



- Non-rotating oval piston
- Piston  $\varnothing$  1/2" to 2-1/2"
- Strokes up to 12"
- Double-acting
- Moment capacity up to 13.3 lbf-in
- Male or female rod thread
- Extensive range of accessories


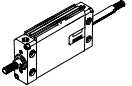
Product range overview									
Function	Type	Piston $\varnothing$ [in]	Stroke [in]	Force [lbf]	Variants				
					P	A	S2	S6	S20
Double-acting	DZF	1/2, 11/16, 1, 1-1/4, 1-5/8, 2, 2-1/2	0.04 ... 12	11.4 ... 418	■	■	■	■	■

Variants									
P	Flexible cushioning rings at both ends	A	Magnet for position sensing	S6	Heat-resistant seals up to 302 °F	S20	Through, hollow piston rod		
		S2	Through piston rod						

# Flat cylinders DZF - Inch Series

Product range overview

**FESTO**

Function	Design	Type	Piston Ø [in]	Standard stroke [in]	Variable stroke [in]
Double-acting		DZF	1/2, 11/16, 1	1/2, 1, 2, 3, 4, 5, 6, 8	0.04 ... 8
			1-1/4, 1-5/8, 2, 2-1/2	1/2, 1, 2, 3, 4, 5, 6, 8, 10, 12	0.04... 13
		DZF-...-S2 Through piston rod	1/2, 11/16, 1	–	0.04 ... 8
			1-1/4, 1-5/8, 2, 2-1/2	–	0.04 ... 13

# Flat cylinders DZF - Inch Series

Product range overview

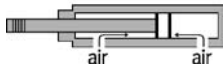
Type	Magnet for position sensing	Piston rod		Non-rotating	Hollow piston rod S2	Heat resistant seals up to 302 °F S6
		with female thread	with male thread			
<b>DZF</b> Single-ended piston rod	■	■	■	■	-	■
<b>DZF-...-S2</b> Through piston rod	■	■	■	■	■	-

# Flat cylinders DZF - Inch Series

Data sheet

FESTO

Double-acting



∅ - Diameter  
1/2 ... 2-1/2 inch

— | — Stroke length  
0.4... 10 inch

Options:

- Non-rotating elliptical piston
- Male or female rod thread
- Through piston rod (S2)
- Through, hollow piston rod (S20)
- Heat resistant (S6)



General technical data								
Piston ∅		1/2	11/16	1	1-1/4	1-5/8	2	2-1/2
Pneumatic connection		10-32 UNF	10-32 UNF	10-32 UNF	1/8" NPT	1/8" NPT	1/4" NPT	1/4" NPT
Piston rod thread	female	4-48 UNF	8-36 UNF	10-32 UNF	1/4-28 UNF	5/16-24 UNF	3/8-24 UNF	3/8-24 UNF
	male	10-32 UNF	5/16-24 UNF	3/8-24 UNF	3/8-24 UNF	1/2-20 UNF	5/8-18 UNF	5/8-18 UNF
Operating medium	Filtered compressed air, lubricated or unlubricated							
Constructional design	Piston							
	Piston rod							
Cushioning	Flexible cushioning rings at both ends							
Magnet for position sensing <sup>1)</sup>	Standard							

1) Position sensing via magnetic proximity sensor (ordered separately, see accessories).

Operating pressure [psi]								
Piston ∅		1/2	11/16	1	1-1/4	1-5/8	2	2-1/2
		23 ... 145	15 ... 145					

Ambient conditions		
Variant	Basic version	S6
Ambient temperature <sup>1)</sup> [°F]	0 ... +176	0 ... +302
Corrosion resistance class CRC <sup>2)</sup>	2	2

1) Observe operating range of proximity sensors.

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

Components with moderate corrosion resistance for use in normal industrial environments subjected to contact with coolants or lubricating agents.

Forces [lbf] and impact energy [ft-lbf]								
Piston ∅		1/2	11/16	1	1-1/4	1-5/8	2	2-1/2
Theoretical force at 90 psi, extending		15.2	36.3	66.1	108.2	168.9	263.9	418.9
	S2/S20	11.4	27.3	55.3	93.0	141.8	221.8	376.8
Theoretical force at 90 psi, retracting		11.4	27.3	55.3	93.0	141.8	221.8	376.8
	S2/S20	11.4	27.3	55.3	93.0	141.8	221.8	376.8
Max. impact energy at endpositions		0.07	0.07	0.07	0.30	0.38	0.47	0.52

# Flat cylinders DZF - Inch Series

Data sheet

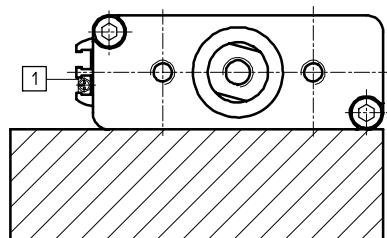
Torque [lbf-in] and torsional backlash [°]							
Piston Ø	1/2	11/16	1	1-1/4	1-5/8	2	2-1/2
Max. torque at the piston rod <sup>1)</sup>	0.9	1.8	4.4	7.1	8.9	10.6	13.3
Max. torsional backlash of the piston rod	±2.5	±1.2	±1.0	±0.8	±0.6	±0.5	±0.4

1) The max. torque must also be observed when fitting mounting attachments to the piston rod.

Weights [oz]							
Piston Ø	1/2	11/16	1	1-1/4	1-5/8	2	2-1/2
Product weight at 0 inch stroke	3.4	3.8	5.9	9.6	16.9	30.2	48.7
Additional weight per 1 inch stroke	0.8	1.2	1.6	2.2	3.6	5.7	8.2

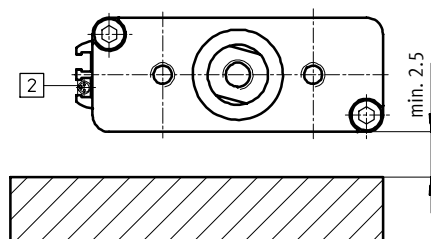
## Safety clearances for reliable switching function

Cylinders mounted to ferritic surfaces



1 SMT-8...

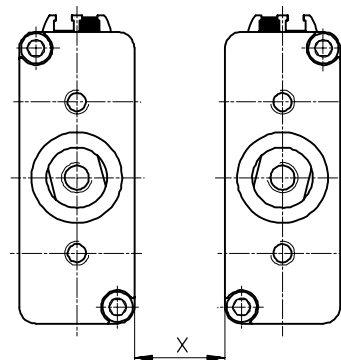
If a proximity sensor SME-8 is used, with piston Ø 1/2 to 1-1/4 inch, a minimum clearance to the ferritic component of 2.5 inch must be maintained. SMT-8 can be used regardless of clearance.



2 SME-8...

## Cylinder to cylinder spacing

Safety clearance X must be maintained when connecting cylinders together in series, as the stray fields of the switching magnets can result in incorrect switching.



Piston Ø	1/2	11/16	1	1-1/4	1-5/8	2	2-1/2
Min. safety clearance X [in]	SMT-8...	1.4		1.0	1.8		3.1
	SME-8...	2.0		1.8	2.6		2.0

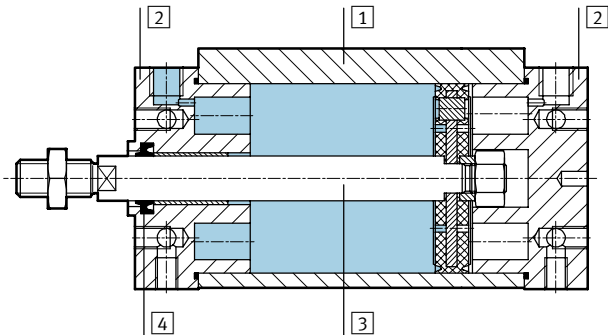
# Flat cylinders DZF - Inch Series

Data sheet



## Materials

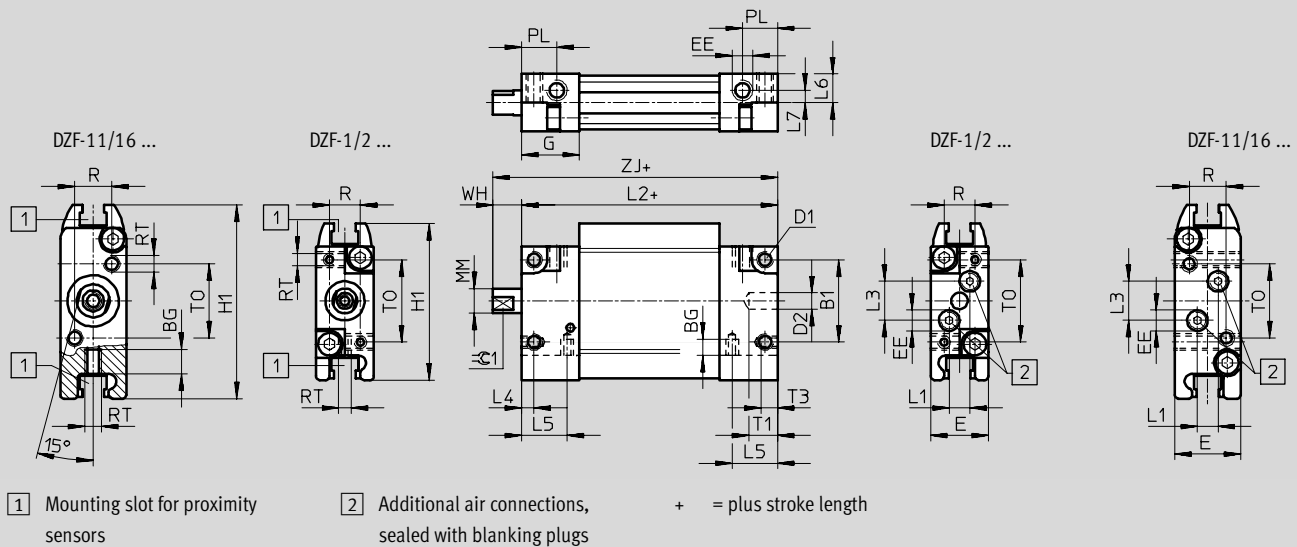
Sectional view



Cylinder	Basic version	S6
1 Cylinder barrel	Wrought aluminum alloy, anodized	Wrought aluminum alloy, anodized
2 Bearing end cap	Wrought aluminum alloy	Wrought aluminum alloy
3 Piston rod	$\varnothing 1/2 \dots 1$	High-alloy stainless steel
	$\varnothing 1-1/4 \dots 2-1/2$	High-alloy steel
4 Dynamic seals	Polyurethane	Fluorocarbon rubber

## Dimensions – Basic version

Piston  $\varnothing 1/2, 11/16$



$\varnothing$	B1	BG	D1	D2	E	EE	G	H1	L1	L2	L3	L4	L5
[in]				$\varnothing$									
1/2	0.8	0.15	8-32 UNC	0.15	0.6	10-32 UNF	0.6	1.5	0.2	2.4	0.37	0.12	0.4
11/16	0.8	0.24	8-32 UNC	0.15	0.6	10-32 UNF	0.6	1.9	0.2	2.4	0.37	0.14	0.2

$\varnothing$	L6	L7	MM	PL	R	RT	T1	T3	TO	WH	ZJ	$\approx \text{C1}$
[in]			$\varnothing$									[mm]
1/2	0.28	0.12	0.24	0.33	0.30	4-48 UNF	0.28	0.16	0.8	0.28	2.7	5
11/16	-	-	0.31	0.33	0.35	8-32 UNC	0.28	0.24	0.7	0.28	2.7	7

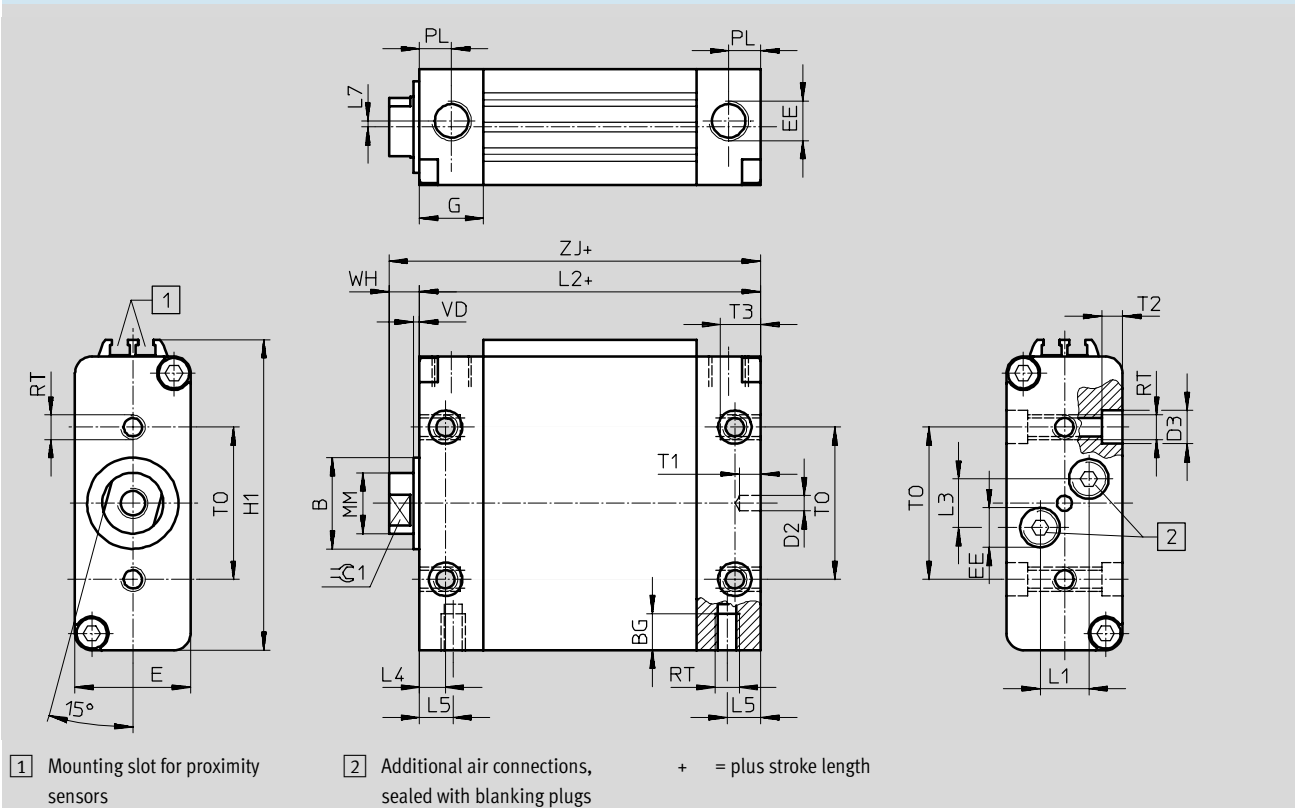
Dimensions are in inches, unless otherwise noted.

# Flat cylinders DZF - Inch Series

Data sheet

## Dimensions – Basic version

Piston Ø 1 ...2-1/2



Ø	B	BG	D2	D3	E	EE	G	H1	L1	L2	L3	L4
[in]	Ø		Ø	Ø								
1	0.6	0.3	0.2	0.3	0.8	10-32 UNF	0.5	2.2	0.2	2.4	0.4	0.2
1-1/4	0.8	0.4	0.2	0.4	0.9	1/8" NPT	0.7	2.6	0.3	2.8	0.6	0.3
1-5/8	1.0	0.4	0.2	0.4	1.2	1/8" NPT	0.7	3.2	0.3	3.0	0.6	0.3
2	1.2	0.5	0.2	0.4	1.5	1/4" NPT	0.8	4.0	0.6	3.2	0.6	0.3
2-1/2	1.2	0.6	0.2	0.6	2.0	1/4" NPT	0.8	5.0	0.7	3.2	0.8	0.3

Ø	L5	L7	MM	PL	RT	T1	T2	T3	T0	VD	WH	ZJ	≈C1
[in]			Ø										[mm]
1	0.2	-	0.4	0.2	10-24 UNC	0.3	0.2	0.3	1.0	0.1	0.3	2.8	9
1-1/4	0.3	0.1	0.5	0.3	1/4-20 UNC	0.3	0.2	0.4	1.3	0.1	0.3	3.1	10
1-5/8	0.3	-	0.6	0.3	1/4-20 UNC	0.3	0.2	0.4	1.6	0.1	0.4	3.3	13
2	0.3	-	0.8	0.4	5/16-18 UNC	0.3	0.2	0.5	2.0	0.1	0.4	3.6	17
2-1/2	0.3	-	0.8	0.4	3/8-16 UNC	0.3	0.2	0.6	2.4	0.1	0.4	3.6	17

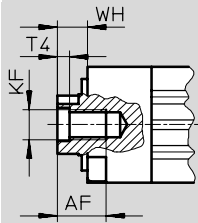
Dimensions are in inches, unless otherwise noted.

# Flat cylinders DZF - Inch Series

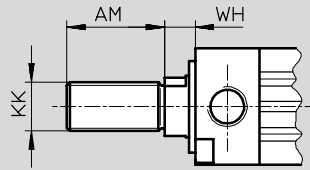
Data sheet

## Dimensions – Options

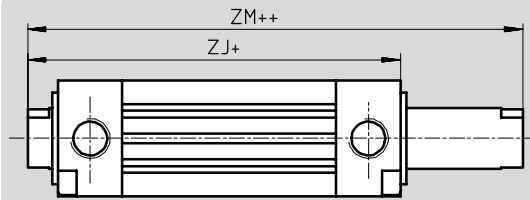
Basic version with female thread



Basic version with male thread

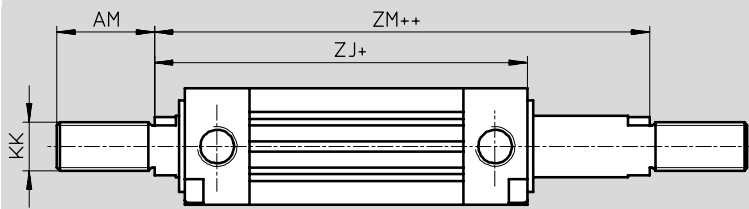


S2 – Through piston rod with female thread



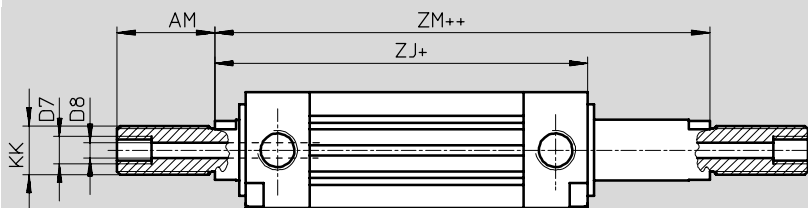
+ = plus stroke length  
++ = plus 2x stroke length

S2 – Through piston rod with male thread



+ = plus stroke length  
++ = plus 2x stroke length

S20 – Through, hollow piston rod



+ = plus stroke length  
++ = plus 2x stroke length

∅	AF	AM	D7	D8 ∅	KF	KK	T4	WH	ZJ	ZM
1/2	0.3	0.6	-	0.07	4-48 UNF	10-32 UNF	0.06	0.3	2.7	3.0
11/16	0.4	0.8	-	0.11	8-36 UNF	5/16-24 UNF	0.06	0.3	2.7	3.0
1	0.5	0.9	-	0.15	10-32 UNF	3/8-24 UNF	0.08	0.3	2.8	3.1
1-1/4	0.6	0.9	-	0.18	1/4-28 UNF	3/8-24 UNF	0.10	0.3	3.1	3.5
1-5/8	0.6	0.9	-	0.2	5/16-24 UNF	1/2-20 UNF	0.13	0.4	3.3	3.7
2	0.8	1.3	1/4-18 NPT	0.3	3/8-24 UNF	5/8-18 UNF	0.19	0.4	3.6	4.0
2-1/2	0.8	1.3	1/4-18 NPT	0.3	3/8-24 UNF	5/8-18 UNF	0.19	0.4	3.6	4.0

Dimensions are in inches, unless otherwise noted.



# Flat cylinders DZF - Inch Series

Ordering Data

M Mandatory data						O Options	
Function	Piston Ø	Stroke	Piston rod thread	Cushioning	Magnet for position sensing	Type of piston rod	Temperature Resistant
DZF	1/2 1 1/16 1 1 1/4 1 5/8 2 2 1/2	0.40 ... 12	A	P	A	S2 S20	S6
<b>DZF</b>	- <b>1 1/4</b>	- <b>10</b>	-	- <b>P</b>	- <b>A</b>	- <b>S6</b>	

Ordering table										
Size	1/2	1 1/16	1	1 1/4	1 5/8	2	2 1/2	Conditions	Code	Enter code
M Function	Flat, double-acting cylinder								<b>DZF</b>	DZF
Piston Ø [in]	1/2	1 1/16	1	1 1/4	1 5/8	2	2 1/2		- ...	
Stroke [in]	0.4 ... 12								- ...	
Piston rod thread	Female thread								-	
	Male thread								-A	
Cushioning	Flexible cushioning rings at both ends								-P	-P
Magnet for position sensing	For use with magnetic proximity sensor								-A	-A
O Type of piston rod	Through piston rod								-S2	
	Through, hollow piston rod								-S20	
Temperature-resistant	Heat-resistant seals up to max. 302 °F							<sup>1</sup>	-S6	

<sup>1</sup> Not in combination with S2 or S20

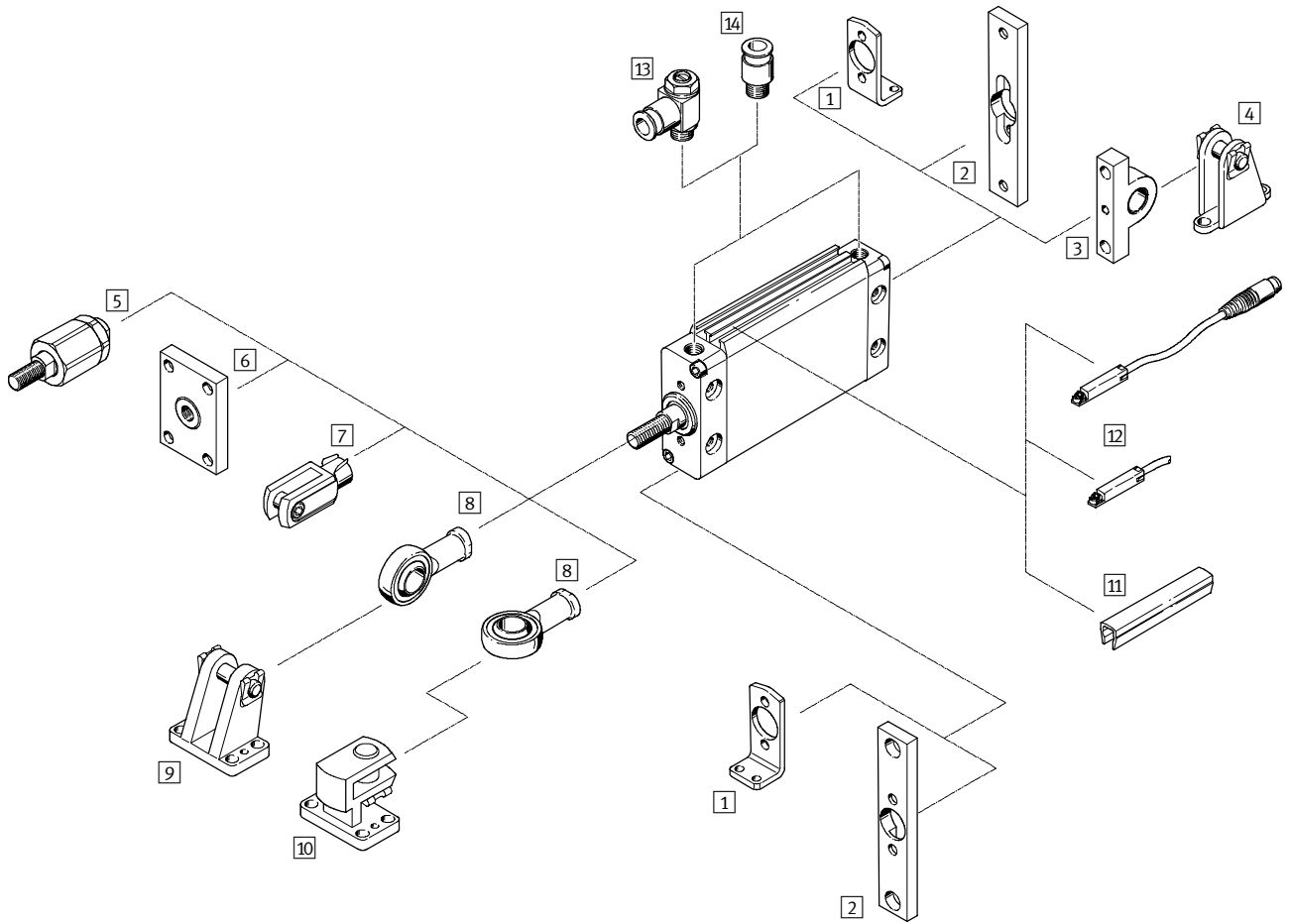
**Transfer order code**

**DZF** -  -  -  - **P** - **A** -

# Flat cylinders DZF - Inch Series

Accessories overview

FESTO



# Flat cylinders DZF - Inch Series

Accessories overview

Mounting attachments and accessories			
	Description	DZF	
1	Foot mounting HZF	for bearing and end caps	■
2	Flange mounting FZF	for bearing and end caps	■
3	Swivel flange SZF	for end caps	■
4	Clevis foot LZF	–	■
5	Self-aligning rod coupler FK	for compensating radial and angular deviations	■
6	Coupling piece KSZ	for cylinders with a non-rotating piston rod to compensate for radial deviations	■
7	Rod clevis SG	permits a swivelling movement of the cylinder in one plane	■
8	Rod eye SGS	with spherical bearing	■
9	Clevis foot LBG	–	■
10	Right-angle clevis foot LQG	–	■
11	Slot cover ABP-5-S	to protect the sensor cable and keep dirt out of the sensor slots	■
12	Proximity sensor SME/SMT-8	can be integrated in the cylinder profile barrel	■
13	One-way flow control valve GRLA/GRLZ	to regulate speed	■
14	Push-in fitting QS	for connecting compressed air tubing with standard external diameters	■

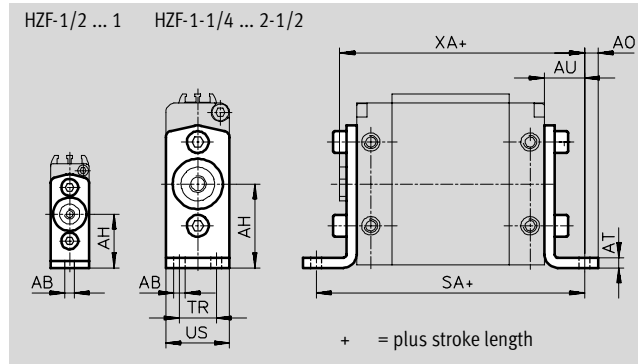
# Flat cylinders DZF - Inch Series

Accessories



## Foot mounting HZF

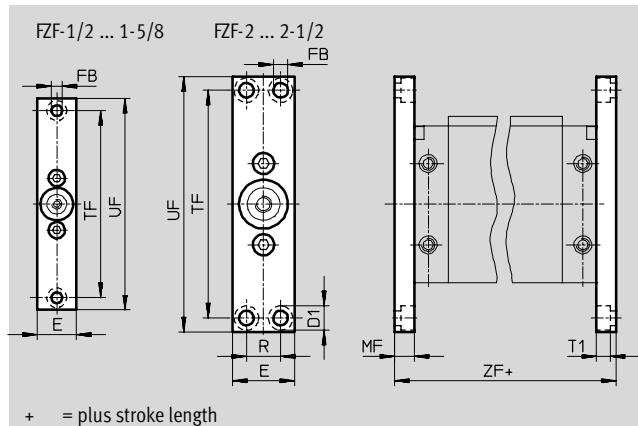
Material:  
Steel



Dimensions and ordering data												
For Ø [in]	AB Ø	AH	AO	AT	AU	SA	TR	US	XA	Weight [oz]	Part No.	Type
1/2	0.18	1.0	0.2	0.1	0.5	3.5	-	0.6	3.2	0.28	546560	HZF-1/2"
11/16	0.22	1.1	0.2	0.1	0.7	3.8	-	0.6	3.4	0.35	546561	HZF-11/16"
1	0.22	1.1	0.3	0.1	0.6	3.7	-	0.8	3.4	0.74	546562	HZF-1"
1-1/4	0.22	1.3	0.2	0.1	0.7	4.3	0.5	0.9	3.9	0.95	546563	HZF-1 1/4"
1-5/8	0.22	1.6	0.3	0.2	0.8	4.6	0.6	1.2	4.1	2.01	546564	HZF-1 5/8"
2	0.26	2.0	0.3	0.2	0.9	5.1	0.9	1.5	4.6	3.42	546565	HZF-2"
2-1/2	0.35	2.5	0.4	0.2	1.1	5.4	1.2	2.0	4.7	5.89	546566	HZF-2 1/2"

## Flange mounting FZF

Material:  
Wrought aluminum alloy



Dimensions and ordering data												
For Ø [in]	D1 Ø	E	FB Ø	MF	R	T1	TF	UF	ZF	Weight [oz]	Part No.	Type
1/2	0.3	0.6	0.18	0.3	-	0.18	3.0	3.5	3.1	0.71	546553	FZF-1/2"
11/16	0.3	0.6	0.18	0.3	-	0.18	3.1	3.7	3.1	0.85	546554	FZF-11/16"
1	0.4	0.8	0.22	0.4	-	0.22	3.9	4.4	3.2	1.76	546555	FZF-1"
1-1/4	0.4	0.9	0.26	0.4	-	0.26	4.5	5.1	3.6	2.40	546556	FZF-1 1/4"
1-5/8	0.4	1.2	0.26	0.4	-	0.25	5.2	5.7	3.8	3.46	546557	FZF-1 5/8"
2	0.6	1.5	0.35	0.5	0.8	0.33	5.5	6.2	4.2	5.19	546558	FZF-2"
2-1/2	0.6	2.0	0.35	0.6	1.3	0.33	5.5	6.2	4.4	9.14	546559	FZF-2 1/2"

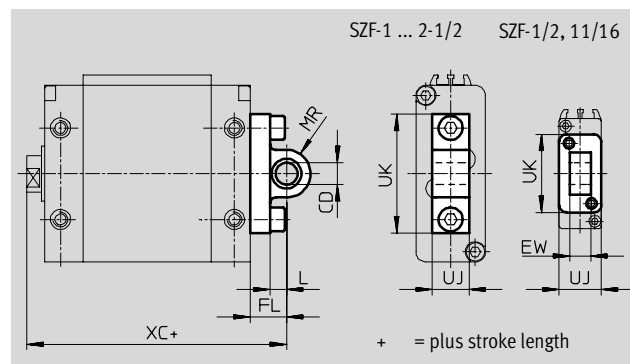
Dimensions are in inches, unless otherwise noted.

# Flat cylinders DZF - Inch Series

Accessories

## Swivel flange SZF

Material:  
Corrosion resistant cast steel

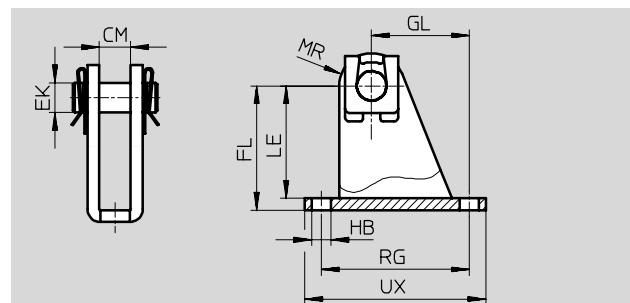


Dimensions and ordering data											
For Ø	CD	EW	FL	L	MR	UJ	UK	XC	CRC <sup>1)</sup>	Part No.	Type
[in]	Ø										
1/2	0.3	0.3	0.6	0.5	0.3	0.6	1.0	3.3	2	546567	SZF-1/2"
11/16	0.3	0.3	0.7	0.6	0.3	0.6	1.0	3.4	2	546568	SZF-11/16"
1	0.3	-	0.6	0.3	0.3	0.4	1.5	3.3	2	546569	SZF-1"
1-1/4	0.4	-	0.6	0.2	0.4	0.4	1.7	3.7	2	546570	SZF-1 1/4"
1-5/8	0.5	-	0.7	0.4	0.5	0.4	2.0	4.1	2	546571	SZF-1 5/8"
2	0.5	-	0.8	0.4	0.5	0.8	2.6	4.4	2	546572	SZF-2"
2-1/2	0.6	-	0.9	0.5	0.7	1.0	3.1	4.6	2	546573	SZF-2 1/2"

1) Corrosion resistance class 2 according to Festo standard 940 070  
Components with moderate corrosion resistance for use in normal industrial environments subjected to contact with coolants or lubricating agents.

## Clevis foot LZF

Material:  
Steel



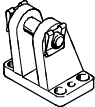
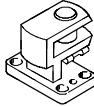
Dimensions and ordering data											
For Ø	CM	EK	FL	GL	HB	LE	MR	RG	UX	Part No.	Type
[in]		Ø			Ø						
1/2	0.28	0.3	1.3	0.7	0.2	1.1	0.3	1.2	1.5	163962	LZF-12/18
11/16	0.28	0.3	1.3	0.7	0.2	1.1	0.3	1.2	1.5	163962	LZF-12/18
1	0.36	0.3	1.4	1.0	0.2	1.3	0.4	1.6	1.9	163963	LZF-25
1-1/4	0.42	0.4	1.7	1.3	0.3	1.5	0.4	2.0	2.4	163964	LZF-32
1-5/8	0.42	0.5	2.0	1.2	0.3	1.9	0.6	2.0	2.4	163965	LZF-40
2	0.79	0.5	2.2	0.9	0.4	2.0	0.6	1.2	1.8	163966	LZF-50
2-1/2	0.99	0.6	2.7	1.3	0.4	2.5	0.7	1.6	2.4	163967	LZF-63


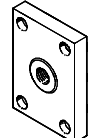


Dimensions are in inches, unless otherwise noted.

# Flat cylinders DZF - Inch Series

Accessories

**FESTO**




Ordering data – Mounting attachments				Ordering data – Mounting attachments			
Designation	For Ø [in]	Part No.	Type	Designation	For Ø [in]	Part No.	Type
<b>Clevis foot LBG</b>				<b>Right-angle clevis foot LQG</b>			
	1-1/4	31761	LBG-32		1-1/4	31768	LQG-32
	1-5/8	31762	LBG-40		1-5/8	31769	LQG-40
	2	31763	LBG-50		2	31770	LQG-50
	2-1/2	31764	LBG-63		2-1/2	31771	LQG-63




Ordering data – Piston rod attachments				Ordering data – Piston rod attachments			
Designation	For Ø [in]	Part No.	Type	Designation	For Ø [in]	Part No.	Type
<b>Rod eye SGS</b>				<b>Coupling piece KSZ</b>			
	1/2	532694	SGS-10-32		1/2	–	
	11/16	13002871	SGS-5/16-24		11/16		
	1	532696	SGS-3/8-24		1	36129	KSZ-3/8-24-UNF
	1-1/4						
	1-5/8	532697	SGS-1/2-20		1-5/8	36130	KSZ-1/2-20-UNF
	2	532698	SGS-5/8-18		2	36131	KSZ-5/8-18-UNF
2-1/2							
<b>Rod clevis SG</b>				<b>Self-aligning rod coupler FK</b>			
	1/2	13005667	SG-10-32		1/2	532703	FK-10-32
	11/16	11129	SG-5/16"-24		11/16	532704	FK-5/16-24
	1	546540	SG-3/8"-24-B		1	532705	FK-3/8-24
	1-1/4						
	1-5/8	546545	SG-1/2-20-B		1-5/8	532706	FK-1/2-20
	2	546575	SG-5/8-18-B		2	532707	FK-5/8-18
2-1/2							





# Flat cylinders DZF - Inch Series

Accessories

FESTO

Ordering data – Proximity sensor for slot type 8, magneto-resistive								
	Mounting	Switch output	Electrical connection			Cable length [ft]	Part No.	Type
			Cable	M8 plug	M12 plug			
NO contact								
	inserted from above	PNP	3 wires	–	–	8.2	525898	SMT-8F-PS-24V-K2.5-OE
		NPN		–	–		525909	SMT-8F-NS-24V-K2.5-OE
		–	2 wires	–	–	8.2	525908	SMT-8F-ZS-24V-K2.5-OE
		PNP	–	3-pin	–	1.0	525899	SMT-8F-PS-24V-K0.3-M8D
		NPN	–	–	–	1.0	525910	SMT-8F-NS-24V-K0.3-M8D
	flush	PNP	3 wires	–	–	8.2	175436	SMT-8-PS-K-LED-24-B
		–	–	3-pin	–	1.0	175484	SMT-8-PS-S-LED-24-B
		–	–	–	–	–	–	–
NC contact								
	inserted from above	PNP	3 wires	–	–	24.6	525911	SMT-8F-PO-24V-K7.5-OE

Ordering data – Proximity sensor for slot type 8, magnetic reed						
	Mounting	Electrical connection		Cable length [ft]	Part No.	Type
		Cable	M8 plug			
NO contact						
	inserted from above	3 wires		–	8.2	525895 SME-8F-DS-24V-K2.5-OE
		–		–	16.4	525897 SME-8F-DS-24V-K5.0-OE
		2 wires		–	8.2	525907 SME-8F-ZS-24V-K2.5-OE
		–		3-pin	1.0	525896 SME-8F-DS-24V-K0.3-M8D
	flush	3 wires		–	8.2	150855 SME-8-K-LED-24
		–		3-pin	1.0	150857 SME-8-S-LED-24
NC contact						
	inserted from above	3 wires		–	24.6	525906 SME-8F-DO-24V-K7.5-OE



Ordering data – Plug sockets							
	Mounting	Switch output		Connection	Cable length [ft]	Part No.	Type
		PNP	NPN				
Straight plug socket							
	M8 union nut	■	■	3-pin	8.2	159420	SIM-M8-3GD-2.5-PU
		■	■		16.4	159421	SIM-M8-3GD-5-PU
	M12 union nut	■	■	3-pin	8.2	159428	SIM-M12-3GD-2.5-PU
		■	■		16.4	159429	SIM-M12-3GD-5-PU
Angled plug socket							
	M8 union nut	■	■	3-pin	8.2	159422	SIM-M8-3WD-2.5-PU
		■	■		16.4	159423	SIM-M8-3WD-5-PU
	M12 union nut	■	■	3-pin	8.2	159430	SIM-M12-3WD-2.5-PU
		■	■		16.4	159431	SIM-M12-3WD-5-PU

Ordering data – Slot cover for slot type 8				
	Mounting	Length [ft]	Part No.	Type
	inserted from above	2x 0.5	151680	ABP-5-S

# Flat cylinders DZF - Inch Series

Accessories

**FESTO**

Ordering data – One-way flow control valves				
	Connection		Part No.	Type
	Thread	For tubing OD		
For exhaust air				
	10-32 UNF	5/32	165008	GRLA-10-32-UNF-QS-5/32-U
		1/4	192753	GRLA-10-32-UNF-QS-1/4-U
	1/8" NPT	5/32	165009	GRLA-1/8-NPT-QS-5/32-U
		3/16	190941	GRLA-1/8-NPT-QS-3/16-U
		1/4	165010	GRLA-1/8-NPT-QS-1/4-U
		5/16	165013	GRLA-1/8-NPT-QS-5/16-U
	1/4" NPT	3/16	190944	GRLA-1/4-NPT-QS-3/16-U
		1/4	165011	GRLA-1/4-NPT-QS-1/4-U
		5/16	165014	GRLA-1/4-NPT-QS-5/16-U
		3/8	190947	GRLA-1/4-NPT-QS-3/8-U
	3/8" NPT	1/4	165012	GRLA-3/8-NPT-QS-1/4-U
		5/16	165015	GRLA-3/8-NPT-QS-5/16-U
		3/8	190950	GRLA-3/8-NPT-QS-3/8-U
		1/2	190951	GRLA-3/8-NPT-QS-1/2-U
	For supply air			
	10-32 UNF	-	151576	GRLZ-10-UNF-B
			151579	GRLZ-10-UNF-RS-B
		3/16	151577	GRLZ-10-UNF-3/16-B
		1/4	151578	GRLZ-10-UNF-1/4-B
	1/8" NPT	-	151561	GRLZ-1/8-NPT-B
			151564	GRLZ-1/8-NPT-RS-B
			151562	GRLZ-1/8-NPT-1/4-B