

Round Cylinders ESNU, Single-acting – Inch Series

FESTO



- Piston Ø 5/16" to 2-1/2"
- Stroke lengths up to 2"
- Single-acting, spring return
- Meets the highest requirements for running characteristics, service life and load carrying ability
- Extensive range of accessories

Product Range Overview							
Function	Type	Piston Ø [in]	Standard Stroke [in]	Variable Stroke ¹⁾ [in]	Force [lbf]	Variants	
						P	A
Single-acting, spring return	ESNU	5/16, 3/8, 1/2, 5/8, 3/4, 1	3/8, 1, 2	0.04 ... 2	0.6 ... 60.7	■	■
		1-1/4, 1-5/8, 2, 2-1/2	1/2, 1, 2	0.125 ... 2	12 ... 402	■	■

1) Reliable position sensing requires a minimum stroke of 0.4 inch.

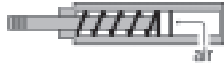
P Flexible cushioning at both ends A Magnet for position sensing

Round Cylinders ESNU – Inch Series (Sizes 5/16” to 1”)

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Technical Data

Single-acting, spring return



Ø - Diameter
5/16 ... 1 in

Stroke length
0.04 ... 2 in



General Technical Data						
Piston Ø [in]	5/16	3/8	1/2	5/8	3/4	1
Pneumatic connection	10-32 UNF	10-32 UNF	10-32 UNF	10-32 UNF	1/8" NPT	1/8" NPT
Piston rod thread	6-32 UNF	6-32 UNF	10-32 UNF	10-32 UNF	5/16-24 UNF	3/8-24 UNF
Constructional design	Piston					
	Piston rod					
	Cylinder barrel					
Cushioning	Flexible cushioning rings at both ends (P)					
Magnet for position sensing ¹⁾	Optional					

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

Operating Pressure [psi]						
Piston Ø [in]	5/16	3/8	1/2	5/8	3/4	1
Operating medium	Filtered compressed air, lubricated or unlubricated					
Operating pressure [psi]	22.1 ... 147.0	17.7 ... 147.0				

Ambient Conditions	
Ambient temperature ¹⁾ [°F]	-4 ... +176
Corrosion resistance class CRC ²⁾	2

1) Note 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.

Round Cylinders ESNU – Inch Series (Sizes 5/16" to 1")

Technical Data

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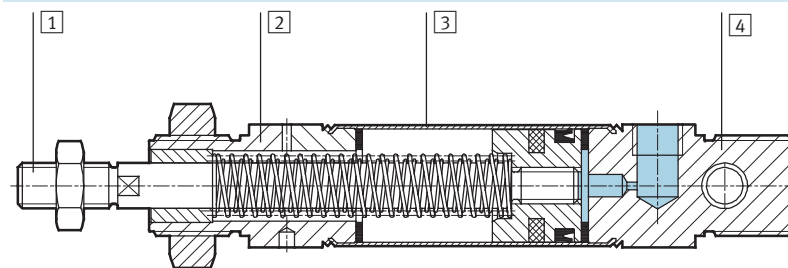
Forces [lbf] and Impact Energy [ft-lbf]						
Piston Ø [in]	5/16	3/8	1/2	5/8	3/4	1
Theoretical force at 90 psi, extending	5.4	9.2	13.7	24.1	38.0	60.7
Max. spring return force, 0.4 inch stroke	1.1	1.1	1.4	3.0	4.1	5.1
Max. spring return force, 1 inch stroke	0.9	0.9	1.2	2.7	3.7	4.8
Max. spring return force, 2 inch stroke	0.6	1.1	0.9	2.2	3.1	4.2
Max. impact energy at the end positions ¹⁾	0.02	0.04	0.05	0.11	0.15	0.22

1) The values are reduced by approx. 50% at 176 °F

Weights ESNU-... [oz]						
Piston Ø [in]	5/16	3/8	1/2	5/8	3/4	1
Product weight with 0 inch stroke	1.2	1.3	2.6	3.2	6.6	8.4
Additional weight per 1 inch stroke	0.20	0.25	0.36	0.41	0.64	0.99

Materials

Sectional view



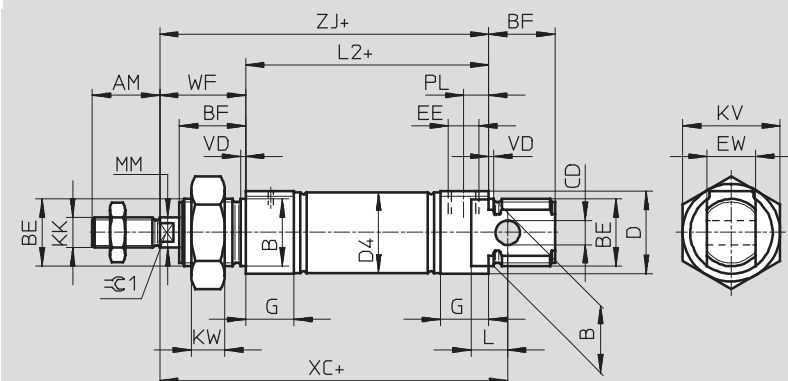
ESNU		
1	Piston rod	High-alloy stainless steel
2	Bearing cap	Wrought aluminum alloy
3	Cylinder barrel	High-alloy stainless steel
4	End cap	Wrought aluminum alloy
–	Seals	Polyurethane, nitrile rubber
–	Spring	Spring steel

Round Cylinders ESNU – Inch Series (Sizes 5/16" to 1")

Technical Data

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Dimensions – Basic Version



+ = plus stroke length

Ø [in]	AM	B Ø	BE	BF	CD Ø	D Ø	D4 Ø	EE	EW	G	KK	KV
5/16	0.5	0.5	M12x1.25	0.5	0.2	0.6	0.37	10-32 UNF	0.3	0.4	6-32 UNC	0.7
3/8							0.44					
1/2	0.6	0.6	M16x1.5	0.7	0.2	0.8	0.52		0.5		10-32 UNF	0.9
5/8							0.68					
3/4	0.8	0.9	M22x1.5	0.8	0.3	1.1	0.84	1/8" NPT	0.6	0.6	5/16-24 UNF	1.3
1	0.9			0.9			1.04				3/8-24 UNF	

Ø	KW	L	L2	MM Ø	PL	VD	WF	XC	ZJ	≈C1
[in]										[mm]
5/16	0.2	0.2	1.8	0.2	0.2	0.1	0.6	2.5	2.4	–
3/8										
1/2	0.3	0.4	2.0	0.2			0.9	3.0	2.8	5
5/8			2.2							
3/4	0.4	0.5	2.7	0.3	8.2		0.9	3.7	3.6	7
1			2.74	0.4						
							1.1	4.1	3.8	9

Dimensions are in inches, unless otherwise noted.

Round Cylinders ESNU – Inch Series (Sizes 5/16" to 1")

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Ordering Data

M Mandatory Data				O Options
Function	Piston Ø	Stroke	Cushioning	Magnet for position sensing
ESNU	5/16 3/8 1/2 5/8 3/4 1	0.04 ... 2	P	A
ESNU	- 1	- 1	- P	- A

Ordering Table										
Size	5/16	3/8	1/2	5/8	3/4	1	Conditions	Code		Enter code
M Function	Standard cylinder, single-acting pushing							ESNU		ESNU
Piston Ø [in]	5/16	3/8	1/2	5/8	3/4	1		-...		
Stroke [in]	0.04 ... 2							-...		
Cushioning	Flexible cushioning rings at both ends							-P		-P
O Magnet for position sensing	For use with magnetic proximity sensor						1	-A		

1 Reliable position sensing requires a minimum stroke of 0.4 inch

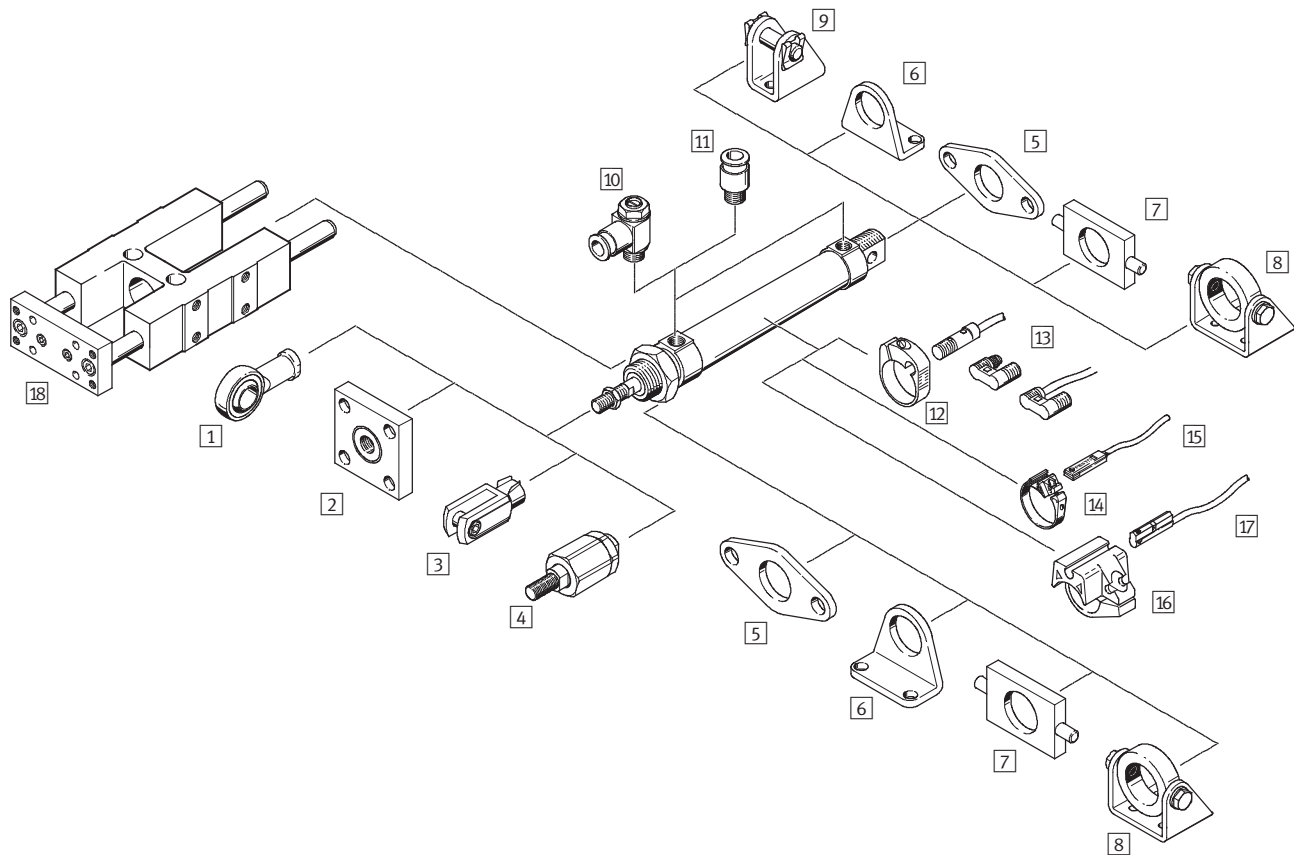
Transfer order code

ESNU	-		-		-	P	-	
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Round Cylinders DSNU/ESNU – Inch Series (Sizes 5/16" to 1")

Accessories Overview

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Mounting Attachments and Accessories		→ Page
1	Rod eye SGS	24
2	Coupling piece KSZ	24
3	Rod clevis SG	24
4	Self-aligning rod coupler FK	24
5	Flange mounting FBN	22
6	Foot mounting HBN	21
7	Swivel mounting WBN	23
8	Swivel mounting SBN	22
9	Clevis foot LBN	23
10	One-way flow control valve GRLA/GRLZ	25
11	Push-in fitting QS	25
12	Sensor mounting kit SMBR	26
13	Proximity switch SMEO/SMT0	26
14	Sensor mounting kit SMBR-8	27
15	Proximity switch SME/SMT-8	27
16	Sensor mounting kit SMBR-10	28
17	Proximity switch SME/SMT-10	28
18	Guide unit FEN	24

Round Cylinders DSNU/ESNU – Inch Series (Sizes 5/16" to 1")

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Accessories

Foot Mounting HBN

Scope of delivery:

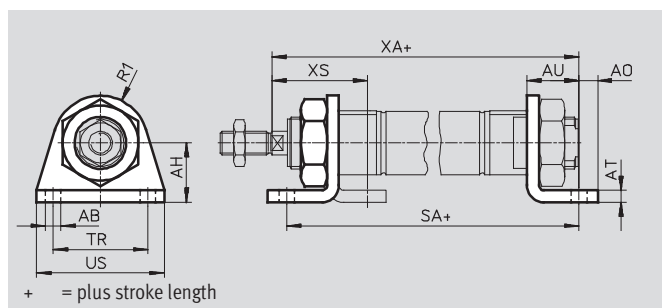
HBN-...x1: 1 foot

HBN-...x2: 2 feet and 1 nut

Material:

HBN: Galvanized steel

Free of copper, PTFE and silicone



Dimensions											
Ø	AB Ø	AH	AO	AT	AU	R1	SA	TR	US	XA	XS
[in]											
5/16, 3/8	0.18	0.6	0.2	0.1	0.4	0.4	2.7	1.0	1.4	2.9	0.9
1/2	0.22	0.8	0.2	0.2	0.6	0.5	3.1	1.3	1.7	3.4	1.3
5/8	0.22	0.8	0.2	0.2	0.6	0.5	3.3	1.3	1.7	3.6	1.3
3/4	0.26	1.0	0.3	0.2	0.7	0.8	4.0	1.6	2.1	4.3	1.4
1	0.26	1.0	0.3	0.2	0.7	0.8	4.08	1.6	2.1	4.51	1.6

Ordering Data				
Ø	Basic version			
[in]	CRC ¹⁾	Weight [oz]	Part No.	Type
5/16, 3/8	2	0.7	5123	HBN-8/10x1
	2	1.9	5124	HBN-8/10x2
1/2, 5/8	2	1.4	5125	HBN-12/16x1
	2	3.7	5126	HBN-12/16x2
3/4, 1	2	3.2	5127	HBN-20/25x1
	2	7.8	5128	HBN-20/25x2

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.

Dimensions are in inches, unless otherwise noted.

Round Cylinders DSNU/ESNU – Inch Series (Sizes 5/16" to 1")

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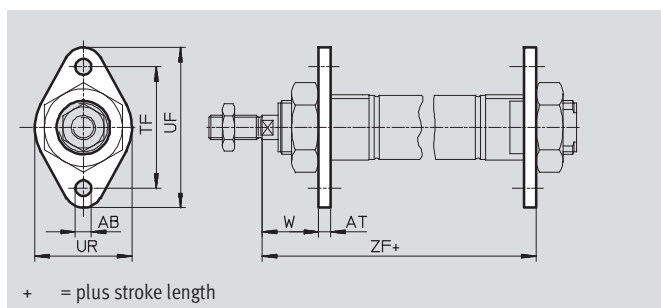
Accessories

Flange Mounting FBN

Material:

FBN: Galvanized steel

Free of copper, PTFE and silicone



+ = plus stroke length

Dimensions							
Ø	AB	AT	TF	UF	UR	W	ZF
[in]	Ø						
5/16, 3/8	0.2	0.1	1.2	2.6	1.0	0.5	2.6
1/2	0.2	0.2	1.6	2.1	1.2	0.7	3.0
5/8	0.2	0.2	1.6	2.1	1.2	0.7	3.2
3/4	0.3	0.2	2.0	2.6	1.6	0.7	3.8
1	0.3	0.2	2.0	2.6	1.6	0.9	4.0

Ordering Data				
Ø	Basic version			
	CRC ¹⁾	Weight [g]	Part No.	Type
[in]				
5/16, 3/8	2	0.4	5129	FBN-8/10
1/2, 5/8	2	0.9	5130	FBN-12/16
3/4, 1	2	1.6	5131	FBN-20/25

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.

Swivel Mounting SBN

Material:

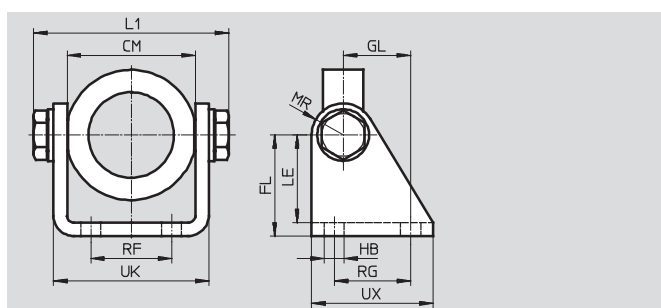
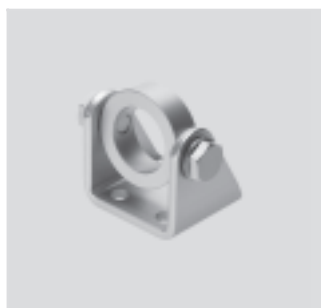
Mounting ring: Wrought aluminum

alloy, anodized

Bearings: Bronze

Screws: Galvanized steel

Bracket: Steel



Dimensions and Ordering Data														
Ø	CM	FL	GL	HB	L1	LE	MR	RF	RG	UK	UX	CRC ¹⁾	Weight	Part No. Type
[in]					max.								[oz]	
3/4, 1	1.5	1.4	0.8	0.3	2.4	1.2	0.5	0.8	0.9	1.81	1.6	2	7.1	539927 SBN-20/25

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.

Dimensions are in inches, unless otherwise noted.

Round Cylinders DSNU/ESNU – Inch Series (Sizes 5/16" to 1")

Accessories

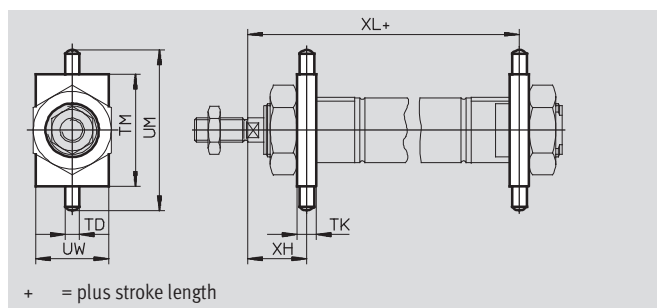
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Swivel Mounting WBN

Material:

Galvanized steel

Free of copper, PTFE and silicone



Dimensions and Ordering Data										
Ø	TD	TK	TM	UM	UW	XH	XL	CRC ¹⁾	Weight	Part No. Type
[in]	Ø								[oz]	
5/16, 3/8	0.2	0.2	1.0	1.5	0.8	0.5	2.6	2	0.7	8608 WBN-8/10
1/2	0.2	0.3	1.5	2.3	1.0	0.7	3.0	2	1.8	8609 WBN-12/16
5/8	0.2	0.3	1.5	2.3	1.0	0.7	3.2	2	1.8	8609 WBN-12/16
3/4	0.2	0.3	1.8	2.6	1.2	0.8	3.8	2	2.5	8610 WBN-20/25
1	0.2	0.3	1.8	2.6	1.2	0.9	4.0	2	2.5	8610 WBN-20/25

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

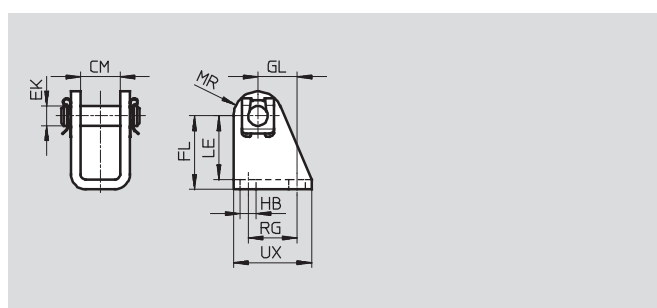
Components with moderate corrosion resistance for use in normal industrial environments subjected to contact with coolants or lubricating agents.

Clevis Foot LBN

Material:

LBN: Galvanized steel

Free of copper, PTFE and silicone



Dimensions									
For Ø	CM	EK	FL	GL	HB	LE	MR	RG	UX
[in]		Ø							
5/16, 3/8	0.32	0.2	0.9	0.54	0.17	0.85	0.2	0.49	0.8
1/2, 5/8	0.48	0.2	1.1	0.5	0.22	0.9	0.3	0.6	1.0
3/4, 1	0.63	0.3	1.2	0.6	0.26	1.0	0.4	0.8	1.3

Ordering Data				
Ø	Basic version			
[in]	CRC ¹⁾	Weight [oz]	Part No.	Type
5/16, 3/8	2	0.8	6057	LBN-8/10
1/2, 5/8	2	1.4	6058	LBN-12/16
3/4, 1	2	2.9	6059	LBN-20/25

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

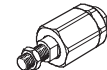
Components with moderate corrosion resistance for use in normal industrial environments subjected to contact with coolants or lubricating agents.

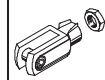
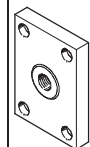
Dimensions are in inches, unless otherwise noted.

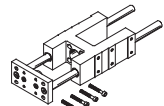
Round Cylinders DSNU/ESNU – Inch Series (Sizes 5/16" to 1")

Accessories

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Ordering Data – Piston Rod Attachments			
Designation	For Ø [in]	Part No.	Type
Rod eye SGS			
	5/16	532693	SGS-6-32
	3/8		
	1/2	532694	SGS-10-32
	5/8		
	3/4	532695	SGS-5/16-24
	1	532696	SGS-3/8-24
Self-aligning rod coupler FK			
	5/16	532702	FK-6-32
	3/8		
	1/2	532703	FK-10-32
	5/8		
	3/4	532704	FK-5/16-24
	1	532705	FK-3/8-24

Designation	For Ø [in]	Part No.	Type
Rod clevis SG			
	5/16	11127	SG-6-32
	3/8		
	1/2	546552	SG-10-32-B
	5/8		
	3/4	546574	SG-5/16"-24-B
	1	546540	SG-3/8"-24-B
Coupling piece KSZ			
	5/16, 3/8	–	
	1/2, 5/8		
	3/4		
	1	36129	KSZ-3/8-24-UNF

Ordering Data – Guide Units					
	For Ø [in]	Stroke [in]	With recirculating ball bearing guide		With plain bearing guide
			Part No.	Type	Part No. Type
	5/16, 3/8	up to 8	151730	FEN-5/16"-3/8"-...-KF	151720 FEN-5/16"-3/8"-...
	1/2, 5/8	up to 8	151731	FEN-1/2"-5/8"-...-KF	151721 FEN-1/2"-5/8"-...
	3/4	up to 10	151732	FEN-3/4"-...-KF	151722 FEN-3/4"-...
	1	up to 10	151733	FEN-1"-...-KF	151723 FEN-1"-...

Round Cylinders DSNU/ESNU – Inch Series (Sizes 5/16" to 1")

Accessories

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Ordering Data – One-way Flow Control Valves				
	Connection		Part No.	Type
	Thread	For tubing O.D.		
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
		1/4"	165010	GRLA-1/8-NPT-QS-1/4-U
		3/16"	190941	GRLA-1/8-NPT-QS-3/16-U
		5/16"	165013	GRLA-1/8-NPT-QS-5/16-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
		1/4"	151562	GRLZ-1/8-NPT-1/4-B
	3/8"	151563	GRLZ-1/8-NPT-3/8-B	

Ordering Data – Push-in Fittings QS				Technical Data → www.festo.com/catalog/QS	
	For tubing O.D. [in]	10/32 UNF		R1/8	
		Part No.	Type	Part No.	Type
With external hex					
	3/16	164851	QS-10-32-UNF-3/16-U	–	
	1/4	164850	QS-10-32-UNF-1/4-U	183741	QS-1/8-1/4-I-U-M
	5/16	–		183742	QS-1/8-5/16-I-U-M
With internal hex					
	1/8	–		533213	QS-H-1/8-1/8-U-M
	5/32	–		533214	QS-H-1/8-5/32-U-M
	3/16	–		533215	QS-H-1/8-3/16-U-M
	1/4	190687	QS-10-32-UNF-1/4-I-U	533216	QS-H-1/8-1/4-U-M
	5/16	–		533217	QS-H-1/8-5/16-U-M

Round Cylinders DSNU/ESNU – Inch Series (Sizes 5/16" to 1")

Accessories

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Ordering data – Proximity Switches for T-slot, Magneto-resistive							Technical data → www.festo.com/catalog/sm	
	Mounting	Switch output	Electrical connection		Cable length [ft]	Connection direction	Part No.	Type
			Cable	M8 plug				
NO contact								
	Via mounting kit	PNP	3-wire	–	8.2	In-line	152836	SMT0-4U-PS-K-LED-24
			–	3-pin	–	In-line	152742	SMT0-4U-PS-S-LED-24
		NPN	3-wire	–	8.2	In-line	152837	SMT0-4U-NS-K-LED-24
			–	3-pin	–	In-line	152743	SMT0-4U-NS-S-LED-24

Ordering data – Proximity Switches for T-slot, Magnetic Reed						Technical data → www.festo.com/catalog/sm	
	Mounting	Electrical connection		Cable length [ft]	Connection direction	Part No.	Type
		Cable	M8 plug				
NO contact							
	Via mounting kit	3-wire	–	8.2	In-line	36198	SME0-4U-K-LED-24
				16.4	In-line	175401	SME0-4U-K5-LED-24
		–	3-pin	–	In-line	151526	SME0-4U-S-LED-24-B

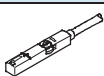
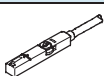
Ordering data – Proximity Switches for T-slot, Magnetic Reed, Corrosion Resistant						Technical data → www.festo.com/catalog/sm	
	Mounting	Electrical connection		Cable length [ft]	Connection direction	Part No.	Type
		Cable	M8 plug				
NO contact							
	Via mounting kit	3-wire	–	8.2	In-line	161775	CRSMEO-4-K-LED-24

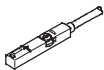
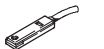
Ordering Data – Mounting Kit for Proximity Sensors SME0/SMT0/CRSMEO			
Designation	For Ø [in]	Part No.	Type
Mounting kit SMBR			
	5/16	19272	SMBR-8
	3/8	19273	SMBR-10
	1/2	19274	SMBR-12
	5/8	19275	SMBR-16
	3/4	19276	SMBR-20
	1	19277	SMBR-25

Round Cylinders DSNU/ESNU – Inch Series (Sizes 5/16" to 1")

Accessories

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Ordering data – Proximity switches for T-slot, magneto-resistive					Technical data → www.festo.com/catalog/sm	
	Type of mounting	Switch output	Electrical connection	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with cylinder profile	PNP	Cable, 3-wire	2.5	543867	SMT-8M-PS-24V-K-2,5-OE
			Plug M8x1, 3-pin	0.3	543866	SMT-8M-PS-24V-K-0,3-M8D
			Plug M12x1, 3-pin	0.3	543869	SMT-8M-PS-24V-K-0,3-M12
		NPN	Cable, 3-wire	2.5	543870	SMT-8M-NS-24V-K-2,5-OE
			Plug M8x1, 3-pin	0.3	543871	SMT-8M-NS-24V-K-0,3-M8D
	Insertable in the slot lengthwise, flush with the cylinder profile	PNP	Cable, 3-wire	2.5	175436	SMT-8-PS-K-LED-24-B
			Plug M8x1, 3-pin	0.3	175484	SMT-8-PS-S-LED-24-B
N/C contact						
	Insertable in the slot from above, flush with cylinder profile	PNP	Cable, 3-wire	7.5	543873	SMT-8M-PO-24V-K7,5-OE

Ordering data – Proximity switches for T-slot, magnetic reed					Technical data → www.festo.com/catalog/sm	
	Type of mounting	Switch output	Electrical connection	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with cylinder profile	Contacting	Cable, 3-wire	2.5	543862	SME-8M-DS-24V-K-2,5-OE
				5.0	543863	SME-8M-DS-24V-K-5,0-OE
			Cable, 3-wire	2.5	543872	SME-8M-ZS-24V-K-2,5-OE
				Plug M8x1, 3-pin	0.3	543861
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	2.5	150855	SME-8-K-LED-24
			Plug M8x1, 3-pin	0.3	150857	SME-8-S-LED-24
N/C contact						
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	7.5	160251	SME-8-O-K-LED-24

Ordering Data – Mounting Kit for Proximity Sensors SME/SMT-8			
Designation	For Ø [in]	Part No.	Type
Mounting kit SMBR-8			
	5/16	175091	SMBR-8-8
	3/8	175092	SMBR-8-10
	1/2	175093	SMBR-8-12
	5/8	175094	SMBR-8-16
	3/4	175095	SMBR-8-20
	1	175096	SMBR-8-25

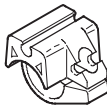
Round Cylinders DSNU/ESNU – Inch Series (Sizes 5/16" to 1")

Accessories

FESTO

Ordering data – Proximity switches for C-slot, magneto-resistive					Technical data → www.festo.com/catalog/sm	
	Type of mounting	Switch output	Electrical connection, connection direction	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with cylinder profile	PNP	Cable, 3-wire, in-line	2.5	525915	SMT-10F-PS-24V-K2,5L-OE
			Plug M8x1, 3-pin, in-line	0.3	525916	SMT-10F-PS-24V-K0,3L-M8D
			Plug M8x1, 3-pin, lateral	0.3	526675	SMT-10F-PS-24V-K0,3Q-M8D
	Insertable in the slot lengthwise	PNP	Plug M8x1, 3-pin, in-line	0.3	173220	SMT-10-PS-SL-LED-24
			Cable, 3-wire, in-line	2.5	173218	SMT-10-PS-KL-LED-24

Ordering data – Proximity switches for C-slot, magnetic reed					Technical data → www.festo.com/catalog/sm	
	Type of mounting	Switch output	Electrical connection, connection direction	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with cylinder profile	Contacting	Plug M8x1, 3-pin, in-line	0.3	525914	SME-10F-DS-24V-K0,3L-M8D
			Cable, 3-wire, in-line	2.5	525913	SME-10F-DS-24V-K2,5L-OE
			Cable, 2-wire, in-line	2.5	526672	SME-10F-ZS-24V-K2,5L-OE
	Insertable in the slot lengthwise	Contacting	Plug M8x1, 3-pin, in-line	0.3	173212	SME-10-SL-LED-24
			Cable, 3-wire, in-line	2.5	173210	SME-10-KL-LED-24

Ordering Data – Mounting Kit for Proximity Sensors SME/SMT-10			
Designation	For Ø [in]	Part No.	Type
Mounting kit SMBR-10			
	5/16	175101	SMBR-10-8
	3/8	173227	SMBR-10-10
	1/2	175102	SMBR-10-12
	5/8	173228	SMBR-10-16
	3/4	175103	SMBR-10-20
	1	175104	SMBR-10-25

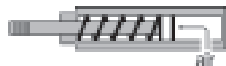
Ordering data – Connecting cables				Technical data → www.festo.com/catalog/nebu	
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541333	NEBU-M8G3-K-2.5-LE3
			5.0	541334	NEBU-M8G3-K-5-LE3
	Straight socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541363	NEBU-M12G5-K-2.5-LE3
			5.0	541364	NEBU-M12G5-K-5-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541338	NEBU-M8W3-K-2.5-LE3
			5.0	541341	NEBU-M8W3-K-5-LE3
	Angled socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541367	NEBU-M12W5-K-2.5-LE3
			5.0	541370	NEBU-M12W5-K-5-LE3

Round cylinders ESNU – Inch Series (Sizes 1-1/4” to 2-1/2”)

Technical Data

FESTO

Single-acting, Spring Return



Ø - Diameter
1-1/4 ... 2-1/2 inch

Stroke length
1/8 ... 2 inch



General Technical Data				
Piston Ø [in]	1-1/4	1-5/8	2	2-1/2
Pneumatic connection	1/8" NPT	1/4" NPT	1/4" NPT	3/8" NPT
Piston rod thread	3/8-24	1/2-20	5/8-18	5/8-18
Constructional design	Piston			
	Piston rod			
	Cylinder barrel			
Cushioning	Flexible cushioning rings at both ends (P)			
Magnet for position sensing ¹⁾	Optional			

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

Operating Pressure [psi]				
Piston Ø	1-1/4	1-5/8	2	2-1/2
Operating medium	Filtered compressed air, lubricated or unlubricated			
Operating pressure [psi]	17.6 ... 150			

Ambient Conditions	
Ambient temperature ²⁾ [°F]	-4 ... +176
Corrosion resistance class CRC ³⁾	2

2) Note operating range of proximity sensors

3) 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.

Round cylinders ESNU – Inch Series (Sizes 1-1/4" to 2-1/2")

Technical Data

FESTO

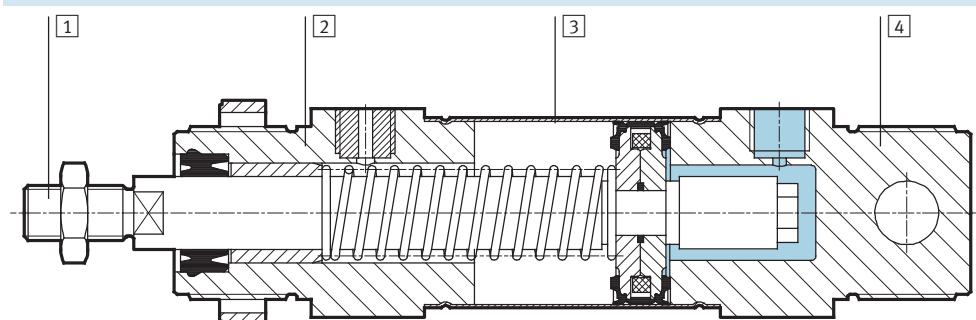
Forces [lbf] and Impact Energy [ft-lbf]				
Piston Ø [in]	1-1/4	1-5/8	2	2-1/2
Theoretical force at 90 psi, extending	94	150	247	402
Max. spring return force 3/8 inch stroke	12	17.7	16.7	16.7
Max. spring return force 1 inch stroke	12	17.7	16.7	16.7
Max. spring return force 2 inch stroke	12	17.7	16.7	16.7
Max. impact energy at the end positions ¹⁾	0.30	0.52	0.74	0.96

1) The values are reduced by approx. 50% at 176 °F

Weights ESNU-... [oz]				
Piston Ø [in]	1-1/4	1-5/8	2	2-1/2
Product weight with 0 inch stroke	13.1	23.3	38.3	51.0
Additional weight per 1 inch stroke	1.4	2.2	3.6	3.9

Materials

Sectional view



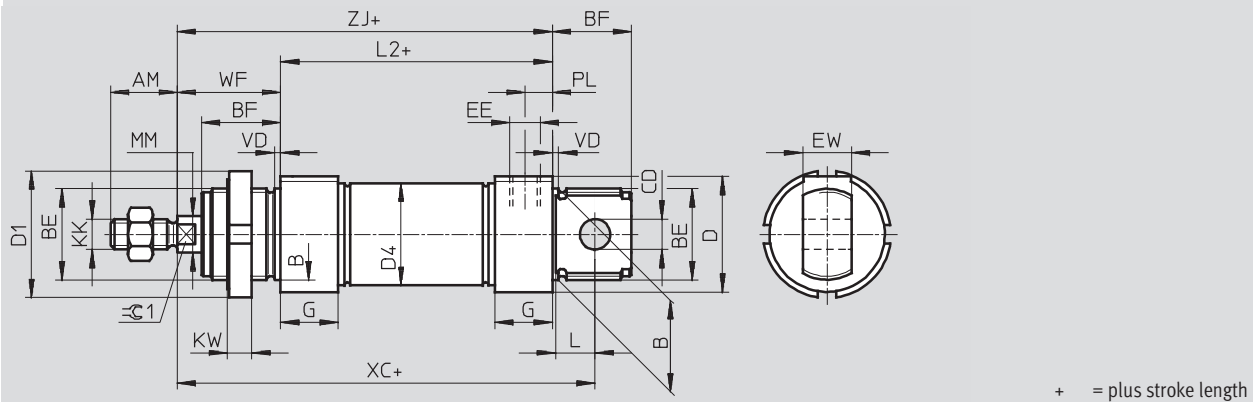
ESNU	
1	Piston rod
2	Bearing cap
3	Cylinder barrel
4	End cap
–	Seals
–	Spring

Round cylinders ESNU – Inch Series (Sizes 1-1/4" to 2-1/2")

Technical Data

FESTO

Dimensions



Ø [in]	AM	B Ø	BE	BF	CD Ø	D Ø	D1 Ø	D4 Ø	EE	EW	G	KK
1-1/4	0.9	1.2	M30x1.5	1.0	0.4	1.5	1.7	1.3	1/8" NPT	0.6	0.7	M10x1.25
1-5/8	0.9	1.5	M38x1.5	1.2	0.5	1.8	2.0	1.6	1/4" NPT	0.7	1.0	M12x1.25
2	1.3	1.8	M45x1.5	1.3	0.6	2.2	2.4	2.1	3/8" NPT	0.8	1.1	M16x1.5
2-1/2						2.8		2.6				

Ø [in]	KW	L	L2	PL	MM Ø	VD	WF	XC	ZJ	≡C1 [mm]
1-1/4	0.3	0.5	2.7	0.4	0.5	0.1	1.3	4.6	4.1	10
1-5/8	0.4	0.6	3.3	0.5	0.6	0.1	1.5	5.5	4.9	13
2		0.6	3.4		0.8		1.7	5.8	5.1	17
2-1/2			3.7	0.5			1.8	6.1	5.5	

Dimensions are in inches, unless otherwise noted.

Round cylinders ESNU – Inch Series (Sizes 1-1/4" to 2-1/2")

Ordering Data

FESTO

M Mandatory Data				O Options
Function	Piston Ø	Stroke	Cushioning	Magnet for position sensing
ESNU	1 1/4 1 5/8 2 2 1/2	1/8 ... 2	P	A
ESNU	- 1 1/4	- 2	- P	- A

Ordering Table							
Size	1 1/4	1 5/8	2	2 1/2	Conditions	Code	Enter code
M Function	Single-acting round cylinder					ESNU	ESNU
Piston Ø [in]	1 1/4	1 5/8	2	2 1/2		~...	
Stroke [in]	1/8 ... 2					~...	
Cushioning	Flexible cushioning rings at both ends					-P	-P
O Magnet for position sensing	For use with magnetic proximity sensor				1	-A	

1 Reliable position sensing requires a minimum stroke length of 0.4 inch.

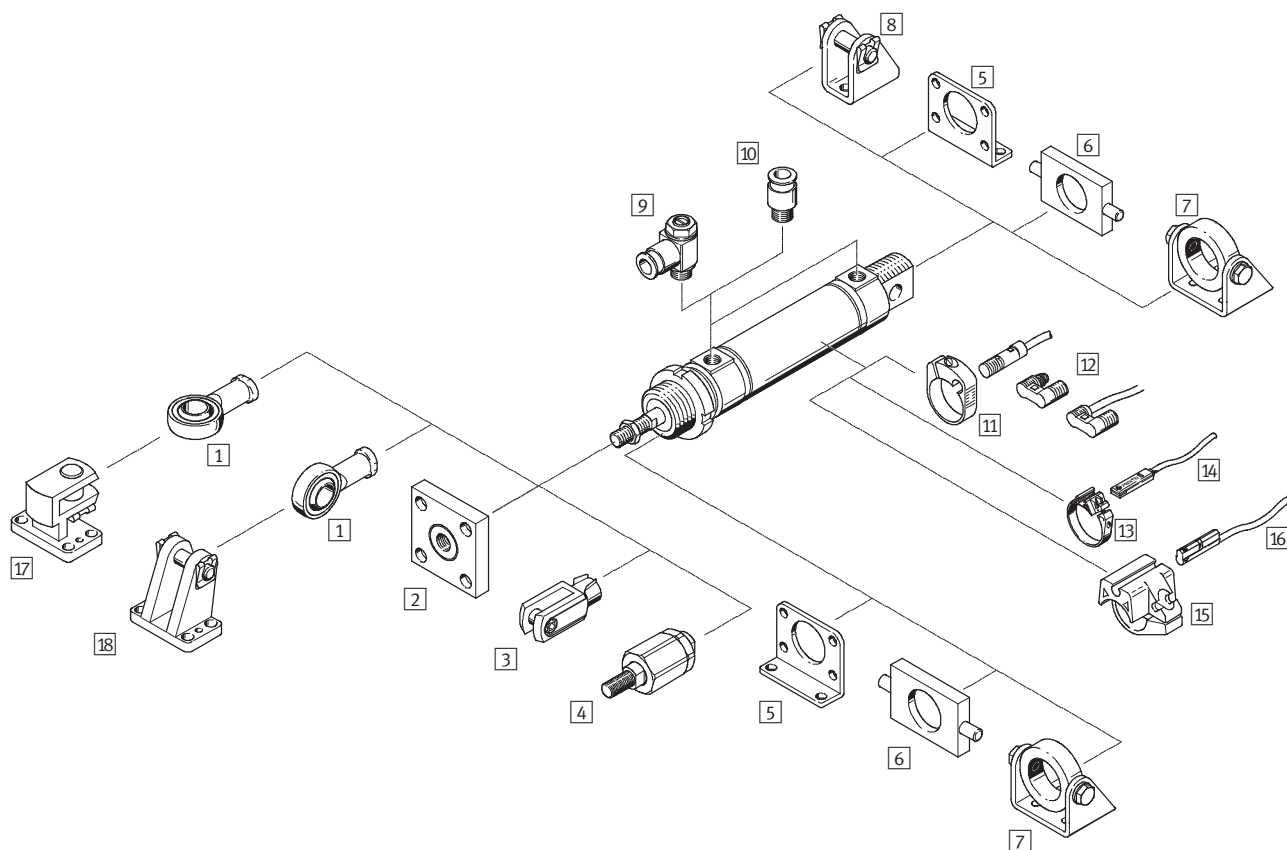
Transfer order code

ESNU	-		-		-	P	-	
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Round cylinders DSNU/ESNU – Inch Series (Sizes 1-1/4" to 2-1/2")

Accessories Overview

FESTO



Mounting Attachments and Accessories		→ Page
1	Rod eye SGS/CRSGS	36
2	Coupling piece KSG/KSZ	36
3	Rod clevis SG/CRSG	36
4	Self-aligning rod coupler FK	36
5	Flange mounting FBN/CRFV	34
6	Swivel mounting WBN	35
7	Swivel mounting SBN	35
8	Clevis foot LBN/CRLBN	36
9	One-way flow control valve GRLA/GRLZ/CRGRLA	37
10	Push-in fitting QS	37
11	Sensor mounting kit CRSMBR	38
12	Proximity sensor SMEO/SMT0/CRSMEO-4	38
13	Sensor mounting kit SMBR-8	39
14	Proximity sensor SME/SMT-8	39
15	Sensor mounting kit SMBR-10	40
16	Proximity sensor SME/SMT-10	40
17	Clevis foot, lateral LQG	35
18	Clevis foot LBG	35

Round cylinders DSNU/ESNU – Inch Series (Sizes 1-1/4" to 2-1/2")

FESTO

Accessories

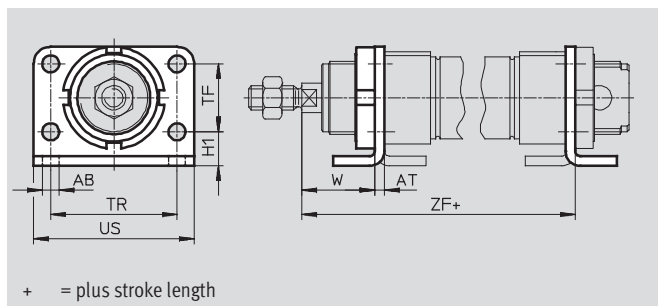
Flange Mounting FBN/CRFV

Material:

FBN: Galvanized steel

CRFV: High-alloy stainless steel

Free of copper, PTFE and silicone



Dimensions								
Ø	AB	AT	H1	TF	TR	US	W	ZF
[in]	Ø							
1-1/4	0.3	0.2	0.6	1.1	2.0	2.6	1.2	4.2
1-5/8	0.4	0.2	0.7	1.2	2.4	3.1	1.1	4.9
2	0.4	0.2	0.8	1.6	2.8	3.5	1.5	5.4
2-1/2	0.4	0.2	0.8	2.0	3.0	3.8	1.5	5.7

Ordering Data								
Ø	Basic version				High corrosion protection			
	CRC ¹⁾	Weight [oz]	Part No.	Type	CRC ¹⁾	Weight [oz]	Part No.	Type
1-1/4	2	3.6	195855	FBN-32	4	3.6	161858	CRFV-32
1-5/8	2	6.7	195856	FBN-40	4	6.7	161859	CRFV-40
2	2	10.2	195857	FBN-50	4	10.2	161860	CRFV-50
2-1/2	2	12.9	195858	FBN-63	4	12.9	161861	CRFV-63

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.

Corrosion resistance class 4 according to Festo standard 940 070

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

Dimensions are in inches, unless otherwise noted.

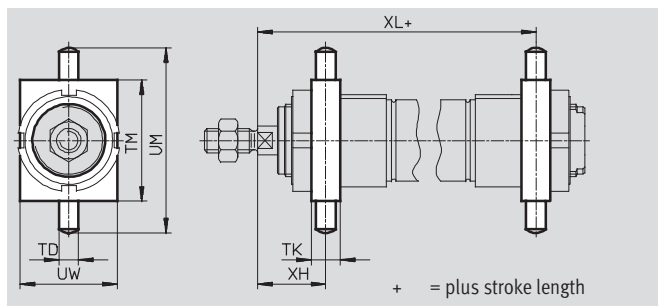
Round cylinders DSNU/ESNU – Inch Series (Sizes 1-1/4" to 2-1/2")

FESTO

Accessories

Swivel Mounting WBN

Material:
Galvanized steel
Free of copper, PTFE and silicone

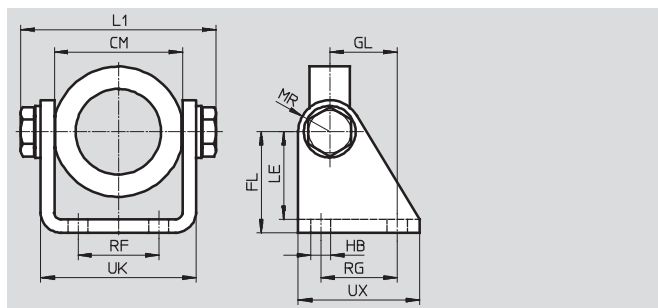
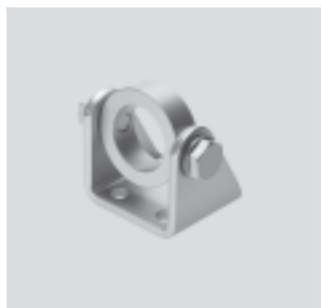


Dimensions and Ordering Data												
Ø	TD	TK	TM	UM	UW	XH	XL	CRC ¹⁾	Weight	Part No.	Type	
[in]	Ø								[oz]			
1-1/4	0.3	0.5	2.0	3.0	1.6	1.1	4.3	2	4.6	195863	WBN-32	
1-5/8	0.4	0.6	2.4	3.6	2.0	1.2	5.0	2	8.5	195864	WBN-40	
2	0.5	0.8	3.1	4.6	2.6	1.3	5.5	2	21.5	195865	WBN-50/63	
2-1/2	0.5	0.8	3.1	4.6	2.6	1.4	5.9	2	21.5	195865	WBN-50/63	

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.

Swivel Mounting SBN

Material:
Mounting ring: Wrought aluminum alloy, anodized
Bearings: Bronze
Screws: Galvanized steel
Bracket: Steel



Dimensions and Ordering Data															
Ø	CM	FL	GL	HB	L1	LE	MR	RF	RG	UK	UX	CRC ¹⁾	Weight	Part No.	Type
[in]					max.								[oz]		
1-1/4	1.8	1.6	1.1	0.4	2.8	1.4	0.5	1.1	1.2	2.2	2.0	2	10.4	539924	SBN-32
1-5/8	2.2	1.8	1.2	0.4	3.5	1.5	0.6	1.4	1.3	2.7	2.1	2	16.4	539925	SBN-40
2, 2-1/2	2.8	2.0	1.3	0.4	4.0	1.7	0.6	1.7	1.4	3.2	2.6	2	23.6	539926	SBN-50/63

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..

Ordering Data – Mounting Attachments			
Designation	For Ø [in]	Part No.	Type
Clevis Foot mounting LBG			
	1-1/4	31761	LBG-32
	1-5/8	31762	LBG-40
	2	31763	LBG-50
	2-1/2	31764	LBG-63

Designation	For Ø [in]	Part No.	Type
Clevis Foot, right-angled LQG			
	1-1/4	31768	LQG-32
	1-5/8	31769	LQG-40
	2	31770	LQG-50
	2-1/2	31771	LQG-63

Dimensions are in inches, unless otherwise noted.

Round cylinders DSNU/ESNU – Inch Series (Sizes 1-1/4" to 2-1/2")

Accessories

FESTO

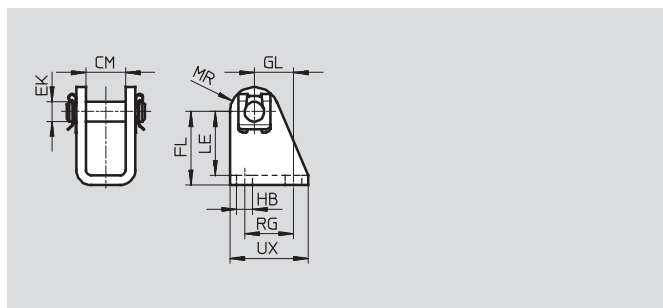
Clevis Foot LBN/CRLBN

Material:

LBN: Galvanized steel

CRLBN: High-alloy stainless steel

Free of copper, PTFE and silicone



Dimensions									
For Ø	CM	EK Ø	FL	GL	HB	LE	MR	RG	UX
[in]									
1-1/4	0.6	0.4	1.4	0.7	0.3	1.2	0.4	0.9	1.4
1-5/8	0.7	0.5	1.6	1.0	0.4	1.4	0.5	1.2	1.8
2, 2-1/2	0.8	0.6	1.8	1.1	0.4	1.5	0.6	1.3	2.0

Ordering Data								
Ø [in]	Basic version				High corrosion protection			
	CRC ¹⁾	Weight [oz]	Part No.	Type	CRC ¹⁾	Weight [g]	Part No.	Type
1-1/4	2	3.8	195860	LBN-32	4	3.8	195866	CRLBN-32
1-5/8	2	6.8	195861	LBN-40	4	6.5	195867	CRLBN-40
2, 2-1/2	2	10.7	195862	LBN-50/63	4	10.2	195868	CRLBN-50/63

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.

Corrosion resistance class 4 according to Festo standard 940 070

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

Ordering Data – Piston Rod Attachments							
Designation	For Ø [in]	Part No.	Type	Designation	For Ø [in]	Part No.	Type
Rod Eye SGS				Self-aligning rod coupler FK			
	1-1/4	532696	SGS-3/8-24		1-1/4	532705	FK-3/8-24
	1-5/8	532697	SGS-1/2-20		1-5/8	532706	FK-1/2-20
	2	532698	SGS-5/8-18		2	532707	FK-5/8-18
	2-1/2				2-1/2		
Rod clevis SG				Coupling piece KSZ			
	1-1/4	13000030	SG-3/8"-24-B		1-1/4	36129	KSZ-3/8-24-UNF
	1-5/8	13000469	SG-1/2-20-B		1-5/8	36130	KSZ-1/2-20-UNF
	2	13000712	SG5/8-18		2	36131	KSZ-5/8-18-UNF
	2-1/2				2-1/2		

Dimensions are in inches, unless otherwise noted.

Round cylinders DSNU/ESNU – Inch Series (Sizes 1-1/4" to 2-1/2")

FESTO

Accessories

Ordering Data – One-way Flow Control Valves				Technical Data → www.festo.com/catalog/GRLA	
	Connection		Part No.	Type	
	Thread	For tubing O.D.			
For exhaust air					
	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	
	1/2" NPT	3/8"	190952	GRLA-1/2-NPT-QS-3/8-U	
		1/2"	190953	GRLA-1/2-NPT-QS-1/2-U	
For supply air					
	1/8" NPT	–	151561	GRLZ-1/8-NPT-B	
		–	151564	GRLZ-1/8-NPT-RS-B	
		1/4"	151562	GRLZ-1/8-NPT-1/4-B	

Ordering Data – Push-in Fittings QS						Technical Data → www.festo.com/catalog/QS			
	For tubing O.D. [in]	R1/8		R1/4		R3/8		R1/2	
		Part No.	Type	Part No.	Type	Part No.	Type	Part No.	Type
With external hex									
	1/4	183741	QS-1/8-1/4-I-U-M	192809	QS-1/4-1/4-I-U-M	–		–	
	5/16	183742	QS-1/8-5/16-I-U-M	183743	QS-1/4-5/16-I-U-M	183745	QS-3/8-5/16-I-U-M	–	
	3/8	–	–	183744	QS-1/4-3/8-I-U-M	183746	QS-3/8-3/8-I-U-M	183747	QS-1/2-3/8-I-U-M
	1/2	–	–	–	–	–	–	183748	QS-1/2-1/2-I-U-M
	–	–	–	–	–	–	–	–	–
With internal hex									
	1/8	533213	QS-H-1/8-1/8-U-M	–	–	–		–	
	5/32	533214	QS-H-1/8-5/32-U-M	–	–	–		–	
	3/16	533215	QS-H-1/8-3/16-U-M	533218	QS-H-1/4-3/16-U-M	–		–	
	1/4	533216	QS-H-1/8-1/4-U-M	533219	QS-H-1/4-1/4-U-M	533222	QS-H-3/8-1/4-U-M	–	
	5/16	533217	QS-H-1/8-5/16-U-M	533220	QS-H-1/4-5/16-U-M	533223	QS-H-3/8-5/16-U-M	–	
	3/8	–	–	533221	QS-H-1/4-3/8-U-M	533224	QS-H-3/8-3/8-U-M	533226	QS-H-1/2-3/8-U-M
	1/2	–	–	–	–	533225	QS-H-3/8-1/2-U-M	533227	QS-H-1/2-1/2-U-M

Round cylinders DSNU/ESNU – Inch Series (Sizes 1-1/4" to 2-1/2")

Accessories

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Ordering data – Proximity Switches for T-slot, Magneto-resistive							Technical data → www.festo.com/catalog/sm	
	Mounting	Switch output	Electrical connection		Cable length [ft]	Connection direction	Part No.	Type
			Cable	M8 plug				
NO contact								
	Via mounting kit	PNP	3-wire	–	8.2	In-line	152836	SMT0-4U-PS-K-LED-24
			–	3-pin	–	In-line	152742	SMT0-4U-PS-S-LED-24
		NPN	3-wire	–	8.2	In-line	152837	SMT0-4U-NS-K-LED-24
			–	3-pin	–	In-line	152743	SMT0-4U-NS-S-LED-24

Ordering data – Proximity Switches for T-slot, Magnetic Reed						Technical data → www.festo.com/catalog/sm	
	Mounting	Electrical connection		Cable length [ft]	Connection direction	Part No.	Type
		Cable	M8 plug				
NO contact							
	Via mounting kit	3-wire	–	8.2	In-line	36198	SME0-4U-K-LED-24
				16.4	In-line	175401	SME0-4U-K5-LED-24
		–	3-pin	–	In-line	151526	SME0-4U-S-LED-24-B

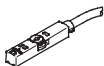
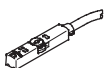
Ordering data – Proximity Switches for T-slot, Magnetic Reed, Corrosion Resistant						Technical data → www.festo.com/catalog/sm	
	Mounting	Electrical connection		Cable length [ft]	Connection direction	Part No.	Type
		Cable	M8 plug				
NO contact							
	Via mounting kit	3-wire	–	8.2	In-line	161775	CRSMEO-4-K-LED-24

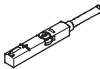
Ordering Data – Mounting Kit for Proximity Sensors SMEO/SMTO/CRSMEO			
Designation	For Ø [in]	Part No.	Type
Mounting kit CRSMBR, corrosion resistant			
	1-1/4	163888	CRSMBR-32
	1-5/8	163889	CRSMBR-40
	2	163890	CRSMBR-50
	2-1/2	163891	CRSMBR-63

Round cylinders DSNU/ESNU – Inch Series (Sizes 1-1/4" to 2-1/2")

Accessories

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Ordering data – Proximity switches for T-slot, magneto-resistive					Technical data → www.festo.com/catalog/sm	
	Type of mounting	Switch output	Electrical connection	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with cylinder profile, short design	PNP	Cable, 3-wire	2.5	574335	SMT-8M-A-PS-24V-E-2,5-OE
			Plug M8x1, 3-pin	0.3	574334	SMT-8M-A-PS-24V-E-0,3-M8D
			Plug M12x1, 3-pin	0.3	574337	SMT-8M-A-PS-24V-E-0,3-M12
		NPN	Cable, 3-wire	2.5	574338	SMT-8M-A-NS-24V-E-2,5-OE
			Plug M8x1, 3-pin	0.3	574339	SMT-8M-A-NS-24V-E-0,3-M8D
N/C contact						
	Insertable in the slot from above, flush with cylinder profile, short design	PNP	Cable, 3-wire	7.5	574340	SMT-8M-A-PO-24V-E-7,5-OE

Ordering data – Proximity switches for T-slot, magnetic reed					Technical data → www.festo.com/catalog/sm	
	Type of mounting	Switch output	Electrical connection	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with cylinder profile	Contacting	Cable, 3-wire	2.5	543862	SME-8M-DS-24V-K-2,5-OE
				5.0	543863	SME-8M-DS-24V-K-5,0-OE
			Plug M8x1, 3-pin	2.5	543872	SME-8M-ZS-24V-K-2,5-OE
				0.3	543861	SME-8M-DS-24V-K-0,3-M8D
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	2.5	150855	SME-8-K-LED-24
			Plug M8x1, 3-pin	0.3	150857	SME-8-S-LED-24
N/C contact						
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	7.5	160251	SME-8-O-K-LED-24

Ordering Data – Mounting Kit for Proximity Sensors SME/SMT-8				
Designation	For Ø [in]	Part No.	Type	
Mounting kit SMBR-8				
	1-1/4	175097	SMBR-8-32	
	1-5/8	175098	SMBR-8-40	
	2	175099	SMBR-8-50	
	2-1/2	175100	SMBR-8-63	

Ordering data – Connecting cables				Technical data → www.festo.com/catalog/nebu	
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541333	NEBU-M8G3-K-2.5-LE3
			5.0	541334	NEBU-M8G3-K-5-LE3
	Straight socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541363	NEBU-M12G5-K-2.5-LE3
			5.0	541364	NEBU-M12G5-K-5-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541338	NEBU-M8W3-K-2.5-LE3
			5.0	541341	NEBU-M8W3-K-5-LE3
	Angled socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541367	NEBU-M12W5-K-2.5-LE3
			5.0	541370	NEBU-M12W5-K-5-LE3

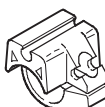
Round cylinders DSNU/ESNU – Inch Series (Sizes 1-1/4" to 2-1/2")

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Accessories

Ordering data – Proximity sensors for C-slot, magneto-resistive						Technical data → Internet: smt	
	Type of mounting	Switching output	Electrical connection, connection direction	Cable length [m]	Part No.	Type	
N/O contact							
	Insertable in the slot from above	PNP	Cable, 3-wire, in-line	2.5	551 373	SMT-10M-PS-24V-E-2,5-L-OE	
			Plug M8x1, 3-pin, in-line	0.3	551 375	SMT-10M-PS-24V-E-0,3-L-M8D	
			Plug M8x1, 3-pin, angled	0.3	551 376	SMT-10M-PS-24V-E-0,3-Q-M8D	

Ordering data – Proximity sensors for C-slot, magnetic reed						Technical data → Internet: sme	
	Type of mounting	Switching output	Electrical connection, connection direction	Cable length [m]	Part No.	Type	
N/O contact							
	Insertable in the slot from above	Contacting	Plug M8x1, 3-pin, in-line	0.3	551 367	SME-10M-DS-24V-E-0,3-L-M8D	
			Cable, 3-wire, in-line	2.5	551 365	SME-10M-DS-24V-E-2,5-L-OE	
			Cable, 2-wire, in-line	2.5	551 369	SME-10M-ZS-24V-E-2,5-L-OE	
	Insertable in slot lengthwise	Contacting	Plug M8x1, 3-pin, in-line	0.3	173 212	SME-10-SL-LED-24	
			Cable, 3-wire, in-line	2.5	173 210	SME-10-KL-LED-24	

Ordering Data – Mounting Kit for Proximity Sensors SME/SMT-10			
Designation	For Ø [in]	Part No.	Type
Mounting kit SMBR-10			
	1-1/4	175105	SMBR-10-32
	1-5/8	175106	SMBR-10-40
	2	175107	SMBR-10-50
	2-1/2	175108	SMBR-10-63

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Festo North America

Festo Regional Contact Center

5300 Explorer Drive
Mississauga, Ontario L4W 5G4
Canada

USA Customers:

For ordering assistance,

Call: 1.800.99.FESTO (1.800.993.3786)

Fax: 1.800.96.FESTO (1.800.963.3786)

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Canadian Customers:

Call: 1.877.GO.FESTO (1.877.463.3786)

Fax: 1.877.FX.FESTO (1.877.393.3786)

Email: festo.canada@ca.festo.com

USA Headquarters

Festo Corporation
395 Moreland Road
P.O. Box 18023
Hauppauge, NY 11788, USA
www.festo.com/us

USA Sales Offices

Appleton

North 922 Tower View Drive, Suite N
Greenville, WI 54942, USA

Boston

120 Presidential Way, Suite 330
Woburn, MA 01801, USA

Chicago

1441 East Business Center Drive
Mt. Prospect, IL 60056, USA

Dallas

1825 Lakeway Drive, Suite 600
Lewisville, TX 75057, USA

Detroit – Automotive Engineering Center

2601 Cambridge Court, Suite 320
Auburn Hills, MI 48326, USA

New York

395 Moreland Road
Hauppauge, NY 11788, USA

Silicon Valley

4935 Southfront Road, Suite F
Livermore, CA 94550, USA

United States



USA Headquarters, East: Festo Corp., 395 Moreland Road, Hauppauge, NY 11788
Phone: 1.631.435.0800; Fax: 1.631.435.8026;
Email: info@festo-usa.com www.festo.com/us

Canada



Headquarters: Festo Inc., 5300 Explorer Drive, Mississauga, Ontario L4W 5G4
Phone: 1.905.624.9000; Fax: 1.905.624.9001;
Email: festo.canada@ca.festo.com www.festo.ca

Mexico



Headquarters: Festo Pneumatic, S.A., Av. Ceylán 3, Col. Tequesquinhuauc, 54020 Tlalneapantla, Edo. de México
Phone: 011 52 [55] 53 21 66 00; Fax: 011 52 [55] 53 21 66 65;
Email: festo.mexico@mx.festo.com www.festo.com/mx

Central USA

Festo Corporation
1441 East Business
Center Drive
Mt. Prospect, IL 60056, USA
Phone: 1.847.759.2600
Fax: 1.847.768.9480



Western USA

Festo Corporation
4935 Southfront Road,
Suite F
Livermore, CA 94550, USA
Phone: 1.925.371.1099
Fax: 1.925.245.1286



Festo Worldwide

Argentina Australia Austria Belarus Belgium Brazil Bulgaria Canada Chile China Colombia Croatia Czech Republic Denmark
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