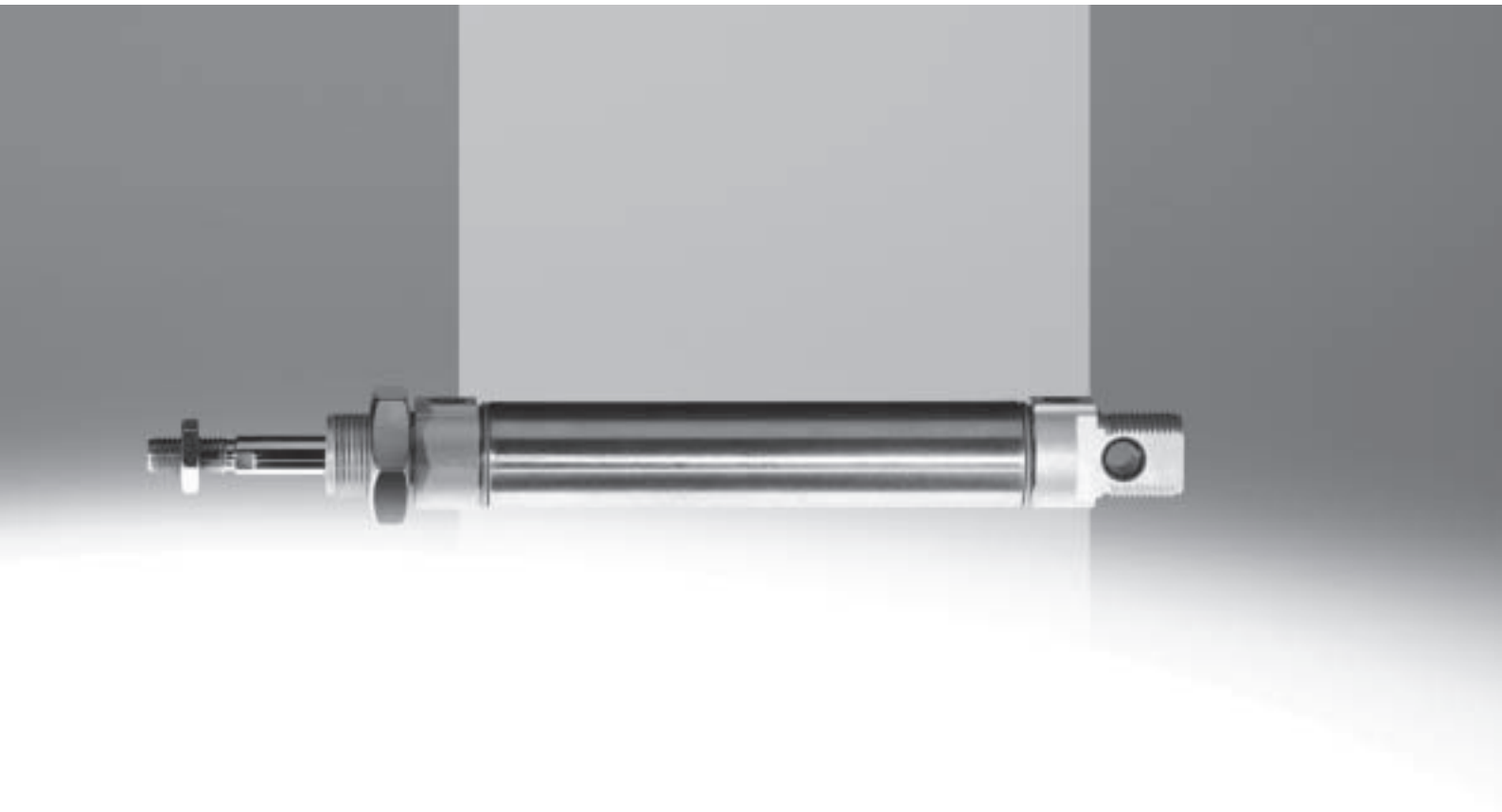
Standard and round cylinders DSNU

FESTO



Exemplary economy and flexibility – for a broad range of standard and non-standard applications.

Info 113

Standard modular system DSNU – Added value included

The designation DSNU covers a comprehensive range of round cylinders with diameters from 8 to 63 mm and with no corners or edges. The diameters 8 to 25 mm comply with the standard ISO 6432. Universal design and functionality is, of course, a feature of all DSNU cylinders.

1 cylinder, X variants: Through piston rod, with clamping cartridge

DSNU: More flexible by design
The combination of a few basic types with a wide range of different features results in the appropriate round cylinder for each application at an economical price.

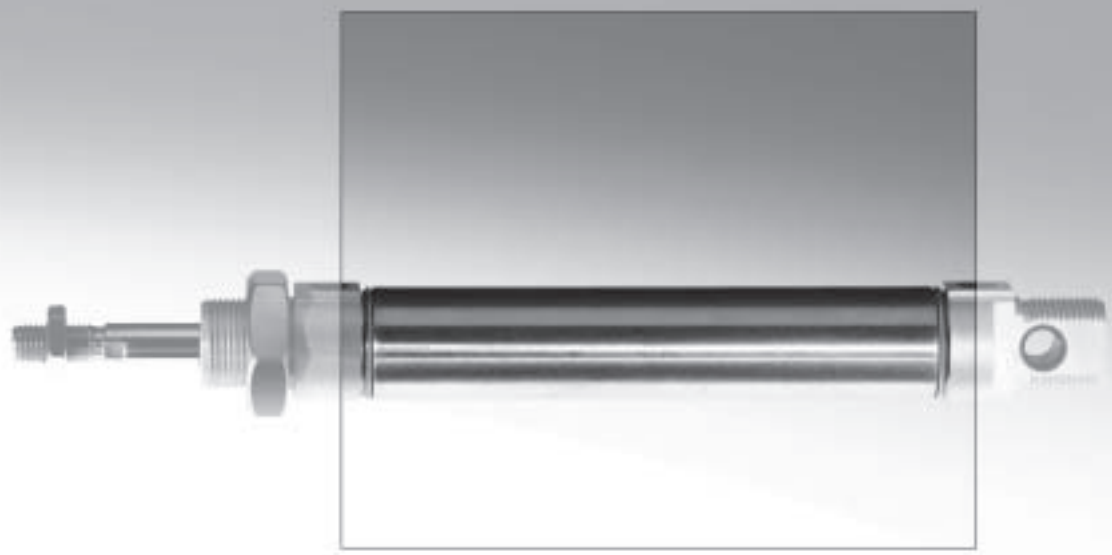
DSNU with standard strokes ex-stock
Shortest delivery times and most attractive price.

DSNU: More powerful by design
The DSNU combines excellent running characteristics and exceptional cushioning characteristics with an extremely long service life.

Everything from a single source
Proximity sensors, throttles and a comprehensive range of mounting attachments for just about every type of installation are available as accessories.

More economical by design: Take the services for the DSNU, for example
- Software tools for reliable planning and design
- CAD models for easier and faster design
- Service worldwide – on-site in over 170 countries

Attractive price plus time-saving services = reduced costs!



Take the offensive with the modular DSNU system:
Enjoy all the advantages of the classic and universal standard cylinder DSNU in accordance with ISO 6432, together with maximum flexibility for your designers.

The DNU at a glance

DSNU-...-basic version
Bearing cap (LD) with flange thread; end cap (AD) with threaded lug and swivel connection.

DSNU-...-MQ
LD with flange thread; AD short with lateral air connection.

DSNU-...-MA
LD with flange thread; AD short with axial air connection.

DSNU-..-MH
LD in block form for direct mounting; AD short with lateral air connection.

DSNU-...-basic version

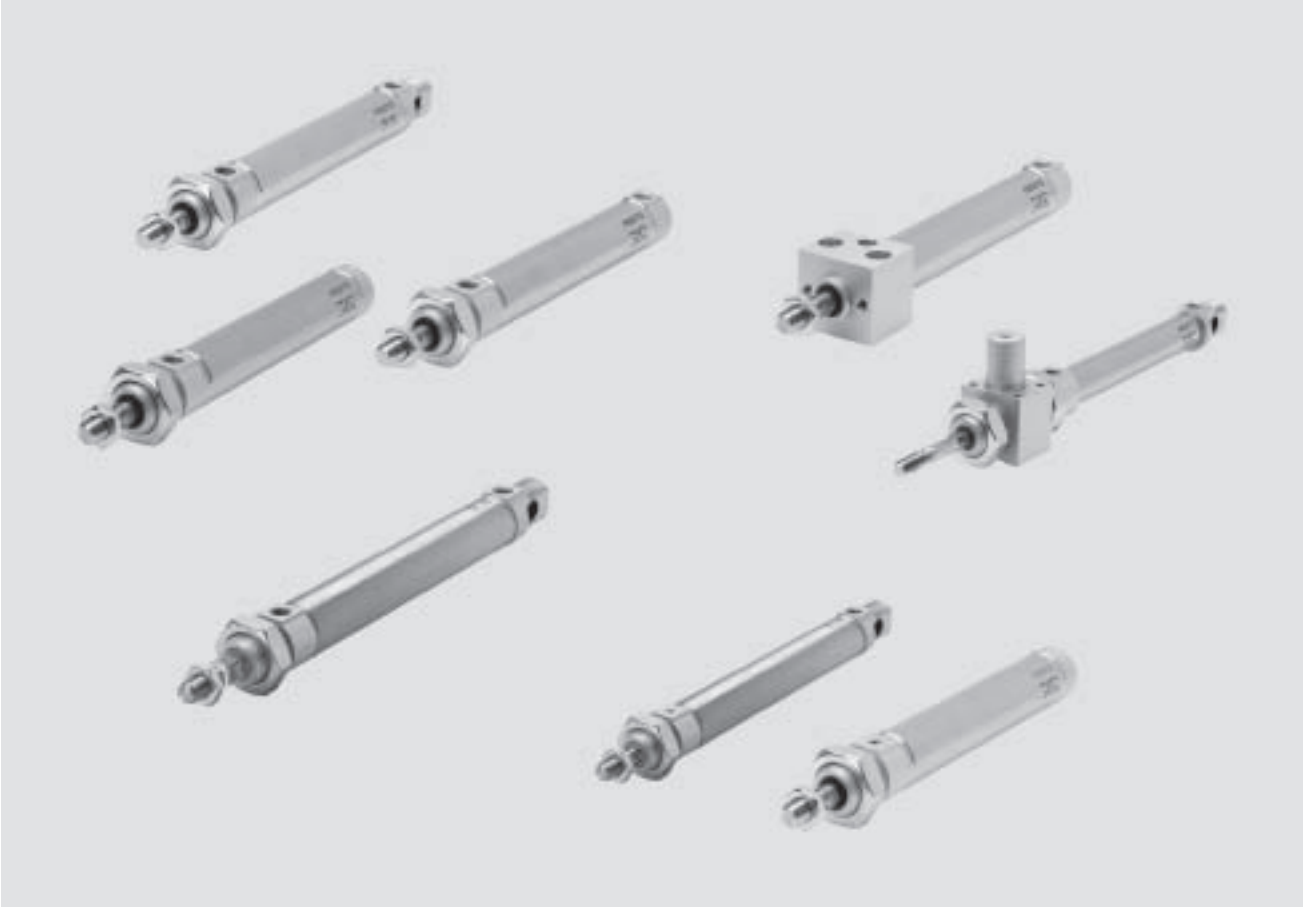
DSNU-...-MQ

DSNU-...-MA

DSNU-...-MH

Standard cylinders DSNU/DSN/ESNU/ESN, ISO 6432

Key features



Optimal range

- Good running performance and long service life thanks to smooth, hard cylinder bore
- Piston rod and cylinder barrel made of stainless steel

More than the standard

ISO 6432
DIN ISO 6432

DIN

- Round cylinders with piston diameters from 8 to 25 mm conform to ISO 6432, DIN ISO 6432. Variants are based on these standards. The series is not repairable
- The cap is swaged onto the barrel

Functional

- Three different end caps mean numerous functional and space-saving designs

Variants

- Non-rotating
- Through piston rod
- With or without position sensing
- Flexible cushioning rings/plates at both ends or pneumatic cushioning adjustable at both ends
- Further piston rod variants

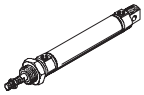
Standard cylinders DSNU/DSN/ESNU/ESN, ISO 6432

Key features

Standard range

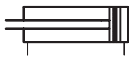
Double-acting

Basic version
DSNU/DSN



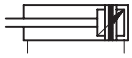
With position sensing
Flexible cushioning rings/plates at both ends

DSNU-P-A



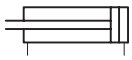
With position sensing
Pneumatic cushioning adjustable at both ends

DSNU-PPV-A



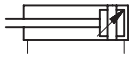
Without position sensing
Flexible cushioning rings/plates at both ends

DSN-P



Without position sensing
Pneumatic cushioning adjustable at both ends

DSN-PPV

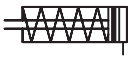


Single-acting

Basic version
ESNU/ESN

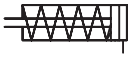
With position sensing
Flexible cushioning rings/plates at both ends

ESNU-P-A



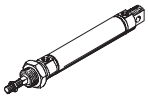
Without position sensing
Flexible cushioning rings/plates at both ends

ESN-P



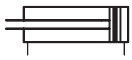
Double-acting
Non-rotating

Basic version
DSNU-Q



With position sensing
Flexible cushioning rings/plates at both ends

DSNU-P-A-Q



only ∅ 12

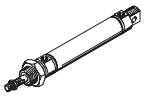
With position sensing
Pneumatic cushioning adjustable at both ends

DSNU-PPV-A-Q

only ∅ 16 … 25

Variants from the modular system

Basic version
DSNU/ESNU

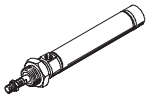


S2: Through piston rod

K8: Extended piston rod

Axial air connection

DSNU-MA/ESNU-MA

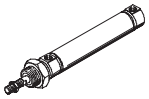


K2: Extended male piston rod thread

S6: Heat-resistant seal up to max. 150 °C

Lateral air connection

DSNU-MQ

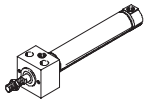


K6: Shortened male piston rod thread

S10: Slow speed (constant motion)

With direct mounting

DSNU-MH

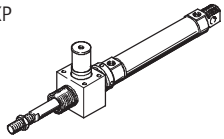


K3: Female piston rod thread

S11: Low friction

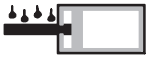
With clamping unit

DSNU-...-KP



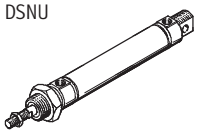
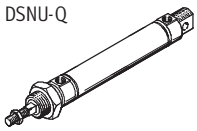
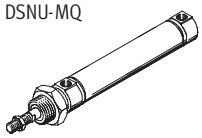
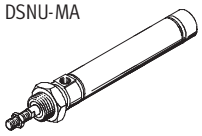
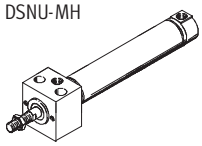
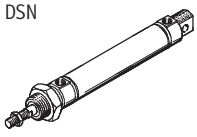
K5: Special thread on piston rod

R3: High corrosion protection



Standard cylinders DSNU/DSN, ISO 6432

Product range overview

Function	Design	Piston ∅ [mm]	Stroke [mm]	Variable stroke[1] [mm]	Piston rod					
					Through S2	Extended K8	Male thread			Female thread K3
							Extended K2	Shortened K6	Special thread K5	
Double-acting	**Basic version with position sensing**									
	DSNU 	8, 10	10, 25, 40, 50, 80, 100, 125, 160, 200, 250, 300, 320, 400, 500	1 ... 100	■	■	■	■	■	■
		12, 16		1 ... 200						
		20		1 ... 320						
		25		1 ... 500						
	Non-rotating									
	DSNU-Q 	12, 16	–	5 ... 160	■	■	■	■	■	■
		20	–	5 ... 200						
		25	–	5 ... 250						
	Lateral air connection									
	DSNU-MQ 	8, 10	–	1 ... 100	–	■	■	■	■	■
		12, 16	–	1 ... 200						
		20	–	1 ... 320						
		25	–	1 ... 500						
	Axial air connection									
	DSNU-MA 	8, 10	–	1 ... 100	–	■	■	■	■	■
		12, 16	–	1 ... 200						
		20	–	1 ... 320						
		25	–	1 ... 500						
	Direct mounting									
	DSNU-MH 	8, 10	–	1 ... 100	–	■	■	■	■	■
		12, 16	–	1 ... 200						
		20	–	1 ... 320						
		25	–	1 ... 500						
	Basic version without position sensing									
	DSN 	8, 10	10, 25, 40, 50, 80, 100, 125, 160, 200, 250, 300, 320, 400, 500	1 ... 100	■	–	–	–	–	–
		12, 16		1 ... 200						
		20		1 ... 320						
		25		1 ... 500						

1) Cylinders with position sensing require a minimum stroke of 10 mm to ensure reliable sensing

Standard cylinders DSNU/DSN, ISO 6432

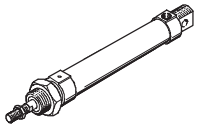
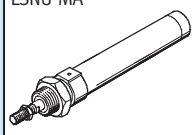
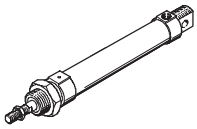
Product range overview

Design	Cushioning		Position sensing	Clamping unit	Heat-resistant seal	Slow speed (constant motion)	Low Friction	Corrosion protection	➔ Page
	Fixed P	Adjustable as of ∅ 16 PPV[2)]	A	KP	S6	S10	S11	R3	
Basic version with position sensing									
DSNU	■	■	■	■	■	■	■	■	13
Non-rotating									
DSNU-Q	■ ∅ 12	■ ∅ 16 ... 25	■	■	–	–	–	■ ∅ 12 ... 25	21
Lateral air connection									
DSNU-MQ	■	■	■	■	■	–	–	■	13
Axial air connection									
DSNU-MA	■	–	■	■	■	–	–	■	13
Direct mounting									
DSNU-MH	■	■	■	–	■	–	–	■	13
Basic version without position sensing									
DSN	■	■	–	–	–	–	–	–	40

2) For product modules as of ∅ 12 mm

Standard cylinders ESNU/ESN, ISO 6432

Product range overview

Function	Design	Piston ∅ [mm]	Stroke [mm]	Variable stroke[1] [mm]	Cushioning Fixed P	Position sensing A
Single-acting	**Basic version with position sensing**					
	ESNU 	8, 10, 12, 16, 20, 25	10, 25, 50	1 … 50	■	■
	Axial air connection					
	ESNU-MA 	8, 10, 12, 16, 20, 25	–	1 … 50	■	■
	Basic version without position sensing					
	ESN 	8, 10, 12, 16, 20, 25	10, 25, 50	1 … 50	■	–

1) Cylinders with position sensing require a minimum stroke of 10 mm to ensure reliable sensing

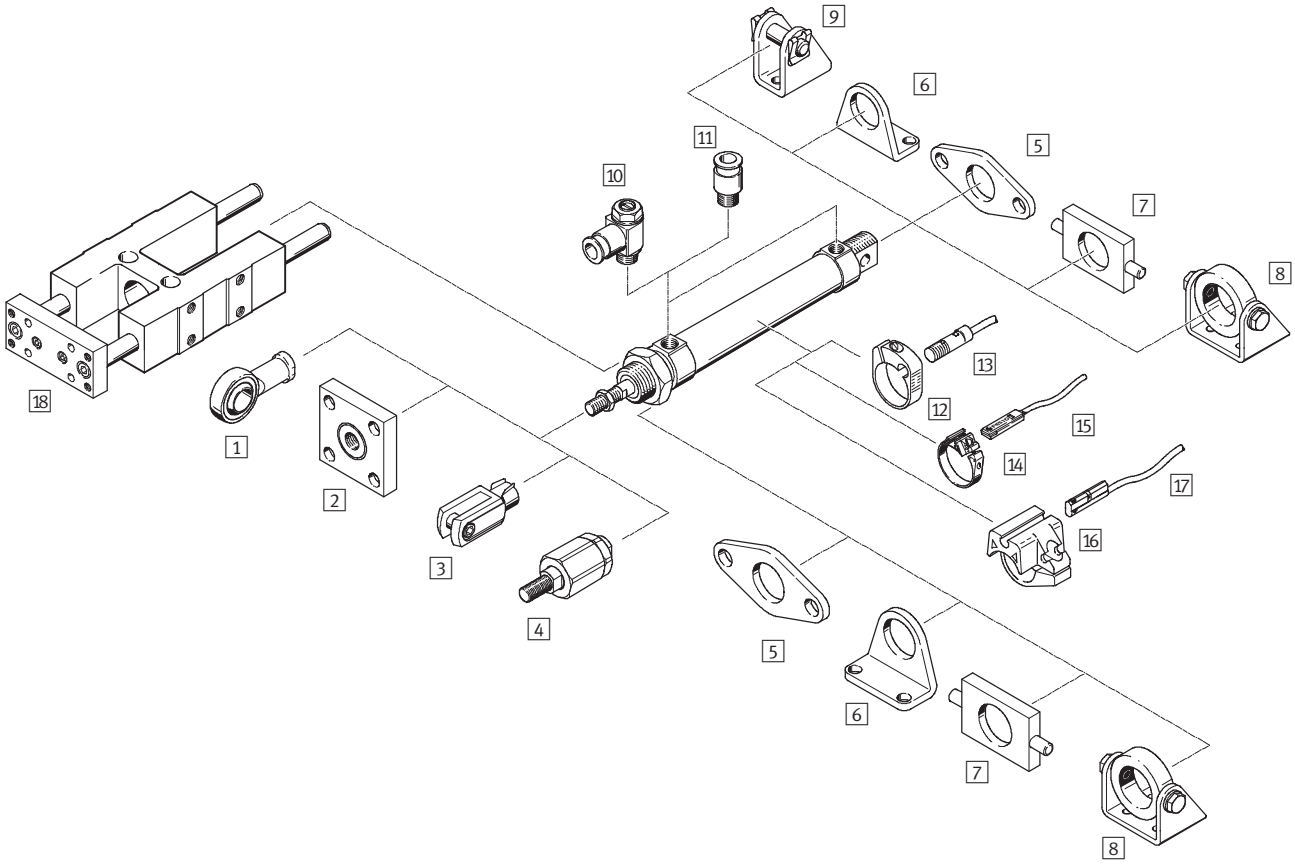
Standard cylinders ESNU/ESN, ISO 6432

Product range overview

Design	Piston rod					→ Page
	Extended	Male thread			Female thread	
		Extended	Shortened	Special thread		
	K8	K2	K6	K5	K3	
Basic version with position sensing						
ESNU	■	■	■	■	■	32
Axial air connection						
ESNU-MA	■	■	■	■	■	32
Basic version without position sensing						
ESN	–	–	–	–	–	46

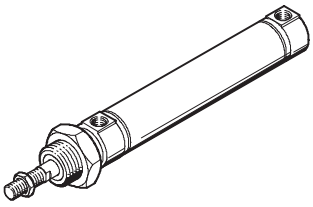
Standard cylinders DSNU/DSN/ESNU/ESN, ISO 6432

Peripherals overview

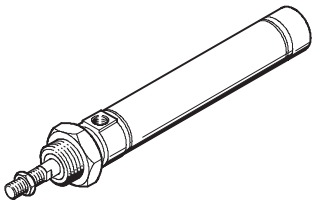


Variants

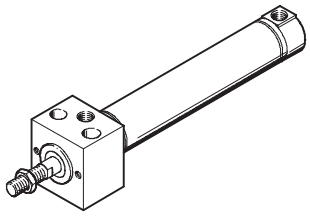
DSNU-MQ



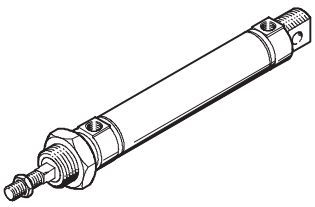
DSNU-MA



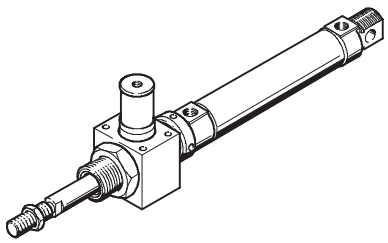
DSNU-MH



DSNU-Q



DSNU-KP



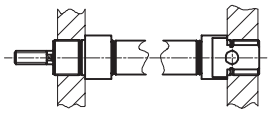
Standard cylinders DSNU/DSN/ESNU/ESN, ISO 6432

Peripherals overview

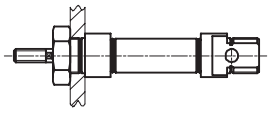
Mounting attachments and accessories	DSNU/ ESNU	DSNU/ ESNU MA	DSNU MQ	DSNU MH	DSNU KP	DSNU-Q	DSN/ESN	→Page
1 Rod eye SGS/CRSGS	■	■	■	■	■	■	■	53
2 Coupling piece KSG/KSZ	■	■	■	■	■	■	■	53
3 Rod clevis SG/CRSG	■	■	■	■	■	■	■	53
4 Self-aligning rod coupler FK	■	■	■	■	■	■	■	53
5 Flange mounting FBN/CRFBN	■	■	■	–	■	■	■	51
6 Foot mounting HBN/CRHBN	■	■	■	–	■	■	■	50
7 Swivel mounting WBN	■	■	■	–	■	■	■	52
8 Swivel mounting SBN	■	■	■	–	■	■	■	51
9 Clevis foot LBN/CRLBN	■	–	–	–	■	■	■	52
10 One-way flow control valve GRLA/GRLZ/CRGRLA	■	■	■	■	■	■	■	57
11 Push-in fitting QS	■	■	■	■	■	■	■	www.festo.com
12 Sensor mounting kit SMBR/CRSMBR	■	■	■	■	■	■	–	54
13 Proximity sensor SMEO/SMTO/CRSMEO-4	■	■	■	■	■	■	–	54
14 Sensor mounting kit SMBR-8	■	■	■	■	■	■	–	55
15 Proximity sensor SME/SMT-8	■	■	■	■	■	■	–	55
16 Sensor mounting kit SMBR-10	■	■	■	■	■	■	–	56
17 Proximity sensor SME/SMT-10	■	■	■	■	■	■	–	56
18 Guide unit FEN	■	■	■	–	–	–	■	53

Mounting options

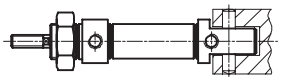
Mounting front and rear



Mounting with hex nut

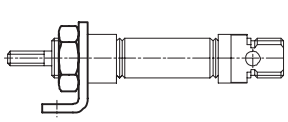


Swivel mounting

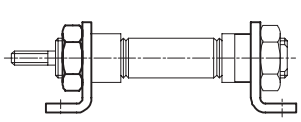


Installation options with mounting attachments

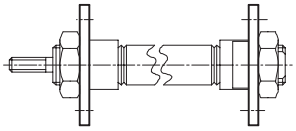
Foot mounting (for short strokes)



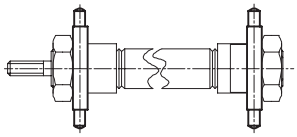
Foot mounting



Flange mounting

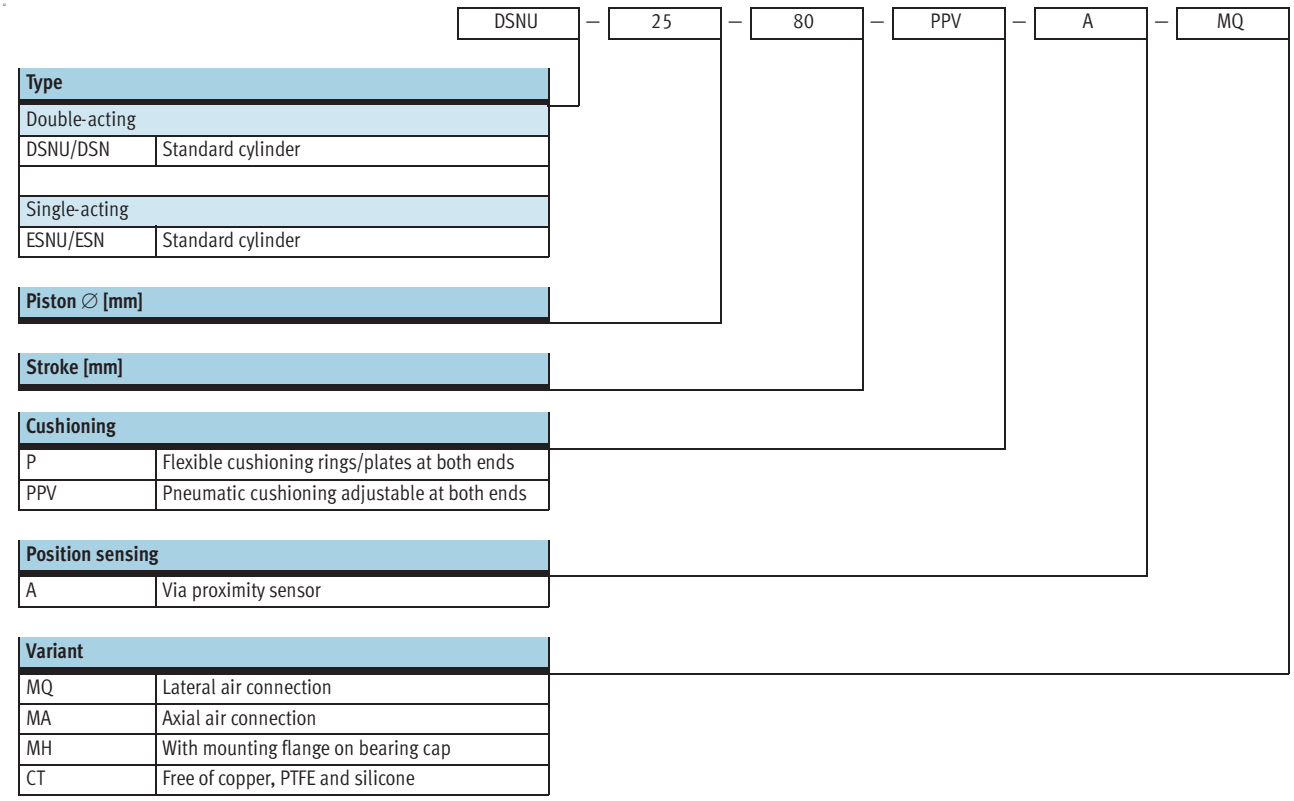


Swivel mounting



Standard cylinders DSNU/DSN/ESNU/ESN, ISO 6432

Type codes



Type	
Double-acting	
DSNU/DSN	Standard cylinder
Single-acting	
ESNU/ESN	Standard cylinder

Piston ∅ [mm]

Stroke [mm]

Cushioning	
P	Flexible cushioning rings/plates at both ends
PPV	Pneumatic cushioning adjustable at both ends

Position sensing	
A	Via proximity sensor

Variant	
MQ	Lateral air connection
MA	Axial air connection
MH	With mounting flange on bearing cap
CT	Free of copper, PTFE and silicone

Modular product system

Individually configurable

DSNU ➔ 28

ESNU ➔ 38

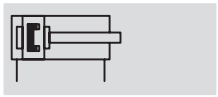
- Square piston rod (protection against rotation)
- Through piston rod (piston rod type)
- Extended male piston rod thread
- Male piston rod thread, shortened at one end
- Female piston rod thread (female thread)
- Special piston rod thread (special thread)
- Extended piston rod
- Clamping unit on piston rod
- Heat-resistant seals for temperatures up to 150 °C (temperature resistance)
- Slow speed (constant motion at low piston rod speeds)
- Low friction
- All external cylinder surfaces conform to corrosion resistance class CRC 3 (corrosion protection)

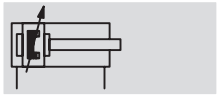
Standard cylinders DSNU, ISO 6432

Technical data

FESTO

Function





- ⌀ - Diameter
  8 ... 25 mm

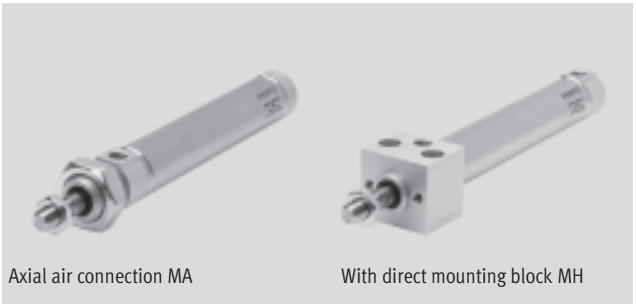
- | - Stroke length
  1 ... 500 mm

Variant

CT-free

Additional variants
➔ 17

Basic version | Lateral air connection MQ



Axial air connection MA | With direct mounting block MH

General technical data							
Piston ⌀		8	10	12	16	20	25
Pneumatic connection		M5	M5	M5	M5	G1⁄8	G1⁄8
Piston rod thread		M4	M4	M6	M6	M8	M10x1.25
Constructional design		Piston					
		Piston rod					
		Cylinder barrel					
Cushioning		Flexible cushioning rings/plates at both ends					
		–		Pneumatic cushioning adjustable at both ends			
Cushioning length (PPV)	[mm]	–		9	12	15	17
Position sensing		Via proximity sensor					
Type of mounting		Direct mounting (MH variant only)					
		Via accessories					
Assembly position		Any					

Operating conditions							
Piston ⌀		8	10	12	16	20	25
Operating medium		Filtered compressed air, lubricated or unlubricated					
Operating pressure	[bar] Basic version	1.5 ... 10[1]			1 ... 10		
	S10	–	–	1.5 ... 10		1 ... 10	
	S11	–	–	0.45 ... 10	0.3 ... 10		

1) DSNU-12 ...-PPV (cushioning adjustable at either end): 2 ... 10 bar

Ambient conditions							
Standard cylinder		Basic version	CT	S6	S10	S11	R3
Ambient temperature[1]	[°C]	–20 ... +80		0 ... +150	+5 ... +80		–20 ... +80
Corrosion resistance class CRC[2]		2	2	2	2	2	3

1) Note operating range of proximity sensors

2) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.
Corrosion resistance class 3 according to Festo standard 940 070
Components requiring higher corrosion resistance. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface

Standard cylinders DSNU, ISO 6432

Technical data

Forces [N] and impact energy [J]						
Piston ∅	8	10	12	16	20	25
Theoretical force at 6 bar, advancing	30	47	68	121	189	295
Theoretical force at 6 bar, retracting	23	40	51	104	158	247
Impact energy at the end positions	0.03	0.05	0.07	0.15	0.20	0.30

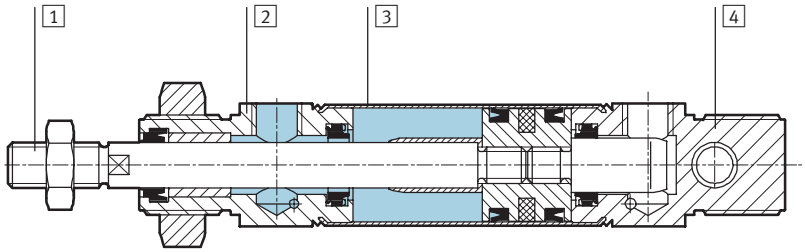
Speed [mm/s]				
Piston ∅	16	20	25	
Speed with judder-free running, S10 horizontal, without load, at 6 bar	10 ... 100			
Minimum speed, advancing S11	2.7	5.3	<1 [1]	
Minimum speed, retracting S11	3.2	4.7	<1 [1]	

1) Measurements of less than 1 mm/s were not conducted

Weights [g]						
Piston ∅	8	10	12	16	20	25
Product weight with 0 mm stroke	34.6	37.3	75	89.9	186.8	238
Additional weight per 10 mm stroke	2.4	2.7	4	4.6	7.2	11

Materials

Sectional view



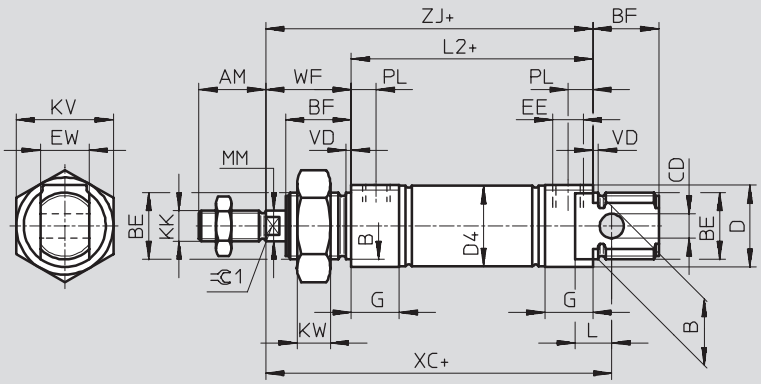
Standard cylinder		Basic version	R3	CT	S6	S10	S11
1	Piston rod	High-alloy stainless steel					
2	Bearing cap	Wrought aluminium alloy					
3	Cylinder barrel	High-alloy stainless steel					
4	End cap	Wrought aluminium alloy					
–	Seals	Polyurethane, nitrile rubber			Fluoro rubber		

Standard cylinders DSNU, ISO 6432

Technical data

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Basic version



\+ = plus stroke length

∅ [mm]	AM	B ∅ h9	BE	BF	CD ∅ E10	D ∅	D4 ∅	EE	EW	G	KK	KV
8	12	12	M12x1.25	12	4	15	9.3	M5	8	10	M4	19
10							11.3					
12	16	16	M16x1.5	17	6	20	13.3		12		M6	24
16							17.3					
20	20	22	M22x1.5	20	8	27	21.3	G⅛	16	16	M8	32
25	22			22			26.5				M10x1.25	

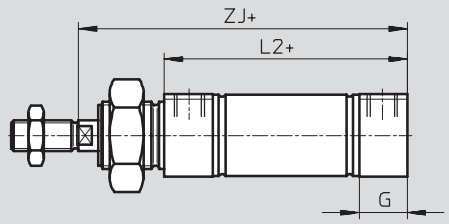
∅ [mm]	KW	L	L2	MM ∅	PL	TO	VD	WF	XC ±1	ZJ	⫽1
8	6	6	46	4	6	18	2	16	64	62	–
10											
12	8	9	50	6		23		22	75	72	5
16			56						82	78	
20	11	12	68	8	8.2	31		24	95	92	7
25			69.5	10				28	104	97.2	9

Standard cylinders DSNU, ISO 6432

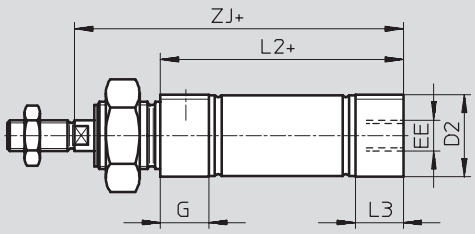
Technical data

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

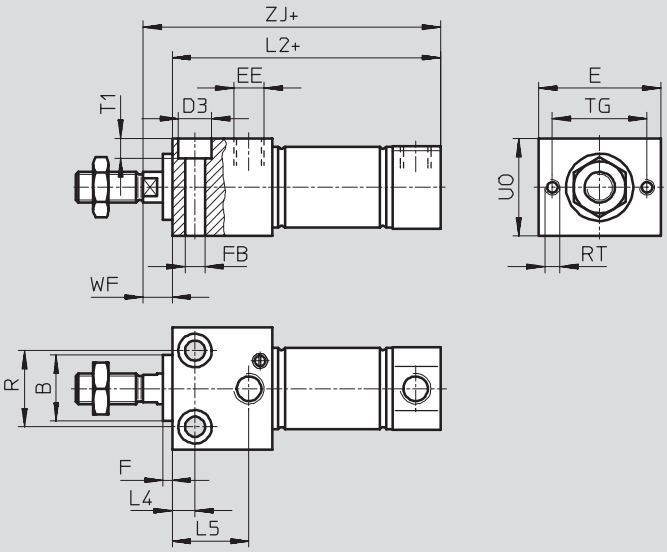
MQ – Lateral air connection



MA – Axial air connection



MH – With direct mounting block



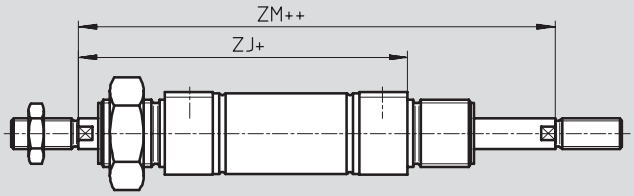
\+ = plus stroke length

∅ [mm]	B ∅ h9	D2 ∅	D3 ∅	E	EE	F	FB ∅	G	L2 -MQ	L2 -MA	L2 -MH
8	12	10.5	6	24	M5	3	3.4	10	46	43.6	53.5
10		12.5								43.1	53.8
12	16	14.5	8	30			4.5		50	47.7	62
16		17.5							56	53.7	67.5
20	22	21.7	10	40	G⅛		5.5	16	68	66.5	81.5
25		26.7	11				6.6		69.5	68.5	86.2

∅ [mm]	L3	L4	L5	R	RT	TG	T1	UO	WF	ZJ -MQ	ZJ -MA	ZJ -MH
8	7.6	5	14	12	M3	18	3.4	16	8	62	59.6	61.5
10	7.1										59.1	61.8
12	7.7	6	18.1	16	M4	23	4.5	22	10	72	69.7	72
16										78	75.7	77.8
20	14.5	7.5	22.4	22	M5	31	5.5	28		92	90.5	91.5
25	14		25.2	25			6.6	32	11	97.5	96.5	97.2

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

S2 – Through piston rod

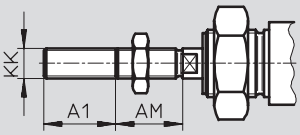


Note

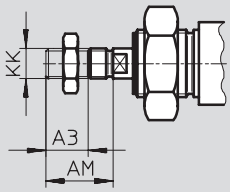
The thread designs on both piston rod ends are identical. In combination with variant Q, the left-hand piston rod end is square, the right-hand piston rod end round.

\+ = plus stroke length
++ = plus stroke length

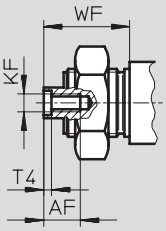
K2 – Extended male piston rod thread



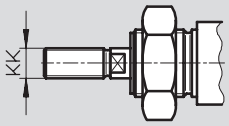
K6 – Shortened male piston rod thread



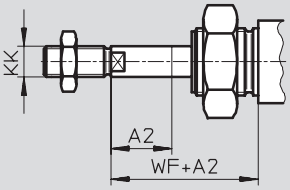
K3 – Female piston rod thread



K5 – Special piston rod thread



K8 – Extended piston rod



Note

If variant K8 is required in combination with S2, the piston rod will only be extended on one side.

∅ [mm]	A1 max.	A2 max.	A3 max.	AM	AF	KF	KK		T4	WF	ZJ			ZM
							Basic thread	Special thread[1)]			-MQ	-MA	-MH	
8	15	50	4	12	–	–	M4	–	–	16	62	59.6	61.5	78.4
10					–	–		–	–			59.1	61.8	
12	20	100		16	–	–	M6	–	–	22	72	69.7	72	94
16					–	–		–	–		78	75.7	77.8	100
20	25		8	20	12	M4	M8	–	2	24	92	90.5	91.5	116
25	35			22		M6	M10x1.25	M10	2.6	28	97.5	96.5	97.2	125.5

1) The special threads are only available as male threads. The scope of delivery does not include a hex nut for the piston rod thread

Standard cylinders DSNU, ISO 6432

Technical data

Ordering data							
Type	Piston ∅ [mm]	Stroke [mm]	Flexible cushioning rings/plates at both ends			Pneumatic cushioning adjustable at both ends	
			Part No.	Type		Part No.	Type
Basic version							
	8	10	19 177	DSNU-8-10-P-A		–	
		25	19 178	DSNU-8-25-P-A			
		40	19 179	DSNU-8-40-P-A			
		50	19 180	DSNU-8-50-P-A			
		80	19 181	DSNU-8-80-P-A			
		100	19 182	DSNU-8-100-P-A			
	10	10	19 183	DSNU-10-10-P-A		–	
		25	19 184	DSNU-10-25-P-A			
		40	19 185	DSNU-10-40-P-A			
		50	19 186	DSNU-10-50-P-A			
		80	19 187	DSNU-10-80-P-A			
		100	19 188	DSNU-10-100-P-A			
	12	10	19 189	DSNU-12-10-P-A		–	
		25	19 190	DSNU-12-25-P-A			
		40	19 191	DSNU-12-40-P-A			
		50	19 192	DSNU-12-50-P-A			
		80	19 193	DSNU-12-80-P-A			
		100	19 194	DSNU-12-100-P-A			
		125	19 195	DSNU-12-125-P-A			
		160	19 196	DSNU-12-160-P-A			
		200	19 197	DSNU-12-200-P-A			
	16	10	19 198	DSNU-16-10-P-A		–	
		25	19 199	DSNU-16-25-P-A		33 973	DSNU-16-25-PPV-A
		40	19 200	DSNU-16-40-P-A		19 229	DSNU-16-40-PPV-A
		50	19 201	DSNU-16-50-P-A		19 230	DSNU-16-50-PPV-A
		80	19 202	DSNU-16-80-P-A		19 231	DSNU-16-80-PPV-A
		100	19 203	DSNU-16-100-P-A		19 232	DSNU-16-100-PPV-A
		125	19 204	DSNU-16-125-P-A		19 233	DSNU-16-125-PPV-A
		160	19 205	DSNU-16-160-P-A		19 234	DSNU-16-160-PPV-A
		200	19 206	DSNU-16-200-P-A		19 235	DSNU-16-200-PPV-A
	20	10	19 207	DSNU-20-10-P-A		–	
		25	19 208	DSNU-20-25-P-A		33 974	DSNU-20-25-PPV-A
		40	19 209	DSNU-20-40-P-A		19 236	DSNU-20-40-PPV-A
		50	19 210	DSNU-20-50-P-A		19 237	DSNU-20-50-PPV-A
		80	19 211	DSNU-20-80-P-A		19 238	DSNU-20-80-PPV-A
		100	19 212	DSNU-20-100-P-A		19 239	DSNU-20-100-PPV-A
		125	19 213	DSNU-20-125-P-A		19 240	DSNU-20-125-PPV-A
		160	19 214	DSNU-20-160-P-A		19 241	DSNU-20-160-PPV-A
		200	19 215	DSNU-20-200-P-A		19 242	DSNU-20-200-PPV-A
		250	19 216	DSNU-20-250-P-A		19 243	DSNU-20-250-PPV-A
		300	19 217	DSNU-20-300-P-A		19 244	DSNU-20-300-PPV-A
		320	34 718	DSNU-20-320-P-A		34 720	DSNU-20-320-PPV-A

Core Range

Standard cylinders DSNU, ISO 6432

Technical data

Ordering data						
Type	Piston ∅ [mm]	Stroke [mm]	Flexible cushioning rings/plates at both ends		Pneumatic cushioning adjustable at both ends	
			Part No.	Type	Part No.	Type
Basic version						
	25	10	19 218	DSNU-25-10-P-A	–	
		25	19 219	DSNU-25-25-P-A	33 975	DSNU-25-25-PPV-A
		40	19 220	DSNU-25-40-P-A	19 245	DSNU-25-40-PPV-A
		50	19 221	DSNU-25-50-P-A	19 246	DSNU-25-50-PPV-A
		80	19 222	DSNU-25-80-P-A	19 247	DSNU-25-80-PPV-A
		100	19 223	DSNU-25-100-P-A	19 248	DSNU-25-100-PPV-A
		125	19 224	DSNU-25-125-P-A	19 249	DSNU-25-125-PPV-A
		160	19 225	DSNU-25-160-P-A	19 250	DSNU-25-160-PPV-A
		200	19 226	DSNU-25-200-P-A	19 251	DSNU-25-200-PPV-A
		250	19 227	DSNU-25-250-P-A	19 252	DSNU-25-250-PPV-A
		300	19 228	DSNU-25-300-P-A	19 253	DSNU-25-300-PPV-A
		320	34 719	DSNU-25-320-P-A	34 721	DSNU-25-320-PPV-A
		400	35 191	DSNU-25-400-P-A	35 193	DSNU-25-400-PPV-A
		500	35 192	DSNU-25-500-P-A	35 194	DSNU-25-500-PPV-A

Core Range

Standard cylinders DSNU, ISO 6432

Technical data

Ordering data							
Type	Piston ∅ [mm]	Stroke [mm]	Flexible cushioning rings/plates at both ends			Pneumatic cushioning adjustable at both ends	
			Part No.	Type		Part No.	Type
Variable stroke							
	8	10 … 100	**14 326**	**DSNU-8-…-P-A**		–	
	10	10 … 100	**14 325**	**DSNU-10-…-P-A**			
	12	10 … 200	**14 324**	**DSNU-12-…-P-A**			
	16	10 … 200	**14 323**	**DSNU-16-…-P-A**		**14 320**	**DSNU-16-…-PPV-A**
	20	10 … 320	**14 328**	**DSNU-20-…-P-A**		**14 321**	**DSNU-20-…-PPV-A**
	25	10 … 500	**14 327**	**DSNU-25-…-P-A**		**14 322**	**DSNU-25-…-PPV-A**
Variable stroke, Free of copper, PTFE and silicone							
	8	10 … 100	**170 121**	**DSNU-8-…-P-A-CT**		–	
	10	10 … 100	**170 122**	**DSNU-10-…-P-A-CT**			
	12	10 … 200	**170 123**	**DSNU-12-…-P-A-CT**			
	16	10 … 200	**170 124**	**DSNU-16-…-P-A-CT**		**170 127**	**DSNU-16-…-PPV-A-CT**
	20	10 … 320	**170 125**	**DSNU-20-…-P-A-CT**		**170 128**	**DSNU-20-…-PPV-A-CT**
	25	10 … 500	**170 126**	**DSNU-25-…-P-A-CT**		**170 129**	**DSNU-25-…-PPV-A-CT**

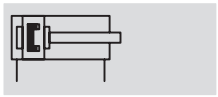
Note

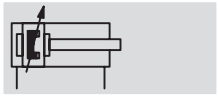
Further variants can be configured and ordered via the DSNU product modules➔ 28.

Standard cylinders DSNU-Q, non-rotating

Technical data

Function





- Ø - Diameter
  12 ... 25 mm

- | - Stroke length
  1 ... 250 mm

General technical data					
Piston∅		12	16	20	25
Pneumatic connection		M5	M5	G1⁄8	G1⁄8
Piston rod thread		M6	M6	M8	M10x1.25
Constructional design		Piston			
		Non-rotating with square piston rod			
Max. torque at the piston rod	[Nm]	0.10	0.10	0.20	0.45
Cushioning		Flexible cushioning rings/ plates at both ends	–		
		Pneumatic cushioning adjustable at both ends			
Cushioning length (PPV)	[mm]	–	12	15	17
Position sensing		Via proximity sensor			
Type of mounting		Via accessories			
Assembly position		Any			

Operating conditions					
Piston ∅		12	16	20	25
Operating medium		Filtered compressed air, lubricated or unlubricated			
Operating pressure	[bar]	1.5 ... 10[1]	1 ... 10		

1) DSNU-12-...-Q-PPV (cushioning adjustable at either end): 2 ... 10 bar

Ambient conditions			
Standard cylinder		Basic version	R3
Ambient temperature[1]	[°C]	–20 ... +80	
Corrosion resistance class CRC[2]		2	3

1) Note operating range of proximity sensors

2) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.
Corrosion resistance class 3 according to Festo standard 940 070
Components requiring higher corrosion resistance. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface

Standard cylinders DSNU-Q, non-rotating

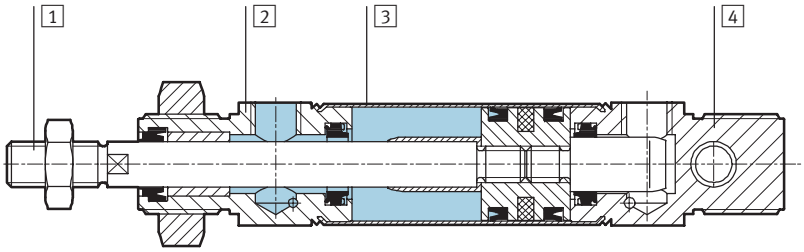
Technical data

Forces [N] and impact energy [J]				
Piston ∅	12	16	20	25
Theoretical force at 6 bar, advancing	68	121	189	295
Theoretical force at 6 bar, retracting	51	104	158	247
Impact energy at end positions	0.07	0.15	0.20	0.30

Weights [g]				
Piston ∅	12	16	20	25
Product weight with 0 mm stroke	80	110	215	275
Additional weight per 10 mm stroke	4.1	4.7	7.1	10.9

Materials

Sectional view



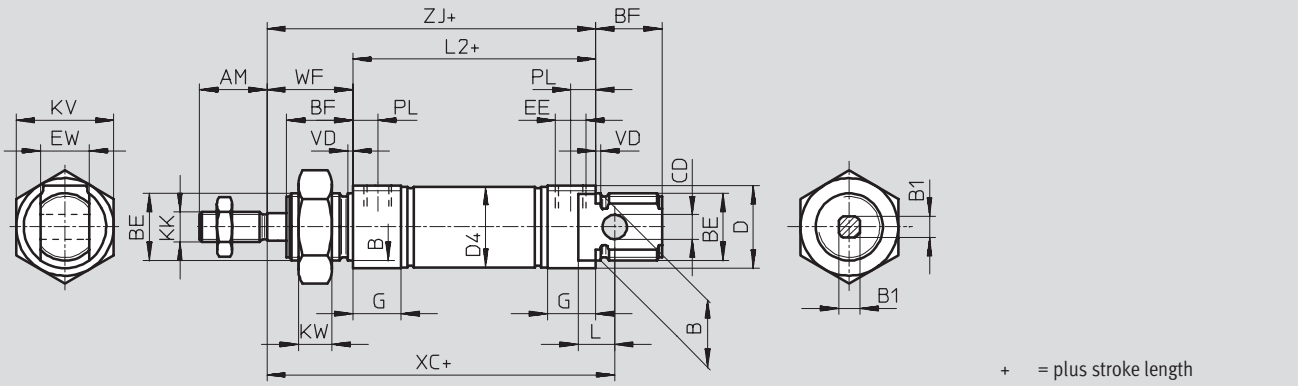
Standard cylinder		
1	Piston rod	High-alloy stainless steel
2	Bearing cap	Wrought aluminium alloy
3	Cylinder barrel	High-alloy stainless steel
4	End cap	Wrought aluminium alloy
–	Seals	Polyurethane, nitrile rubber

Standard cylinders DSNU-Q, non-rotating

Technical data

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Basic version



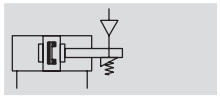
∅ [mm]	AM	B ∅ h9	B1 □	BE	BF	CD ∅ E10	D ∅	D4 ∅	EE	EW
12	16	16	5.5	M16x1.5	17	6	20	13.3	M5	12
16								17.3		
20	20	22	7	M22x1.5	20	8	27	21.3	G1⁄8	16
25	22		9		22			26.5		

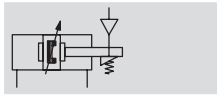
∅ [mm]	G	KK	KV	KW	L	L2	PL	VD	WF	XC ±1	ZJ
12	10	M6	24	8	9	50	6	2	22	75	72
16						56				82	78
20	16	M8	32	11	12	68	8.2		24	95	92
25		M10x1.25				69.5			28	104	97.5

Standard cylinders DSNU-KP, with clamping cartridge

Technical data

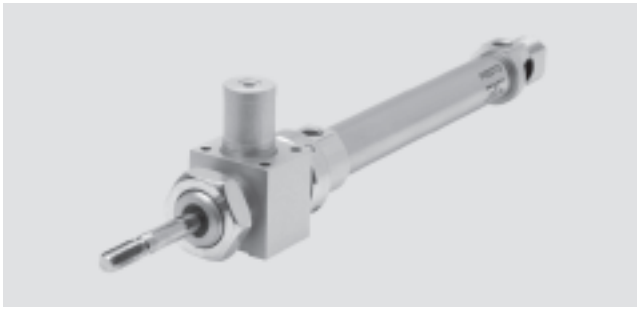
Function





- Ø - Diameter
  8 ... 25 mm

- | - Stroke length
  1 ... 500 mm



General technical data							
Piston ∅		8	10	12	16	20	25
Pneumatic connection		M5	M5	M5	M5	G1⁄8	G1⁄8
Piston rod thread		M4	M4	M6	M6	M8	M10x1.25
Constructional design		Piston					
		Piston rod					
		Cylinder barrel					
Cushioning		Flexible cushioning rings/plates at both ends					
		–		Pneumatic cushioning adjustable at both ends			
Cushioning length (PPV)	[mm]	–	–	9	12	15	17
Position sensing		Via proximity sensor					
Type of mounting		Via through-holes					
		Via accessories					
Assembly position		Any					
Clamping unit holding force	[N]	80	80	180	180	350	350
Max. axial backlash at the clamped piston rod	[mm]	0.25	0.25	0.25	0.25	0.3	0.3
Clamping unit pneumatic connection		M5	M5	M5	M5	M5	M5

Operating conditions							
Piston ∅		8	10	12	16	20	25
Operating medium		Filtered compressed air, lubricated or unlubricated					
Operating pressure	[bar]	3 ... 10					

Ambient conditions			
Standard cylinder		Basic version	R3
Ambient temperature[1]	[°C]	–10 ... +80	
Corrosion resistance class CRC[2]		2	3

1) Note operating range of proximity sensors

2) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.
Corrosion resistance class 3 according to Festo standard 940 070
Components requiring higher corrosion resistance. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface

Standard cylinders DSNU-KP, with clamping cartridge

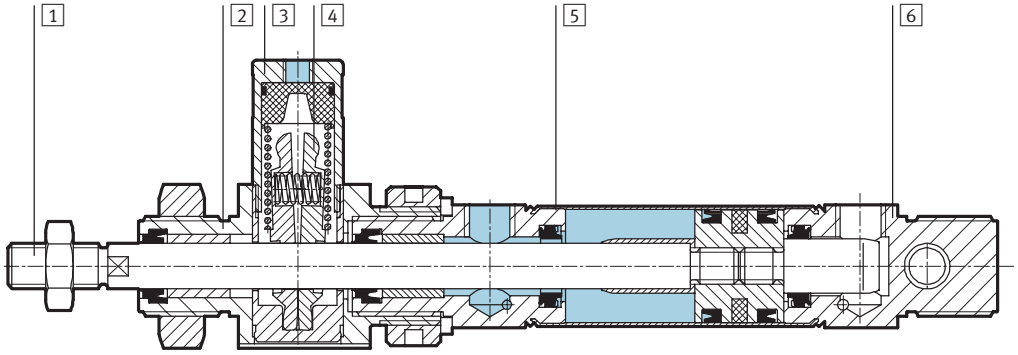
Technical data

Forces [N] and impact energy [J]						
Piston ∅	8	10	12	16	20	25
Theoretical force at 6 bar, advancing	30	47	68	121	189	295
Theoretical force at 6 bar, retracting	23	40	51	104	158	247
Impact energy at the end positions[1)]	0.03	0.05	0.07	0.15	0.20	0.30

1) The values are reduced by approx. 50% at 80 °C

Materials

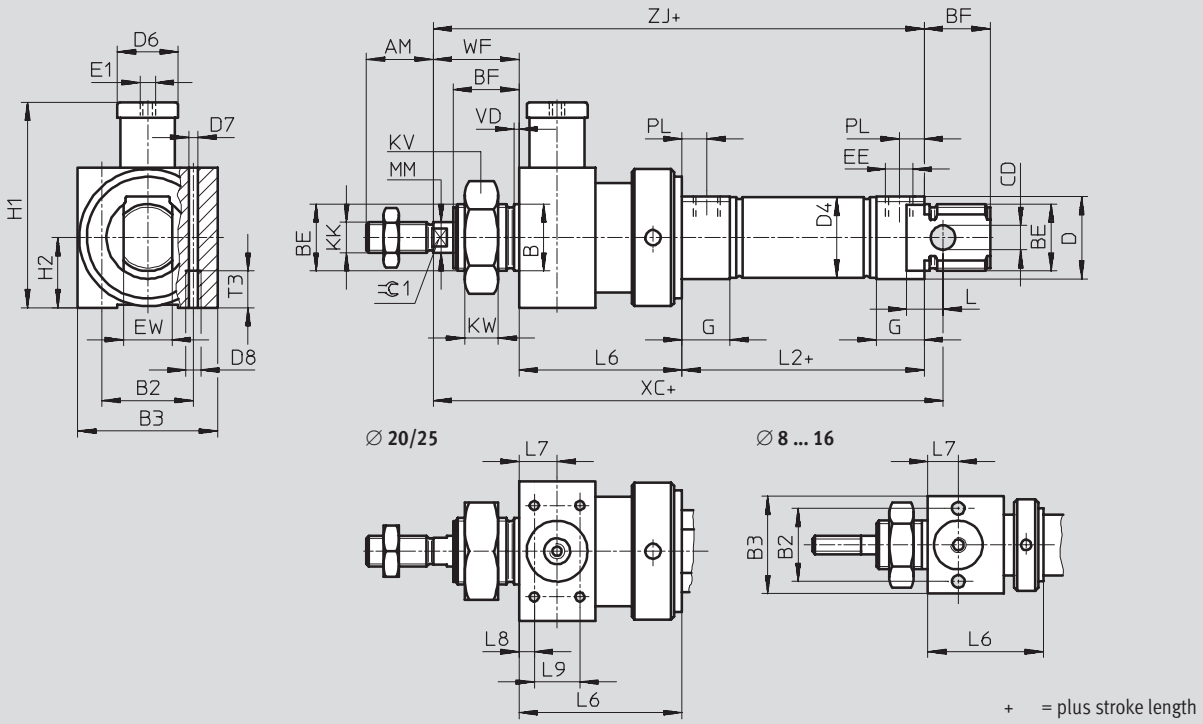
Sectional view



Standard cylinder		
1	Piston rod	High-alloy stainless steel
2	Bearing cap	Wrought aluminium alloy
3	Housing, clamping unit	Wrought aluminium alloy
4	Clamping jaws	Brass
5	Cylinder barrel	High-alloy stainless steel
6	End cap	Wrought aluminium alloy
–	Clamping unit piston	Polyacetate
–	Spring	Spring steel
–	Seals	Polyurethane, nitrile rubber

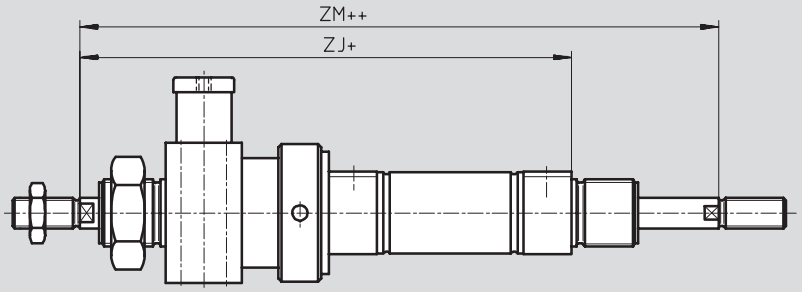
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Basic version



\+ = plus stroke length

S2 – Through piston rod



- - Note

The thread designs on both piston rod ends are identical. The clamping cartridge is mounted on only one side.

In combination with variant Q, the front piston rod is square, the rear piston rod round. The clamping cartridge is mounted on the rear, round piston rod.

\+ = plus stroke length

++ = plus stroke length

Standard cylinders DSNU-KP, with clamping cartridge

Technical data

∅ [mm]	AM	B ∅ h9	B2	B3	BE	BF	CD ∅ E10	D ∅	D4 ∅	D6 ∅	D7 ∅	D8
8	12	12	19.5	27	M12x1.25	12	4	15	9.3	12	4.2	M5
10									11.3			
12	16	16	24	32	M16x1.5	17	6	20	13.3	16		
16									17.3			
20	20	22	27	36	M22x1.5	20	8	27	21.3	20		
25	22					22			26.5			

∅ [mm]	E1	EE	EW	G	H1	H2	KK	KV	KW	MM ∅	L	L2
8	M5	M5	8	10	34.5	13.5	M4	19	6	4	6	46
10												
12			12		41	16	M6	24	8	6	9	50
16												56
20		G⅛	16	16	62.5	18	M8	32	11	8	12	68
25							M10x1.25			10		69.5

∅ [mm]	L6	L7	L8	L9	T3	PL	VD	WF	XC ±1	ZJ	ZM	⫧1
8	29 ±0.65	8	–	–	11	6	2	16	93	91	107	–
10			–	–								–
12	38 ±0.75	10	–	–				22	113	110	132	5
16			–	–					120	116	138	
20	47 ±0.75	13	4.5	20		8.2		24	142	139	163	7
25	48 ±0.75							28	152	145.5	173.5	9

Standard cylinders DSNU, ISO 6432

Ordering data – Modular products

FESTO

M Mandatory data					O Options →		
Module No.	**Function**	**Piston ∅**	**Stroke**	**Cushioning**	**Position sensing**	**Cylinder cap**	**Type of piston rod**
193 986	DSNU	8	1 ... 500	P	A	MQ	S2
193 987		10		PPV		MA	
193 988		12				MH	
193 989		16					
193 990		20					
193 991		25					
Ordering example							
193 991	**DSNU**	**25**	**350**	**PPV**	**A**	**MH**	**S2**

Ordering table

Size			8	10	12	16	20	25	Condi-tions	Code		Enter code
M	Module No.		**193 986**	**193 987**	**193 988**	**193 989**	**193 990**	**193 991**				
	Function		Standard cylinder, double-acting, based on ISO 6432							**DSNU**		DSNU
	Piston ∅	[mm]	8	10	12	16	20	25		**-...**		
	Stroke	[mm]	1 ... 100		1 ... 200		1 ... 320	1 ... 500		**-...**		
	Cushioning		Flexible cushioning rings/plates at both ends							**-P**		
			–	–	Pneumatic cushioning adjustable at both ends				1	**-PPV**		
O	Position sensing		Via proximity sensors						2	**-A**		
	Cylinder cap		Lateral air connection, end cap						3	**-MQ**		
			Axial air connection, end cap						3	**-MA**		
			Mounting flange at front (direct mounting), bearing cap						4	**-MH**		
↓	Type of piston rod		Through piston rod						5	**-S2**		

1 **PPV** Not with cylinder end cap MA
In combination with S6, S10, S11 not with piston ∅ 12 mm

2 **A** Minimum stroke: 10 mm

3 **MQ, MA** Not with piston rod type S2, S10, S11

4 **MH** Not with combination S6-R3
Not with KP, S10, S11

5 **S2** Not with S10, S11

Transfer order code

	DSNU	–		–		–		–		–		–	

Standard cylinders DSNU, ISO 6432

Ordering data – Modular products

FESTO

0 Options

	Male thread extended	Male thread shortened	Female thread	Special thread	Piston rod extended	Clamping unit	Tempera-ture-resistant	Constant motion	Low friction	Corrosion protection
	...K2	...K6	K3	"..."K5	...K8	KP	S6	S10	S11	R3
–		7K6		"M10"K5						R3

Ordering table

Size	8	10	12	16	20	25	Condi-tions	Code		Enter code
0 Male thread extended [mm]	Piston rod with extended male thread 1 ... 15		1 ... 20		1 ... 25	1 ... 35	6	-...K2		
Male thread shortened [mm]	Piston rod with shortened male thread 1 ... 4				1 ... 8	1 ... 10	7	-...K6		
Female thread	Female piston rod thread –	–	–	–	(M4)	(M6)	8	-K3		
Special thread	Special piston rod thread –	–	–	–	–	M10		-"..."K5		
Piston rod extended [mm]	Extended piston rod at front 1 ... 50		1 ... 100					...K8		
Clamping unit	Clamping cartridge						9	-KP		
Temperature-resistant	Heat-resistant seals up to max. 150 °C						10	-S6		
Constant motion	–	–	Slow speed (constant motion at low piston speeds)				11	-S10		
Low friction	–	–	Low friction				12	-S11		
Corrosion protection	–	–	High corrosion protection					-R3		

6 **K2** Not with K3, K6
7 **K6** Not with K3
8 **K3** Not with KZ
9 **KP** Not with S6, S10, S11, R3
10 **S6** Not with S10, S11
11 **S10** Not with S11, R3
12 **S11** Not with R3

Transfer order code

–		–		–		–		–		–		–		–		–	

Standard cylinders DSNU-Q, non-rotating

Ordering data – Modular products

FESTO

M Mandatory data					O Options			
Module No.	**Function**	**Piston ∅**	**Stroke**	**Cushioning**	**Position sensing**	**Cylinder cap**	**Protection against torsion**	**Type of piston rod**
193 988 193 989 193 990 193 991 **Ordering example**	DSNU	12 16 20 25	1 ... 500	P PPV	A	MQ MA MH	Q	S2
193 990	**DSNU**	– **20**	– **150**	– **PPV**	– **A**	– **MQ**	– **Q**	–

Ordering table

Size		12	16	20	25	Conditions	Code	Enter code
M	Module No.	**193 988**	**193 989**	**193 990**	**193 991**			
	Function	Standard cylinder, double-acting, based on ISO 6432					**DSNU**	DSNU
	Piston ∅ [mm]	12	16	20	25		**-...**	
	Stroke [mm]	5 ... 160		5 ... 200	5 ... 250		**-...**	
	Cushioning	Flexible cushioning rings/plates at both ends	–	–	–		**-P**	
		–	Pneumatic cushioning adjustable at both ends				**-PPV**	
O	Position sensing	Via proximity sensors				1	**-A**	
	Cylinder cap	Lateral air connection, end cap				2	**-MQ**	
		Axial air connection, end cap	–	–	–	2	**-MA**	
		–	Mounting flange at front (direct mounting), bearing cap			3	**-MH**	
	Protection against torsion	Square piston rod					**-Q**	-Q
↓	Type of piston rod	Through piston rod					**-S2**	

1 **A** Minimum stroke: 10 mm

2 **MQ, MA** Not with S2

3 **MH** Not with combination Q-R3

Transfer order code

	DSNU	–		–		–		–		–		–	**Q**	–

Standard cylinders DSNU-Q, non-rotating

Ordering data – Modular products

FESTO

➔ 0 Options

Male thread extended	Male thread shortened	Female thread	Special thread	Piston rod extended	Clamping unit	Corrosion protection
...K2	...K6	K3	"..."K5	...K8	KP	R3
– **20K2**	–	–	–	– **60K8**	– **KP**	–

Ordering table

Size	12	16	20	25	Conditions	Code		Enter code
↓ 0 Male thread extended [mm]	Piston rod with extended male thread 1 ... 20		1 ... 25	1 ... 35	4	-...K2		
Male thread shortened [mm]	Piston rod with shortened male thread 1 ... 4		1 ... 8	1 ... 10	5	-...K6		
Female thread	Female piston rod thread –	–	(M4)	(M6)	6	-K3		
Special thread	Special piston rod thread –	–	–	M10		-"..."K5		
Piston rod extended [mm]	Extended piston rod 1 ... 100					...K8		
Clamping unit	Clamping cartridge				7	-KP		
Corrosion protection	–	High corrosion protection				-R3		

4 **K2** Not with K3, K6
5 **K6** Not with K3
6 **K3** Not with K5
7 **KP** Only with S2
Not with R3

Transfer order code

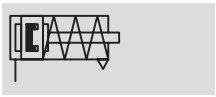
–		–		–		–		–		–		–	

Standard cylinders ESNU, ISO 6432

Technical data

FESTO

Function



- Ø - Diameter
  8 ... 25 mm

- | - Stroke length
  1 ... 50 mm

Variante

CT-free

Additional variants
➔35

Basic version

Axial air connection MA

General technical data							
Piston ∅		8	10	12	16	20	25
Pneumatic connection		M5	M5	M5	M5	G1⁄8	G1⁄8
Piston rod thread		M4	M4	M6	M6	M8	M10x1.25
Constructional design		Piston					
		Piston rod					
		Cylinder barrel					
Cushioning		Flexible cushioning rings/plates at both ends					
Position sensing		Via proximity sensor					
Type of mounting		Via accessories					
Assembly position		Any					

Operating conditions							
Piston ∅		8	10	12	16	20	25
Operating medium		Filtered compressed air, lubricated or unlubricated					
Operating pressure	[bar]	1.5 ... 10			1.2 ... 10		

Ambient conditions		
Standard cylinder		
Ambient temperature[1]	[°C]	–20 ... +80
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 requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

Standard cylinders ESNU, ISO 6432

Technical data

Forces [N] and impact energy [J]						
Piston ∅	8	10	12	16	20	25
Theoretical force at 6 bar, advancing	24	41	61	107	169	270
Spring return force 10 mm stroke	4.9	4.9	6.3	13.2	18.3	22.9
Spring return force 25 mm stroke	4.1	4.1	5.4	11.9	16.5	21.2
Spring return force 50 mm stroke	2.8	4.8	3.9	9.8	13.6	18.5
Impact energy at the end positions[1)]	0.03	0.05	0.07	0.15	0.20	0.30

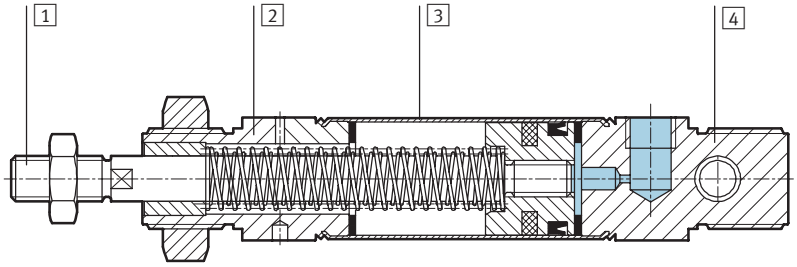
1) The values are reduced by approx. 50% at 80 °C

Weights ESNU-... [g]						
Piston ∅	8	10	12	16	20	25
Product weight with 0 mm stroke	35	37.3	75	89.9	186.8	238
Additional weight per 10 mm stroke	2.4	2.7	4	4.6	7.2	11

Weights ESNU-...-MA [g]						
Piston ∅	8	10	12	16	20	25
Product weight with 0 mm stroke	30	33	65	81	167	222
Additional weight per 10 mm stroke	2.4	2.7	4	4.6	7.2	11

Materials

Sectional view



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

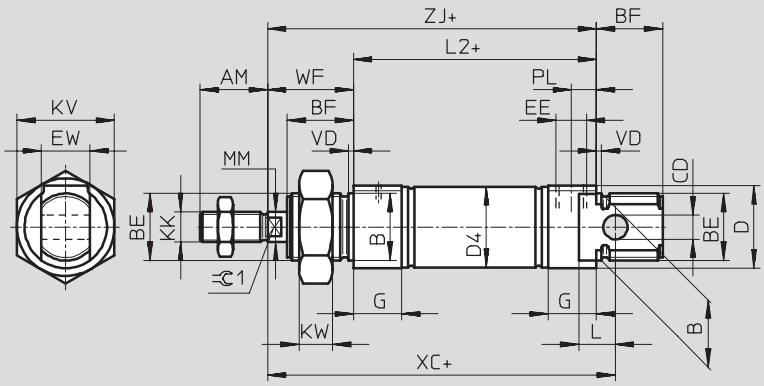
Standard cylinders ESNU, ISO 6432

Technical data

FESTO

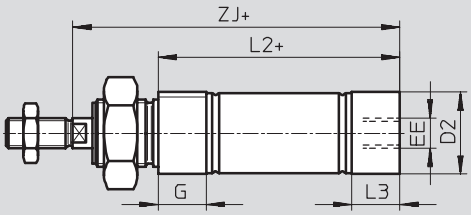
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Basic version



\+ = plus stroke length

MA – Axial air connection



\+ = plus stroke length

∅ [mm]	AM	B ∅ h9	BE	BF	CD ∅ E10	D ∅	D2 ∅	D4 ∅	EE	EW	G	KK	KV
8	12	12	M12x1.25	12	4	15	10.5	9.3	M5	8	10	M4	19
10							12.5	11.3					
12	16	16	M16x1.5	17	6	20	14.5	13.3		12		M6	24
16							17.5	17.3					
20	20	22	M22x1.5	20	8	27	21.7	21.3	G⅛	16	16	M8	32
25	22			22			26.7	26.5				M10x1.25	

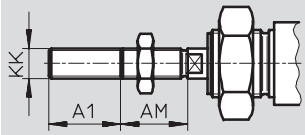
∅ [mm]	KW	L	L2	L2 -MA	L3	MM ∅	PL	VD	WF	XC ±1	ZJ	ZJ -MA	⫽C1
8	6	6	46	43.6	7.6	4	6	2	16	64	62	59.6	–
10				43.1	7.1							59.1	
12	8	9	50	47.7	7.7	6			22	75	72	69.7	5
16			56	53.7						82	78	75.7	
20	11	12	68	66.5	14.5	8	8.2		24	95	92	90.5	7
25			69.5	68.5	14	10			28	104	97.5	96.5	9

Standard cylinders ESNU, ISO 6432

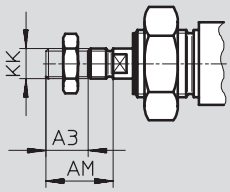
Technical data

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

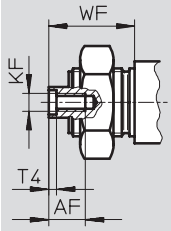
K2 – Extended male piston rod thread



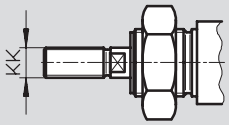
K6 – Shortened male piston rod thread



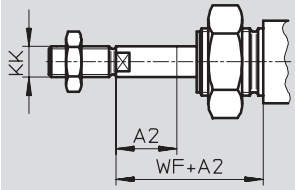
K3 – Female piston rod thread



K5 – Special piston rod thread



K8 – Extended piston rod



∅ [mm]	A1 max.	A2 max.	A3 max.	AF	AM	KF	KK		T4	WF
							Basic thread	Special thread[1)]		
8	15	50	4	–	12	–	M4	–	–	16
10				–		–		–	–	
12	20			–	16	–	M6	–	–	22
16				–		–		–	–	
20	25		8	12	20	M4	M8	–	2	24
25	35				22	M6	M10x1.25	M10	2.6	28

1) The special threads are only available as male threads. The scope of delivery does not include a hex nut for the piston rod thread

Standard cylinders ESNU, ISO 6432

Technical data

Ordering data			
Type	Stroke [mm]	Part No.	Type
Basic version			
	∅ 8 mm		
	10	**19 254**	**ESNU-8-10-P-A**
	25	**19 255**	**ESNU-8-25-P-A**
	50	**19 256**	**ESNU-8-50-P-A**
	∅ 10 mm		
	10	**19 257**	**ESNU-10-10-P-A**
	25	**19 258**	**ESNU-10-25-P-A**
	50	**19 259**	**ESNU-10-50-P-A**
	∅ 12 mm		
	10	**19 260**	**ESNU-12-10-P-A**
	25	**19 261**	**ESNU-12-25-P-A**
	50	**19 262**	**ESNU-12-50-P-A**
	∅ 16 mm		
	10	**19 263**	**ESNU-16-10-P-A**
	25	**19 264**	**ESNU-16-25-P-A**
	50	**19 265**	**ESNU-16-50-P-A**
	∅ 20 mm		
	10	**19 266**	**ESNU-20-10-P-A**
	25	**19 267**	**ESNU-20-25-P-A**
	50	**19 268**	**ESNU-20-50-P-A**
	∅ 25 mm		
	10	**19 269**	**ESNU-25-10-P-A**
	25	**19 270**	**ESNU-25-25-P-A**
	50	**19 271**	**ESNU-25-50-P-A**

Standard cylinders ESNU, ISO 6432

Technical data

Ordering data				
Type	Piston ∅ [mm]	Stroke [mm]	Part No.	Type
Variable stroke				
	8	1 … 50	**14 119**	**ESNU-8-…-P-A**
	10	1 … 50	**14 118**	**ESNU-10-…-P-A**
	12	1 … 50	**14 317**	**ESNU-12-…-P-A**
	16	1 … 50	**14 316**	**ESNU-16-…-P-A**
	20	1 … 50	**14 319**	**ESNU-20-…-P-A**
	25	1 … 50	**14 318**	**ESNU-25-…-P-A**
Free of copper, PTFE and silicone				
	8	1 … 50	**170 130**	**ESNU-8-…-P-A-CT**
	10	1 … 50	**170 131**	**ESNU-10-…-P-A-CT**
	12	1 … 50	**170 132**	**ESNU-12-…-P-A-CT**
	16	1 … 50	**170 133**	**ESNU-16-…-P-A-CT**
	20	1 … 50	**170 134**	**ESNU-20-…-P-A-CT**
	25	1 … 50	**170 135**	**ESNU-25-…-P-A-CT**

Standard cylinders ESNU, ISO 6432

Ordering data – Modular products

FESTO

M Mandatory data					O Options →	
Module No.	**Function**	**Piston ∅**	**Stroke**	**Cushioning**	**Position sensing**	**End cap**
193 996	ESNU	8	1 … 50	P	A	MA
193 997		10				
193 998		12				
193 999		16				
194 000		20				
194 001		25				
Ordering example						
194 002	**ESNU**	**25**	**45**	**P**	**A**	**MA**

Ordering table

Size		8	10	12	16	20	25	Condi-tions	Code		Enter code
M	Module No.	**193 996**	**193 997**	**193 998**	**193 999**	**194 000**	**194 001**				
	Function	Standard cylinder, single-acting pushing, based on ISO 6432							**ESNU**		ESNU
	Piston ∅ [mm]	8	10	12	16	20	25		**-...**		
	Stroke [mm]	1 … 50							**-...**		
	Cushioning	Flexible cushioning rings/plates at both ends							**-P**		-P
O	Position sensing	For proximity sensors						1	**-A**		
↓	End cap	Axial air connection							**-MA**		

1 **A** Minimum stroke: 10 mm

Transfer order code

	ESNU	–		–		–	**P**	–		–

[0] Options

Male thread extended	Male thread shortened	Female thread	Special thread	Piston rod extended
...K2	...K6	K3	"..."K5	...K8
– **30K2**	–	–	– **"M10"K5**	– **30K8**

Ordering table

Size	8	10	12	16	20	25	Conditions	Code		Enter code
[0] Male thread extended [mm]	Piston rod with extended male thread 1 ... 15		1 ... 20		1 ... 25	1 ... 35	[2]	**-...K2**		
Male thread shortened [mm]	Piston rod with shortened male thread 1 ... 4				1 ... 8			**-...K6**		
Female thread	Female piston rod thread –	–	–	–	(M4)	(M6)	[3]	**-K3**		
Special thread	Special piston rod thread –	–	–	–	–	M10		**-"..."K5**		
Piston rod extended [mm]	Piston rod extended 1 ... 50							**...K8**		

[2] **K2** Not with female thread K3, shortened male thread K6

[3] **K3** Not with special thread K5, shortened male thread K6

Transfer order code

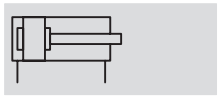
–		–		–		–		–	

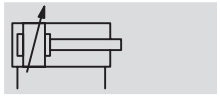
Standard cylinders DSN, ISO 6432

Technical data

FESTO

Function





- Ø - Diameter
  8 ... 25 mm

- I - Stroke length
  1 ... 500 mm

Variant

S2

General technical data							
Piston ∅		8	10	12	16	20	25
Pneumatic connection		M5	M5	M5	M5	G1⁄8	G1⁄8
Piston rod thread		M4	M4	M6	M6	M8	M10x1.25
Constructional design		Piston					
		Piston rod					
		Cylinder barrel					
Cushioning		Flexible cushioning rings/plates at both ends					
		–			Pneumatic cushioning adjustable at both ends		
Cushioning length (PPV)	[mm]	–			14	17	
Type of mounting		Via accessories					
Assembly position		Any					

Operating conditions							
Piston ∅		8	10	12	16	20	25
Operating medium		Filtered compressed air, lubricated or unlubricated					
Operating pressure	[bar]	1.5 ... 10			1 ... 10		

Ambient conditions		
Standard cylinder		
Ambient temperature[1]	[°C]	–20 ... +80
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 requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

Standard cylinders DSN, ISO 6432

Technical data

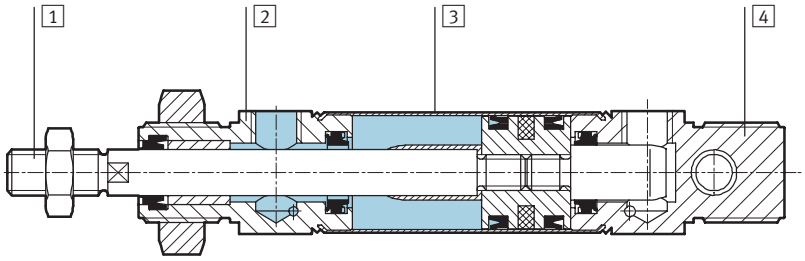
Forces [N]						
Piston ∅	8	10	12	16	20	25
Theoretical force at 6 bar, advancing[1)]	30	47	68	121	189	295
Theoretical force at 6 bar, retracting[1)]	23	40	51	104	158	247

1) The force in the advance stroke is the same as the force in the return stroke with the variant S2

Weights [g]						
Piston ∅	8	10	12	16	20	25
Product weight with 0 mm stroke	40	43	80	96	200	260
Additional weight per 10 mm stroke	2.3	2.5	4.1	4.7	7.1	10.9

Materials

Sectional view



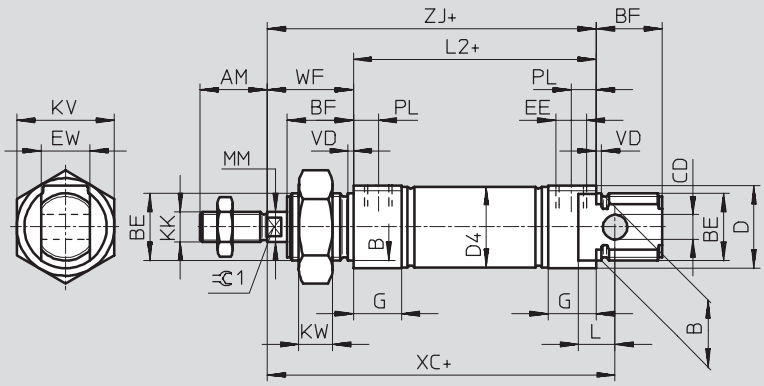
Standard cylinder		
1	Piston rod	High-alloy stainless steel
2	Bearing cap	Wrought aluminium alloy
3	Cylinder barrel	High-alloy stainless steel
4	End cap	Wrought aluminium alloy
–	Seals	Polyurethane, nitrile rubber

Standard cylinders DSN, ISO 6432

Technical data

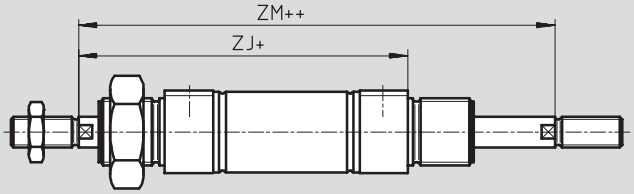
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Basic version



\+ = plus stroke length

S2 – Through piston rod



\+ = plus stroke length
++ = plus 2 stroke lengths

∅ [mm]	AM	B ∅ h9	BE	BF	CD ∅ E10	D ∅	D4 ∅	EE	EW	G	KK
8	12	12	M12x1.25	12	4	15	9.3	M5	8	10	M4
10							11.3				
12	16	16	M16x1.5	17	6	20	13.3		12		M6
16							17.3				
20	20	22	M22x1.5	20	8	27	21.3	G⅛	16	16	M8
25	22			22			26.5				M10x1.25

∅ [mm]	KV	KW	L	L2	MM ∅	PL	VD	WF	XC ±1	ZJ	ZM	⌗C1
8	19	6	6	46	4	6	2	16	64	62	78.4	–
10												
12	24	8	9	50	6			22	75	72	94	5
16				56					82	78	100	
20	32	11	12	68	8	8.2		24	95	92	116	7
25				69.5	10			28	104	97.5	125.5	9

Standard cylinders DSN, ISO 6432

Technical data

Ordering data				
Type	Piston ∅ [mm]	Stroke [mm]	Flexible cushioning rings/plates at both ends	
			Part No.	Type
Basic version				
	8	10	**5 033**	**DSN-8-10-P**
		25	**5 034**	**DSN-8-25-P**
		40	**5 035**	**DSN-8-40-P**
		50	**5 036**	**DSN-8-50-P**
		80	**5 037**	**DSN-8-80-P**
		100	**5 038**	**DSN-8-100-P**
	10	10	**5 040**	**DSN-10-10-P**
		25	**5 041**	**DSN-10-25-P**
		40	**5 042**	**DSN-10-40-P**
		50	**5 043**	**DSN-10-50-P**
		80	**5 044**	**DSN-10-80-P**
		100	**5 045**	**DSN-10-100-P**
	12	10	**5 047**	**DSN-12-10-P**
		25	**5 048**	**DSN-12-25-P**
		40	**5 049**	**DSN-12-40-P**
		50	**5 050**	**DSN-12-50-P**
		80	**5 051**	**DSN-12-80-P**
		100	**5 052**	**DSN-12-100-P**
		125	**8 519**	**DSN-12-125-P**
		160	**5 053**	**DSN-12-160-P**
		200	**5 054**	**DSN-12-200-P**

Standard cylinders DSN, ISO 6432

Technical data

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Ordering data							
Type	Piston ∅ [mm]	Stroke [mm]	Flexible cushioning rings/plates at both ends			Pneumatic cushioning adjustable at both ends	
			Part No.	Type		Part No.	Type
Basic version							
	16	10	**5 056**	**DSN-16-10-P**		–	
		25	**5 057**	**DSN-16-25-P**			
		40	**5 058**	**DSN-16-40-P**		**14 534**	**DSN-16-40-PPV**
		50	**5 059**	**DSN-16-50-P**		**14 535**	**DSN-16-50-PPV**
		80	**5 060**	**DSN-16-80-P**		**14 536**	**DSN-16-80-PPV**
		100	**5 061**	**DSN-16-100-P**		**14 537**	**DSN-16-100-PPV**
		125	**8 520**	**DSN-16-125-P**		**14 538**	**DSN-16-125-PPV**
		160	**5 062**	**DSN-16-160-P**		**14 539**	**DSN-16-160-PPV**
		200	**5 063**	**DSN-16-200-P**		**14 540**	**DSN-16-200-PPV**
	20	10	**5 065**	**DSN-20-10-P**		–	
		25	**5 066**	**DSN-20-25-P**			
		40	**5 067**	**DSN-20-40-P**		**8 743**	**DSN-20-40-PPV**
		50	**5 068**	**DSN-20-50-P**		**8 744**	**DSN-20-50-PPV**
		80	**5 069**	**DSN-20-80-P**		**8 745**	**DSN-20-80-PPV**
		100	**5 070**	**DSN-20-100-P**		**8 746**	**DSN-20-100-PPV**
		125	**8 521**	**DSN-20-125-P**		**8 747**	**DSN-20-125-PPV**
		160	**5 071**	**DSN-20-160-P**		**8 748**	**DSN-20-160-PPV**
		200	**5 072**	**DSN-20-200-P**		**8 749**	**DSN-20-200-PPV**
		250	**8 522**	**DSN-20-250-P**		**8 750**	**DSN-20-250-PPV**
		300	**5 073**	**DSN-20-300-P**		**8 751**	**DSN-20-300-PPV**
		320	**34 710**	**DSN-20-320-P**		**34 712**	**DSN-20-320-PPV**
	25	10	**5 075**	**DSN-25-10-P**		–	
		25	**5 076**	**DSN-25-25-P**			
		40	**5 077**	**DSN-25-40-P**		**9 666**	**DSN-25-40-PPV**
		50	**5 078**	**DSN-25-50-P**		**9 667**	**DSN-25-50-PPV**
		80	**5 079**	**DSN-25-80-P**		**9 668**	**DSN-25-80-PPV**
		100	**5 080**	**DSN-25-100-P**		**9 669**	**DSN-25-100-PPV**
		125	**8 523**	**DSN-25-125-P**		**8 531**	**DSN-25-125-PPV**
		160	**5 081**	**DSN-25-160-P**		**9 670**	**DSN-25-160-PPV**
		200	**5 082**	**DSN-25-200-P**		**9 671**	**DSN-25-200-PPV**
		250	**8 524**	**DSN-25-250-P**		**8 532**	**DSN-25-250-PPV**
		300	**5 083**	**DSN-25-300-P**		**9 672**	**DSN-25-300-PPV**
		320	**34 711**	**DSN-25-320-P**		**34 713**	**DSN-25-320-PPV**
		400	**32 298**	**DSN-25-400-P**		**32 300**	**DSN-25-40-PPV**
		500	**32 299**	**DSN-25-500-P**		**32 301**	**DSN-25-500-PPV**

Standard cylinders DSN, ISO 6432

Technical data

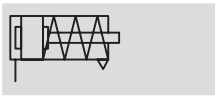
Ordering data						
Type	Piston ∅ [mm]	Stroke [mm]	Flexible cushioning rings/plates at both ends			Pneumatic cushioning adjustable at both ends
			Part No.	Type		Part No. Type
Variable stroke						
	8	1 … 100	**5 032**	**DSN-8-…-P**		–
	10	1 … 100	**5 039**	**DSN-10-…-P**		
	12	1 … 200	**5 046**	**DSN-12-…-P**		
	16	1 … 200	**5 055**	**DSN-16-…-P**		
	20	1 … 320	**5 064**	**DSN-20-…-P**		
	25	1 … 500	**5 074**	**DSN-25-…-P**		
Variable stroke						
	16	1 … 200	–			**14 533** **DSN-16-…-PPV**
	20	1 … 320				**8 742** **DSN-20-…-PPV**
	25	1 … 500				**9 665** **DSN-25-…-PPV**
Variable stroke, through piston rod						
	20	10 … 320	–			**11 893** **DSN-20-…-PPV-S2**
	25	10 … 500				**11 894** **DSN-25-…-PPV-S2**

Standard cylinders ESN, ISO 6432

Technical data

FESTO

Function



- Ø - Diameter
  8 ... 25 mm

- I - Stroke length
  1 ... 500 mm

General technical data							
Piston ∅		8	10	12	16	20	25
Pneumatic connection		M5	M5	M5	M5	G1⁄8	G1⁄8
Piston rod thread		M4	M4	M6	M6	M8	M10x1.25
Constructional design		Piston					
		Piston rod					
		Cylinder barrel					
Cushioning		Flexible cushioning rings/plates at both ends					
Type of mounting		Via accessories					
Assembly position		Any					

Operating conditions							
Piston ∅		8	10	12	16	20	25
Operating medium		Filtered compressed air, lubricated or unlubricated					
Operating pressure	[bar]	1.5 ... 10			1.2 ... 10		

Ambient conditions		
Standard cylinder		
Ambient temperature[1]	[°C]	–20 ... +80
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 requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

Standard cylinders ESN, ISO 6432

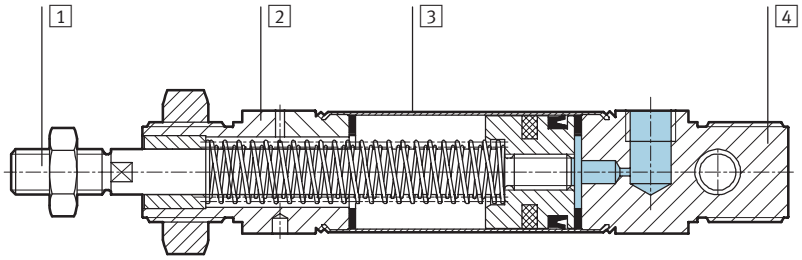
Technical data

Forces [N] and impact energy [J]						
Piston ∅	8	10	12	16	20	25
Theoretical force at 6 bar, advancing	24	41	61	107	169	270
Spring return force 10 mm stroke	4.9	4.9	6.3	13.2	18.3	22.9
Spring return force 25 mm stroke	4.1	4.1	5.4	11.9	16.5	21.2
Spring return force 50 mm stroke	2.8	4.8	3.9	9.8	13.6	18.5
Impact energy at the end positions	0.03	0.05	0.07	0.15	0.20	0.30

Weights [g]						
Piston ∅	8	10	12	16	20	25
Product weight with 0 mm stroke	40	43	80	96	200	260
Additional weight per 10 mm stroke	2.3	2.5	4.1	4.7	7.1	10.9

Materials

Sectional view



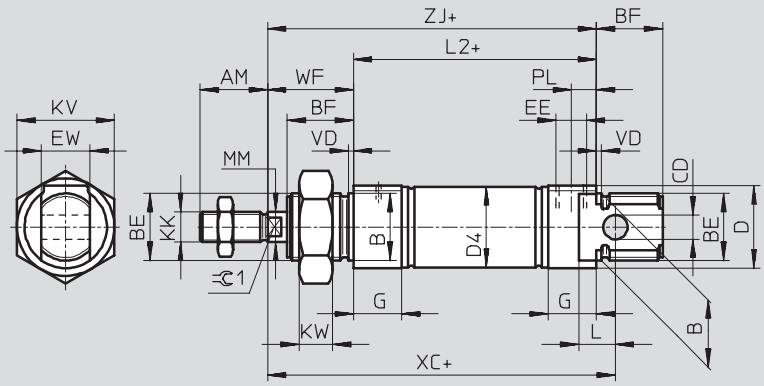
Standard cylinder		
1	Piston rod	High-alloy stainless steel
2	Bearing cap	Wrought aluminium alloy
3	Cylinder barrel	High-alloy stainless steel
4	End cap	Wrought aluminium alloy
–	Seals	Polyurethane, nitrile rubber
–	Spring	Spring steel

Standard cylinders ESN, ISO 6432

Technical data

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Basic version



\+ = plus stroke length

∅ [mm]	AM	B ∅ h9	BE	BF	CD ∅ E10	D ∅	D4 ∅	EE	EW	G	KK
8	12	12	M12x1.25	12	4	15	9.3	M5	8	10	M4
10							11.3				
12	16	16	M16x1.5	17	6	20	13.3		12		M6
16							17.3				
20	20	22	M22x1.5	20	8	27	21.3	G⅛	16	16	M8
25	22			22			26.5				M10x1.25

∅ [mm]	KV	KW	L	L2	MM ∅	PL	VD	WF	XC ±1	ZJ	⫧1
8	19	6	6	46	4	6	2	16	64	62	–
10											
12	24	8	9	50	6			22	75	72	5
16				56					82	78	
20	32	11	12	68	8	8.2		24	95	92	7
25				69.5	10			28	104	97.5	9

Standard cylinders ESN, ISO 6432

Technical data

Ordering data			
Type	Stroke [mm]	Part No.	Type
Basic version			
	∅ 8 mm		
	10	**5 086**	**ESN-8-10-P**
	25	**5 087**	**ESN-8-25-P**
	50	**5 088**	**ESN-8-50-P**
	∅ 10 mm		
	10	**5 089**	**ESN-10-10-P**
	25	**5 090**	**ESN-10-25-P**
	50	**5 091**	**ESN-10-50-P**
	∅ 12 mm		
	10	**5 092**	**ESN-12-10-P**
	25	**5 093**	**ESN-12-25-P**
	50	**5 094**	**ESN-12-50-P**
	∅ 16 mm		
	10	**5 095**	**ESN-16-10-P**
	25	**5 096**	**ESN-16-25-P**
	50	**5 097**	**ESN-16-50-P**
	∅ 20 mm		
	10	**5 098**	**ESN-20-10-P**
	25	**5 099**	**ESN-20-25-P**
	50	**5 100**	**ESN-20-50-P**
	∅ 25 mm		
	10	**5 101**	**ESN-25-10-P**
	25	**5 102**	**ESN-25-25-P**
	50	**5 103**	**ESN-25-50-P**

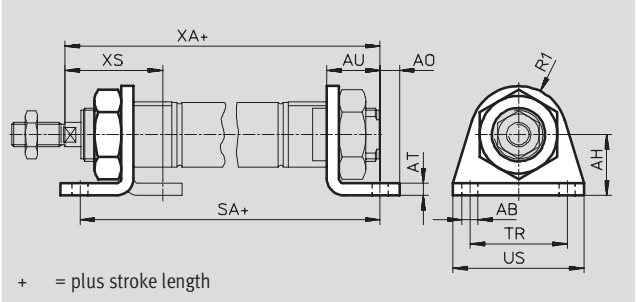
Ordering data				
Type	Piston ∅ [mm]	Stroke [mm]	Part No.	Type
Variable stroke				
	8	1 … 50	**11 651**	**ESN-8-…-P**
	10	1 … 50	**11 652**	**ESN-10-…-P**
	12	1 … 50	**11 653**	**ESN-12-…-P**
	16	1 … 50	**11 654**	**ESN-16-…-P**
	20	1 … 50	**11 655**	**ESN-20-…-P**
	25	1 … 50	**11 656**	**ESN-25-…-P**

Foot mounting HBN/CRHBN

Scope of delivery:
HBN/CRHBN-...x1: 1 foot
HBN/CRHBN-...x2: 2 feet and 1 nut

Material:
HBN: Galvanised steel
CRHBN: High-alloy stainless steel
Free of copper, PTFE and silicone

HBN/CRHBN-...x2



+ = plus stroke length

Dimensions and ordering data

For ∅ [mm]	AB ∅	AH	AO	AT	AU	R1	SA	SA -KP	TR	US	XA	XA -KP	XS	XS -KP
8, 10	4.5	16	5	3	11	10	68	97	25	35	73	102	24	–
12	5.5	20	6	4	14	13	78	116	32	42	86	124	32	–
16	5.5	20	6	4	14	13	84	122	32	42	92	130	32	–
20	6.6	25	8	5	17	20	102	149	40	54	109	156	36	–
25	6.6	25	8	5	17	20	103.5	151.5	40	54	114.5	162.5	40	–

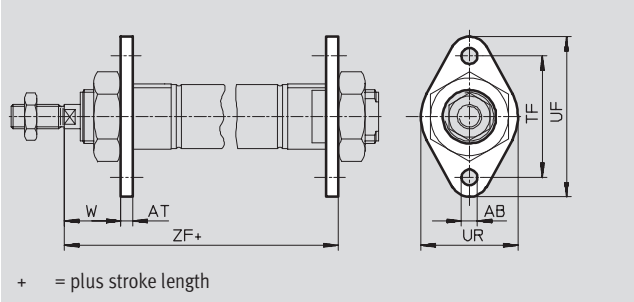
For ∅ [mm]	Basic version				High corrosion protection			
	CRC[1]	Weight [g]	Part No.	Type	CRC[1]	Weight [g]	Part No.	Type
8, 10	2	20	**5 123**	**HBN-8/10x1**	–	–	**–**	
	2	55	**5 124**	**HBN-8/10x2**	–	–	**–**	
12, 16	2	40	**5 125**	**HBN-12/16x1**	4	40	**161 866**	**CRHBN-12/16x1**
	2	105	**5 126**	**HBN-12/16x2**	4	97	**162 999**	**CRHBN-12/16x2**
20, 25	2	90	**5 127**	**HBN-20/25x1**	4	55	**161 867**	**CRHBN-20/25x1**
	2	220	**5 128**	**HBN-20/25x2**	4	100	**162 998**	**CRHBN-20/25x2**

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

Core Range

Flange mounting FBN/CRFBN

Material:
FBN: Galvanised steel
CRFBN: High-alloy stainless steel
Free of copper, PTFE and silicone



\+ = plus stroke length

Dimensions and ordering data

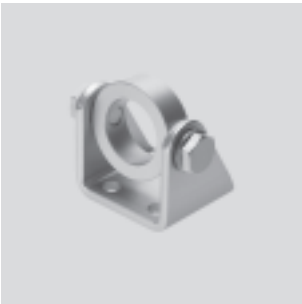
For ∅ [mm]	AB ∅	AT	TF	UF	UR	W	ZF	ZF -KP
8, 10	4.5	3	30	40	25	13	65	94
12	5.5	4	40	53	30	18	76	114
16	5.5	4	40	53	30	18	82	120
20	6.6	5	50	66	40	19	97	144
25	6.6	5	50	66	40	23	102.5	150.5

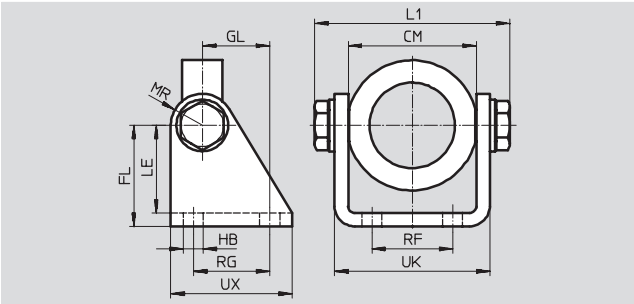
For ∅	Basic version				High corrosion protection			
[mm]	CRC[1)]	Weight [g]	Part No.	Type	CRC[1)]	Weight [g]	Part No.	Type
8, 10	2	12	**5 129**	**FBN-8/10**	–	–	**–**	
12, 16	2	25	**5 130**	**FBN-12/16**	4	25	**161 864**	**CRFBN-12/16**
20, 25	2	45	**5 131**	**FBN-20/25**	4	45	**161 865**	**CRFBN-20/25**

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

Swivel mounting SBN

Material:
Mounting ring: Wrought aluminium alloy, anodised
Bearings: Bronze
Screws: Galvanised steel
Bracket: Steel





Dimensions and ordering data

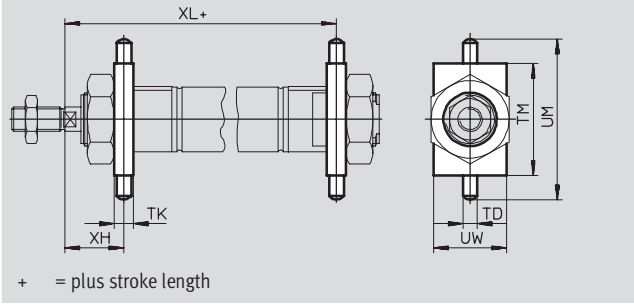
For ∅ [mm]	CM	FL	GL	HB	L1 max.	LE	MR	RF	RG	UK	UX	CRC[1)]	Weight [g]	Part No.	Type
20/25	38.1$^{+0.4}$	35	20	7	60.2	31	12	20	24	46.1	40	2	200	**539 927**	**SBN-20/25**

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

Core Range

Swivel mounting WBN

Material:
Galvanised steel
Free of copper, PTFE and silicone



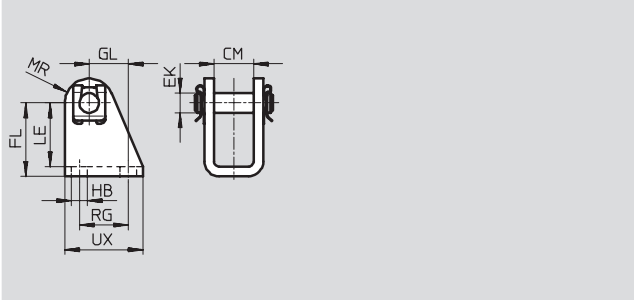
Dimensions and ordering data

For ∅ [mm]	TD ∅ f8	TK	TM	UM	UW	XH	XL	-KP	CRC[1]	Weight [g]	Part No.	Type
8, 10	4	6	26	38	20	13	65	94	2	20	**8 608**	**WBN-8/10**
12	6	8	38	58	25	18	76	114	2	50	**8 609**	**WBN-12/16**
16	6	8	38	58	25	18	82	120	2	50	**8 609**	**WBN-12/16**
20	6	8	46	66	30	20	96	143	2	70	**8 610**	**WBN-20/25**
25	6	8	46	66	30	24	101.5	149.5	2	70	**8 610**	**WBN-20/25**

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

Clevis foot LBN/CRLBN

Material:
LBN: Galvanised steel
CRLBN: High-alloy stainless steel
Free of copper, PTFE and silicone



Dimensions and ordering data

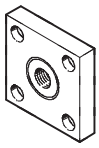
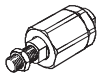
For ∅ [mm]	CM	EK ∅	FL	GL	HB	LE	MR	RG	UX
8, 10	8.1	4	24 +0.3/–0.2	13.8	4.5	21.5	5	12.5	20
12, 16	12.1	6	27 +0.3/–0.2	13	5.5	24	7	15	25
20, 25	16.1	8	30 +0.4/–0.2	16	6.6	26	10	20	32

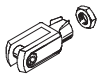
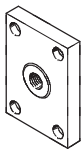
For ∅	Basic version				High corrosion protection			
[mm]	CRC[1]	Weight [g]	Part No.	Type	CRC[1]	Weight [g]	Part No.	Type
8, 10	2	22	**6 057**	**LBN-8/10**	–	–	**–**	
12, 16	2	40	**6 058**	**LBN-12/16**	4	55	**161 862**	**CRLBN-12/16**
20, 25	2	81	**6 059**	**LBN-20/25**	4	62	**161 863**	**CRLBN-20/25**

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

Core Range

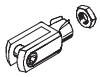
Ordering data – Piston rod attachments — Technical data ➔ www.festo.com

Designation	For ∅	Part No.	Type
Rod eye SGS			
	8	**9 253**	**SGS-M4**
	10		
	12	**9 254**	**SGS-M6**
	16		
	20	**9 255**	**SGS-M8**
	25	**9 261**	**SGS-M10x1,25**
Coupling piece KSG			
	8	–	
	10		
	12		
	16		
	20		
	25	**32 963**	**KSG-M10x1,25**
Self-aligning rod coupler FK			
	8	**6 528**	**FK-M4**
	10		
	12	**2 061**	**FK-M6**
	16		
	20	**2 062**	**FK-M8**
	25	**6 140**	**FK-M10x1,25**

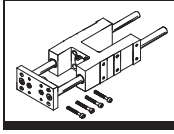
Designation	For ∅	Part No.	Type
Rod clevis SG			
	8	**6 532**	**SG-M4**
	10		
	12	**3 110**	**SG-M6**
	16		
	20	**3 111**	**SG-M8**
	25	**6 144**	**SG-M10x1,25**
Coupling piece KSZ			
	12	**36 123**	**KSZ-M6**
	16		
	20	**36 124**	**KSZ-M8**
	25	**36 125**	**KSZ-M10x1,25**

Ordering data – Corrosion resistant piston rod attachments — Technical data ➔ www.festo.com

Designation	For ∅	Part No.	Type
Rod eye CRSGS			
	12	**195 580**	**CRSGS-M6**
	16		
	20	**195 581**	**CRSGS-M8**
	25	**195 582**	**CRSGS-M10x1,25**

Designation	For ∅	Part No.	Type
Rod clevis CRSG			
	12	**13 567**	**CRSG-M6**
	16		
	20	**13 568**	**CRSG-M8**
	25	**13 569**	**CRSG-M10x1,25**

Ordering data – Guide units — Technical data ➔ www.festo.com

	For ∅	Stroke [mm]	with recirculating ball bearing guide Part No.	Type	with plain bearing guide Part No.	Type
	8, 10	1 … 200	**35 197**	**FEN-8/10-…-KF**	**35 196**	**FEN-8/10-…**
	12, 16	1 … 200	**33 481**	**FEN-12/16-…-KF**	**19 168**	**FEN-12/16-…**
	20	2 … 250	**33 482**	**FEN-20-…-KF**	**19 169**	**FEN-20-…**
	25	2 … 250	**33 483**	**FEN-25-…-KF**	**19 170**	**FEN-25-…**

Core Range

Ordering data – Proximity sensors, u-shaped design, magneto-resistive — Technical data ➔ www.festo.com

	Mounting	Switch output	Electrical connection		Cable length	Connection direction	Part No.	Type
			Cable	M8 plug	[m]			
NO contact								
	Via accessories	PNP	3-wire	–	2.5	In-line	**152 836**	**SMTO-4U-PS-K-LED-24**
			–	3-pin	–	In-line	**152 742**	**SMTO-4U-PS-S-LED-24**
		NPN	3-wire	–	2.5	In-line	**152 837**	**SMTO-4U-NS-K-LED-24**
			–	3-pin	–	In-line	**152 743**	**SMTO-4U-NS-S-LED-24**

Ordering data – Proximity sensors, u-shaped design, magnetic reed — Technical data ➔ www.festo.com

	Mounting	Electrical connection		Cable length	Connection direction	Part No.	Type
		Cable	M8 plug	[m]			
NO contact							
	Via accessories	3-wire	–	2.5	In-line	**36 198**	**SMEO-4U-K-LED-24**
				5	In-line	**175 401**	**SMEO-4U-K5-LED-24**
		–	3-pin	–	In-line	**151 526**	**SMEO-4U-S-LED-24-B**

Ordering data – Proximity sensors, round design, magnetic reed, corrosion resistant — Technical data ➔ www.festo.com

	Mounting	Electrical connection		Cable length	Connection direction	Part No.	Type
		Cable	M8 plug	[m]			
NO contact							
	Via accessories	3-wire	–	2.5	In-line	**161 775**	**CRSMEO-4-K-LED-24**

Ordering data – Mounting kit for proximity sensor SMEO/SMTO/CRSMEO — Technical data ➔ www.festo.com

Designation	For ∅	Part No.	Type
Mounting kit SMBR			
	8	**19 272**	**SMBR-8**
	10	**19 273**	**SMBR-10**
	12	**19 274**	**SMBR-12**
	16	**19 275**	**SMBR-16**
	20	**19 276**	**SMBR-20**
	25	**19 277**	**SMBR-25**

Designation	For ∅	Part No.	Type
Mounting kit CRSMBR, corrosion resistant			
	8	–	–
	10	–	–
	12	**164 581**	**CRSMBR-12**
	16	**164 582**	**CRSMBR-16**
	20	**164 583**	**CRSMBR-20**
	25	**164 584**	**CRSMBR-25**

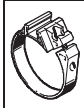
Ordering data – Proximity sensor for slot type 8, magneto-resistive — Technical data ➔ www.festo.com

	Mounting	Switch output	Electrical connection: Cable	Electrical connection: M8 plug	Electrical connection: M12 plug	Cable length [m]	Part No.	Type
NO contact								
	Via accessories	PNP	3-wire	–	–	2.5	525 898	SMT-8F-PS-24V-K2,5-OE
		NPN					525 909	SMT-8F-NS-24V-K2,5-OE
		–	2-wire	–	–	2.5	525 908	SMT-8F-ZS-24V-K2,5-OE
		PNP	–	3-pin	–	0.3	525 899	SMT-8F-PS-24V-K0,3-M8D
		NPN					525 910	SMT-8F-NS-24V-K0,3-M8D
		PNP	–	–	3-pin	0.3	525 900	SMT-8F-PS-24V-K0,3-M12
	Via accessories	PNP	3-wire	–	–	2.5	175 436	SMT-8-PS-K-LED-24-B
			–	3-pin	–	0.3	175 484	SMT-8-PS-S-LED-24-B
NC contact								
	Via accessories	PNP	3-wire	–	–	7.5	525 911	SMT-8F-PO-24V-K7,5-OE

Ordering data – Proximity sensor for slot type 8, magnetic reed — Technical data ➔ www.festo.com

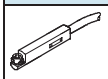
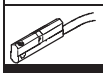
	Mounting	Electrical connection: Cable	Electrical connection: M8 plug	Cable length [m]	Part No.	Type
NO contact						
	Via accessories	3-wire	–	2.5	525 895	SME-8F-DS-24V-K2,5-OE
				5.0	525 897	SME-8F-DS-24V-K5,0-OE
		2-wire	–	2.5	525 907	SME-8F-ZS-24V-K2,5-OE
		–	3-pin	0.3	525 896	SME-8F-DS-24V-K0,3-M8D
	Via accessories	3-wire	–	2.5	150 855	SME-8-K-LED-24
		–	3-pin	0.3	150 857	SME-8-S-LED-24
NC contact						
	Via accessories	3-wire	–	7.5	525 906	SME-8F-DO-24V-K7,5-OE

Ordering data – Mounting kit for proximity sensors SME/SMT-8 — Technical data➔ www.festo.com

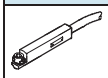
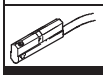
Designation	For ∅	Part No.	Type
Mounting kit SMBR-8			
	8	175 091	SMBR-8-8
	10	175 092	SMBR-8-10
	12	175 093	SMBR-8-12
	16	175 094	SMBR-8-16
	20	175 095	SMBR-8-20
	25	175 096	SMBR-8-25

Core Range

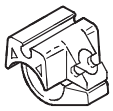
Ordering data – Proximity sensor for slot type 10, magneto-resistive — Technical data ➔ www.festo.com

	Mounting	Switch output	Electrical connection		Cable length	Connection direction	Part No.	Type
			Cable	M8 plug	[m]			
NO contact								
	Via accessories	PNP	3-wire	–	2.5	In-line	525 915	SMT-10F-PS-24V-K2,5L-OE
			–	3-pin	0.3	In-line	525 916	SMT-10F-PS-24V-K0,3L-M8D
						Lateral	526 675	SMT-10F-PS-24V-K0,3Q-M8D
	Via accessories	PNP	–	3-pin	0.3	In-line	173 220	SMT-10-PS-SL-LED-24
			3-wire	–	2.5		173 218	SMT-10-PS-KL-LED-24

Ordering data – Proximity sensor for slot type 10, magnetic reed — Technical data ➔ www.festo.com

	Mounting	Electrical connection		Cable length	Connection direction	Part No.	Type
		Cable	M8 plug	[m]			
NO contact							
	Via accessories	–	3-pin	0.3	In-line	525 914	SME-10F-DS-24V-K0,3L-M8D
		3-wire	–	2.5	In-line	525 913	SME-10F-DS-24V-K2,5L-OE
		2-wire				526 672	SME-10F-ZS-24V-K2,5L-OE
	Via accessories	3-wire	–	0.3	In-line	173 212	SME-10-SL-LED-24
		–	3-pin	2.5		173 210	SME-10-KL-LED-24

Ordering data – Mounting kit for proximity sensors SME/SMT-10 — Technical data➔ www.festo.com

Designation	For ∅	Part No.	Type
Mounting kit SMBR-10			
	8	175 101	SMBR-10-8
	10	173 227	SMBR-10-10
	12	175 102	SMBR-10-12
	16	173 228	SMBR-10-16
	20	175 103	SMBR-10-20
	25	175 104	SMBR-10-25

Ordering data – Plug sockets — Technical data ➔ www.festo.com

	Mounting	Switch output		Connection	Cable length	Part No.	Type
		PNP	NPN		[m]		
Straight plug socket							
	Union nut M8	■	■	3-pin	2.5	159 420	SIM-M8-3GD-2,5-PU
					5	159 421	SIM-M8-3GD-5-PU
	Union nut M12	■	■	3-pin	2.5	159 428	SIM-M12-3GD-2,5-PU
					5	159 429	SIM-M12-3GD-5-PU
Angled plug socket							
	Union nut M8	■	■	3-pin	2.5	159 422	SIM-M8-3WD-2,5-PU
					5	159 423	SIM-M8-3WD-5-PU
	Union nut M12	■	■	3-pin	2.5	159 430	SIM-M12-3WD-2,5-PU
					5	159 431	SIM-M12-3WD-5-PU

Core Range

Ordering data – One-way flow control valves — Technical data ➔ www.festo.com

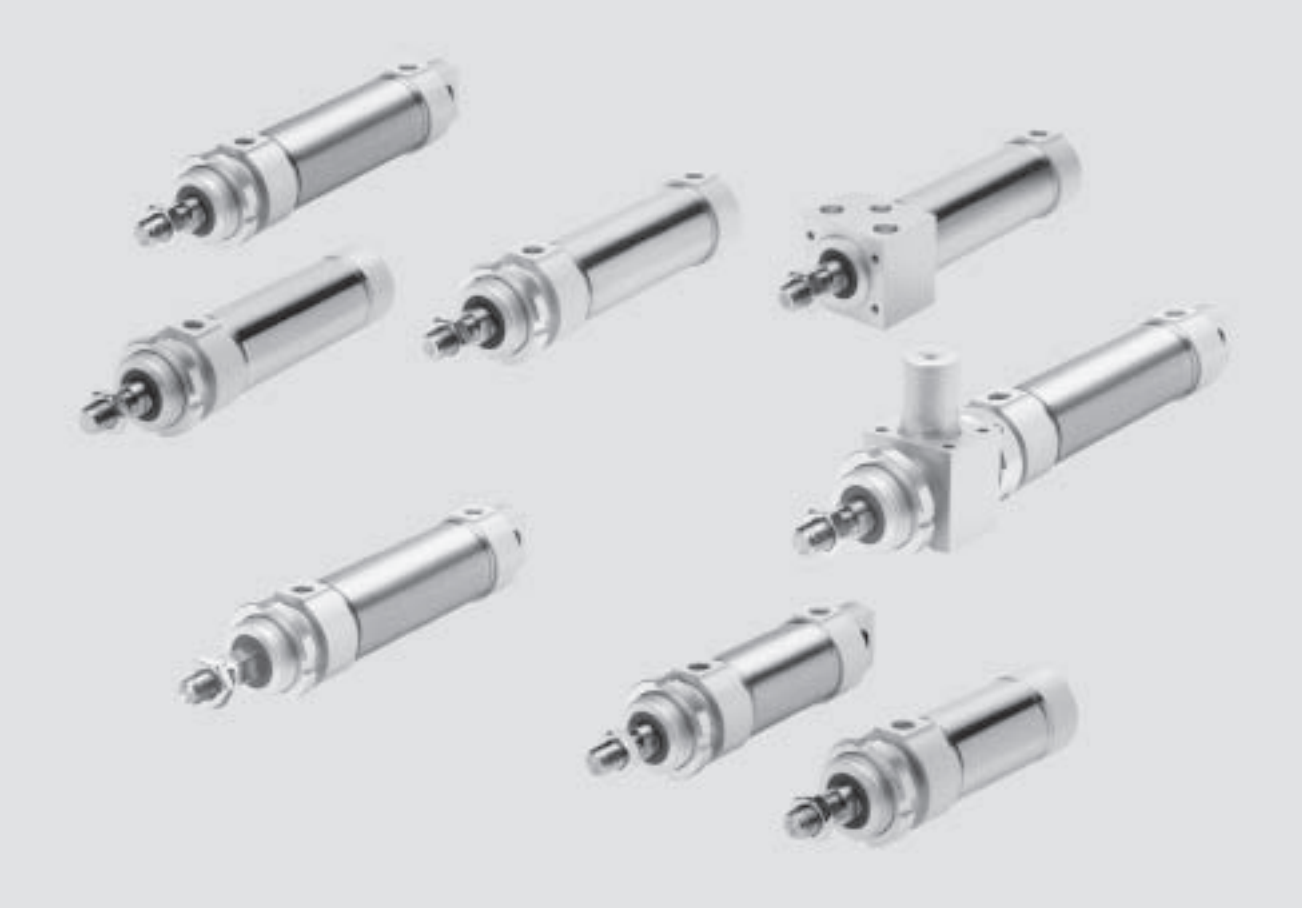
	Connection		Material	Part No.	Type
	Thread	For tubing O.D.			
For exhaust air					
	M5	3	Metal design	193 137	GRLA-M5-QS-3-D
		4		193 138	GRLA-M5-QS-4-D
		6		193 139	GRLA-M5-QS-6-D
	G1/8	3		193 142	GRLA-1/8-QS-3-D
		4		193 143	GRLA-1/8-QS-4-D
		6		193 144	GRLA-1/8-QS-6-D
		8		193 145	GRLA-1/8-QS-8-D
For supply air					
	M5	3	Metal design	193 153	GRLZ-M5-QS-3-D
		4		193 154	GRLZ-M5-QS-4-D
		6		193 155	GRLZ-M5-QS-6-D
	G1/8	3		193 156	GRLZ-1/8-QS-3-D
		4		193 157	GRLZ-1/8-QS-4-D
		6		193 158	GRLZ-1/8-QS-6-D
		8		193 159	GRLZ-1/8-QS-8-D

Ordering data – One-way flow control valves, corrosion-resistant — Technical data ➔ www.festo.com

	Connection		Material	Part No.	Type
	Thread	For push-in fitting			
For exhaust air					
	M5	CRQS/CRQSL/CRQST	Electrolytically polished stainless steel casting	161 403	CRGRLA-M5-B
	G1/8			161 404	CRGRLA-1/8-B

Round cylinders DSNU/ESNU

Key features



Optimal range

- Good running performance and long service life thanks to smooth, hard cylinder bore
- Piston rod and cylinder barrel made of stainless steel
- The cap is swaged onto the barrel

Functional

- Three different end caps mean numerous functional and space-saving designs
- Piston diameter 32 to 63 mm. The series is not repairable

Variants

- Non-rotating
- Through piston rod
- With or without position sensing
- Flexible cushioning rings/plates at both ends or pneumatic cushioning adjustable at both ends
- Further piston rod variants

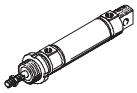
Round cylinders DSNU/ESNU

Key features

Standard range

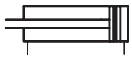
Double-acting

Basic version
DSNU



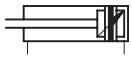
With position sensing
Flexible cushioning rings/plates at both ends

DSNU-P-A



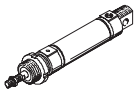
With position sensing
Pneumatic cushioning adjustable at both ends

DSNU-PPV-A



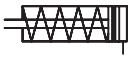
Single-acting

Basic version
ESNU



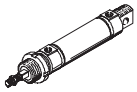
With position sensing
Flexible cushioning rings/plates at both ends

ESNU-P-A



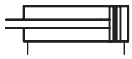
Double-acting
Non-rotating

Basic version
DSNU-Q



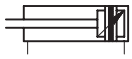
With position sensing
Flexible cushioning rings/plates at both ends

DSNU-P-A-Q



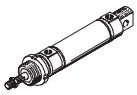
With position sensing
Pneumatic cushioning adjustable at both ends

DSNU-PPV-A-Q



Variants from the modular system

Basic version
DSNU/ESNU

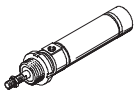


S2: Through piston rod

K8: Piston rod extended

Axial air connection

DSNU-MA/ESNU-MA

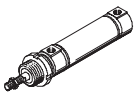


K2: Extended male piston rod thread

S6: Heat-resistant seal up to max. 150 °C

Lateral air connection

DSNU-MQ

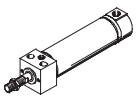


K6: Shortened male piston rod thread

S10: Slow speed (constant motion)

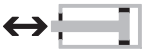
With direct mounting

DSNU-MH



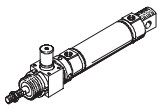
K3: Female piston rod thread

S11: Low friction



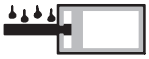
With clamping unit

DSNU-...-KP



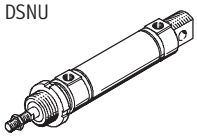
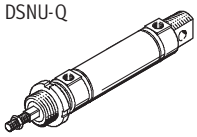
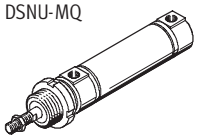
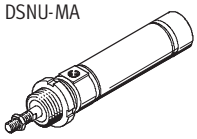
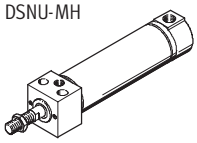
K5: Special thread on piston rod

R3: High corrosion protection



Round cylinders DSNU

Product range overview

Function	Design	Piston ∅ [mm]	Stroke [mm]	Variable stroke[1] [mm]	Piston rod					
					Through S2	Extended K8	Male thread			Female thread K3
							Extended K2	Shortened K6	Special thread K5	
Double-acting	**Basic version with position sensing**									
	DSNU 	32, 40, 50, 63	25, 40, 50, 80, 100, 125, 160, 200, 250, 320	1 ... 500	■	■	■	■	■	■
	Non-rotating									
	DSNU-Q 	32	–	5 ... 300	■	■	■	■	■	■
		40, 50	–	5 ... 400						
		63	–	5 ... 500						
	Lateral air connection									
	DSNU-MQ 	32, 40, 50, 63	–	1 ... 500	–	■	■	■	■	■
	Axial air connection									
	DSNU-MA 	32, 40, 50, 63	–	1 ... 500	–	■	■	■	■	■
	Direct mounting									
	DSNU-MH 	32, 40, 50, 63	–	1 ... 500	–	■	■	■	■	■

1) Cylinders with position sensing require a minimum stroke of 10 mm to ensure reliable sensing

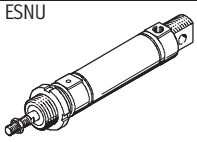
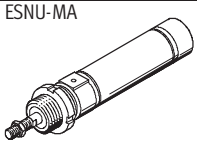
Round cylinders DSNU

Product range overview

Design	Cushioning		Position sensing	Clamping unit	Heat-resistant seal	Slow speed (constant motion)	Low friction	Corrosion protection	Wiper seal	➔Page
	Fixed	Adjustable								
	P	PPV	A	KP	S6	S10	S11	R3	R8	
Basic version with position sensing										
DSNU	■	■	■	■	■	■	■	■	■	67
Non-rotating										
DSNU-Q	■	■	■	■	■	■	■	■	–	73
Lateral air connection										
DSNU-MQ	■	■	■	■	■	–	–	■	■	67
Axial air connection										
DSNU-MA	■	–	■	■	■	–	–	■	–	67
Direct mounting										
DSNU-MH	■	■	■	–	■	–	–	■	–	67

Round cylinders ESNU

Product range overview

Function	Design	Piston ∅ [mm]	Stroke[1] [mm]	Variable stroke [mm]	Cushioning Fixed P	Position sensing A
Single-acting	**Basic version with position sensing**					
	ESNU 	32, 40, 50, 63	10, 25, 50	1 ... 50	■	■
	Axial air connection					
	ESNU-MA 	32, 40, 50, 63	–	1 ... 50	■	■

1) Cylinders with position sensing require a minimum stroke of 10 mm to ensure reliable sensing

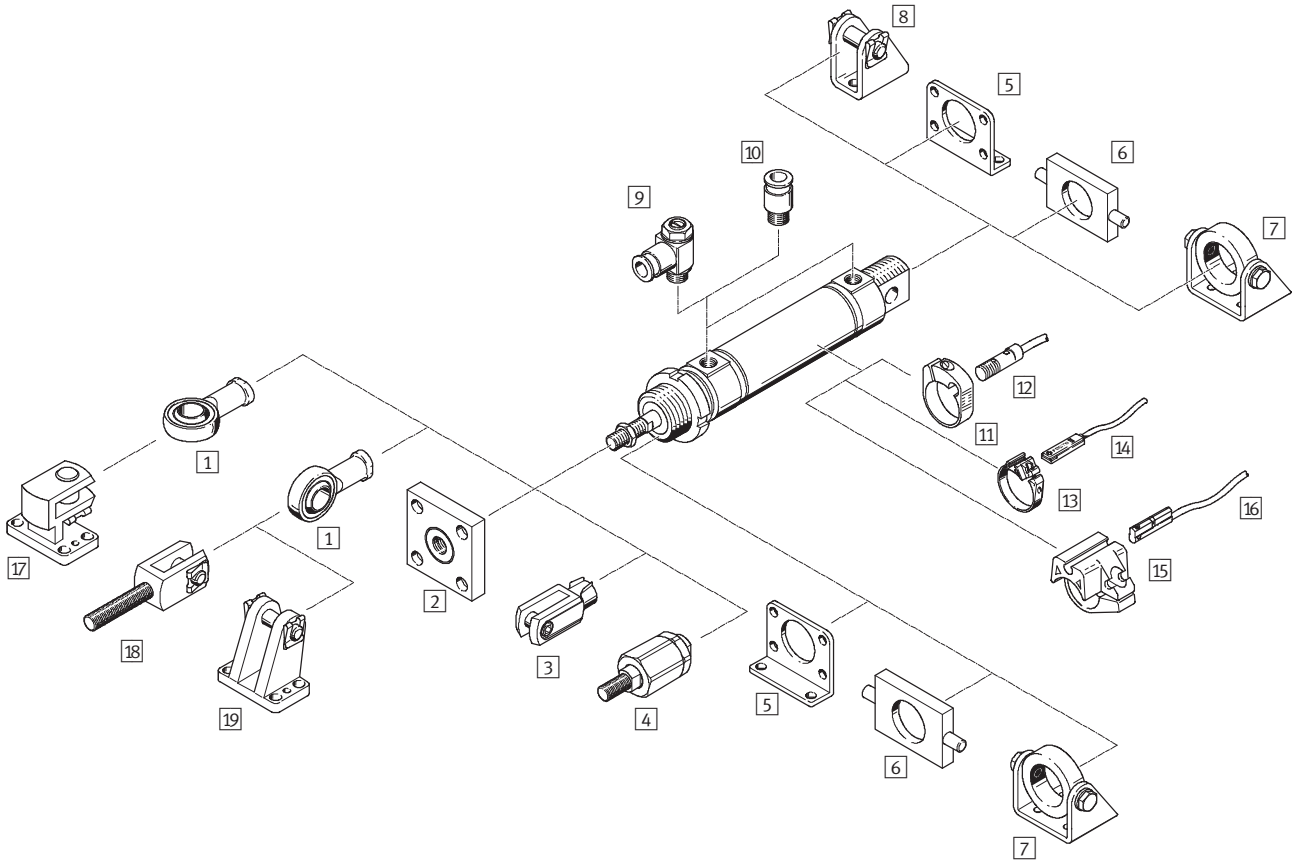
Round cylinders ESNU

Product range overview

Design	Piston rod					→ Page
	Extended	Male thread			Female thread	
		Extended	Shortened	Special thread		
	K8	K2	K6	K5	K3	
Basic version with position sensing						
ESNU	■	■	■	■	■	84
Axial air connection						
ESNU-MA	■	■	■	■	■	84

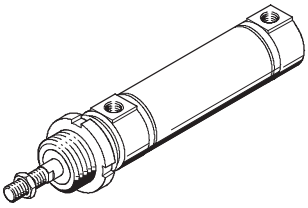
Round cylinders DSNU/ESNU

Peripherals overview

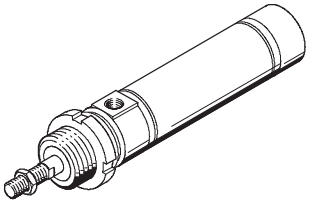


Variants

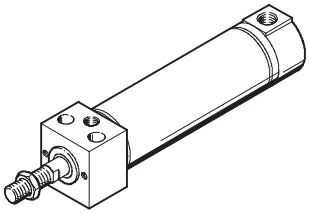
DSNU-MQ



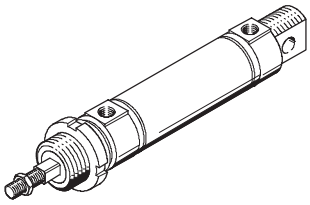
DSNU-MA



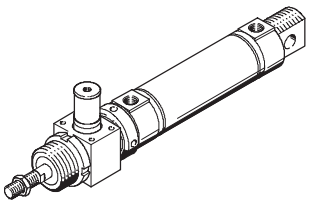
DSNU-MH



DSNU-Q



DSNU-KP



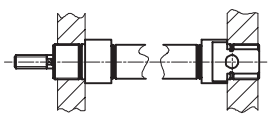
Round cylinders DSNU/ESNU

Peripherals overview

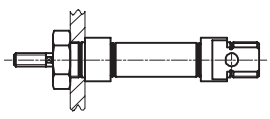
Mounting attachments and accessories		DSNU/ESNU	DSNU/ESNU MA	DSNU MQ	DSNU MH	DSNU KP	DSNU-Q	→Page
1	Rod eye SGS/CRSGS	■	■	■	■	■	■	94
2	Coupling piece KSG/KSZ	■	■	■	■	■	■	94
3	Rod clevis SG/CRSG	■	■	■	■	■	■	94
4	Self-aligning rod coupler FK	■	■	■	■	■	■	94
5	Foot mounting HBN/CRH	■	■	■	–	■	■	90
	Flange mounting FBN/CRFV	■	■	■	–	■	■	91
6	Swivel mounting WBN	■	■	■	–	■	■	92
7	Swivel mounting SBN	■	■	■	–	■	■	92
8	Clevis foot LBN/CRLBN	■	–	–	–	■	■	93
9	One-way flow control valve GRLA/GRLZ/CRGRLA	■	■	■	■	■	■	94
10	Push-in fitting QS	■	■	■	■	■	■	www.festo.com
11	Sensor mounting kit CRSMBR	■	■	■	■	■	■	95
12	Proximity sensor SMEO/SMTO/CRSMEO-4	■	■	■	■	■	■	95
13	Sensor mounting kit SMBR-8	■	■	■	■	■	■	96
14	Proximity sensor SME/SMT-8	■	■	■	■	■	■	96
15	Sensor mounting kit SMBR-10	■	■	■	■	■	■	97
16	Proximity sensor SME/SMT-10	■	■	■	■	■	■	97
17	Clevis foot, lateral LQG	■	■	■	■	■	■	93
18	Rod clevis SGA	■	■	■	■	■	■	94
19	Clevis foot LBG	■	■	■	■	■	■	93

Mounting options

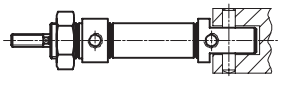
Mounting front and rear



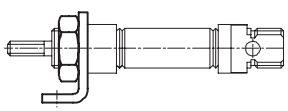
Mounting with hex nut



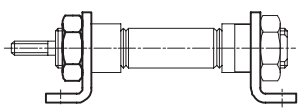
Swivel mounting



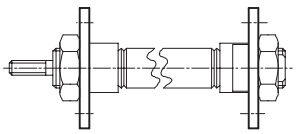
Foot mounting (for short strokes)



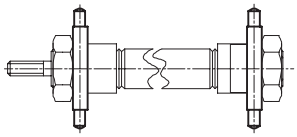
Foot mounting



Flange mounting

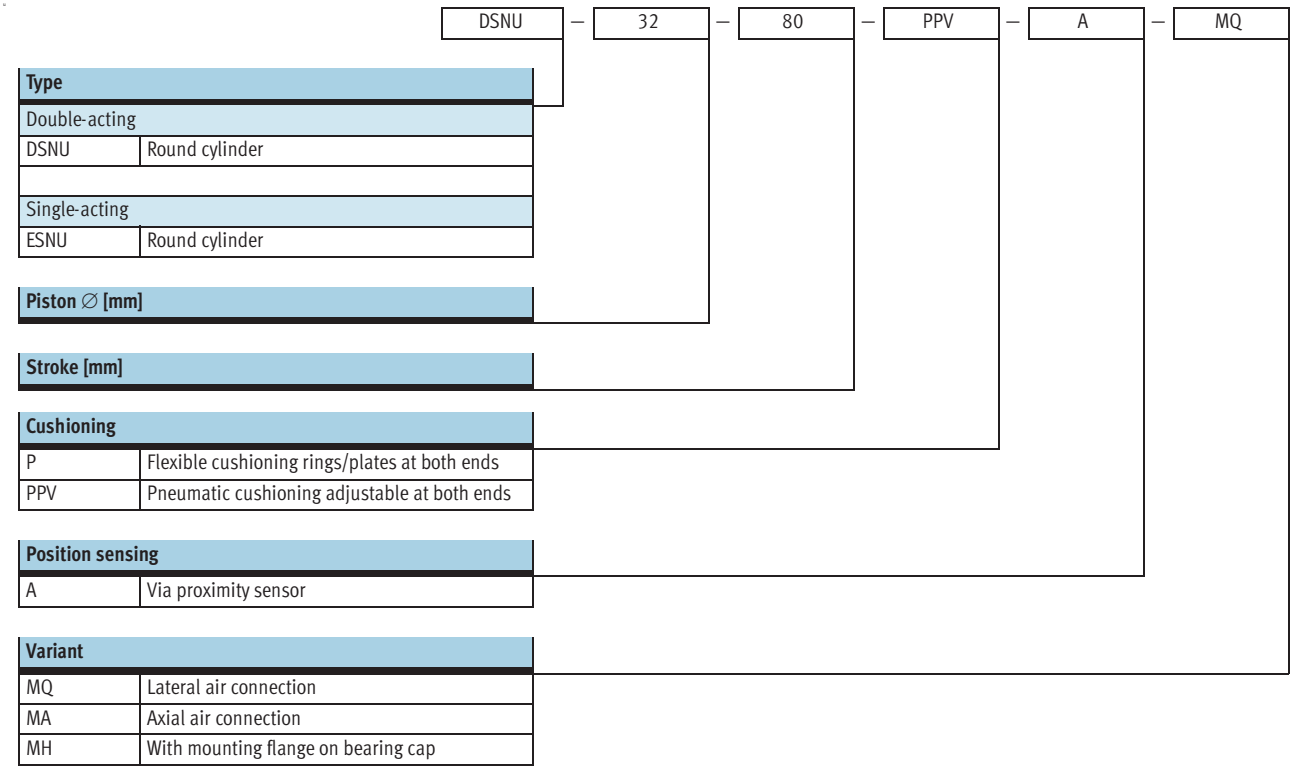


Swivel mounting



Round cylinders DSNU/ESNU

Type codes



Type	
Double-acting	
DSNU	Round cylinder
Single-acting	
ESNU	Round cylinder

Piston ∅ [mm]

Stroke [mm]

Cushioning	
P	Flexible cushioning rings/plates at both ends
PPV	Pneumatic cushioning adjustable at both ends

Position sensing	
A	Via proximity sensor

Variant	
MQ	Lateral air connection
MA	Axial air connection
MH	With mounting flange on bearing cap

Modular product system

Individually configurable

DSNU ➔ 80

ESNU ➔ 88

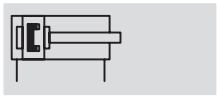
- Square piston rod (protection against rotation)
- Through piston rod (piston rod type)
- Extended male piston rod thread
- Male piston rod thread, shortened at one end
- Female piston rod thread (female thread)
- Special piston rod thread (special thread)
- Extended piston rod
- Clamping unit on piston rod
- Heat-resistant seals for temperatures up to 150 °C (temperature resistance)
- Slow speed (constant motion at low piston rod speeds)
- Low friction
- All external cylinder surfaces conform to corrosion resistance class CRC 3 (corrosion protection)
- Dust protection (wiper seal)

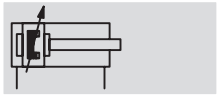
Round cylinders DSNU

Technical data

FESTO

Function





- ∅ - Diameter
  32 ... 63 mm

- | - Stroke length
  1 ... 500 mm

Variants

➔ 71

Basic version | Lateral air connection MQ

Axial air connection MA | With direct mounting block MH

General technical data					
Piston ∅		32	40	50	63
Pneumatic connection		G⅛	G¼	G¼	G⅜
Piston rod thread		M10x1.25	M12x1.25	M16x1.5	M16x1.5
Constructional design		Piston			
		Piston rod			
		Cylinder barrel			
Cushioning		Flexible cushioning rings/plates at both ends			
		Pneumatic cushioning adjustable at both ends			
Cushioning length (PPV)	[mm]	14	18	20	21
Position sensing		Via proximity sensor			
Type of mounting		Direct mounting (MH variant only)			
		Via accessories			
Assembly position		Any			

Operating conditions					
Piston ∅		32	40	50	63
Operating medium		Filtered compressed air, lubricated or unlubricated			
Operating pressure	Basic version	1 ... 10			
	S10	0.5 ... 10		0.4 ... 10	
	S11	0.2 ... 10	–	0.2 ... 10	

Ambient conditions						
Round cylinder		Basic version	S6	S10	S11	R3
Ambient temperature[1]	[°C]	–20 ... +80	0 ... +150	+5 ... +80		–20 ... +80
Corrosion resistance class CRC[2]		2	2	2	2	3

1) Note operating range of proximity sensors

2) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents
Corrosion resistance class 3 according to Festo standard 940 070
Components requiring higher corrosion resistance. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface

Round cylinders DSNU

Technical data

Forces [N] and impact energy [J]				
Piston ∅	32	40	50	63
Theoretical force at 6 bar, advancing	483	753	1,178	1,870
Theoretical force at 6 bar, retracting	415	633	990	1,682
Impact energy at the end positions	0.40	0.70	1	1.3

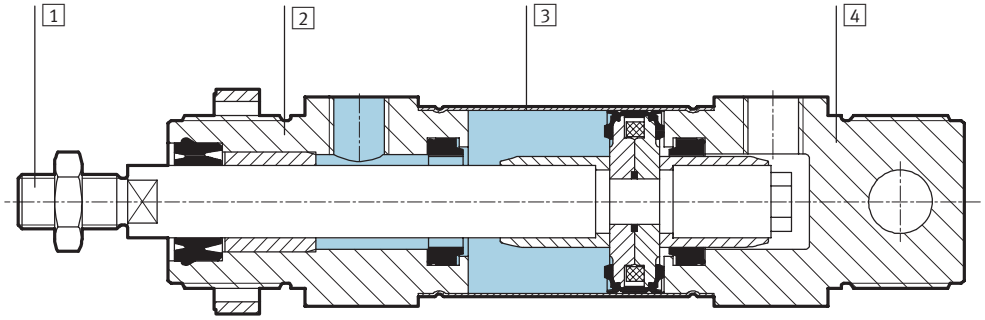
Speed [mm/s]				
Piston ∅	32	40	50	63
Speed with judder-free running, S10 horizontal, without load, at 6 bar	8 ... 100			5 ... 100
Minimum speed, advancing S11	<1 [1]			
Minimum speed, retracting S11	<1 [1]			

1) Measurements of less than 1 mm/s were not conducted.

Weights [g]				
Piston ∅	32	40	50	63
Product weight with 0 mm stroke	370.5	661	1,087	1,445
Additional weight per 10 mm stroke	15.5	24	40	44

Materials

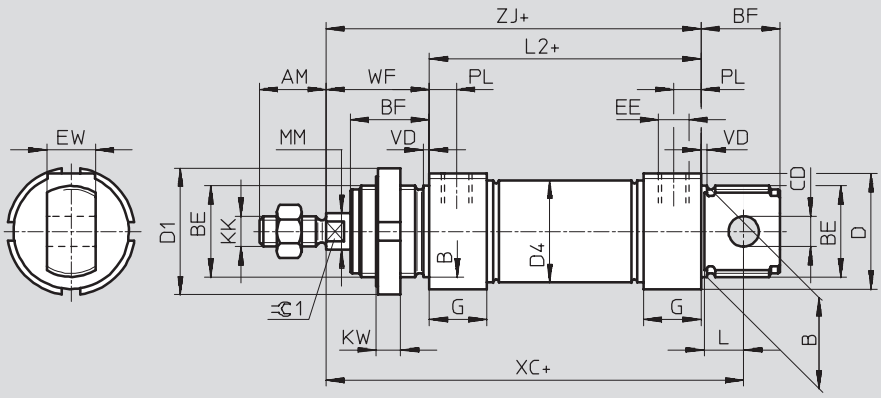
Sectional view



Round cylinder	Basic version	S6	S10	S11	R3
1 Piston rod	High-alloy steel				High-alloy stainless steel
2 Bearing cap	Wrought aluminium alloy				
3 Cylinder barrel	High-alloy stainless steel				
4 End cap	Wrought aluminium alloy				
– Seals	Polyurethane, nitrile rubber	Fluoro rubber			Polyurethane, nitrile rubber

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Basic version



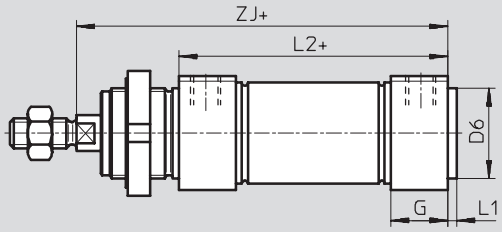
\+ = plus stroke length

∅ [mm]	AM	B ∅ h9	BE	BF	CD ∅ E10	D ∅	D1 ∅	D4 ∅	EE	EW	G
32	22	30	M30x1.5	26	10	38	42	33.6	G1⁄8	16	19
40	24	38	M38x1.5	30	12	46	50	41.6	G1⁄4	18	25
50	32	45	M45x1.5	33	16	57	60	52.4		21	
63						70		65.4	G3⁄8		28

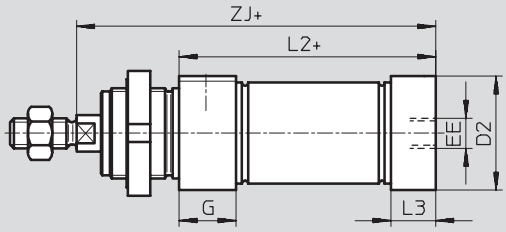
∅ [mm]	KK	KW	L	L2	MM ∅	PL	VD	WF	XC ±1	ZJ	⫧1
32	M10x1.25	8	13	69.5	12	9	2	34	117.5	103.5	10
40	M12x1.25	10	15	84.6	16	12	3	39	139.6	123.6	13
50	M16x1.5		16	86.2	20			44	147.2	130.2	17
63				94.2		13		45	156.2	139.2	

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

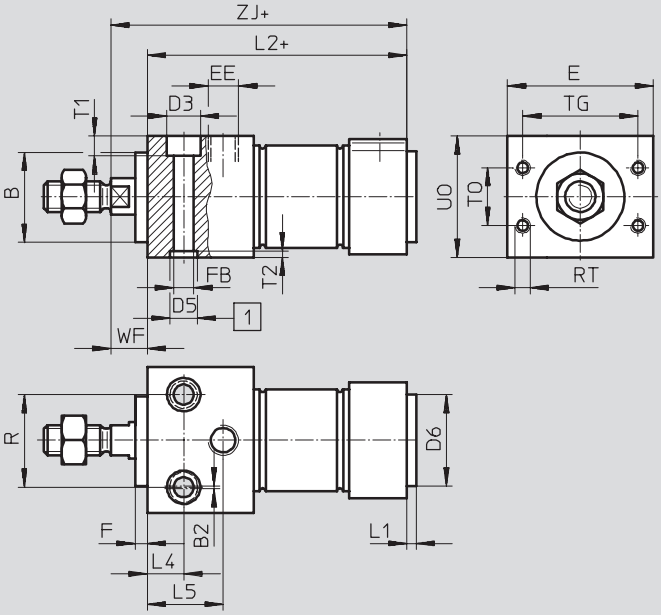
MQ – Lateral air connection



MA – Axial air connection



MH – With direct mounting block



1 Centring holes (2 centring sleeves included in scope of delivery)

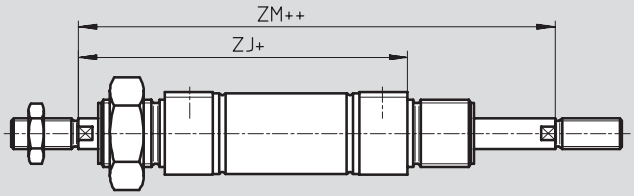
\+ = plus stroke length

∅ [mm]	B ∅ h9	B2	E	EE	G	F	FB ∅	D2 ∅	D3	D5 ∅	D6 ∅	L1	L2 -MQ	L2 -MA	L2 -MH
32	30	1	48	G⅛	19	4	6.6	34	11	9	30	3	69.5	65.5	85.5
40	38		54	G¼	25		9	42	14	12	38	4	84.6	77.6	104.6
50	45		64					53			45		86.2	86.2	109.2
63		2	72	G⅜	28		11	66	18	15			94.2	94.2	117.2

∅ [mm]	L3	L4	L5	R	RT	TO	T1	T2	TG	UO	WF	ZJ -MQ	ZJ -MA	ZJ -MH
32	15	12	25	30	M5	16	6.6	2.1	38	40	12	103.5	99.5	97.5
40	18	15	32	38		24	9	2.6	42	48		123.6	116.5	116.6
50	25		35	42	M6	32			50	58	15	130.2	130.2	124.2
63	28		36	44	M8	36	11	3.1	52	72		139.2	139.2	132.2

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

S2 – Through piston rod

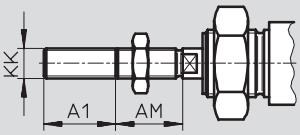


Note

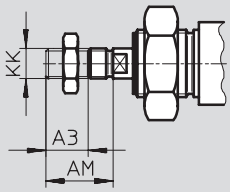
The thread designs on both piston rod ends are identical. In combination with variant Q, the left-hand piston rod end is square, the right-hand piston rod end round.

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

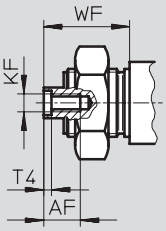
K2 – Extended male piston rod thread



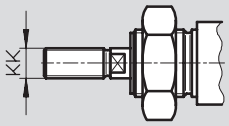
K6 – Shortened male piston rod thread



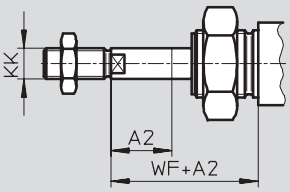
K3 – Female piston rod thread



K5 – Special piston rod thread



K8 – Extended piston rod



Note

If variant K8 is required in combination with S2, the piston rod will only be extended on one side.

∅ [mm]	A1 max.	A2 max.	A3 max.	AF	AM	KF	KK		T4	WF	ZJ			ZM
							Basic thread	Special thread[1)]			-MQ	-MA	-MH	
32	35	500	8	12	22	M6	M10x1.25	M10	2.6	34	103.5	99.5	97.5	137.5
40					24	M8	M12x1.25	M12	3.3	39	123.6	111.6	116.6	162.6
50	70		10	16	32	M10	M16x1.5	M16	4.7	44	130.2	130.2	124.2	174.2
63										45	139.2	139.2	132.2	184.2

1) The special threads are only available as male threads. The scope of delivery does not include a hex nut for the piston rod thread

Round cylinders DSNU

Technical data

FESTO

Ordering data							
Type	Piston ∅ [mm]	Stroke [mm]	Flexible cushioning rings/plates at both ends			Pneumatic cushioning adjustable at both ends	
			Part No.	Type		Part No.	Type
	32	25	195 980	DSNU-32-25-P-A		196 020	DSNU-32-25-PPV-A
		40	195 981	DSNU-32-40-P-A		196 021	DSNU-32-40-PPV-A
		50	195 982	DSNU-32-50-P-A		196 022	DSNU-32-50-PPV-A
		80	195 983	DSNU-32-80-P-A		196 023	DSNU-32-80-PPV-A
		100	195 984	DSNU-32-100-P-A		196 024	DSNU-32-100-PPV-A
		125	195 985	DSNU-32-125-P-A		196 025	DSNU-32-125-PPV-A
		160	195 986	DSNU-32-160-P-A		196 026	DSNU-32-160-PPV-A
		200	195 987	DSNU-32-200-P-A		196 027	DSNU-32-200-PPV-A
		250	195 988	DSNU-32-250-P-A		196 028	DSNU-32-250-PPV-A
		320	195 989	DSNU-32-320-P-A		196 029	DSNU-32-320-PPV-A
	40	25	195 990	DSNU-40-25-P-A		196 030	DSNU-40-25-PPV-A
		40	195 991	DSNU-40-40-P-A		196 031	DSNU-40-40-PPV-A
		50	195 992	DSNU-40-50-P-A		196 032	DSNU-40-50-PPV-A
		80	195 993	DSNU-40-80-P-A		196 033	DSNU-40-80-PPV-A
		100	195 994	DSNU-40-100-P-A		196 034	DSNU-40-100-PPV-A
		125	195 995	DSNU-40-125-P-A		196 035	DSNU-40-125-PPV-A
		160	195 996	DSNU-40-160-P-A		196 036	DSNU-40-160-PPV-A
		200	195 997	DSNU-40-200-P-A		196 037	DSNU-40-200-PPV-A
		250	195 998	DSNU-40-250-P-A		196 038	DSNU-40-250-PPV-A
		320	195 999	DSNU-40-320-P-A		196 039	DSNU-40-320-PPV-A
	50	25	196 000	DSNU-50-25-P-A		196 040	DSNU-50-25-PPV-A
		40	196 001	DSNU-50-40-P-A		196 041	DSNU-50-40-PPV-A
		50	196 002	DSNU-50-50-P-A		196 042	DSNU-50-50-PPV-A
		80	196 003	DSNU-50-80-P-A		196 043	DSNU-50-80-PPV-A
		100	196 004	DSNU-50-100-P-A		196 044	DSNU-50-100-PPV-A
		125	196 005	DSNU-50-125-P-A		196 045	DSNU-50-125-PPV-A
		160	196 006	DSNU-50-160-P-A		196 046	DSNU-50-160-PPV-A
		200	196 007	DSNU-50-200-P-A		196 047	DSNU-50-200-PPV-A
		250	196 008	DSNU-50-250-P-A		196 048	DSNU-50-250-PPV-A
		320	196 009	DSNU-50-320-P-A		196 049	DSNU-50-320-PPV-A
	63	25	196 010	DSNU-63-25-P-A		196 050	DSNU-63-25-PPV-A
		40	196 011	DSNU-63-40-P-A		196 051	DSNU-63-40-PPV-A
		50	196 012	DSNU-63-50-P-A		196 052	DSNU-63-50-PPV-A
		80	196 013	DSNU-63-80-P-A		196 053	DSNU-63-80-PPV-A
		100	196 014	DSNU-63-100-P-A		196 054	DSNU-63-100-PPV-A
		125	196 015	DSNU-63-125-P-A		196 055	DSNU-63-125-PPV-A
		160	196 016	DSNU-63-160-P-A		196 056	DSNU-63-160-PPV-A
		200	196 017	DSNU-63-200-P-A		196 057	DSNU-63-200-PPV-A
		250	196 018	DSNU-63-250-P-A		196 058	DSNU-63-250-PPV-A
		320	196 019	DSNU-63-320-P-A		196 059	DSNU-63-320-PPV-A

- Note

Further variants can be configured and ordered via the DSNU product modules➔ 80.

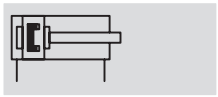
Core Range

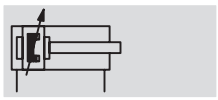
Round cylinders DSNU-Q, non-rotating

Technical data

FESTO

Function





- Ø - Diameter
  32 ... 63 mm

- | - Stroke length
  5 ... 500 mm

General technical data					
Piston ∅		32	40	50	63
Pneumatic connection		G⅛	G¼	G¼	G⅜
Piston rod thread		M10x1.25	M12x1.25	M16x1.5	M16x1.5
Constructional design		Piston			
		Non-rotating with square piston rod			
Max. torque at the piston rod	[Nm]	0.8	1.1	1.5	1.5
Cushioning		Flexible cushioning rings/plates at both ends			
		Pneumatic cushioning adjustable at both ends			
Cushioning length (PPV)	[mm]	14	18	20	21
Position sensing		Via proximity sensor			
Type of mounting		Via accessories			
Assembly position		Any			

Operating conditions					
Piston ∅		32	40	50	63
Operating medium		Filtered compressed air, lubricated or unlubricated			
Operating pressure	[bar]	1 ... 10			

Ambient conditions			
Round cylinder		Basic version	R3
Ambient temperature[1]	[°C]	–20 ... +80	
Corrosion resistance class CRC[2]		2	3

1) Note operating range of proximity sensors

2) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents
Corrosion resistance class 3 according to Festo standard 940 070
Components requiring higher corrosion resistance. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface

Round cylinders DSNU-Q, non-rotating

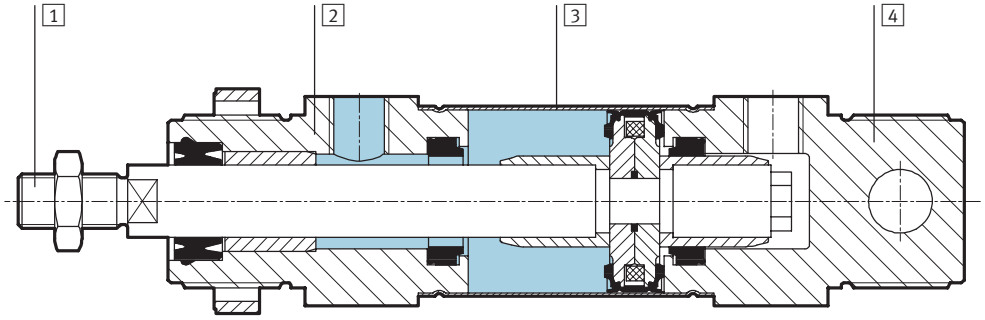
Technical data

Forces [N] and impact energy [J]				
Piston ∅	32	40	50	63
Theoretical force at 6 bar, advancing	483	753	1,178	1,870
Theoretical force at 6 bar, retracting	415	633	990	1,682
Impact energy at end positions	0.40	0.70	1	1.3

Weights [g]				
Piston ∅	32	40	50	63
Product weight with 0 mm stroke	370.5	661	1,087	1,445
Additional weight per 10 mm stroke	15.5	24	40	44

Materials

Sectional view



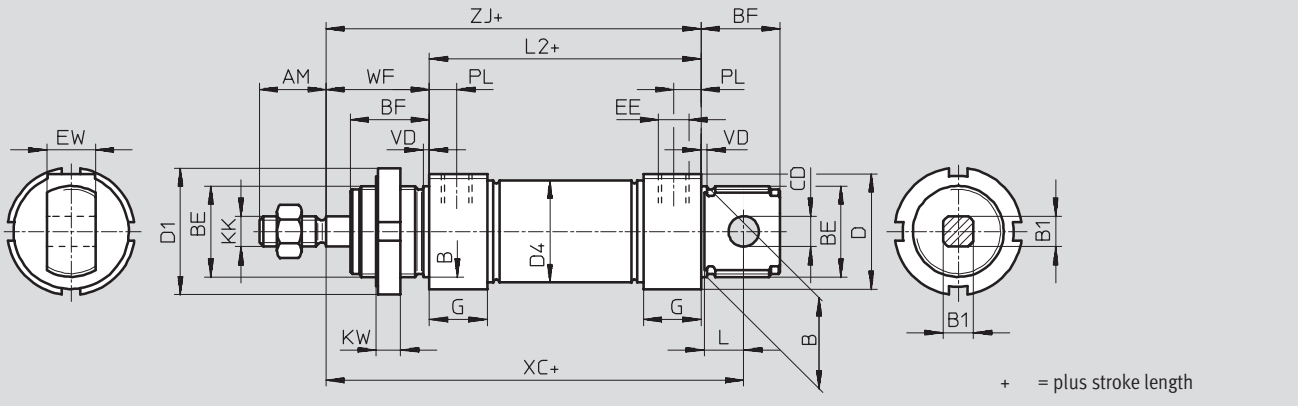
Round cylinder		Basic version	R3
1	Piston rod	High-alloy steel	High-alloy stainless steel
2	Bearing cap	Wrought aluminium alloy	
3	Cylinder barrel	High-alloy stainless steel	
4	End cap	Wrought aluminium alloy	
–	Seals	Polyurethane, nitrile rubber	

Round cylinders DSNU-Q, non-rotating

Technical data

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Basic version



∅ [mm]	AM	B ∅ h9	B1 □	BE	BF	CD ∅ E10	D ∅	D1 ∅	D4 ∅	EE	EW
32	22	30	10	M30x1.5	26	10	38	42	33.6	G1/8	16
40	24	38	12	M38x1.5	30	12	46	50	41.6	G1/4	18
50	32	45	16	M45x1.5	33	16	57	60	52.4	G1/4	21
63	32	45	16	M45x1.5	33	16	70	60	65.4	G3/8	21

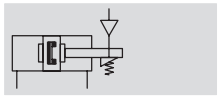
∅ [mm]	G	KK	KW	L	L2	PL	VD	WF	XC ±1	ZJ
32	19	M10x1.25	8	13	69.5	9	2	34	117.5	103.5
40	25	M12x1.25	10	15	84.6	12	3	39	139.6	123.6
50	25	M16x1.5	10	16	86.2	12	3	44	147.2	130.2
63	28	M16x1.5	10	16	94.2	13	3	45	156.2	139.2

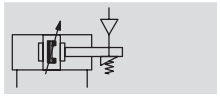
Round cylinders DSNU-KP, with clamping cartridge

Technical data

FESTO

Function





- Ø - Diameter
  32 ... 63 mm

- | - Stroke length
  1 ... 500 mm

General technical data					
Piston ∅		32	40	50	63
Pneumatic connection		G⅛	G¼	G¼	G⅜
Piston rod thread		M10x1.25	M12x1.25	M16x1.5	M16x1.5
Constructional design		Piston			
		Piston rod			
		Cylinder barrel			
Cushioning		Flexible cushioning rings/plates at both ends			
		Pneumatic cushioning adjustable at both ends			
Cushioning length (PPV)	[mm]	14	18	20	21
Position sensing		Via proximity sensor			
Type of mounting		Via through-holes			
		Via accessories			
Assembly position		Any			
Clamping unit holding force	[N]	600	1,000	1,400	2,000
Max. axial backlash at the clamped piston rod	[mm]	0.25	0.25	0.3	0.3
Clamping unit pneumatic connection		M5	G⅛	G⅛	G⅛

Operating conditions					
Piston ∅		32	40	50	63
Operating medium		Filtered compressed air, lubricated or unlubricated			
Operating pressure	[bar]	3 ... 10			

Ambient conditions			
Round cylinder		Basic version	R3
Ambient temperature[1]	[°C]	–10 ... +80	
Corrosion resistance class CRC[2]		2	3

1) Note operating range of proximity sensors

2) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents
Corrosion resistance class 3 according to Festo standard 940 070
Components requiring higher corrosion resistance. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface

Round cylinders DSNU-KP, with clamping cartridge

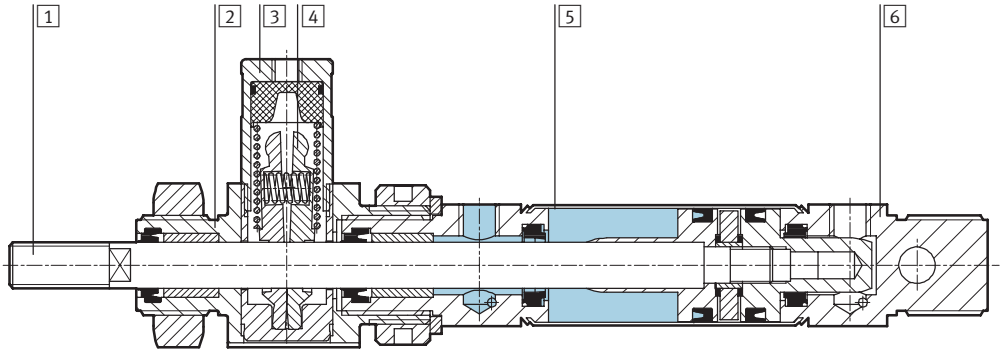
Technical data

Forces [N] and impact energy [J]				
Piston ∅	32	40	50	63
Theoretical force at 6 bar, advancing	483	753	1,178	1,870
Theoretical force at 6 bar, retracting	415	633	990	1,682
Impact energy at the end positions[1)]	0.40	0.70	1	1.3

1) The values are reduced by approx. 50% at 80 °C

Materials

Sectional view



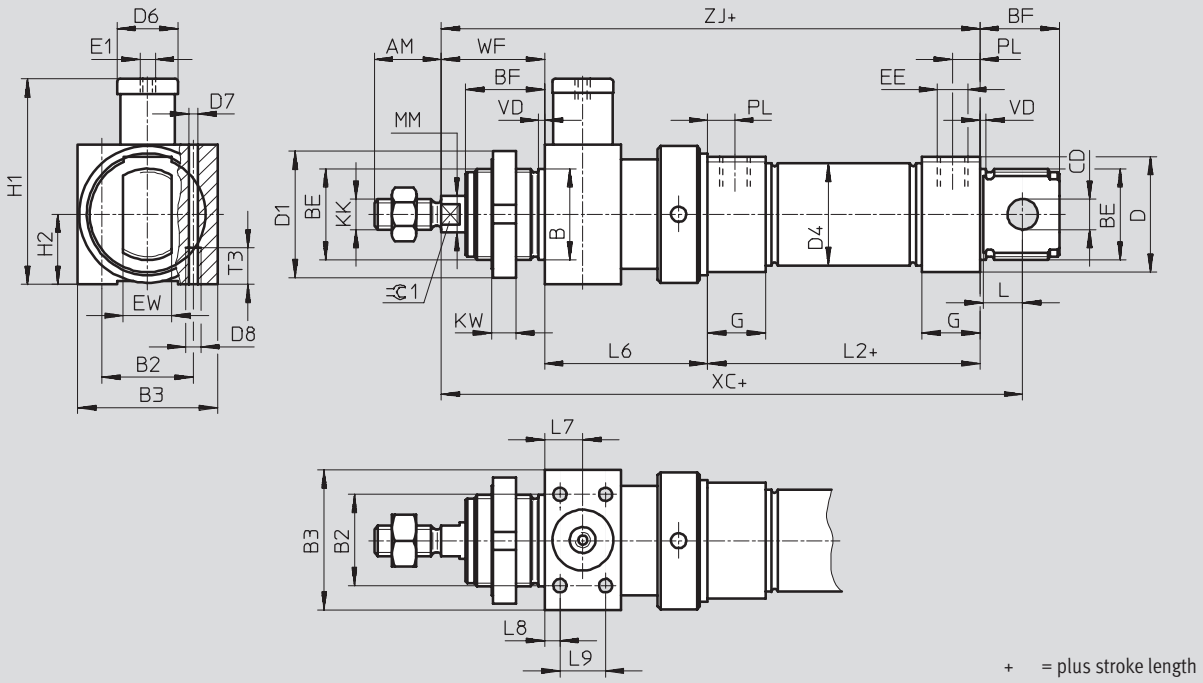
Round cylinder		Basic version	R3
1	Piston rod	High-alloy steel	High-alloy stainless steel
2	Bearing cap	Wrought aluminium alloy	
3	Clamping unit housing	Wrought aluminium alloy	
4	Clamping jaws	Brass	
5	Cylinder barrel	High-alloy stainless steel	
6	End cap	Wrought aluminium alloy	
–	Clamping unit piston	Polyacetate	
–	Spring	Spring steel	
–	Seals	Polyurethane, nitrile rubber	

Round cylinders DSNU-KP, with clamping cartridge

Technical data

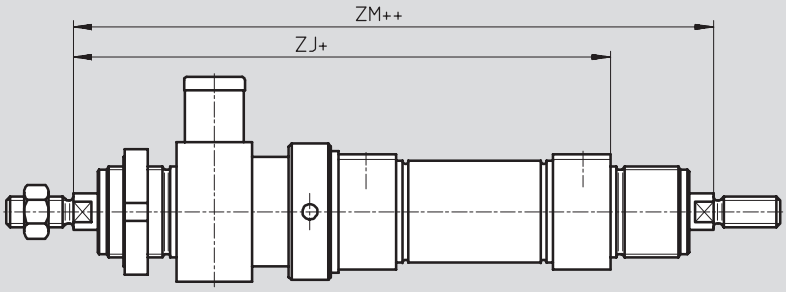
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Basic version



\+ = plus stroke length

S2 – Through piston rod



- - Note

The thread designs on both piston rod ends are identical. The clamping cartridge is mounted on only one side.

In combination with variant Q, the front piston rod is square, the rear piston rod round. The clamping cartridge is mounted on the rear, round piston rod.

\+ = plus stroke length

++ = plus stroke length

Round cylinders DSNU-KP, with clamping cartridge

Technical data

∅ [mm]	AM	B ∅ h9	B2	B3	BE	BF	CD ∅ E10	D ∅	D1 ∅	D4 ∅	D6	D7
32	22	30	30	46	M30x1.5	26	10	38	42	33.6	20	4.4
40	24	38	36	56	M38x1.5	30	12	46	50	41.6	24	6.8
50	32	45	50	65	M45x1.5	33	16	57	60	52.4	30	8.5
63			54	72	M45x1.5			70		65.4	38	

∅ [mm]	D8	E1	EE	EW	G	H1	H2	KK	KW	MM ∅	L	L2
32	M5	M5	G1/8	16	19	67.5	23	M10x1.25	8	12	13	69.5
40	M8	G1/8	G1/4	18	25	89	28	M12x1.25	10	16	15	84.6
50	M10	G1/8		21		107.5	32.5	M16x1.5		20	16	86.2
63		G1/8	G3/8		28	121.5	36					94.2

∅ [mm]	L6 ±0.75	L7	L8	L9	T3	PL	VD	WF	XC ±1	ZJ	ZM	⌀1
32	55	12.5	5	15	12	9	2	34	171	157	191	10
40	69	17	7	20	18	12	3	39	207.1	191.1	230.1	13
50	78	20		26	20			44	223.7	206.7	250.7	17
63	86	24	8	32	21	13		45	240.7	223.7	268.7	

Round cylinders DSNU

Ordering data – Modular products

FESTO

M Mandatory data					O Options			
Module No.	**Function**	**Piston ∅**	**Stroke**	**Cushioning**	**Position sensing**	**Cylinder cap**	**Type of piston rod**	**Male thread extended**
193 992	DSNU	32	1 … 500	P	A	MQ	S2	…K2
193 993		40		PPV		MA		
193 994		50				MH		
193 995		63						
Ordering example								
193 994	**DSNU**	**50**	**400**	**PPV**	**A**	**MQ**		

Ordering table

Size		32	40	50	63	Conditions	Code	Enter code
M	Module No.	**193 992**	**193 993**	**193 994**	**193 995**			
	Function	Double-acting round cylinder					**DSNU**	DSNU
	Piston ∅ [mm]	32	40	50	63		**-...**	
	Stroke [mm]	1 … 500					**-...**	
	Cushioning	Flexible cushioning rings/plates at both ends					**-P**	
		Pneumatic cushioning adjustable at both ends				1	**-PPV**	
O	Position sensing	Via proximity sensors				2	**-A**	
	Cylinder cap	Lateral air connection, end cap				3	**-MQ**	
		Axial air connection, end cap				4	**-MA**	
		Mounting flange at front (direct mounting), bearing cap				5	**-MH**	
	Type of piston rod	Through piston rod				6	**-S2**	
	Male thread extended	Piston rod with extended male thread						
↓	[mm]	1 … 35		1 … 70		7	**-...K2**	

1	**PPV**	Not with MA	5	**MH**	Not with combination S6-R3
2	**A**	Minimum stroke: 10 mm			Not with KP, S10, S11, R8
3	**MQ**	Not with S2, S10, S11	6	**S2**	Not with MQ, MA, S10, S11
4	**MA**	Not with S2, S10, S11, R8	7	**K2**	Not with K3, K6

Transfer order code

	DSNU	–		–		–		–		–		–		–

[0] Options

	Male thread shortened	Female thread	Special thread	Piston rod extended	Clamping unit	Temperature-resistant	Constant motion	Running characteristics	Corrosion protection	Wiper seal
	...K6	K3	"..."K5	...K8	KP	S6	S10	S11	R3	R8
–	**8K6**	–	–	–	–	**S6**	–	–	**R3**	–

Ordering table

Size	32	40	50	63	Conditions	Code		Enter code
[0] Male thread shortened [mm]	Piston rod with shortened male thread 1 ... 8		1 ... 10		[8]	**-...K6**		
Female thread	Female piston rod thread (M6)	(M8)	(M10)		[9]	**-K3**		
Special thread	Special piston rod thread M10	M12	M16			**-"..."K5**		
Piston rod extended at front [mm]	Extended piston rod at front 1 ... 500					**...K8**		
Clamping unit	Clamping cartridge				[10]	**-KP**		
Temperature-resistant	Heat-resistant seals up to max. 150 °C				[11]	**-S6**		
Constant motion	Slow speed (constant motion at low piston speeds)				[12]	**-S10**		
Running characteristics	Low friction				[13]	**-S11**		
Corrosion protection	High corrosion protection				[14]	**-R3**		
Wiper seal	Metal scraper					**-R8**		

[8] **K6** Not with K3
[9] **K3** Not with K5
[10] **KP** Not with S6, S10, S11, R3, R8
[11] **S6** Not with S10, S11
[12] **S10** Not with S11, R3, R8
[13] **S11** Not with R3, R8
[14] **R3** Not with R8

Transfer order code

–		–		–		–		–		–		–		–		–	

Round cylinders DSNU-Q, non-rotating

Ordering data – Modular products

FESTO

M Mandatory data					O Options				
Module No.	**Function**	**Piston ∅**	**Stroke**	**Cushio-ning**	**Position sensing**	**Cylinder cap**	**Protection against torsion**	**Type of piston rod**	**Male thread extended**
193 992	DSNU	32	1 … 500	P	A	MQ	Q	S2	…K2
193 993		40		PPV		MA			
193 994		50				MH			
193 995		63							
Ordering example									
193 992	**DSNU**	**– 32**	**– 500**	**– P**	**– A**	**– MA**	**– Q**	**–**	**–**

Ordering table

Size		32	40	50	63	Condi-tions	Code	Enter code
M	Module No.	**193 992**	**193 993**	**193 994**	**193 995**			
	Function	Double-acting round cylinder					**DSNU**	DSNU
	Piston ∅ [mm]	32	40	50	63		**-...**	
	Stroke [mm]	1 … 500					**-...**	
	Cushioning	Flexible cushioning rings/plates at both ends					**-P**	
		Pneumatic cushioning adjustable at both ends				1	**-PPV**	
O	Position sensing	Via proximity sensors				2	**-A**	
	Cylinder cap	Lateral air connection, end cap				3	**-MQ**	
		Axial air connection, end cap				3	**-MA**	
		Mounting flange at front (direct mounting), bearing cap				4	**-MH**	
	Protection against torsion	Square piston rod Restricted stroke [mm]					**-Q**	-Q
		5 … 300	5 … 400		5 … 500			
	Type of piston rod	Through piston rod					**-S2**	
↓	Male thread extended [mm]	Piston rod with extended male thread 1 … 35		1 … 70		5	**-...K2**	

1 **PPV** Not with MA

2 **A** Minimum stroke: 10 mm

3 **MQ, MA** Not with S2

4 **MH** Not with combination Q-R3, S6-R3
Not with KP

5 **K2** Not with K3, K6

Transfer order code

	DSNU	–		–		–		–		–		–	**Q**	–		–	

Round cylinders DSNU-Q, non-rotating

Ordering data – Modular products

FESTO

→ [0] Options

Male thread shortened	Female thread	Special thread	Piston rod extended	Clamping unit	Temperature-resistant	Corrosion protection
...K6	K3	"..."K5	...K8	KP	S6	R3
–	**K3**	–	–	**KP**	–	–

Ordering table

Size	32	40	50	63	Conditions	Code	Enter code
[0] Male thread shortened [mm]	Piston rod with shortened male thread 1 ... 4		1 ... 10		[6]	**-...K6**	
Female thread	Female piston rod thread (M6)	(M8)	(M10)		[7]	**-K3**	
Special thread	Special piston rod thread M10	M12	M16			**-"..."K5**	
Piston rod extended [mm]	Extended piston rod 1 ... 500					**...K8**	
Clamping unit	Clamping cartridge				[8]	**-KP**	
Temperature-resistant	Heat-resistant seals up to max. 150 °C					**-S6**	
Corrosion protection	High corrosion protection					**-R3**	

[6] **K6** Not with K3

[7] **K3** Not with K5

[8] **KP** Only with S2
Not with S6, R3

Transfer order code

–		–		–		–		–		–		–	

Round cylinders ESNU

Technical data

FESTO

Function

- Ø - Diameter
  32 ... 63 mm

- | - Stroke length
  1 ... 50 mm

Additional variants

➔ 87

Basic version

Axial air connection MA

General technical data				
Piston ∅	32	40	50	63
Pneumatic connection	G1⁄8	G1⁄4	G1⁄4	G3⁄8
Piston rod thread	M10x1.25	M12x1.25	M16x1.5	M16x1.5
Constructional design	Piston			
	Piston rod			
	Cylinder barrel			
Cushioning	Flexible cushioning rings/plates at both ends			
Position sensing	Via proximity sensor			
Type of mounting	Via accessories			
Assembly position	Any			

Operating conditions				
Piston ∅	32	40	50	63
Operating medium	Filtered compressed air, lubricated or unlubricated			
Operating pressure [bar]	1.2 ... 10			

Ambient conditions	
Round cylinder	
Ambient temperature[1] [°C]	–20 ... +80
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 requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

Round cylinders ESNU

Technical data

Forces [N] and impact energy [J]				
Piston ∅	32	40	50	63
Theoretical force at 6 bar, advancing	442	688	1,071	1,763
Spring return force 10 mm stroke	36	60	95	95
Spring return force 25 mm stroke	30	50	82	82
Spring return force 50 mm stroke	20	30	60	60
Impact energy at the end positions[1)]	0.40	0.70	1	1.3

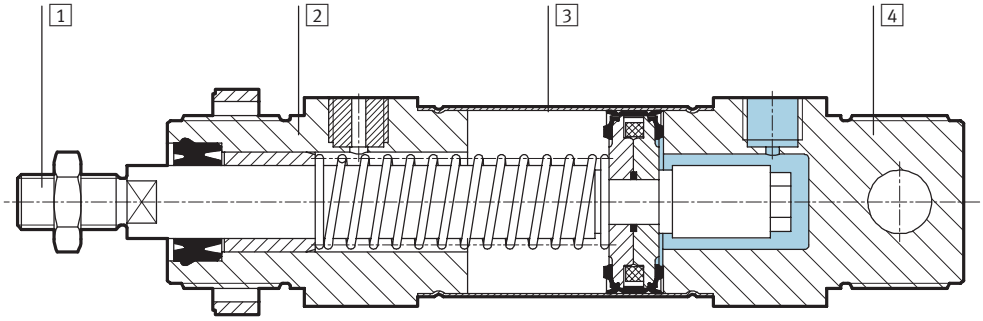
1) The values are reduced by approx. 50% at 80 °C

Weights ESNU-... [g]				
Piston ∅	32	40	50	63
Product weight with 0 mm stroke	370.5	661	1,087	1,445
Additional weight per 10 mm stroke	15.5	24	40	44

Weights ESNU-...-MA [g]				
Piston ∅	32	40	50	63
Product weight with 0 mm stroke	330	585	1,013	1,369
Additional weight per 10 mm stroke	15.5	24	40	44

Materials

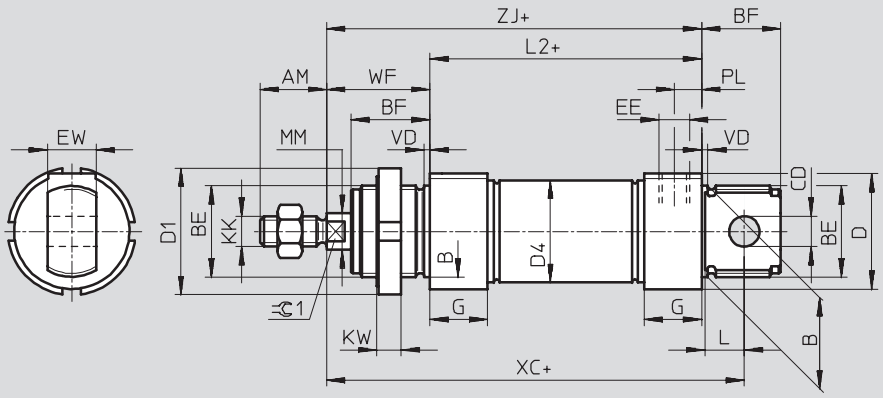
Sectional view



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

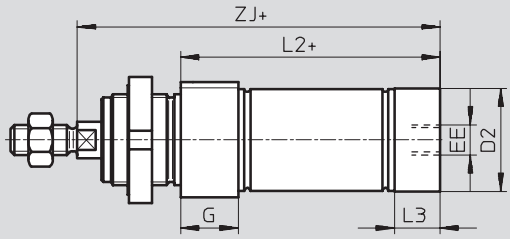
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Basic version



\+ = plus stroke length

MA – Axial air connection



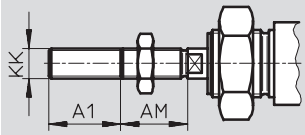
\+ = plus stroke length

∅ [mm]	AM	B ∅ h9	BE	BF	CD ∅ E10	D ∅	D1 ∅	D2 ∅	D4 ∅	EE	EW	G	KK
32	22	30	M30x1.5	26	10	38	42	34	33.6	G1/8	16	19	M10x1.25
40	24	38	M38x1.5	30	12	46	50	42	41.6	G1/4	18	25	M12x1.25
50	32	45	M45x1.5	33	16	57	60	53	52.4		21		M16x1.5
63						70		66	65.4	G3/8		28	

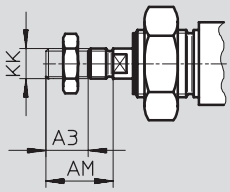
∅ [mm]	KW	L	L2	L2 -MA	L3	PL	MM ∅	VD	WF	XC ±1	ZJ	ZJ -MA	=C1
32	8	13	69.5	65.5	15	9	12	2	34	117.5	103.5	99.5	10
40	10	15	84.6	77.6	18	12	16	3	39	139.6	123.6	116.6	13
50		16	86.2	86.2	25		20		44	147.2	130.2	130.2	17
63			94.2	94.2	28	13			45	156.2	139.2	139.2	

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

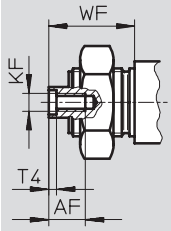
K2 – Extended male piston rod thread



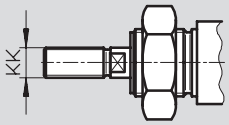
K6 – Shortened male piston rod thread



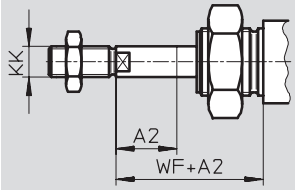
K3 – Female piston rod thread



K5 – Special piston rod thread



K8 – Extended piston rod



∅ [mm]	A1 max.	A2 max.	A3 max.	AF	AM	KF	KK		T4	WF
							Basic thread	Special thread[1)]		
32	35	50	8	M6	22	12	M10x1.25	M10	2.6	34
40				M8	24		M12x1.25	M12	3.3	39
50			10	M10	32	16	M16x1.5	M16	4.7	44
63										45

1) The special threads are only available as male threads. The scope of delivery does not include a hex nut for the piston rod thread

Ordering data

Type	Piston ∅ [mm]	Stroke [mm]	Without position sensing Part No.	Type	With position sensing Part No.	Type
	32	10	**195 870**	**ESNU-32-10-P**	**196 376**	**ESNU-32-10-P-A**
		25	**195 871**	**ESNU-32-25-P**	**196 377**	**ESNU-32-25-P-A**
		50	**195 872**	**ESNU-32-50-P**	**196 378**	**ESNU-32-50-P-A**
	40	10	**195 873**	**ESNU-40-10-P**	**196 379**	**ESNU-40-10-P-A**
		25	**195 874**	**ESNU-40-25-P**	**196 380**	**ESNU-40-25-P-A**
		50	**195 875**	**ESNU-40-50-P**	**196 381**	**ESNU-40-50-P-A**
	50	10	**195 876**	**ESNU-50-10-P**	**196 382**	**ESNU-50-10-P-A**
		25	**195 877**	**ESNU-50-25-P**	**196 383**	**ESNU-50-25-P-A**
		50	**195 878**	**ESNU-50-50-P**	**196 384**	**ESNU-50-50-P-A**
	63	10	**195 879**	**ESNU-63-10-P**	**196 385**	**ESNU-63-10-P-A**
		25	**195 880**	**ESNU-63-25-P**	**196 386**	**ESNU-63-25-P-A**
		50	**195 881**	**ESNU-63-50-P**	**196 387**	**ESNU-63-50-P-A**

Round cylinders ESNU

Ordering data – Modular products

FESTO

M Mandatory data					O Options →	
Module No.	**Function**	**Piston ∅**	**Stroke**	**Cushioning**	**Position sensing**	**End cap**
194 002	ESNU	32	1 … 50	P	A	MA
194 003		40				
194 004		50				
194 005		63				
Ordering example						
194 002	**ESNU** –	**32** –	**45** –	**P** –	**A** –	**MA** –

Ordering table

Size			32	40	50	63	Condi-tions	Code		Enter code
M	Module No.		**194 002**	**194 003**	**194 004**	**194 005**				
	Function		Single-acting round cylinder					**ESNU**		ESNU
	Piston ∅	[mm]	32	40	50	63		**-...**		
	Stroke	[mm]	1 … 50					**-...**		
	Cushioning		Flexible cushioning rings/plates at both ends					**-P**		-P
O	Position sensing		Via proximity sensors				1	**-A**		
↓	End cap		Axial air connection					**-MA**		

1 **A** Minimum stroke: 10 mm

Transfer order code

	ESNU	–		–		–	**P**	–		–		–

[0] Options

Male thread extended	Male thread shortened	Female thread	Special thread	Piston rod extended
...K2	...K6	K3	"..."K5	...K8
50K2	–	–	**"M10"K5**	– **30K8**

Ordering table

Size	32	40	50	63	Conditions	Code	Enter code
[0] Male thread extended [mm]	Piston rod with extended male thread 1 ... 35				[2]	**-...K2**	
Male thread shortened [mm]	Piston rod with shortened male thread 1 ... 8		1 ... 10			**-...K6**	
Female thread	Female piston rod thread (M6)	(M8)	(M10)		[3]	**-K3**	
Special thread	Special piston rod thread M10	M12	M16			**-"..."K5**	
Piston rod extended [mm]	Piston rod extended 1 ... 50					**...K8**	

[2] **K2** Not with female thread K3, shortened male thread K6

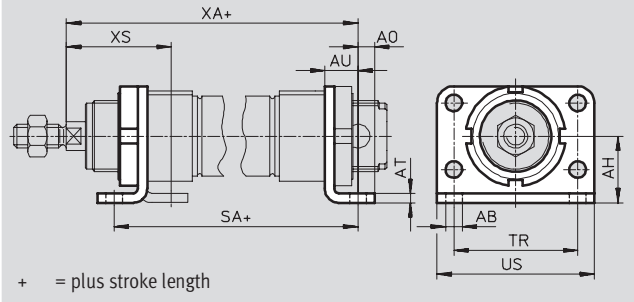
[3] **K3** Not with special thread K5, shortened male thread K6

Transfer order code

	–	–	–	–

Foot mounting HBN/CRH

Material:
HBN: Galvanised steel
CRH: High-alloy stainless steel
Free of copper, PTFE and silicone



Dimensions and ordering data

For ∅ [mm]	AB ∅	AH	AO	AT	AU	SA	SA -KP	TR	US	XA	XA -KP	XS	XS -KP
32	7	28	7	4	14	97.5	151	52	66	117.5	171	44	–
40	9	33	10	5	20	124.6	192.1	60	80	138.6	206.1	49	–
50	9	40	10	6	20	126.2	202.7	70	90	150.2	226.7	58	–
63	9	45	10	6	20	134.2	218.7	76	96	159.2	243.7	59	–

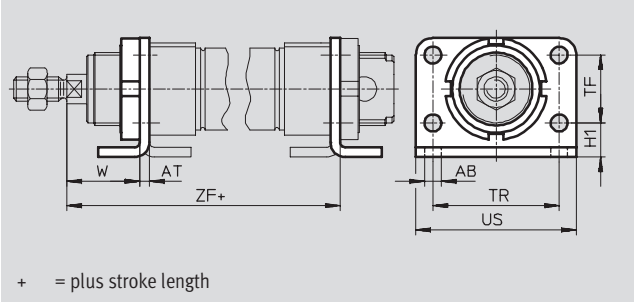
For ∅	Basic version				High corrosion protection			
[mm]	CRC[1)]	Weight [g]	Part No.	Type	CRC[1)]	Weight [g]	Part No.	Type
32	2	247	**195 851**	**HBN-32x2**	4	237	**162 951**	**CRH-32**
40	2	446	**195 852**	**HBN-40x2**	4	341	**162 952**	**CRH-40**
50	2	666	**195 853**	**HBN-50x2**	4	559	**162 953**	**CRH-50**
63	2	816	**195 854**	**HBN-63x2**	4	680	**162 954**	**CRH-63**

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

Core Range

Flange mounting FBN/CRFV

Material:
FBN: Galvanised steel
CRFV: High-alloy stainless steel
Free of copper, PTFE and silicone



\+ = plus stroke length

Dimensions and ordering data

For ∅ [mm]	AB ∅	AT	H1	TF	TR	US	W	ZF	ZF -KP
32	7	4	14	28	52	66	30	107.5	161
40	9	5	18	30	60	80	29	123.6	191.1
50	9	6	20	40	70	90	38	136.2	212.6
63	9	6	20	50	76	96	39	145.2	229.7

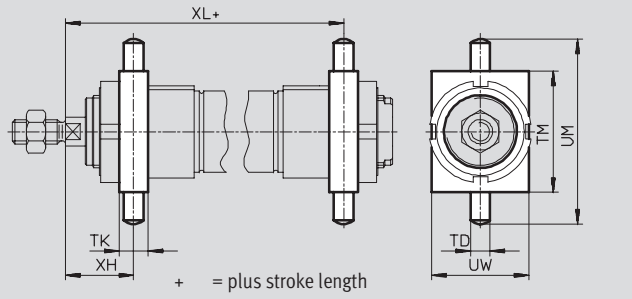
For ∅	Basic version				High corrosion protection			
[mm]	CRC[1)]	Weight [g]	Part No.	Type	CRC[1)]	Weight [g]	Part No.	Type
32	2	102	**195 855**	**FBN-32**	4	102	**161 858**	**CRFV-32**
40	2	190	**195 856**	**FBN-40**	4	190	**161 859**	**CRFV-40**
50	2	290	**195 857**	**FBN-50**	4	290	**161 860**	**CRFV-50**
63	2	365	**195 858**	**FBN-63**	4	365	**161 861**	**CRFV-63**

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

Core Range

Swivel mounting WBN

Material:
Galvanised steel
Free of copper, PTFE and silicone



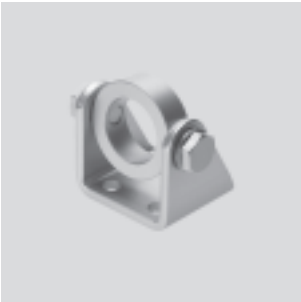
Dimensions and ordering data

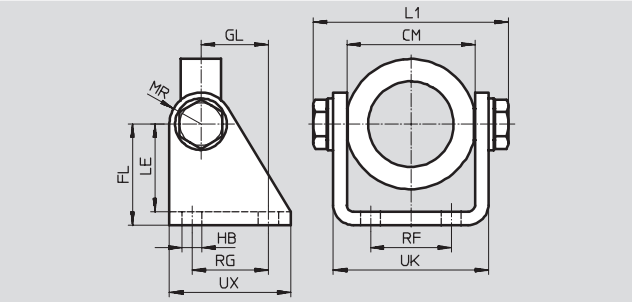
For ∅ [mm]	TD ∅ f8	TK	TM	UM	UW	XH	XL	XL -KP	CRC[1]	Weight [g]	Part No.	Type
32	8	12	50	76	40	28	109.5	163	2	130	**195 863**	**WBN-32**
40	10	15	60	92	50	31.5	126.1	193.6	2	240	**195 864**	**WBN-40**
50	12	20	80	116	65	34	140.2	216.7	2	610	**195 865**	**WBN-50/63**
63	12	20	80	116	65	35	149.2	233.7	2	610	**195 865**	**WBN-50/63**

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

Swivel mounting SBN

Material:
Mounting ring: Wrought aluminium alloy, anodised
Bearings: Bronze
Screws: Galvanised steel
Bracket: Steel





Dimensions and ordering data

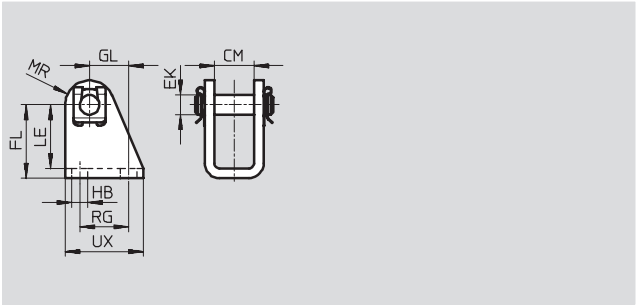
For ∅ [mm]	CM	FL	GL	HB	L1 max.	LE	MR	RF	RG	UK	UX	CRC[1]	Weight [g]	Part No.	Type
32	46.1+0.2	40	27	9	72.2	35	13	28	30	56.1	50	2	295	**539 924**	**SBN-32**
40	57.1+0.2	45	30	9	88.2	39	14	36	34	69.1	54	2	465	**539 925**	**SBN-40**
50/63	70.1+0.4	50	34	9	102.2	44	16	42	35	82.1	65	2	670	**539 926**	**SBN-50/63**

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

Core Range

Clevis foot LBN/CRLBN

Material:
LBN: Galvanised steel
CRLBN: High-alloy stainless steel
Free of copper, PTFE and silicone



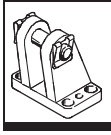
Dimensions and ordering data

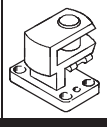
For ∅ [mm]	CM	EK ∅	FL	GL	HB	LE	MR	RG	UX
32	16.1	10	35 +0.4/–0.2	18.5	6.6	31	11	24	35
40	18.1	12	40 +0.4/–0.2	24.5	9	35	13	30	45
50, 63	21.1	16	45 +0.5/–0.2	28	9	39	14	34	50

For ∅	Basic version				High corrosion protection			
[mm]	CRC[1]	Weight [g]	Part No.	Type	CRC[1]	Weight [g]	Part No.	Type
32	2	109	**195 860**	**LBN-32**	4	107	**195 866**	**CRLBN-32**
40	2	192	**195 861**	**LBN-40**	4	184	**195 867**	**CRLBN-40**
50, 63	2	302	**195 862**	**LBN-50/63**	4	289	**195 868**	**CRLBN-50/63**

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

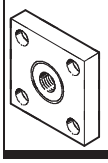
Ordering data – Mounting attachments Technical data ➔ www.festo.com

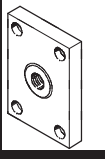
Designation	For ∅	Part No.	Type
Clevis foot mounting LBG			
	32	**31 761**	**LBG-32**
	40	**31 762**	**LBG-40**
	50	**31 763**	**LBG-50**
	63	**31 764**	**LBG-63**

Designation	For ∅	Part No.	Type
Clevis foot, right-angled LQG			
	32	**31 768**	**LQG-32**
	40	**31 769**	**LQG-40**
	50	**31 770**	**LQG-50**
	63	**31 771**	**LQG-63**

Core Range

Ordering data – Piston rod attachments — Technical data ➔ www.festo.com

Designation	For ∅	Part No.	Type
Rod eye SGS			
	32	9 261	SGS-M10x1,25
	40	9 262	SGS-M12x1,25
	50	9 263	SGS-M16x1,5
	63		
Rod clevis SG			
	32	6 144	SG-M10x1,25
	40	6 145	SG-M12x1,25
	50	6 146	SG-M16x1,5
	63		
Coupling piece KSG			
	32	32 963	KSG-M10x1,25
	40	32 964	KSG-M12x1,25
	50	32 965	KSG-M16x1,5
	63		

Designation	For ∅	Part No.	Type
Rod clevis SGA			
	32	32 954	SGA-M10x1.25
	40	10 767	SGA-M12x1,25
	50	10 768	SGA-M16x1,5
	63		
Self-aligning rod coupler FK			
	32	6 140	FK-M10x1,25
	40	6 141	FK-M12x1,25
	50	6 142	FK-M16x1,5
	63		
Coupling piece KSZ			
	32	36 125	KSZ-M10x1,25
	40	36 126	KSZ-M12x1,25
	50	36 127	KSZ-M16x1,5
	63		

Ordering data – Corrosion resistant piston rod attachments — Technical data ➔ www.festo.com

Designation	For ∅	Part No.	Type
Rod eye CRSGS			
	32	195 582	CRSGS-M10x1,25
	40	195 583	CRSGS-M12x1,25
	50	195 584	CRSGS-M16x1,5
	63		

Designation	For ∅	Part No.	Type
Rod clevis CRSG			
	32	13 569	CRSG-M10x1,25
	40	13 570	CRSG-M12x1,25
	50	13 571	CRSG-M16x1,5
	63		

Ordering data – One-way flow control valves — Technical data ➔ www.festo.com

	Connection		Material	Part No.	Type
	Thread	For tubing O.D.			
For exhaust air					
	G1⁄8	3	Metal design	193 142	GRLA-1⁄8-QS-3-D
		4		193 143	GRLA-1⁄8-QS-4-D
		6		193 144	GRLA-1⁄8-QS-6-D
		8		193 145	GRLA-1⁄8-QS-8-D
	G1⁄4	6		193 146	GRLA-1⁄4-QS-6-D
		8		193 147	GRLA-1⁄4-QS-8-D
		10		193 148	GRLA-1⁄4-QS-10-D
	G3⁄8	6		193 149	GRLA-3⁄8-QS-6-D
		8		193 150	GRLA-3⁄8-QS-8-D
		10		193 151	GRLA-3⁄8-QS-10-D
For supply air					
	G1⁄8	3	Metal design	193 156	GRLZ-1⁄8-QS-3-D
		4		193 157	GRLZ-1⁄8-QS-4-D
		6		193 158	GRLZ-1⁄8-QS-6-D
		8		193 159	GRLZ-1⁄8-QS-8-D

Core Range

Ordering data – One-way flow control valves, corrosion-resistant — Technical data ➔ www.festo.com

	Connection		Material	Part No.	Type
	Thread	For push-in fitting			
For exhaust air					
	G1/8	CRQS/CRQSL/CRQST	Electrolytically polished stainless steel casting	**161 404**	**CRGRLA-1/8-B**
	G1/4			**161 405**	**CRGRLA-1/4-B**
	G3/8			**161 406**	**CRGRLA-3/8-B**

Ordering data – Proximity sensors, u-shaped design, magneto-resistive — Technical data ➔ www.festo.com

	Mounting	Switch output	Electrical connection		Cable length [m]	Connection direction	Part No.	Type
			Cable	M8 plug				
NO contact								
	Via accessories	PNP	3-wire	–	2.5	In-line	**152 836**	**SMTO-4U-PS-K-LED-24**
			–	3-pin	–	In-line	**152 742**	**SMTO-4U-PS-S-LED-24**
		NPN	3-wire	–	2.5	In-line	**152 837**	**SMTO-4U-NS-K-LED-24**
			–	3-pin	–	In-line	**152 743**	**SMTO-4U-NS-S-LED-24**

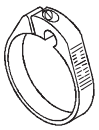
Ordering data – Proximity sensors, u-shaped design, magnetic reed — Technical data ➔ www.festo.com

	Mounting	Electrical connection		Cable length [m]	Connection direction	Part No.	Type
		Cable	M8 plug				
NO contact							
	Via accessories	3-wire	–	2.5	In-line	**36 198**	**SMEO-4U-K-LED-24**
				5	In-line	**175 401**	**SMEO-4U-K5-LED-24**
		–	3-pin	–	In-line	**151 526**	**SMEO-4U-S-LED-24-B**

Ordering data – Proximity sensors, round design, magnetic reed, corrosion resistant — Technical data ➔ www.festo.com

	Mounting	Electrical connection		Cable length [m]	Connection direction	Part No.	Type
		Cable	M8 plug				
NO contact							
	Via accessories	3-wire	–	2.5	In-line	**161 775**	**CRSMEO-4-K-LED-24**

Ordering data – Mounting kit for proximity sensor SMEO/SMTO/CRSMEO — Technical data ➔ www.festo.com

Designation	For ∅	Part No.	Type
Mounting kit CRSMBR, corrosion resistant			
	32	**163 888**	**CRSMBR-32**
	40	**163 889**	**CRSMBR-40**
	50	**163 890**	**CRSMBR-50**
	63	**163 891**	**CRSMBR-63**

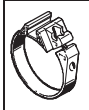
Ordering data – Proximity sensor for slot type 8, magneto-resistive — Technical data ➔ www.festo.com

	Mounting	Switch output	Electrical connection			Cable length [m]	Part No.	Type
			Cable	M8 plug	M12 plug			
NO contact								
	Via accessories	PNP	3-wire	–	–	2.5	**525 898**	**SMT-8F-PS-24V-K2,5-OE**
		NPN					**525 909**	**SMT-8F-NS-24V-K2,5-OE**
		–	2-wire	–	–	2.5	**525 908**	**SMT-8F-ZS-24V-K2,5-OE**
		PNP	–	3-pin	–	0.3	**525 899**	**SMT-8F-PS-24V-K0,3-M8D**
		NPN					**525 910**	**SMT-8F-NS-24V-K0,3-M8D**
		PNP	–	–	3-pin	0.3	**525 900**	**SMT-8F-PS-24V-K0,3-M12**
	Via accessories	PNP	3-wire	–	–	2.5	**175 436**	**SMT-8-PS-K-LED-24-B**
			–	3-pin	–	0.3	**175 484**	**SMT-8-PS-S-LED-24-B**
NC contact								
	Via accessories	PNP	3-wire	–	–	7.5	**525 911**	**SMT-8F-PO-24V-K7,5-OE**

Ordering data – Proximity sensor for slot type 8, magnetic reed — Technical data ➔ www.festo.com

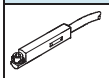
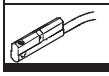
	Mounting	Electrical connection		Cable length [m]	Part No.	Type
		Cable	M8 plug			
NO contact						
	Via accessories	3-wire	–	2.5	**525 895**	**SME-8F-DS-24V-K2,5-OE**
				5.0	**525 897**	**SME-8F-DS-24V-K5,0-OE**
		2-wire	–	2.5	**525 907**	**SME-8F-ZS-24V-K2,5-OE**
		–	3-pin	0.3	**525 896**	**SME-8F-DS-24V-K0,3-M8D**
	Via accessories	3-wire	–	2.5	**150 855**	**SME-8-K-LED-24**
		–	3-pin	0.3	**150 857**	**SME-8-S-LED-24**
NC contact						
	Via accessories	3-wire	–	7.5	**525 906**	**SME-8F-DO-24V-K7,5-OE**

Ordering data – Mounting kit for proximity sensors SME/SMT-8 — Technical data➔ www.festo.com

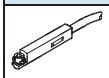
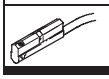
Designation	For ∅	Part No.	Type
Mounting kit SMBR-8			
	32	**175 097**	**SMBR-8-32**
	40	**175 098**	**SMBR-8-40**
	50	**175 099**	**SMBR-8-50**
	63	**175 100**	**SMBR-8-63**

Core Range

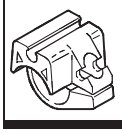
Ordering data – Proximity sensor for slot type 10, magneto-resistive — Technical data ➔ www.festo.com

	Mounting	Switch output	Electrical connection		Cable length [m]	Connection direction	Part No.	Type
			Cable	M8 plug				
NO contact								
	Via accessories	PNP	3-wire	–	2.5	In-line	525 915	SMT-10F-PS-24V-K2,5L-OE
			–	3-pin	0.3	In-line	525 916	SMT-10F-PS-24V-K0,3L-M8D
						Lateral	526 675	SMT-10F-PS-24V-K0,3Q-M8D
	Via accessories	PNP	–	3-pin	0.3	In-line	173 220	SMT-10-PS-SL-LED-24
			3-wire	–	2.5		173 218	SMT-10-PS-KL-LED-24

Ordering data – Proximity sensor for slot type 10, magnetic reed — Technical data ➔ www.festo.com

	Mounting	Electrical connection		Cable length [m]	Connection direction	Part No.	Type
		Cable	M8 plug				
NO contact							
	Via accessories	–	3-pin	0.3	In-line	525 914	SME-10F-DS-24V-K0,3L-M8D
		3-wire	–	2.5	In-line	525 913	SME-10F-DS-24V-K2,5L-OE
		2-wire				526 672	SME-10F-ZS-24V-K2,5L-OE
	Via accessories	3-wire	–	0.3	In-line	173 212	SME-10-SL-LED-24
		–	3-pin	2.5		173 210	SME-10-KL-LED-24

Ordering data – Mounting kit for proximity sensors SME/SMT-10 — Technical data➔ www.festo.com

Designation	For ∅	Part No.	Type
Mounting kit SMBR-10			
	32	175 105	SMBR-10-32
	40	175 106	SMBR-10-40
	50	175 107	SMBR-10-50
	63	175 108	SMBR-10-63

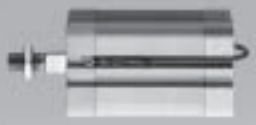
Ordering data – Plug sockets — Technical data ➔ www.festo.com

	Mounting	Switch output		Connection	Cable length [m]	Part No.	Type
		PNP	NPN				
Straight plug socket							
	Union nut M8	■	■	3-pin	2.5	159 420	SIM-M8-3GD-2,5-PU
					5	159 421	SIM-M8-3GD-5-PU
	Union nut M12	■	■	3-pin	2.5	159 428	SIM-M12-3GD-2,5-PU
					5	159 429	SIM-M12-3GD-5-PU
Angled plug socket							
	Union nut M8	■	■	3-pin	2.5	159 422	SIM-M8-3WD-2,5-PU
					5	159 423	SIM-M8-3WD-5-PU
	Union nut M12	■	■	3-pin	2.5	159 430	SIM-M12-3WD-2,5-PU
					5	159 431	SIM-M12-3WD-5-PU

Core Range

Products and services – everything from a single source

Products incorporating new ideas are created when enthusiasm for technology and efficiency come together. Tailor-made service goes without saying when the customer is the focus of attention.



Pneumatic and electrical drives

- Pneumatic cylinders
- Semi-rotary drives
- Handling modules
- Servopneumatic positioning systems
- Electromechanical drives
- Positioning controllers and controllers

Valves and valve terminals

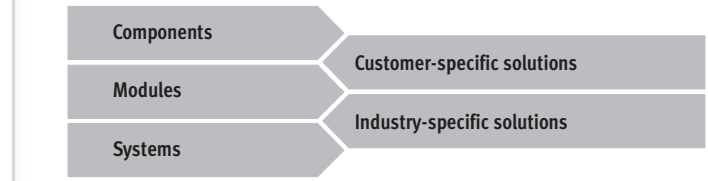
- Standard valves
- Universal and application-optimised valves
- Manually and mechanically actuated valves
- Shut-off, pressure control and flow control valves
- Proportional valves
- Safety valves

Fieldbus systems/ electrical peripherals

- Fieldbus Direct
- Installation system CP/CPI
- Modular electrical terminal CPX

Compressed air preparation

- Service unit combinations
- Filter regulators
- Filters
- Pressure regulators
- Lubricators
- On-off and soft-start valves
- Dryers
- Pressure amplifiers
- Accessories for compressed air preparation



Services from Festo to increase your productivity – across the entire value creation sequence

Engineering – for greater speed in the development process

- CAD models
- 14 engineering tools
- Digital catalogue
- FluidDRAW®
- More than 1,000 technical consultants and project engineers worldwide
- Technical hotlines

Supply chain – for greater speed in the procurement process

- E-commerce and online shop
- Online order tracking
- Euro special manufacturing service
- Logistics optimisation

Gripping and vacuum technology

- Vacuum generators
- Vacuum grippers
- Vacuum security valves
- Vacuum accessories
- Standard grippers
- Micro grippers
- Precision grippers
- Heavy-duty grippers

Sensors and monitoring units

- Proximity sensors
- Pressure and flow sensors
- Display and operating units
- Inductive and optical proximity sensors
- Displacement encoders for positioning cylinders
- Optical orientation detection and quality inspection

Controllers/bus systems

- Pneumatic and electropneumatic controllers
- Programmable logic controllers
- Fieldbus systems and accessories
- Timers/counters
- Software for visualisation and data acquisition
- Display and operating units

Accessories

- Pipes
- Tubing
- Pipe connectors and fittings
- Electrical connection technology
- Silencers
- Reservoirs
- Air guns

All in all, 100% product and service quality

A customer-oriented range with unlimited flexibility:
Components combine to produce ready-to-install modules and systems. Included in this are special designs – since at Festo, most industry-specific products and customer-specific solutions are based on the 23,000 plus catalogue products. Combined with the services for the entire value creation sequence, the end result is unbeatable economy.

Assembly – for greater speed in the assembly/commissioning process

- Prepack
- Preassembly
- Turnkey pneumatics
- Handling solutions

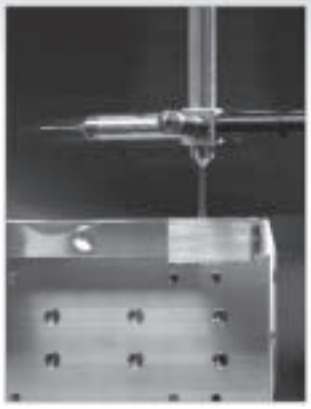
Operation – for greater speed in the operational process

- Spare parts service
- Energy saving service
- Compressed air consumption analysis
- Compressed air quality analysis
- Customer service

Aspects of quality

Quality can be viewed from a number of aspects. A short virtual tour of the Research and Development department, the Production department or the Customer Service Centre speaks more than a thousand words.

3D engineering and simulation



Innovation quality

Let's look at some of the figures:

- 6.5% of turnover
- 2,800 patents with 100 new applications every year
- 3D engineering and simulation
- 10,600 employees worldwide
- Each and every one of them a lateral thinker

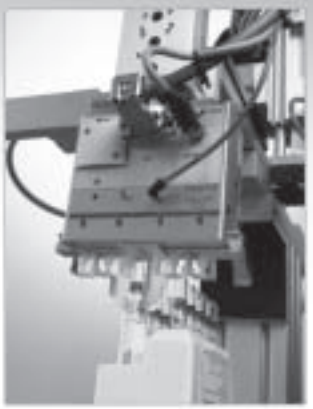
Production quality

Your interest is quality and economy – therefore we place considerable value on:

- Minimum production tolerances
- Ultra-modern, proprietary production methods
- Core competencies in production
- Defined quality standards across the entire production chain
- Strict quality assurance systems: on that you can depend.

Price quality

More service for less money. Many of the new and further developments in the Festo product range have one thing in common: they are technically superior and more attractively priced than their predecessor product. Examples are to be found in all product segments: among the drives, valves, valve terminals; among the service units, and among the range of accessories.



Range quality

For individual solutions. Festo offers components as industry-specific catalogue products as well as standards-based and highly individual special designs. Ready-to-install combinations of these components play an integral part in the Festo product portfolio as modules or systems. Incidentally, an increasing number of components can be individually configured as modular products.

Didactic quality

To complement the products and services for automation, Festo Didactic offers exceptionally efficient training hardware, learning software and seminars of the highest quality. Optimally tailored to your value creation sequence.
In short – training in practical applications for practical application.

What must be observed when using Festo components?

Specified limit values for technical data and any specific instructions must be adhered to by the user in order to ensure recommended operating conditions.
When pneumatic components are used, the user shall ensure that they are operated using correctly prepared compressed air without aggressive media.
When Festo components are used in safety-oriented applications, the user shall ensure that all applicable national and local safety laws and regulations, for example the machine directive, together with the relevant references to standards are observed.
Unauthorised conversions or modifications to products and systems from Festo involve a safety risk and are thus not permissible.
Festo does not accept any liability for resulting damages.
You should contact Festo's advisors if one of the following apply to your application:

- The ambient conditions and conditions of use or the operating medium differ from the specified technical data.
- The product is to perform a safety function.
- A risk or safety analysis is required.
- You are unsure about the product's suitability for use in the planned application.
- You are unsure about the product's suitability for use in safety-oriented applications.

All technical data applies at the time of going to print.