sensor kit DADG | Inductive sensor kit for sensing the status of the clamping function | 12 |

 **Note**

Only the flange mounting FNG/FNC/CRFNG is permissible for emergency stop applications/dynamic braking. Additional accessories for this application are available on request.

Datasheet

Function



-  Diameter of the round rod to be clamped
16 ... 40 mm
-  Force
1350 ... 17000 N



| General technical data | | | | |
|--|--|----|------|----|
| For round rod Ø | 16 | 20 | 25 | 40 |
| Release connection | G1/8 | | G3/8 | |
| Position sensing | Via proximity switch | | | |
| Type of mounting | With female thread | | | |
| | With accessories | | | |
| Clamping type with operating direction | At both ends | | | |
| | Clamping via spring force, released via compressed air | | | |
| Mounting position | Any | | | |

| Operating and environmental conditions | | | | |
|--|---|----|-------------|-------------|
| For round rod Ø | 16 | 20 | 25 | 40 |
| Operating pressure [bar] | 3.8 ... 8 | | | |
| Min. release pressure [bar] | 3.8 | | | |
| Max. permissible test pressure [bar] | 8 | | | |
| Operating medium | Compressed air to ISO 8573-1:2010 [7:4:4] | | | |
| Requirements on the round rod | | | | |
| Tolerance | h7 ... f7 | | | |
| Quality | At least HRC 60 or hard chromium-plated (minimum thickness 20 µm) | | | |
| | Surface roughness max. 4 µm | | | |
| Lead-in chamfer | 3 mm wide 15° chamfer on the end of the round rod | | | |
| Ambient temperature ¹⁾ [°C] | -20 ... +80 | | -10 ... +80 | -20 ... +80 |
| Corrosion resistance class CRC ²⁾ | | | | |
| [] Standard | 1 | | | |
| [R3] High corrosion protection | 3 | | | |

1) Note operating range of proximity switches.

2) More information www.festo.com/x/topic/crc

| Safety data | | | | |
|--|--|----|----|----|
| For round rod Ø | 16 | 20 | 25 | 40 |
| Safety function | Holding and stopping a movement | | | |
| Performance level (PL) | Stopping, holding, blocking a movement/category 1, Performance Level c | | | |
| Certification | German Technical Control Board (TÜV) | | | |
| Certificate-issuing authority | German Technical Control Board (TÜV) CA 697 | | | |
| CE marking (see declaration of conformity) ¹⁾ | To EU Machinery Directive | | | |
| UKCA marking (see declaration of conformity) ¹⁾ | According to UK regulations for machines | | | |

1) More information www.festo.com/catalogue/dacs

Datasheet

| Weight [g] | | | | |
|--------------------|------|------|-------|-------|
| For round rod Ø | 16 | 20 | 25 | 40 |
| Product weight [g] | 1483 | 3143 | 12832 | 34500 |

| Forces [N] | | | | |
|----------------------|------|------|------|-------|
| For round rod Ø | 16 | 20 | 25 | 40 |
| Static holding force | 1350 | 3300 | 8200 | 17000 |

 **Note**

The specified holding force refers to a static load. If this value is exceeded, slippage may occur. Dynamic forces occurring during operation must not exceed the static holding force if slippage is to be avoided. The holding brake is backlash-free in the clamped condition when varying loads are applied to the round rod.

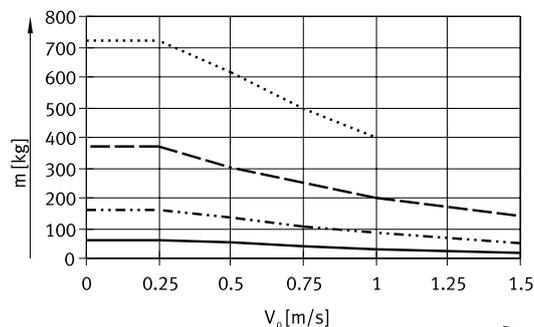
Lateral loads and bending moments on the round rod can impair the function. (Make sure that the load on the round rod is only in the direction of movement.)

Control:
The holding brake may only be released when the forces on the round rod are in equilibrium. Otherwise there is a risk of accidents due to the sudden movement of the round rod. Blocking off the compressed air supply at both ends (e.g. with a 5/3-way valve) does not provide any safety.

| Materials | |
|------------------------|----------------------------|
| Holding brakes | |
| Spring | High-alloy stainless steel |
| Housing | |
| DACS-... | Steel |
| DACS-...-R3 | High-alloy stainless steel |
| Clamping jaws | Tool steel |
| Piston | Steel |
| Seals | NBR |
| | TPE-U (PU) |
| LABS (PWIS) conformity | VDMA24364-Zone III |
| Note on materials | RoHs-compliant |

Datasheet

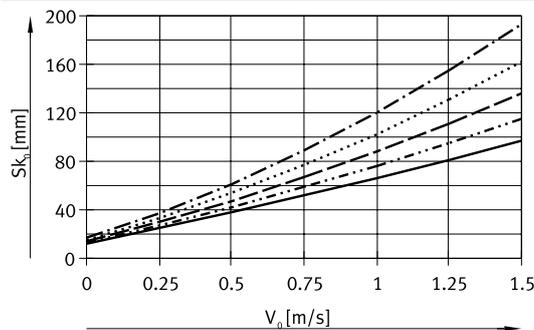
Load mass m as a function of drive speed v_0



- DACS-40
- DACS-25
- · - · - DACS-20
- DACS-16

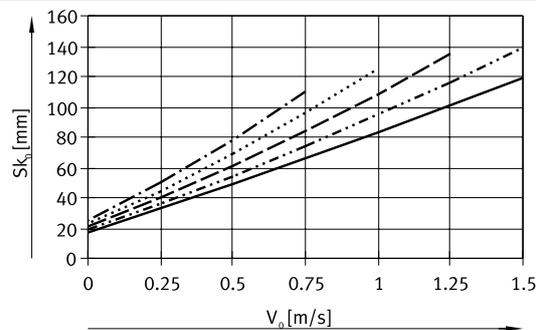
Stopping distance sk_0 as a function of drive speed v_0

Ø 16



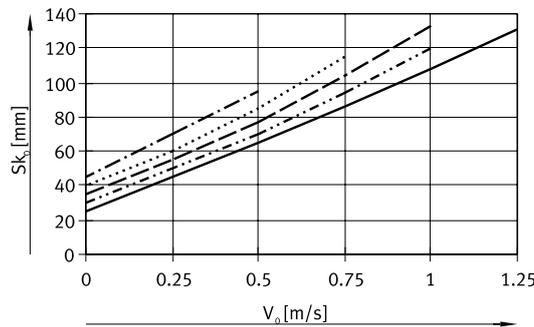
- · - · - 50 kg
- 40 kg
- 30 kg
- · - · - 20 kg
- 10 kg

Ø 20



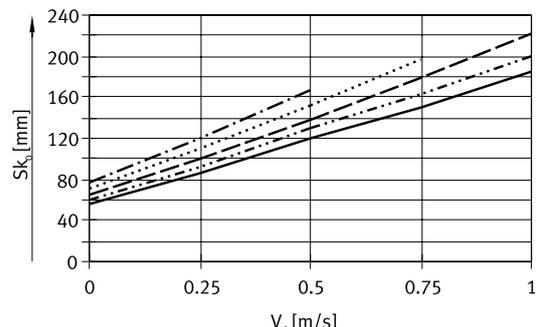
- · - · - 125 kg
- 100 kg
- 75 kg
- · - · - 50 kg
- 25 kg

Ø 25



- · - · - 300 kg
- 250 kg
- 200 kg
- · - · - 150 kg
- 100 kg

Ø 40



- · - · - 700 kg
- 600 kg
- 500 kg
- · - · - 400 kg
- 300 kg

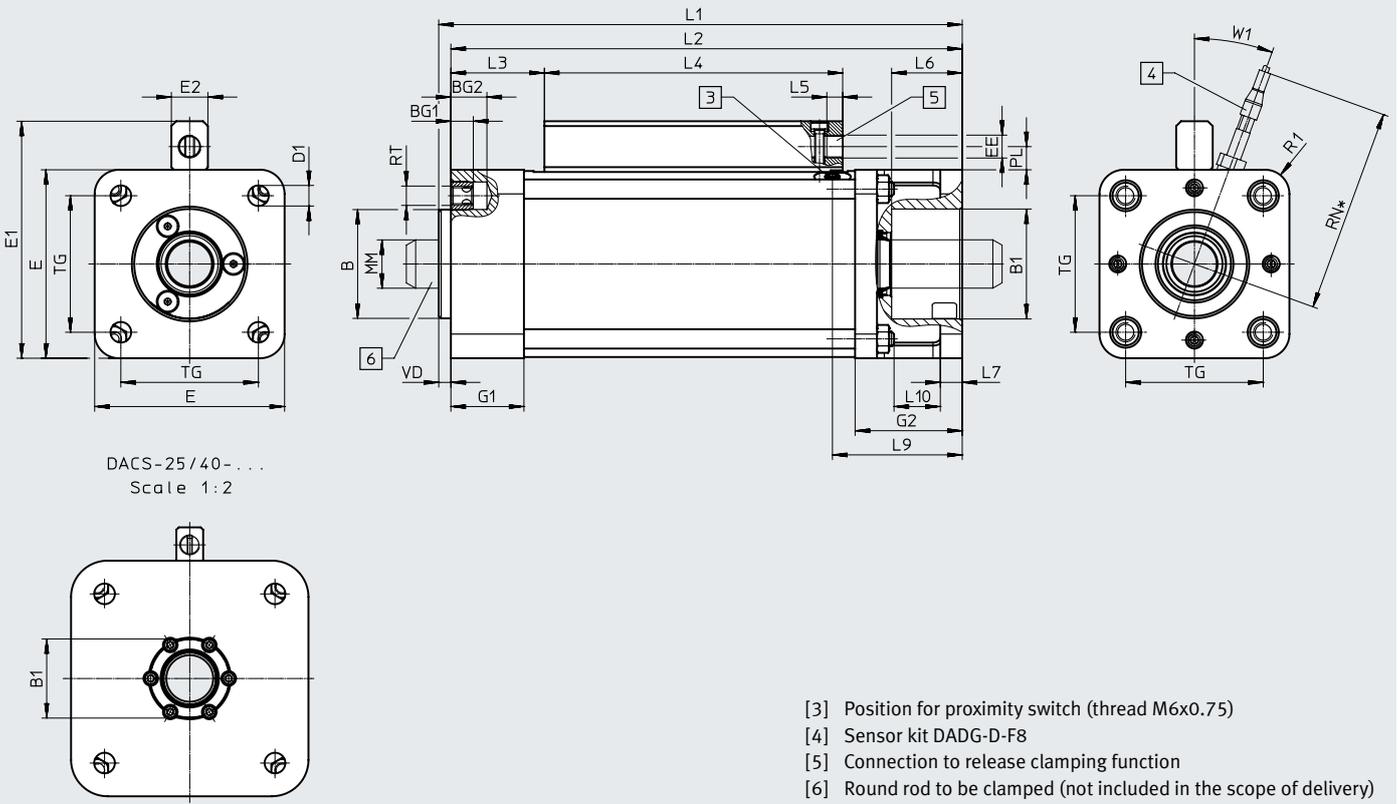
Note

All data in the graphs is intended exclusively for the purposes of preselection when configuring the emergency braking function and must be checked mathematically and in practice prior to commissioning. More information www.festo.com/sp → User documentation.

Datasheet

Dimensions and ordering data

Download CAD data → www.festo.com



| For round rod Ø [mm] | B Ø d11 | B1 ¹⁾ Ø ±0.1 | BG1 | BG2 | D1 Ø | E ±0.8 | E1 ±1 | E2 | EE | G1 | G2 | L1 ±1.2 | L2 ±1 | L3 | L4 | L5 |
|-------------------------|---------------|-------------------------------|-----|------|---------|-----------|----------|----|------|----|----|------------|----------|------|-------|-----|
| 16 | 35 | 35.5 | 8 | 13.2 | 6.5 | 54 | 74.1 | 15 | G1/8 | 27 | 40 | 191 | 186 | 29 | 116 | 6.5 |
| | 35 | 35.5 | 8 | 13.2 | 6.5 | 54 | 74.1 | 15 | G1/8 | 27 | 40 | 191 | 186 | 29 | 116 | 6.5 |
| 20 | 45 | 45.5 | 9 | 14.8 | 8.5 | 78 | 98.1 | 15 | G1/8 | 30 | 44 | 215 | 210 | 38.4 | 122.5 | 6.5 |
| | 45 | 45.5 | 9 | 14.8 | 8.5 | 78 | 98.1 | 15 | G1/8 | 30 | 44 | 215 | 210 | 38.4 | 122.5 | 6.5 |
| 25 | 55 | 55.5 | 10 | 14.8 | 10.5 | 124 | 152.1 | 22 | G3/8 | 35 | 54 | 260 | 255 | 47.1 | 148.5 | 8 |
| | 55 | 55.5 | 10 | 14.8 | 10.5 | 124 | 152.1 | 22 | G3/8 | 35 | 54 | 260 | 255 | 47.1 | 148.5 | 8 |
| 40 | 65 | 65.5 | 14 | 21 | 17 | 195 | 222.6 | 22 | G3/8 | 48 | 80 | 305 | 298 | 67.2 | 143.5 | 8 |
| | 65 | 65.5 | 14 | 21 | 17 | 195 | 222.6 | 22 | G3/8 | 48 | 80 | 305 | 298 | 67.2 | 143.5 | 8 |

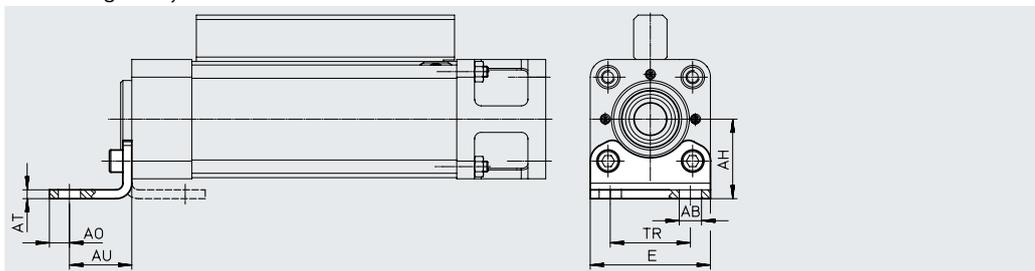
1) Not suitable as centring diameter

| For round rod Ø [mm] | L6 +0.3 | L7 | L9 | L10 | MM ²⁾ Ø | PL | R1 | RN | RT | TG ±0.2 | VD ±0.2 | W1 | Part no. | Type |
|-------------------------|------------|----|------|--------------------|-----------------------|------|-----|-----|-----|------------|------------|-----|----------------|-----------------------|
| 16 | 22 | 8 | 49.4 | 17 ₊₁ | 16 | 9.6 | R8 | 98 | M6 | 38 | 5 | 27° | 8072770 | DACS-16-A-S |
| | 22 | 8 | 49.4 | 17 ₊₁ | 16 | 9.6 | R8 | 98 | M6 | 38 | 5 | 27° | 8072774 | DACS-16-A-R3-S |
| 20 | 29 | 9 | 53.6 | 18 ₊₁ | 20 | 9.6 | R10 | 100 | M8 | 56.5 | 5 | 20° | 8072771 | DACS-20-A-S |
| | 29 | 9 | 53.6 | 18 ₊₁ | 20 | 9.6 | R10 | 100 | M8 | 56.5 | 5 | 20° | 8072775 | DACS-20-A-R3-S |
| 25 | 38.5 | 12 | 65.3 | 20 _{+1.5} | 25 | 13.6 | R15 | 120 | M10 | 89 | 5 | 20° | 8072772 | DACS-25-A-S |
| | 38.5 | 12 | 65.3 | 20 _{+1.5} | 25 | 13.6 | R15 | 120 | M10 | 89 | 5 | 20° | 8072776 | DACS-25-A-R3-S |
| 40 | 61.5 | 16 | 95.5 | 34 _{+1.5} | 40 | 13.6 | R30 | 155 | M16 | 140 | 7 | 20° | 8072773 | DACS-40-A-S |
| | 61.5 | 16 | 95.5 | 34 _{+1.5} | 40 | 13.6 | R30 | 155 | M16 | 140 | 7 | 20° | 8072777 | DACS-40-A-R3-S |

2) Round rod to be clamped: observe specifications as per the datasheet, S. 5 (e.g. diameter, tolerances)

Accessories

Footmounting
HNG/HNC/CRHNC

 Material:
 HNG/HNC: Galvanised steel
 CRHNC: High-alloy steel

Note

The foot mounting can also be fitted on the side of the end cap. Separate screws are required for this.

Dimensions and ordering data

| For \varnothing | AB \varnothing | AH | AO | AT | AU | E | TR |
|-------------------|---------------------|-----|------|----|----|-----|-----|
| [mm] | | | | | | | |
| 16 | 10 | 36 | 9 | 4 | 28 | 54 | 36 |
| 20 | 10 | 50 | 12.5 | 5 | 32 | 75 | 50 |
| 25 | 14.5 | 71 | 17.5 | 6 | 41 | 110 | 75 |
| 40 | 18.5 | 115 | 20 | 10 | 60 | 169 | 115 |

| For \varnothing | Basic version | | | | Corrosion resistant | | | |
|-------------------|-------------------|------------|---------------|--------------------|---------------------|------------|---------------|--------------------|
| | CRC ¹⁾ | Weight [g] | Part no. | Type ²⁾ | CRC ¹⁾ | Weight [g] | Part no. | Type ²⁾ |
| [mm] | | | | | | | | |
| 16 | 1 | 193 | 174370 | HNC-40 | 4 | 188 | 176938 | CRHNC-40 |
| 20 | 1 | 436 | 174372 | HNC-63 | 4 | 424 | 176940 | CRHNC-63 |
| 25 | 1 | 1009 | 174374 | HNC-100 | 4 | 990 | 176942 | CRHNC-100 |
| 40 | 1 | 3931 | 34476 | HNG-160 | | | | |

 1) More information www.festo.com/x/topic/crc

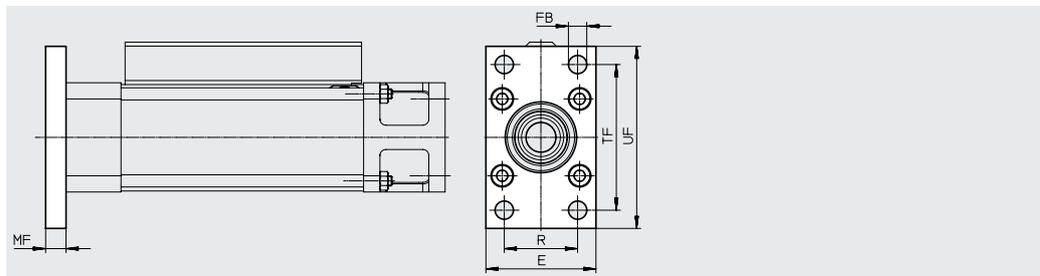
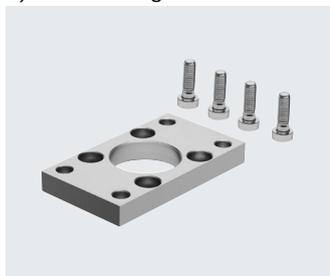
2) Suitable for ATEX

Accessories

Flange mounting FNC/CRFNG

Suitable for
emergency stop applications/
dynamic braking

Material:
FNC: Galvanised steel
CRFNG: high-alloy steel
RoHS-compliant



Dimensions and ordering data

| For \varnothing [mm] | E | FB \varnothing | MF | R | TF | UF |
|---------------------------|-----|---------------------|----|----|-----|-----|
| 16 | 54 | 9 | 10 | 36 | 72 | 90 |
| 20 | 75 | 9 | 12 | 50 | 100 | 120 |
| 25 | 110 | 14 | 16 | 75 | 150 | 175 |

| For \varnothing [mm] | Basic version | | | | Corrosion resistant | | | |
|---------------------------|-------------------|---------------|---------------|--------------------|---------------------|---------------|---------------|--------------------|
| | CRC ¹⁾ | Weight [g] | Part no. | Type ²⁾ | CRC ¹⁾ | Weight [g] | Part no. | Type ²⁾ |
| 16 | 1 | 291 | 174377 | FNC-40 | 4 | 291 | 161847 | CRFNG-40 |
| 20 | 1 | 679 | 174379 | FNC-63 | 4 | 680 | 161849 | CRFNG-63 |
| 25 | 1 | 2041 | 174381 | FNC-100 | 4 | 2054 | 161851 | CRFNG-100 |

1) More information www.festo.com/x/topic/crc

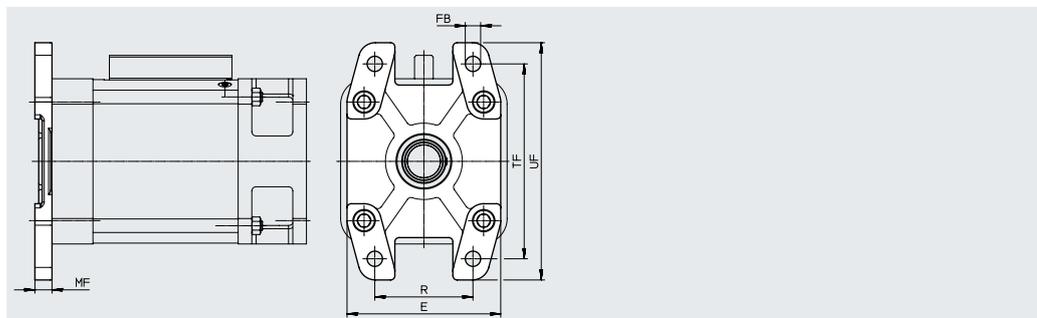
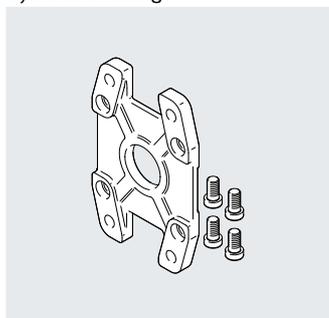
2) Suitable for ATEX

Accessories

Flange mounting FNG

Suitable for emergency stop applications/
dynamic braking

Material:
Painted spheroidal graphite cast iron
RoHS-compliant



Dimensions and ordering data

| For \varnothing | E | FB \varnothing | MF | R | TF | UF | CRC ¹⁾ | Weight [g] | Part no. | Type ²⁾ |
|-------------------|-----|---------------------|----|-----|-----|-----|-------------------|---------------|--------------|--------------------|
| 40 | 180 | 18 | 20 | 115 | 230 | 280 | 1 | 3550 | 34478 | FNG-160 |

- 1) More information www.festo.com/x/topic/crc
2) Suitable for ATEX

Accessories

Proximity switch DADG

General technical data

| | | | |
|--|--|----|----|
| For ø | 16; 20 | 25 | 40 |
| Size | M4 | | |
| Type of mounting | Screw-clamped | | |
| Type of mounting | Flush | | |
| Housing material | Steel | | |
| Cable sheath material | TPE-U(PUR) | | |
| Note on materials | Contains paint-wetting impairment substances RoHs-compliant | | |
| Product weight [g] | 26 | 30 | 32 |
| Conforms to standard | EN 60947-5-2 | | |
| Certification | RCM c UL us (OL) | | |
| CE marking (see declaration of conformity) | To EU EMC Directive | | |
| Degree of protection | IP67 | | |

Operating and environmental conditions

| | | | |
|--|--|----|----|
| For ø | 16; 20 | 25 | 40 |
| Switching output | PNP | | |
| Switching element function | N/O | | |
| Electrical connection 1, connection type | Cable | | |
| Electrical connection 1, connection technology | Open end | | |
| Electrical connection 1, number of pins/wires | 3 | | |
| Cable length [m] | 2 | | |
| Operating voltage range DC [V] | 10 ... 30 | | |
| Max. switching frequency | 5000 Hz | | |
| Max. switching frequency DC | 5000 Hz | | |
| Max. output current [mA] | 100 | | |
| No-load current [mA] | ≤ 10 | | |
| Voltage drop [V] | 2 | | |
| Residual ripple [%] | 10 | | |
| Reverse polarity protection | For all electrical connections | | |
| Short circuit current rating | Clocked | | |
| Rated operating distance [mm] | 0.6 | | |
| Assured operating distance [mm] | 0.64 | | |
| Reduction factors | Aluminium = 0.55 Stainless steel St 18/8 = 0.8 Copper = 0.5 Brass = 0.65 Steel St 37 = 1.0 | | |
| Repetition accuracy [mm] | 0.01 | | |
| Ambient temperature [°C] | -25 ... +70 | | |

Ordering data

Datasheets → Internet: dadg

| | For ø | Part no. | Type |
|--|--------|----------|-----------------|
|  | 16; 20 | 8072857 | DADG-D-F8-16/20 |
| | 25 | 8072858 | DADG-D-F8-25 |
| | 40 | 8072859 | DADG-D-F8-40 |