




Standards-based cylinders DSBG, ISO 15552

FESTO










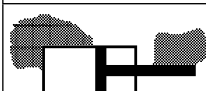
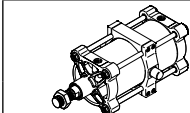
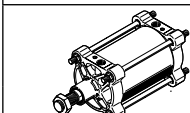
Key features

At a glance

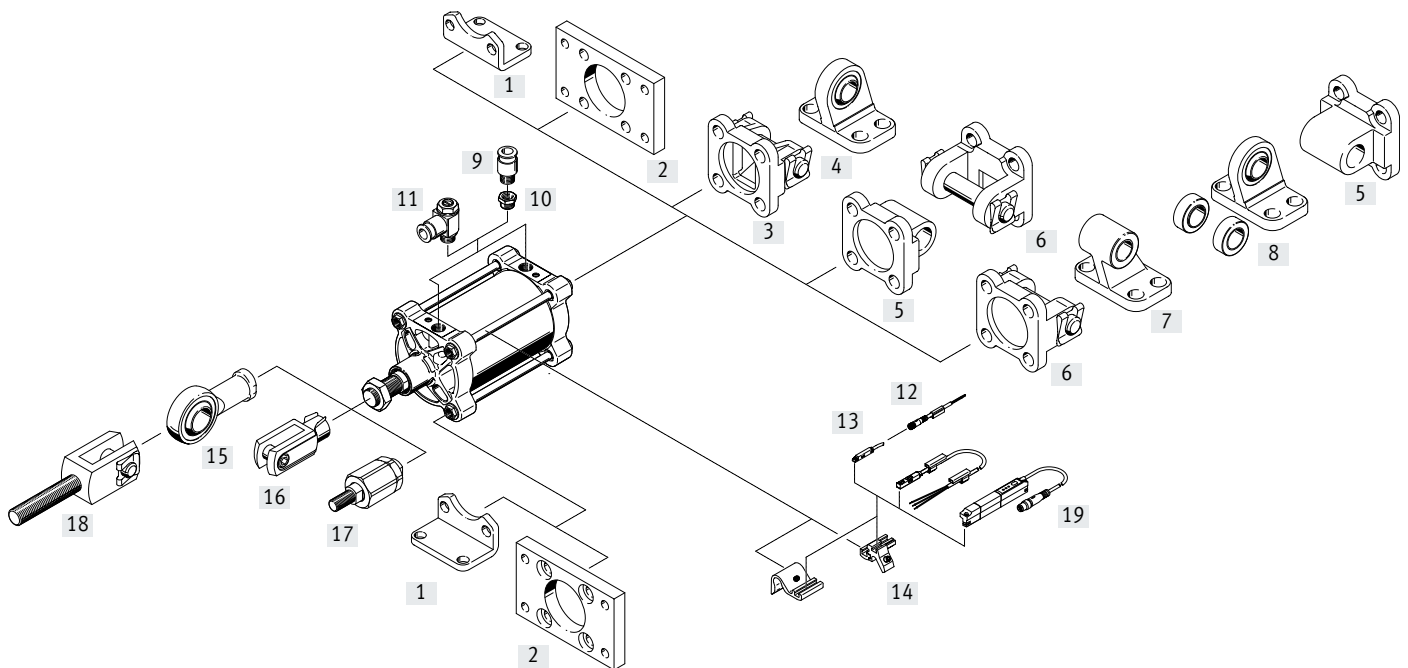
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 - Standards-based cylinders to ISO 15552 (corresponds to the withdrawn standards ISO 6431, DIN ISO 6431, VDMA24562, NFE49003.1 and UNI 10290)
 - Sturdy tie rod design
 - Double-acting
 - For contactless position sensing
 - EX4: for use in potentially explosive areas
 - An extensive range of accessories enables the cylinders to be installed virtually anywhere
 - Choice of two cushioning types:
 - Elastic cushioning: elastic cushioning rings/pads at both ends
 - PPV cushioning: pneumatic cushioning, adjustable at both ends
 - The variants can be configured according to individual needs using a modular product system
 - Excellent flexibility thanks to the wide range of variants

Variants from the modular product system

Symbol	Key features	Description
	T Through piston rod	For working at both ends with the same force in the forward and return stroke, for attaching external stops
	F Female piston rod thread	–
	R3 High corrosion protection	All external cylinder surfaces comply with corrosion resistance class 3 to Festo standard 940 070. The piston rod is made from corrosion and acid-resistant steel
	T1 Heat-resistant seals	Temperature range 0 ... +120°C
	T4 Heat-resistant seals	Temperature range 0 ... +150°C
	...E Extended piston rod	1 ... 500 mm
	...L Extended piston rod thread	1 ... 100 mm
	...S Shortened piston rod thread	1 ... 86 mm
	M... Piston rod thread	Piston rod thread version: M16/M16x1.5/M20/M20x1.5/M24/M27/M27x2/M30x2/M36/ M36x2/M42/M42x2/M48
	A6 Scraper variant	Metal scraper: The cylinder is fitted with a hard-chrome plated piston rod and a metal scraper, which scrapes off hard particles (e.g. welding spatter) sticking to the piston rod. For use in welding systems, for example
	V Central swivel mounting	<ul style="list-style-type: none"> • For piston diameter 160, 200 • Swivel mounting, clamped centrally between the cylinder end caps • Position can be moved at any time
	...Y Trunnion flange mounting position	<ul style="list-style-type: none"> • For piston diameter 250, 320 • Swivel mounting, position freely selectable, positive-locking screw connection • Position cannot be changed at a later date
	B Integrated spacer bolts	<ul style="list-style-type: none"> • B1: at both ends • B2: on the bearing cap • B3: on the end cap
	Thread length of spacer bolts: ...LB2 on the bearing cap ...LB3 on the end cap	<ul style="list-style-type: none"> • Variable thread length: 32 ... 140 mm • Optionally on the bearing or end cap

Peripherals overview



Mounting components and accessories

	For diameter	Description	→ Page/ Internet
[1] Foot mounting HNG	160 ... 320	For bearing and end caps, corresponds to MS1 to ISO 15552	17
[2] Flange mounting FNG	160 ... 320	For bearing or end caps, corresponds to MF1/MF2 to ISO 15552	17
[3] Swivel flange SNG	160, 200	For end caps	18
[4] Clevis foot LSNG	160, 200	With spherical bearing	20
[5] Swivel flange SGNL	160, 200	For end cap, corresponds to MP2 to ISO 15552	19
[6] Swivel flange SGNB	160 ... 320	For end cap, corresponds to MP2 to ISO 15552	18
[7] Clevis foot LN/LNG	160 ... 320	For swivel flange SGNB	18
[8] Clevis foot LSN	160 ... 320	With spherical bearing	20
[9] Push-in fitting QS	160, 200	For connecting tubing with standard outside diameters	20
[10] Reducing nipple NPFC	160, 200	For connecting QS fittings with thread G1/2 to cylinders with thread G3/4	20
Reducing nipple D	250, 320	For connecting QS fittings with thread G1/2 to cylinders with thread G1	
[11] One-way flow control valve GRIA	160, 200	For speed regulation	grla
[12] Connecting cable NEBU	160 ... 320	–	21
[13] Proximity switch SME/SMT-8	160 ... 320	For sensing the piston position	21
[14] Sensor bracket DASP	160 ... 320	For proximity switch SME/SMT-8	22
[15] Rod eye SGS	160 ... 320	With spherical bearing	20
[16] Rod clevis SG	160 ... 320	Permits a swivelling movement of the cylinder in one plane	20
[17] Self-aligning rod coupler FK	160, 200	For compensating radial and angular deviations	20
[18] Rod clevis SGA	160, 200	Suitable for spherical mounting of cylinders in conjunction with rod eye SGS	20
[19] Position transmitter SDAT	160, 200	<ul style="list-style-type: none"> Continuously senses the position of the piston Has an analogue output 	22
– Trunnion support LNZG	160 ... 320	For mounting the cylinder in combination with central swivel mounting or trunnion flange mounting position	19

Type codes

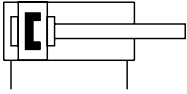
001	Series	
DSBG	Standards-based cylinder, double-acting, based on ISO 15552	
002	Central swivel mounting	
	None	
V	Central, clamped	
003	Piston diameter	
160	160	
200	200	
250	250	
320	320	
004	Stroke	
...	25 ... 500	
005	Piston rod type	
	At one end	
T	Through piston rod	
006	Piston rod thread type	
	Male thread	
F	Female thread	
007	Cushioning	
P	Elastic cushioning rings/plates on both sides	
PPV	Pneumatic cushioning, adjustable at both ends	
008	Position sensing	
	None	
A	For proximity sensor	
009	Standard	
	Not according to standard	
N3	Conforms to ISO 15552	
010	Corrosion protection	
	Standard	
R3	High corrosion protection	
011	Temperature range	
	Standard	
T1	Heat-resistant seals max. 120°C	
T4	0 ... +150°C	
012	Scraper variant	
	None	
A6	Metal scraper	

013	EU certification	
	None	
EX4	II 2GD	
014	Trunnion flange mounting position, positive locking	
	None	
...Y	With	
015	Piston rod extension	
	None	
...E	1 ... 500 mm	
016	Piston rod thread extension	
...L	1 ... 70 mm	
017	Piston rod thread shortening	
	None	
...S	0 ... 86 mm	
018	Piston rod thread	
	Standard	
M16	M16	
M16P	M16x1.5	
M20	M20	
M20P	M20x1.5	
M24	M24	
M27	M27	
M36P	M36x2	
M42P	M42x2	
M48	M48	
M42	M42	
M27P	M27x2	
M30P	M30x2	
M36	M36	
019	Integrated spacer bolts	
	None	
B1	Both sides	
B2	In the bearing cover	
B3	In the end cap	
020	Thread length of spacer bolts on bearing cap	
	Without spacer bolt	
...LB2	20 ... 140 mm	
021	Thread length of spacer bolts on end cap	
	Without spacer bolt	
...LB3	20 ... 140 mm	

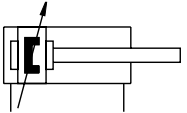
Data sheet

Function

Elastic cushioning



PPV cushioning

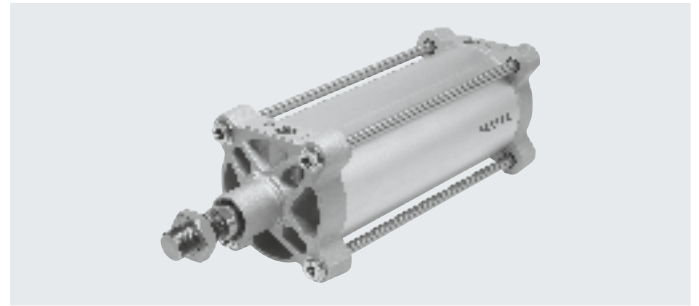


⌀ - Diameter
160 ... 320 mm

- | - Stroke length
1 ... 2700 mm



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General technical data

Piston diameter	160	200	250	320
Design	Piston/piston rod/cylinder barrel			
Mode of operation	Double-acting			
Pneumatic connection	G3/4	G3/4	G1	G1
Stroke ¹⁾				
DSBG-... [mm]	1 ... 2700		1 ... 2250	
DSBG-...-...E [mm]	1 ... 2000			
DSBG-...-...L [mm]	1 ... 2000			
Cushioning				
DSBG-...-P	Elastic cushioning rings/pads at both ends			
DSBG-...-PPV	Pneumatic cushioning, adjustable at both ends			
Cushioning length [mm]	48		55	65
Position sensing	Via proximity switch			
Type of mounting	With female thread/accessories			
Mounting position	Any			

1) In combination with the position sensing option, the minimum stroke is 10 mm

Operating and environmental conditions

Piston diameter	160	200	250	320
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]			
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)			
Operating pressure [bar]	0.6 ... 10			
Ambient temperature ¹⁾				
DSBG-... [°C]	-20 ... +80			
DSBG-...-T1 [°C]	0 ... +120			
DSBG-...-T4 [°C]	0 ... +150		-	
DSBG-...-EX4 [°C]	-20 ... +60			
Corrosion resistance CRC				
DSBG-... [2 ²⁾				
DSBG-...-R3 [3 ³⁾				

1) Note operating range of proximity switches

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

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

3) Corrosion resistance class CRC 3 to Festo standard FN 940070

High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional surface requirements which are in direct contact with a normal industrial environment.

Data sheet

ATEX ¹⁾	
ATEX category for gas	II 2G
Type of ignition protection for gas	Ex h IIC T4 Gb
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex h IIIC T120°C Db
Explosion-proof ambient temperature	-20°C ≤ Ta ≤ +60°C
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity)	To UK EX instructions
Explosion protection certification outside the EU	EPL Gb (GB)
	EPL Db (GB)

1) Note the ATEX certification of the accessories.

Forces [N] and impact energy [J]				
Piston diameter	160	200	250	320
Theoretical force at 6 bar, advancing	12064	18850	29452	48255
Theoretical force at 6 bar, retracting	11310	18096	28274	46385
Max. impact energy in the end positions				
DSBG-...	3.3	4.8	7.2	12.6
DSBG-...-T1/T4	2.3	4	4.2	6

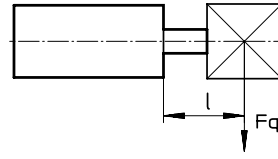
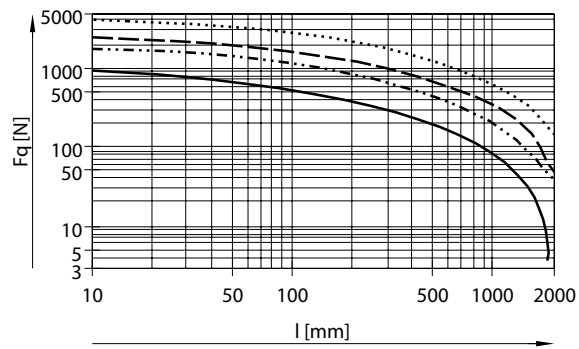
Permissible impact velocity:
$$v = \sqrt{\frac{2 \cdot E}{m_1 + m_2}}$$

Maximum permissible mass:
$$m_2 = \frac{2 \cdot E}{v^2} - m_1$$

V perm. impact velocity
 E max. impact energy
 m1 Moving mass (drive)
 m2 Moving payload

Weights [g]				
Piston diameter	160	200	250	320
DSBG-...				
Product weight with 0 mm stroke	11751	15493	29313	50231
Additional weight per 10 mm stroke	208	246	384	623
Moving mass with 0 mm stroke	4292	5348	9978	16912
Moving mass per 10 mm stroke	97	97	157	249
DSBG-...-T				
Product weight with 0 mm stroke	13487	17356	31979	54775
Additional weight per 10 mm stroke	304	343	541	872
Moving mass with 0 mm stroke	6028	7210	12643	21455
Moving mass per 10 mm stroke	194	194	314	499

Data sheet

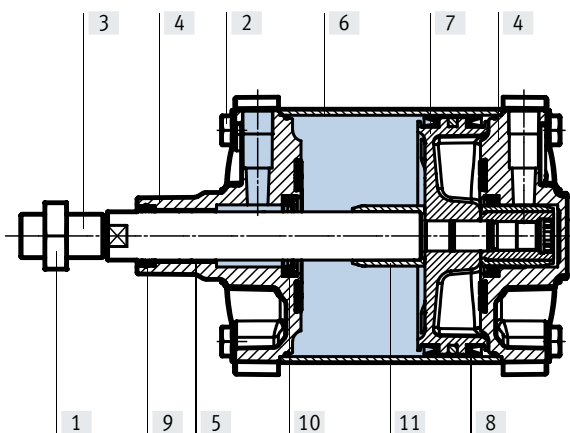
Max. transverse force F_q as a function of stroke length l 

- $\varnothing 160/200$
- ⋯ $\varnothing 250$
- - - $\varnothing 320$

Data sheet

Materials

Sectional view



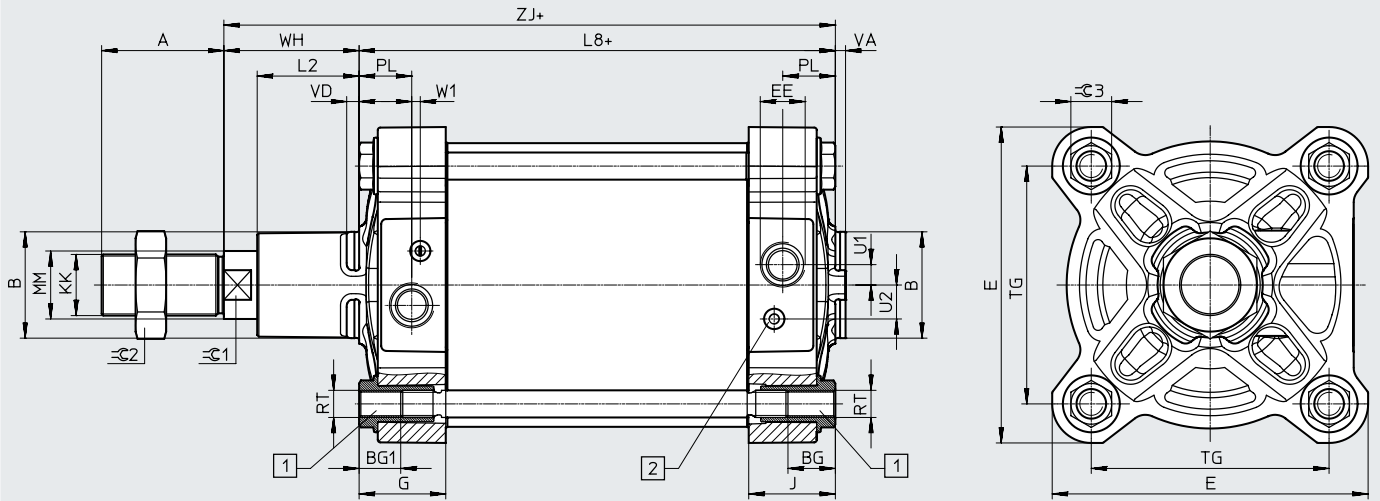
Normzylinder

[1]	Nut	
	DSBG-...	Galvanised steel
	DSBG-...-R3	High-alloy stainless steel
[2]	Collar nut	Galvanised steel
[3]	Piston rod	
	DSBG-...	Steel, high-alloy
	DSBG-...-R3	High-alloy stainless steel
	DSBG-...-A6	Hard-chrome-plated tempered steel
[4]	Cover	Coated die-cast aluminium
[5]	Bearing	
	DSBG-...	Metal polymer compound
	DSBG-...-EX4	Bronze
[6]	Cylinder barrel	Anodised wrought aluminium alloy
[7]	Piston	Coated die-cast aluminium
[8]	Piston seal	
	DSBG-...	NBR
	DSBG-...-T1/-T4	FPM
[9]	Piston rod wiper seal	
	DSBG-...	NBR
	DSBG-...-T1/-T4	FPM
[10]	Buffer seal	
	DSBG-...	POM
	DSBG-...-T1/-T4	Wrought aluminium alloy
[11]	Cushion piston	
	DSBG-...	POM
	DSBG-...-T1/-T4	Wrought aluminium alloy
-	Tie rods	
	DSBG-...	Steel, high-alloy
	DSBG-...-R3	High-alloy stainless steel
	Rod wiper seal	
	DSBG-...-A6	CuZn
	Spacer bolt	
	DSBG-...-B1/-B2/-B3/-LB2/-LB3	High-alloy steel
	DSBG-...-R3-B1/-R3-B2/-R3-B3/-R3-LB2/-R3-LB3	High-alloy stainless steel
	Swivel mounting	
	DSBG-160/200-...-V/-...V	Painted spheroidal graphite cast iron
	DSBG-250/320-...-Y/-...Y	Galvanised steel
	Collar nut	Galvanised steel
	Note on materials	
	DSBG-...	RoHS-compliant
	DSBG-...-T4	Contains paint-wetting impairment substances

Data sheet

Dimensions

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+ = plus stroke length

[1] Special outer hex nut with female thread for mounting components

[2] Adjusting screw for adjustable end-position cushioning (PPV)

∅	A	B	BG	BG1	E	EE	G	J
[mm]	-0.5	∅ d11	min.	±0.5	±0.9			
160	72	65	24	25	186	G3/4	50.7	50.7
200	72	75	24	25	230	G3/4	46.9	46.7
250	84	90	25	26	284	G1	51.2	51.2
320	96	110	28	29	347	G1	58.2	58.2

∅	L2	L8	MM	PL	RT	TG	U1	U2
[mm]						±1.1		
160	60	180±1	40	31	M16	140	12	20
200	70	180±1.2	40	30	M16	175	12	20
250	80	200±1.6	50	32	M20	220	25	25
320	90	220±2.2	63	37.5	M24	270	25	25

∅	VA	VD	W1	WH	ZJ	∅C1	∅C2	∅C3
[mm]	-1				±1			
160	6	7	5	80±1.3	260	36	55	24 _{h13}
200	6	6.5	5	95±1.4	275	36	55	24 _{h13}
250	10	13.7	3	105±1.5	305	46	65	41 _{h14}
320	10	10.7	1.5	120±1.5	340	55	75	50 _{h14}

∅	KK	
	DSBG...	-M... ¹⁾
[mm]		
160	M36x2	M16/M16x1.5/M20/M20x1.5/M24/M27/M27x2/M30x2/M36
200	M36x2	M20/M20x1.5/M24/M27/M27x2/M30x2/M36
250	M42x2	M24/M27/M27x2/M30x2/M36x2/M42
320	M48x2	M27/M27x2/M30x2/M36x2/M42x2/M48

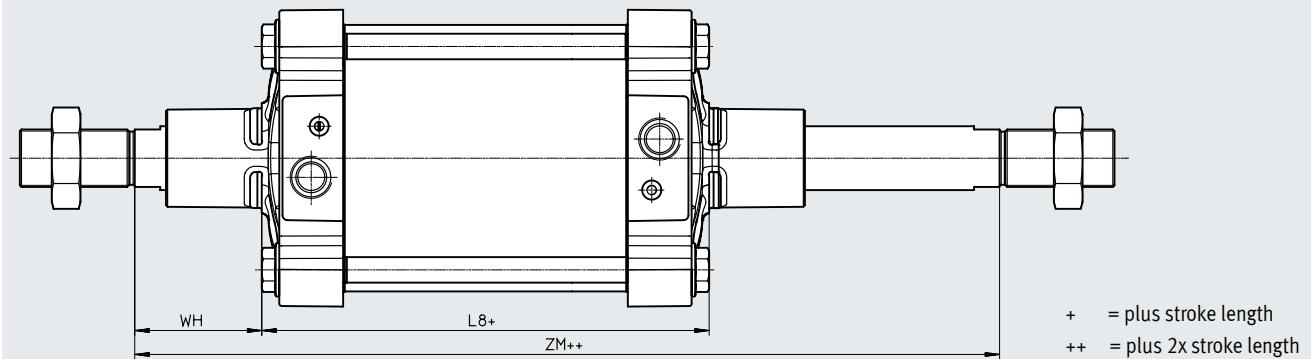
1) Threads with smaller nominal diameter than in the basic version can generally not withstand such high loads. If necessary, the screw connection must be engineered.

Data sheet

Dimensions – Variants

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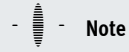
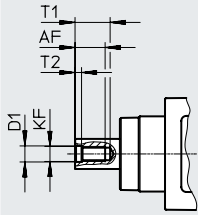
T – Through piston rod



∅	L8	WH	ZM
[mm]			
160	180±1.1	80±1.3	342±1
200	180±1	95±1.4	372±1.2
250	200±1	105±1.5	410±1.6
320	220±2.2	120±1.5	462±1

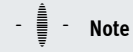
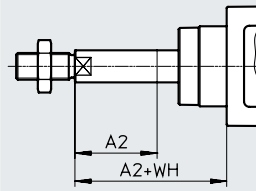
Data sheet

F – Female thread



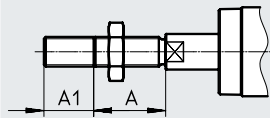
Note
Female thread at both ends in combination with the variant T.

...E – Extended piston rod



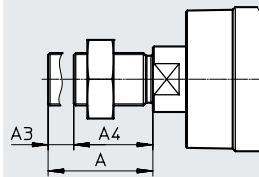
Note
Piston rod thread is extended at one end in combination with the variant T.

...L – Extended piston rod thread



Note
Piston rod thread is extended at both ends in combination with variant T.

...S – Shortened piston rod thread



Note
Piston rod is shortened at both ends in combination with variant T.

Effective thread length: $A4 = A - A3$

∅	A	A1		A2		A3	
		min.	max.	min.	max.	min.	max.
160	72	1	70	1	500	1	62
200	72	1	70	1	500	1	62
250	84	1	100	1	500	1	74
320	96	1	100	1	500	1	86

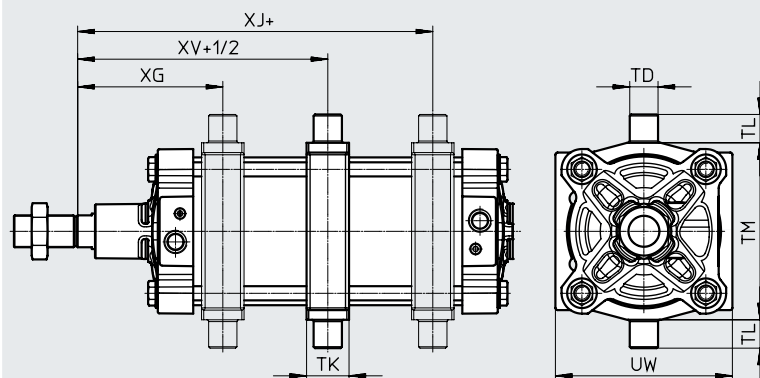
∅	AF	D1	KF	T1	T2	WH
[mm]		H9				
160	36	25	M24	40	10	80±1.3
200	36	25	M24	40	10	95±1.4
250	50	31	M30	60	10	105±1.5
320	55	37	M36	65	13	120±1.5

Data sheet

Dimensions – Variants

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V – Central swivel mounting



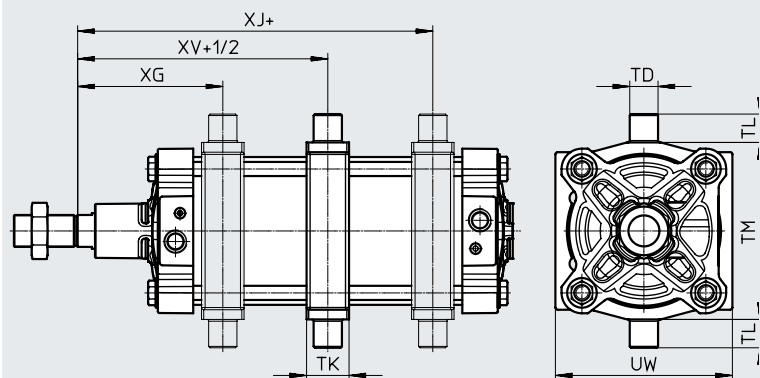
- **Note**

The swivel mounting is mounted centrally on delivery but can be moved at any time.

+ = plus stroke length
+1/2 = plus half stroke length

∅	TD	TK	TL	TM	UW	XG	XJ	XV
[mm]	∅ e8		h14	h14		±0.5	±0.5	
160	32	48	32	200	200	157.5	182.5	170
200	32	48	32	250	240	169	200.5	185

...Y – Trunnion flange mounting position



- **Note**

The dimensions for the trunnion flange mounting position (...Y) refer to the basic design without extended piston rod thread.

The swivel mounting has a positive-locking screw connection. This means that the position cannot be changed at a later date.

+ = plus stroke length
+1/2 = plus half stroke length

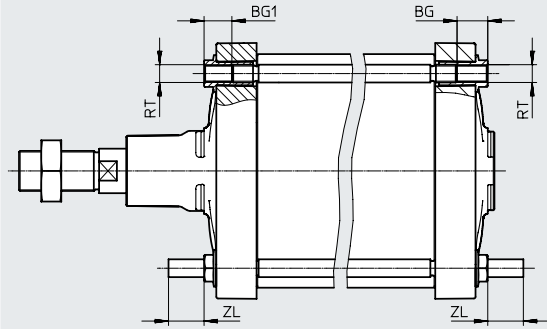
∅	TD	TK	TL	TM	UW	XG	XJ	XV
[mm]	∅ e8		h14	h14		±2.4	±2.4	±2.4
250	40	60	40	320	319	198	209	205
320	50	70	50	400	385	226	233	230

Data sheet

Dimensions – Variants

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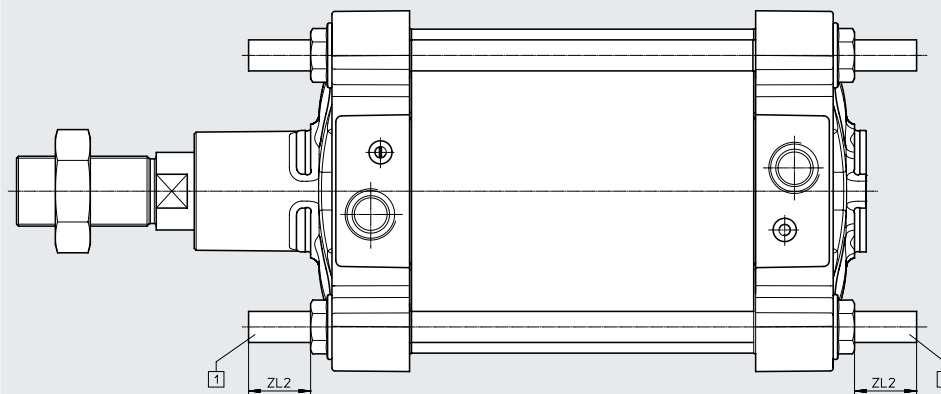
B1/B2/B3 – Integrated spacer bolt



∅	BG	BG1	RT	ZL	ZL1 ¹⁾
[mm]	min.	±0.5		±0.5	
160	24	25	M16	32	32
200	24	25	M16	32	32
250	25	26	M20	40	40
320	28	29	M24	50	50

1) Tolerances depending on variant:
 B1: ZL1 = +1/-2; B3: ZL1 = ±0.5

...LB2/-LB3 – Thread length of spacer bolts




[1] = DSBG-...-LB2 (on the bearing cap)
 [2] = DSBG-...-LB3 (on the end cap)

∅	ZL2	
	min.	max.
[mm]		
160	32	140
200	32	140
250	40	140
320	50	140

Data sheet

Ordering data					
Piston diameter [mm]	Stroke [mm]	With PPV cushioning With position sensing		With elastic cushioning Without position sensing	
		Part no.	Type	Part no.	Type
160	25	2029462	DSBG-160-25-PPVA-N3	2536747	DSBG-160-25-P-N3
	40	2029463	DSBG-160-40-PPVA-N3	2536748	DSBG-160-40-P-N3
	50	2029464	DSBG-160-50-PPVA-N3	2536749	DSBG-160-50-P-N3
	80	2029465	DSBG-160-80-PPVA-N3	2536750	DSBG-160-80-P-N3
	100	2029466	DSBG-160-100-PPVA-N3	2536751	DSBG-160-100-P-N3
	125	2029467	DSBG-160-125-PPVA-N3	2536752	DSBG-160-125-P-N3
	160	2029468	DSBG-160-160-PPVA-N3	2536753	DSBG-160-160-P-N3
	200	2029469	DSBG-160-200-PPVA-N3	2536754	DSBG-160-200-P-N3
	250	2029470	DSBG-160-250-PPVA-N3	2536755	DSBG-160-250-P-N3
	320	2029471	DSBG-160-320-PPVA-N3	2536756	DSBG-160-320-P-N3
	400	2029472	DSBG-160-400-PPVA-N3	2536758	DSBG-160-400-P-N3
	500	2029473	DSBG-160-500-PPVA-N3	2536759	DSBG-160-500-P-N3
	1 ... 2700 ¹⁾	2035926	DSBG-160-...-PPVA-N3	2537196	DSBG-160-...-P-N3
200	25	2390139	DSBG-200-25-PPVA-N3	2537448	DSBG-200-25-P-N3
	40	2390140	DSBG-200-40-PPVA-N3	2537449	DSBG-200-40-P-N3
	50	2390141	DSBG-200-50-PPVA-N3	2537450	DSBG-200-50-P-N3
	80	2390142	DSBG-200-80-PPVA-N3	2537451	DSBG-200-80-P-N3
	100	2390143	DSBG-200-100-PPVA-N3	2537452	DSBG-200-100-P-N3
	125	2390144	DSBG-200-125-PPVA-N3	2537454	DSBG-200-125-P-N3
	160	2390145	DSBG-200-160-PPVA-N3	2537455	DSBG-200-160-P-N3
	200	2390146	DSBG-200-200-PPVA-N3	2537456	DSBG-200-200-P-N3
	250	2390147	DSBG-200-250-PPVA-N3	2537457	DSBG-200-250-P-N3
	320	2390148	DSBG-200-320-PPVA-N3	2537458	DSBG-200-320-P-N3
	400	2390149	DSBG-200-400-PPVA-N3	2537459	DSBG-200-400-P-N3
	500	2390150	DSBG-200-500-PPVA-N3	2537460	DSBG-200-500-P-N3
	1 ... 2700 ¹⁾	2389803	DSBG-200-...-PPVA-N3	2537445	DSBG-200-...-P-N3
250	1 ... 2250 ¹⁾	2865078	DSBG-250-...-PPVA-N3	2865145	DSBG-250-...-P-N3
320	1 ... 2250 ¹⁾	3150987	DSBG-320-...-PPVA-N3	3178601	DSBG-320-...-P-N3

1) In combination with the position sensing option, the minimum stroke is 10 mm.

 - Note

Other variants in the modular product system → page 15

Ordering data – Modular product system


Ordering table							
Size	160	200	250	320	Conditions	Code	Enter code
Module no.	2036032	2344936	2732003	2776472			
Function	Standards-based cylinder, double-acting, based on ISO 15552					DSBG	DSBG
Central swivel mounting	None						
	Centrally clamped		–			-V	
Piston diameter [mm]	160	200	250	320		-...	
Stroke [mm]	1 ... 2700		1 ... 2250		[1]	-...	
Piston rod type	At one end						
	Through piston rod					-T	
Piston rod thread type	Male thread						
	Female thread				[2]	-F	
Cushioning	Elastic cushioning rings/pads at both ends					-P	
	Pneumatic cushioning, adjustable at both ends					-PPV	
Position sensing	None						
	Via proximity switch					A	
Standard	Corresponds to ISO 15552					-N3	
Corrosion protection	Standard						
	High corrosion protection				[3]	R3	
Temperature range	Standard						
	[°C]	Heat-resistant seals up to max. 120				T1	
	[°C]	0 ... +150		–	[4]	T4	
Scraper variant	None						
	Metal scraper		–			A6	
EU certification	None						
	II 2GD				[45]	EX4	
Trunnion flange mounting position [mm]	None						
	–		198 ... 2459		226 ... 2483	[6]	-...Y

- [1] ... In combination with the position sensing option A, the minimum stroke is 10 mm
 [2] F Not with N3, ...L, M...
 [3] R3 Not with V, ...Y
 [4] T4 Not with A6
 [5] EX4 Not with V, P, T1, T4, B1, B2, B3, ...LB2, ...LB3
 [6] ...Y Not with ...LB2, ...LB3


Ordering data – Modular product system

Ordering table		160	200	250	320	Conditions	Code	Enter code
Size								
Extended piston rod	[mm]	None						
		1 ... 500				[7]	-...E	
Extended piston rod thread	[mm]	None						
		1 ... 70		1 ... 100		[7]	-...L	
Shortened piston rod thread	[mm]	None						
		1 ... 62		1 ... 74	1 ... 86		-...S	
Piston rod thread		Standard (→ 9)						
		M16	-			[9]	-M16	
		M16x1.5	-			[9]	-M16P	
		M20	-			[9]	-M20	
		M20x1.5	-			[9]	-M20P	
		M24	-			[9]	-M24	
		M27	-			[9]	-M27	
		M27x2	-			[9]	-M27P	
		M30x2	-			[9]	-M30P	
		M36	-			[9]	-M36	
		M36x2	-			[9]	-M36P	
		-	M42		-	[9]	-M42	
		-	M42x2		-	[9]	-M42P	
-	-			M48	[9]	-M48		
Integrated spacer bolts		None						
		At both ends				[8] [9]	-B1	
		On the bearing cap				[8] [9]	-B2	
		On the end cap				[8] [9]	-B3	
Thread length of spacer bolts	[mm]	None						
		On the bearing cap				[9]	-...LB2	
		32 ... 140		40 ... 140	50 ... 140			
		On the end cap				[9]	-...LB3	
32 ... 140		40 ... 140	50 ... 140					

- [7] ...E, ...L Only up to stroke 2000 mm.
Not with N3
- [8] B1, B2, B3 Not with ...LB2, ...LB3
- [9] M..., B..., LB... Not with N3

 - **Note**

If a thread smaller than the standard thread is selected for feature M... (piston rod thread), this may reduce the load capacity.

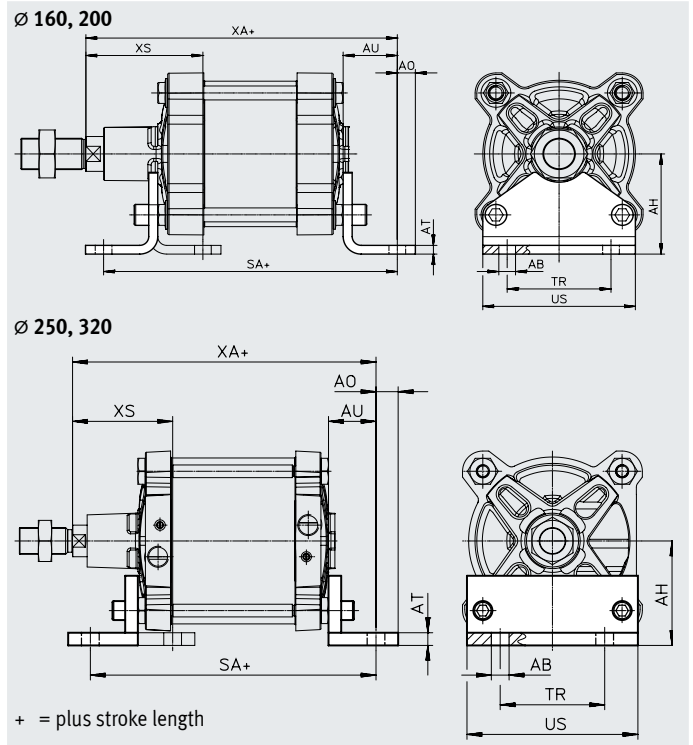
 - **Note**

When characteristic M... is selected, the piston rod nut is not included.

Accessories

Foot mounting HNG

Material:
Galvanised steel
Free of copper and PTFE

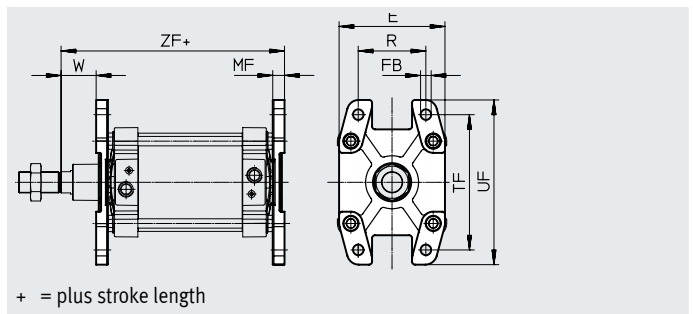
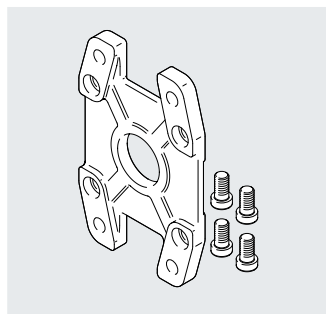


Dimensions and ordering data														
For diameter [mm]	AB \varnothing	AH	AO	AT	AU	SA	TR	US	XA	XS	CRC ¹⁾	Weight [g]	Part no.	Type
160	18.5	115	20	10	60	300	115	169	320	130	2	3931	34476	HNG-160
200	24	135	30	12	70	320	135	214	345	153	2	6896	34477	HNG-200
250	28	165	35	20	75	350	165	270	380	160	2	17084	157510	HNG-250
320	35	200	40	25	85	390	200	340	425	180	2	29968	157511	HNG-320

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Flange mounting FNG

Material:
Painted spheroidal graphite cast iron
Free of copper and PTFE
RoHS-compliant



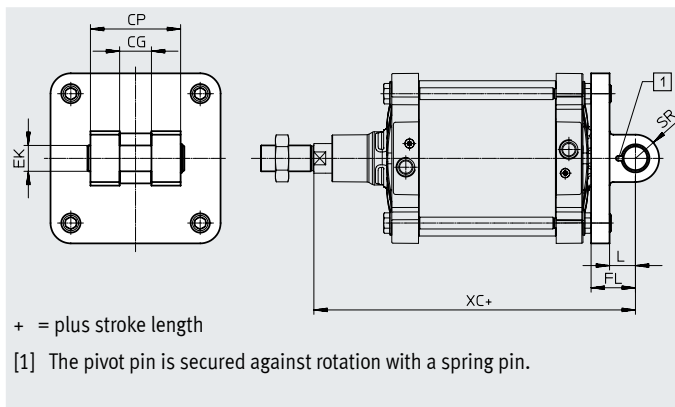
Dimensions and ordering data													
For diameter [mm]	E	FB \varnothing H13	MF	R	TF	UF	W	ZF	CRC ¹⁾	Weight [g]	Part no.	Type	
160	180	18	20	115	230	280	60	280	1	3550	34478	FNG-160	
200	220	22	25	135	270	320	70	300	1	5321	34479	FNG-200	
250	270	26	25	165	330	390	80	330	1	8657	157508	FNG-250	
320	340	33	30	200	400	470	90	370	1	15109	157509	FNG-320	

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Accessories

Swivel flange SNG

Material:
Die-cast aluminium
Free of copper and PTFE
RoHS-compliant



Dimensions and ordering data

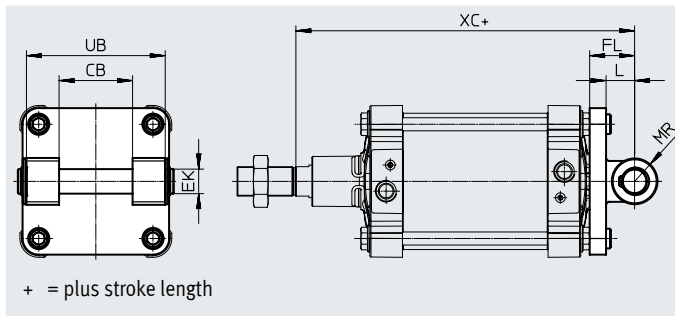
For diameter [mm]	CG	CP	EK \varnothing	FL	L	SR	XC	CRC ¹⁾	Weight [g]	Part no.	Type
160	H14	d12	F7 h9	± 0.2	35	max.	315	2	3577	152597	SNG-160
200	H14	d12	F7 h9	± 0.2	35	max.	335	2	5160	152598	SNG-200

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

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Swivel flange SNGB

Material:
 $\varnothing 160$: Die-cast aluminium
 $\varnothing 200$: Galvanised steel
 $\varnothing 250/320$: Spheroidal graphite cast iron
Free of copper and PTFE
RoHS-compliant



Dimensions and ordering data

For diameter [mm]	CB \varnothing	EK \varnothing	FL	L	MR	UB	XC	CRC ¹⁾	Weight [g]	Part no.	Type
160	H14	E10	± 0.2	37	30	h14	315	2	3445	34547	SNGB-160
200	H14	E10	± 0.2	40	25	h14	335	2	10020	562455	SNGB-200-B
250	H14	E10	± 0.2	47	40	h14	375	1	16141	157512	SNGB-250
320	H14	E10	± 0.2	52	45	h14	420	1	26636	157513	SNGB-320

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

Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

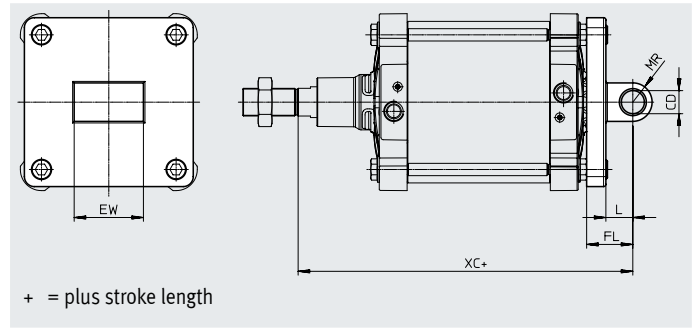
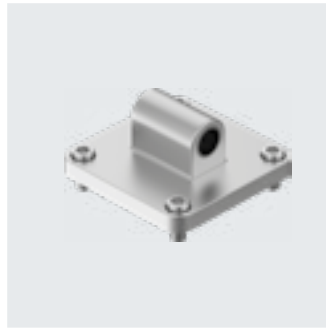
Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Accessories

Swivel flange SNGL

Material:
Die-cast aluminium
Free of copper and PTFE



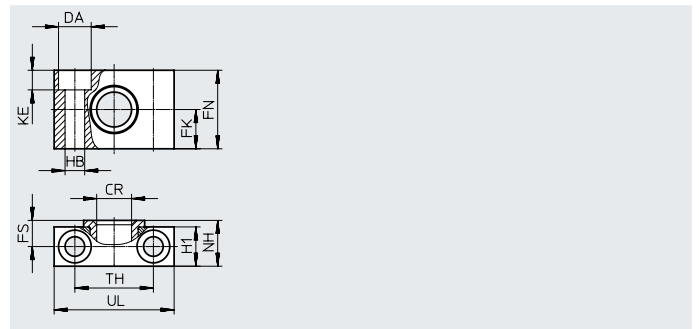
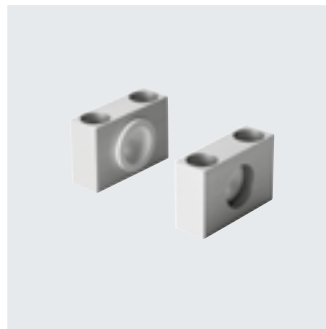
Dimensions and ordering data										
For diameter [mm]	CD ∅ H9	EW -0.5/-1.2	FL ±0.2	L	MR	XC	CRC ¹⁾	Weight [g]	Part no.	Type
160	30	90	55	35	25	315	2	2358	151534	SNGL-160
200	30	90	60	35	25	335	2	3713	151535	SNGL-200

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

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Trunnion support LNZG

Material:
Mounting: Galvanised steel
Plain bearing: Plastic
Free of copper and PTFE
RoHS-compliant




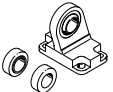

Dimensions and ordering data									
For diameter [mm]	CR ∅	DA ∅ H13	FK ∅ ±0.2	FN	FS	H1	HB ∅ H13	KE	
160, 200	32 ^{D11}	26	30	60	22.5	36	18	17	
250	40 ^{G7}	33	35	70	27.5	45	22	21.5	
320	50 ^{G7}	40	40	80	32.5	55	26	25.5	


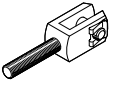
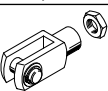
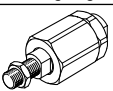
For diameter [mm]	NH	TH ±0.3	UL	CRC ¹⁾	Weight [g]	Part no.	Type
160, 200	40	60	92	2	659	35780	LNZG-16 0/200
250	50	90	140	2	2218	157516	LNZG-250
320	60	100	150	2	2934	157517	LNZG-320


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

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.


Accessories

Ordering data – Mounting components				Data sheets → Internet: mounting component			
Designation	For diameter	Part no.	Type	Designation	For diameter	Part no.	Type
Clevis foot LN/LNG				Clevis foot LSN			
	160	9037	LN-160		160	6988	LSN-160
	200	33898	LNG-200		200	6989	LSN-200
	250	9039	LN-250		250	6990	LSN-250
	320	9040	LN-320		320	6991	LSN-320
Clevis foot LSNG							
	160	152599	LSNG-160				
	200	152600	LSNG-200				

Ordering data – Piston rod attachments				Data sheets → Internet: piston rod attachment			
Designation	For diameter	Part no.	Type	Designation	For diameter	Part no.	Type
Rod eye SGS				Rod clevis SGA			
	160, 200	10775	SGS-M36x2		160, 200	10771	SGA-M36x2
	250	10776	SGS-M42x2				
	320	10777	SGS-M48x2				
Rod eye SG				Self-aligning rod coupler FK			
	160, 200	9581	SG-M36x2		160, 200	10746	FK-M36x2
	250	9582	SG-M42x2				
	320	9583	SG-M48x2				

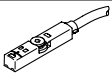
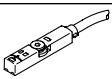
Ordering data – Push-in fittings					Data sheets → Internet: qs	
	For diameter	Connection		Part no.	Type	PE ¹⁾
		Thread	Tubing O.D.			
G thread with external hexagon						
	160, 200	G3/4	22	8040613	QS-G3/4-22	1

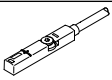
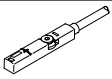
1) Packaging unit

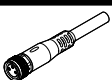
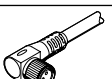
Ordering data – Reducing nipple						
	For diameter	Description	Part no.	Type	PE ¹⁾	
	Reducing nipple NPFC					
	160, 200	For connecting QS fittings with thread G1/2 to cylinders with thread G3/4	8030313	NPFC-R-G34-G12-MF	1	
	Reducing nipple D					
	250, 320	For connecting QS fittings with thread G1/2 to cylinders with thread G1	197634	D-1/2I-1A	1	

1) Packaging unit

Accessories

Ordering data – Proximity switch for T-slot, magneto-resistive						Data sheets → Internet: smt
	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part no.	Type
N/O contact						
	Inserted in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-wire	2.5	574335	SMT-8M-A-PS-24V-E-2.5-OE
			Plug M8x1, 3-pin	0.3	574334	SMT-8M-A-PS-24V-E-0.3-M8D
			Plug M12x1, 3-pin	0.3	574337	SMT-8M-A-PS-24V-E-0.3-M12
		NPN	Cable, 3-wire	2.5	574338	SMT-8M-A-NS-24V-E-2.5-OE
			Plug M8x1, 3-pin	0.3	574339	SMT-8M-A-NS-24V-E-0.3-M8D
N/C contact						
	Inserted in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-wire	7.5	574340	SMT-8M-A-PO-24V-E-7.5-OE

Ordering data – Proximity switches for T-slot, magnetic reed						Data sheets → Internet: sme
	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part no.	Type
N/O contact						
	Inserted in the slot from above, flush with the cylinder profile	Contacting	Cable, 3-wire	2.5	543862	SME-8M-DS-24V-K-2.5-OE
				5.0	543863	SME-8M-DS-24V-K-5.0-OE
			Cable, 2-wire	2.5	543872	SME-8M-ZS-24V-K-2.5-OE
			Plug M8x1, 3-pin	0.3	543861	SME-8M-DS-24V-K-0.3-M8D
N/C contact						
	Inserted in the slot from above, flush with the cylinder profile	Contacting	Cable, 3-wire	7.5	546799	SME-8M-DO-24V-K-7.5-OE

Ordering data – Connecting cables						Data sheets → Internet: nebu
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type	
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541333	NEBU-M8G3-K-2.5-LE3	
			5	541334	NEBU-M8G3-K-5-LE3	
	Straight socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	541363	NEBU-M12G5-K-2.5-LE3	
			5	541364	NEBU-M12G5-K-5-LE3	
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541338	NEBU-M8W3-K-2.5-LE3	
			5	541341	NEBU-M8W3-K-5-LE3	
	Angled socket, M12x1, 5-pin,	Cable, open end, 3-wire	2.5	541367	NEBU-M12W5-K-2.5-LE3	
			5	541370	NEBU-M12W5-K-5-LE3	

Accessories

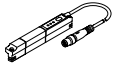
Position transmitter

The position transmitter continuously senses the position of the piston.

It has an analogue output with an output signal in proportion to the piston position.


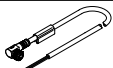
Ordering data – Position transmitter for T-slot

Data sheets → Internet: position transmitter


	For diameter	Position measuring range	Analogue output [mA]	Type of mounting	Electrical connection	Cable length [m]	Part no.	Type
	160, 200	0 ... 50	4 ... 20	Inserted in the slot from above	Plug M8x1, 4-pin, in-line	0.3	1531265	SDAT-MHS-M50-1L-SA-E-0.3-M8
		0 ... 80					1531266	SDAT-MHS-M80-1L-SA-E-0.3-M8
		0 ... 100					1531267	SDAT-MHS-M100-1L-SA-E-0.3-M8
		0 ... 125					1531268	SDAT-MHS-M125-1L-SA-E-0.3-M8
		0 ... 160					1531269	SDAT-MHS-M160-1L-SA-E-0.3-M8

Ordering data – Connecting cables

Data sheets → Internet: nebu

	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type
	Straight socket, M8x1, 4-pin	Cable, open end, 4-wire	2.5	541342	NEBU-M8G4-K-2.5-LE4
			5	541343	NEBU-M8G4-K-5-LE4
	Angled socket, M8x1, 4-pin	Cable, open end, 4-wire	2.5	541344	NEBU-M8W4-K-2.5-LE4
			5	541345	NEBU-M8W4-K-5-LE4

Ordering data – Sensor bracket for proximity switches

	For diameter	Materials	Part no.	Type
	160, 200	Rail: anodised wrought aluminium alloy Screws: high-alloy stainless steel	1553813	DASP-M4-160-A
	250		1456781	DASP-M4-250-A
	320		3015256	DASP-M4-320-A