

## 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](http://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
<b>DACS</b>	Holding brake

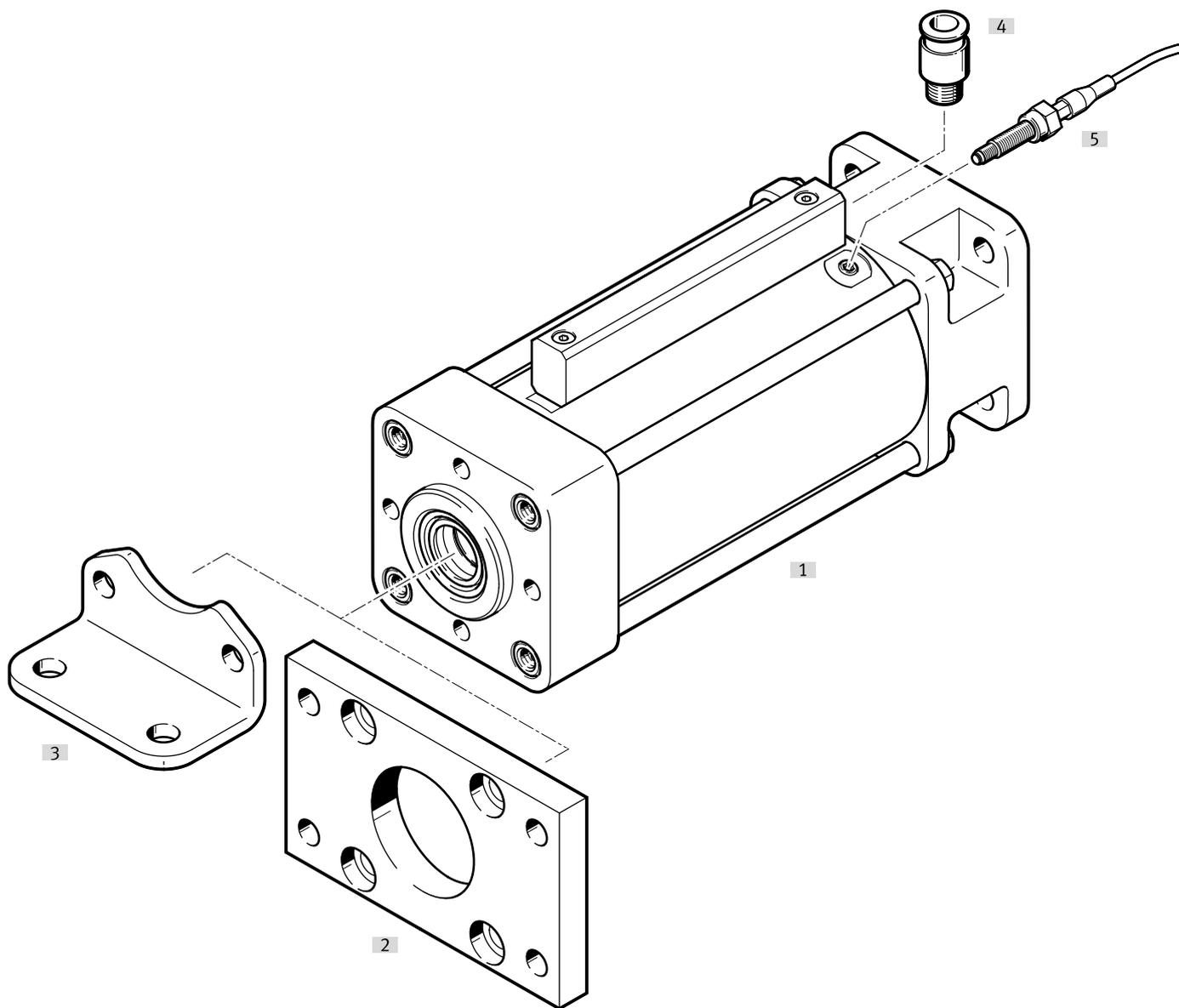
002	Piston rod diameter [mm]
<b>16</b>	16
<b>20</b>	20
<b>25</b>	25
<b>40</b>	40

003	Position sensing
<b>A</b>	For proximity sensor

004	Corrosion protection
	Standard
<b>R3</b>	High corrosion protection

005	Certification
<b>S</b>	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"> <li>• For bearing cap</li> <li>• Suitable for emergency stop applications/dynamic braking</li> </ul>		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 <sup>1)</sup> [°C]	-20 ... +80		-10 ... +80	-20 ... +80
Corrosion resistance class CRC <sup>2)</sup>				
[ ] Standard	1			
[R3] High corrosion protection	3			

1) Note operating range of proximity switches.

2) More information [www.festo.com/x/topic/crc](http://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) <sup>1)</sup>	To EU Machinery Directive			
UKCA marking (see declaration of conformity) <sup>1)</sup>	According to UK regulations for machines			

1) More information [www.festo.com/catalogue/dacs](http://www.festo.com/catalogue/dacs)

## Datasheet

<b>Weight [g]</b>				
For round rod Ø	16	20	25	40
Product weight [g]	1483	3143	12832	34500

<b>Forces [N]</b>				
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.)

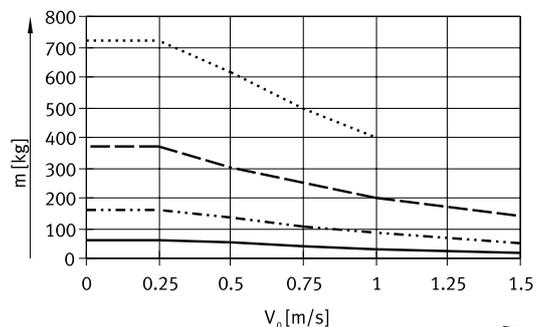
**Control:**  
The holding brake may only be released when the forces on the round rod are in equilibrium. Otherwise there is a risk of accidents due to the sudden movement of the round rod. Blocking off the compressed air supply at both ends (e.g. with a 5/3-way valve) does not provide any safety.

### 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

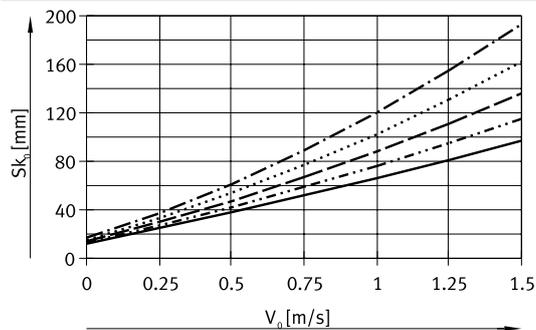
## Load mass m as a function of drive speed v<sub>0</sub>



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

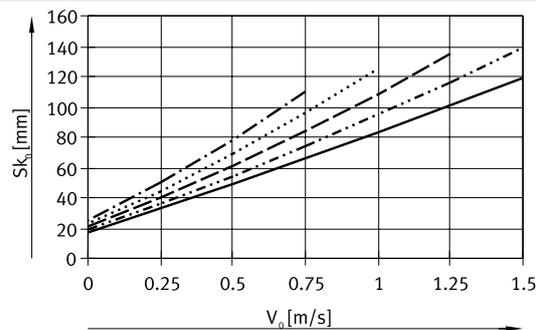
## Stopping distance s<sub>k0</sub> as a function of drive speed v<sub>0</sub>

∅ 16



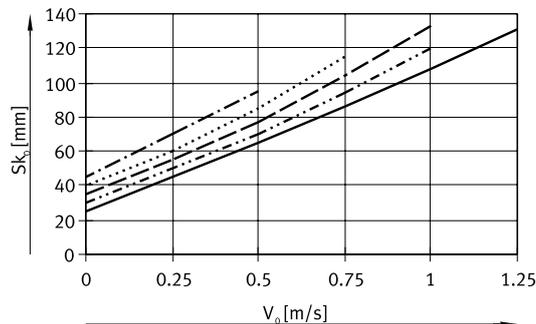
- · - · - 50 kg
- ..... 40 kg
- 30 kg
- · · · - 20 kg
- 10 kg

∅ 20



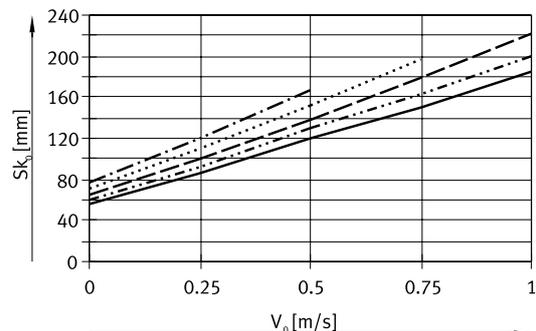
- · - · - 125 kg
- ..... 100 kg
- 75 kg
- · · · - 50 kg
- 25 kg

∅ 25



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

∅ 40



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

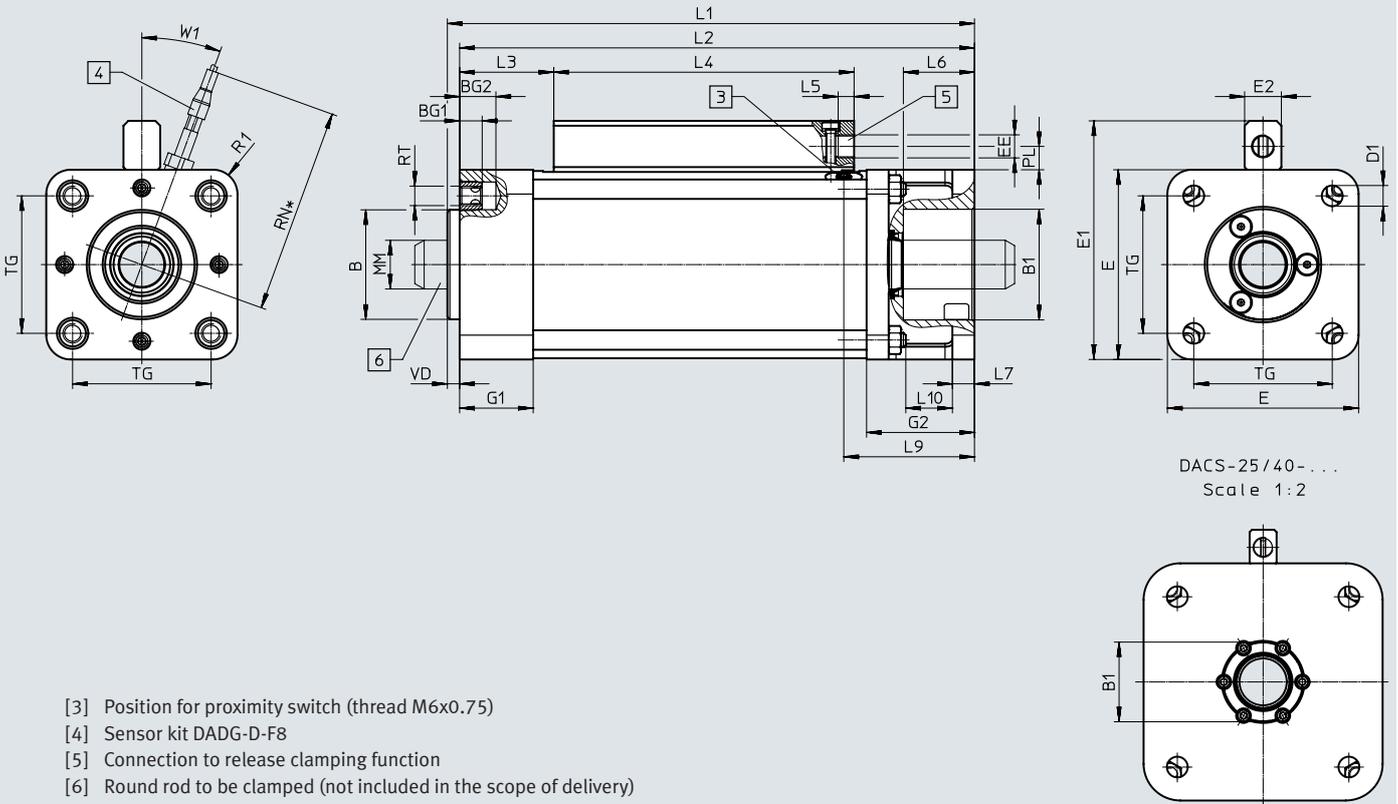
**Note**

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](http://www.festo.com/sp) → User documentation.

Datasheet

Dimensions and ordering data

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



For round rod Ø [mm]	B ø d11	B1 <sup>1)</sup> 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

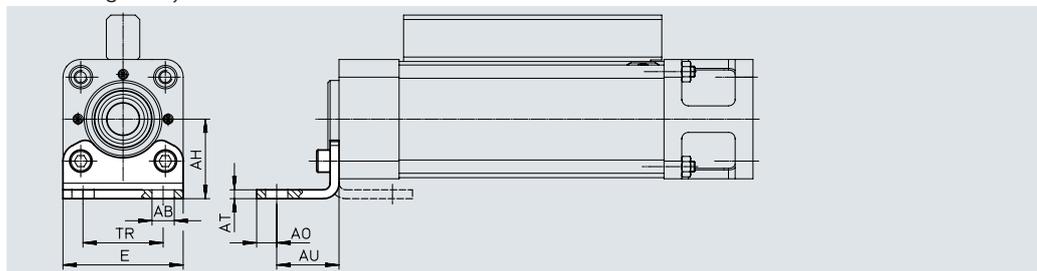
For round rod Ø [mm]	L6 +0.3	L7	L9	L10	MM <sup>2)</sup> ø	PL	R1	RN	RT	TG ±0.2	VD ±0.2	W1	Part no.	Type
16	22	8	49.4	17 <sub>+1</sub>	16	9.6	R8	98	M6	38	5	27°	<b>8072770</b>	<b>DACS-16-A-S</b>
	22	8	49.4	17 <sub>+1</sub>	16	9.6	R8	98	M6	38	5	27°	<b>8072774</b>	<b>DACS-16-A-R3-S</b>
20	29	9	53.6	18 <sub>+1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

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 $\varnothing$ [mm]	AB $\varnothing$	AH	AO	AT	AU	E	TR
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 $\varnothing$ [mm]	Basic version				Corrosion resistant			
	CRC <sup>1)</sup>	Weight [g]	Part no.	Type <sup>2)</sup>	CRC <sup>1)</sup>	Weight [g]	Part no.	Type <sup>2)</sup>
16	1	193	<b>174370</b>	<b>HNC-40</b>	4	188	<b>176938</b>	<b>CRHNC-40</b>
20	1	436	<b>174372</b>	<b>HNC-63</b>	4	424	<b>176940</b>	<b>CRHNC-63</b>
25	1	1009	<b>174374</b>	<b>HNC-100</b>	4	990	<b>176942</b>	<b>CRHNC-100</b>
40	1	3931	<b>34476</b>	<b>HNG-160</b>				

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

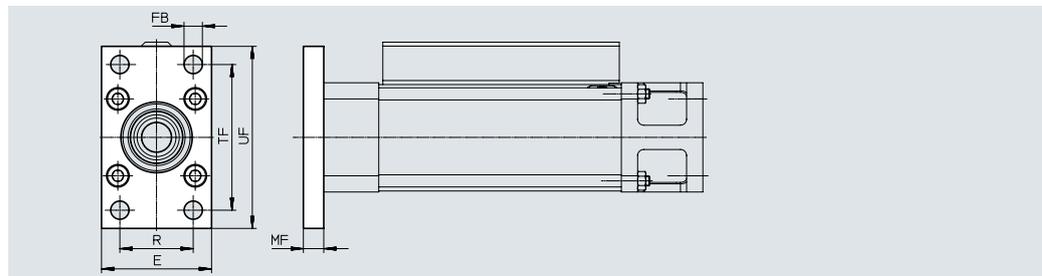
2) Suitable for ATEX

## 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 <sup>1)</sup>	Weight [g]	Part no.	Type <sup>2)</sup>	CRC <sup>1)</sup>	Weight [g]	Part no.	Type <sup>2)</sup>
16	1	291	<b>174377</b>	<b>FNC-40</b>	4	291	<b>161847</b>	<b>CRFNG-40</b>
20	1	679	<b>174379</b>	<b>FNC-63</b>	4	680	<b>161849</b>	<b>CRFNG-63</b>
25	1	2041	<b>174381</b>	<b>FNC-100</b>	4	2054	<b>161851</b>	<b>CRFNG-100</b>

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

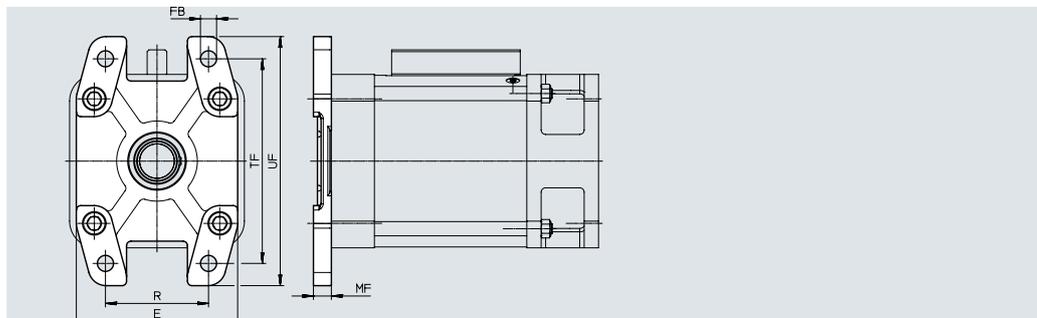
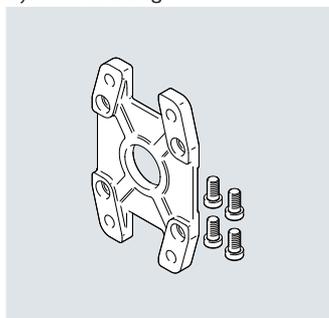
2) Suitable for ATEX

## 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 <sup>1)</sup>	Weight [g]	Part no.	Type <sup>2)</sup>
40	180	18	20	115	230	280	1	3550	<b>34478</b>	<b>FNG-160</b>

- 1) More information [www.festo.com/x/topic/crc](http://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