

Standards-based cylinder DSNA

FESTO



Characteristics

At a glance

- Double-acting standards-based cylinder
- With one-ended or through piston rod
- With adjustable cushioning at both ends
- Numerous mounting options
- The variants can be configured according to individual needs using a modular product system

System of units

[N] Imperial

Piston rod type

[] At one end



- The piston rod can be used for connection at one end of the standards-based cylinder

Piston rod type

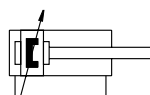
[T] Through piston rod



- The piston rod can be used for connection at both ends of the standards-based cylinder
- Identical forces in forward and return stroke

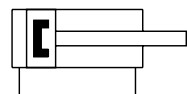
Cushioning

[PPV] Pneumatic cushioning, adjustable at both ends



Position sensing

[A] For proximity switch



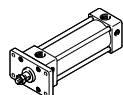
Standard

[N5] Conforms to ANSI/NFPA

- The standards-based cylinder conforms to ANSI/NFPA standards T3.6.7 R3-2009 T3, Section 8.3 "Pneumatic cylinders"

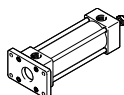
Type of mounting

[MF1] Flange plate, bearing cap



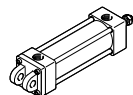
Type of mounting

[MF2] Flange plate, end cap



Type of mounting

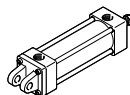
[MP1] Swivel bearing



- Cannot be combined with through piston rod

Type of mounting

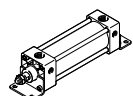
[MP2] Swivel mounting



- Cannot be combined with through piston rod

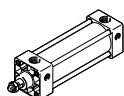
Type of mounting

[MS1] Foot mounting



Type of mounting

[MS4] Direct mounting



Type codes

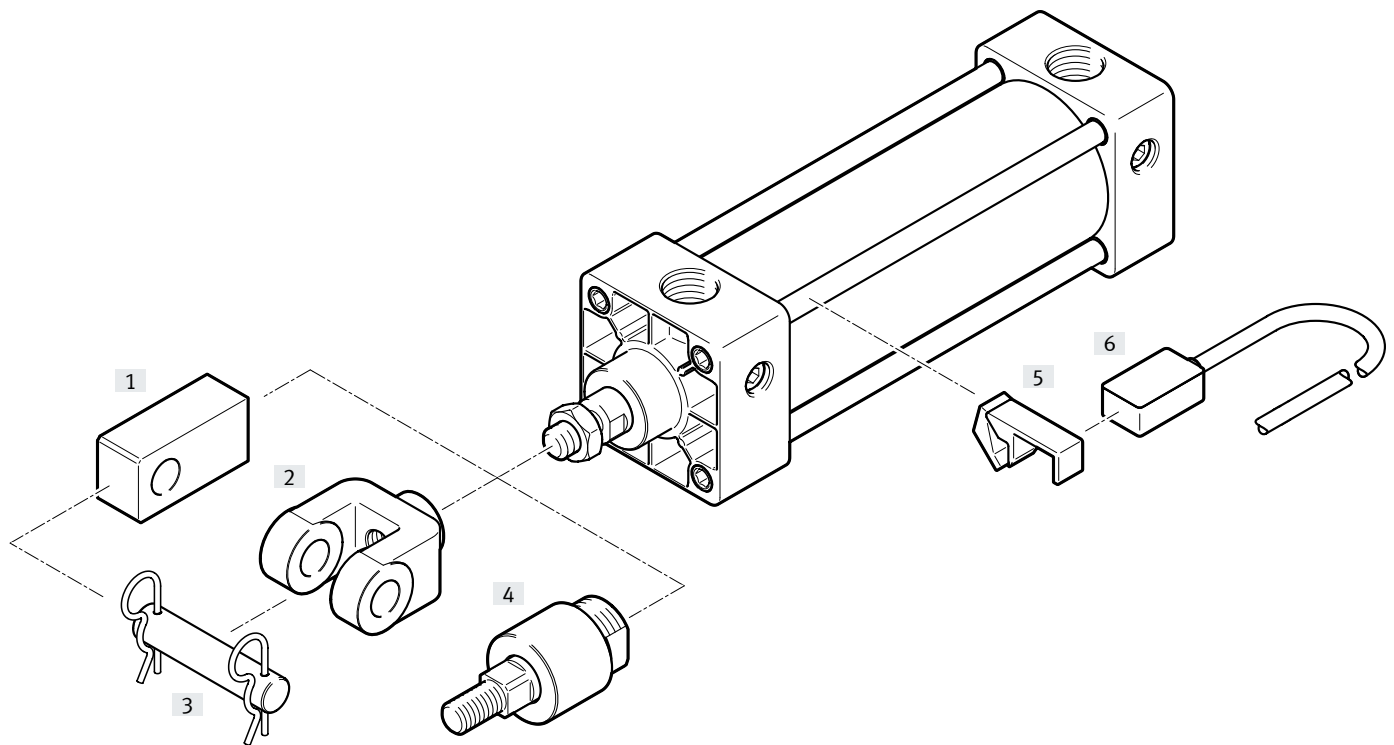
001	Type	
DSNA	Standards-based cylinder DSNA	
002	System of units	
N	Imperial	
003	Piston diameter	
1 1/2"	1 1/2"	
2"	2"	
2 1/2"	2 1/2"	
3 1/4"	3 1/4"	
4"	4"	
004	Stroke	
0,25" ... 20"	0,25" ... 20"	
005	Piston rod type	
-	At one end	
T	Through piston rod	

006	Cushioning	
PPV	Pneumatic cushioning, adjustable at both ends	
007	Position sensing	
A	Via proximity sensor	
008	Standard	
N5	Based on ANSI/NFPA	
009	Type of mounting	
MF1	Flange plate bearing cap	
MF2	Flange plate end cap	
MP1	Swivel bearing	
MP2	Swivel mounting	
MS1	Foot mounting	
MS4	Direct mounting	

**Note**

The strokes are available in increments of 0.25 inches

Peripherals overview

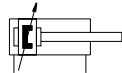


Accessories			
	Type/order code	Description	→ Page/Internet
[1]	Rod eye DARC-C7B	Permits swivel motion in one plane	13
[2]	Rod clevis DARC-C7	Permits swivel motion in one plane	13
[3]	Pivot pin DADG-B-C7	For rod clevis DARC-C7 and rod eye DARC-C7B	14
[4]	Self-aligning rod coupler DARP-C7	For connection to the piston rod	14
[5]	Sensor bracket SAMH-FC-SH	For proximity switches SDBF-FCR/SDBF-FCS	15
[6]	Proximity switches SDBF-FCR/SDBF-FCS	Can be integrated into sensor bracket SAMH-FC-SH	15

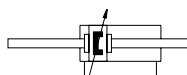
Data sheet

Function

DSNA-N



DSNA-N-...-T



Ø - Diameter
1 1/2 ... 4 inch

— - Stroke length
0.25 ... 20 inch



General technical data					
Piston diameter	1 1/2	2	2 1/2	3 1/4	4
Design	Piston				
	Piston rod				
	Tie rod				
	Cylinder barrel				
Mode of operation	Double-acting				
Pneumatic connection	3/8 NPT	3/8 NPT	3/8 NPT	1/2 NPT	1/2 NPT
Piston rod end	External thread				
Piston rod thread	7/16-20 UNF-2A			3/4-16 UNF-2A	
Stroke ¹⁾ [in]	0.25 ... 20				
Cushioning	Pneumatic cushioning, adjustable at both ends				
Position sensing	For proximity switch				
Type of mounting	Direct mounting via thread				
	With accessories				
Mounting position	Any				

1) The strokes are available in increments of 0.25 inches.

Operating and environmental conditions						
Piston diameter		1 1/2	2	2 1/2	3 1/4	4
Conforms to standard		NFPA				
		T3.6.7				
Operating pressure						
	[psi]	13 ... 140		7 ... 140		
	[MPa]	0,089 ... 0,965		0,048 ... 0,965		
	[bar]	0,89 ... 9,65		0,48 ... 9,65		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]				
Information on operating and pilot media		Lubricated operation possible (in which case lubricated operation will always be required)				
Ambient temperature ¹⁾	[°F]	+23 ... +140				
Corrosion resistance class CRC ²⁾		1				

1) Note operating range of proximity switches

2) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. Dry indoor application and protection during transport and storage. Also applies to parts behind coverings, in the non-visible interior area, or parts that are covered in the application (e.g. actuator trunnions).

Forces [lbs] at 80 psi					
Piston diameter	1 1/2	2	2 1/2	3 1/4	4
Theoretical force, advancing	156	243.2	386.4	623.2	973.6
Theoretical force, retracting	131.2	218.4	361.6	560.8	911.2

Data sheet

Weights [lb] based on the type of mounting ¹⁾					
Piston diameter	1 1/2	2	2 1/2	3 1/4	4
Basic weight with 0 inch stroke					
[MS4]/[T-MS4]	1.49/2.12	2.16/2.80	2.94/3.64	5.53/6.82	7.28/9.29
[MS1]/[T-MS1]	1.84/2.47	2.69/3.33	3.60/4.30	6.93/8.22	9.39/11.40
[MF1]/[T-MF1]	2.03/2.62	3.05/3.63	4.21/4.79	8.63/9.69	11.72/13.30
[MF2]/[T-MF2]					
[MP1]	2.13	3.13	4.23	8.79	11.68
[MP2]					
Additional weight per 1 inch stroke					
[MS4]/[T-MS4]	0.17/0.26	0.21/0.30	0.22/0.37	0.44/0.66	0.49/0.71
[MS1]/[T-MS1]					
[MF1]/[T-MF1]					
[MF2]/[T-MF2]					
[MP1]	0.17	0.21	0.22	0.44	0.49
[MP2]					

1) Types of mounting

[MS4]/[T-MS4]	Direct mounting/through piston rod and direct mounting
[MS1]/[T-MS1]	Foot mounting/through piston rod and foot mounting
[MF1]/[T-MF1]	Flange plate, bearing cap/through piston rod and flange plate, bearing cap
[MF2]/[T-MF2]	Flange plate, end cap/through piston rod and flange plate, end cap
[MP1]	Swivel bearing
[MP2]	Swivel mounting

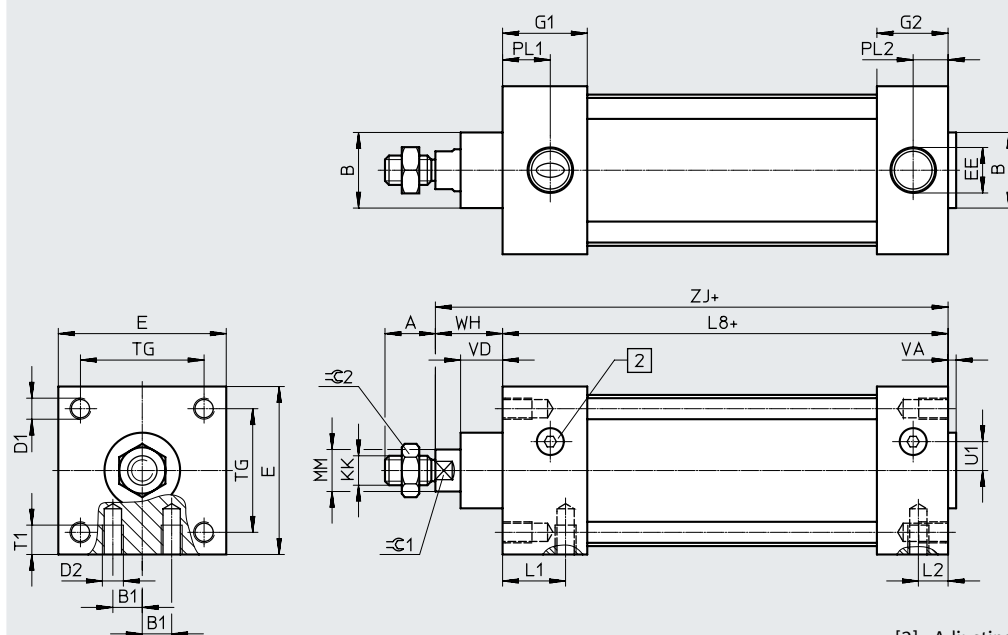
Materials					
Piston diameter	1 1/2	2	2 1/2	3 1/4	4
Cover material	Coated die-cast aluminum				
Seals material	FPM				
	NBR				
Piston rod material	High-alloy stainless steel				
Material of cylinder barrel	Smooth-anodized wrought aluminum alloy				
Note on materials	Contains paint-wetting impairment substances				
	RoHS-compliant				

Data sheet

Dimensions

Download CAD data → www.festo.com

[MS4] Direct mounting



[2] Adjusting screw for adjustable end-position cushioning
+ = plus stroke length

∅	A	B ∅	B1	D1	D2	E	EE	G1	G2	KK	L1	L2
[in]												
1 1/2	0.75	1.125	0.3125	1/4-28	1/4-20	2	3/8	1.26	1.01	7/16-20	0.9375	0.4425
2	0.75	1.125	0.4375	5/16-24	5/16-18	2.5	3/8	1.26	1.06	7/16-20	0.9375	0.4425
2 1/2	0.75	1.125	0.625	5/16-24	3/8-16	3	3/8	1.30	1.06	7/16-20	0.9375	0.4375
3 1/4	1.125	1.5	0.75	3/8-24	1/2-13	3.75	1/2	1.57	1.18	3/4-16	1.0625	0.5625
4	1.125	1.5	1.031	3/8-24	1/2-13	4.5	1/2	1.57	1.18	3/4-16	1.0625	0.5625

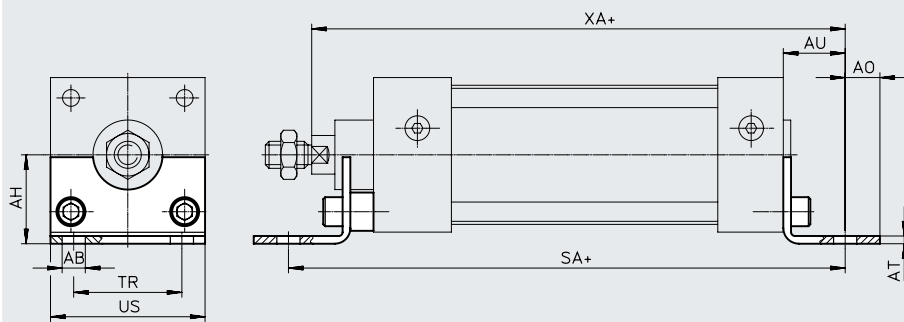
∅	L8	MM ∅	PL1	PL2	T1	TG	VA	VD	WH	ZJ	≈G1	≈G2
[in]												
1 1/2	3.63	0.625	0.71	0.56	0.28125	1.43	0.12	0.625	1	4.63	0.5625	0.69
2	3.63	0.625	0.71	0.52	0.4375	1.84	0.12	0.625	1	4.63	0.5625	0.69
2 1/2	3.75	0.625	0.75	0.52	0.59375	2.19	0.13	0.625	1	4.75	0.5625	0.69
3 1/4	4.25	1	0.965	0.565	0.625	2.76	0.205	0.875	1.375	5.625	0.875	1.12
4	4.25	1	0.965	0.565	0.625	3.32	0.205	0.875	1.375	5.625	0.875	1.12

Data sheet

Dimensions

Download CAD data → www.festo.com

[MS1] Foot mounting



+ = plus stroke length

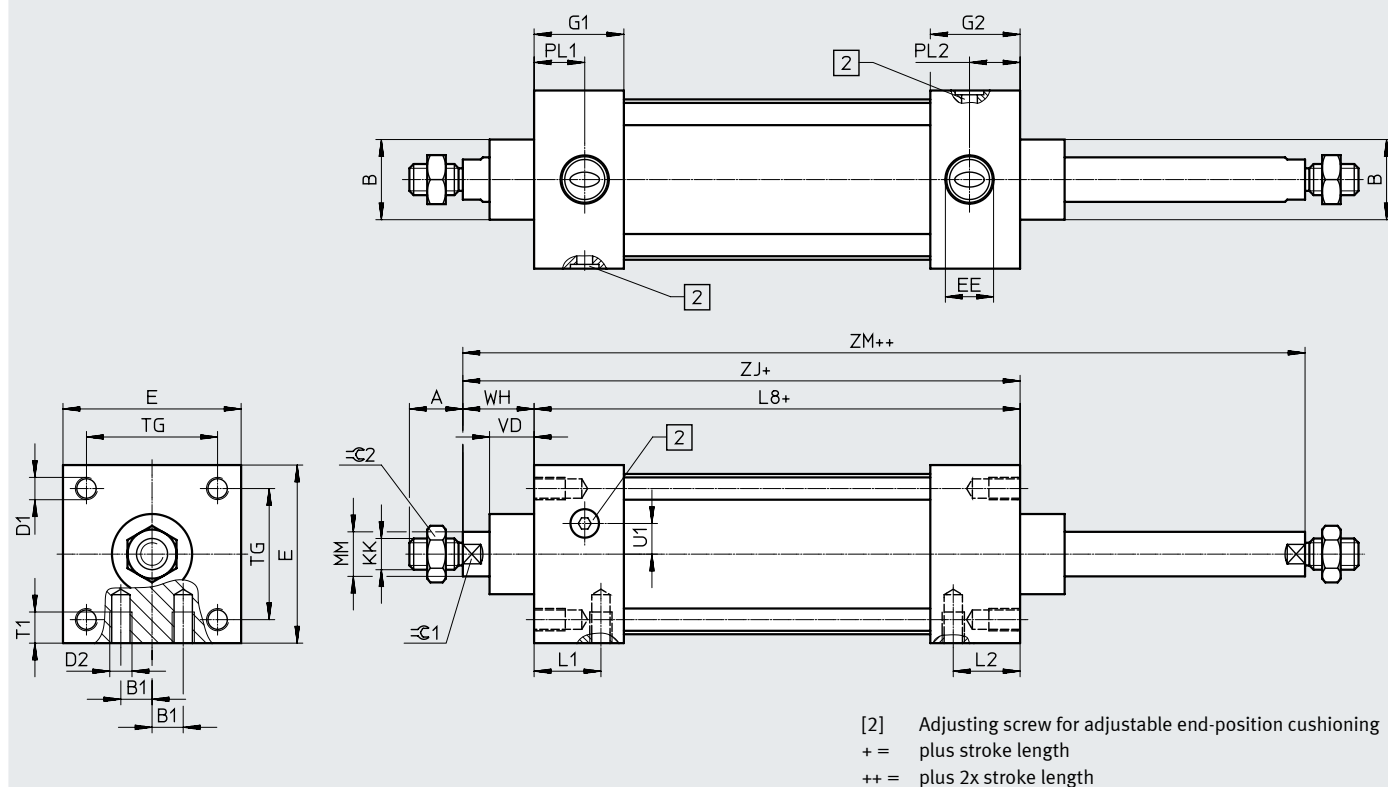
∅	AB ∅	AH	AO	AT	AU	SA	TR	US	XA	XS
[in]										
1 1/2	0.375	1.188	0.4375	0.125	1	6	1.25	2	5.63	1.375
2	0.375	1.438	0.5625	0.125	1	6	1.75	2.5	5.63	1.375
2 1/2	0.375	1.625	0.5625	0.125	1	6.13	2.25	3	5.75	1.375
3 1/4	0.5	1.938	0.75	0.1719	1.255	7.38	2.75	3.75	6.88	1.755
4	0.5	2.250	0.75	0.2344	1.255	7.38	3.50	4.5	6.88	1.755

Data sheet

Dimensions

Download CAD data → www.festo.com

[T] Through piston rod



∅	A	B ∅	B1	D1	D2	E	EE	G1	G2	KK	L1	L2
[in]												
1 1/2	0.75	1.125	0.3125	1/4-28	1/4-20	2	3/8	1.26	1.26	7/16-20	0.9375	0.9425
2	0.75	1.125	0.4375	5/16-24	5/16-18	2.5	3/8	1.26	1.26	7/16-20	0.9375	0.9425
2 1/2	0.75	1.125	0.625	5/16-24	3/8-16	3	3/8	1.30	1.30	7/16-20	0.9375	0.9425
3 1/4	1.125	1.5	0.75	3/8-24	1/2-13	3.75	1/2	1.57	1.57	3/4-16	1.0625	1.0575
4	1.125	1.5	1.031	3/8-24	1/2-13	4.5	1/2	1.57	1.57	3/4-16	1.0625	1.0575

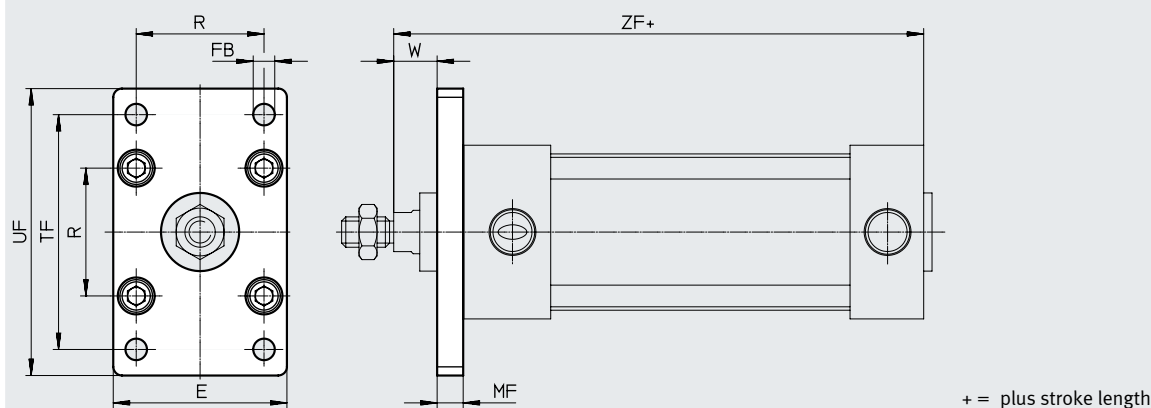
∅	L8	MM ∅	PL1	PL2	T1	TG	VD	WH	ZJ	ZM	⌀1	⌀2
[in]												
1 1/2	3.78	0.625	0.71	0.71	0.28125	1.43	0.625	1	4.78	5.78	0.5625	0.69
2	3.82	0.625	0.71	0.71	0.4375	1.84	0.625	1	4.82	5.82	0.5625	0.69
2 1/2	3.98	0.625	0.75	0.75	0.59375	2.19	0.625	1	4.98	5.98	0.5625	0.69
3 1/4	4.64	1	0.965	0.955	0.625	2.76	0.875	1.375	6.015	7.40	0.875	1.12
4	4.64	1	0.965	0.955	0.625	3.32	0.875	1.375	6.015	7.40	0.875	1.12

Data sheet

Dimensions

Download CAD data → www.festo.com

[MF1] Flange plate, bearing cap

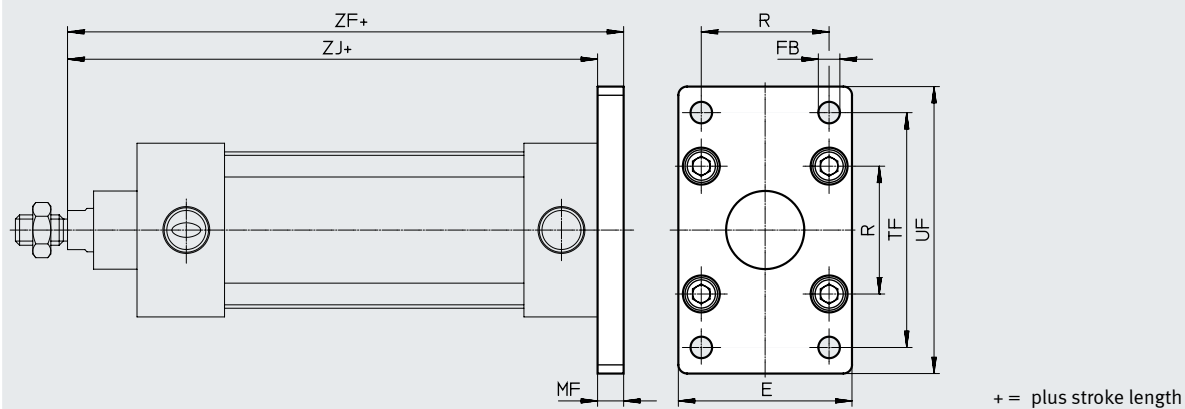


∅	E	FB ∅	MF	R	TF	UF	W	ZF
[in]								
1 1/2	2	0.25	0.375	1.43	2.75	3.38	0.625	4.63
2	2.5	0.31	0.375	1.84	3.38	4.13	0.625	4.63
2 1/2	3	0.31	0.375	2.19	3.88	4.63	0.625	4.75
3 1/4	3.75	0.38	0.625	2.76	4.68	5.50	0.75	5.625
4	4.5	0.38	0.625	3.32	5.44	6.25	0.75	5.625

Dimensions

Download CAD data → www.festo.com

[MF2] Flange plate, end cap



∅	E	FB ∅	MF	R	TF	UF	ZF	ZJ
[in]								
1 1/2	2	0.25	0.375	1.43	2.75	3.38	5	4.63
2	2.5	0.31	0.375	1.84	3.38	4.13	5	4.63
2 1/2	3	0.31	0.375	2.19	3.88	4.63	5.13	4.75
3 1/4	3.75	0.38	0.625	2.76	4.68	5.50	6.25	5.625
4	4.5	0.38	0.625	3.32	5.44	6.25	6.25	5.625

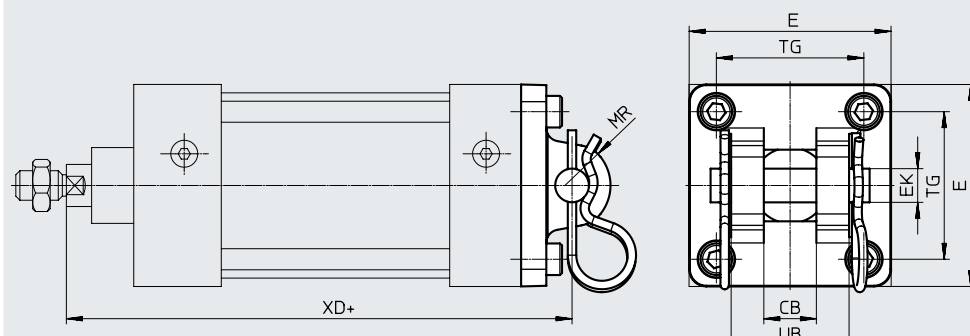
Data sheet

Dimensions

Download CAD data → www.festo.com

[MP1] Swivel bearing

[MP2] Swivel mounting



+ = plus stroke length

∅	CB	E	EK ∅	MR ∅	TG	UB	XD+	
[in]							[MP1]	[MP2]
1 1/2	0.78	2	0.50	1.24	1.43	1.75	5.38	5.75
2	0.78	2.5	0.50	1.24	1.84	1.75	5.38	5.75
2 1/2	0.78	3	0.50	1.24	2.19	1.75	5.50	5.88
3 1/4	1.125	3.75	0.75	1.88	2.76	2.50	6.88	7.50
4	1.125	4.5	0.75	1.88	3.32	2.50	6.88	7.50

Ordering data – Modular product system

Ordering table								
Piston diameter	1 1/2	2	2 1/2	3 1/4	4	Conditions	Code	Enter code
Module no.	8117043	8117044	8117045	8117046	8117047			
Function	Standards-based cylinder, double-acting						DSNA	DSNA
System of units	Imperial						-N	-N
Piston diameter [in]	1 1/2	2	2 1/2	3 1/4	4		-..."	
Stroke [in]	0.25 ... 20						-..."	
Piston rod type	At one end							
	Through piston rod						-T	
Cushioning	Pneumatic cushioning, adjustable at both ends						-PPV	-PPV
Position sensing	For proximity switch						A	A
Standard	Conforms to ANSI/NFPA						-N5	-N5
Type of mounting	Flange plate, bearing cap						-MF1	
	Flange plate, end cap					[1]	-MF2	
	Swivel bearing					[1]	-MP1	
	Swivel mounting					[1]	-MP2	
	Foot mounting						-MS1	
	Direct mounting						-MS4	

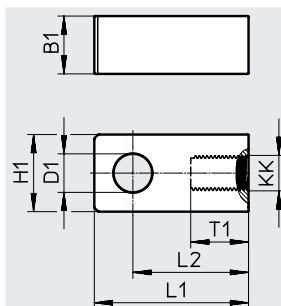
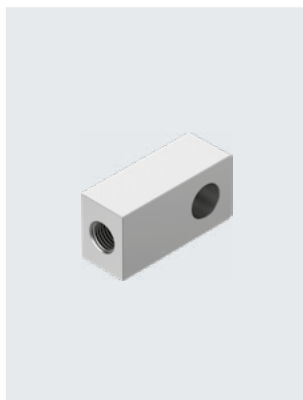
[1] MF2, MP1, MP2 Not with through piston rod T

Accessories

Rod eye DARC-C7B

Material:
Nickel-plated steel

RoHS-compliant
Contains paint-wetting
impairment substances



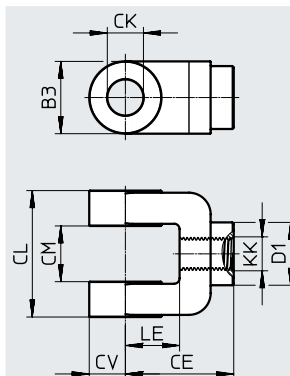
Dimensions and ordering data

For diameter [in]	B1	D1 Ø	H1	KK	L1	L2	T1	Part no.	Type
1 1/2; 2; 2 1/2	0.75	0.5	1	7/16-20	2	1.5	0.75	8117050	DARC-C7B-U716
3 1/4; 4	1.25	0.75	1.5	3/4-16	2.81	2.06	1.13	8117051	DARC-C7B-U34

Rod clevis DARC-C7

Material:
Painted cast steel

RoHS-compliant
Contains paint-wetting
impairment substances



Dimensions and ordering data

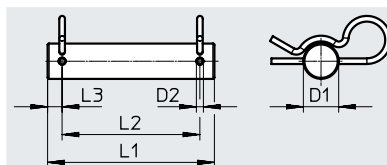
For diameter [in]	B3	CE	CK Ø	CL	CM	CV	D1 Ø	KK	LE	Part no.	Type
1 1/2; 2; 2 1/2	1	1.5	0.5	1.75	0.77	0.5	0.87	7/16-20	0.75	8117048	DARC-C7-U716
3 1/4; 4	1.5	2.38	0.75	2.5	1.27	0.75	1.34	3/4-16	1.25	8117049	DARC-C7-U34

Accessories

Pivot pin DADG-B-C7

Material:
Pin; pin fasteners: steel

RoHS-compliant
Contains paint-wetting
impairment substances



Dimensions and ordering data

For diameter [in]	D1 ∅	D2 ∅	L1	L2	L3	Part no.	Type
1 1/2; 2; 2 1/2	0.5	0.16	2.36	1.95	0.2	8117052	DADG-B-C7-1/2"
3 1/4; 4	0.75	0.2	3.13	2.74	0.19	8117053	DADG-B-C7-3/4"

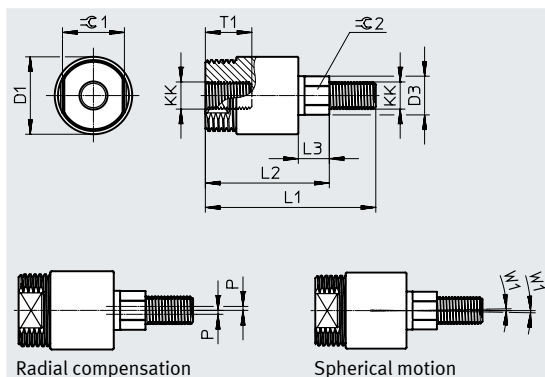
 Note

In addition to the depicted R-clips, two straight cotter pins are also included in the scope of delivery of pivot pin DADG-B-C7.

Self-aligning rod coupler
DARP-C7

Material:
Housing; bushing; ball stud;
spherical washer: oxidized steel

RoHS-compliant
Contains paint-wetting
impairment substances



Dimensions and ordering data

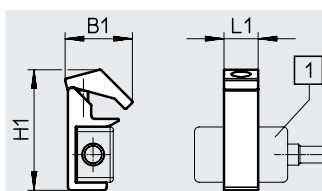
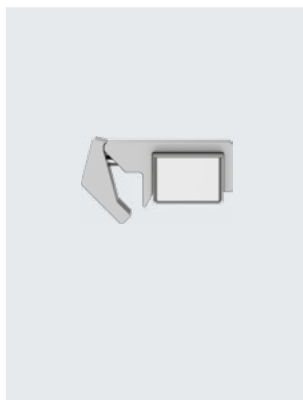
For diameter [in]	D1 ∅	D3 ∅	KK	L1	L2	L3	T1	∅1	∅2	P	W1	Part no.	Type
1 1/2; 2; 2 1/2	1.25	0.63	7/16-20 UNF	2.75	2	0.5	0.75	1 1/8	9/16	0.0625	1°	8117054	DARP-C7-U716-F
3 1/4; 4	1.75	0.97	3/4-16 UNF	3.44	2.31	0.31	1.13	1 1/2	7/8	0.0625	1°	8117055	DARP-C7-U34-F

Accessories

Sensor bracket SAMH-FC-SH

Material:
Mounting; screw: steel
(galvanized or nickel-plated)

RoHS-compliant
Contains paint-wetting
impairment substances



[1] Proximity switch SDBF

Dimensions and ordering data

For diameter [in]	B1	H1	L1	Part no.	Type
1 1/2 ... 4	0.75	1.3	0.43	8117067	SAMH-FC-SH

Ordering data – Proximity switches

Data sheets → Internet: sdbf

	For diameter [in]	Type of mounting	Switching output	Electrical connection	Part no.	Type
N/O contact						
	1 1/2 ... 4	Can be integrated into sensor bracket SAMH-FC-SH	PNP	Cable, 3-wire	8117062	SDBF-FCS-1L-PU-K-9-N-LE
				M8 plug, 3-pin	8117065	SDBF-FCS-1L-PU-K-N-M8
			NPN	Cable, 3-wire	8117063	SDBF-FCS-1L-NU- K-9-N-LE
				M8 plug, 3-pin	8117066	SDBF-FCS-1L-NU-K-N-M8

Ordering data – Seal set

Data sheets → Internet: dadg

	For diameter [in]	Description	Part no.	Type
	1 1/2	Spare parts	8117056	DADG-SK-C7-1 1/2"
	2		8117057	DADG-SK-C7-2"
	2 1/2		8117058	DADG-SK-C7-2 1/2"
	3 1/4		8117059	DADG-SK-C7-3 1/4"
	4		8117060	DADG-SK-C7-4"