

Copac and Copar – Linear and Rotary Actuators for the Process Industry

FESTO



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Festo Corporation Mission

Enhance the business success of our customers by providing cost-efficient automation solutions with innovative products and services.

We accomplish this through:

- The commitment and conduct of our employees
- Allocation of capital
- Continuous improvement of internal processes
- Product innovation with reliability
- Application knowledge

Copac/Copar Actuators

Superior Quality - Excellent Value

A Step Ahead

**Pneumatics in process technology:
Your next step towards a more
economical future**

**Copac and Copar –
Linear and quarter turn actuators**

The Festo linear and quarter turn actuators – Copac and Copar – are particularly suited for use in water, sewage, industrial process water and silage technology, as well as the paper and bulk goods industries, among others.

Water, sludge, waste or contaminated material of widely differing consistency pass through processing stations, and are treated, separated, sorted or filtered. In silage or bulk goods industry, materials such as powder, granulates, and flour are transported and fed – all in a dusty, polluted and hazardous environment.

Festo actuators provide reliable control of a wide range of different ball, plug, butterfly, and shut-off valves, etc.

Our know-how – Your benefit

Festo offers you:

- Simple, sturdy and durable technology, tried and tested a million times over in industry.
- System solutions of modular design, which can be easily upgraded and offer potential savings compared to conventional actuators.
- Economic operation thanks to optimum configuration of actuators
- Safety, thanks to explosion-proof actuators and components, defined fail-safe positions and manual override
- Intelligent open and closed loop control systems controlled by means of actuators networked with sensors and controllers, also suitable for decentralized control.
- Decentralized automation
Pneumatic drive technology
Controllable via 30 different fieldbus protocols: fast, safe, cost effective, easily expandable.
- Extensive service network in more than 170 countries and 53 independent national companies

Copac/Copar Actuators

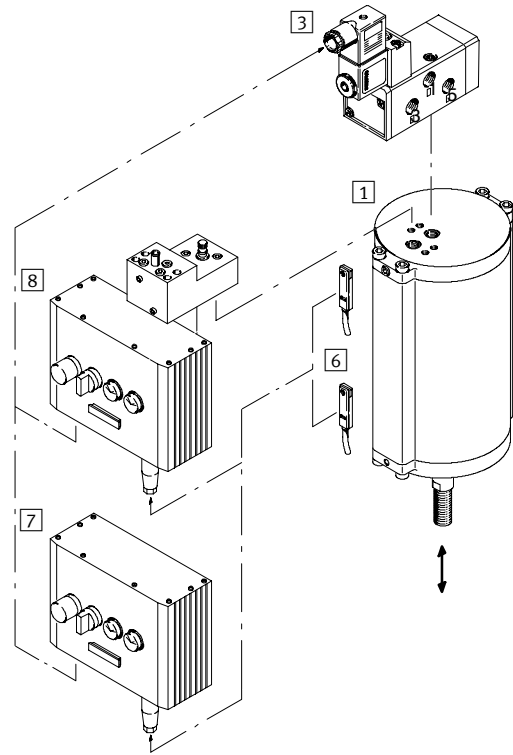
Overview

Actuators for the process industry

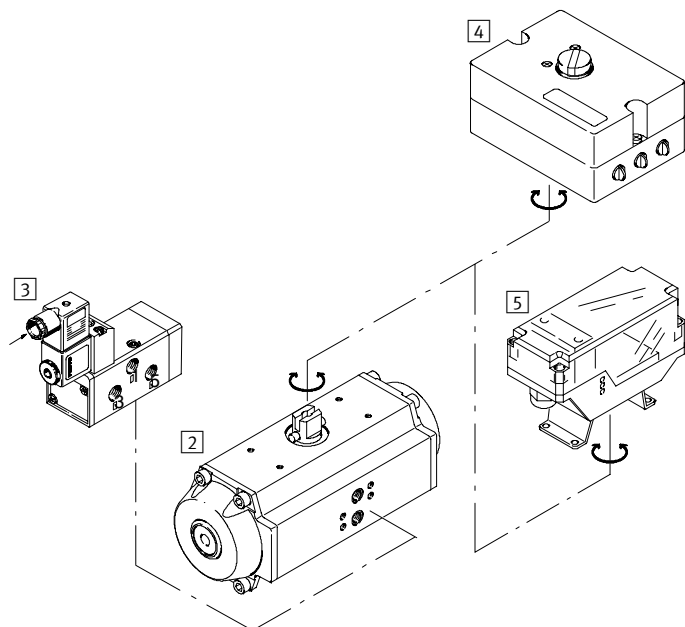
Complete systems

Modular design –
geared to your requirements

Copac



Copar



- 1 Copac linear actuators
- 2 Copar quarter turn actuators
- 3 NAMUR valve
- 4 Positioner
- 5 Limit switch box
- 6 Proximity sensor
- 7 Local control, electrical
- 8 Local control, pneumatic

Actuators for the process industry

Copac/Copar Actuators

Overview



Copac linear valve actuator

→ Page 6

Application Example

Copac



Copar rotary valve actuator

→ Page 18

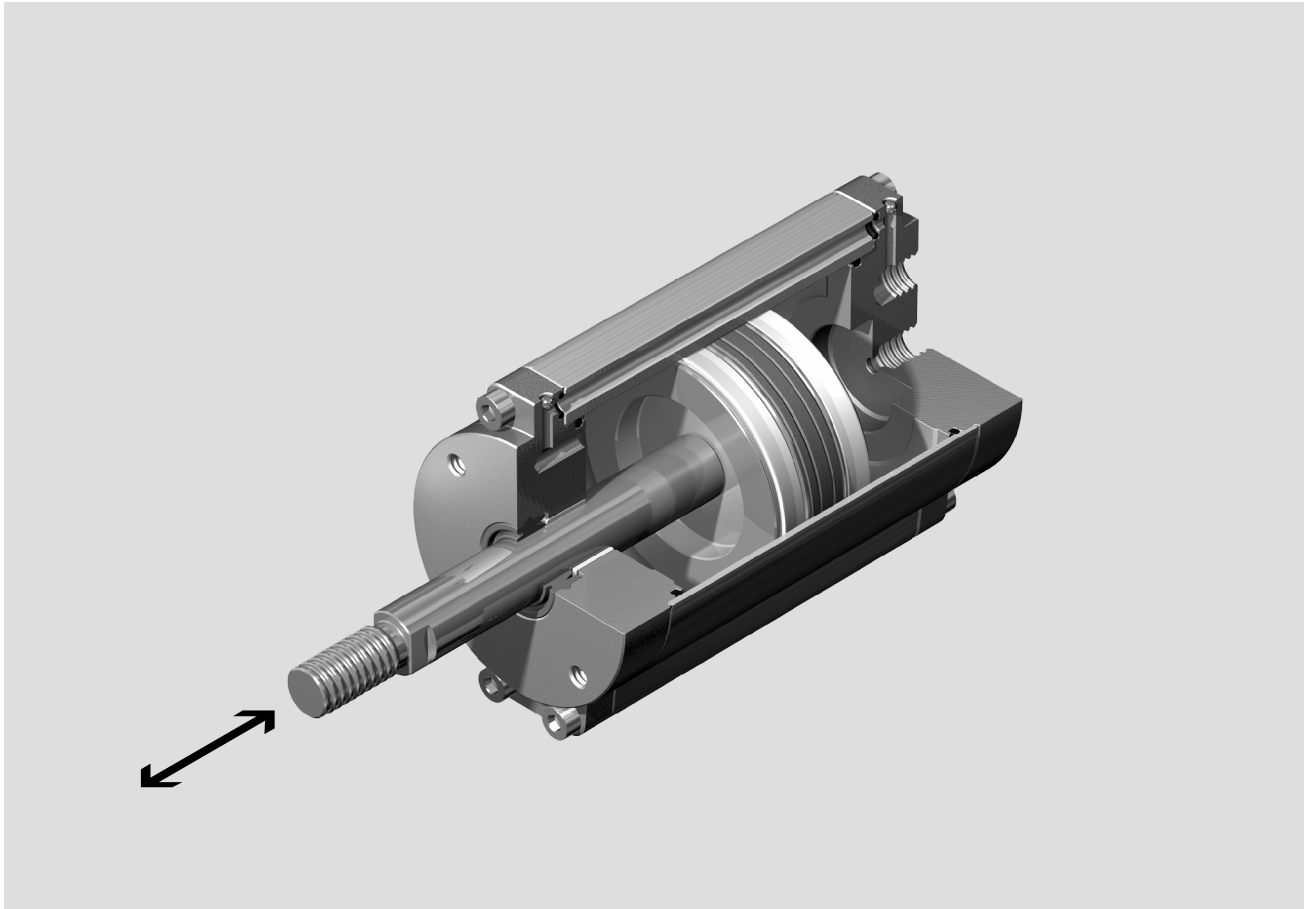
Application Example

Copar

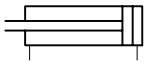
Copac Linear Valve Actuator, Type DLP

Key features at a glance

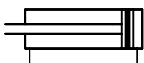
Actuators for the process industry






Copac linear valve actuator DLP-...



DLP-...-A



-  - Diameters
80 ... 320 mm
-  - Stroke lengths
40 ... 2,000 mm
-  - Force
2,800 ... 47,500 N

Two basic models

- Double-acting actuator
Example: DLP-...
- Double acting actuator for non-contact end position sensing [A]
Example: DLP-...-A

A clean solution for shut-off, safety, and control slide valves.

The linear drive copac acts directly upon the slide plate of the process valve and facilitates accurate advancement to various positions.

Order code

→ Page 8

Data sheet copac

→ Page 10

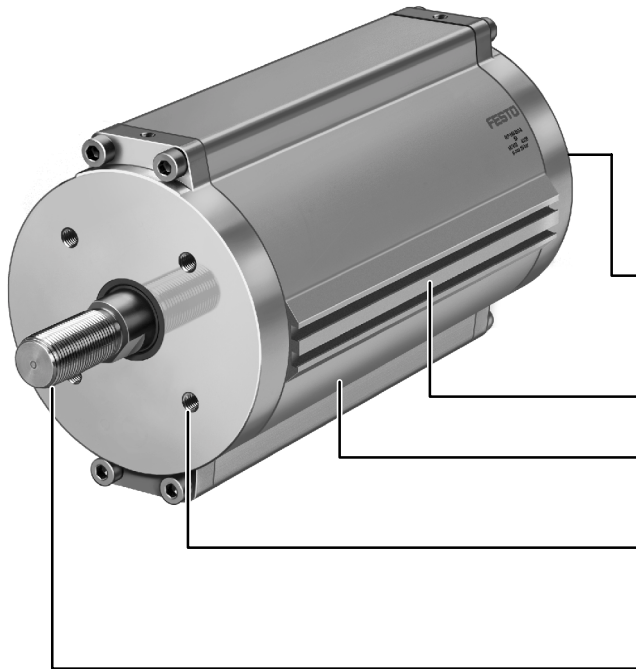
Accessories

→ Page 34

Copac Linear Valve Actuator, Type DLP

Key features at a glance

Copac linear valve actuator DLP



Air connection hole pattern per Namur [VDI/VDE 3845] for attaching solenoid valves.

For cylinder sensor mounting.

Sturdy and reliable, even in aggressive environments.

Mounting hole pattern per DIN 3358/ISO 5210 for direct mounting.

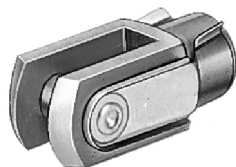
Designed for slow and fast valve activation.

- Highly corrosion resistant.
- Suitable for manual on-site use, as well as automatic operation.
- For contactless end-position sensing.
- Opening and closing motion is actuated via a flange-mounted solenoid valve with hole pattern in accordance with Namur, or via valve terminals with 30 different fieldbus protocols.
- Internal air lines eliminate protruding tubing and attachments, thereby also eliminating bothersome accumulations of contamination.

Self-aligning rod coupler
FK-... see page 13



Rod clevis
SG-... see page 14



Rod eye
SGS-... see page 15



Proximity sensor
SME/SMT-8 see page 16



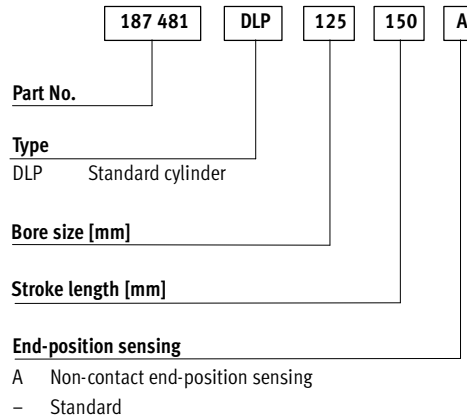
Accessories

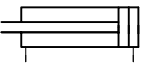
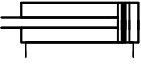
Copac Linear Valve Actuator, Type DLP

Order code

Actuators for the process industry

Copac linear valve actuator DLP...



Ordering data			
Type	Bore [mm]	Part No.	Type
 Without end-position sensing	80	187 473	DLP-80-...
	100	187 474	DLP-100-...
	125	187 475	DLP-125-...
	160	187 476	DLP-160-...
	250	187 477	DLP-250-...
	320	187 478	DLP-320-...
 For contactless end-position sensing	80	187 479	DLP-80-...-A
	100	187 480	DLP-100-...-A
	125	187 481	DLP-125-...-A
	160	187 482	DLP-160-...-A
	250	187 483	DLP-250-...-A
	320	187 484	DLP-320-...-A

Actuator design

The actuators described are designed for standard valve/ fittings suitable for the process industry (i.e.: water, paper, etc.) The preliminary selection is based on experience. Variances caused as a result of high process pressures, special fittings, and special safety requirements have not been taken into account.

Stroke length of actuator

Generally, the stroke length of the Copac linear actuator corresponds to the nominal diameter of the 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.

Example:	You require a linear actuator with a maximum force of 4800 N for a valve slide with a nominal diameter of 150 mm and an operating pressure of 6 bar. Which Copac linear actuator is suitable for this task?	
Step 1	In order to operate the valve slide, the return force of the linear actuator must be greater than the maximum inherent force of the valve slide [4800 N]. From the table at the bottom of page 10, you will see that these requirements are met by the linear actuator DLP-125 [return force 6881 N], while also providing an adequate reserve.	
Step 2	The required stroke length of the linear actuator is obtained from the travel distance of the valve/ slide. Assumption: The travel distance corresponds exactly to the nominal diameter of the valve/ slide [150 mm]. The result of this is the following order designation: DLP-125-150	If the piston position is to be sensed by means of a proximity switch, the order designation is as follows: DLP-125-150-A [The proximity switches must be ordered separately]
Step 3	The overall dimension of the linear actuator can be calculated according to the dimensions table on page 11. The overall length is obtained from the dimension ZB and the required stroke. Overall length = ZB + stroke Overall length = 138 mm + 150 mm Overall length = 288 mm	
Step 4	The total air consumption for a complete cycle [opening and closing] is calculated from the air consumption for the pulling movement [opening] and for the pushing movement [closing] of the linear drive. An operating pressure of 6 bar results in the following total air consumption:	Total air consumption = air consumption for opening + air consumption for closing Total air consumption = $150 \text{ mm} \times \frac{0.800 \text{ NI}}{10 \text{ mm}} +$ $150 \text{ mm} \times \frac{0.860 \text{ NI}}{10 \text{ mm}}$ Total air consumption = 24.9 NI

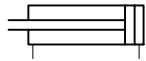
Copac Linear Valve Actuator, Type DLP

Data sheet

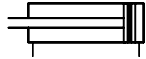
Actuators for the process industry




Copac linear valve actuator

DLP-...



DLP-...-A



-  Diameters
80 ... 320 mm
-  Stroke lengths
40 ... 2,000 mm
-  Force
2,800 ... 47,500 N

Two basic models

- Double acting actuator
Example: DLP-...
- Double acting actuator for non-contact end position sensing [A]
Example: DLP-...-A

Technical data		
Medium	Compressed air, filtered [lubricated or unlubricated]	
Design	Piston cylinder, double-acting	
Operating pressure*	2 ... 10 bar	
Temperature range**	-20 ... +80 °C [observe operating range of cylinder sensor]	
Corrosion resistance	CRC2 to FN 940 070 part 1 [Festo standard]***	
Free from paint-wetting impairment substances	PWIS-free to FN 942 010 [Festo standard]****	
Moisture condensation	Permissible	
Assembly position	Any	
Material	Cylinder barrel	Smooth anodized aluminum
	Bearing cap	Extruded aluminum
	Piston rod	High-alloy rolled steel
	External screws	Stainless steel
	Rod bearing	Smooth composite material
	Seals	Polyurethane, perbunan

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

** Additional temperature ranges available upon request.

*** Components with medium corrosion exposure. Externally visible components with significant decorative function in direct contact with normal industrial atmosphere [or media such as cutting fluid, oils, etc.]

**** Paint-wetting impairment substances can cause pitting [localized funnel-shaped depressions] in paint finishes applied to the surfaces.

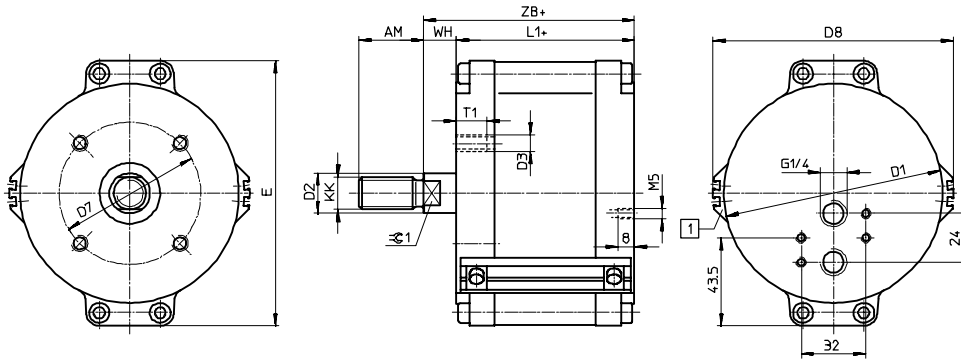
Bore size [mm]	Stroke length [mm]	Thrust at 6 bar*** [N]	Return force at 6 bar*** [N]	Air consumption at 6 bar*** and 10 mm stroke		Weight	
				push [Nl]	pull [Nl]	Basic weight [kg]	Weight per 10 mm stroke [kg]
80	40 ... 2000	3016	2827	0.35	0.33	2.1	0.065
100	50 ... 2000	4712	4524	0.55	0.53	3.1	0.92
125	50 ... 2000	7363	6881	0.86	0.8	5.7	0.167
160	100 ... 2000	12064	11581	1.41	1.35	8	0.183
250	100 ... 2000	29452	28698	3.44	3.35	24.1	0.248
320	150 ... 2000	48255	47501	5.63	5.54	39.9	0.322

*** Theoretical values.

Conversion factors → page 45.

Copac linear valve actuator, type DLP

Copac linear actuators DLP-80 to 160-...



1 Mounting rail for cylinder sensor
SME/SMT-8

+ = plus stroke length

Type	AM -2	D1 ∅	D2 ∅	D3	D7 ∅	D8 ∅	E	KK	L1	T1	WH	ZB	⊕1
DLP-80-...	32	87	20	M8	70	99	108	M16 x 1.5	73	15	16	89	16
DLP-80-...-A									100			116	
DLP-100-...	32	108	20	M8	70	119	131	M16 x 1.5	76	15	16	92	16
DLP-100-...-A									104			120	
DLP-125-...	54	135	32	M10	102	147	163	M27 x 2	114	24	18	138	27
DLP-125-...-A													
DLP-160-...	54	170	32	M10	102	182	199	M27 x 2	114	24	18	138	27
DLP-160-...-A													

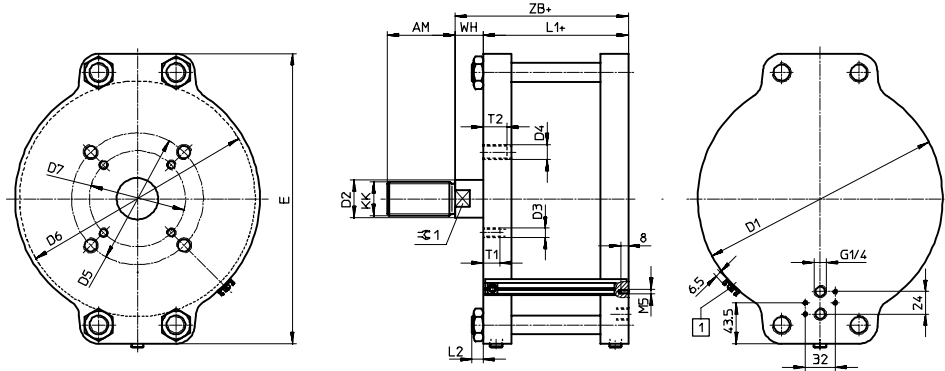
Conversion factors → page 45.

Copac Linear Valve Actuator, Type DLP

Data sheet

Actuators for the process industry

Copac linear actuators
DLP-250 to 320-...



1 Mounting rail for cylinder sensor
SME/SMT-8

+ = plus stroke length

Type	AM -2	D1	D2 Ø	D3	D4	D5	D6	D7	E
DLP-250-...	72	260	40	M10	M16	140	244	102	308
DLP-250-...-A									
DLP-320-...	72	332	40	M10	M16	140	324	102	378
DLP-320-...-A									

Type	KK	L1	L2	T1	T2	WH	ZB	≈C1
DLP-250-...	M 36 x 2	152	12	18	25	30	184	36
DLP-250-...-A								
DLP-320-...	M 36 x 2	159	12	18	25	30	191	36
DLP-320-...-A								

Conversion factors → page 45.

Copac Linear Valve Actuator, Type DLP

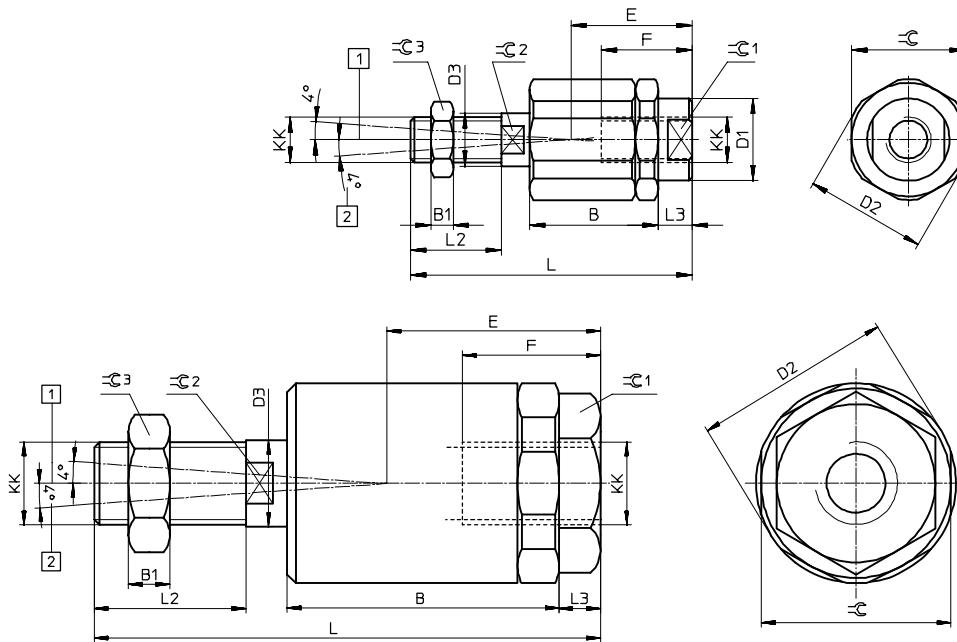
Data sheet

Self-aligning rod coupler

FK-...
with hexagon nut to DIN 439

Material:
Steel, galvanized

The self-aligning rod coupler permits compensation of radial and alignment errors.



- 1 Radial displacement of central axis (P)
- 2 Deflection of central axis

Type	B	B1	D1	D2	D3	E	F	KK
FK-M16x1.5	53	8	33.8	45	22	44.5	32	M16x1.5
FK-M27x2	91	13.5	-	62	28	53	40	M27x2
FK-M36x2	157	18	-	80	36	110	70	M36x2

Type	L	L2	L3	≈C	≈C1	≈C2	≈C3
FK-M16x1.5	103	32	9	41	30	19	24
FK-M27x2	157	54	12	55	55	24	41
FK-M36x2	251	72	22	75	75	32	55

Suitable for linear drive type	Weight [kg]	Max. permissible tensile and pressure load N	Radial displacement P [mm]	Part No.	Type
DLP-80-.../DLP-100-...	0.650	10000	1	6142	FK-M16x1.5
DLP-125-.../DLP-160-...	2.100	30000	1	10485	FK-M27x2
DLP-250-...DLP-320-...	5.800	40000	1	10746	FK-M36x2

Conversion factors → page 45.

Copac Linear Valve Actuator, Type DLP

Data sheet

Actuators for the process industry

Rod clevis

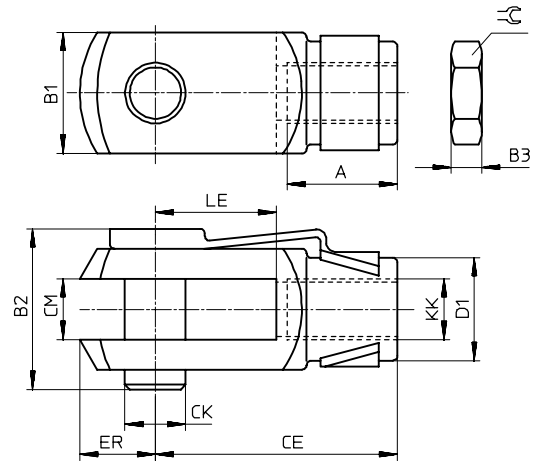
SG-...

to DIN ISO 8140 or DIN 71752

Material:

Steel, galvanized

See table for swivelling cylinder attachment with hexagon nut to DIN 439 and pivot pin.



Type	A	B1	B2	B3	CE	CK	CM	D1	ER	KK	LE	≅
SG-M16x1.5* **	32	32	39	8	64	64	16	26	19	M16x1.5	32	24
SG-M27x2*	56	56	74	13.5	110	30	30	48	38	M27x2	54	41
SG-M36x2*	56	70	90.5	18	144	35	35	60	44	M36x2	72	55

* DIN ISO 8140

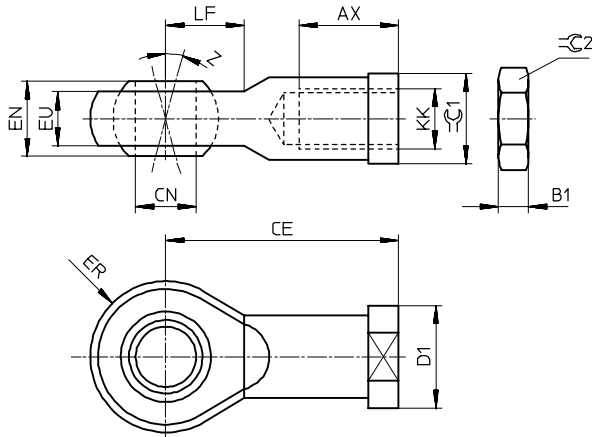
** DIN 71752

Suitable for linear drive type	Weight [kg]	Part No.	Type
DLP-80-.../DLP-100-...	0.335	6164	SG-M16x1.5
DLP-125-.../DLP-160-...	1.475	14987	SG-M27x2-B
DLP-250-.../DLP-320-...	4.080	9581	SG FK-M36x2

Conversion factors → page 45.

Copac Linear Valve Actuator, Type DLP

Data sheet



Rod eye
SGS-...
 to DIN ISO 8139 and
 DIN 648 dimension series K.
 With hexagon nut to DIN 439.

Material:
 Body: Steel, galvanized.
 Swivel bearing: Steel/PTFE bronze
 combination.

Type	AX	B1	CE	CN ∅ H9	D1 ∅	EU	EN	ER	KK	LF	≈C1	≈C2	Z
SGS-M16x1.5	28	8	64	16	27	15	21	21	M16x1.5	22	22	24	15
SGS-M27x2	51	13.5	110	30	50	25	37	35	M27x2	36	41	41	15
SGS-M36x2	56	18	125	35	58	28	43	40	M36x2	41	50	55	15

Suitable for linear drive type	Weight [kg]	Max. permissible tensile and pressure load N	Radial displacement P [mm]	Part No.	Type
DLP-80-.../DLP-100-...	0.650	10000	1	9263	SGS-M16x1.5
DLP-125-.../DLP-160-...	2.100	30000	1	10774	SGS-M27x2
DLP-250-.../DLP-320-...	5.800	40000*	1	10775	SGS-M36x2

* When the linear drive type DLP-320-... is used the overall system must be dimensioned in such a way as to ensure that the self-aligning rod coupler is not overloaded.

Conversion factors → page 45.

Copac Linear Valve Actuator, Type DLP

Data sheet

Actuators for the process industry

Magnetic piston sensor

SME-8-K-LED-24

SME-...

SME-8-K-24-S6

With reed contact

Material:

Body: PET

Plate: Stainless steel

Cable: PUR

Material ...-S6:

Body: PET

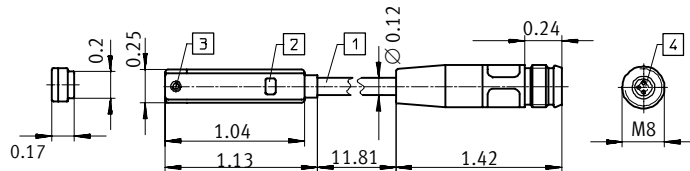
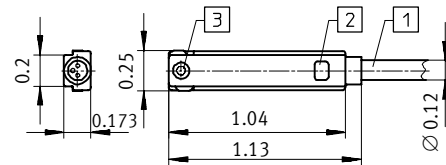
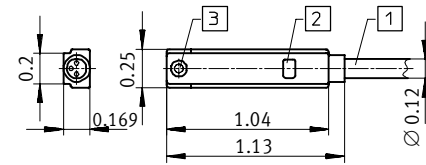
Plate: Stainless steel

Cable: TPE-S

SME-8-O-K-LED-24

(Normally closed)

SME-8-S-LED-24



- 1 SME-8-K-LED-24,
3-wire cable, 8.2 ft
- SME-8-O-K-LED,
3-wire cable, 24.6 ft
- SME-8-S-LED-24,
3-wire cable, 0.98 ft

- SME-8-K-24-S6,
2-wire cable, 8.2 ft
- SME-8-K-LED-230,
2-wire cable, 8.2 ft

- 2 Yellow LED
- 3 Max. tightening torque
0.148 lbf
- 4 Suitable for plug-socket
SIM-M8-...

Design	Connection	Weight [kg]	Part No.	Type
24 VDC	With cable	0.05	150 855	SME-8-L-LED-24
24 VDC	With plug	0.01	150 857	SME-8-S-LED-24
24 VDC, NC	With cable	0.09	160 251	SME-O K-LED-24
24 VDC	With cable	0.05	161 756	SME-8-K-24-S6*

* without LED;
Heat-resistant.

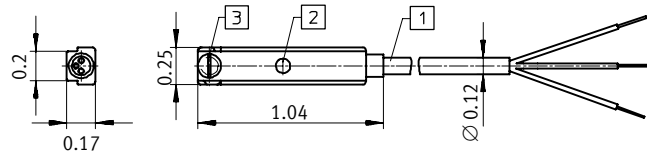
Conversion factors → page 45.

Copac Linear Valve Actuator, Type DLP

Data sheet

Actuators for the process industry

SMT-8-PS-K-LED-24
SMT-8-NS-K-LED-24-B



Magnetic piston sensor
SMT-...

With electronic output

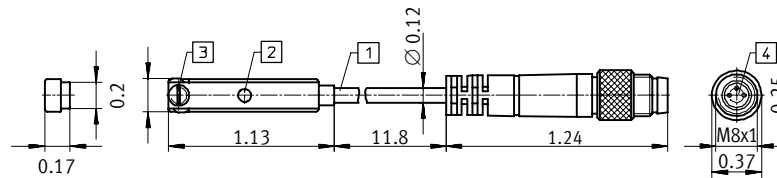
Material:

Body: PET

Plate: Stainless steel

Cable: PUR

SMT-8-PS-S-LED-24
SMT-8-NS-S-LED-24



1 SMT-8-...-K-LED-24
3-wire cable, 8.2 ft
SMT-8-...-S-LED-24
3-wire cable, 11.81 inch

2 Yellow LED
3 Max. tightening torque 0.148 lbf
4 Suitable for plug-socket
SIM-M8-...

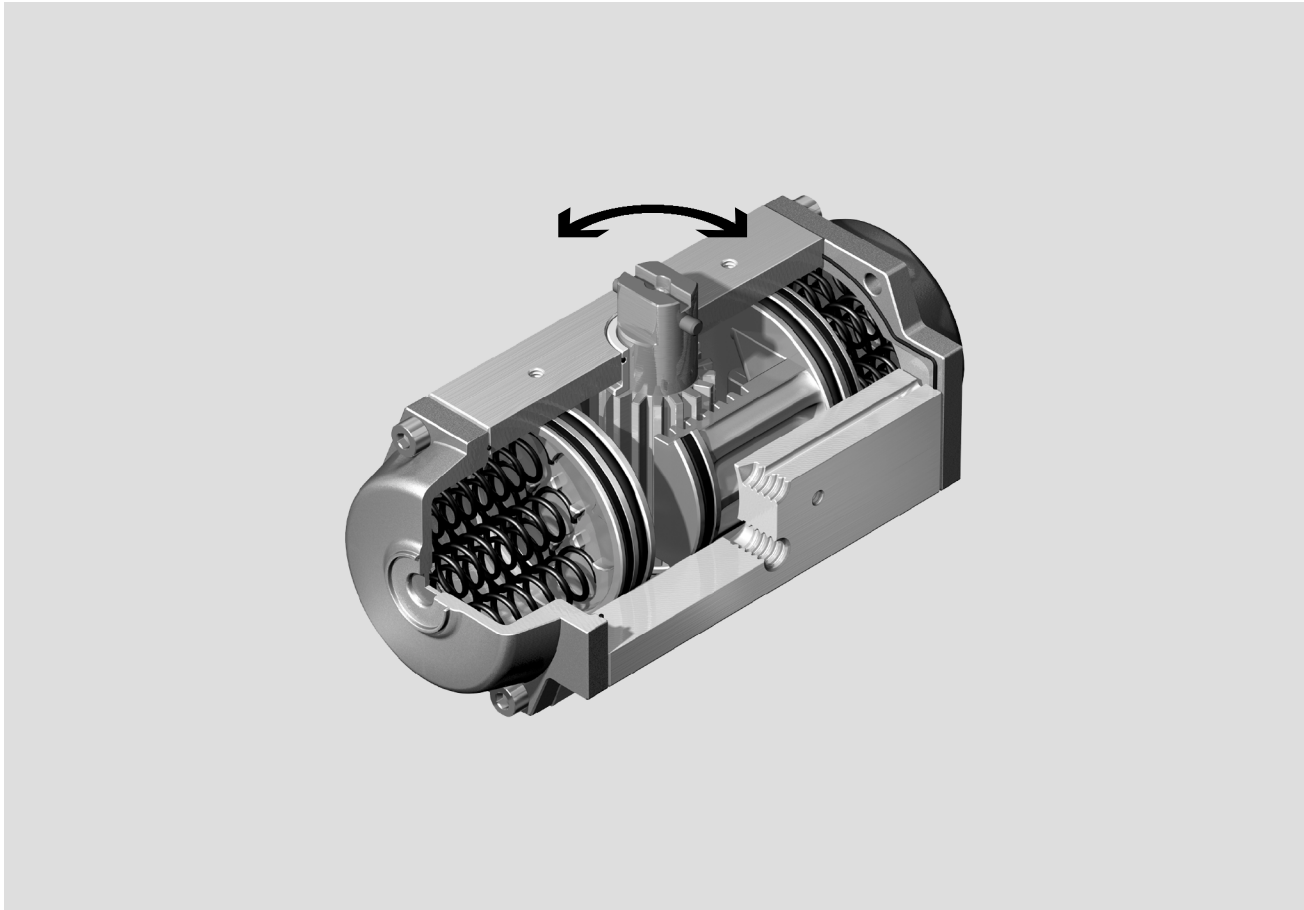
Design	Connection	Weight [kg]	Part No.	Type
24 VDC, PNP	With cable	0.18	150 864	SMT-8-PS-K-LED-24
24 VDC, NPN	With cable	0.04	150 862	SMT-8-NS-K-LED-24
24 VDC, PNP	With plug	0.02	150 865	SMT-8-PS-S-LED-24
24 VDC, NPN	With plug	0.02	150 863	SMT-8-NS-S-LED-24

Conversion factors → page 45.

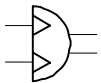
Copar Rotary Valve Actuator, Type DRD/DRE

Key features at a glance

Actuators for the process industry



Copar rotary valve actuator
DRD-...
DRE-...



- Torque range
7.5 ... 8800 Nm
- 90° rotation angle
standard, other angles
available on request
- NPT models also available

Two basic models:

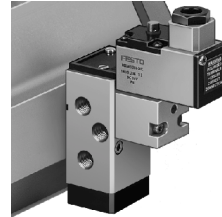
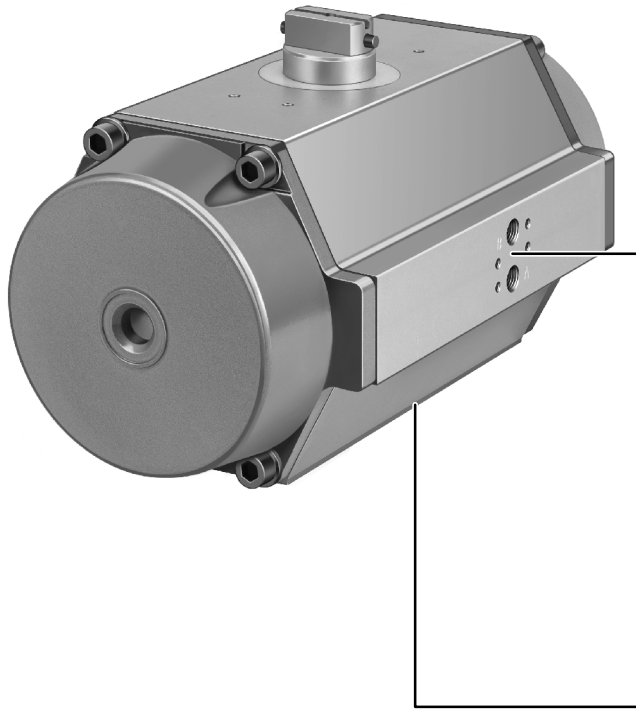
- Double acting actuator
Example: DRD-...
- Single acting actuator
Example: DRE-...

The copar rotary actuator is sturdy and accurate for precise positioning, especially with ball, plug, shut-off and butterfly valves, etc.

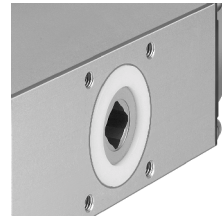
- Order code → Page 20
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Copar Rotary Valve Actuator, Type DRD/DRE

Key features at a glance



Opening and closing can be controlled with a flange-mounted solenoid valve featuring an air connection hole pattern per Namur [VDI/VDE 3845].



Flange connection per ISO 5211/DIN 3337.

NPT models have square on shaft rotated 45°.

Copar rotary valve actuator DRD, DRE

- Direction of rotation can be changed from clockwise to counterclockwise.
- Torques are graduated in accordance with ISO.
- Fast or slow valve actuation.
- Suitable for manual on-site use, as well as automatic operation.
- Resistant to overload and continuous loads.
- Highly corrosion resistant.
- Can be used as a variable-speed drive in combination with an electro-pneumatic positioning controller.
- End-position sensor and limit switch module can be mounted directly to the actuator.
- For contactless end-position sensing.
- Optionally adjustable end positions for sizes 8 ... 100, facilitating adjustment ranges of -4° ... +8° and from 82° ... 94°.

Copar Rotary Valve Actuator, Type DRD/DRE

Order code

Actuators for the process industry

Standard models

Double-acting rotary actuator DRD		Single-acting rotary actuator DRE	
Part No.	Type	Part No.	Type
189 781	DRD-1-F03	Spring-force closing	189 900 DRE-2-F03-Q10-FS
189 782	DRD-2-F03		189 901 DRE-2-F04-Q10-FS
189 783	DRD-2-F04		189 960 DRE-4-F04-Q10-FS
189 784	DRD-4-F04		189 961 DRE-4-F05-Q10-FS
189 785	DRD-4-F05		190 019 DRE-8-F05-Q10-FS
189 763	DRD-8-F05		190 059 DRE-14-F05-Q10-FS
189 764	DRD-14-F05		190 099 DRE-26-F07-Q10-FS
189 765	DRD-26-F07		190 141 DRE-50-F07-Q10-FS
189 766	DRD-50-F07		190 142 DRE-50-F10-Q10-FS
189 767	DRD-50-F10		190 221 DRE-77-F10-Q10-FS
189 768	DRD-77-F10		190 222 DRE-77-F12-Q10-FS
189 769	DRD-77-F12		190 299 DRE-100-F12-Q10-FS
189 770	DRD-100-F12		190 341 DRE-150-F12-Q10-FS
189 771	DRD-150-F12		190 342 DRE-150-F14-Q10-FS
189 772	DRD-150-F14		190 401 DRE-225-F12-Q10-FS
189 773	DRD-225-F12		190 402 DRE-225-F14-Q10-FS
189 774	DRD-225-F14		190 461 DRE-375-F14-Q10-FS
189 775	DRD-375-F14		190 462 DRE-375-F16-Q10-FS
189 776	DRD-375-F16		190 471 DRE-575-F16-Q10-FS
189 777	DRD-575-F16		190 472 DRE-575-F25-Q10-FS
189 778	DRD-575-F25		190 521 DRE-880-F25-Q10-FS
189 779	DRD-880-F25		190 522 DRE-880-F30-Q10-FS
189 780	DRD-880-F30		
With adjustable end-position limit and overtravel [74° to 98°]	189 786 DRD-8-F05-O	Spring-force closing	190 029 DRE-8-F05-Q10-FS-O
	189 787 DRD-14-F05-O	With adjustable end-position limit and overtravel [74° to 98°]	190 069 DRE-14-F05-Q10-FS-O
	189 788 DRD-26-F07-O		190 109 DRE-26-F07-Q10-FS-O
	189 789 DRD-50-F07-O		190 161 DRE-50-F07-Q10-FS-O
	189 790 DRD-50-F10-O		190 162 DRE-50-F10-Q10-FS-O
	189 791 DRD-77-F10-O		190 241 DRE-77-F10-Q10-FS-O
	189 792 DRD-77-F12-O		190 242 DRE-77-F12-Q10-FS-O
	189 793 DRD-100-F12-O		190 309 DRE-100-F12-Q10-FS-O

Important

If a rotary actuator needs optional requirements which go beyond those listed, a corresponding order code must be determined. [This order code

does not include a part no.]. For explanation of codes and ordering examples, see the next page.

Copar Rotary Valve Actuator, Type DRD/DRE

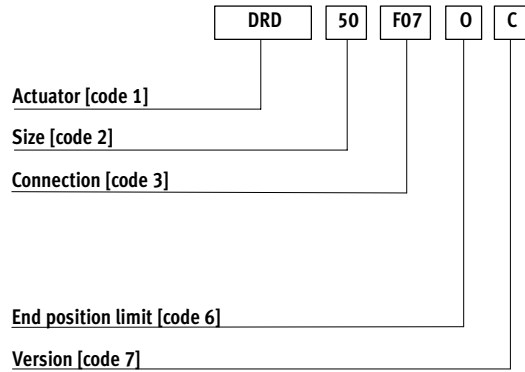
Order code

Actuators for the process industry

Product modules

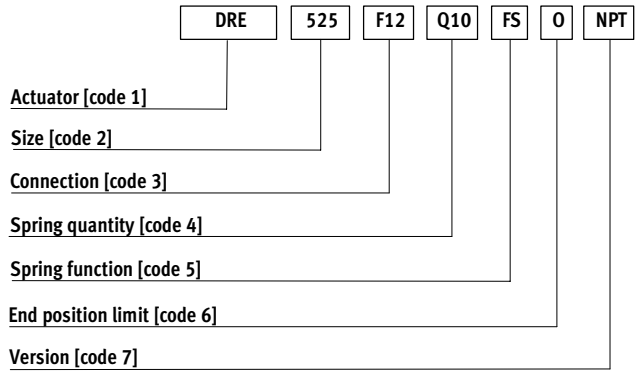
Order examples:

Double-acting rotary actuators



Copar rotary actuators

Single-acting rotary actuators



Code 1: actuator		Code 2: sizes		Code 3: connection to valve †	
DRD	double-acting	1	Size 1	F03	Flange pattern F03 with square V09
DRE	single-acting	2	Size 2	F04	Flange pattern F04 with square V11
		4	Size 4	F05	Flange pattern F05 with square V14
		8	Size 8	F07	Flange pattern F07 with square V17
		14	Size 14	F10	Flange pattern F10 with square V22
		26	Size 26	F12	Flange pattern F12 with square V27
		50	Size 50	F14	Flange pattern F14 with square V36
		77	Size 77	F16	Flange pattern F16 with square V46
		100	Size 100	F25	Flange pattern F25 with square V55
		150	Size 100	F30	Flange pattern F30 with square V75
		225	Size 225	† See overview on page 22	
		375	Size 375		
		575	Size 575		
		880	Size 880		

Code 4: spring quantity for rotary actuator DRE-...		Code 5: spring function for rotary actuator DRE-...	
Q06	Spring quantity 06	FS	Spring-force closing
Q08	Spring quantity 08	FO	Spring-force opening
Q10	Spring quantity 10*		
Q12	Spring quantity 12**		
Q14	Spring quantity 14		
Q09	Spring quantity 09***		
Q15	Spring quantity 15***		
Q18	Spring quantity 18***		

Code 6: end-position limit		Code 7: version	
–	without adjustable end-position limit	–	standard version
		NPT	with NPT/UNC thread
0	with adjustable end-position limit and extended rotation angle (angle of rotation to 98°, only possible for sizes 6 through 100)	C	corrosion-resistant version ****

* Standard spring quantity (configured for 6 bar operating pressure).
 ** Standard for size 575.
 *** Only with size 575.
 **** Upon request.

Copar Rotary Valve Actuator, Type DRD/DRE

Data sheet

Actuators for the process industry

Copar rotary actuators

Overview, Code 3

Connection sizes per DIN/ISO 5211, square hole per DIN 3337 and max. permissible flange load

Square hole connection on rotary actuator Type	Max. Flange Torque* [Nm]	F03 V09	F04 V11	F05 V14	F07 V17	F10 V22	F12 V27	F14 V36	F16 V46	F25 V55	F30 V75
DRD/DRE-1-F03-...	32										
DRD/DRE-2-F04-...	65										
DRD/DRE-4-F05-...	125										
DRD/DRE-8-F05-...	125										
DRD/DRE-14-F07-...	125										
DRD/DRE-26-F07-...	250										
DRD/DRE-50-F07-...	250										
DRD/DRE-50-F10-...	500										
DRD/DRE-77-F10-...	500										
DRD/DRE-77-F12-...	1,000										
DRD/DRE-100-F12-...	1,000										
DRD/DRE-150-F12-...	1,000										
DRD/DRE-150-F14-... **	2,000										
DRD/DRE-225-F12-...	1,000										
DRD/DRE-225-F14-... **	2,000										
DRD/DRE-375-F14-...	2,000										
DRD/DRE-375-F16-... **	4,000										
DRD/DRE-575-F16-... **	4,000										
DRD/DRE-575-F25-...	8,000										
DRD/DRE-880-F25-... **	8,000										
DRD/DRE-880-F30-...	16,000										

* The specified maximum permissible torques per DIN/ISO 5211 are in accordance with the indicated flange sizes.

** Standard

Technical data

Design	Piston cylinder, double or single-acting	
Operating pressure*	min.: sizes 1 ... 4: 2.5 bar, sizes 8 ... 880: 2 bar, max.: [all sizes]: 10 bar	
Temperature range**	-20 ... +80 °C [observe operating range of cylinder sensor]	
Material	Housing	Anodized aluminum
	Bearing cap	Painted aluminum
	Shaft	Aluminum, sizes 150 ... 880: steel
	External screws	Stainless steel
	Seals	Polyurethane, perbunan, POM

* Minimum operating pressures vary for single-acting rotary actuators depending upon spring quantity.

** Additional temperature ranges available upon request.

Conversion factors → page 45.

Copar Rotary Valve Actuator, Type DRD/DRE


Actuators for the process industry

Data sheet

Rotary actuator DRD-...	Torque [Nm] at operating pressure [theoretical]						
	2 bar	3 bar	4 bar	5 bar	6 bar*	7 bar	8 bar
DRD-1-...	2.48	3.72	4.96	6.2	7.44	8.68	8.68
DRD-2-...	5.4	8.1	10.8	13.5	16.2	18.9	21.6
DRD-4-...	12.4	18.8	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	71	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	1026
DRD-100-...	338	506	675	843	1012	1181	1350
DRD-150-...	506	758	1011	1264	1517	1770	2023
DRD-225-...	758	1138	1517	1896	2275	2654	3033
DRD-375-...	1264	1896	2528	3159	3791	4423	5055
DRD-575-...	1919	2879	3839	4799	5758	6718	7677
DRD-880-...	2938	4407	5876	7345	8814	10283	11752

Copar rotary actuators
Torque for DRD-...
with 90° rotation angle

* Measured.

 Important

The following minimum degrees of efficiency apply for all rotary actuators:

DRD/DRE-1-... to 4-...: ≥ 80%

DRD/DRE-8-... to 880-...: ≥ 90%

Rotary actuator DRD-...**														
Actuator DRD-...	1	2	4	8	14	26	50	77	100	150	225	375	575	880
Weight [kg]	0.6	0.8	1.1	2.4	3.6	6.4	11.2	18.5	23	31	37	80	123	156

Weights

** Weight for single-acting rotary actuators is supplied upon request.

Rotary actuator DRD-...														
Actuator DRD-...	1	2	4	8	14	26	50	77	100	150	225	375	575	880
Consumption*** [NI]	0.2	0.3	0.5	0.7	2	3.2	4	6.6	8	12.4	16.6	34	46	64

Air consumption

*** At 6 bar.

Conversion factors → page 45.


Copar Rotary Valve Actuator, Type DRD/DRE

Data sheet

Actuators for the process industry

Copar rotary actuators

Torque for DRE-...
with 90° rotation angle

 Note

The following minimum degrees of efficiency apply for all rotary actuators:

DRD/DRE-1-... to 4-...: ≥ 80%

DRD/DRE-8-... to 880-...: ≥ 90%

Rotary actuator DRE-2-...								
Spring quantity**	Spring torque [Nm]	Md available	Theoretical torque [Nm] at operating pressure					
			3 bar	4 bar	5 bar	6 bar*	7 bar	8 bar
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

Rotary actuator DRE-4-...								
Spring quantity**	Spring torque [Nm]	Md available	Theoretical torque [Nm] at operating pressure					
			3 bar	4 bar	5 bar	6 bar*	7 bar	8 bar
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

Rotary actuator DRE-8-...								
Spring quantity**	Spring torque [Nm]	Md available	Theoretical torque [Nm] at operating pressure					
			3 bar	4 bar	5 bar	6 bar*	7 bar	8 bar
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

* Measured.

** Smaller spring quantity upon request.

Conversion factors → page 45.

Copar Rotary Valve Actuator, Type DRD/DRE

Actuators for the process industry

Data sheet

Copar rotary actuators
Torque for DRE-...
with 90° rotation angle

Rotary actuator DRE-14-...								
Spring quantity**	Spring torque [Nm]	Md available	Md available 3 bar	Theoretical torque [Nm] at operating pressure				
				4 bar	5 bar	6 bar*	7 bar	8 bar
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

Rotary actuator DRE-26-...								
Spring quantity**	Spring torque [Nm]	Md available	Theoretical torque [Nm] at operating pressure					
			3 bar	4 bar	5 bar	6 bar*	7 bar	8 bar
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

Rotary actuator DRE-50-...								
Spring quantity**	Spring torque [Nm]	Md available	Theoretical torque [Nm] at operating pressure					
			3 bar	4 bar	5 bar	6 bar*	7 bar	8 bar
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

* Measured.

** Smaller spring quantity upon request.

Conversion factors → page 45.

Copar Rotary Valve Actuator, Type DRD/DRE

Data sheet

Actuators for the process industry

Copar rotary actuators

Torque for DRE-...
with 90° rotation angle

 Note

The following minimum degrees of efficiency apply for all rotary actuators:

DRD/DRE-1-... to 4-...: ≥ 80%

DRD/DRE-8-... to 880-...: ≥ 90%

Rotary actuator DRE-77-...								
Spring quantity**	Spring torque [Nm]	Md available	Theoretical torque [Nm] at operating pressure					
			3 bar	4 bar	5 bar	6 bar*	7 bar	8 bar
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

Rotary actuator DRE-100-...								
Spring quantity**	Spring torque [Nm]	Md available	Theoretical torque [Nm] at operating pressure					
			3 bar	4 bar	5 bar	6 bar*	7 bar	8 bar
6	160	min.	174	343	511	680	849	1018
	332	max.	346	515	683	852	1021	1190
8	213	min.	63	232	400	569	738	907
	443	max.	293	462	630	799	968	1137
10	267	min.	-	121	289	458	627	796
	554	max.		408	576	745	914	1083
12	320	min.	-	-	178	347	516	685
	665	max.			523	692	861	1030
14	373	min.	-	-	67	236	405	574
	767	max.			470	639	808	977

Rotary actuator DRE-150-...								
Spring quantity**	Spring torque [Nm]	Md available	Theoretical torque [Nm] at operating pressure					
			3 bar	4 bar	5 bar	6 bar*	7 bar	8 bar
6	253	min.	252	505	758	1011	1264	1517
	506	max.	505	758	1011	1264	1517	1770
8	337	min.	84	337	590	843	1096	1349
	674	max.	421	674	927	1180	1433	1686
10	421	min.	-	168	421	674	927	1180
	843	max.		590	843	1096	1349	1602
12	506	min.	-	-	253	506	759	1012
	1011	max.			758	1011	1264	1517
14	590	min.	-	-	84	337	590	843
	1180	max.			674	927	1180	1433

* Measured.

** Smaller spring quantity upon request.

Conversion factors → page 45.

Copar Rotary Valve Actuator, Type DRD/DRE

Actuators for the process industry

Data sheet

Copar rotary actuators
Torque for DRE-...
with 90° rotation angle

Rotary actuator DRE-225-...			Theoretical torque [Nm] at operating pressure					
Spring quantity**	Spring torque [Nm]	Md available						
			3 bar	4 bar	5 bar	6 bar*	7 bar	8 bar
6	379	min.	382	761	1140	1519	1898	2277
	756	max.	759	1138	1517	1896	2275	2654
8	506	min.	127	506	885	1264	1643	2022
	1011	max.	632	1011	1390	1769	2148	2527
10	632	min.	-	253	632	1011	1390	1769
	1264	max.		885	1264	1643	2022	2401
12	758	min.	-	-	379	758	1137	1516
	1517	max.			1138	1517	1896	2275
14	885	min.	-	-	127	506	885	1264
	1769	max.			1011	1390	1769	2148

Rotary actuator DRE-375-...			Theoretical torque [Nm] at operating pressure					
Spring quantity**	Spring torque [Nm]	Md available						
			3 bar	4 bar	5 bar	6 bar*	7 bar	8 bar
6	632	min.	632	1264	1895	2527	3159	3791
	1264	max.	1264	1896	2527	3159	3791	4423
8	843	min.	211	843	1474	2106	2738	3370
	1685	max.	1053	1685	2316	2948	3580	4212
10	1053	min.	-	421	1052	1684	2360	2948
	2107	max.		1475	2106	2738	3370	4002
12	1264	min.	-	-	631	1263	1895	2527
	2528	max.			1895	2527	3159	3791
14	1475	min.	-	-	210	842	1474	2106
	2949	max.			1684	2316	2948	3580

Rotary actuator DRE-575-...			Theoretical torque [Nm] at operating pressure					
Spring quantity**	Spring torque [Nm]	Md available						
			3 bar	4 bar	5 bar	6 bar*	7 bar	8 bar
6	632	min.	1615	2575	3535	4494	5454	6413
	1264	max.	2247	3207	4167	5126	6086	7045
8	948	min.	938	1943	2903	3862	4822	5781
	1896	max.	1931	2891	3851	4810	5770	6729
10	1264	min.	351	1311	2271	3230	4190	5149
	2528	max.	1615	2575	3535	4494	5454	6413
12	1580	min.	-	679	1639	2598	3558	4517
	3160	max.		2259	3219	4178	5138	6097
14	1896	min.	-	-	1007	1966	2926	3885
	3792	max.			2903	3862	4822	5781

* Measured.

** Smaller spring quantity upon request.

Conversion factors → page 45.


Copar Rotary Valve Actuator, Type DRD/DRE

Data sheet

Actuators for the process industry

Copar rotary actuators

Torque for DRE-...
with 90° rotation angle

 Note

The following minimum degrees of efficiency apply for all rotary actuators:

DRD/DRE-1-... to 4-...: ≥ 80%

DRD/DRE-8-... to 880-...: ≥ 90%

Rotary actuator DRE-880-...			Theoretical torque [Nm] at operating pressure					
Spring quantity**	Spring torque [Nm]	Md available	3 bar	4 bar	5 bar	6 bar*	7 bar	8 bar
6	1468	min.	1470	2939	4408	5877	7346	8815
	2937	max.	2939	4408	5877	7346	8815	10284
8	1958	min.	791	2260	3729	5198	6667	8136
	3616	max.	2449	3918	5387	6856	8325	9794
10	2447	min.	-	982	2451	3920	5389	6858
	4894	max.		3429	4898	6367	7836	9305
12	2937	min.	-	-	1472	2941	4410	5879
	5873	max.			4408	5877	7346	8815
14	3792	min.	-	-	3553	5022	6491	7960
	6852	max.			493	1962	3431	4900

* Measured.

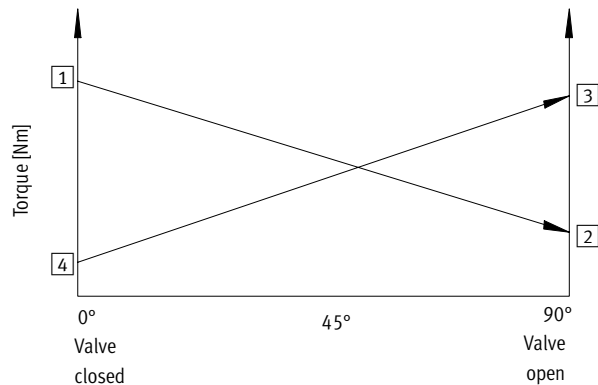
** Smaller spring quantity upon request.

Air consumption

Rotary actuator DRE-...														
Actuator DRE-...	1	2	4	8	14	26	50	77	100	150	225	375	575	880
Consumption*** [Nl]	-	0.2	0.3	0.4	1	1.6	2	3	4	6.2	8.3	17	23	32

*** At 6 bar.

Available torques



e.g. DRE-880-F25-Q10-FS
at 6 bar operating pressure

- 1 Maximum torque at operating pressure → 6367 Nm
- 2 Minimum torque at operating pressure → 3920 NM
- 3 Maximum spring torque → 4894 Nm
- 4 Minimum spring torque → 2447 Nm

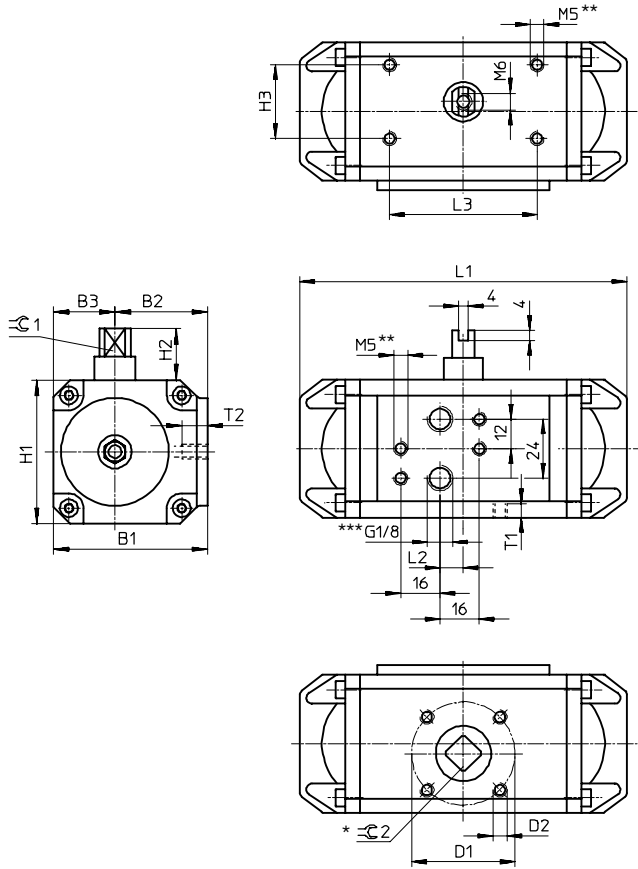
Conversion factors → page 45.

Copar Rotary Valve Actuator, Type DRD/DRE

Data sheet

Copar rotary actuators

DRD/DRE-1 to 4-...



Type	B1	B2	B3	D1 Ø	D2		H1	H2	H3	L1	L2	L3	T1	T2	C1	C2
					mm	inch										
DRD-/DRE-1-F03-...	45	25	20	36	M5	10-24 UNC	45	20	25	89	11	50	5	5	8	9
DRD-/DRE-2-F03-...	60	34	26	36	M5	10-24 UNC	56	20	25	133	10	50	6	7	9	9
DRD-/DRE-2-F04-...	60	34	26	42	M5	10-24 UNC	56	20	25	133	10	50	6	7	9	11
DRD-/DRE-4-F04-...	71	38	33	42	M5	10-24 UNC	66	20	25	175	24	80	7	7	15	11
DRD-/DRE-4-F05-...	71	38	33	50	M6	¼-20 UNC	66	20	30	175	24	80	7	7	15	14

* Metric version shown. On NPT models, square on shaft is parallel to the housing.

** On NPT model thread is 10-24 NC x t1.

*** Inch version is ¼" NPT.

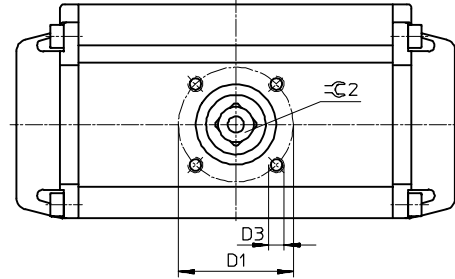
Conversion factors → page 45.

Copar Rotary Valve Actuator, Type DRD/DRE

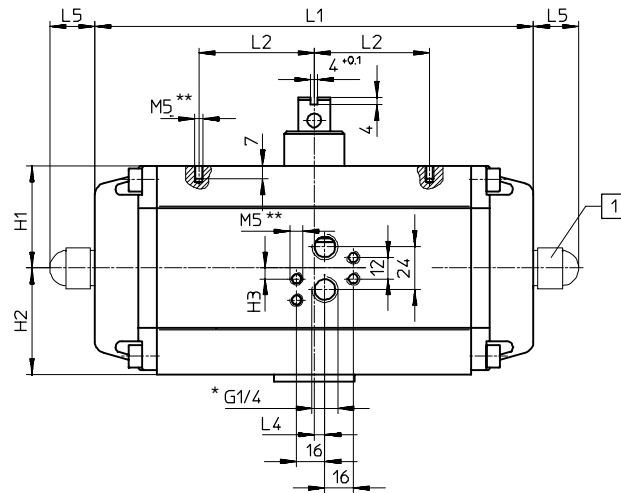
Data sheet

Actuators for the process industry

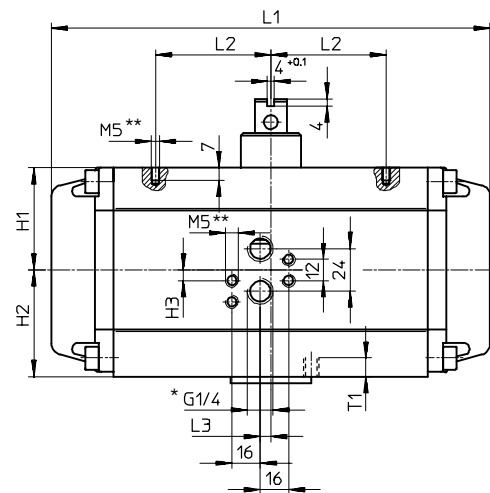
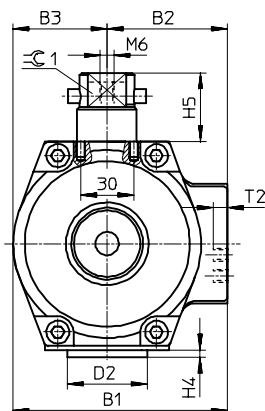
Copar rotary actuators



DRD/DRE-8-... to 100-...



DRD/DRE-150-... to 880-...



* Inch version is 1/4" NPT.
 ** Inch version is No. 10-24 UNC

1 End-position setting

Copar Rotary Valve Actuator, Type DRD/DRE

Actuators for the process industry

Data sheet

Copar rotary actuators

Type	B1	B2	B3	D1 ∅	D2 ∅ f8		D3 ∅		H1	H2	H3
					mm	inch	mm	Inch			
					DRD-/DRE-8-F05-...	93.5	52.5	41			
DRD-/DRE-14-F05-...	122	67	55	50	35	1.378	M6	¼-20 UNC	59.5	61.5	-
DRD-/DRE-26-F07-...	146	79	67	70	55	2.165	M8	5/16-18 UNC	71.5	74.5	-
DRD-/DRE-50-F07-...	172	94	78	70	55	2.165	M8	5/16-18 UNC	81.5	84.5	-
DRD-/DRE-50-F10-...	172	94	78	102	70	2.756	M10	3/8-16 UNC	81.5	84.5	-
DRD-/DRE-77-F10-...	189.5	99.5	90	102	70	2.756	M10	3/8-16 UNC	94	98	-
DRD-/DRE-77-F12-...	189.5	99.5	90	125	85	3.347	M12	7/16-14 UNC	94	98	-
DRD-/DRE-100-F12-...	216	114	102	125	85	3.347	M12	7/16-14 UNC	106.5	111.5	-
DRD-/DRE-150-F12-...	254	135	119	125	85	3.347	M12	7/16-14 UNC	136	136	-
DRD-/DRE-150-F14-...	254	135	119	140	100	3.937	M16	5/8-11 UNC	136	136	-
DRD-/DRE-225-F12-...	254	135	119	125	85	3.347	M12	7/16-14 UNC	136	136	-
DRD-/DRE-225-F14-...	254	135	119	140	100	3.937	M16	5/8-11 UNC	136	136	-
DRD-/DRE-375-F14-...	344	172	172	140	100	3.937	M16	5/8-11 UNC	172	172	6
DRD-/DRE-375-F16-...	344	172	172	165	130	5.118	M20	¾-10 UNC	172	172	6
DRD-/DRE-575-F16-...	422	211	211	165	130	5.118	M20	¾-10 UNC	211	211	6
DRD-/DRE-575-F25-...	422	211	211	254	200	7.874	M16	5/8-11 UNC	211	211	6
DRD-/DRE-880-F25-...	450	225	225	254	200	7.874	M16	5/8-11 UNC	225	225	6
DRD-/DRE-880-F30-...	450	225	225	298	230	9.055	M20	¾-10 UNC	225	225	6

Type	H4	H5	L1 DRD	L1 DRE	L2	L3	L4	L5	T1	T2	≈C1	≈C2	H11
DRD-/DRE-14-F05-...	3	20	213	213	40	-	-	29.5	9	6	14	14	
DRD-/DRE-26-F07-...	3	20	266	266	40	-	-	30	12	6	17	17	
DRD-/DRE-50-F07-...	3	20	354	354	65	-	15	33	13	6	17	17	
DRD-/DRE-50-F10-...	3	30	354	354	65	-	15	33	16	6	22	22	
DRD-/DRE-77-F10-...	3	30	411	411	65	-	15	38	16	6	22	22	
DRD-/DRE-77-F12-...	3	30	411	411	65	-	15	38	18	6	27	27	
DRD-/DRE-100-F12-...	3	30	418	418	65	-	15	38	18	6	27	27	
DRD-/DRE-150-F12-...	3	30	387	485	65	40	-	-	20	8	46	27	
DRD-/DRE-150-F14-...	4	30	387	485	65	40	-	-	25	8	46	36	
DRD-/DRE-225-F12-...	3	30	510	601	65	71	-	-	20	8	46	27	
DRD-/DRE-225-F14-...	4	30	510	601	65	71	-	-	25	8	46	36	
DRD-/DRE-375-F14-...	5	30	560	740	65	80	-	-	25	8	46	36	
DRD-/DRE-375-F16-...	5	30	560	740	75	80	-	-	32	8	46	46	
DRD-/DRE-575-F16-...	5	30	532	754	75	89	-	-	32	8	46	46	
DRD-/DRE-575-F25-...	5	30	532	754	75	89	-	-	22	8	46	55	
DRD-/DRE-880-F25-...	5	30	668	878	75	110	-	-	22	8	46	55	
DRD-/DRE-880-F30-...	5	30	668	878	75	110	-	-	27	8	46	75	

Conversion factors → page 45.

Copar Rotary Valve Actuator, Type DRD/DRE

Data sheet

Actuators for the process industry

Limit switch box with sensors

QH-DR-E...

Materials:

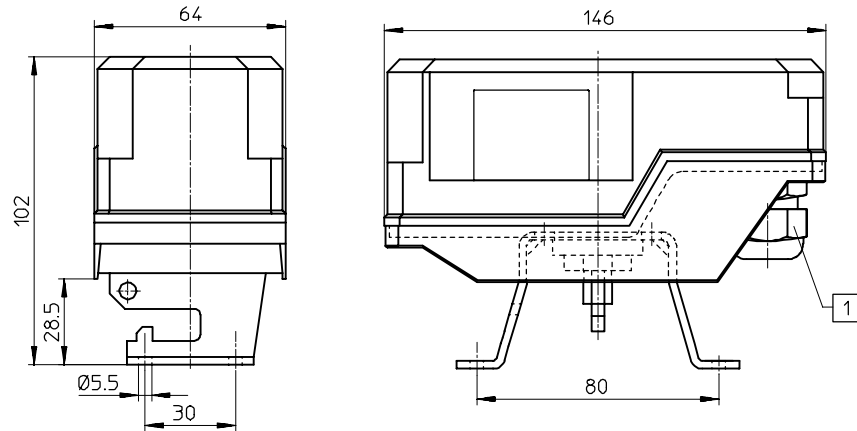
Housing, lower: Vestamid

Cap: Macrolon, transparent

Seal: EPDM 60 Shore A

The limit switch box is available in 3 versions. Sensing can be:

- Inductive
- Electrical
- Pneumatic



1 Connection PG 13.5

Inductive sensing

Part No.	Type
164 853	QH-DR-E-SIEN-M12NB B
Permissible operating voltage	10 to 30 VDC
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 connection cables	0.2 to 2.5 mm ²
Switching accuracy unit	≤ 0.5°
Connection	PG 13.5
Temperature range	-25 ... +85° C
Display	LED, yellow
Degree of protection	Housing IP 65
CE symbol	EN50947-5-2:1995

Conversion factors → page 45.

Electrical sensing

Part No.	Type
164 854	QH-DR-E-S3-SW B
Category	AC 15 / AC 12 DC 13 / DC 12
Permissible operating voltage	0 to 250 VAC 0 to 250 VAC
Rated operating currents for rated operating voltage	Ohmic load: [AC 12 / DC 12] 230 VAC / 230 VDC 10 A AC / 0.3 A DC Inductive load: [AC 12 / DC 12] 230 VAC / 230 VDC 4 A AC / 0.2 A DC
Rated transient voltage	2.5 kV
Cross section of connection cables	0.2 to 2.5 mm ²
Switching accuracy unit	1.5°
Connection	PG 13.5
Temperature range	-25 ... +80° C
Degree of protection	Housing IP 65
CE symbol	Yes, to EN60947-5-1:1991

Pneumatic sensing

Part No.	Type
164 855	QH-DR-E-S3-PK-3-B B
Medium	Compressed air, filtered [lubricated or unlubricated]
Function	3/2-way valve, directly actuated, normally closed
Pneumatic connection	Barbed fitting for plastic tubing NW 3
Nominal width	1.8 mm [smallest cross-section]
Working pressure	-1 to +8 bar
Switching accuracy unit	1.5°
Connection	PG 13.5
Temperature range	-10 ... +60° C

Conversion factors → page 45.

Copac/Copar Valve Actuators, Type DRD/DRE/DLP

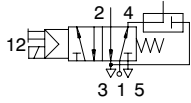
Data sheet

Actuators for the process industry

NAMUR valve

NVF3-MOH-5/2K-1/4

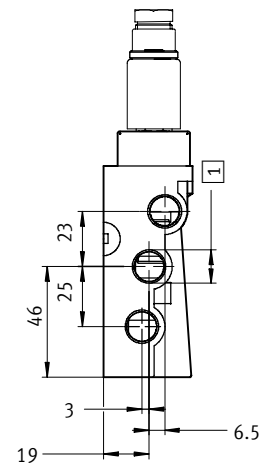
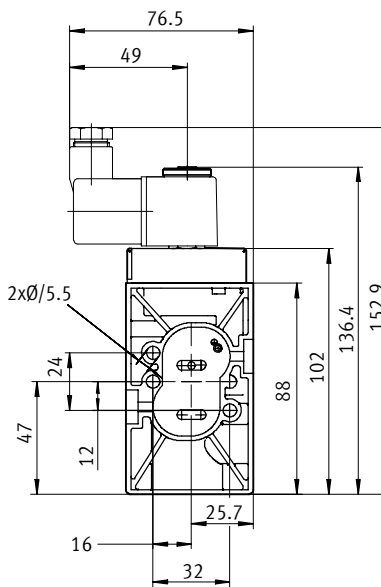
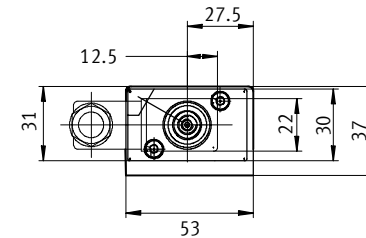
NVF3-MOH-5/2K-1/4NPT



Materials:

Housing: Al, anodized, St-A2, POM

Seal: NBR



1 3 x G $\frac{1}{4}$ or $\frac{1}{4}$ NPT

Note: Coil is not included in scope of delivery.

Ordering Information		196 982	196 983
Part No.		NVF3-MOH-5/2K-1/4	NVF3-MOH-5/2K-1/4NPT
Type			
Design		Piston spool valve with sealing cartridge, rotatable sealing plate for optional 5/2 or 3/2-way valve function with exhaust air feedback.	
Type of mounting		2 through holes in housing	
Connection threads	1,3,5 2,4	G $\frac{1}{4}$,	$\frac{1}{4}$ NPT
Nominal size		7 mm	
Standard flow rate	5/2 function	1 \rightarrow 2	900 l/min
		1 \rightarrow 4	900 l/min
		2 \rightarrow 3	900 l/min
		4 \rightarrow 5	900 l/min
	3/2 function	1 \rightarrow 2	900 l/min
		2 \rightarrow 3	900 l/min
Operating pressure range		2 ... 10 bar	
Response time at 6 bar [ms]		On: 50/Off: 100	
Temperature range [ambient]		-10 ... +60° C	
Temperature range [medium]		-10 ... +60° C	
Weight [without coil]		260 g	
Degree of protection to DIN 40 050		IP65	

Solenoid coil data \rightarrow page 39.

Conversion factors \rightarrow page 45.

Copac/Copar Valve Actuators, Type DRD/DRE/DLP

Actuators for the process industry

Data sheet

NAMUR valve
NVF3-MOH-5/2K-1/4
NVF3-MOH-5/2K-1/4NPT

Electrical data, F-solenoid	DC	AC	
Voltages	Standard	24, 42, 110, 230 VAC / 50 to 60 Hz	
	Special	12 to 240 VAC / 50 to 60 Hz	
Permissible voltage fluctuation	±10 %	± 10 % for nominal frequency	
Permissible frequency fluctuation	–	± 5 % for nominal voltage	
Power consumption for standard voltages [for special voltages on request]	4.1W at 12V	Pick-up: 7.5 VA	Pick-up: 50 Hz: 12 VA
	4.5W at 24V	Hold: 6 VA	Pick-up: 60 Hz: 10 VA Hold: 50Hz: 9 VA Hold: 60 Hz: 7.5 VA
Duty cycle	100 %		
Degree of protection to DIN 40 050	IP 65		
Cable conduit fitting	PG 9		
Temperature range [ambient]	-5 ... +40° C		
Temperature range [medium]	-10 ... +60° C		
Min. pick-up time	10 ms		
Power factor φ_1	–	0.7	

Valve technical data → page 38

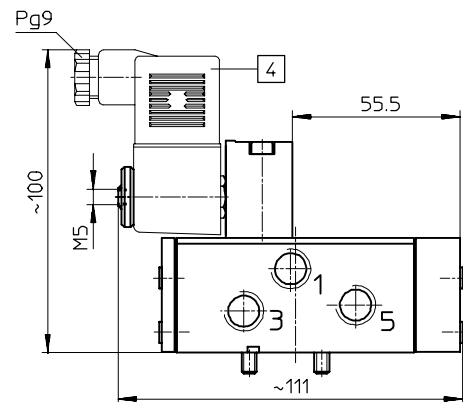
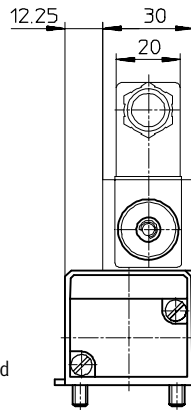
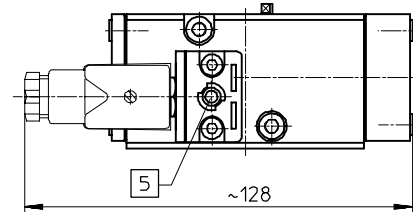
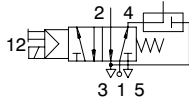
Conversion factors → page 45.

Copac/Copar Valve Actuators, Type DRD/DRE/DLP

Data sheet

Actuators for the process industry

NAMUR valve
MFH-5/2K-FR-NA



- 4 Plug can be repositioned by 180°
- 5 Manual override

Note: Coil is not included in scope of delivery.

Part No.	Type	DC	AC
183 973	MFH-5/2K-FR-NA + voltage	DC	AC
Electrical data, F-solenoid			
Voltages	Standard	12, 24 VDC	24, 42, 110, 230 VAC / 50 to 60 Hz
	Special	12 to 230 VDC	12 to 240 VAC / 50 to 60 Hz
Permissible voltage fluctuation		±10 %	± 10 % for nominal frequency
Permissible frequency fluctuation		–	± 5 % for nominal voltage
Power consumption for standard voltages [for special voltages on request]		4.1W at 12V	Pick-up 7.5 VA
		4.5W at 24V	Hold: 6 VA
			Pick-up: 50 Hz: 12 VA Pick-up: 60 Hz: 10 VA Hold: 50Hz: 9 VA Hold: 60 Hz: 7.5 VA
Duty cycle		100 %	
Degree of protection to DIN 40 050		IP 65	
Cable conduit fitting		PG 9	
Temperature range [ambient]		-5 ... +40° C	
Temperature range [medium]		-10 ... +60° C	
Min. pick-up time		10 ms	
Power factor φ_1		–	0.7

Valve technical data → page 38

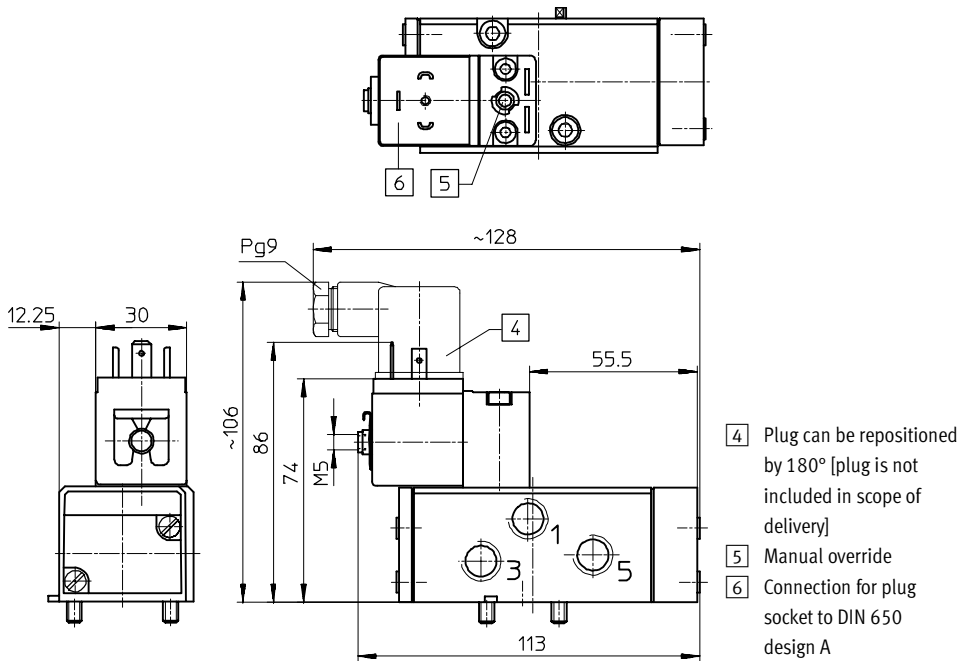
Conversion factors → page 45.

Copac/Copar Valve Actuators, Type DRD/DRE/DLP

Actuators for the process industry

Data sheet

NAMUR valve
MN1H-5/2K-FR-NA



Part No.	Type	DC	AC
183 974	MN1H-5/2K-FR-NA + voltage		
Electrical data, N1 solenoid			
Voltages	24V	110V / 50 to 60 Hz 120V / 60 Hz	230V / 50 to 60 Hz
Permissible voltage fluctuation	-10 % +10 %	50 Hz: 99 to 121V 60 Hz: 99 to 132V	207 to 235V
Permissible frequency fluctuation	–	± 5 % for nominal voltage	
Power consumption for standard voltages	2.5 W	Pick-up 5 VA Hold: 3.7 VA	
Duty cycle	100 %		
Degree of protection to DIN 40 050	IP 65 with plug socket		
Electrical connection	Plug pins with connection pattern to DIN 43 650 Design A		
Temperature range [Ambient]	-10 ... +50° C		
Temperature range [medium]	-10 ... +50° C		
Power factor φ_1	–	0.7	

Valve technical data → page 38

Conversion factors → page 45.

Copac/Copar Valve Actuators, Type DRD/DRE/DLP

Data sheet

Actuators for the process industry

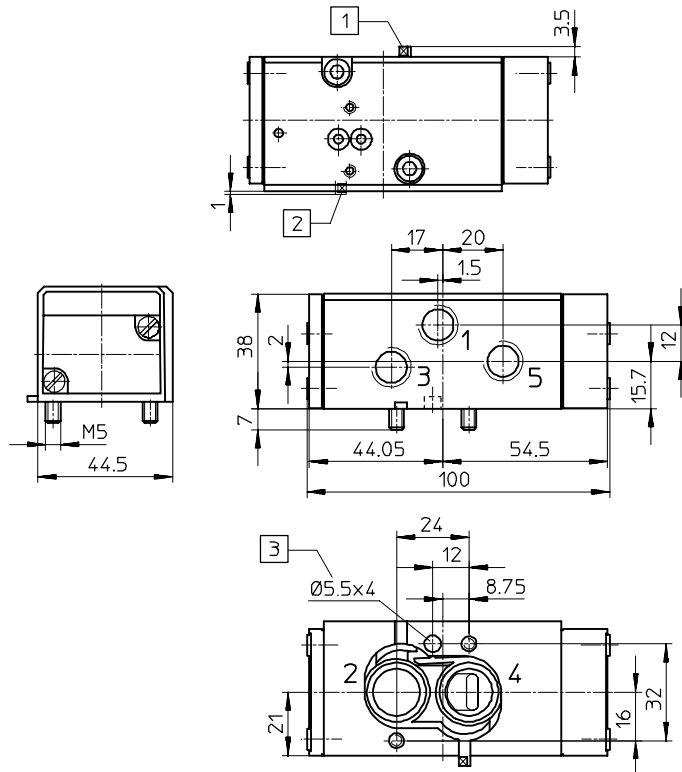
NAMUR valve

Basic

Materials:

Housing, Al, anodized, St-A2, POM

Seal: NBR



- 1 Sealing plate set to 5/2-valve function
- 2 Sealing plate set to 3/2-valve function
- 3 Hole for coding pin

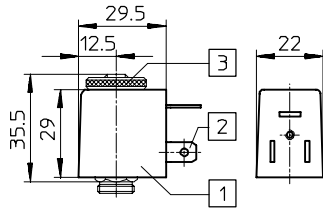
Basic Namur valve body		
Medium	Compressed air, filtered [lubricated or unlubricated]	
Design	Spool valve with sealing ring cartridge and convertible sealing plate [NAMUR hole pattern] for either 5/2-way or 3/2-way valve function with exhaust air return.	
Type of mounting	2 holes in housing to VDI/VDE 3845, NAMUR DIN 228/1 with 2 cheesehead screws M5x40 DIN 912 A2	
Connection threads	1, 3, 5 2, 4 G¼ NAMUR hole pattern	
Nominal width	8 mm	
Standard flow rate	5/2-function 1 → 2 1 → 4 1 → 3 1 → 5 3/2-function 1 → 2 1 → 3 1 → 5	800 l/min 800 l/min 950 l/min 950 l/min 800 l/min 950 l/min 140 l/min
Operating pressure	2 to 10 bar for F-, N1- and XM coils; 2 to 8 bar for TB-, XD- and XIA coils	
Temperature range [ambient]	-10 ... +50° C	
Temperature range [medium]	-10 ... +50° C	
Corrosion protection	CRC2 to FN 940 070 [Festo standard]*	

* Paint-wetting impairment substances can cause pitting [localized funnel-shaped depressions] in paint finishes applied to the surfaces.
Conversion factors → page 45.

Copac/Copar Valve Actuators, Type DRD/DRE/DLP

Actuators for the process industry

Data sheet



- 1 The solenoid coil can be rotated on the armature tube.
- 2 Plug pins
- 3 Tightening torque for the securing nut: min. 100 Ncm, max. 150 Ncm

F-solenoid coils
MSFG-...
MSFW-...

Materials:
 Steel, Cu, Duroplast



Can only be operated on aluminum valves with following valve body dimensions: $\geq 26 \times 16 \times 14$ mm

CSA approval upon request, only in combination with certain valves

	Part No.	Type	
Solenoid coil without plug-socket			for mounting to the following valves
12 V DC	34 410	MSFG-12-OD	Scope of delivery: 1 solenoid coil, 1 spring washer, 1 knurled nut
24 V DC	34 411	MSFG-24/42-50/60-OD	
42 V DC	34 413	MSFG-42-OD	
48 V DC	34 414	MSFG-48-OD	
24 V/50 ... 60 Hz AC	34 415	MSFW-24-50/60-OD	
42 V/50 ... 60 Hz AC	34 411	MSFG-24/42-50/60-OD	
48 V/50 ... 60 Hz AC	34 418	MSFW-48-50/60-OD	
110 V/50 ... 60 Hz AC	34 420	MSFW-110-50/60-OD	
230 V/50 ... 60 Hz AC	34 422	MSFW-230-50/60-OD	
240 V/50 ... 60 Hz AC	34 424	MSFW-240-50/60-OD	
Accessories			
Plug-socket	34 431	MSSD-F	
Plug-socket with PVC cable			
for 24 V DC, 2.5 m	30 935	KMF-1-24-2,5-LED	
for 0 ... 240 V, 2.5 m	30 936	KMF-1-230-2,5	
for 24 V DC, 5 m	30 937	KMF-1-24-5-LED	
for 0 ... 240 V, 5 m	30 938	KMF-1-230-5	
Luminescent seal			
for 12 ... 24 V DC/AC	19 143	MF-LD-12...24	
for 0 ... 240 V DC/AC	19 144	MF-LD-220/230-50	
Identification plate (scope of delivery 35 pieces)	33 362	KMC/F/V-BZ-35X	

	MSFG-...	MSFW-...
Voltages	12, 24, 42, 48 V DC	24, 42, 48, 110, 230, 240 V AC/50...60 Hz
Permissible voltage fluctuation	±10%	±10%
Permissible frequency fluctuation	-	±5%
Power consumption	4.1 W at 12 V DC 4.5 W at 24, 42, 48 V DC	Pull: 7.5 VA Hold: 6 VA
Duty cycle	100%	
Degree of protection per EN 60 529	IP 65 with plug-socket	
Electrical connection	Plug pins as per Festo standard connection diagram	
Temperature range [ambient]	-5 ... +40 °C	
Temperature range [medium]	-10 ... +60 °C	
Min. pickup time	10 ms	
Power factor: cosφ	-	0.7
Weights	0.065 kg	0.055 kg

Conversion factors → page 45.

Copac/Copar Valve Actuators, Type DRD/DRE/DLP

Data sheet

Actuators for the process industry

N1 solenoid coils

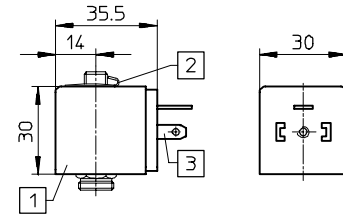
MSN1G-...

MSN1W-...

Materials:

Thermoplastic, steel, Cu

- 1 The solenoid coil can be rotated on the armature tube.
- 2 Securing clip
- 3 Plug pins



	MSN1G-24-...	MSN1W-110-...	MSN1W-230-...
Voltages	24 V	110 V/50 ... 60 Hz 120 V/60 Hz	230 V/50 ... 60 Hz
Permissible voltage fluctuation	-15% +10%	50 Hz: ±10% 60 Hz: -10/+20%	±10%
Permissible frequency fluctuation	-	±5%	
Power consumption	2.5 W	Pull: 5 VA Hold: 3.7 VA	
Duty cycle	100%		
Degree of protection per EN 60 529	IP 65 with plug-socket		
Electrical connection	Plug pins as per connection diagram DIN 43 650, type A		
Temperature range [ambient]	-10 ... +50 °C		
Temperature range [medium]	-10 ... +50 °C		
Min. pickup time	10 ms		
Power factor: cosφ	-	0.7	
Weights	0.080 kg		

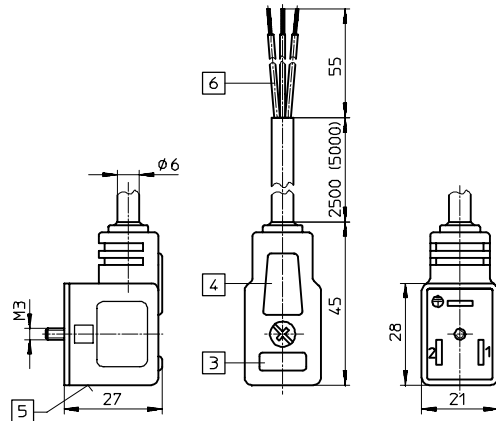
	Part No.	Type	
Solenoid coil without plug-socket Connection diagram: DIN 43 650 Type A			for mounting to the following valves MN1H, JMN1H Scope of delivery: 1 solenoid coil, 1 mounting clip
24 V DC	123 060	MSN1G-24-OD	
110 V AC/50 ... 60 Hz	123 061	MSN1W-110-50/60-OD	
230 V AC/50 ... 60 Hz	123 062	MSN1W-230-50/60-OD	
Accessories			
Plug-socket	34 583	MSSD-C	
Plug-socket with PVC cable			
for 24 V DC, 2.5 m	30 931	KMC-1-24-2,5-LED	
for 0 ... 240 V, 2.5 m	30 932	KMC-1-220/230-2,5	
for 24 V DC, 5 m	30 933	KMC-1-24-5-LED	
for 0 ... 240 V, 5 m	30 934	KMC-1-220/230-5	
Luminescent seal			
for 12 ... 24 V DC/AC	19 145	MC-LD-12-24	
for 0 ... 240 V DC/AC	19 146	MC-LD-230	
Identification plate (scope of delivery 35 pieces)	33 362	KMC/F/V-BZ-35X	

Conversion factors → page 45.

Copac/Copar Valve Actuators, Type DRD/DRE/DLP

Actuators for the process industry

Data sheet



- 3 LED illuminated area
- 4 Designation area
- 5 Circuit diagram
- 6 Wires: 3 x 0.75 mm²

Plug-sockets with cable KMF...

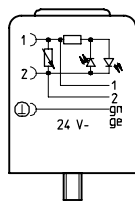
Materials:
Housing: polymer
Cable: PVC
Contacts: CuSn

		Part No.	Type
Plug-sockets with cable			
Plug-socket with flat seal, moulded-in PVC cable for F solenoid coils	2.5 m	for 24 V DC	30 935 KMF-1-24-2,5-LED
		for 0 ... 240 V	30 936 KMF-1-220/230-2,5
	5 m	for 24 V DC	30 937 KMF-1-24-5-LED
		for 0 ... 240 V	30 938 KMF-1-220/230-5
Accessories			
Identification plates	scope of delivery 35 pieces	33 362	KMC/F/V-BZ-35X

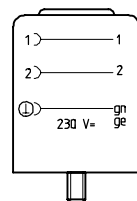
		24 V DC	230 V DC/AC
Type of mounting		Central screw M3	M3
Permissible voltage		24 V DC	0 ... 240 V
Terminals	[mm ²]	3 x 0.75	3 x 0.75
Temperature range		-20 ... +80 °C	
Degree of protection per EN 60 529		IP 67 (assembled), KMEB-2: IP 65 (assembled)	
Weights [kg]	PVC cable	2.5 m	0.170
		5 m	0.320
	PUR cable	2.5 m	
		5 m	

Conversion factors → page 45.

24 V DC



0 ... 240 V DC/AC



The 24 V DC version is reverse polarity protected and has a protective circuit for peak voltages of up to 100 V, as well as an operating status indicator with yellow LED.

Copac/Copar Valve Actuators, Type DRD/DRE/DLP

Data sheet

Actuators for the process industry

Plug-sockets with cable

KMC-...

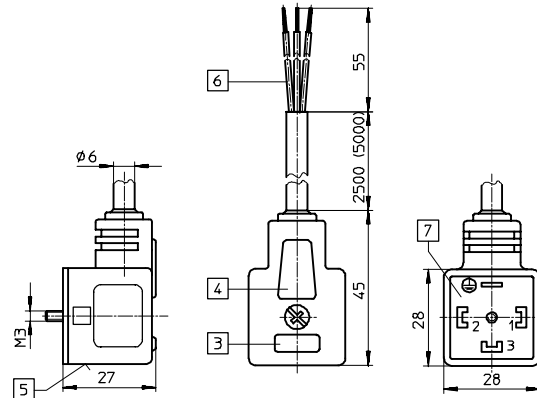
Materials:

Housing: polymer

Cable: PVC

Contacts: CuSn

- 3 LED illuminated area
- 4 Designation area
- 5 Circuit diagram
- 6 Wires: 3 x 0.75 mm²

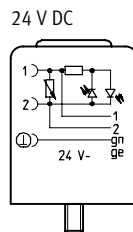


				Part No.	Type	
Plug-sockets with cable						
Plug-socket with flat seal, moulded-in PVC cable						
Connection diagram per DIN 43 650	Type A	2.5 m	for 24 V DC	30 931	KMC-1-24-2,5-LED	
			for 0 ... 240 V	30 932	KMC-1-220/230-2,5	
	5 m	for 24 V DC	30 933	KMC-1-24-5-LED		
		for 0 ... 240 V	30 934	KMC-1-220/230-5		
Accessories						
Identification plates				scope of delivery 35 pieces	33 362	KMC/F/V-BZ-35X

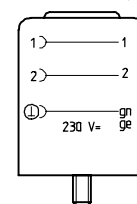
		24 V DC	230 V DC/AC
Type of mounting		Central screw M3	M3
Permissible voltage		24 V DC	0 ... 240 V
Terminals	[mm ²]	3 x 0.75	3 x 0.75
Temperature range		-20 ... +80 °C	
Degree of protection per EN 60 529		IP 67 (assembled), KMEB-2: IP 65 (assembled)	
Weights [kg]	PVC cable	2.5 m	0.110
		5 m	0.315
	PUR cable	2.5 m	
		5 m	

Conversion factors → page 45.

The 24 V DC version is reverse polarity protected and has a protective circuit for peak voltages of up to 100 V, as well as an operating status indicator with yellow LED.



0 ... 240 V DC/AC

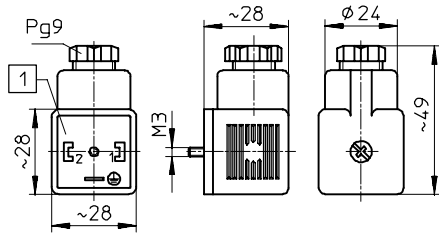


Copac/Copar Valve Actuators, Type DRD/DRE/DLP

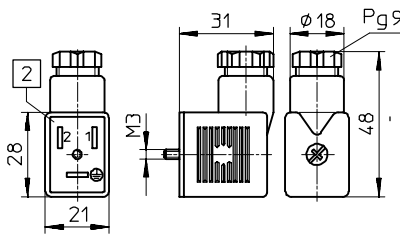
Data sheet

Actuators for the process industry

MSSD-C



MSSD-F



Plug-sockets

MSSD-C

MSSD-F

Materials: polymer

- 1 Inserts can be repositioned by 90°
- 2 Insert can be repositioned by 180°

		Part No.	Type
Plug-sockets			
Plug-socket with flat seal			
Connection Diagram per DIN 43 650 type A		34 583	MSSD-C
for F solenoid coils		34 431	MSSD-F
Accessories			
Identification plates	scope of delivery 35 pieces	33 362	KMC/F/V-BZ-35X

	MSSD-C	MSSD-F
Type of mounting	M3 Central screw	
Cable diameter	6 ... 8 mm	
Maximum conductor cross section	3 x 1.5 mm ²	
Cable conduit fitting	Pg 9	
Temperature range	-25 ... +90 °C	
Degree of protection per EN 60 529	IP 65	
Weights [kg]	0.022	0.017

Conversion factors → page 45.

Copac/Copar Valve Actuators, Type DRD/DRE/DLP

Data sheet

Actuators for the process industry

Additional accessories



QuickStar fittings and tubing
– See Catalog 275 363

Available on request:

- Assembly kits
- Couplings
- Shaft adapters
- Reducers
- Position controllers
- Limit switch boxes



One-way flow control valves
type GRLA...-B
– See Catalog 275 360



Quick exhaust valves
– See Catalog 275 360



Mufflers
– See Catalog 275 363

Copac/Copar Valve Actuators, Type DRD/DRE/DLP

Data sheet

Local controllers – Copac/Copar

The local control unit is used for controlling pneumatic actuators in the process industry. It gives an operator the same functionality as electrical actuators. The operator can switch from local control to remote control and can move the valve into any position from the local mode.



Additional accessories
Available on request
[Contact your local Festo office]

Assembly kits

- Couplings [shaft/shaft]
- Shaft adapters/reducing sleeves
- Mounting bridges



Closed loop controllers for Copac actuators

The controllable copar actuator incorporates an additional integrated measuring system. This system provides for intermediate position control of linear process valves.

In development
[Contact your local Festo office]

Conversions: bar/psi = x 14.500
kg/lb = x 2.2046
mm/inch = x 25.400
N/lbs = x 0.2248
Nl/ft³ = x 0.0353
Nm/ft-lb = x 0.7376
C°/F° = x [1.8] + 32

Conversion Factors

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