

■ Linear drives

■ Semi-rotary drives

■ Accessories

Specified types in accordance with  
ATEX directive for potentially  
explosive atmospheres

➔ [www.festo.com/en/ex](http://www.festo.com/en/ex)

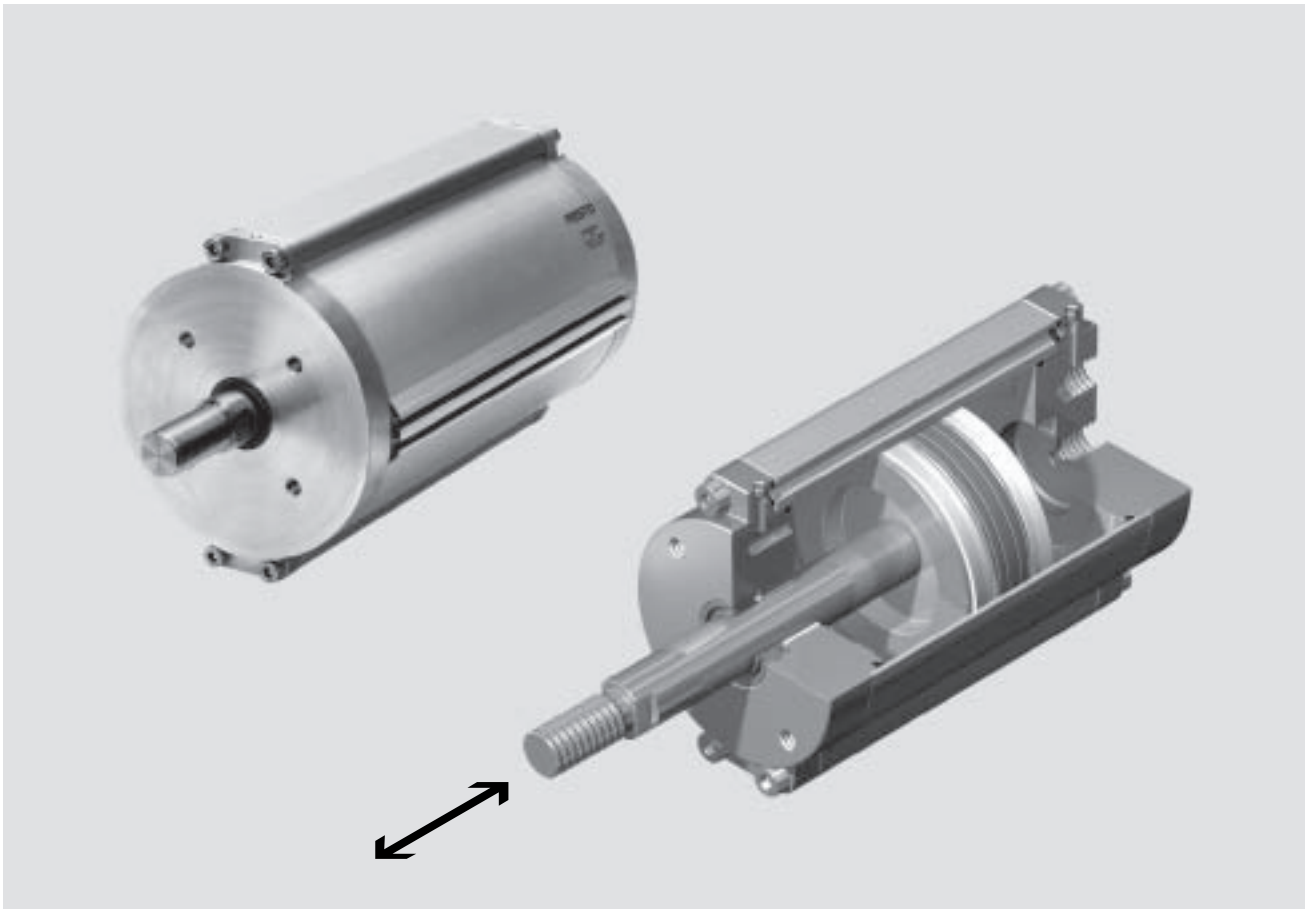
# Linear actuators DLP, Copac




Features

FESTO

Actuators  
Linear actuators

1.1



-  Diameter  
80 ... 320 mm
-  Stroke length  
40 ... 2,000 mm
-  Force  
2,800 ... 47,500 N

Festo Copac linear actuators are ideally suited for use in water, sewage, industrial process water and silage technology, as well as the paper and bulk goods industry. A clean solution for shut-off, safety and control slide valves. The Copac linear drive acts directly upon the slide plate and facilitates accurate advancing to various positions.

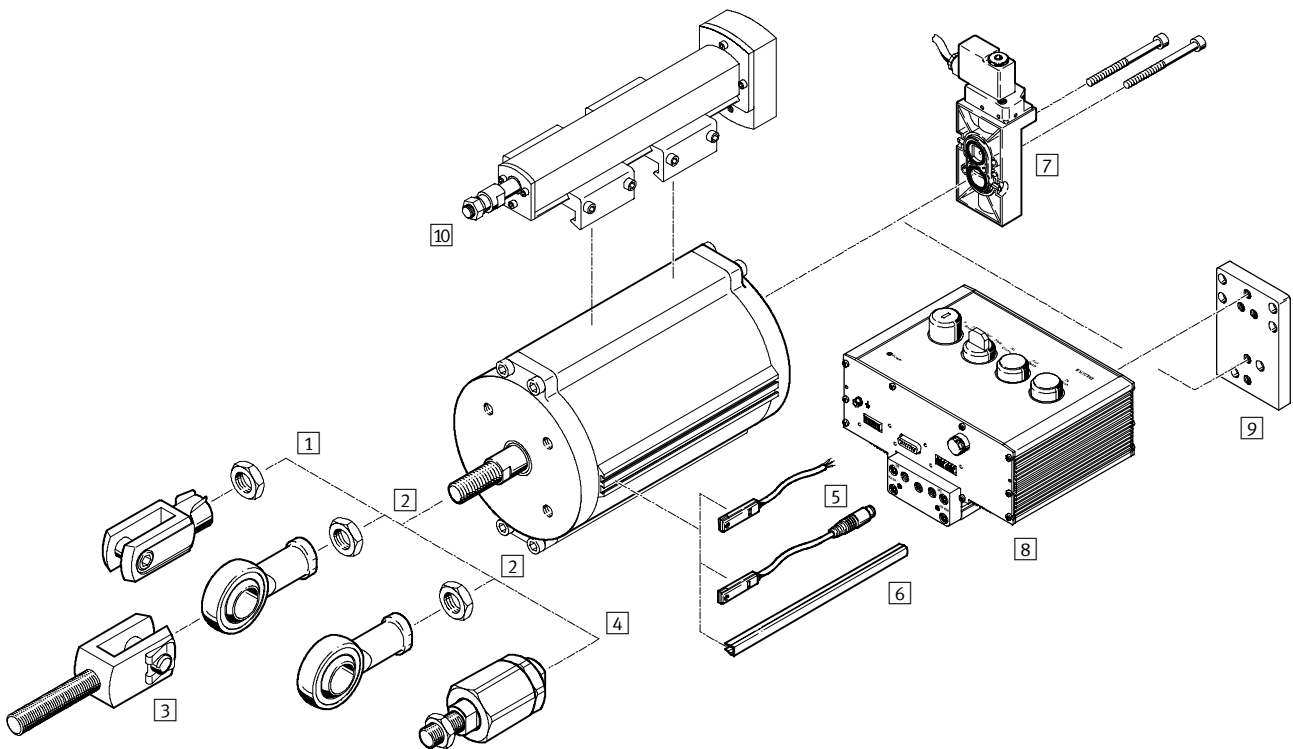
- Fast or slow valve actuation
- Position sensing
- Internal air channels eliminate protruding tubing and attachments, and thus also harmful accumulation of contaminants
- Suitable for manual on-site use, as well as automatic operation
- Opening and closing actuated via flange-mounted solenoid valve with Namur port pattern, or via valve terminals with a choice of 30 different fieldbus protocols
- Sturdy and reliable, even in aggressive environments

- Highly corrosion resistant
- Mounting port pattern to DIN 3358/ISO 5210 for direct mounting
- Port pattern to Namur VDI/VDE 3845 for attaching solenoid valves



# Linear actuators DLP, Copac

Peripherals overview



Mounting attachments and accessories					
	Brief description	DLP-80/100	DLP-125/160	DLP-250/320	→ Page
1	Rod clevis SG	■	■	■	7 / 1.1-6
	Rod clevis, stainless steel CRSG	■	■	-	7 / 1.1-7
2	Rod eye SGS	■	■	■	7 / 1.1-9
	Rod eye, stainless steel CRSGS	■	■	-	7 / 1.1-10
3	Rod clevis SGA	■	■	■	7 / 1.1-8
4	Self-aligning rod coupler FK	■	■	■	7 / 1.1-11
5	Proximity sensors SMT-8	■	■	■	7 / 1.1-12
	Proximity sensors SME-8	■	■	■	7 / 1.1-14
6	Slot cover ABP-5-S	■	■	■	7 / 1.1-16
7	Solenoid valves	■	■	■	7 / 2.1-2
8	Local controller DLP-VSE	■	■	■	7 / 3.1-2
9	Sub-base DLP-VSE-OBEN-NAMUR	■	■	■	7 / 3.1-5
10	Measuring unit ASDLP	■	■	-	7 / 1.1-17

# Linear actuators DLP, Copac

Type codes

DLP		100	125	A
<b>Type</b>				
DLP	Double-acting linear actuator			
<b>Piston <math>\varnothing</math> [mm]</b>				
<b>Stroke [mm]</b>				
<b>Position sensing</b>				
A	For contactless sensing			

## Application example




# Linear actuators DLP, Copac


Technical data


FESTO

Function



-  - Diameter  
80 ... 320 mm

-  - Stroke length  
40 ... 2,000 mm

-  - Force  
2,800 ... 47,500 N



General technical data						
Piston $\varnothing$	80	100	125	160	250	320
Pneumatic connection	G $\frac{1}{4}$					
Operating medium	Filtered compressed air, lubricated or unlubricated					
	Other media upon request					
Design	Piston cylinder, double-acting					
Position sensing	Via proximity sensor					

Operating conditions						
Piston $\varnothing$	80	100	125	160	250	320
Operating pressure <sup>1)</sup>	[bar]	2 ... 10 bar				
Ambient temperature <sup>2)</sup>	[°C]	-20 ... 80 (observe operating range of proximity sensors)				
Corrosion resistance class CRC <sup>3)</sup>		2				

1) Depending upon the counter force of the valve slide, a higher minimum pressure may be required to actuate the overall system.

2) Additional temperature ranges available upon request

3) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Forces [N] and air consumption [NI]						
Piston $\varnothing$	80	100	125	160	250	320
Theoretical force at 6 bar, advancing	3,016	4,712	7,363	12,064	29,452	48,255
Theoretical force at 6 bar, retracting	2,827	4,524	6,881	11,581	28,698	47,501
Theoretical air consumption at 6 bar and 10 mm stroke, pushing	0.35	0.55	0.86	1.41	3.44	5.63
Theoretical air consumption at 6 bar and 10 mm stroke, pulling	0.33	0.53	0.80	1.35	3.35	5.54

Weights [g]						
Piston $\varnothing$	80	100	125	160	250	320
Product weight at 0 mm stroke	2,100	3,100	5,700	8,000	24,100	39,900
Additional weight per 10 mm stroke	65	920	167	183	248	322

Materials						
Piston $\varnothing$	80	100	125	160	250	320
Cylinder barrel	Smooth anodised aluminium				Stainless steel	
Bearing end cap	Extruded aluminium					
Piston rod	High-alloy rolled steel					
External screws	Steel					
Rod bearing	Smooth composite material					
Seals	Polyurethane, nitrile rubber					

# Linear actuators DLP, Copac

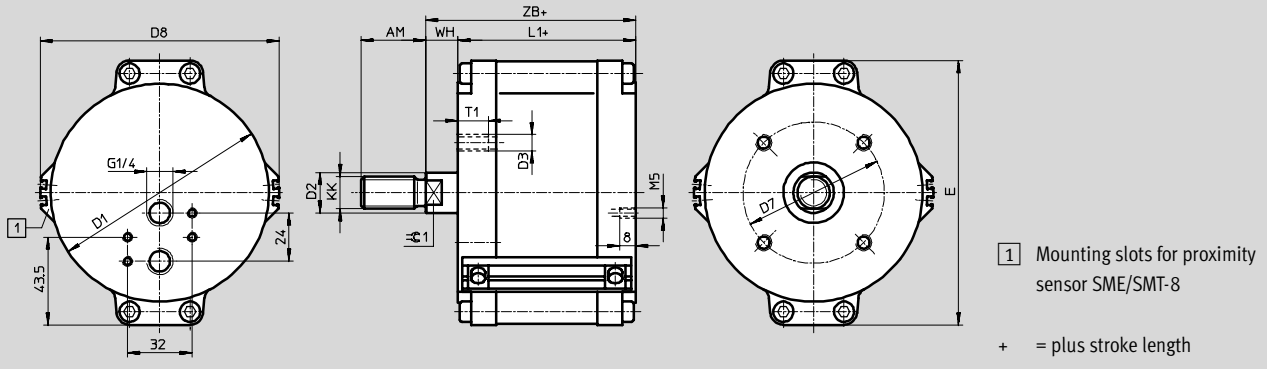
Technical data



## Dimensions

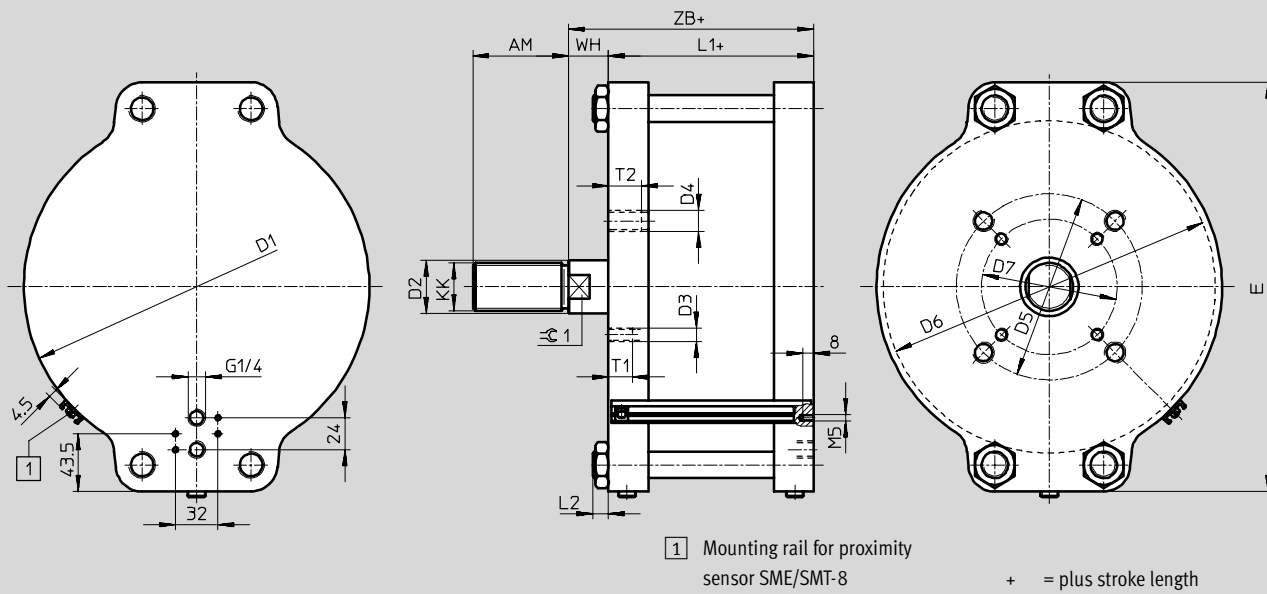
Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

∅ 80 ... 160 mm



Type	AM	D1 ∅	D2 ∅	D3	D7 ∅	D8 ∅	E	KK	L1	T1	WH	ZB	≈C1
DLP-80-...	32	87	20	M8	70	99	108	M16x1.5	73	15	16	89	16
DLP-80-...-A									100			116	
DLP-100-...	32	108	20	M8	70	119	131	M16x1.5	76	15	16	92	16
DLP-100-...-A									104			120	
DLP-125-...	54	135	32	M10	102	147	163	M27x2	114	18	24	138	27
DLP-125-...-A													
DLP-160-...	54	170	32	M10	102	182	199	M27x2	114	18	24	138	27
DLP-160-...-A													

∅ 250 ... 320 mm

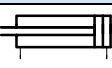
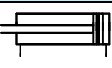


Type	AM	D1 ∅	D2 ∅	D3	D4	D5	D6 ∅	D7 ∅	E	KK	L1	L2	T1	T2	WH	ZB	≈C1
DLP-250-...	72	260	40	M10	M16	140	244	102	308	M36x2	152	12	18	25	30	184	36
DLP-250-...-A																	
DLP-320-...	72	332	40	M10	M16	140	324	102	378	M36x2	159	12	18	25	30	191	36
DLP-320-...-A																	

# Linear actuators DLP, Copac

Technical data



Ordering data				
Design	Piston Ø [mm]	Stroke [mm]	Part No.	Type
without position sensing				
	80	40 ... 2,000	<b>187 473</b>	<b>DLP-80-...</b>
	100	50 ... 2,000	<b>187 474</b>	<b>DLP-100-...</b>
	125	50 ... 2,000	<b>187 475</b>	<b>DLP-125-...</b>
	160	100 ... 2,000	<b>187 476</b>	<b>DLP-160-...</b>
	250	100 ... 2,000	<b>187 477</b>	<b>DLP-250-...</b>
	320	150 ... 2,000	<b>187 478</b>	<b>DLP-320-...</b>
with position sensing				
	80	40 ... 2,000	<b>187 479</b>	<b>DLP-80-...-A</b>
	100	50 ... 2,000	<b>187 480</b>	<b>DLP-100-...-A</b>
	125	50 ... 2,000	<b>187 481</b>	<b>DLP-125-...-A</b>
	160	100 ... 2,000	<b>187 482</b>	<b>DLP-160-...-A</b>
	250	100 ... 2,000	<b>187 483</b>	<b>DLP-250-...-A</b>
	320	150 ... 2,000	<b>187 484</b>	<b>DLP-320-...-A</b>

## Stroke length of the actuator

Generally, the stroke length of the Copac linear actuator corresponds to the nominal diameter of the process valve. The system tolerances may lead to a greater stroke range than the specified nominal stroke range of the linear actuator. The zero point is set with an adjustable rod clevis. This ensures that the end position of the valve slide is reached and the zero position of the system is fixed.

# Linear actuators DLP, Copac

Accessories



## Rod clevis SG

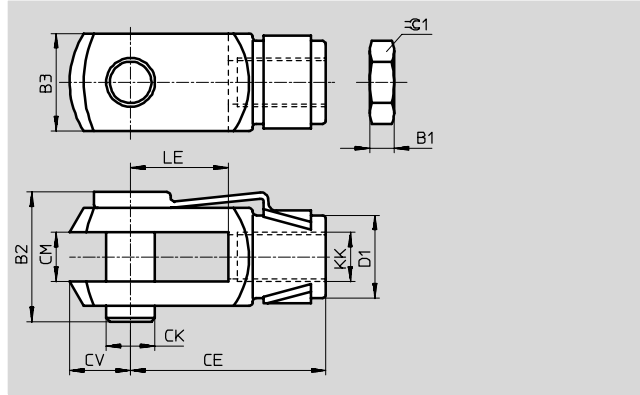
Scope of delivery:

1 rod clevis, 1 hinged spring pin,  
1 hex nut to DIN 439

Material:

Galvanised steel

M16x1.5/M27x2: Free of copper, PTFE  
and silicone



Dimensions and ordering data								
KK	B1	B2	B3	CE	CK ∅ H9	CM	CV	D1 ∅
M16x1.5	8	39	32	64±0.4	16	16+0.7/+0.15	19	26
M27x2	13.5	74	55	110±0.4	30	30+0.7/+0.15	38	48
M36x2	18	92	70	144±0.4	35	35+0.7/+0.15	44	60

KK	LE ±0.5	≈C1	DIN ISO 8140	DIN 71 752	CRC <sup>1)</sup>	Weight [g]	Part No.	Type
M16x1.5	32	24	■	■	2	356	6 146	SG-M16x1,5
M27x2	54	41	■	-	2	1,475	14 987	SG-M27x2-B
M36x2	72	55	■	-	2	4,080	9 581	SG-M36x2

1) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Core Range



# Linear actuators DLP, Copac

Accessories

## Rod clevis CRSG, stainless steel

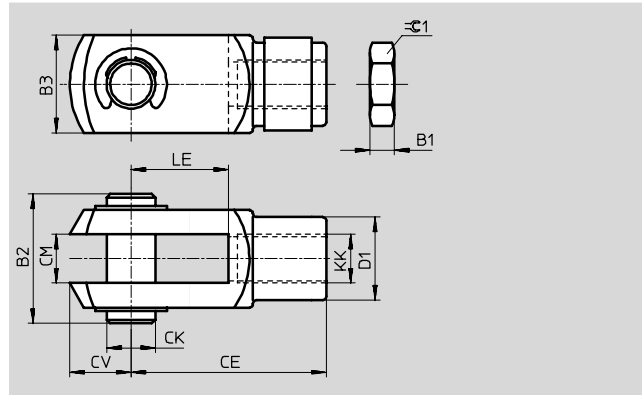
Scope of delivery:

1 rod clevis, 1 pivot pin, 1 hex nut to DIN 439

Material:

High-alloy steel

Free of copper, PTFE and silicone



Dimensions and ordering data								
KK	B1	B2	B3	CE	CK ∅ H9	CM	CV	D1 ∅
M16x1.5	8	43	32	64±0.4	16	16+0.7/+0.15	19	26
M27x2	13.5	70	55	110±0.4	30	30+0.7/+0.15	38	48

KK	LE ±0.5	≈C1	DIN ISO 8140	DIN 71 752	CRC <sup>1)</sup>	Weight [g]	Part No.	Type
M16x1.5	32	24	■	■	4	395	13 571	CRSG-M16x1,5
M27x2	54	41	■	-	4	1,900	185 361	CRSG-M27x2

1) Corrosion resistance class 4 according to Festo standard 940 070

Components requiring higher corrosion resistance. Parts used with aggressive media, e.g. food or chemical industry. These applications should be supported with special tests with the media if required.

# Linear actuators DLP, Copac

Accessories



## Rod clevis SGA

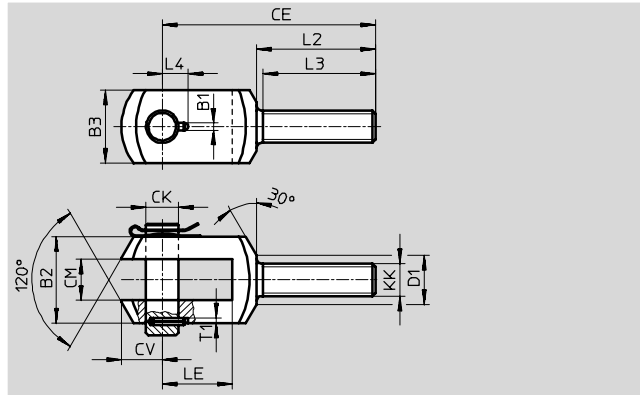
Scope of delivery:

1 rod clevis, 1 pivot pin and  
1 retaining clip

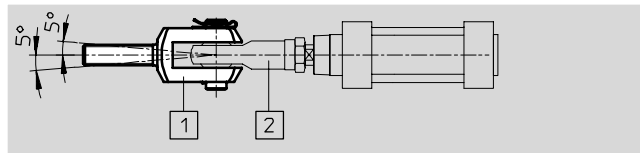
Material:

Galvanised steel

Free of copper, PTFE and silicone



The rod clevis SGA [1] is used in combination with the rod eye SGS [2] (→ 7 / 1.1-9) for spherical mounting of cylinders.



Dimensions and ordering data								
KK	B1	B2	B3	CE	CK ∅ F7/h9	CM B12	CV	D1 ∅
M16x1.5	4.3	40	35	108	16	21	21	24
M27x2	6.3	67	60	168	30	37	32	38
M36x2	6.3	78	70	211	35	43	39	48

KK	L2	L3	L4	LE	T1	CRC <sup>1)</sup>	Weight [g]	Part No.	Type
M16x1.5	65	62	14	31	3	2	500	10 768	SGA-M16x1,5
M27x2	98	92	24	54	5	2	2,120	10 770	SGA-M27x2
M36x2	121	115	26.5	72	5	2	3 825	10 771	SGA-M36x2

1) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

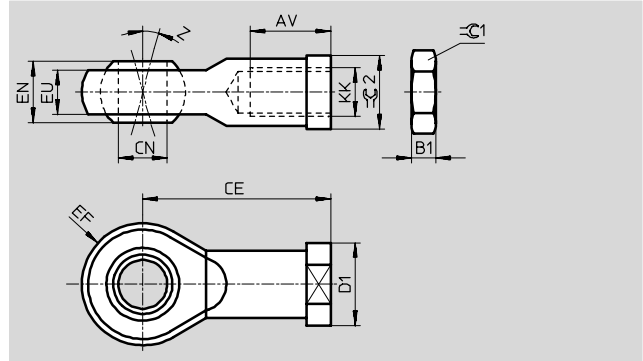
# Linear actuators DLP, Copac

Accessories

## Rod eye SGS

Scope of delivery:  
1 rod eye, 1 hex nut to DIN 439

Material:  
Galvanised steel



Dimensions and ordering data								
KK	AV	B1	CE	CN ∅ H7	D1 ∅	EF ±0.5	EN	EU
M16x1.5	28 -2	8	64	16	27	21	21	15
M27x2	51 -2	13.5	110	30	50	35	37	25
M36x2	56 +2	18	125	35	58	40	43	28

KK	Z [°]	≈C1	≈C2	DIN ISO 12 240-4 dimensional series K	CETOP RP 103 P	CRC <sup>1)</sup>	Weight [g]	Part No.	Type
M16x1.5	15	24	22	–	■	2	210	9 263	SGS-M16x1,5
M27x2	15	41	41	–	■	2	1,300	10 774	SGS-M27x2
M36x2	15	55	50	■	■	2	1,825	10 775	SGS-M36x2

1) Corrosion resistance class 2 according to Festo standard 940 070  
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Core Range

# Linear actuators DLP, Copac

Accessories



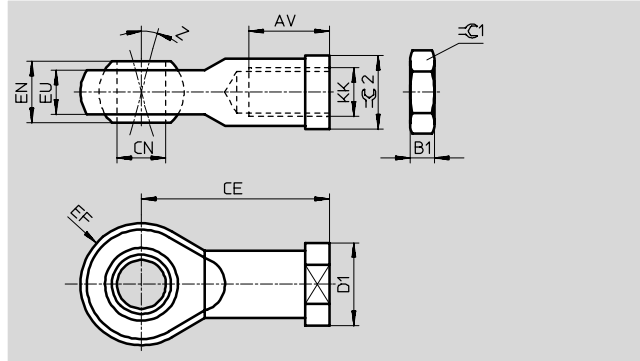
## Rod eye CRSGS, stainless steel

Scope of delivery:

1 rod eye, 1 hex nut to DIN 439

Material:

High-alloy steel



Actuators  
Linear actuators  
1.1

Dimensions and ordering data								
KK	AV	B1	CE	CN	D1	EF	EN	EU
	-2			∅ H7	∅	±0.5		
M16x1.5	28	8	64	16	27	21	21	15
M27x2	51	13.5	110	30	50	35	37	25

KK	Z	≅G1	≅G2	DIN ISO 12 240-4 dimensional series K	CETOP RP 103 P	CRC <sup>1)</sup>	Weight [g]	Part No.	Type
	[°]								
M16x1.5	15	24	22	-	■	4	210	195 584	CRSGS-M16x1,5
M27x2	15	41	41	-	■	4	1,300	195 586	CRSGS-M27x2

1) Corrosion resistance class 4 according to Festo standard 940 070  
Components requiring higher corrosion resistance. Parts used with aggressive media, e.g. food or chemical industry. These applications should be supported with special tests with the media if required.

# Linear actuators DLP, Copac

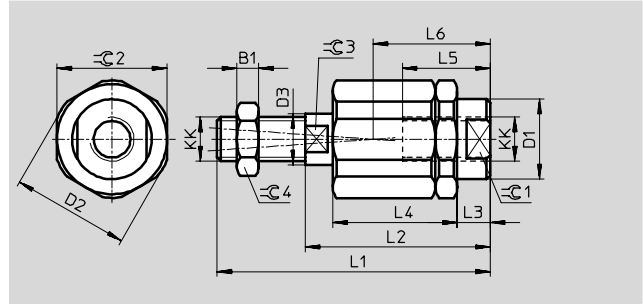


Accessories

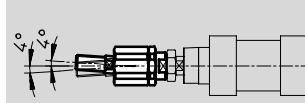
## Self-aligning rod coupler FK

Scope of delivery:  
1 self-aligning rod coupler, 1 hex nut to DIN 439

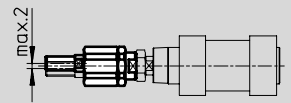
Material:  
Galvanised steel  
Free of copper, PTFE and silicone



Angular compensation



Radial compensation of central axis



Dimensions and ordering data											
KK	B1	D1 ∅	D2 ∅	D3 ∅	L1	L2	L3	L4	L5	L6	
M16x1.5	8	33.8	45	22	103	71	10	53	32	44.5	
M27x2	13.5	62	62	28	157	103	12.2	79	42	62.5	
M36x2	18	80	80	38	251	179	22	136	78	110	

KK	≅C1	≅C2	≅C3	≅C4	Radial deviation [mm]	CRC <sup>1)</sup>	Weight [g]	Part No.	Type
M16x1.5	30	41	19	24	±1	2	650	<b>6 142</b>	<b>FK-M16x1,5</b>
M27x2	55	55	24	41	±1	2	2,100	<b>10 485</b>	<b>FK-M27x2</b>
M36x2	75	75	32	55	±1	2	5,800	<b>10 746</b>	<b>FK-M36x2</b>

1) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Core Range

# Linear actuators DLP, Copac

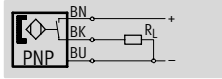
Accessories



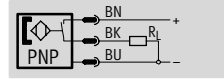
## Proximity sensor SMT-8, magneto-resistive

Function

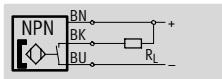
NO contact, PNP, with cable



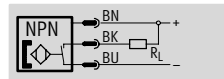
NO contact, PNP, with plug



NO contact, NPN, with cable



NO contact, NPN, with plug



General technical data						
Switching element function	NO contact					
Electrical data						
Switch output	PNP			NPN		
Electrical connection	Cable, 3-wire	Cable, 3-wire	Cable with plug M8x1, 3-pin	Cable, 3-wire	Cable with plug M8x1, 3-pin	
Operating voltage range	[V DC]	10 ... 30				
Max. output current	[mA]	100				
Max. switching capacity	[W]	3				
Voltage drop	[V]	1.8				
Residual current	[mA]	≤0.01				
Protection against short circuit	Yes					
Protection against polarity reversal	For all electrical connections					
Protection class to EN 60 529	IP65/IP67					
CE symbol	89/336/EEC (EMC)	Yes				
Type						
Design	For T-slot					
Type of mounting	Clamped in T-slot, insertable from end, flush with the cylinder profile					
Reproducibility of switching point <sup>1)</sup>	[mm]	±0.2				
Switch-on time	[ms]	≤0.2				
Switch-off time	[ms]	≤0.5				
Switching status display	Yellow LED					
Cable length	[m]	2.5	5.0	0.3	2.5	0.3
Mounting position	Any					
Materials	Housing	Polyurethane				
	Cable sheath	Polyurethane				
Note on material	Free of copper, PTFE and silicone					
Product weight	[g]	30	60	10	30	10

1) Only applicable to drives secured against rotation

Operating and environmental conditions					
Electrical connection	Cable, 3-wire		Cable with plug		
Cable installation	Fixed	Flexible	Fixed	Flexible	
Ambient temperature	[°C]	-20 ... +60	-5 ... +60	-20 ... +60	-5 ... +60
Corrosion resistance class CRC <sup>1)</sup>	4		2		

1) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Corrosion resistance class 4 according to Festo standard 940 070

Components requiring higher corrosion resistance. Parts used with aggressive media, e.g. food or chemical industry. These applications should be supported with special tests with the media if required.

# Linear actuators DLP, Copac

Accessories



**Dimensions** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

With cable

- 1 Connecting cable
- 2 Yellow LED
- 3 Clamping component

With plug M8

- 1 Connecting cable
- 2 Yellow LED
- 3 Clamping component
- 4 Plug suitable for plug socket with cable SIM-M8...

## Ordering data

	Switch output	Electrical connection		Cable length [m]	Part No.	Type
		Cables	M8 plug			
	NO contact					
	PNP	3-wire	-	2.5	175 436	SMT-8-PS-K-LED-24-B
		-	3-pin	5.0	175 434	SMT-8-PS-K5-LED-24-B
	NPN	3-wire	-	0.3	175 484	SMT-8-PS-S-LED-24-B
		-	3-pin	2.5	171 180	SMT-8-NS-K-LED-24-B
				0.3	171 181	SMT-8-NS-S-LED-24-B

### Plug socket with cable M8

SIM-M8-3GD-...

SIM-M8-3WD-...

Material:

Housing: Polyurethane

Cable sheath: Polyurethane



## Ordering data

Switch output		Switching status display with LED	Cable length [m]	Weight [g]	Part No.	Type
PNP	NPN					
Straight socket						
■	■	-	2.5	79	159 420	SIM-M8-3GD-2,5-PU
■	■	-	5	150	159 421	SIM-M8-3GD-5-PU
■	■	-	10	284	192 964	SIM-M8-3GD-10-PU
Angled plug socket						
■	■	-	2.5	81	159 422	SIM-M8-3WD-2,5-PU
■	■	-	5	146	159 423	SIM-M8-3WD-5-PU
■	■	-	10	283	192 965	SIM-M8-3WD-10-PU
-	■	■	2.5	80	159 426	SIM-M8-3WD-2,5-NSL-PU
-	■	■	5	150	159 427	SIM-M8-3WD-5-NSL-PU
■	-	■	2.5	83	159 424	SIM-M8-3WD-2,5-PSL-PU
■	-	■	5	143	159 425	SIM-M8-3WD-5-PSL-PU

Core Range

# Linear actuators DLP, Copac

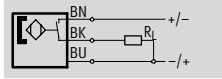
Accessories



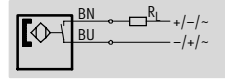
## Proximity sensor SME-8, magnetic reed

Function

NO contact, with 3-wire cable

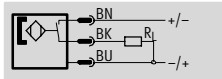


NO contact, with 2-wire cable<sup>1)</sup>

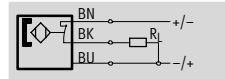


1) e.g. heat resistant, 0 ... 30 V AC/DC

NO contact, 3-wire, with plug



NC contact, with 3-wire cable



General technical data								
Switching element function		NO contact					NC contact	
Electrical data								
Switch output		Contacting, bipolar						
Electrical connection		Cable, 3-wire	Cable, 3-wire	Cable with plug M8x1, 3-pin	Cable, 2-wire	Cable, 2-wire	Cable, 2-wire <sup>1)</sup>	
Operating voltage range	D.C. voltage	[V DC] 12 ... 30			12 ... 27	3 ... 250	0 ... 30	12 ... 30
	A.C. voltage	[V AC] –			–	3 ... 250	0 ... 30	12 ... 30
Max. output current	D.C. voltage	[mA] 500			80	120	500	50
	A.C. voltage	[mA] –			–	200	–	50
Max. switching capacity	D.C. voltage	[W] 10			2	10	10	1.5
	A.C. voltage	[VA] –			–	10	–	–
Voltage drop		[V] –			–	–	–	1.8
Protection against short circuit		No						
Protection against polarity reversal		No			Yes <sup>2)</sup>		Yes	No
Protection class to EN 60 529		IP65/IP67			IP67			
CE symbol	89/336/EEC (EMC)		Yes		Yes	Yes	Omitted	Yes
	73/23/EEC (low voltage)		Omitted		Omitted	Yes	Omitted	Omitted
Type								
Design		For T-slot						
Type of mounting		Clamped in T-slot, insertable from end, flush with the cylinder profile						
Reproducibility of switching point <sup>3)</sup>		[mm] ±0.1						
Switch-on time		[ms] ≤0.5					≤0.5	≤2
Switch-off time		[ms] 0.03					≤0.5	≤0.2
Switching status display		Yellow LED					–	Yellow LED
Cable length		[m] 2.5	5.0	0.3	2.5	2.5	2.5	7.5
Mounting position		Any						
Materials	Housing		Polyester					
	Cable sheath		Polyurethane			Polyvinyl chloride	Polyurethane	
Note on material		Free of copper, PTFE and silicone					–	
Product weight		[g] 30	60	8	24	40	50	85

- 1) Heat-resistant design
- 2) Without LED function
- 3) Only applicable to drives secured against rotation



# Linear actuators DLP, Copac

Accessories

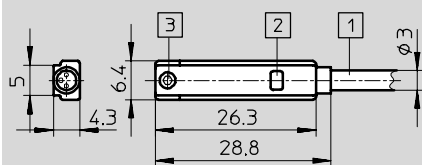


Operating and environmental conditions						
Electrical connection	Cables		Cable, heat resistant		Cable with plug	
Cable installation	Fixed	Flexible	Fixed	Flexible	Fixed	Flexible
Ambient temperature [°C]	-20 ... +60	-5 ... +60	-40 ... +120	-5 ... +120	-20 ... +60	-5 ... +60
Corrosion resistance class CRC <sup>1)</sup>	4		4		2	

- 1) Corrosion resistance class 2 according to Festo standard 940 070  
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.  
 Corrosion resistance class 4 according to Festo standard 940 070  
 Components requiring higher corrosion resistance. Parts used with aggressive media, e.g. food or chemical industry. These applications should be supported with special tests with the media if required.

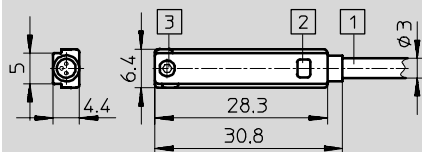
## Dimensions Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

### NO contact with cable



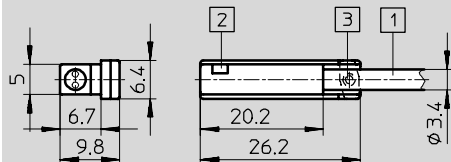
- 1 Connecting cable
- 2 Yellow LED
- 3 Clamping component

### NC contact with cable



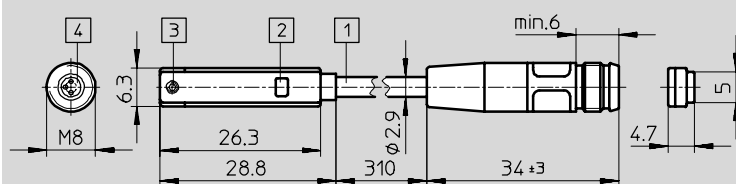
- 1 Connecting cable
- 2 Yellow LED
- 3 Clamping component

### Operating voltage range 3 ... 250 V DC/AC



- 1 Connecting cable
- 2 Yellow LED
- 3 Clamping component

### With plug M8



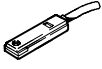
- 1 Connecting cable
- 2 Plug suitable for plug socket with cable SIM-M8-...
- 3 Clamping component
- 4 Yellow LED

# Linear actuators DLP, Copac

Accessories

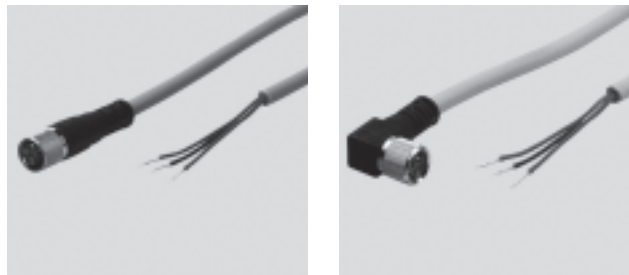
FESTO

Actuators  
Linear actuators  
1.1

Ordering data					
	Electrical connection		Cable length [m]	Part No.	Type
	Cables	M8 plug			
	NO contact				
	Operating voltage range 0 ... 30 V AC/DC				
	3-wire	–	2.5	150 855	SME-8-K-LED-24
			5.0	175 404	SME-8-K5-LED-24
	–	3-pin	0.3	150 857	SME-8-S-LED-24
	2-wire	–	2.5	171 169	SME-8-ZS-KL-LED-24
	Heat resistant seals up to 120 °C				
	2-wire	–	2.5	161 756	SME-8-K-24-S6
	Operating voltage range 3 ... 250 V AC/DC				
	2-wire	–	2.5	152 820	SME-8-K-LED-230
NC contact					
3-wire	–	7.5	160 251	SME-8-O-K-LED-24	

Plug socket with cable M8  
SIM-M8-3GD-...  
SIM-M8-3WD-...

Material:  
Housing: Polyurethane  
Cable sheath: Polyurethane



Ordering data						
Switch output		Switching status display with LED	Cable length [m]	Weight [g]	Part No.	Type
PNP	NPN					
Straight socket						
■	■	–	2.5	79	159 420	SIM-M8-3GD-2,5-PU
■	■	–	5	150	159 421	SIM-M8-3GD-5-PU
■	■	–	10	284	192 964	SIM-M8-3GD-10-PU
Angled plug socket						
■	■	–	2.5	81	159 422	SIM-M8-3WD-2,5-PU
■	■	–	5	146	159 423	SIM-M8-3WD-5-PU
■	■	–	10	283	192 965	SIM-M8-3WD-10-PU
–	■	■	2.5	80	159 426	SIM-M8-3WD-2,5-NSL-PU
–	■	■	5	150	159 427	SIM-M8-3WD-5-NSL-PU
■	–	■	2.5	83	159 424	SIM-M8-3WD-2,5-PSL-PU
■	–	■	5	143	159 425	SIM-M8-3WD-5-PSL-PU

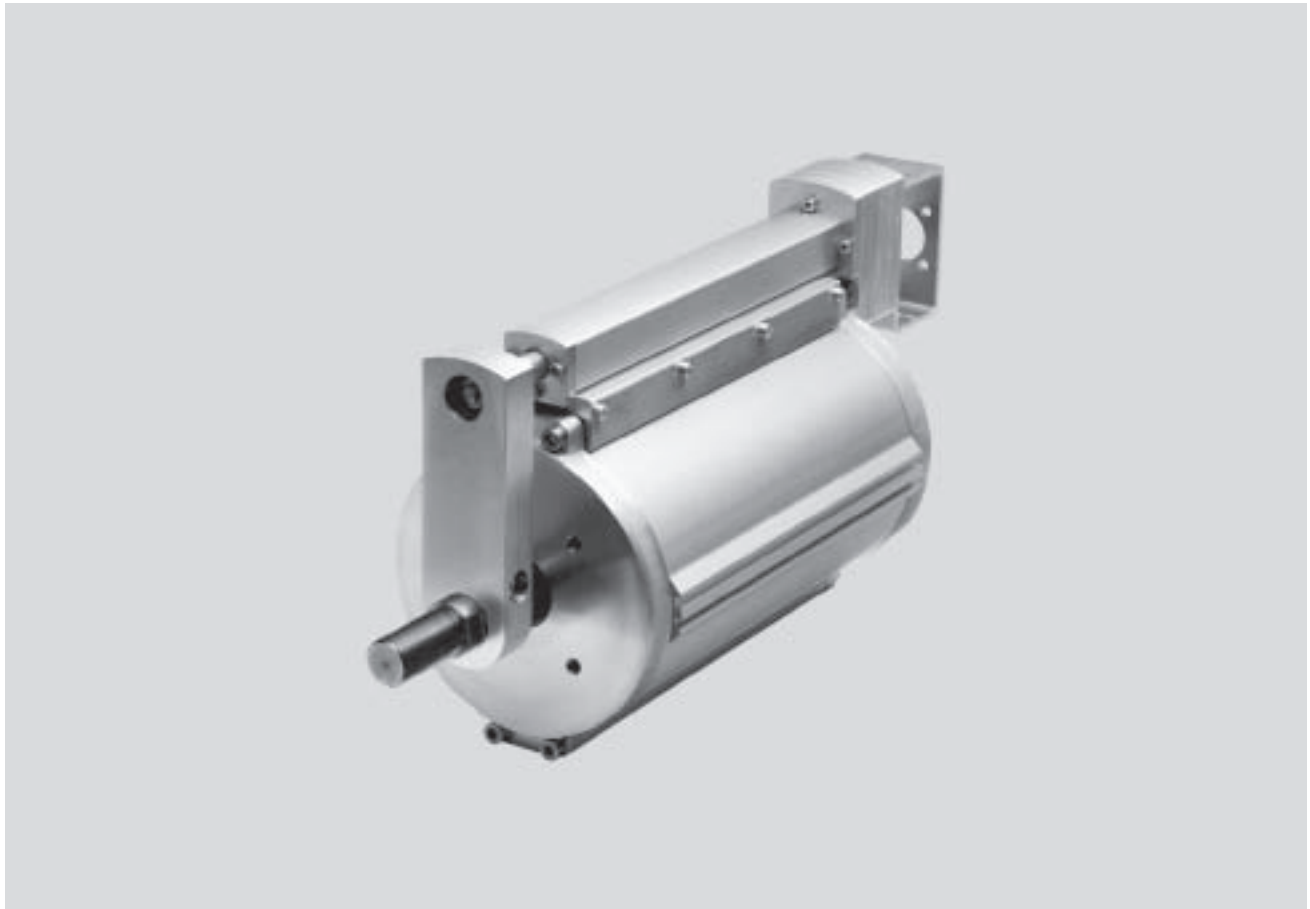
Ordering data – Slot cover for slot type 8				
	Mounting	Length [m]	Part No.	Type
	Insertable from above	2x 0.5	151 680	ABP-5-S

Core Range

## Measuring unit ASDLP

Key features

**FESTO**



### Systematic safety in the process industry

Explosion-proof, overload-proof and durable closed loop valve controller, even under the most unfavourable conditions. From valves and pneumatic drives to the fully enclosed sensor box, right on up to complete pneumatic and electrical activation – compatible with over 30 fieldbus protocols.

The ASDLP measuring unit is optimised for the process industry and can be used for closed and open-loop control of gate valves, flat slide valves and weirs particularly in the area of water, sewage and silage technology and in the paper and bulk goods industry. The linear measuring unit ASDLP is an extension of the pneumatic linear actuator DLP and thus offers the option of infinitely fine sensing of the entire linear movement of the linear actuator DLP on a purely mechanical basis.

By attaching an external device to the DLP and connecting this to the relevant process valve, the linear movement of the cylinder is converted into a rotational movement. The swivel angle is optimised with respect to the usability of various positioning controllers. The system offers the option of mounting the positioning controller normally used for semi-rotary drives in the area of process automation directly onto the cylinder.

- Port pattern to Namur (VDI/VDE 3845) for direct assembly of conventional positioning controllers
- Purely mechanical conversion of the linear movement into a rotational movement to actuate the positioning controllers
- Unrestricted use in explosive atmospheres
- Specially suited for use outdoors
- Sturdy and reliable, even in aggressive environments
- Highly corrosion resistant
- Clean, smooth surface thanks to its elegant design
- Swivel angle of between 36 and 108°

## Measuring unit ASDLP

Type code

		ASDLP	—	120	—	120/140
<b>Type</b>						
ASDLP	Measuring unit for linear actuators DLP					
<b>Piston Ø [mm]</b>						
80	corresponding piston Ø of the linear actuator					
100						
125						
160						
<b>Stroke [mm]</b>						

# Measuring unit ASDLP

Technical data

**Interface to the linear actuator**  
The measuring unit is attached by clamping it into existing slots in the linear actuator DLP. Existing DLP linear actuators can thus be retrofitted with the measuring unit without requiring additional attachments.

**Interface to the positioning controller**  
Port pattern to Namur VDI/VDE 3845



General technical data				
Piston Ø	80	100	125	160
Mounting position	Any			
Max. speed [m/sec]	0.05			
Ambient temperature [°C]	-20 ... 80 (observe operating range of positioning controller)			
Corrosion resistance class CRC <sup>1)</sup>	3			

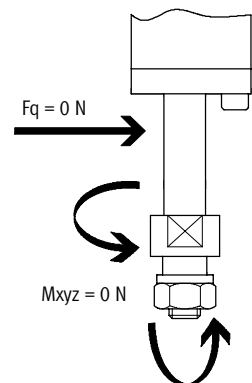
1) Corrosion resistance class 3 according to Festo standard 940 070  
Components requiring higher corrosion resistance. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface.

Rotation angle [°]				
Gearing for stroke [mm]	50 ... 100	100 ... 200	200 ... 600	
Theoretical angle of rotation [°]	54 ... 108	50.5 ... 101	36 ... 108	

Weights [g]				
Piston Ø	80	100	125	160
Product weight at 0 mm stroke	1,496	1,506	1,427	1,427
Additional weight per 10 mm stroke	23.9	23.9	23.9	23.9

Materials				
Piston Ø	80	100	125	160
Cylinder barrel	Smooth anodised aluminium			
Bearing end cap	Extruded aluminium			
Piston rod	Smooth-rolled, high-alloy steel			
External screws	Stainless steel			
Rod bearing	Smooth composite material			
Seals	Polyurethane, nitrile rubber			

### Permissible loads on the measuring unit and on its measuring telescope



Permissible drive torque or resetting torque, as appropriate, of the positioning controller  
 $M_{driv. max} = 2.5 \text{ Nm}$

Permissible lateral load on the measuring telescope  
 $F_q = 0 \text{ N}$

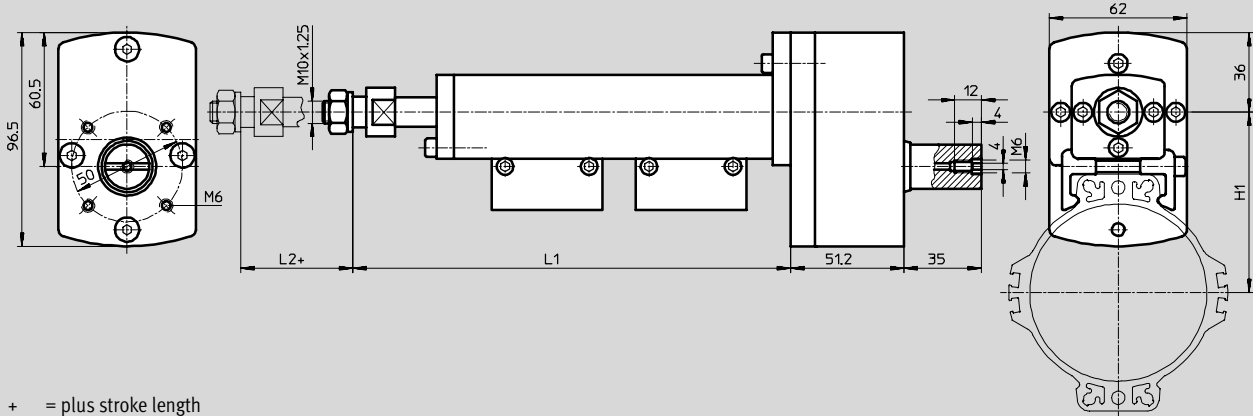
Permissible torques on the measuring telescope  
 $M_{xyz} = 0 \text{ Nm}$

# Measuring unit ASDLP

Technical data

**Dimensions**

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




Type	H1	L1 ±3.5	L2
ASDLP-80-50/90	81.5	285	43.8 ... 52.5
ASDLP-80-X		195+	
ASDLP-100-50/90	93	289	47.8 ... 56.5
ASDLP-100-90/110		309	
ASDLP-100-X		199+	
ASDLP-125-120/140	109	308	16.8 ... 25.5
ASDLP-125-X		168+	
ASDLP-160-140/170	127	338	16.8 ... 25.5
ASDLP-160-200/220		388	
ASDLP-160-250/270		438	
ASDLP-160-X		168+	


Ordering data			
Piston Ø [mm]	Stroke [mm]	Part No.	Type
kept in stock			
80	50 ... 90	529 085	ASDLP-80-50/90
100	50 ... 90	529 087	ASDLP-100-50/90
	90 ... 110	529 088	ASDLP-100-90/110
125	120 ... 140	529 090	ASDLP-125-120/140
160	140 ... 170	529 092	ASDLP-160-140/170
	200 ... 220	529 093	ASDLP-160-200/220
	250 ... 270	529 094	ASDLP-160-250/270
upon request			
80	50 ... 600	529 084	ASDLP-80-X
100	50 ... 600	529 086	ASDLP-100-X
125	50 ... 600	529 089	ASDLP-125-X
160	50 ... 600	529 091	ASDLP-160-X


## Quarter turn actuators DAPS

Key features



 Size  
0015 ... 1920

 Torque  
15 ... 1,920 Nm

 Swivel angle  
0 ... 90°

The quarter turn actuators DAPS are specially tailored to the requirements of the process industry. The torque is generated via a scotch-yoke mechanism. This is advantageous for overcoming the valve's high breakaway torques.

Given their robustness and graduated torques, the DAPS quarter turn actuators are predominantly used to control valves through which various media flow and whose angle of rotation is limited to 90°, e.g. ball valves and butterfly valves.

- Compact design
- Torque characteristics adjusted to the process valves
- For the same housing size, the single-acting drive has half the torque of the double-acting drive
- Low wearing thanks to the simple and robust mechanical system

- Port pattern to Namur VDI/VDE 3845 for attaching solenoid valves



# Quarter turn actuators DAPS, double-acting

Product range overview

Flange hole pattern – Connection dimensions to DIN ISO 5211 and Namur VDI/VDE 3845															
Connection	F03	F04	F04	F05	F05	F07	F07	F10	F10	F12	F12	F14	F14	F16	Shaft height
Square	V11	V11	V14	V14	V17		V22		V27		V36	V36	V46	V46	
DAPS-0015-...-F03	■	-	-	-	-	-	-	-	-	-	-	-	-	-	20
DAPS-0015-...-F04	-	■	-	-	-	-	-	-	-	-	-	-	-	-	20
DAPS-0030-...-F03	■	-	-	-	-	-	-	-	-	-	-	-	-	-	20
DAPS-0030-...-F04	-	■	-	-	-	-	-	-	-	-	-	-	-	-	20
DAPS-0060-...-F04	-	-	■	-	-	-	-	-	-	-	-	-	-	-	20
DAPS-0060-...-F05	-	-	-	■	-	-	-	-	-	-	-	-	-	-	20
DAPS-0106-...-F0507	-	-	-	-	■	■	-	-	-	-	-	-	-	-	20
DAPS-0180-...-F0710	-	-	-	-	-	-	■	■	-	-	-	-	-	-	30
DAPS-0240-...-F0710	-	-	-	-	-	-	■	■	-	-	-	-	-	-	30
DAPS-0360-...-F0710	-	-	-	-	-	-	■	■	-	-	-	-	-	-	30
DAPS-0480-...-F1012	-	-	-	-	-	-	-	-	■	■	-	-	-	-	30
DAPS-0960-...-F12	-	-	-	-	-	-	-	-	-	-	■	-	-	-	30
DAPS-0960-...-F14	-	-	-	-	-	-	-	-	-	-	-	■	-	-	30
DAPS-1920-...-F14	-	-	-	-	-	-	-	-	-	-	-	-	■	-	30
DAPS-1920-...-F16	-	-	-	-	-	-	-	-	-	-	-	-	-	■	30
Hole pattern for Namur accessories	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
	80	80	80	80	80	80	80	80	80	80	80	80	80	80	



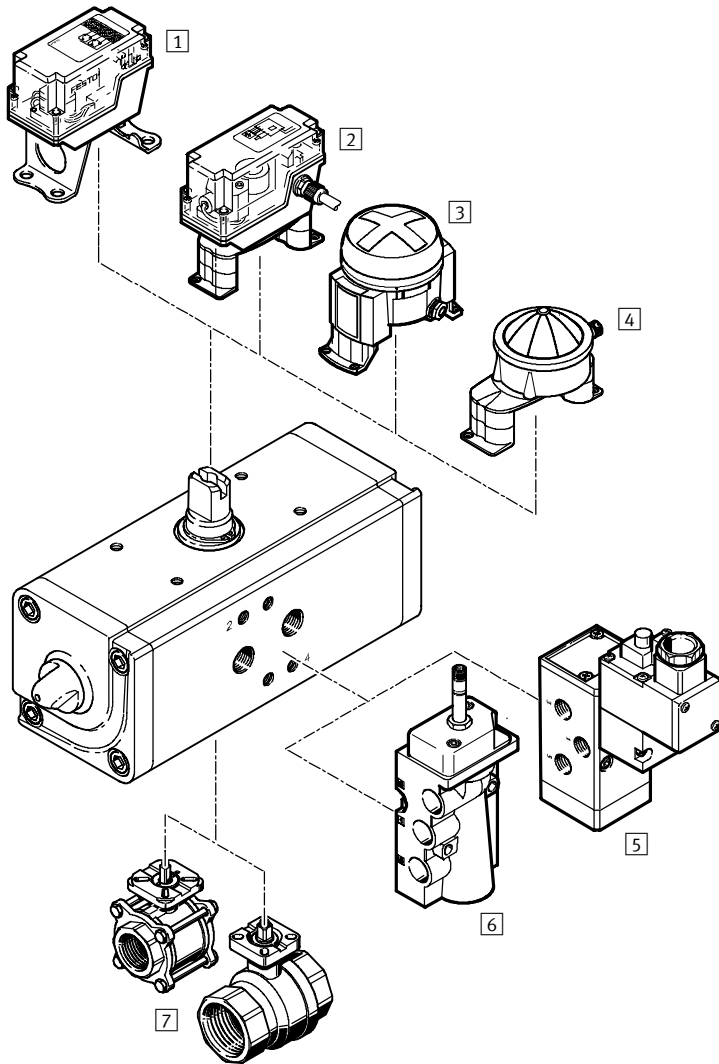
# Quarter turn actuators DAPS, single-acting

Product range overview

Flange hole pattern – Connection dimensions to DIN ISO 5211 and Namur VDI/VDE 3845															
Connection	F03	F04	F04	F05	F05	F07	F07	F10	F10	F12	F12	F14	F14	F16	Shaft height
Square	V11	V11	V14	V14	V17		V22		V27		V36	V36	V46	V46	
DAPS-0015-...-F03	■	-	-	-	-	-	-	-	-	-	-	-	-	-	20
DAPS-0015-...-F04	-	■	-	-	-	-	-	-	-	-	-	-	-	-	20
DAPS-0030-...-F04	-	-	■	-	-	-	-	-	-	-	-	-	-	-	20
DAPS-0030-...-F05	-	-	-	■	-	-	-	-	-	-	-	-	-	-	20
DAPS-0053-...-F0507	-	-	-	-	■	■	-	-	-	-	-	-	-	-	20
DAPS-0090-...-F0710	-	-	-	-	-	-	■	■	-	-	-	-	-	-	30
DAPS-0120-...-F0710	-	-	-	-	-	-	■	■	-	-	-	-	-	-	30
DAPS-0180-...-F0710	-	-	-	-	-	-	■	■	-	-	-	-	-	-	30
DAPS-0240-...-F1012	-	-	-	-	-	-	-	-	■	■	-	-	-	-	30
DAPS-0480-...-F12	-	-	-	-	-	-	-	-	-	-	■	-	-	-	30
DAPS-0480-...-F14	-	-	-	-	-	-	-	-	-	-	-	■	-	-	30
DAPS-0960-...-F14	-	-	-	-	-	-	-	-	-	-	-	-	■	-	30
DAPS-0960-...-F16	-	-	-	-	-	-	-	-	-	-	-	-	-	■	30
Hole pattern for Namur accessories	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
	80	80	80	80	80	80	80	80	80	80	80	80	80	80	

# Quarter turn actuators DAPS

Peripherals overview



Mounting attachments and accessories		
	Brief description	→ Page
1	End-position sensing attachment QH-DR-E square design pneumatic, electrical or inductive sensing	7 / 1.2-60
2	End-position sensing attachment DAPZ square design electrical, electrically explosion-proof or inductive sensing	7 / 1.2-52
3	End-position sensing attachment DAPZ round design, variant AR electrical, inductive or inductively explosion-proof sensing	7 / 1.2-57
4	End-position sensing attachment DAPZ Round design, variant RO	7 / 1.2-54
5	Solenoid valve MFH basic valve with pilot control valve for F solenoid coil	7 / 2.1-10
	Solenoid valve MN1H basic valve with pilot control valve for N1 solenoid coil	7 / 2.1-10
	Solenoid valve MGTBH basic valve with pilot control valve, solenoid coil and socket	7 / 2.1-10
6	Solenoid valve NVF3 for F solenoid coil and explosion-proof F solenoid coil	7 / 2.1-4
7	Ball valve VAPB Brass or stainless steel, corrosion-resistant	2 / 5.2-2

# Quarter turn actuators DAPS

Type code

DAPS – 0240 – 090 – R S 4 – F1012

Type	
DAPS	Quarter turn actuator

Size	
0015	Nominal torque 15 Nm
0030	Nominal torque 30 Nm
0053	Nominal torque 53 Nm
0060	Nominal torque 60 Nm
0106	Nominal torque 106 Nm
0180	Nominal torque 180 Nm
0240	Nominal torque 240 Nm
0360	Nominal torque 360 Nm
0480	Nominal torque 480 Nm
0960	Nominal torque 960 Nm
1920	Nominal torque 1,920 Nm

Adjustment range of swivel angle	
090	90°

Closing direction	
R	Closes to right

Mode of operation	
	Double-acting
S	Single-acting

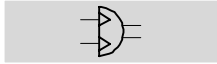
Spring strength	
	Omitted for double-acting
1	For connection pressure 2.8 bar
2	For connection pressure 3.5 bar
3	For connection pressure 4.2 bar
4	For connection pressure 5.6 bar


Flange hole pattern	
F03	Flange hole pattern F03
F04	Flange hole pattern F04
F05	Flange hole pattern F05
F07	Flange hole pattern F07
F10	Flange hole pattern F10
F12	Flange hole pattern F12
F14	Flange hole pattern F14
F16	Flange hole pattern F16


# Quarter turn actuators DAPS, double-acting


Technical data

Function



-  - Size  
0015 ... 1920

-  - Torque  
15 ... 1,920 Nm

-  - Swivel angle  
0 ... 90°



## General technical data

Size	0015 ... 0360	0480 ... 1920
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$
Operating medium	Dried air, lubricated or unlubricated	
Design	Piston cylinder	
Operating pressure <sup>1)</sup> [bar]	1 ... 8.4	
Ambient temperature [°C]	-20 ... +80 °C	
Corrosion resistance class CRC <sup>2)</sup>	3	
Adjustment range of swivel angle [°]	90 ±5	
Mounting position	Any	
<b>Materials</b>		
Housing	Wrought aluminium alloy	
Cover	Wrought aluminium alloy	
Shaft	Stainless steel	
External screws	Stainless steel	
Seals	Nitrile rubber	

1) Minimum operating pressures vary for single-acting quarter turn actuators depending upon spring quantity.

2) Corrosion resistance class 3 according to Festo standard 940 070

Components requiring higher corrosion resistance. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface.

## Air consumption [l/cycle] at 6 bar

Type		Type	
DAPS-0015	0.72	DAPS-0240	12
DAPS-0030	1.44	DAPS-0360	17.4
DAPS-0060	3	DAPS-0480	24
DAPS-0106	5.04	DAPS-0960	48
DAPS-0180	8.64	DAPS-1920	96

## Quarter turn actuators DAPS, double-acting

Technical data

Actual effective torque [Nm] as a function of operating pressure [bar] and swivel angle [°]									
Type	Swivel angle	Operating pressure							
		2.5	3	4	5	5.6	6	7	8
DAPS-0015	0	6.7	8	10.7	13.4	15	16.1	18.8	21.4
	50	3.3	4	5.4	6.7	7.5	8	9.4	10.7
	90	5	6	8.1	10.1	11.3	12.1	14.1	16.1
DAPS-0030	0	13.4	16.1	21.4	26.8	30	32.1	37.5	42.9
	50	6.7	8	10.7	13.4	15	16.1	18.8	21.4
	90	10	12	16.1	20.1	22.5	24.1	28.1	32.1
DAPS-0060	0	26.8	32.1	42.9	53.6	60	64.3	75	85.7
	50	13.4	16.1	21.4	26.8	30	32.1	37.5	42.9
	90	20.1	24.1	32.1	40.2	45	48.2	56.3	64.3
DAPS-0106	0	47.5	57	76	95	106	114	133	151
	50	23.5	28	38	47	53	57	66	76
	90	35.5	43	57	71	80	86	100	114
DAPS-0180	0	80.4	96	128.4	160.8	180	193.2	225.6	264.8
	50	40.2	48	64.8	80.4	90	96	112.8	128.4
	90	60.6	72	97.2	121.2	135	145.2	169.2	193.2
DAPS-0240	0	107.1	128.6	171.4	214.3	240	257.1	300	342.9
	50	53.5	64.3	85.7	107.1	120	128.6	150	171.4
	90	80.3	96.4	128.6	160.7	180	192.9	225	257.1
DAPS-0360	0	160.8	192	256.8	321.6	360	386.4	451.2	513.6
	50	80.4	96	129.6	160.8	180	192	225.6	264.8
	90	121.2	144	194.4	242.4	270	290.4	338.4	386.4
DAPS-0480	0	214.3	257.1	342.9	428.6	480	514.3	600	685.7
	50	107.1	128.6	171.4	214.3	240	257.1	300	342.9
	90	160.7	192.9	257.1	321.4	360	358.7	450	514.3
DAPS-0960	0	428.6	514.3	685.7	857.1	960	1,028.6	1,200	1,371.4
	50	214.3	257.1	342.9	428.6	480	514.3	600	685.7
	90	321.4	385.7	514.3	642.9	720	771.4	900	1,028.6
DAPS-1920	0	857.1	1,028.6	1,371.4	1,714.3	1,920	2,057.1	2,400	2,742.9
	50	428.6	514.3	685.8	857.1	960	1,028.6	1,200	1,371.4
	90	642.9	771.4	1,028.6	1,285.7	1,440	1,542.9	1,800	2,057.1

Nominal torque for size at 5.6 bar and swivel angle 0°

Weights [g]			
Type		Type	
DAPS-0015	750	DAPS-0240	5,200
DAPS-0030	1,000	DAPS-0360	6,200
DAPS-0060	1,900	DAPS-0480	8,200
DAPS-0106	2,300	DAPS-0960	17,400
DAPS-0180	4,100	DAPS-1920	30,700

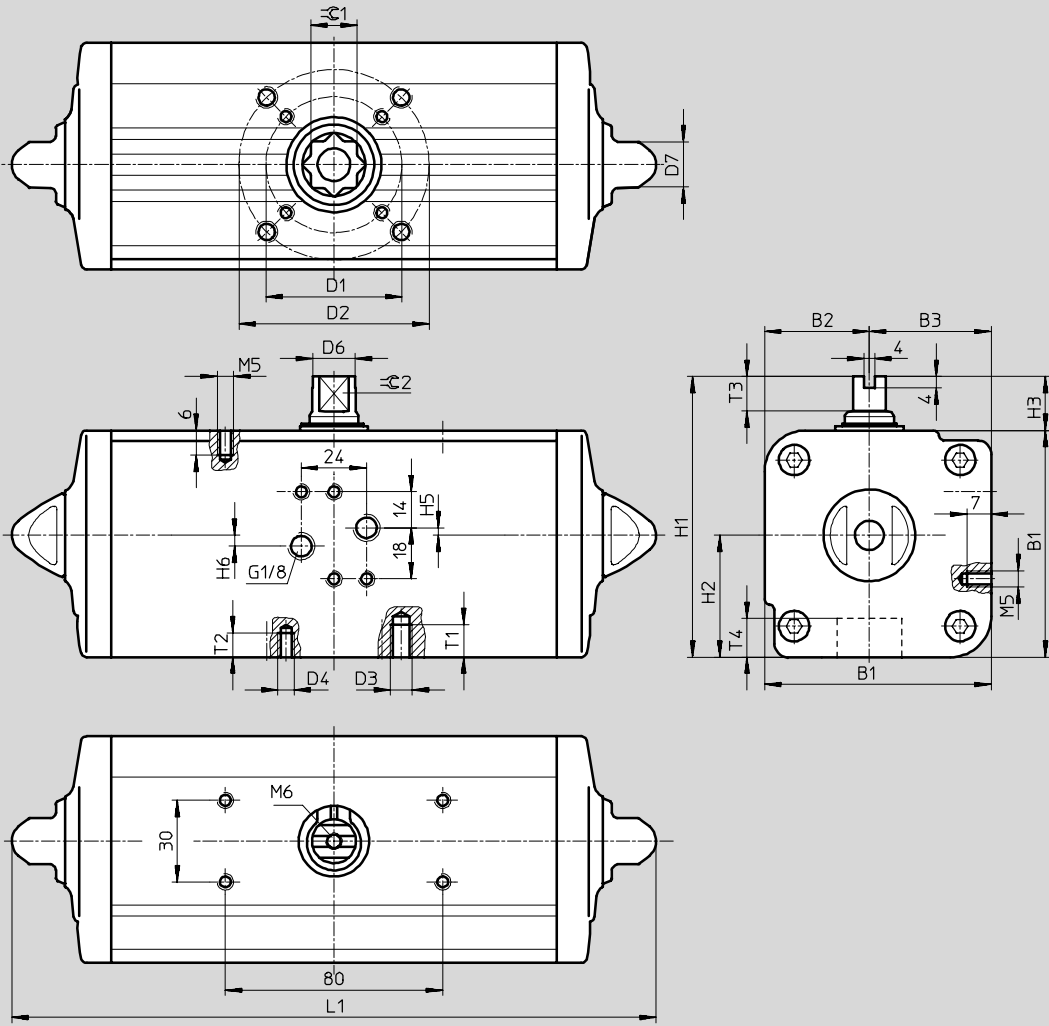
# Quarter turn actuators DAPS, double-acting

Technical data

**Dimensions**

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

DAPS-0015 ... DAPS-0360



Actuators  
Quarter turn actuators  
1.2

## Quarter turn actuators DAPS, double-acting

Technical data

Type	B1	B2	B3	D1 ∅	D2 ∅	D3	D4	D6 ∅	D7 ∅	H1	H2
DAPS-0015-...-F03	52.2	24.2	28	36	-	-	M5	9.2	13	72.2	28
DAPS-0015-...-F04				42			M5				
DAPS-0030-...-F03	59.2	27.7	31.5	36	-	-	M5	10.9	13	79.2	31.5
DAPS-0030-...-F04				42			M5				
DAPS-0060-...-F04	70.4	32.7	37.7	42	-	-	M5	14.5	13	90.4	37.7
DAPS-0060-...-F05				50			M6				
DAPS-0106-...-F0507	83.3	38.5	44.8	50	70	M8	M6	16.2	17	103.3	44.8
DAPS-0180-...-F0710	107.5	51	56.5	70	102	M10	M8	20.2	22	137.5	56.5
DAPS-0240-...-F0710	111.1	51	60.1	70	102	M10	M8	22.5	22	141.1	60.1
DAPS-0360-...-F0710	118	56	62	70	102	M10	M8	25.5	22	148	62

Type	H3	H5	H6	L1	T1	T2	T3	T4	≙ 1	≙ 2
DAPS-0015-...-F03	20	0.8	3.2	159	-	8	10	13.2	11	8
DAPS-0015-...-F04						8				
DAPS-0030-...-F03	20	0.8	3.2	174	-	8	10	13.2	11	9
DAPS-0030-...-F04						8				
DAPS-0060-...-F04	20	-	4	198	-	8	13	16.5	14	10
DAPS-0060-...-F05						9				
DAPS-0106-...-F0507	20	-	4	236.5	9	12	13	19.3	17	12
DAPS-0180-...-F0710	30	-	4	289.9	12	15	16	24.8	22	15
DAPS-0240-...-F0710	30	-	4	313.6	12	15	17	24.8	22	15
DAPS-0360-...-F0710	30	-	4	339.3	12	15	19	24.3	22	19

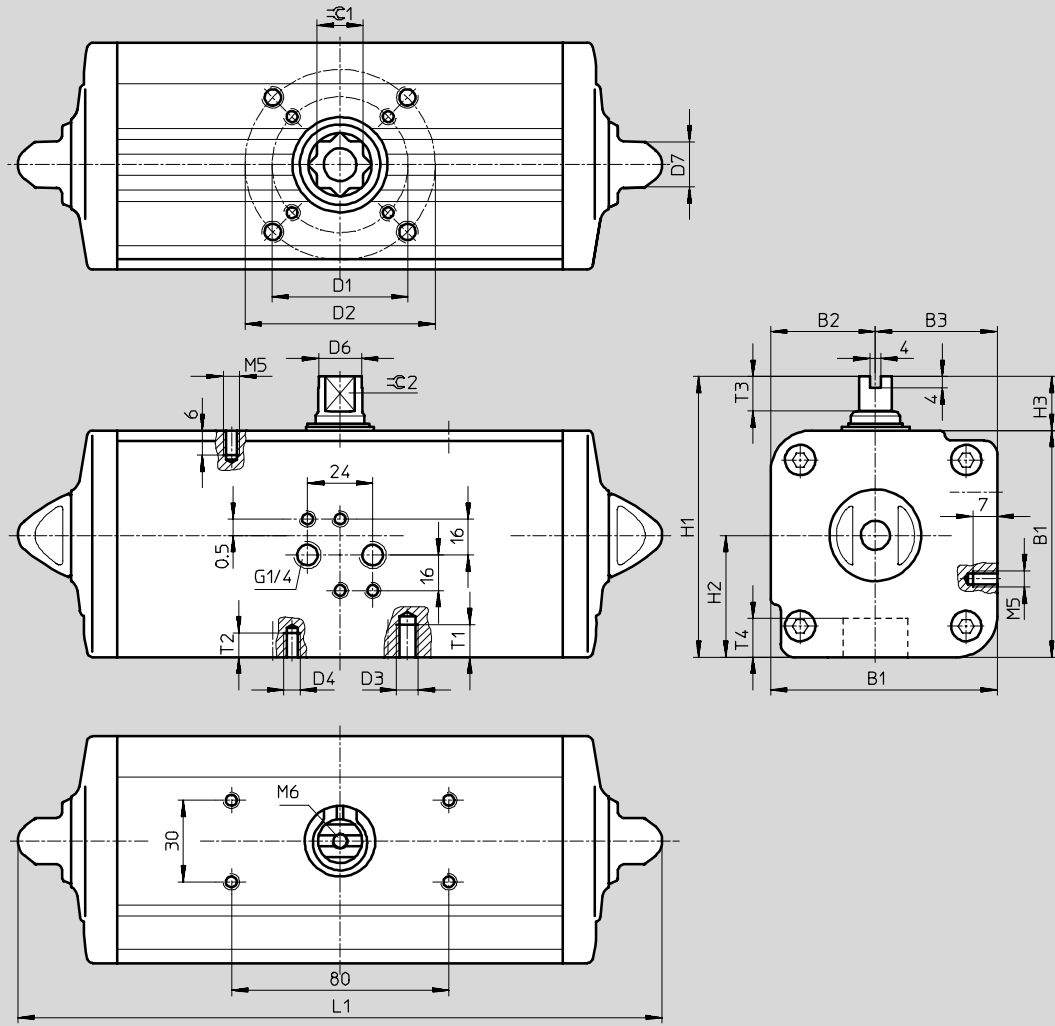
# Quarter turn actuators DAPS, double-acting

Technical data

**Dimensions**

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

DAPS-0480 ... DAPS-1920



Actuators  
Quarter turn actuators

1.2



## Quarter turn actuators DAPS, double-acting

Technical data

Type	B1	B2	B3	D1 ∅	D2 ∅	D3	D4	D6 ∅	D7 ∅
DAPS-0480-...-F1012	134.9	62	72.9	102	125	M12	M10	29	27
DAPS-0960-...-F12	168	74.5	93.5	125	-	-	M12	36.5	27
DAPS-0960-...-F14				140			M16		
DAPS-1920-...-F14	207.7	93	114.7	140	-	-	M16	46	36
DAPS-1920-...-F16				165			M20		

Type	H1	H2	H3	L1	T1	T2	T3	T4	⌀ 1	⌀ 2
DAPS-0480-...-F1012	164.9	72.9	30	387.7	15	18	19	29.5	27	19
DAPS-0960-...-F12	198	93.5	30	479.4	-	18	19.5	38.5	36	24
DAPS-0960-...-F14						24				
DAPS-1920-...-F14	237.7	114.7	30	601	-	24	18.5	48.5	46	32
DAPS-1920-...-F16						30				

## Quarter turn actuators DAPS, double-acting

Technical data

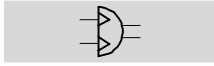
Ordering data		Ordering data	
Part No.	Type	Part No.	Type
Size 0015		Size 0240	
533 417	DAPS-0015-090-R-F03	533 422	DAPS-0240-090-R-F0710
533 475	DAPS-0015-090-R-F04		
		Size 0360	
Size 0030		533 423	DAPS-0360-090-R-F0710
533 418	DAPS-0030-090-R-F03		
533 476	DAPS-0030-090-R-F04	Size 0480	
		533 424	DAPS-0480-090-R-F1012
Size 0060			
533 419	DAPS-0060-090-R-F04	Size 0960	
533 477	DAPS-0060-090-R-F05	533 425	DAPS-0960-090-R-F12
		533 478	DAPS-0960-090-R-F14
Size 0106			
533 420	DAPS-0106-090-R-F0507	Size 1920	
		533 426	DAPS-1920-090-R-F14
Size 0180		533 479	DAPS-1920-090-R-F16
533 421	DAPS-0180-090-R-F0710		


Ordering data – Wearing parts kits		Ordering data – Wearing parts kits	
Part No.	Type	Part No.	Type
Size 0015		Size 0240	
397 470	DAPS-0015	397 475	DAPS-0240/S0120
Size 0030		Size 0360	
397 471	DAPS-0030/S0015	397 476	DAPS-0360/S0180
Size 0060		Size 0480	
397 472	DAPS-0060/S0030	397 477	DAPS-0480/S0240
Size 0106		Size 0960	
397 473	DAPS-0106/S0053	397 478	DAPS-0960/S0480
Size 0180		Size 1920	
397 474	DAPS-0180/S0090	397 479	DAPS-1920/S0960


# Quarter turn actuators DAPS, single-acting


Technical data

Function



 Size  
0015 ... 0960

 Torque  
15 ... 960 Nm

 Swivel angle  
0 ... 90°



General technical data		
Size	0015 ... 0180	0240 ... 0960
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$
Operating medium	Dried air, lubricated or unlubricated	
Design	Piston cylinder	
Operating pressure <sup>1)</sup> [bar]	1 ... 8.4	
Ambient temperature [°C]	-20 ... +80 °C	
Corrosion resistance class CRC <sup>2)</sup>	3	
Adjustment range of swivel angle [°]	90 ±5	
Mounting position	Any	
<b>Materials</b>		
Housing	Wrought aluminium alloy	
Cover	Wrought aluminium alloy	
Shaft	Stainless steel	
External screws	Stainless steel	
Seals	Nitrile rubber	

1) Minimum operating pressures vary for single-acting quarter turn actuators depending upon spring quantity.

2) Corrosion resistance class 3 according to Festo standard 940 070

Components requiring higher corrosion resistance. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface.

Air consumption [l/cycle] at 6 bar			
Type		Type	
DAPS-0015	0.36	DAPS-0180	4.32
DAPS-0030	0.72	DAPS-0240	6
DAPS-0053	1.08	DAPS-0480	12
DAPS-0090	2.16	DAPS-0960	24
DAPS-0120	3		

Weights [g]			
Type		Type	
DAPS-0015	1,300	DAPS-0180	8,700
DAPS-0030	2,200	DAPS-0240	11,000
DAPS-0053	3,200	DAPS-0480	23,300
DAPS-0090	5,400	DAPS-0960	41,400
DAPS-0120	6,900		

# Quarter turn actuators DAPS, single-acting

Technical data

Actual effective torque [Nm] as a function of operating pressure [bar], spring strength and swivel angle [°]																		
Spring strength	Spring torque [Nm]			Operating pressure														
				2.5			2.8			3			3.5			4.2		
	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°
<b>DAPS-0015</b>																		
1	5.0	3.7	7.5	6.2	2.9	3.7	7.5	3.7	5	8.4	4.2	5.9	10.6	5.6	8.1	13.8	7.4	11.3
2	6.3	4.7	9.4	-	-	-	-	-	-	7.2	3.3	4	9.4	4.7	6.3	12.6	6.5	9.4
3	7.5	5.6	11.3	-	-	-	-	-	-	-	-	-	8.2	3.7	4.4	11.3	5.6	7.5
4	10.0	7.5	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>DAPS-0030</b>																		
1	10.0	7.5	15	12.3	5.9	7.3	15	7.5	10	16.8	8.6	11.8	21.3	11.3	16.3	27.5	15	22.5
2	12.5	9.4	18.8	-	-	-	-	-	-	14.3	6.7	8	18.8	9.4	12.5	25.1	13.2	18.8
3	15.0	11.3	22.5	-	-	-	-	-	-	-	-	-	16.3	7.5	8.8	22.5	11.3	15
4	20.0	15	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>DAPS-0053</b>																		
1	17.5	13	26.5	21.8	10.2	12.8	26.5	13	17.5	29.6	14.9	20.6	37.5	19.5	28.5	48.5	26	39.5
2	22	16.5	33	-	-	-	-	-	-	25.1	11.8	14.1	33	16.5	22	44	23.1	33
3	26	19.5	40	-	-	-	-	-	-	-	-	-	29	13	15	40	19.5	26
4	35	26	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>DAPS-0090</b>																		
1	30	22.5	45	37	17.7	22	45	22.5	30	50.4	25.7	35.4	63.8	33.8	48.8	82.5	45	67.5
2	37.5	28.1	56.3	-	-	-	-	-	-	42.9	20.1	24.1	56.3	28.1	37.5	75.1	39.4	56.3
3	45	33.9	67.5	-	-	-	-	-	-	-	-	-	48.8	22.6	26.3	67.5	33.9	45
4	60	45	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>DAPS-0120</b>																		
1	40	30	60	49.3	23.6	29.3	60	30	40	67.1	34.3	47.1	85	45	65	110	60	90
2	50	37.5	75	-	-	-	-	-	-	57.1	26.8	32.1	75	37.5	50	100	52.5	75
3	60	45	90	-	-	-	-	-	-	-	-	-	65	30	35	90	45	60
4	80	60	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>DAPS-0180</b>																		
1	60	45	90	73.9	35.4	43.9	90	45	60	100.7	51.4	70.7	127.5	67.5	97.5	165	90	135
2	75	56.3	112.5	-	-	-	-	-	-	85.7	40.2	48.2	112.5	56.3	75	150	78.8	112.5
3	90	67.5	135	-	-	-	-	-	-	-	-	-	97.5	45	52.5	135	67.5	90
4	120	90	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>DAPS-0240</b>																		
1	80	60	120	98.6	47.1	58.6	120	60	80	134.3	68.6	94.3	170	90	130	220	120	180
2	100	75	150	-	-	-	-	-	-	114.3	53.6	64.3	150	75	100	200	105	105
3	120	90	180	-	-	-	-	-	-	-	-	-	130	60	70	180	90	120
4	160	120	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>DAPS-0480</b>																		
1	160	120	240	197.1	94.3	117.1	240	120	160	268.6	137.1	188.6	340	180	260	440	240	360
2	200	150	300	-	-	-	-	-	-	228.6	107.1	128.6	300	150	200	400	210	300
3	240	180	360	-	-	-	-	-	-	-	-	-	260	120	140	360	180	240
4	320	240	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>DAPS-0960</b>																		
1	320	240	480	394.3	188.6	234.3	480	240	320	537.1	274.3	377.1	680	360	520	880	480	720
2	400	300	600	-	-	-	-	-	-	457.1	214.3	257.1	600	300	400	800	420	600
3	480	360	720	-	-	-	-	-	-	-	-	-	520	240	280	720	360	480
4	640	480	960	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

# Quarter turn actuators DAPS, single-acting

Technical data

Actual effective torque [Nm] as a function of operating pressure [bar], spring strength and swivel angle [°]															
Spring strength	Operating pressure														
	5			5.6			6			7			8		
	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°
<b>DAPS-0015</b>															
1	-			-			-			-			-		
2	16.1	8.7	13	18.8	10.3	15.7	-			-			-		
3	14.9	7.7	11.1	17.6	9.3	13.8	19.4	10.4	15.6	23.8	13.1	20	28.3	15.7	24.5
4	12.3	5.9	7.3	15	7.5	10	16.8	8.6	11.8	21.3	11.3	16.3	25.7	13.9	20.7
<b>DAPS-0030</b>															
1	-			-			-			-			-		
2	32.2	17.5	25.9	37.6	20.7	31.3	-			-			-		
3	29.6	15.6	22.1	35	18.8	27.5	38.6	21	31.1	47.5	26.4	40	56.4	31.7	48.9
4	24.6	11.8	14.6	30	15	20	33.6	17.1	23.6	42.5	22.5	32.5	51.4	27.9	41.4
<b>DAPS-0053</b>															
1	-			-			-			-			-		
2	56.6	30.6	45.6	66	36.3	55	-			-			-		
3	52.6	26.9	38.6	62	32.5	48	68.3	36.2	54.3	84	45.5	70	99.7	54.8	85.7
4	43.6	20.4	25.6	53	26	35	59.3	29.7	41.3	75	39	57	90	48.3	72.7
<b>DAPS-0090</b>															
1	-			-			-			-			-		
2	96.5	52.2	77.7	112.6	61.9	93.8	-			-			-		
3	88.9	46.8	66.4	105	56.5	82.5	115.7	63	93.2	142.5	79.1	120	169.3	95.2	146.8
4	73.9	35.4	43.9	90	45	60	100.7	51.4	70.7	127.5	67.5	97.5	154.3	83.6	124.3
<b>DAPS-0120</b>															
1	-			-			-			-			-		
2	128.6	69.6	130.6	150	82.5	125	-			-			-		
3	118.6	62.1	88.6	140	75	110	154.3	83.6	124.3	190	105	160	225.7	126.4	195.7
4	86.7	40	46.7	106.7	52	66.7	120	60	80	153.3	80	113.3	186.7	100	146.7
<b>DAPS-0180</b>															
1	-			-			-			-			-		
2	192.9	104.5	155.4	225	123.8	187.5	-			-			-		
3	177.9	93.2	132.9	210	112.5	165	231.4	125.4	186.4	285	157.5	240	338.6	189.6	293.6
4	147.9	70.7	87.9	180	90	120	201.4	102.9	141.4	255	135	195	308.6	167.6	284.6
<b>DAPS-0240</b>															
1	-			-			-			-			-		
2	257.1	139.3	207.1	300	165	250	-			-			-		
3	237.1	124.3	177.1	280	150	220	308.6	167.1	248.6	380	210	320	451.4	252.9	391.4
4	197.1	94.3	117.1	240	120	160	268.6	137.1	188.6	340	180	260	411.4	222.9	331.4
<b>DAPS-0480</b>															
1	-			-			-			-			-		
2	514.3	278.6	414.3	600	330	500	-			-			-		
3	474.3	248.6	354.3	560	300	440	617.1	334.3	497.1	760	420	640	902.9	505.7	782.9
4	394.3	118.6	234.3	480	240	320	537.1	274.3	377.1	680	360	250	822.9	445.7	662.9
<b>DAPS-0960</b>															
1	-			-			-			-			-		
2	1028.6	557.1	828.6	1,200	660	1000	-			-			-		
3	948.6	497.1	708.6	1,120	600	880	1,234.3	668.6	994.3	1,520	840	1,280	1,805.7	1,011.4	1,565.7
4	788.6	377.1	468.6	960	480	640	1,074.3	548.6	754.3	1,360	720	1,040	1,645.7	891.4	1,325.7

Nominal torque for size at 5.6 bar and swivel angle 0°

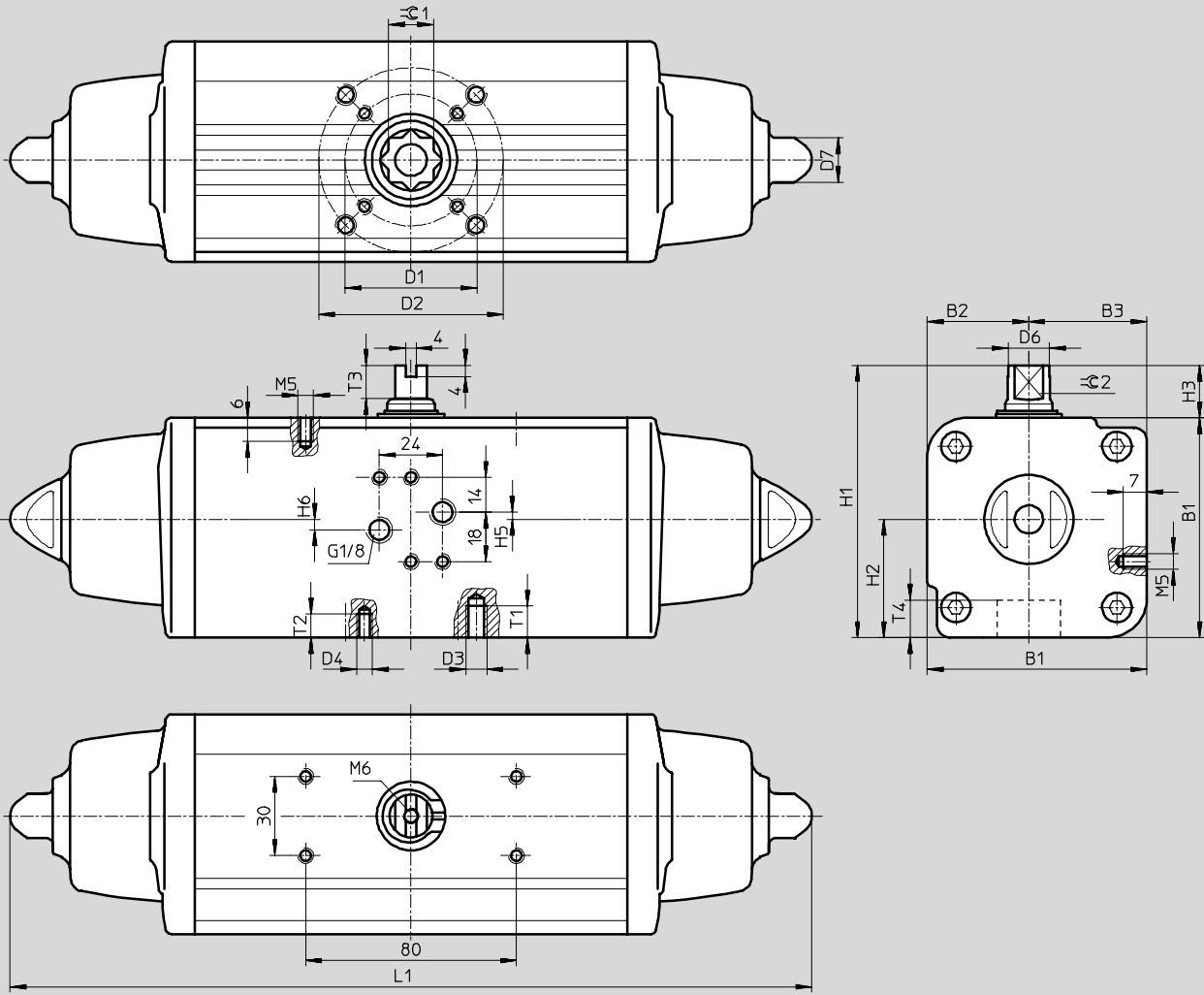
# Quarter turn actuators DAPS, single-acting

Technical data

**Dimensions**

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

DAPS-0015 ... DAPS-0180



## Quarter turn actuators DAPS, single-acting

Technical data

Type	B1	B2	B3	D1 ∅	D2 ∅	D3	D4	D6 ∅	D7 ∅	H1	H2
DAPS-0015-...-F03	59.2	27.7	31.5	36	-	-	M5	10.9	13	79.2	31.5
DAPS-0015-...-F04				42			M5				
DAPS-0030-...-F04	70.4	32.7	37.7	42	-	-	M5	14.5	13	90.4	37.7
DAPS-0030-...-F05				50			M6				
DAPS-0053-...-F0507	83.3	38.5	44.8	50	70	M8	M6	16.2	17	103.3	44.8
DAPS-0090-...-F0710	107.5	51	56.5	70	102	M10	M8	20.2	22	137.5	56.5
DAPS-0120-...-F0710	111.1	51	60.1	70	102	M10	M8	22.5	22	141.1	60.1
DAPS-0180-...-F0710	118	56	62	70	102	M10	M8	25.5	22	148	62

Type	H3	H5	H6	L1	T1	T2	T3	T4	⊕ 1	⊕ 2
DAPS-0015-...-F03	20	0.8	3.2	233.3	-	8	10	13.2	11	9
DAPS-0015-...-F04						8				
DAPS-0030-...-F04	20	-	4	259	-	8	13	16.5	14	10
DAPS-0030-...-F05						9				
DAPS-0053-...-F0507	20	-	4	303.5	9	12	13	19.3	17	12
DAPS-0090-...-F0710	30	-	4	393.7	12	15	16	24.8	22	15
DAPS-0120-...-F0710	30	-	4	409.6	12	15	17	24.8	22	15
DAPS-0180-...-F0710	30	-	4	474	12	15	19	24.3	22	19

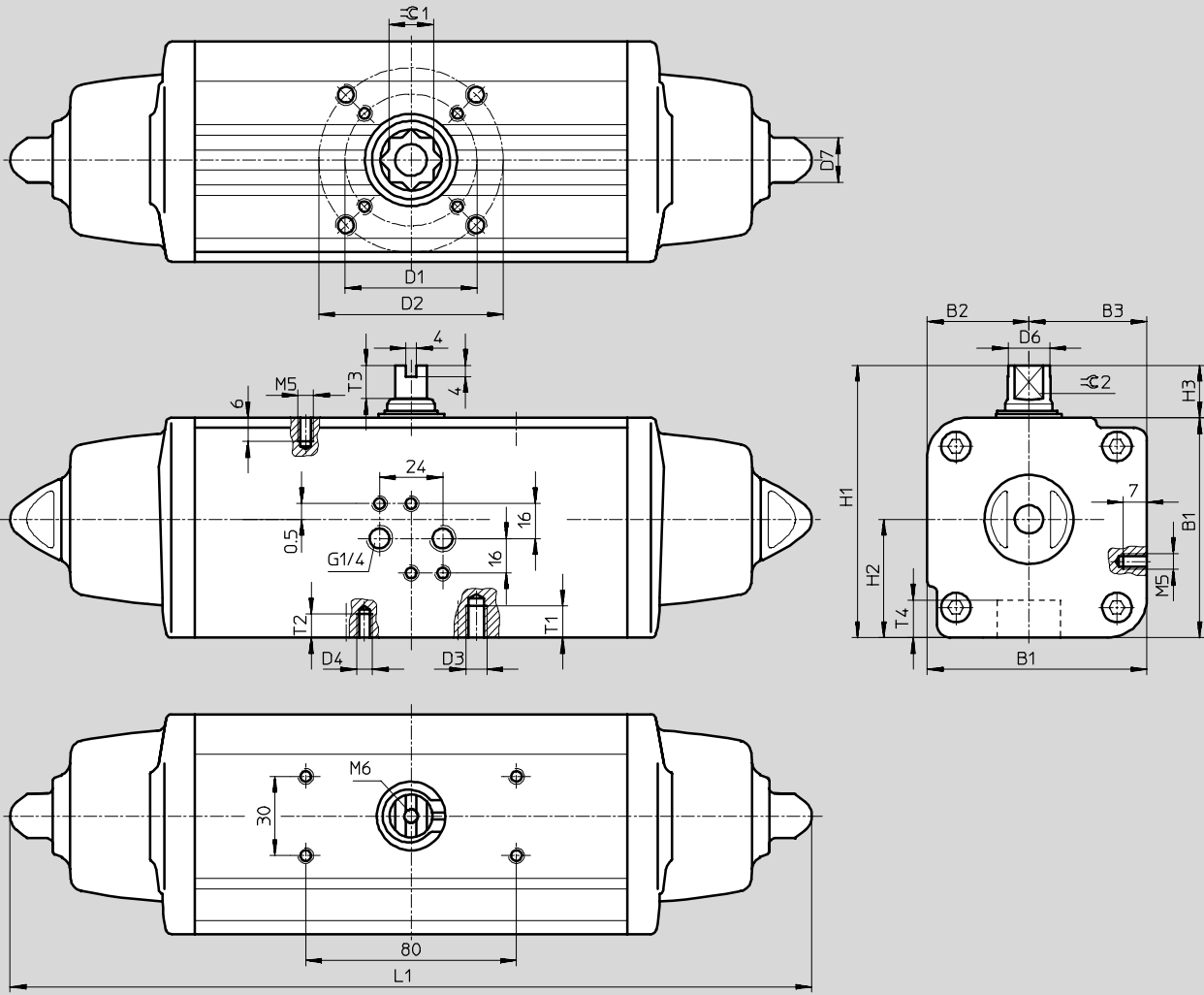
# Quarter turn actuators DAPS, single-acting

Technical data

**Dimensions**

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

DAPS-0240 ... DAPS-0960



Type	B1	B2	B3	D1 ∅	D2 ∅	D3	D4	D6 ∅	D7 ∅
DAPS-0240-...-F1012	134.9	62	72.9	102	125	M12	M10	29	27
DAPS-0480-...-F12	168	74.5	93.5	125	-	-	M12	36.5	27
DAPS-0480-...-F14				140			M16		
DAPS-0960-...-F14	207.7	93	114.7	140	-	-	M16	46	36
DAPS-0960-...-F16				165			M20		

Type	H1	H2	H3	L1	T1	T2	T3	T4	⌀G1	⌀G2
DAPS-0240-...-F1012	164.9	72.9	30	520.5	15	18	19	29.5	27	19
DAPS-0480-...-F12	198	93.5	30	648.2	-	18	19.5	38.5	36	24
DAPS-0480-...-F14						24				
DAPS-0960-...-F14	237.7	114.7	30	828	-	24	18.5	48.5	46	32
DAPS-0960-...-F16						30				



## Quarter turn actuators DAPS, single-acting

Technical data

Ordering data		Ordering data	
Part No.	Type	Part No.	Type
Size 0015		Size 0180	
533 427	DAPS-0015-090-RS1-F03	533 447	DAPS-0180-090-RS1-F0710
533 480	DAPS-0015-090-RS1-F04	533 448	DAPS-0180-090-RS2-F0710
533 428	DAPS-0015-090-RS2-F03	533 449	DAPS-0180-090-RS3-F0710
533 481	DAPS-0015-090-RS2-F04	533 450	DAPS-0180-090-RS4-F0710
533 429	DAPS-0015-090-RS3-F03		
533 482	DAPS-0015-090-RS3-F04	Size 0240	
533 430	DAPS-0015-090-RS4-F03	533 451	DAPS-0240-090-RS1-F1012
533 483	DAPS-0015-090-RS4-F04	533 452	DAPS-0240-090-RS2-F1012
		533 453	DAPS-0240-090-RS3-F1012
Size 0030		533 454	DAPS-0240-090-RS4-F1012
533 431	DAPS-0030-090-RS1-F04		
533 484	DAPS-0030-090-RS1-F05	Size 0480	
533 432	DAPS-0030-090-RS2-F04	533 455	DAPS-0480-090-RS1-F12
533 485	DAPS-0030-090-RS2-F05	533 488	DAPS-0480-090-RS1-F14
533 433	DAPS-0030-090-RS3-F04	533 456	DAPS-0480-090-RS2-F12
533 486	DAPS-0030-090-RS3-F05	533 489	DAPS-0480-090-RS2-F14
533 434	DAPS-0030-090-RS4-F04	533 457	DAPS-0480-090-RS3-F12
533 487	DAPS-0030-090-RS4-F05	533 490	DAPS-0480-090-RS3-F14
		533 458	DAPS-0480-090-RS4-F12
Size 0053		533 491	DAPS-0480-090-RS4-F14
533 435	DAPS-0053-090-RS1-F0507		
533 436	DAPS-0053-090-RS2-F0507	Size 0960	
533 437	DAPS-0053-090-RS3-F0507	533 459	DAPS-0960-090-RS1-F14
533 438	DAPS-0053-090-RS4-F0507	533 492	DAPS-0960-090-RS1-F16
		533 460	DAPS-0960-090-RS2-F14
		533 493	DAPS-0960-090-RS2-F16
Size 0090		533 461	DAPS-0960-090-RS3-F14
533 439	DAPS-0090-090-RS1-F0710	533 494	DAPS-0960-090-RS3-F16
533 440	DAPS-0090-090-RS2-F0710	533 462	DAPS-0960-090-RS4-F14
533 441	DAPS-0090-090-RS3-F0710	533 495	DAPS-0960-090-RS4-F16
533 442	DAPS-0090-090-RS4-F0710		
Size 0120			
533 443	DAPS-0120-090-RS1-F0710		
533 444	DAPS-0120-090-RS2-F0710		
533 445	DAPS-0120-090-RS3-F0710		
533 446	DAPS-0120-090-RS4-F0710		

Ordering data – Wearing parts kits		Ordering data	
Part No.	Type	Part No.	Type
Size 0015		Size 0180	
397 471	DAPS-0030/S0015	397 476	DAPS-0360/S0180
Size 0030		Size 0240	
397 472	DAPS-0060/S0030	397 477	DAPS-0480/S0240
Size 0053		Size 0480	
397 473	DAPS-0106/S0053	397 478	DAPS-0960/S0480
Size 0090		Size 0960	
397 474	DAPS-0180/S0090	397 479	DAPS-1920/S0960
Size 0120			
397 475	DAPS-0240/S0120		

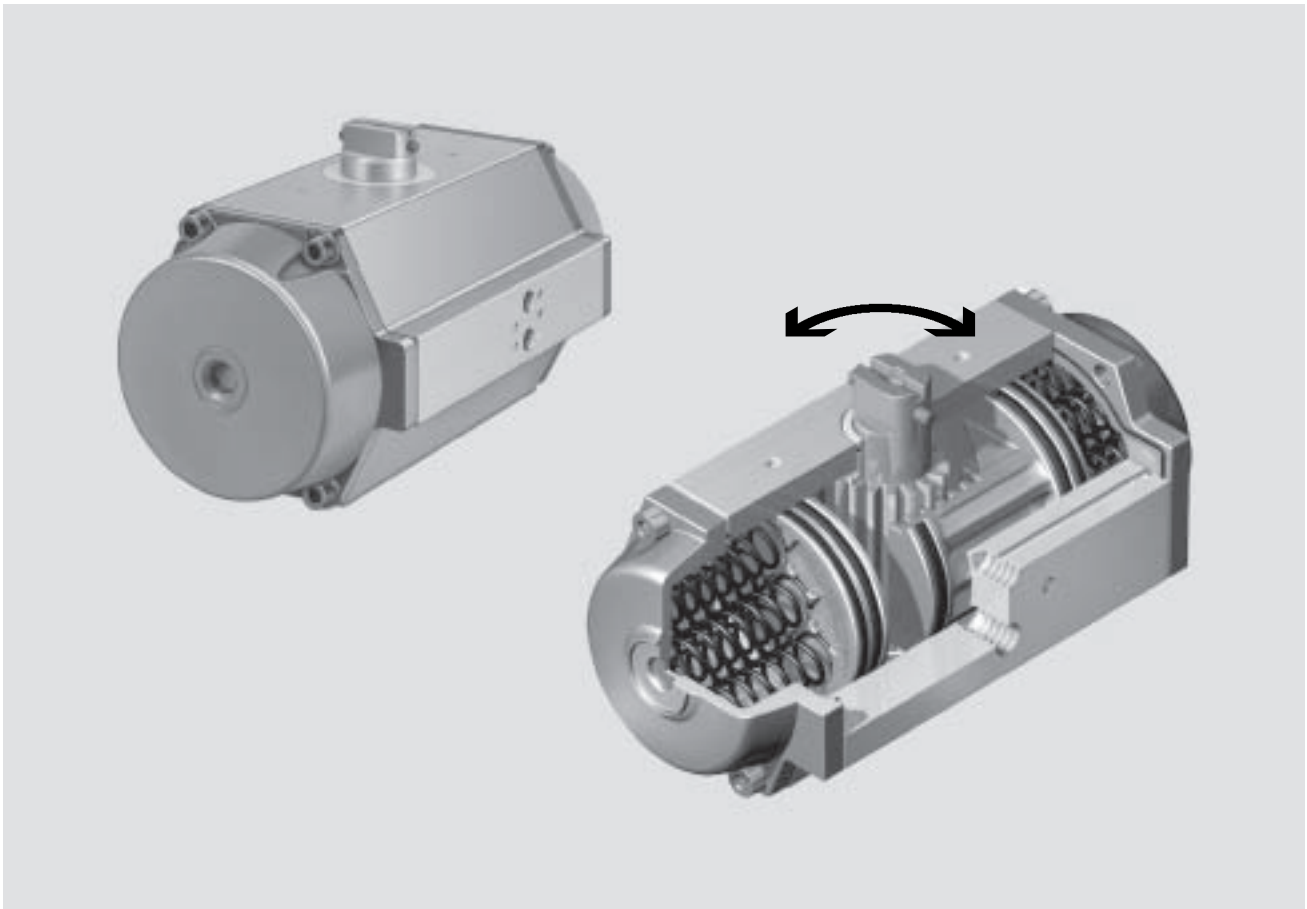
# Copar quarter turn actuators DRD/DRE


Key features


FESTO


Actuators  
Quarter turn actuators

1.2



 Size  
1 ... 880

 Torque  
7.5 ... 8,800 Nm

 Swivel angle  
0 ... 90°

The Copar quarter turn actuators are ideally suited for automating swivel valves in the process industry.

Sturdy, but nevertheless accurate for high precision positioning, especially with ball valves and plug valves, as well as shut-off and butterfly valves.

- Direction of rotation can be optionally changed from clockwise to anticlockwise
- End-position sensor and limit switch module can be mounted directly to the drive
- Fast or slow valve actuation
- Suitable for manual on-site use, as well as automatic operation
- Resistant to overload and continuous loads
- Can be used as a variable-speed actuator in combination with an electro-pneumatic positioning controller
- Opening and closing are controlled with a flange-mounted solenoid valve with port pattern to Namur
- Highly corrosion resistant
- Optionally adjustable end positions for sizes 8 ... 100, facilitating adjustment ranges of  $-4^{\circ}$  ...  $+8^{\circ}$  and  $74^{\circ}$  ...  $98^{\circ}$
- Port pattern to Namur VDI/VDE 3845 for attaching solenoid valves



# Copar quarter turn actuators DRD/DRE

Product range overview



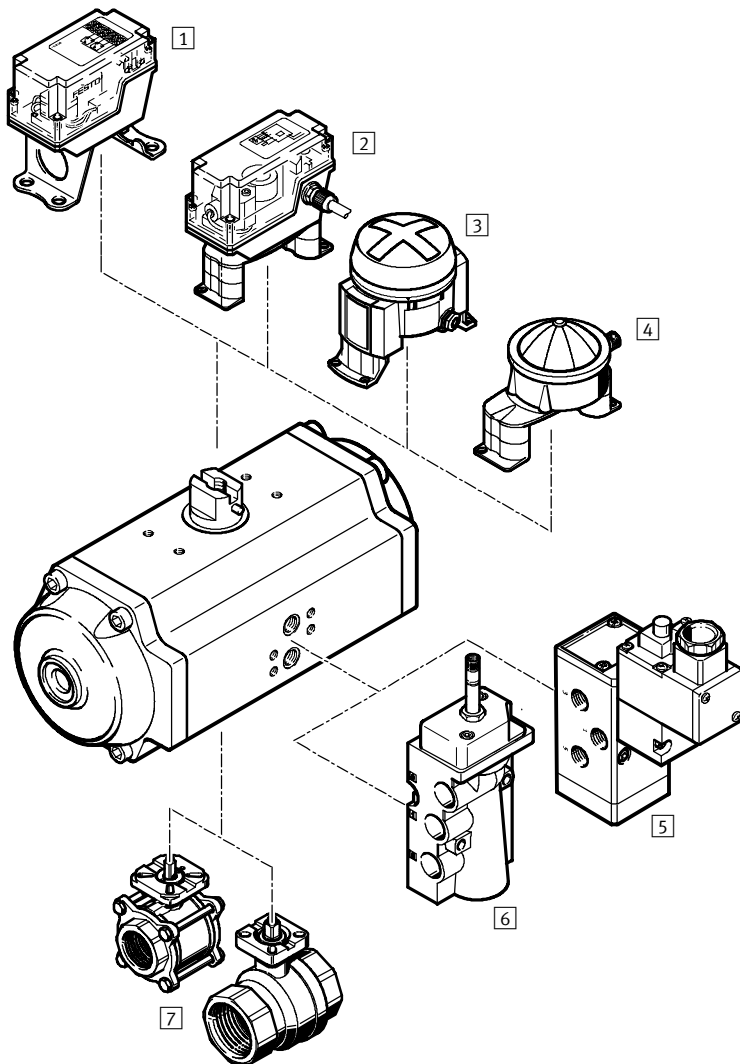
Flange hole pattern – Connection dimensions to DIN ISO 5211 and Namur VDI/VDE 3845													
Connection	F03	F04	F05	F07	F10	F12	F14	F16	F25	F30	Shaft height		
Square	V09	V11	V14	V17	V22	V27	V36	V46	V55	V75			
DR...-1-F03	■	-	-	-	-	-	-	-	-	-	-	20	
DR...-2-F03	■	-	-	-	-	-	-	-	-	-	-	20	
DR...-2-F04	-	■	-	-	-	-	-	-	-	-	-	20	
DR...-4-F04	-	-	■	-	-	-	-	-	-	-	-	20	
DR...-4-F05	-	-	-	■	-	-	-	-	-	-	-	20	
DR...-8-F05	-	-	-	■	-	-	-	-	-	-	-	20	
DR...-14-F05	-	-	-	■	-	-	-	-	-	-	-	20	
DR...-26-F07	-	-	-	-	■	-	-	-	-	-	-	20	
DR...-50-F07	-	-	-	-	-	■	-	-	-	-	-	20	
DR...-50-F10	-	-	-	-	-	-	■	-	-	-	-	30	
DR...-77-F10	-	-	-	-	-	-	-	■	-	-	-	30	
DR...-77-F12	-	-	-	-	-	-	-	-	■	-	-	30	
DR...-100-F12	-	-	-	-	-	-	-	-	-	■	-	30	
DR...-150-F14	-	-	-	-	-	-	-	-	-	-	■	30	
DR...-225-F14	-	-	-	-	-	-	-	-	-	-	-	30	
DR...-375-F16	-	-	-	-	-	-	-	-	-	-	■	30	
DR...-575-F16	-	-	-	-	-	-	-	-	-	-	■	30	
DR...-575-F25	-	-	-	-	-	-	-	-	-	-	■	30	
DR...-880-F25	-	-	-	-	-	-	-	-	-	-	■	30	
DR...-880-F30	-	-	-	-	-	-	-	-	-	-	-	■	30
Hole pattern for	25	25	30	30	30	30	30	30	30	30	30		
Namur accessories	50	50	80	80	80	80	130	130	130	150	150		

Actuators  
Quarter turn actuators

1.2

# Copar quarter turn actuators DRD/DRE

Peripherals overview



Mounting attachments and accessories		
	Brief description	→ Page
1	End-position sensing attachment QH-DR-E square design, pneumatic, electrical or inductive sensing fits sizes 4 ... 50	7 / 1.2-60
2	End-position sensing attachment DAPZ square design, electrical, electrically explosion-proof or inductive sensing fits sizes 4 ... 225, size 1 and 2 or 375 ... 880 with adapter → 7 / 1.2-59	7 / 1.2-52
3	End-position sensing attachment DAPZ round design, variant AR, electrical, inductive or inductively explosion-proof sensing fits sizes 4 ... 225	7 / 1.2-57
4	End-position sensing attachment DAPZ round design, variant RO, electrical, inductive or inductive Namur sensing fits sizes 4 ... 225, size 1 and 2 or 375 ... 880 with adapter → 7 / 1.2-59	7 / 1.2-54
5	Solenoid valve MFH Solenoid valve MN1H Solenoid valve MGTBH basic valve with pilot control valve for F solenoid coil basic valve with pilot control valve for N1 solenoid coil basic valve with pilot control valve, solenoid coil and socket	7 / 2.1-10 7 / 2.1-10 7 / 2.1-10
6	Solenoid valve NVF3 for F solenoid coil and explosion-proof F solenoid coil	7 / 2.1-4
7	Ball valve VAPB Brass or stainless steel, corrosion-resistant	2 / 5.2-2

# Copar quarter turn actuators DRD/DRE

Type codes

FESTO

DRE – 575 – F12 – Q10 – FS – O – C

Type	
DRD	Double-acting quarter turn actuator
DRE	Single-acting quarter turn actuator

Size	
1	Size 1
2	Size 2
4	Size 4
8	Size 8
14	Size 14
26	Size 26
50	Size 50
77	Size 77
100	Size 100
150	Size 150
225	Size 225
375	Size 375
575	Size 575
880	Size 880

Flange hole pattern	
F03	Flange hole pattern F03 with shaft connection V09
F04	Flange hole pattern F04 with shaft connection V11
F05	Flange hole pattern F05 with shaft connection V14
F07	Flange hole pattern F07 with shaft connection V17
F10	Flange hole pattern F10 with shaft connection V22
F12	Flange hole pattern F12 with shaft connection V27
F14	Flange hole pattern F14 with shaft connection V36
F16	Flange hole pattern F16 with shaft connection V46
F25	Flange hole pattern F25 with shaft connection V55
F30	Flange hole pattern F30 with shaft connection V75

Number of springs for quarter turn actuator DRE	
Q06	Number of springs 06
Q08	Number of springs 08
Q10	Number of springs 10 <sup>1)</sup>
Q12	Number of springs 12
Q14	Number of springs 14
Q09	Number of springs 09 <sup>2)</sup>
Q15	Number of springs 15 <sup>2)</sup>
Q18	Number of springs 18 <sup>2)</sup>

Spring function for quarter turn actuator DRE	
FS	Spring force, closing
F0	Spring force, opening

End-position limitation	
	Without adjustable end-position limitation
O	With adjustable end-position limit and extended rotation angle <sup>3)</sup>

Variant	
	Standard version
NPT	NPT/UNC thread <sup>4)</sup>
C	Corrosion-resistant design <sup>4)</sup>

- 1) Standard spring quantity designed for 6 bar operating pressure
- 2) Only with size 575

- 3) Swivel range to 98°, only with size 8 ... 100
- 4) Upon request.

# Copar quarter turn actuators DRD/DRE

Sizing information

## Sizing and adapting quarter turn actuators for process valves

We will use the example of a rack-and-pinion actuator to explain how to size double-acting and single-acting

quarter turn actuators. The procedure is the same for scotch yoke actuators, with the exception that the non-linear

characteristic of the actuator's torque curve does not have to be taken into account.

## Sizing example for a double-acting quarter turn actuator

### Breakaway torque of the process valve

The torque required to facilitate reliable opening of the valve's shut-off device (disc in a butterfly valve, ball in a ball valve ...) under the specified operating conditions (medium, temperature, inline pressure, etc.).

### Compressed air supply

The minimum compressed air pressure available at all times at the valve to be sized forms the basis for sizing (worst-case analysis).

### Process valve type

What type of valve (butterfly valve, ball valve, etc.) is being used?

The main operating conditions must be known before the breakaway torque can be specified by the valve manufacturer or correctly derived from existing tables:

- Medium
- Temperature, concentration, viscosity of the medium
- Gas or liquid, lubricating or non-lubricating
- Presence of particles that form deposits or caking
- Differential pressure at the process valve
- Required safety factor

If no safety factor is specified, a factor of at least approx. 1.2 (20% safety) should be taken into account when sizing the quarter turn actuator.

### Example

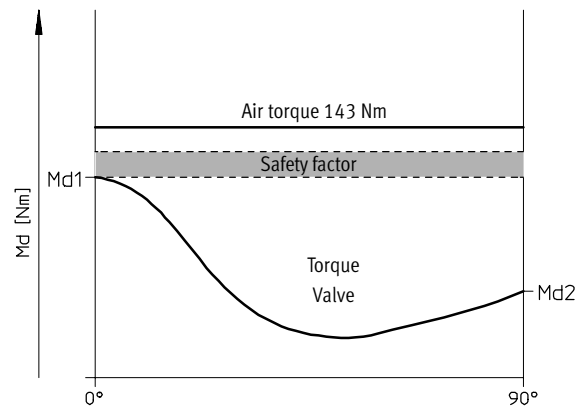
A breakaway torque of 100 Nm is determined for the valve. A safety factor of 1.2 is selected.

This gives a minimum torque of 120 Nm for the quarter turn actuator. The torque tables for double-acting quarter turn actuators propose the actuator with the designation

DRD-14-F05 from the Copar series. This actuator has a torque of 143 Nm at compressed air pressure of 6 bar.

This torque is constant across the entire swivel range (0° ... 90°) thanks to the rack-and-pinion design and is therefore sufficient for the valve.

### Relationship of the actuator to the butterfly valve torque curve:



0° =Valve closed  
90° =Valve open

Md1 = Breakaway torque  
Md2 = Closing torque

# Copar quarter turn actuators DRD/DRE

Sizing information

## Sizing example for a single-acting quarter turn actuator

The most important criteria for the sizing of single-acting quarter turn actuators are, with the exception of the valve's closing torque, the same as for double-acting actuators:

- Breakaway torque of the process valve
- Closing torque of the process valve  
What torque is required to move the shut-off device (disc, ball ...) securely back into the seal?
- Compressed air supply
- Process valve type

As with double-acting actuators, the main operating conditions must be known before the breakaway torque can be specified by the valve manufacturer or correctly derived from existing tables → 7 / 1.2-24. These conditions also apply for the closing torque. As the lubricating properties of the medium remain almost incalculable here, this is more difficult to determine. For that reason, most process valve manufacturers do not specify a closing torque.

### The solution:

The breakaway torque is used instead of the closing torque as it is always greater than the closing torque of a process valve. It can generally be assumed that the breakaway torque specified by the process valve manufacturer can be used without a safety factor.

If no safety factor is specified for the breakaway torque, a factor of at least 1.2 to 1.3 (20% to 30% safety) should be included when sizing the single-acting quarter turn actuator. Single-acting quarter turn actuators can close or open with spring force as a safety function.

## The most frequent application: Closing with spring force

When the valve is closed, the springs in the actuators are pretensioned. This means: A single-acting actuator will always have a lower maximum air torque than the identically sized double-acting actuator (same piston diameter, same design).

When the process valve opens, the actuator works against the spring force. If the springs are compressed, the force in the springs increases and the opening force of the air decreases proportionally.

This means that the actuator must overcome the torque generated by the spring force as well as the normal breakaway torque. The air torque decreases in accordance with the increasing spring force.

### Example

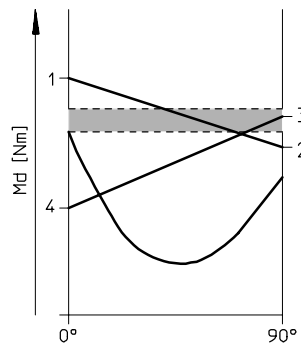
A breakaway torque of 20 Nm is established for a ball valve. A safety factor of 1.2 is selected. This gives a minimum torque of 24 Nm for opening the ball valve.

The necessary torque in the ball valve's open position is estimated at 50% of the breakaway torque (12 Nm). This gives a torque requirement of approx. 14 Nm taking into consideration a safety factor of 20%.

The closing torque of the process valve is not known, therefore the breakaway torque is selected without an additional safety factor: 20 Nm.

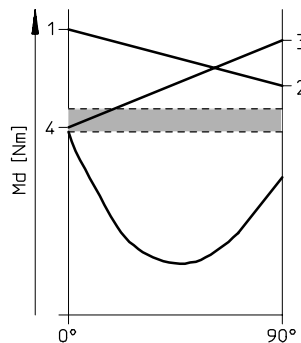
The 3 diagrams below show the calculated breakaway torques and closing torques using the typical torque characteristics of a ball valve and the torque lines of quarter turn actuators of the Copar series. These were selected using the torque tables.

Figure 1:  
DRE-4-F05-Q10-FS



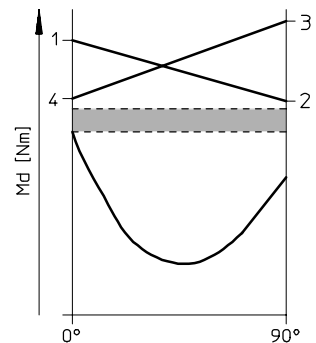
■ Necessary safety factor 20%

Figure 2:  
DRE-8-F05-Q10-FS



0° = Valve closed  
90° = Valve open

Figure 3:  
DRE-8-F05-Q12-FS



1 → 2 = Air torque  
3 → 4 = Spring torque

# Copar quarter turn actuators DRD/DRE

Sizing information



Torques [Nm]		Figure 1 DRE-4-F05-Q10-FS	Figure 2 DRE-8-F05-Q10-FS	Figure 3 DRE-8-F05-Q12-FS
Air torque	max. 1	26.9	53.5	49.5
	min. 2	16.6	32.5	24.2
Spring torque	max. 3	20.6	41.5	49.8
	min. 4	10.3	20.5	24.6

**Re. Figure 1:**

The quarter turn actuator in Figure 1 is not suitable for this application as the low closing torque of the springs is not enough to close the ball valve (3 to 4).

**Re. Figure 2:**

The use of the actuator shown in Figure 2 is critical as the closing torque of the springs (4) is only slightly above the breakaway torque of the ball valve. Even small pressure increases in the piping or pressure

drops in the compressed air system will stop the ball valve closing completely.

**Re. Figure 3:**

The ideal quarter turn actuator in this case is shown in Figure 3. The break-

away and closing torques of the actuator are above the torque values incl. safety factor (20%) calculated for this ball valve when both opening and closing. This guarantees a reliable actuator function.

**An example for the influence of the compressed air pressure:**

The available air torque falls to 37 Nm or 11.8 Nm at a pressure of 5 bar for the actuator in Figure 3 and is therefore not sufficient for this application example. For this reason, particular attention must be paid to the constant

available minimum air pressure when sizing a quarter turn actuator.

Note that all single-acting actuators are more often than not 1 ... 2 sizes larger than the double-acting

actuators for the same process valve because of the reduced available torques on the air side.

In the case of actuators that open using spring force (rotation of the

piston by 180° to reverse the direction of rotation), the springs must apply the breakaway torque and the air torque must be large enough to be able to close the valve once more.

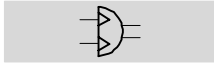


# Copar quarter turn actuators DRD

Technical data

FESTO

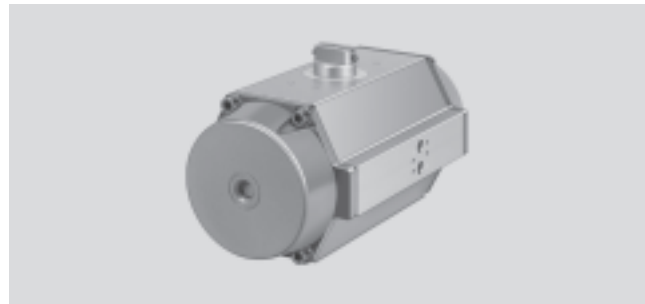
Function



- | - Size  
1 ... 880

- ⊥ - Torque  
2.5 ... 11,750 Nm

- ⤵ - Swivel angle  
0 ... 90°



General technical data	
Design	Piston cylinder
Operating pressure <sup>1)</sup>	[bar]
Sizes 1 to 4	2.5 ... 10
Sizes 8 to 880	2 ... 10
Ambient temperature <sup>2)</sup>	[°C] -20 ... +80 °C (observe operating range of proximity sensors)
Adjustment range of swivel angle	
without end-position setting	[°] 90
with end-position setting	[°] 74 ... 98
Materials	
Housing	Anodised aluminium
Bearing end cap	
Sizes 1 to 4	GRP
Sizes 8 to 880	Painted aluminium
Shaft	
Sizes 1 to 100	Aluminium
Sizes 150 to 880	Steel
External screws	Stainless steel
Seals	Polyurethane, nitrile rubber, polyacetate

1) Minimum operating pressures vary for single-acting quarter turn actuators depending upon spring quantity.

2) Further temperature ranges upon request.


Air consumption [l/cycle] at 6 bar			
Type		Type	
DRD-1	1.44	DRD-77	36
DRD-2	2.04	DRD-100	48
DRD-4	3	DRD-150	74.4
DRD-8	4.2	DRD-225	99.6
DRD-14	12	DRD-375	204
DRD-26	19.2	DRD-575	276
DRD-50	24	DRD-880	384

# Copar quarter turn actuators DRD

Technical data



Theoretical torque [Nm] at swivel angle 0° and 90° as a function of operating pressure [bar]							
Type	Operating pressure						
	2	3	4	5	6	7	8
DRD-1	2.48	3.72	4.96	6.2	7.44	8.68	9.92
DRD-2	5.4	8.1	10.8	13.5	16.2	18.9	21.6
DRD-4	12.4	18.6	24.8	31	37.2	43.4	49.6
DRD-8	24.7	37	49.3	61.6	74	86.3	98.6
DRD-14	47	72	95	119	143	167	191
DRD-26	89	133	177	222	266	310	354
DRD-50	169	253	337	421	505	589	673
DRD-77	256	385	513	642	770	898	1,026
DRD-100	338	506	675	843	1,012	1,181	1,350
DRD-150	506	758	1,011	1,264	1,517	1,770	2,023
DRD-225	758	1,138	1,517	1,896	2,275	2,654	3,033
DRD-375	1,264	1,896	2,528	3,159	3,791	4,423	5,055
DRD-575	1,919	2,879	3,839	4,799	5,758	6,718	7,677
DRD-880	2,938	4,407	5,876	7,345	8,814	10,283	11,752

-  - Note

The following minimum degrees of efficiency apply for all quarter turn actuators:

DR...-1 ... 4:	≥ 80%
DR...-8 ... 880:	≥ 90%

Weights [g]			
Type	Type		
DRD-1	600	DRD-77	18,500
DRD-2	800	DRD-100	23,000
DRD-4	1,100	DRD-150	31,000
DRD-8	2,400	DRD-225	37,000
DRD-14	3,600	DRD-375	80,000
DRD-26	6,400	DRD-575	123,000
DRD-50	11,200	DRD-880	156,000

# Copar quarter turn actuators DRD

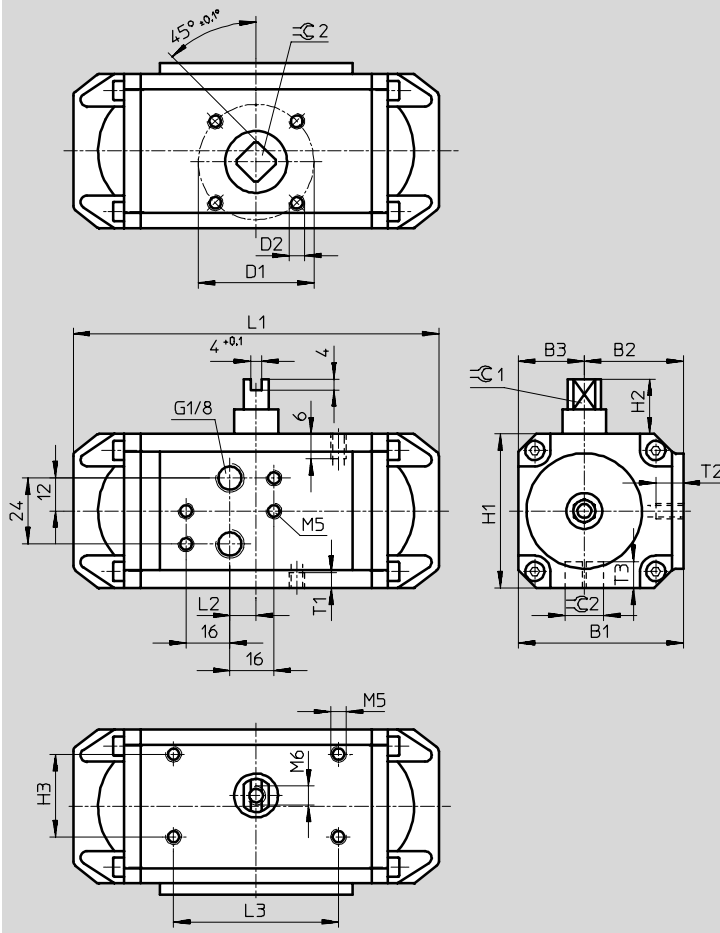
Technical data



## Dimensions

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

Size 1...4



Type	B1	B2	B3	D1	D2	H1	H2	H3
DRD-1-F03	45	25	20	36	M5	45	20	25
DRD-2-F04	60	34	26	42	M5	56	20	25
DRD-2-F03				36				
DRD-4-F05	71	38	33	50	M6	66	20	30
DRD-4-F04				42	M5			

Type	L1	L2	L3	T1	T2	T3	∅C1	∅C2
				min.		+2	±0.1	H11
DRD-1-F03	89	11	50	5	5	10	8	9
DRD-2-F04	133	10	50	6	7	12	9	11
DRD-2-F03						10		9
DRD-4-F05	175	24	80	7	7	16	15	14
DRD-4-F04						12		11

# Copar quarter turn actuators DRD

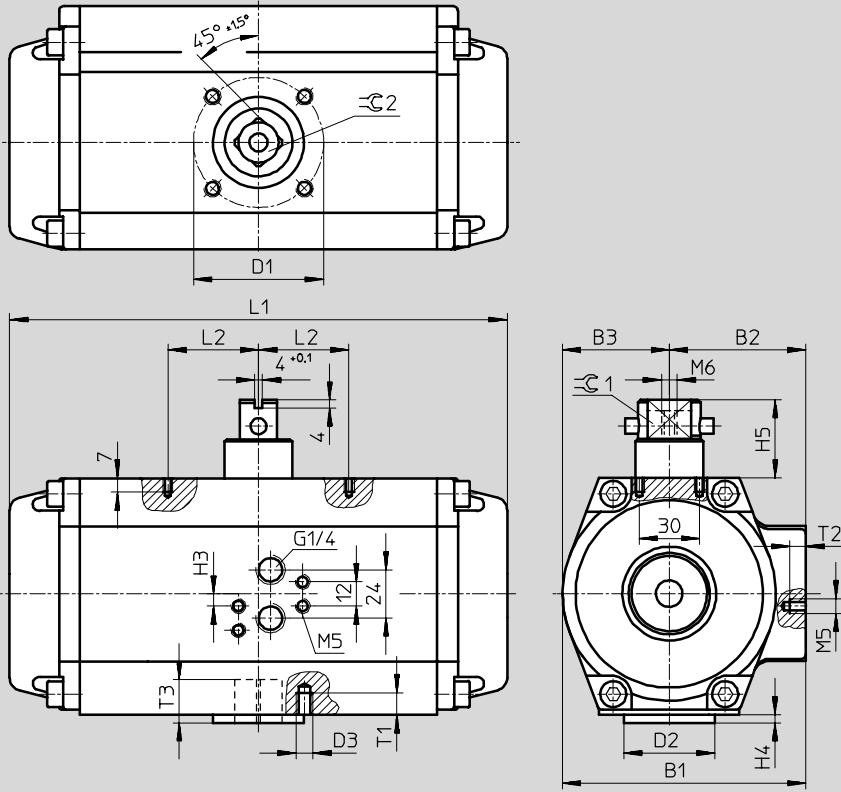
Technical data



## Dimensions

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

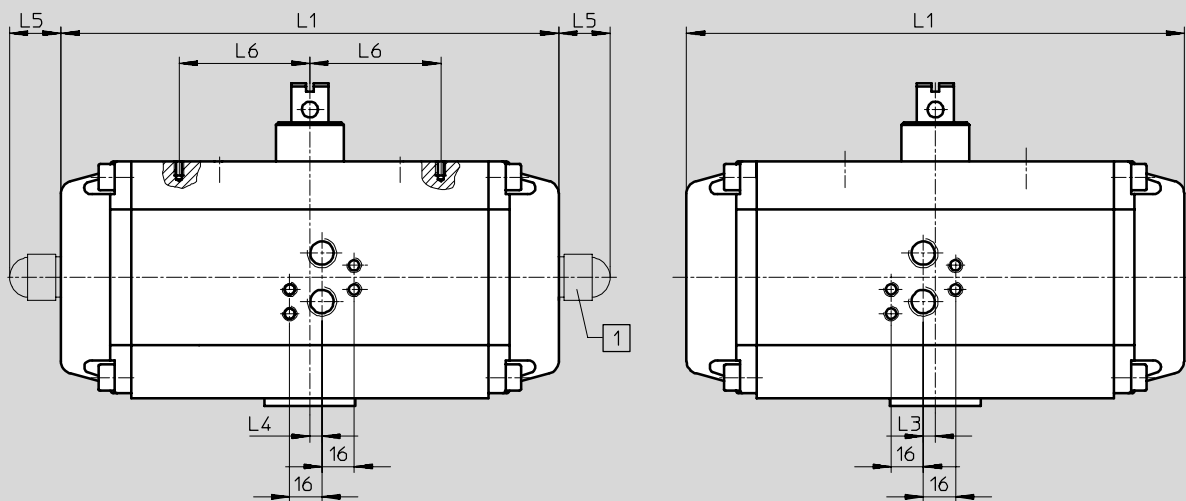
Size 8...880



## With end-position setting

Size 8...100

Size 150...880



1 End-position setting

# Copar quarter turn actuators DRD

Technical data



Type	B1	B2	B3	D1 ∅	D2 ∅ f8	D3 ∅	H1	H2	H3	H4 max.	H5 +0.2/-0.5
DRD-8-F05	93.5	52.5	41	50	35	M6	46	46.5	-	3	20
DRD-14-F05	122	67	55	50	35	M6	59.5	61.5	-	3	20
DRD-26-F07	146	79	67	70	55	M8	71.5	74.5	-	3	20
DRD-50-F07	172	94	78	70	55	M8	81.5	84.5	-	3	20
DRD-50-F10				102	70	M10					30
DRD-77-F10	189.5	99.5	90	102	70	M10	94	98	-	3	30
DRD-77-F12				125	85	M12					
DRD-100-F12	216	114	102	125	85	M12	106.5	111.5	-	3	30
DRD-150-F14	254	135	119	140	100	M16	136	136	-	4	30
DRD-225-F14	254	135	119	140	100	M16	136	136	-	4	30
DRD-375-F16	344	172	172	165	130	M20	172	172	6	5	30
DRD-575-F16	422	211	211	165	130	M20	211	211	6	5	30
DRD-575-F25				254	200	M16					
DRD-880-F25	450	225	225	254	200	M16	225	225	6	5	30
DRD-880-F30				298	230	M20					

Type	L1	L2	L3	L4	L5	L6	T1	T2	T3	≈C1	≈C2	H11
DRD-8-F05	204	40	-	-	24.5	-	9	5	17 +1	14	14	
DRD-14-F05	213	40	-	-	29.5	-		6	17 +1	14	14	
DRD-26-F07	266	40	-	-	30	65	12	6	21 +1	17	17	
DRD-50-F07	354	40	-	15	33	65	13	6	19 +1	17	17	
DRD-50-F10							16		24 +1	22	22	
DRD-77-F10	411	65	-	15	38	-	16	6	25 +1	22	22	
DRD-77-F12							18		30 +1	27	27	
DRD-100-F12	411	65	-	15	38	-	18	6	29 +2	27	27	
DRD-150-F14	387	65	40	-	-	-	25	8	38 +2	46	36	
DRD-225-F14	510	65	71	-	-	-	25	8	38 +2	46	36	
DRD-375-F16	560	75	80	-	-	-	32	8	45 +2	46	46	
DRD-575-F16	532	75	89	-	-	-	32	8	48 +2	46	46	
DRD-575-F25							22		57 +2		55	
DRD-880-F25	668	75	110	-	-	-	22	8	57 +2	46	55	
DRD-880-F30							27		77 +2		75	

# Copar quarter turn actuators DRD

Technical data



Actuators  
Quarter turn actuators

1.2

Ordering data – without end-position setting		Part No.	Type
Size 1		Size 77	
189 781	DRD-1-F03	189 768	DRD-77-F10
		189 769	DRD-77-F12
Size 2			
189 782	DRD-2-F03	Size 100	
189 783	DRD-2-F04	189 770	DRD-100-F12
Size 4		Size 150	
189 784	DRD-4-F04	189 772	DRD-150-F14
189 785	DRD-4-F05		
		Size 225	
		189 774	DRD-225-F14
Size 8			
189 763	DRD-8-F05	Size 375	
		189 776	DRD-375-F16
Size 14			
189 764	DRD-14-F05	Size 575	
		189 777	DRD-575-F16
Size 26		189 778	DRD-575-F25
189 765	DRD-26-F07		
		Size 880	
Size 50		189 779	DRD-880-F25
189 766	DRD-50-F07	189 780	DRD-880-F30
189 767	DRD-50-F10		



Note

Should a quarter turn actuator be required with options which exceed these, then the appropriate order code needs to be established. There is no part number for this order code; for the necessary data see → 7 / 1.2-23

Ordering data – with end-position setting		Part No.	Type
Size 8		Size 50	
189 786	DRD-8-F05-0	189 789	DRD-50-F07-0
		189 790	DRD-50-F10-0
Size 14			
189 787	DRD-14-F05-0	Size 77	
		189 791	DRD-77-F10-0
Size 26		189 792	DRD-77-F12-0
189 788	DRD-26-F07-0		
		Size 100	
		189 793	DRD-100-F12-0



Note

Should a quarter turn actuator be required with options which exceed these, then the appropriate order code needs to be established. There is no part number for this order code; for the necessary data see → 7 / 1.2-23

# Copar quarter turn actuators DRD, corrosion-resistant

Technical data



Ordering data		Ordering data	
Part No.	Type	Part No.	Type
Size 1		Size 77	
189 835	DRD-1-F03-C	189 822	DRD-77-F10-C
		189 823	DRD-77-F12-C
Size 2		Size 100	
189 836	DRD-2-F03-C	189 824	DRD-100-F12-C
189 837	DRD-2-F04-C		
Size 4		Size 150	
189 838	DRD-4-F04-C	189 826	DRD-150-F14-C
189 839	DRD-4-F05-C		
Size 8		Size 225	
189 817	DRD-8-F05-C	189 828	DRD-225-F14-C
Size 14		Size 375	
189 818	DRD-14-F05-C	189 830	DRD-375-F16-C
Size 26		Size 575	
189 819	DRD-26-F07-C	189 831	DRD-575-F16-C
		189 832	DRD-575-F25-C
Size 50		Size 880	
189 820	DRD-50-F07-C	189 833	DRD-880-F25-C
189 821	DRD-50-F10-C	189 834	DRD-880-F30-C



Note

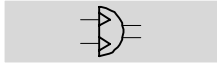
Should a quarter turn actuator be required with options which exceed these, then the appropriate order code needs to be established. There is no part number for this order code; for the necessary data see → 7 / 1.2-23

# Copar quarter turn actuators DRE

Technical data

FESTO

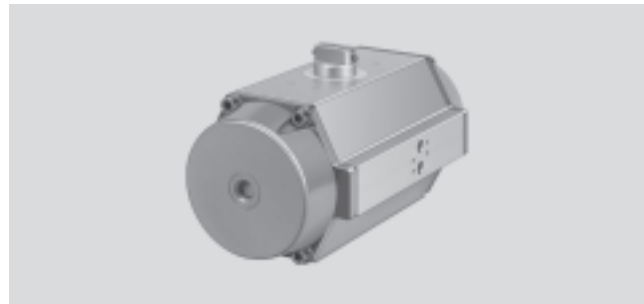
Function



- - Size  
2 ... 880

- - Torque  
2.5 ... 9,305 Nm

- - Swivel angle  
0 ... 90°



General technical data	
Design	Piston cylinder
Operating pressure <sup>1)</sup>	[bar]
Sizes 2 to 4	2.5 ... 10
Sizes 8 to 880	2 ... 10
Ambient temperature <sup>2)</sup>	[°C] -20 ... +80 °C (observe operating range of proximity sensors)
Adjustment range of swivel angle	
without end-position setting	[°] 90
with end-position setting	[°] 74 ... 98
Materials	
Housing	Anodised aluminium
Bearing end cap	
Size 2 ... 4	GRP
Size 8 ... 880	Painted aluminium
Shaft	
Size 2 ... 100	Aluminium
Size 150 ... 880	Steel
External screws	Stainless steel
Seals	Polyurethane, nitrile rubber, polyacetate

1) Minimum operating pressures vary for single-acting quarter turn actuators depending upon spring quantity.

2) Further temperature ranges upon request.

Air consumption [l/cycle] at 6 bar			
Type		Type	
DRE-2	1.02	DRE-100	24
DRE-4	1.5	DRE-150	37.2
DRE-8	2.1	DRE-225	49.8
DRE-14	6	DRE-375	102
DRE-26	9.6	DRE-575	138
DRE-50	12	DRE-880	192
DRE-77	18		

Weights upon request



# Copar quarter turn actuators DRE


Technical data



Torques [Nm] at operating pressure [bar]								
Number of springs <sup>2)</sup>	Spring torque [Nm]	Md available	Operating pressure					
			3	4	5	6	7	8
Quarter turn actuators DRE-2 <sup>1)</sup>								
6	2.7	min.	2.7	5.4	8.1	10.8	13.5	16.2
	5.4	max.	5.4	8.1	10.8	13.5	16.2	18.9
8	3.6	min.	0.9	3.6	6.3	9	11.7	14.4
	7.2	max.	4.5	7.2	9.9	12.6	15.3	18
10	4.5	min.	–	2.8	5.5	8.2	10.9	13.6
	8	max.	–	6.3	9	11.7	14.4	17.1
12	5.4	min.	–	–	2.7	5.4	8.1	10.8
	10.8	max.	–	–	8.1	10.8	13.5	16.2
14	8.3	min.	–	–	0.9	3.6	6.3	9
	12.6	max.	–	–	5.2	7.9	10.6	13.3
Quarter turn actuators DRE-4 <sup>1)</sup>								
6	6.1	min.	6.4	12.6	18.8	25	31.2	37.4
	12.2	max.	12.5	18.7	24.9	31.1	37.3	43.5
8	8.2	min.	2.2	8.4	14.6	20.8	27	33.2
	16.4	max.	10.4	16.6	22.8	29	35.2	41.4
10	10.3	min.	–	4.2	10.4	16.6	22.8	29
	20.6	max.	–	14.5	20.7	26.9	33.1	39.3
12	12.3	min.	–	–	6.4	12.6	18.8	25
	24.6	max.	–	–	18.7	24.9	31.1	37.3
14	14.4	min.	–	–	2.2	8.4	14.6	20.8
	28.8	max.	–	–	16.6	22.8	29	35.2
Quarter turn actuators DRE-8 <sup>1)</sup>								
6	12.3	min.	12.1	24.4	36.7	49.1	61.4	73.7
	24.9	max.	24.7	37	49.3	61.7	74	86.3
8	16.4	min.	3.8	16.1	28.4	40.8	53.1	65.4
	33.2	max.	20.6	32.9	45.2	57.6	69.9	82.2
10	20.5	min.	–	7.8	20.1	32.5	44.8	57.1
	41.5	max.	–	28.8	41.1	53.5	65.8	78.1
12	24.6	min.	–	–	11.8	24.2	36.5	48.8
	49.8	max.	–	–	37	49.4	61.7	74
14	28.7	min.	–	–	4.5	16.9	29.2	41.5
	57.1	max.	–	–	32.9	45.3	57.6	69.9

1) Theoretical values

2) Smaller spring quantity upon request

-  - Note

The following minimum degrees of efficiency apply for all quarter turn actuators:

DR...-1 ... 4:	≥ 80%
DR...-8 ... 880:	≥ 90%

# Copar quarter turn actuators DRE

Technical data




Actuators  
Quarter turn actuators  
1.2

Torques [Nm] at operating pressure [bar]								
Number of springs <sup>2)</sup>	Spring torque [Nm]	Md available	Operating pressure					
			3	4	5	6	7	8
Quarter turn actuators DRE-14 <sup>1)</sup>								
6	24	min.	24	47	71	95	119	143
	48	max.	48	71	95	119	143	167
8	32	min.	8	31	55	79	103	127
	64	max.	40	63	87	111	135	159
10	40	min.	–	15	39	63	87	111
	80	max.	–	55	79	103	127	151
12	48	min.	–	–	23	47	71	95
	96	max.	–	–	71	95	119	143
14	56	min.	–	–	7	31	55	79
	112	max.	–	–	63	87	111	135
Quarter turn actuators DRE-26 <sup>1)</sup>								
6	44	min.	44	88	133	177	221	275
	89	max.	89	133	178	222	266	320
8	58	min.	15	59	104	148	192	246
	118	max.	75	119	164	208	252	306
10	73	min.	–	29	74	118	162	216
	148	max.	–	104	149	193	237	291
12	88	min.	–	–	44	88	132	186
	178	max.	–	–	134	178	222	276
14	102	min.	–	–	15	59	103	157
	207	max.	–	–	120	164	208	262
Quarter turn actuators DRE-50 <sup>1)</sup>								
6	80	min.	85	169	253	337	421	505
	168	max.	173	257	341	425	509	593
8	107	min.	29	113	197	281	365	449
	224	max.	146	230	314	398	482	556
10	134	min.	–	57	141	225	309	393
	280	max.	–	203	287	371	455	539
12	160	min.	–	–	85	169	253	337
	336	max.	–	–	261	345	429	513
14	187	min.	–	–	29	113	197	281
	392	max.	–	–	234	318	402	486

1) Theoretical values

2) Smaller spring quantity upon request

-  - Note

The following minimum degrees of efficiency apply for all quarter turn actuators:

DR...-1 ... 4:	≥ 80%
DR...-8 ... 880:	≥ 90%

# Copar quarter turn actuators DRE


Technical data



Torques [Nm] at operating pressure [bar]								
Number of springs <sup>2)</sup>	Spring torque [Nm]	Md available	Operating pressure					
			3	4	5	6	7	8
Quarter turn actuators DRE-77 <sup>1)</sup>								
6	122	min.	132	260	389	517	645	773
	253	max.	263	391	520	648	776	904
8	162	min.	48	176	305	433	561	689
	337	max.	223	351	480	608	736	864
10	203	min.	-	91	220	348	476	604
	422	max.	-	310	439	567	695	823
12	244	min.	-	-	136	264	392	520
	506	max.	-	-	398	526	654	772
14	284	min.	-	-	52	180	308	436
	590	max.	-	-	358	486	614	742
Quarter turn actuators DRE-100 <sup>1)</sup>								
6	160	min.	174	343	511	680	849	1,018
	332	max.	346	515	683	852	1,021	1,190
8	213	min.	63	232	400	569	738	907
	443	max.	293	462	630	799	968	1,137
10	267	min.	-	121	289	458	627	796
	554	max.	-	408	576	745	914	1,083
12	320	min.	-	-	178	347	516	685
	665	max.	-	-	523	692	861	1,030
14	373	min.	-	-	67	236	405	574
	767	max.	-	-	470	639	808	977
Quarter turn actuators DRE-150 <sup>1)</sup>								
6	253	min.	252	505	758	1,011	1,264	1,517
	506	max.	505	758	1,011	1,264	1,517	1,770
8	337	min.	84	337	590	843	1,096	1,349
	674	max.	421	674	927	1,180	1,433	1,686
10	421	min.	-	168	421	674	927	1,180
	843	max.	-	590	843	1,096	1,349	1,602
12	506	min.	-	-	253	506	759	1,012
	1,011	max.	-	-	758	1,011	1,264	1,517
14	590	min.	-	-	84	337	590	843
	1,180	max.	-	-	674	927	1,180	1,433

1) Theoretical values

2) Smaller spring quantity upon request

-  - Note

The following minimum degrees of efficiency apply for all quarter turn actuators:

DR...-1 ... 4:	≥ 80%
DR...-8 ... 880:	≥ 90%

# Copar quarter turn actuators DRE

Technical data



Actuators  
Quarter turn actuators  
1.2

Torques [Nm] at operating pressure [bar]								
Number of springs <sup>2)</sup>	Spring torque [Nm]	Md available	Operating pressure					
			3	4	5	6	7	8
Quarter turn actuators DRE-225 <sup>1)</sup>								
6	379	min.	382	761	1,140	1,519	1,898	2,277
	756	max.	759	1,138	1,517	1,896	2,275	2,654
8	506	min.	127	506	885	1,264	1,643	2,022
	1,011	max.	632	1,011	1,390	1,769	2,148	2,527
10	632	min.	–	253	632	1,011	1,390	1,769
	1,264	max.	–	885	1,264	1,643	2,022	2,401
12	758	min.	–	–	379	758	1,137	1,516
	1,517	max.	–	–	1,138	1,517	1,896	2,275
14	885	min.	–	–	127	506	885	1,264
	1,769	max.	–	–	1,011	1,390	1,769	2,148
Quarter turn actuators DRE-375 <sup>1)</sup>								
6	632	min.	632	1,264	1,895	2,527	3,159	3,791
	1,264	max.	1,264	1,896	2,527	3,159	3,791	4,423
8	843	min.	211	843	1,474	2,106	2,738	3,370
	1,685	max.	1,053	1,685	2,316	2,948	3,580	4,212
10	1,053	min.	–	421	1,052	1,684	2,360	2,948
	2,107	max.	–	1,475	2,106	2,738	3,370	4,002
12	1,264	min.	–	–	631	1,263	1,895	2,527
	2,528	max.	–	–	1,895	2,527	3,159	3,791
14	1,475	min.	–	–	210	842	1,474	2,106
	2,949	max.	–	–	1,684	2,316	2,948	3,580
Quarter turn actuators DRE-575 <sup>1)</sup>								
6	632	min.	1,615	2,575	3,535	4,494	5,454	6,413
	1,264	max.	2,247	3,207	4,167	5,126	6,086	7,045
8	948	min.	938	1,943	2,903	3,862	4,822	5,781
	1,896	max.	1,931	2,891	3,851	4,810	5,770	6,729
10	1,264	min.	351	1,311	2,271	3,230	4,190	5,149
	2,528	max.	1,615	2,575	3,535	4,494	5,454	6,413
12	1,580	min.	–	679	1,639	2,598	3,558	4,517
	3,160	max.	–	2,259	3,219	4,178	5,138	6,097
14	1,896	min.	–	–	1,007	1,966	2,926	3,885
	3,792	max.	–	–	2,903	3,862	4,822	5,781

1) Theoretical values

2) Smaller spring quantity upon request

-  - Note

The following minimum degrees of efficiency apply for all quarter turn actuators:


DR...-1 ... 4:   ≥ 80%  
DR...-8 ... 880:   ≥ 90%

# Copar quarter turn actuators DRE

Technical data

Torques [Nm] at operating pressure [bar]								
Number of springs <sup>2)</sup>	Spring torque [Nm]	Md available	Operating pressure					
			3	4	5	6	7	8
Quarter turn actuators DRE-880 <sup>1)</sup>								
6	1,468	min.	1,470	2 939	4,408	5,877	7,346	8,815
	2,937	max.	2,939	4,408	5,877	7,346	8,815	10,284
8	1,958	min.	791	2,260	3,729	5,198	6,667	8,136
	3,616	max.	2,449	3,918	5,387	6,856	8,325	9,794
10	2,447	min.	-	982	2,451	3,920	5,389	6,858
	4,894	max.	-	3,429	4,898	6,367	7,836	9,305
12	2,937	min.	-	-	1,472	2,941	4,410	5,879
	5,873	max.	-	-	4,408	5,877	7,346	8,815
14	3,792	min.	-	-	493	1,962	3,431	4,900
	6,852	max.	-	-	3,553	5,022	6,491	7,960

- 1) Theoretical values
- 2) Smaller spring quantity upon request

 - Note

The following minimum degrees of efficiency apply for all quarter turn actuators:

DR...-1 ... 4:	≥ 80%
DR...-8 ... 880:	≥ 90%

# Copar quarter turn actuators DRE

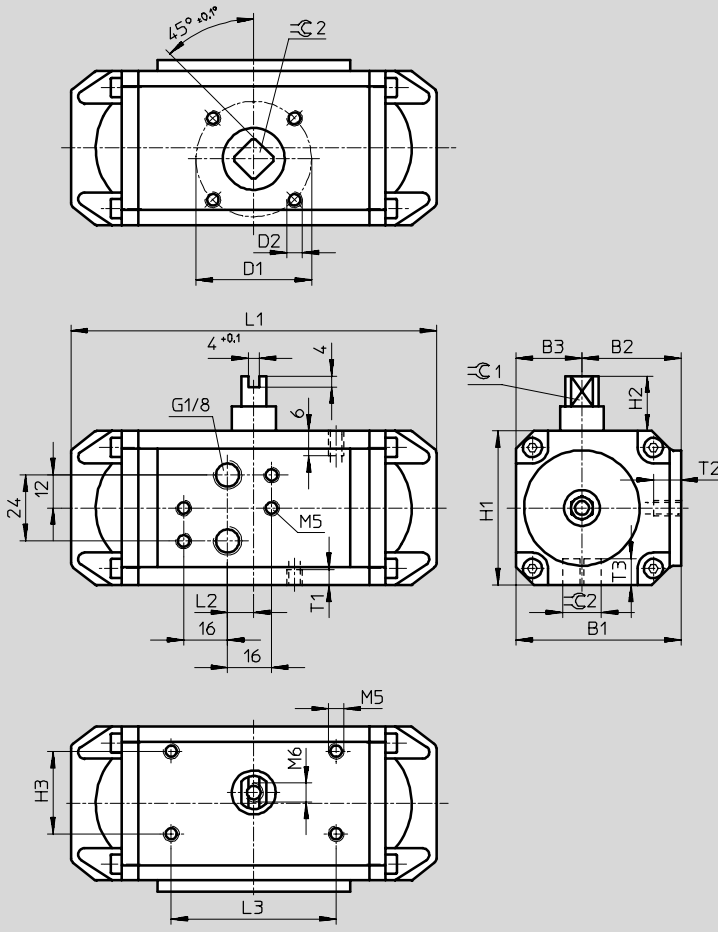
Technical data



## Dimensions

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

Size 2...4



Actuators  
Quarter turn actuators

1.2

# Copar quarter turn actuators DRE

Technical data



Type	B1	B2	B3	D1	D2	H1	H2	H3
DRE-2-F04	60	34	26	42	M5	56	20	25
DRE-2-F03				36				
DRE-4-F05	71	38	33	50	M6	66	20	30
DRE-4-F04				42	M5			

Type	L1	L2	L3	T1	T2	T3	⌀1	⌀2
				min.		+2	±0.1	H11
DRE-2-F04	133	10	50	6	7	12	9	11
DRE-2-F03						10		9
DRE-4-F05	175	24	80	7	7	16	15	14
DRE-4-F04						12		11

# Copar quarter turn actuators DRE

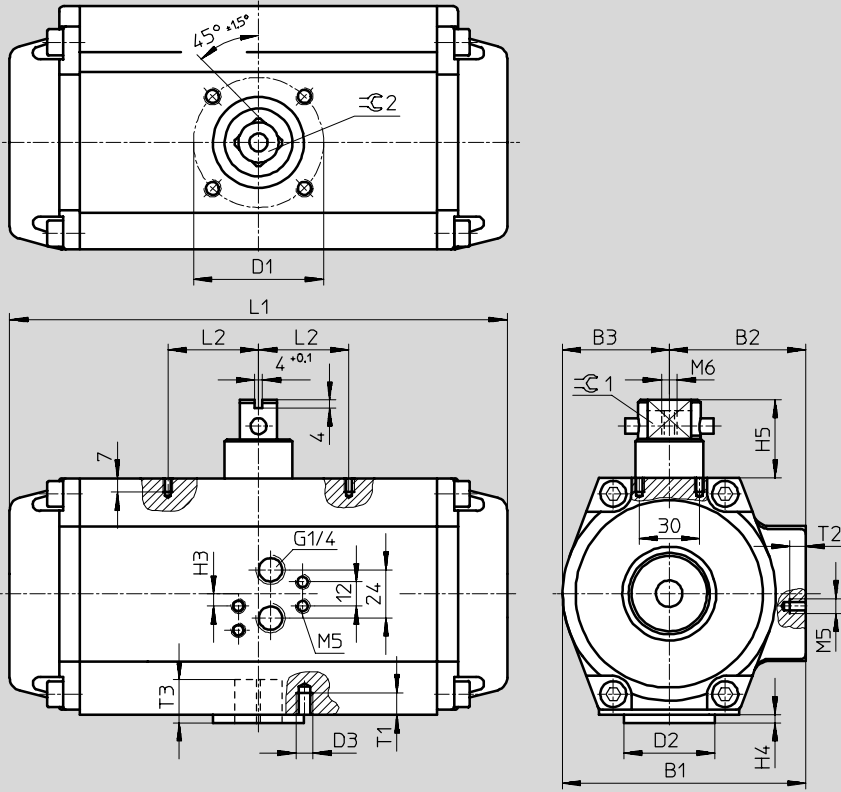
Technical data



## Dimensions

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

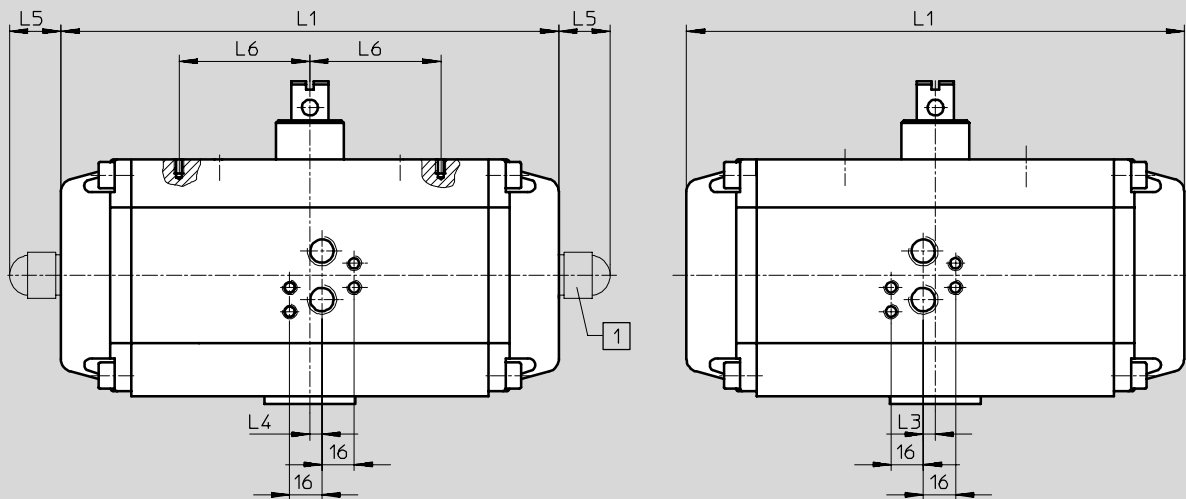
Size 8...880



## With end-position setting

Size 8...100

Size 150...880



1 End-position setting



# Copar quarter turn actuators DRE

Technical data



Type	B1	B2	B3	D1 ∅	D2 ∅ f8	D3 ∅	H1	H2	H3	H4 max.	H5 +0.2/-0.5
DRE-8-F05	93.5	52.5	41	50	35	M6	46	46.5	-	3	20
DRE-14-F05	122	67	55	50	35	M6	59.5	61.5	-	3	20
DRE-26-F07	146	79	67	70	55	M8	71.5	74.5	-	3	20
DRE-50-F07	172	94	78	70	55	M8	81.5	84.5	-	3	20
DRE-50-F10				102	70	M10					30
DRE-77-F10	189.5	99.5	90	102	70	M10	94	98	-	3	30
DRE-77-F12				125	85	M12					
DRE-100-F12	216	114	102	125	85	M12	106.5	111.5	-	3	30
DRE-150-F14	254	135	119	140	100	M16	136	136	-	4	30
DRE-225-F14	254	135	119	140	100	M16	136	136	-	4	30
DRE-375-F16	344	172	172	165	130	M20	172	172	6	5	30
DRE-575-F16	422	211	211	165	130	M20	211	211	6	5	30
DRE-575-F25				254	200	M16					
DRE-880-F25	450	225	225	254	200	M16	225	225	6	5	30
DRE-880-F30				298	230	M20					

Type	L1	L2	L3	L4	L5	L6	T1	T2	T3	≈C1	≈C2 H11
DRE-8-F05	204	40	-	-	24.5	-	9	5	17 +1	14	14
DRE-14-F05	213	40	-	-	29.5			6	17 +1	14	14
DRE-26-F07	266	40	-	-	30	65	12	6	21 +1	17	17
DRE-50-F07	354	40	-	15	33	65	13	6	19 +1	17	17
DRE-50-F10							16		24 +1	22	22
DRE-77-F10	411	65	-	15	38	-	16	6	25 +1	22	22
DRE-77-F12							18		30 +1	27	27
DRE-100-F12	411	65	-	15	38	-	18	6	29 +2	27	27
DRE-150-F14	387	65	40	-	-	-	25	8	38 +2	46	36
DRE-225-F14	510	65	71	-	-	-	25	8	38 +2	46	36
DRE-375-F16	560	75	80	-	-	-	32	8	45 +2	46	46
DRE-575-F16	532	75	89	-	-	-	32	8	48 +2	46	46
DRE-575-F25							22		57 +2		55
DRE-880-F25	668	75	110	-	-	-	22	8	57 +2	46	55
DRE-880-F30							27		77 +2		75

# Copar quarter turn actuators DRE

Technical data



Ordering data – without end-position setting			
Spring-force closing		Spring-force opening	
Part No.	Type	Part No.	Type
<b>Size 2</b>			
189 840	DRE-2-F03-Q06-FS	189 906	DRE-2-F03-Q06-FO
189 841	DRE-2-F04-Q06-FS	189 907	DRE-2-F04-Q06-FO
189 842	DRE-2-F03-Q08-FS	189 908	DRE-2-F03-Q08-FO
189 843	DRE-2-F04-Q08-FS	189 909	DRE-2-F04-Q08-FO
189 900	DRE-2-F03-Q10-FS	189 910	DRE-2-F03-Q10-FO
189 901	DRE-2-F04-Q10-FS	189 911	DRE-2-F04-Q10-FO
189 902	DRE-2-F03-Q12-FS	189 912	DRE-2-F03-Q12-FO
189 903	DRE-2-F04-Q12-FS	189 913	DRE-2-F04-Q12-FO
189 904	DRE-2-F03-Q14-FS	189 914	DRE-2-F03-Q14-FO
189 905	DRE-2-F04-Q14-FS	189 915	DRE-2-F04-Q14-FO
<b>Size 4</b>			
189 956	DRE-4-F04-Q06-FS	189 966	DRE-4-F04-Q06-FO
189 957	DRE-4-F05-Q06-FS	189 967	DRE-4-F05-Q06-FO
189 958	DRE-4-F04-Q08-FS	189 968	DRE-4-F04-Q08-FO
189 959	DRE-4-F05-Q08-FS	189 969	DRE-4-F05-Q08-FO
189 960	DRE-4-F04-Q10-FS	189 970	DRE-4-F04-Q10-FO
189 961	DRE-4-F05-Q10-FS	189 971	DRE-4-F05-Q10-FO
189 962	DRE-4-F04-Q12-FS	189 972	DRE-4-F04-Q12-FO
189 963	DRE-4-F05-Q12-FS	189 973	DRE-4-F05-Q12-FO
189 964	DRE-4-F04-Q14-FS	189 974	DRE-4-F04-Q14-FO
189 965	DRE-4-F05-Q14-FS	189 975	DRE-4-F05-Q14-FO
<b>Size 8</b>			
190 017	DRE-8-F05-Q06-FS	190 022	DRE-8-F05-Q06-FO
190 018	DRE-8-F05-Q08-FS	190 023	DRE-8-F05-Q08-FO
190 019	DRE-8-F05-Q10-FS	190 024	DRE-8-F05-Q10-FO
190 020	DRE-8-F05-Q12-FS	190 025	DRE-8-F05-Q12-FO
190 021	DRE-8-F05-Q14-FS	190 026	DRE-8-F05-Q14-FO
<b>Size 14</b>			
190 057	DRE-14-F05-Q06-FS	190 062	DRE-14-F05-Q06-FO
190 058	DRE-14-F05-Q08-FS	190 063	DRE-14-F05-Q08-FO
190 059	DRE-14-F05-Q10-FS	190 064	DRE-14-F05-Q10-FO
190 060	DRE-14-F05-Q12-FS	190 065	DRE-14-F05-Q12-FO
190 061	DRE-14-F05-Q14-FS	190 066	DRE-14-F05-Q14-FO
<b>Size 26</b>			
190 097	DRE-26-F07-Q06-FS	190 102	DRE-26-F07-Q06-FO
190 098	DRE-26-F07-Q08-FS	190 103	DRE-26-F07-Q08-FO
190 099	DRE-26-F07-Q10-FS	190 104	DRE-26-F07-Q10-FO
190 100	DRE-26-F07-Q12-FS	190 105	DRE-26-F07-Q12-FO
190 101	DRE-26-F07-Q14-FS	190 106	DRE-26-F07-Q14-FO



Note

Should a quarter turn actuator be required with options which exceed these, then the appropriate order code needs to be established. There is no part number for this order code; for the necessary data see ➔ 7 / 1.2-23

# Copar quarter turn actuators DRE

Technical data



Ordering data – without end-position setting			
Spring-force closing		Spring-force opening	
Part No.	Type	Part No.	Type
Size 50			
190 137	DRE-50-F07-Q06-FS	190 147	DRE-50-F07-Q06-FO
190 138	DRE-50-F10-Q06-FS	190 148	DRE-50-F10-Q06-FO
190 139	DRE-50-F07-Q08-FS	190 149	DRE-50-F07-Q08-FO
190 140	DRE-50-F10-Q08-FS	190 150	DRE-50-F10-Q08-FO
190 141	DRE-50-F07-Q10-FS	190 151	DRE-50-F07-Q10-FO
190 142	DRE-50-F10-Q10-FS	190 152	DRE-50-F10-Q10-FO
190 143	DRE-50-F07-Q12-FS	190 153	DRE-50-F07-Q12-FO
190 144	DRE-50-F10-Q12-FS	190 154	DRE-50-F10-Q12-FO
190 145	DRE-50-F07-Q14-FS	190 155	DRE-50-F07-Q14-FO
190 146	DRE-50-F10-Q14-FS	190 156	DRE-50-F10-Q14-FO
Size 77			
190 217	DRE-77-F10-Q06-FS	190 227	DRE-77-F10-Q06-FO
190 218	DRE-77-F12-Q06-FS	190 228	DRE-77-F12-Q06-FO
190 219	DRE-77-F10-Q08-FS	190 229	DRE-77-F10-Q08-FO
190 220	DRE-77-F12-Q08-FS	190 230	DRE-77-F12-Q08-FO
190 221	DRE-77-F10-Q10-FS	190 231	DRE-77-F10-Q10-FO
190 222	DRE-77-F12-Q10-FS	190 232	DRE-77-F12-Q10-FO
190 223	DRE-77-F10-Q12-FS	190 233	DRE-77-F10-Q12-FO
190 224	DRE-77-F12-Q12-FS	190 234	DRE-77-F12-Q12-FO
190 225	DRE-77-F10-Q14-FS	190 235	DRE-77-F10-Q14-FO
190 226	DRE-77-F12-Q14-FS	190 236	DRE-77-F12-Q14-FO
Size 100			
190 297	DRE-100-F12-Q06-FS	190 302	DRE-100-F12-Q06-FO
190 298	DRE-100-F12-Q08-FS	190 303	DRE-100-F12-Q08-FO
190 299	DRE-100-F12-Q10-FS	190 304	DRE-100-F12-Q10-FO
190 300	DRE-100-F12-Q12-FS	190 305	DRE-100-F12-Q12-FO
190 301	DRE-100-F12-Q14-FS	190 306	DRE-100-F12-Q14-FO
Size 150			
190 338	DRE-150-F14-Q06-FS	190 348	DRE-150-F14-Q06-FO
190 340	DRE-150-F14-Q08-FS	190 350	DRE-150-F14-Q08-FO
190 342	DRE-150-F14-Q10-FS	190 352	DRE-150-F14-Q10-FO
190 344	DRE-150-F14-Q12-FS	190 354	DRE-150-F14-Q12-FO
190 346	DRE-150-F14-Q14-FS	190 356	DRE-150-F14-Q14-FO



Note

Should a quarter turn actuator be required with options which exceed these, then the appropriate order code needs to be established. There is no part number for this order code; for the necessary data see → 7 / 1.2-23

# Copar quarter turn actuators DRE

Technical data



Ordering data – without end-position setting			
Spring-force closing		Spring-force opening	
Part No.	Type	Part No.	Type
<b>Size 225</b>			
190 398	DRE-225-F14-Q06-FS	190 408	DRE-225-F14-Q06-FO
190 400	DRE-225-F14-Q08-FS	190 410	DRE-225-F14-Q08-FO
190 402	DRE-225-F14-Q10-FS	190 412	DRE-225-F14-Q10-FO
190 404	DRE-225-F14-Q12-FS	190 414	DRE-225-F14-Q12-FO
190 406	DRE-225-F14-Q14-FS	190 416	DRE-225-F14-Q14-FO
<b>Size 375</b>			
190 458	DRE-375-F16-Q06-FS	190 468	DRE-375-F16-Q06-FO
190 460	DRE-375-F16-Q08-FS	190 470	DRE-375-F16-Q08-FO
190 462	DRE-375-F16-Q10-FS	190 472	DRE-375-F16-Q10-FO
190 464	DRE-375-F16-Q12-FS	190 474	DRE-375-F16-Q12-FO
190 466	DRE-375-F16-Q14-FS	190 476	DRE-375-F16-Q14-FO
<b>Size 575</b>			
190 517	DRE-575-F16-Q06-FS	190 527	DRE-575-F16-Q06-FO
190 518	DRE-575-F25-Q06-FS	190 528	DRE-575-F25-Q06-FO
190 519	DRE-575-F16-Q09-FS	190 529	DRE-575-F16-Q09-FO
190 520	DRE-575-F25-Q09-FS	190 530	DRE-575-F25-Q09-FO
190 521	DRE-575-F16-Q12-FS	190 531	DRE-575-F16-Q12-FO
190 522	DRE-575-F25-Q12-FS	190 532	DRE-575-F25-Q12-FO
190 523	DRE-575-F16-Q15-FS	190 533	DRE-575-F16-Q15-FO
190 524	DRE-575-F25-Q15-FS	190 534	DRE-575-F25-Q15-FO
190 525	DRE-575-F16-Q18-FS	190 535	DRE-575-F16-Q18-FO
190 526	DRE-575-F25-Q18-FS	190 536	DRE-575-F25-Q18-FO
<b>Size 880</b>			
189 719	DRE-880-F25-Q06-FS	189 729	DRE-880-F25-Q06-FO
189 720	DRE-880-F30-Q06-FS	189 730	DRE-880-F30-Q06-FO
189 721	DRE-880-F25-Q08-FS	189 731	DRE-880-F25-Q08-FO
189 722	DRE-880-F30-Q08-FS	189 732	DRE-880-F30-Q08-FO
189 723	DRE-880-F25-Q10-FS	189 733	DRE-880-F25-Q10-FO
189 724	DRE-880-F30-Q10-FS	189 734	DRE-880-F30-Q10-FO
189 725	DRE-880-F25-Q12-FS	189 735	DRE-880-F25-Q12-FO
189 726	DRE-880-F30-Q12-FS	189 736	DRE-880-F30-Q12-FO
189 727	DRE-880-F25-Q14-FS	189 737	DRE-880-F25-Q14-FO
189 728	DRE-880-F30-Q14-FS	189 738	DRE-880-F30-Q14-FO



Note

Should a quarter turn actuator be required with options which exceed these, then the appropriate order code needs to be established. There is no part number for this order code; for the necessary data see → 7 / 1.2-23

# Copar quarter turn actuators DRE

Technical data

FESTO

Ordering data – with end-position setting			
Spring-force closing		Spring-force opening	
Part No.	Type	Part No.	Type
<b>Size 8</b>			
190 027	DRE-8-F05-Q06-FS-O	190 032	DRE-8-F05-Q06-FO-O
190 028	DRE-8-F05-Q08-FS-O	190 033	DRE-8-F05-Q08-FO-O
190 029	DRE-8-F05-Q10-FS-O	190 034	DRE-8-F05-Q10-FO-O
190 030	DRE-8-F05-Q12-FS-O	190 035	DRE-8-F05-Q12-FO-O
190 031	DRE-8-F05-Q14-FS-O	190 036	DRE-8-F05-Q14-FO-O
<b>Size 14</b>			
190 067	DRE-14-F05-Q06-FS-O	190 072	DRE-14-F05-Q06-FO-O
190 068	DRE-14-F05-Q08-FS-O	190 073	DRE-14-F05-Q08-FO-O
190 069	DRE-14-F05-Q10-FS-O	190 074	DRE-14-F05-Q10-FO-O
190 070	DRE-14-F05-Q12-FS-O	190 075	DRE-14-F05-Q12-FO-O
190 071	DRE-14-F05-Q14-FS-O	190 076	DRE-14-F05-Q14-FO-O
<b>Size 26</b>			
190 107	DRE-26-F07-Q06-FS-O	190 112	DRE-26-F07-Q06-FO-O
190 108	DRE-26-F07-Q08-FS-O	190 113	DRE-26-F07-Q08-FO-O
190 109	DRE-26-F07-Q10-FS-O	190 114	DRE-26-F07-Q10-FO-O
190 110	DRE-26-F07-Q12-FS-O	190 115	DRE-26-F07-Q12-FO-O
190 111	DRE-26-F07-Q14-FS-O	190 116	DRE-26-F07-Q14-FO-O
<b>Size 50</b>			
190 157	DRE-50-F07-Q06-FS-O	190 167	DRE-50-F07-Q06-FO-O
190 158	DRE-50-F10-Q06-FS-O	190 168	DRE-50-F10-Q06-FO-O
190 159	DRE-50-F07-Q08-FS-O	190 169	DRE-50-F07-Q08-FO-O
190 160	DRE-50-F10-Q08-FS-O	190 170	DRE-50-F10-Q08-FO-O
190 161	DRE-50-F07-Q10-FS-O	190 171	DRE-50-F07-Q10-FO-O
190 162	DRE-50-F10-Q10-FS-O	190 172	DRE-50-F10-Q10-FO-O
190 163	DRE-50-F07-Q12-FS-O	190 173	DRE-50-F07-Q12-FO-O
190 164	DRE-50-F10-Q12-FS-O	190 174	DRE-50-F10-Q12-FO-O
190 165	DRE-50-F07-Q14-FS-O	190 175	DRE-50-F07-Q14-FO-O
190 166	DRE-50-F10-Q14-FS-O	190 176	DRE-50-F10-Q14-FO-O
<b>Size 77</b>			
190 237	DRE-77-F10-Q06-FS-O	190 247	DRE-77-F10-Q06-FO-O
190 238	DRE-77-F12-Q06-FS-O	190 248	DRE-77-F12-Q06-FO-O
190 239	DRE-77-F10-Q08-FS-O	190 249	DRE-77-F10-Q08-FO-O
190 240	DRE-77-F12-Q08-FS-O	190 250	DRE-77-F12-Q08-FO-O
190 241	DRE-77-F10-Q10-FS-O	190 251	DRE-77-F10-Q10-FO-O
190 242	DRE-77-F12-Q10-FS-O	190 252	DRE-77-F12-Q10-FO-O
190 243	DRE-77-F10-Q12-FS-O	190 253	DRE-77-F10-Q12-FO-O
190 244	DRE-77-F12-Q12-FS-O	190 254	DRE-77-F12-Q12-FO-O
190 245	DRE-77-F10-Q14-FS-O	190 255	DRE-77-F10-Q14-FO-O
190 246	DRE-77-F12-Q14-FS-O	190 256	DRE-77-F12-Q14-FO-O
<b>Size 100</b>			
190 307	DRE-100-F12-Q06-FS-O	190 312	DRE-100-F12-Q06-FO-O
190 308	DRE-100-F12-Q08-FS-O	190 313	DRE-100-F12-Q08-FO-O
190 309	DRE-100-F12-Q10-FS-O	190 314	DRE-100-F12-Q10-FO-O
190 310	DRE-100-F12-Q12-FS-O	190 315	DRE-100-F12-Q12-FO-O
190 311	DRE-100-F12-Q14-FS-O	190 316	DRE-100-F12-Q14-FO-O



Note

Should a quarter turn actuator be required with options which exceed these, then the appropriate order code needs to be established. There is no part number for this order code; for the necessary data see → 7 / 1.2-23

# Copar quarter turn actuators DRE, corrosion-resistant

Technical data



Ordering data		Ordering data	
Spring-force closing		Spring-force opening	
Part No.	Type	Part No.	Type
<b>Size 2</b>			
189 936	DRE-2-F03-Q06-FS-C	189 946	DRE-2-F03-Q06-FO-C
189 937	DRE-2-F04-Q06-FS-C	189 947	DRE-2-F04-Q06-FO-C
189 938	DRE-2-F03-Q08-FS-C	189 948	DRE-2-F03-Q08-FO-C
189 939	DRE-2-F04-Q08-FS-C	189 949	DRE-2-F04-Q08-FO-C
189 940	DRE-2-F03-Q10-FS-C	189 950	DRE-2-F03-Q10-FO-C
189 941	DRE-2-F04-Q10-FS-C	189 951	DRE-2-F04-Q10-FO-C
189 942	DRE-2-F03-Q12-FS-C	189 952	DRE-2-F03-Q12-FO-C
189 943	DRE-2-F04-Q12-FS-C	189 953	DRE-2-F04-Q12-FO-C
189 944	DRE-2-F03-Q14-FS-C	189 954	DRE-2-F03-Q14-FO-C
189 945	DRE-2-F04-Q14-FS-C	189 955	DRE-2-F04-Q14-FO-C
<b>Size 4</b>			
189 997	DRE-4-F04-Q06-FS-C	190 007	DRE-4-F04-Q06-FO-C
189 998	DRE-4-F05-Q06-FS-C	190 008	DRE-4-F05-Q06-FO-C
189 999	DRE-4-F04-Q08-FS-C	190 009	DRE-4-F04-Q08-FO-C
190 000	DRE-4-F05-Q08-FS-C	190 010	DRE-4-F05-Q08-FO-C
190 001	DRE-4-F04-Q10-FS-C	190 011	DRE-4-F04-Q10-FO-C
190 002	DRE-4-F05-Q10-FS-C	190 012	DRE-4-F05-Q10-FO-C
190 003	DRE-4-F04-Q12-FS-C	190 013	DRE-4-F04-Q12-FO-C
190 004	DRE-4-F05-Q12-FS-C	190 014	DRE-4-F05-Q12-FO-C
190 005	DRE-4-F04-Q14-FS-C	190 015	DRE-4-F04-Q14-FO-C
190 006	DRE-4-F05-Q14-FS-C	190 016	DRE-4-F05-Q14-FO-C
<b>Size 8</b>			
190 047	DRE-8-F05-Q06-FS-C	190 052	DRE-8-F05-Q06-FO-C
190 048	DRE-8-F05-Q08-FS-C	190 053	DRE-8-F05-Q08-FO-C
190 049	DRE-8-F05-Q10-FS-C	190 054	DRE-8-F05-Q10-FO-C
190 050	DRE-8-F05-Q12-FS-C	190 055	DRE-8-F05-Q12-FO-C
190 051	DRE-8-F05-Q14-FS-C	190 056	DRE-8-F05-Q14-FO-C
<b>Size 14</b>			
190 087	DRE-14-F05-Q06-FS-C	190 092	DRE-14-F05-Q06-FO-C
190 088	DRE-14-F05-Q08-FS-C	190 093	DRE-14-F05-Q08-FO-C
190 089	DRE-14-F05-Q10-FS-C	190 094	DRE-14-F05-Q10-FO-C
190 090	DRE-14-F05-Q12-FS-C	190 095	DRE-14-F05-Q12-FO-C
190 091	DRE-14-F05-Q14-FS-C	190 096	DRE-14-F05-Q14-FO-C
<b>Size 26</b>			
190 127	DRE-26-F07-Q06-FS-C	190 132	DRE-26-F07-Q06-FO-C
190 128	DRE-26-F07-Q08-FS-C	190 133	DRE-26-F07-Q08-FO-C
190 129	DRE-26-F07-Q10-FS-C	190 134	DRE-26-F07-Q10-FO-C
190 130	DRE-26-F07-Q12-FS-C	190 135	DRE-26-F07-Q12-FO-C
190 131	DRE-26-F07-Q14-FS-C	190 136	DRE-26-F07-Q14-FO-C



Note

Should a quarter turn actuator be required with options which exceed these, then the appropriate order code needs to be established. There is no part number for this order code; for the necessary data see → 7 / 1.2-23

# Copar quarter turn actuators DRE, corrosion-resistant

Technical data

FESTO

Ordering data		Ordering data	
Spring-force closing		Spring-force opening	
Part No.	Type	Part No.	Type
<b>Size 50</b>			
190 197	DRE-50-F07-Q06-FS-C	190 207	DRE-50-F07-Q06-FO-C
190 198	DRE-50-F10-Q06-FS-C	190 208	DRE-50-F10-Q06-FO-C
190 199	DRE-50-F07-Q08-FS-C	190 209	DRE-50-F07-Q08-FO-C
190 200	DRE-50-F10-Q08-FS-C	190 210	DRE-50-F10-Q08-FO-C
190 201	DRE-50-F07-Q10-FS-C	190 211	DRE-50-F07-Q10-FO-C
190 202	DRE-50-F10-Q10-FS-C	190 212	DRE-50-F10-Q10-FO-C
190 203	DRE-50-F07-Q12-FS-C	190 213	DRE-50-F07-Q12-FO-C
190 204	DRE-50-F10-Q12-FS-C	190 214	DRE-50-F10-Q12-FO-C
190 205	DRE-50-F07-Q14-FS-C	190 215	DRE-50-F07-Q14-FO-C
190 206	DRE-50-F10-Q14-FS-C	190 216	DRE-50-F10-Q14-FO-C
<b>Size 77</b>			
190 277	DRE-77-F10-Q06-FS-C	190 287	DRE-77-F10-Q06-FO-C
190 278	DRE-77-F12-Q06-FS-C	190 288	DRE-77-F12-Q06-FO-C
190 279	DRE-77-F10-Q08-FS-C	190 289	DRE-77-F10-Q08-FO-C
190 280	DRE-77-F12-Q08-FS-C	190 290	DRE-77-F12-Q08-FO-C
190 281	DRE-77-F10-Q10-FS-C	190 291	DRE-77-F10-Q10-FO-C
190 282	DRE-77-F12-Q10-FS-C	190 292	DRE-77-F12-Q10-FO-C
190 283	DRE-77-F10-Q12-FS-C	190 293	DRE-77-F10-Q12-FO-C
190 284	DRE-77-F12-Q12-FS-C	190 294	DRE-77-F12-Q12-FO-C
190 285	DRE-77-F10-Q14-FS-C	190 295	DRE-77-F10-Q14-FO-C
190 286	DRE-77-F12-Q14-FS-C	190 296	DRE-77-F12-Q14-FO-C
<b>Size 100</b>			
190 327	DRE-100-F12-Q06-FS-C	190 332	DRE-100-F12-Q06-FO-C
190 328	DRE-100-F12-Q08-FS-C	190 333	DRE-100-F12-Q08-FO-C
190 329	DRE-100-F12-Q10-FS-C	190 334	DRE-100-F12-Q10-FO-C
190 330	DRE-100-F12-Q12-FS-C	190 335	DRE-100-F12-Q12-FO-C
190 331	DRE-100-F12-Q14-FS-C	190 336	DRE-100-F12-Q14-FO-C
<b>Size 150</b>			
190 378	DRE-150-F14-Q06-FS-C	190 388	DRE-150-F14-Q06-FO-C
190 380	DRE-150-F14-Q08-FS-C	190 390	DRE-150-F14-Q08-FO-C
190 382	DRE-150-F14-Q10-FS-C	190 392	DRE-150-F14-Q10-FO-C
190 384	DRE-150-F14-Q12-FS-C	190 394	DRE-150-F14-Q12-FO-C
190 386	DRE-150-F14-Q14-FS-C	190 396	DRE-150-F14-Q14-FO-C



Note

Should a quarter turn actuator be required with options which exceed these, then the appropriate order code needs to be established. There is no part number for this order code; for the necessary data see → 7 / 1.2-23

# Copar quarter turn actuators DRE, corrosion-resistant

Technical data



Actuators  
Quarter turn actuators

1.2

Ordering data		Ordering data	
Spring-force closing		Spring-force opening	
Part No.	Type	Part No.	Type
<b>Size 225</b>			
190 438	DRE-225-F14-Q06-FS-C	190 448	DRE-225-F14-Q06-FO-C
190 440	DRE-225-F14-Q08-FS-C	190 450	DRE-225-F14-Q08-FO-C
190 442	DRE-225-F14-Q10-FS-C	190 452	DRE-225-F14-Q10-FO-C
190 444	DRE-225-F14-Q12-FS-C	190 454	DRE-225-F14-Q12-FO-C
190 446	DRE-225-F14-Q14-FS-C	190 456	DRE-225-F14-Q14-FO-C
<b>Size 375</b>			
190 498	DRE-375-F16-Q06-FS-C	190 508	DRE-375-F16-Q06-FO-C
190 500	DRE-375-F16-Q08-FS-C	190 510	DRE-375-F16-Q08-FO-C
190 502	DRE-375-F16-Q10-FS-C	190 512	DRE-375-F16-Q10-FO-C
190 504	DRE-375-F16-Q12-FS-C	190 514	DRE-375-F16-Q12-FO-C
190 506	DRE-375-F16-Q14-FS-C	190 516	DRE-375-F16-Q14-FO-C
<b>Size 575</b>			
189 699	DRE-575-F16-Q06-FS-C	189 709	DRE-575-F16-Q06-FO-C
189 700	DRE-575-F25-Q06-FS-C	189 710	DRE-575-F25-Q06-FO-C
189 701	DRE-575-F16-Q09-FS-C	189 711	DRE-575-F16-Q09-FO-C
189 702	DRE-575-F25-Q09-FS-C	189 712	DRE-575-F25-Q09-FO-C
189 703	DRE-575-F16-Q12-FS-C	189 713	DRE-575-F16-Q12-FO-C
189 704	DRE-575-F25-Q12-FS-C	189 714	DRE-575-F25-Q12-FO-C
189 705	DRE-575-F16-Q15-FS-C	189 715	DRE-575-F16-Q15-FO-C
189 706	DRE-575-F25-Q15-FS-C	189 716	DRE-575-F25-Q15-FO-C
189 707	DRE-575-F16-Q18-FS-C	189 717	DRE-575-F16-Q18-FO-C
189 708	DRE-575-F25-Q18-FS-C	189 718	DRE-575-F25-Q18-FO-C
<b>Size 880</b>			
189 759	DRE-880-F25-Q06-FS-C	189 850	DRE-880-F25-Q06-FO-C
189 760	DRE-880-F30-Q06-FS-C	189 851	DRE-880-F30-Q06-FO-C
189 761	DRE-880-F25-Q08-FS-C	189 852	DRE-880-F25-Q08-FO-C
189 762	DRE-880-F30-Q08-FS-C	189 853	DRE-880-F30-Q08-FO-C
189 844	DRE-880-F25-Q10-FS-C	189 854	DRE-880-F25-Q10-FO-C
189 845	DRE-880-F30-Q10-FS-C	189 855	DRE-880-F30-Q10-FO-C
189 846	DRE-880-F25-Q12-FS-C	189 856	DRE-880-F25-Q12-FO-C
189 847	DRE-880-F30-Q12-FS-C	189 857	DRE-880-F30-Q12-FO-C
189 848	DRE-880-F25-Q14-FS-C	189 858	DRE-880-F25-Q14-FO-C
189 849	DRE-880-F30-Q14-FS-C	189 859	DRE-880-F30-Q14-FO-C



Note

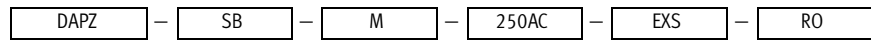
Should a quarter turn actuator be required with options which exceed these, then the appropriate order code needs to be established. There is no part number for this order code; for the necessary data see

➔ 7 / 1.2-23



# End-position sensing attachments DAPZ

Type code



**Type**

DAPZ	End-position sensing attachment
------	---------------------------------

**Specification**

SB	Sensor box
----	------------

**Measuring principle**

I	Inductive
M	Electrical, micro switch

**Operating voltage**

25DC	25 V DC
30DC	30 V DC
36DC	36 V DC
250AC	250 V AC

**Design**

EX	Explosion-proof
D	Display
S	Square design
R	Round design
A	AS-interface connection
M	Solenoid plug

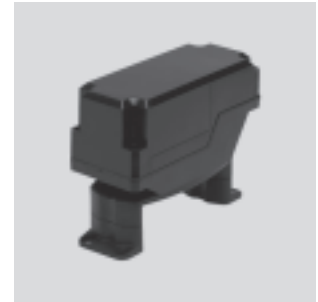
**Variant**

RO	Foot height fixed
AR	Foot height adjustable

## End-position sensing attachments DAPZ, square design

Technical data

- Interface to the drive to Namur VDI/VDE 3845
- Simple and quick assembly and connection
- Integrated solenoid valve actuation
- Fully assembled and tested unit for the AS-interface



Technical data – Electrical sensing		
	Standard	Explosion-proof
Operating voltage range [V AC]	0 ... 250	0 ... 250
Max. switching capacity	16 A, 250 V AC	16 A, 250 V AC
Switching element function	Changeover switch	Changeover switch
Electrical connection	M20x1.5	M20x1.5
Display	Yes	No
Temperature range [°C]	-25 ... +85	-25 ... +85
Protection class	Housing IP65	Housing IP65
CE symbol	Yes	Yes
Corrosion resistance class CRC <sup>1)</sup>	2	2

1) Corrosion resistance class 2 according to Festo standard 940 070  
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Technical data – Inductive sensing		
Operating voltage range [V DC]	0 ... 30	
Switching element function	NC contact	
Electrical connection	AS-interface flat cable plug	
Display	Yes	
Minimum service life	2 x 10 <sup>5</sup> cycles	
Temperature range [°C]	-25 ... +85	
Protection class	Housing IP65	
CE symbol	Yes	
Protection against short circuit	Yes	
Protection against polarity reversal	For operating voltage	
Corrosion resistance class CRC <sup>1)</sup>	2	

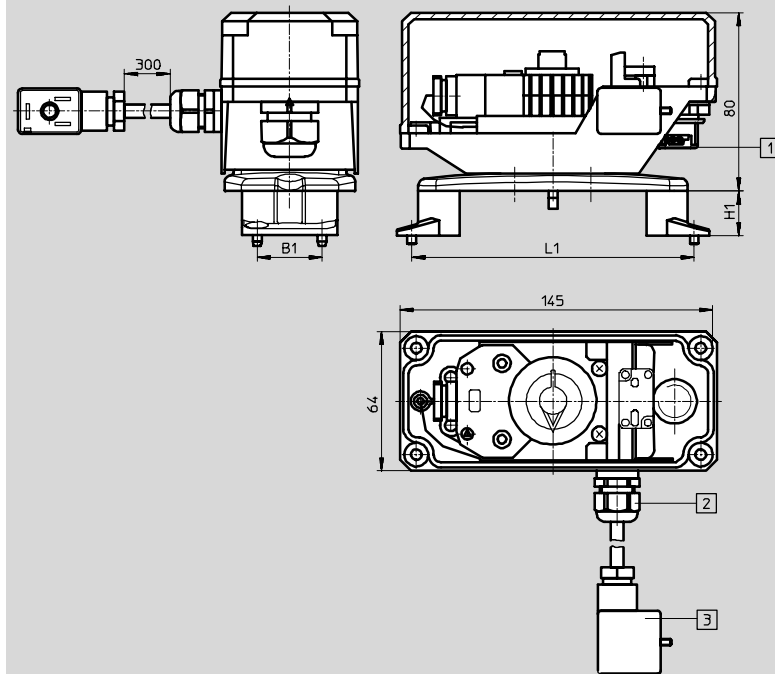
1) Corrosion resistance class 2 according to Festo standard 940 070  
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Materials	Electrical sensing		Inductive sensing
	Standard	Explosion-proof	
Housing socket	Polyamide, black	Polyamide, black	Polyamide, black
Housing cover	Polycarbonate, transparent	Polyamide, black	Polycarbonate, transparent
Seal	Silicone, ethylene propylene rubber or nitrile rubber	Ethylene propylene rubber	Silicone, ethylene propylene rubber or nitrile rubber

# End-position sensing attachments DAPZ, square design

Technical data

**Dimensions** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)



1 Connection for AS-interface flat cable

2 Cable conduit fitting M12x1.5

3 Solenoid plug

	B1	L1	H1
<b>Feet mounted inwards</b>			
Foot 20	30	80	20
Foot 30	30	80	30
Foot 50 (order accessories separately)	30	80	50
<b>Feet mounted outwards</b>			
Foot 20	30	130	20
Foot 30	30	130	30
Foot 50 (order accessories separately)	30	130	50
<b>Mounting with adapter (order accessories separately)</b>			
DAPZ-SBZ-K0-RO	25	50	20
DAPZ-SBZ-K3-RO	30	150	30

<b>Ordering data</b>				
Measuring principle	Operating voltage	Design	Part No.	Type
Electrical	250 V AC	Display, solenoid plug	<b>534 468</b>	<b>DAPZ-SB-M-250AC-DSM-RO</b>
Electrical	250 V AC	Explosion-proof	<b>534 470</b>	<b>DAPZ-SB-M-250AC-EXS-RO</b>
Inductive	30 V DC	Display, AS-interface connection, solenoid plug	<b>534 473</b>	<b>DAPZ-SB-I-30DC-DSAM-RO</b>

# End-position sensing attachments DAPZ, round design, variant RO

Technical data

- Interface to the drive to Namur VDI/VDE 3845
- Simple and quick assembly and connection
- Integrated solenoid valve actuation
- Fully assembled and tested unit for the AS-interface



Technical data – Electrical sensing		
Operating voltage range	[V AC]	0 ... 250
Max. switching capacity		16 A, 250 V AC
Switching element function		Changeover switch
Electrical connection		M20x1.5
Display		Yes
Temperature range	[°C]	-25 ... +100
Protection class		Housing IP65
CE symbol		Yes
Corrosion resistance class CRC <sup>1)</sup>		2

1) Corrosion resistance class 2 according to Festo standard 940 070  
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Technical data – Inductive sensing			
	Standard	Namur	
Operating voltage range	[V DC]	0 ... 30	0 ... 25
Switching element function		NO contact, PNP	NC contact, Namur
Electrical connection		M20x1.5	M20x1.5
Display		Yes	No
Minimum service life		2 x 10 <sup>5</sup> cycles	2 x 10 <sup>5</sup> cycles
Temperature range	[°C]	-25 ... +70	-25 ... +70
Protection class		Housing IP65	Housing IP65
CE symbol		Yes	Yes
Protection against short circuit		Yes	Yes
Protection against polarity reversal		Yes	-
Corrosion resistance class CRC <sup>1)</sup>		2	2

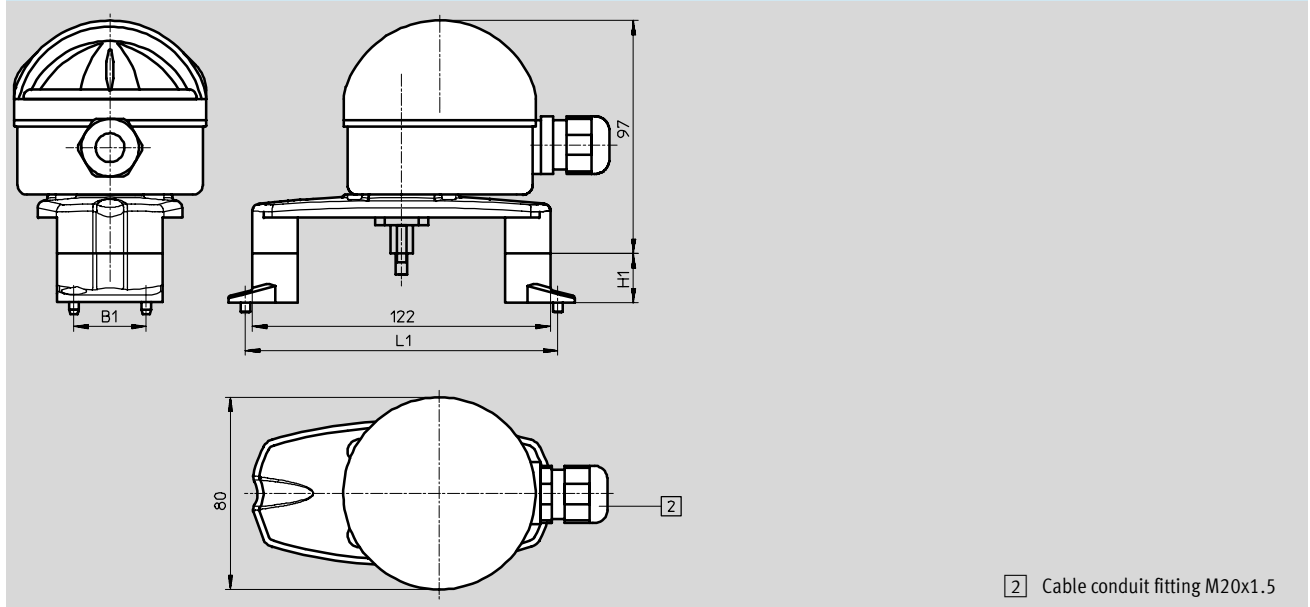
1) Corrosion resistance class 2 according to Festo standard 940 070  
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Materials	Electrical sensing	Inductive sensing	
		Standard	Namur
Housing socket	Polyamide, black	Polyamide, black	Polyamide, black
Housing cover	Polycarbonate, transparent	Polycarbonate, transparent	Polyamide, black
Seal	Silicone, ethylene propylene rubber or nitrile rubber	Silicone, ethylene propylene rubber or nitrile rubber	Silicone, ethylene propylene rubber or nitrile rubber

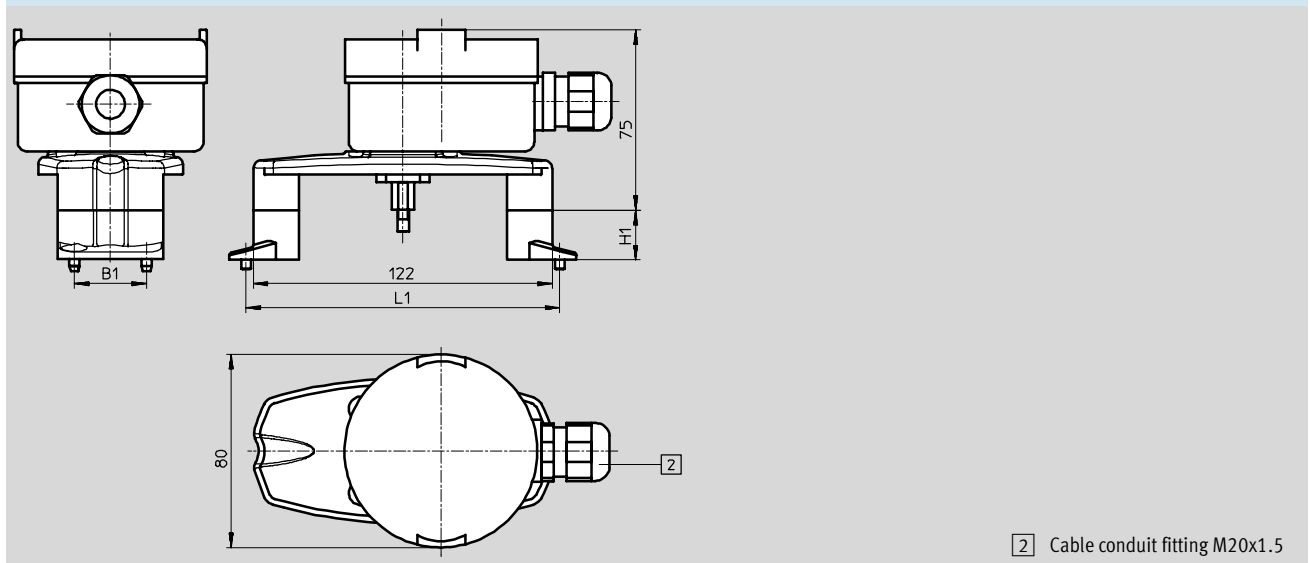
# End-position sensing attachments DAPZ, round design, variant RO

Technical data

**Dimensions** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)  
 Standard



Namur



	B1	L1	H1
<b>Feet mounted inwards</b>			
Foot 20	30	80	20
Foot 30	30	80	30
Foot 50 (order accessories separately)	30	80	50
<b>Feet mounted outwards</b>			
Foot 20	30	130	20
Foot 30	30	130	30
Foot 50 (order accessories separately)	30	130	50
<b>Mounting with adapter (order accessories separately)</b>			
DAPZ-SBZ-K0-RO	25	50	20
DAPZ-SBZ-K3-RO	30	150	30

## End-position sensing attachments DAPZ, round design, variant RO

Technical data

Ordering data				
Measuring principle	Operating voltage	Design	Part No.	Type
Electrical	250 V AC	Display	534 469	DAPZ-SB-M-250AC-DR-RO
Inductive	30 V DC	Display	534 471	DAPZ-SB-I-30DC-DR-RO
Inductive	25 V DC	Namur	534 472	DAPZ-SB-I-25DC-R-RO

# End-position sensing attachments DAPZ, round design, variant AR

Technical data

- Interface to the drive to Namur VDI/VDE 3845
- Simple and quick assembly and connection
- Integrated solenoid valve actuation
- Fully assembled and tested unit for the AS-interface



Technical data – Electrical sensing	
	Standard
Operating voltage range	4 V AC ... 250 V DC
Power range	1 mA ... 5 A
Switching element function	Changeover switch
Electrical connection	M20x1.5
Display	Yes
Temperature range [°C]	-20 ... +70
Protection class	Housing IP67
CE symbol	Yes
Corrosion resistance class CRC <sup>1)</sup>	2

1) Corrosion resistance class 2 according to Festo standard 940 070  
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

Technical data – Inductive sensing		
	Standard	Explosion-proof
Operating voltage range [V DC]	0 ... 36	0 ... 25
Switching element function	NO contact, PNP	NO contact, Namur
Electrical connection	M20x1.5	M20x1.5
Display	Yes	Yes
Minimum service life	2 x 10 <sup>5</sup> cycles	2 x 10 <sup>5</sup> cycles
Temperature range [°C]	-20 ... +70	-20 ... +70
Protection class	Housing IP67	Housing IP67
CE symbol	Yes	Yes
Protection against short circuit	Pulsed	-
Protection against polarity reversal	Yes	-
Corrosion resistance class CRC <sup>1)</sup>	2	2

1) Corrosion resistance class 2 according to Festo standard 940 070  
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

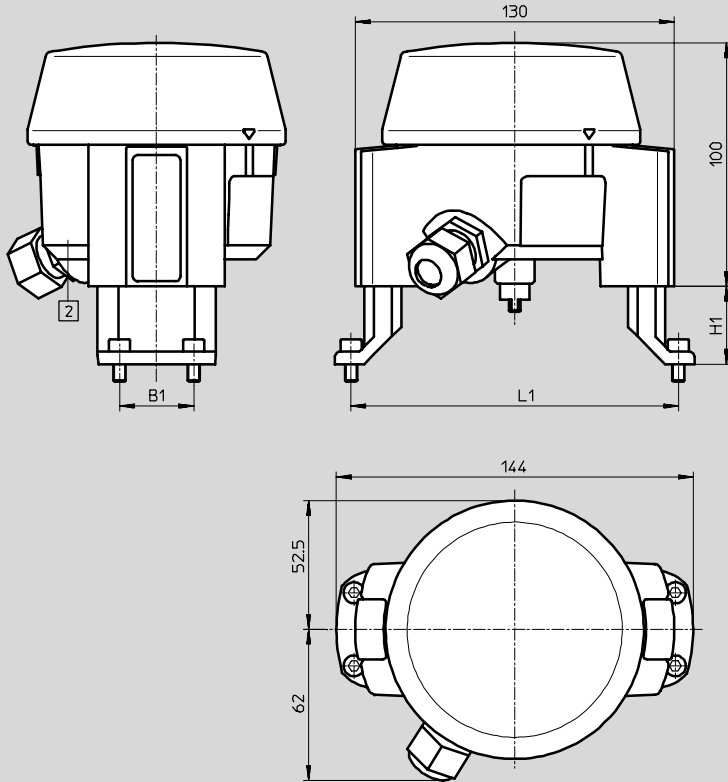
Materials	Electrical sensing	Inductive sensing	
		Standard	Explosion-proof
Housing socket	Acrylic butadiene styrene	Acrylic butadiene styrene	Acrylic butadiene styrene
Housing cover	Polycarbonate, transparent	Polycarbonate, transparent	Polycarbonate, transparent
Seal	Nitrile rubber	Nitrile rubber	Nitrile rubber

# End-position sensing attachments DAPZ, round design, variant AR

Technical data

**Dimensions**

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



**2** Cable conduit fitting M20x1.5















	B1	L1	H1
<b>Feet mounted inwards</b>			
Foot height adjustable	30	80	20, 30, 50
<b>Feet mounted outwards</b>			
Foot height adjustable	30	130	20, 30, 50

<b>Ordering data</b>				
Measuring principle	Operating voltage	Design	Part No.	Type
Electrical	250 V AC	Display	534 474	DAPZ-SB-M-250AC-DR-AR
Inductive	36 V DC	Display	534 475	DAPZ-SB-I-36DC-DR-AR
Inductive	25 V DC	explosion-proof, display	534 476	DAPZ-SB-I-25DC-EXDR-AR



## End-position sensing attachments DAPZ

Accessories

Ordering data			
	Brief description	Part No.	Type
<b>Foot</b>			
	Kit for end-position sensing attachment DAPZ...-RO Shaft height 50 mm, port pattern 130 x 30 mm	534 477	DAPZ-SBZ-F50-RO  New
<b>Adapter for foot mounting</b>			
	Kit for end-position sensing attachment DAPZ...-RO on the quarter turn actuator DRD/DRE sizes 1 and 2 Foot connection L50 x B25 x H20 mm	534 478	DAPZ-SBZ-K0-RO  New
	Kit for end-position sensing attachment DAPZ...-RO on the quarter turn actuator DRD/DRE sizes 375 ... 880 Foot connection L150 x B30 x H30 mm	534 479	DAPZ-SBZ-K3-RO  New
<b>Bus connection</b>			
	Flat cable for AS-interface components, yellow, 100 m	18 940	KASI-1,5-Y-100
	Cable distributor for flat cable, cable parallel, rotatable	18 786	ASI-KVT-FK
	Cable distributor for flat cable, cable symmetrical	18 797	ASI-KVT-FK-S
	Cable cap for flat cable (scope of delivery includes 50 pieces)	18 787	ASI-KK-FK
	Cable sleeve (scope of delivery includes 20 pieces)	165 593	ASI-KT-FK
<b>Miscellaneous</b>			
	Combi power pack for AS-interface	191 082	ASI-CNT-115/230-VAC-B
	Addressing device for AS-interface stations	18 959	ASI-PRG-ADR
	Addressing cable for addressing device	18 960	KASI-ADR

# End-position sensing attachments QH-DR-E

Technical data



End-position sensing attachment with choice of 3 sensing methods:

- Pneumatic
  - with micro stem actuated valve
  - S-3-PK-3-B
- Electrical
  - with micro switch with roller lever,
  - IP 67 (splash-proof) S-3-E-SW-B
- Inductive
  - with proximity sensor
  - SIEN-M12-NB-B



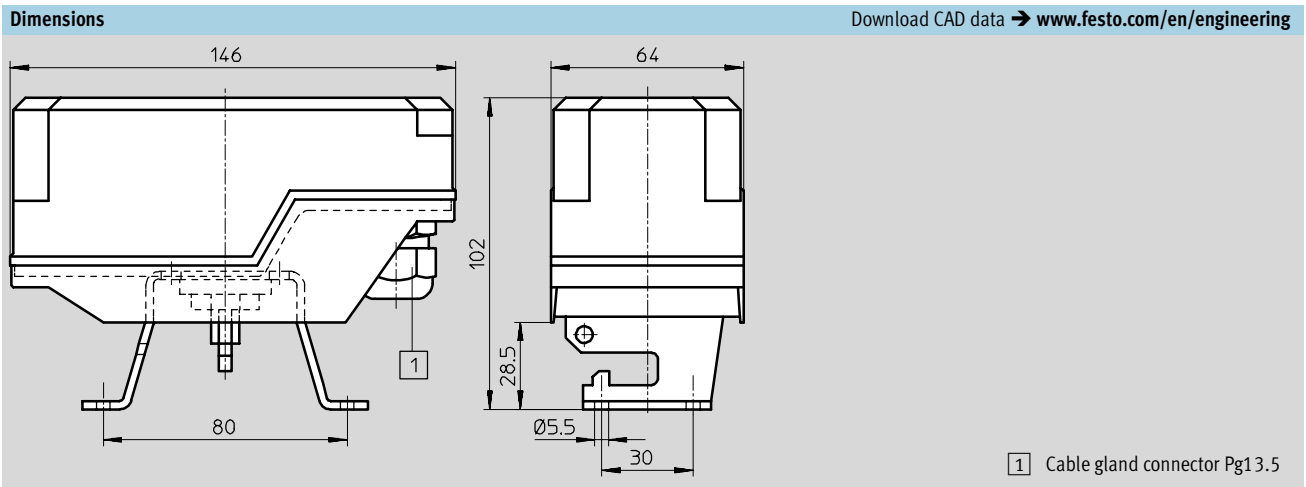
Technical data	
<b>Pneumatic sensing</b>	
Medium	Filtered compressed air, lubricated or unlubricated
Function	3/2-way valve, directly actuated, normally closed
Pneumatic connection	Barbed fitting for 3 mm plastic tubing
Nominal size	1.8 mm
Operating pressure range	-1 ... +8 bar
Connection	Cable gland connector Pg13.5
Temperature range	-10 ... +60 °C
<b>Electrical sensing</b>	
Utilisation category	AC 15/AC 12; DC 13/DC 12
Operating voltage range	0 ... 250 V AC; 0 ... 250 V DC
Rated operating current at rated operating voltage	Ohmic load (AC 12 / DC 12): 230 V DC: 0.3 A, 230 V AC: 10 A
	Inductive load (AC 12 / DC 12): 230 V DC: 0.2 A, 230 V AC: 4 A
Rated surge voltage	2.5 kV
Cross-section of connectable cables	0.2 ... 2.5 mm <sup>2</sup>
Electrical connection	Cable gland connector Pg13.5
Temperature range	-25 ... +80 °C
Protection class	Housing IP65
CE symbol	Yes, to EN 60 947-5-1: 1991
<b>Inductive sensing</b>	
Operating voltage range	10 ... 30 V DC
Rated operating current	200 mA
Idle current	≤ 1 mA
Output	Short circuit proof, reverse polarity protected
	Voltage drop: ≤ 3.2 V, residual current: ≤ 0.01 mA
Cross-section of connectable cables	0.2 ... 2.5 mm <sup>2</sup>
Electrical connection	Pg13.5
Temperature range	-25 ... +85 °C
Display	Yellow LED
Protection class	Housing IP65
CE symbol	Yes, to EN 50 947-5-2:1995

Materials	
Housing base	Polymer
Cover	Transparent polymer
Seal	Ethylene propylene rubber

# End-position sensing attachments QH-DR-E

Technical data

FESTO



Ordering data		
Sensing principle	Part No.	Type
Pneumatic with S3-PK-3-B	164 855	QH-DR-E-S3-PK-3-B-B
Electrical with S3-E-SW-B	164 854	QH-DR-E-S3-E-SW-B
Inductive with SIE-M12-NB-B	164 853	QH-DR-E-SIEN-M12-NB-B

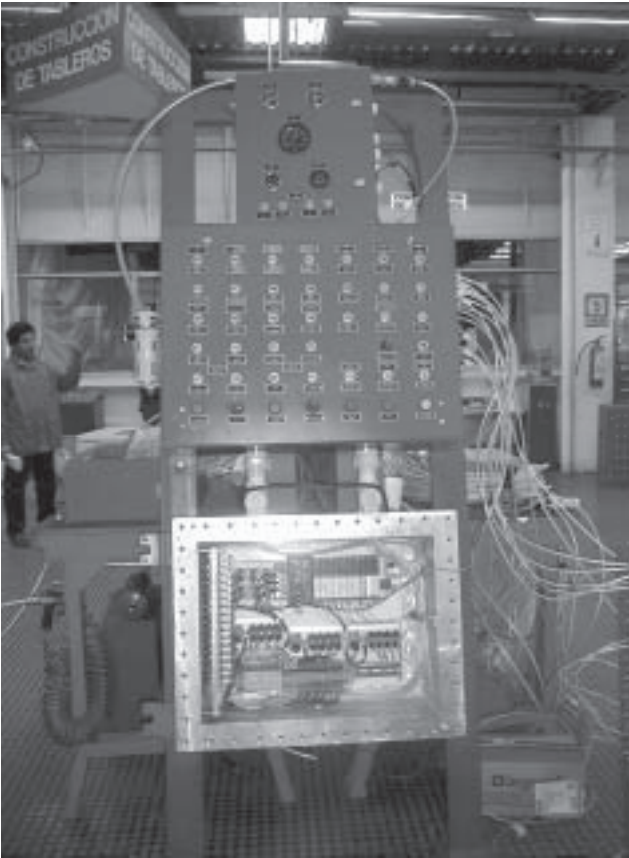
# Semi-rotary drives

Applications

FESTO

Actuators  
Quarter turn actuators

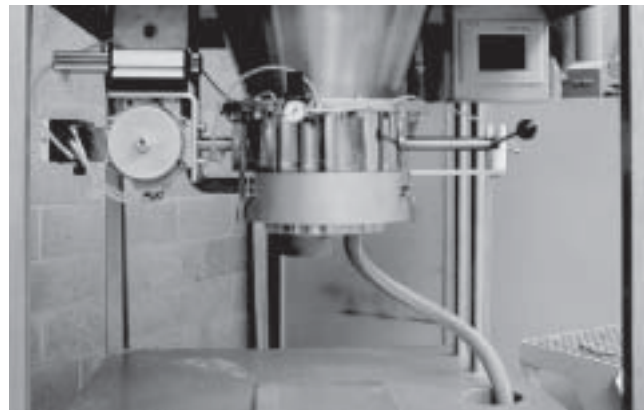
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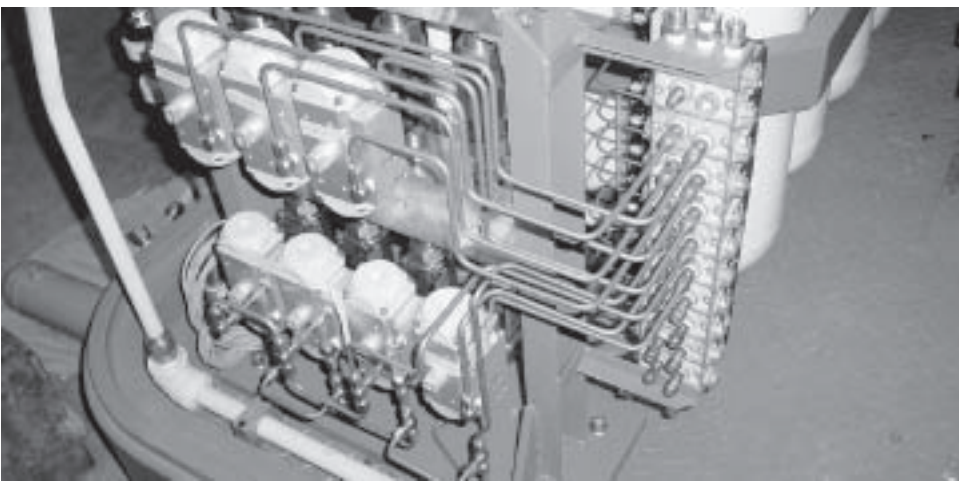
Control cabinet in the petro-chemical industry



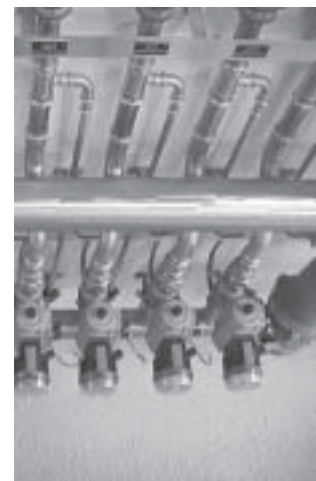
Wine racking



Filling and dosing plastic granulate



Petroleum gas tank farm



Sewage treatment plant