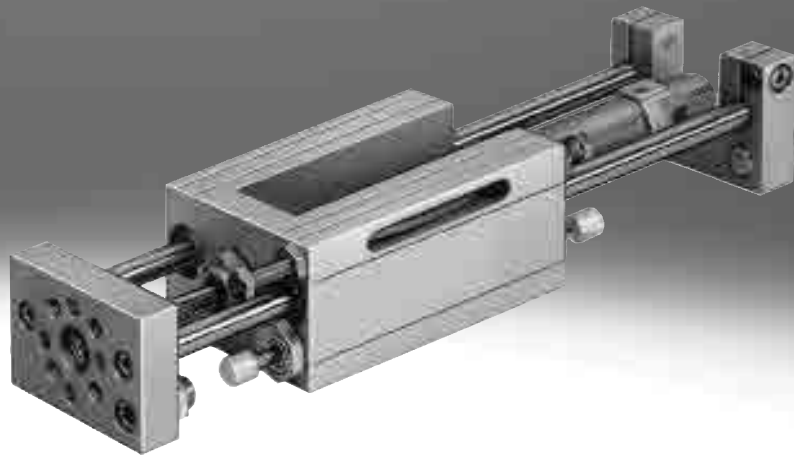


Linear drive units SLE

FESTO



Key features

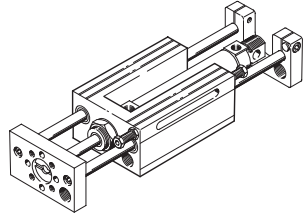
Design

The linear drive unit SLE is a combination of a guide unit and a standards-based cylinder. The drive moves a flange plate

The modular system enables customised end-position cushioning and end-position sensing solutions.

Basic unit

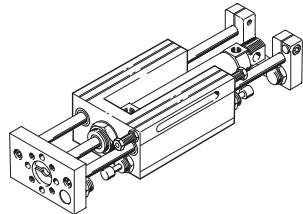
SLE...-G



Standard unit

SLE...-S

With two self-adjusting shock absorbers and two inductive proximity switches with PNP output



Type codes

001	Series
SLE	Linear drive unit

002	Size
10	10
16	16
20	20
25	25
32	32
40	40
50	50

003	Stroke
...	10 ... 500

004	Guide
KF	Recirculating ball bearing guide

005	Position sensing
A	For proximity sensor

006	Solution package
S	Solution package=G - CV - CH - PV - PH

007	Basic unit
G	Linear drive unit with pneumatic drive

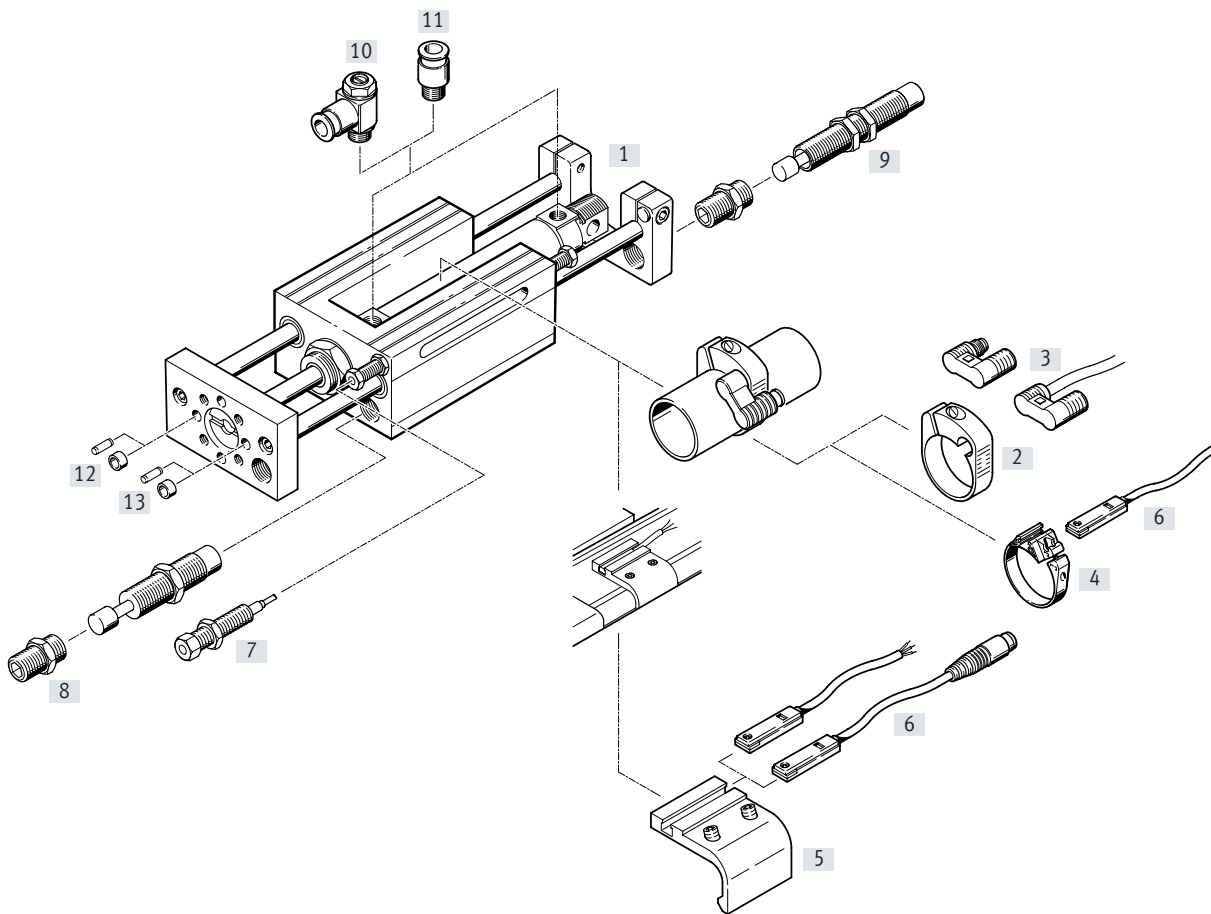
008	Shock absorber at front
	None
CV	Shock absorber, self-adjusting, with stop, at front
YV	Shock absorber, adjustable, with stop at front

009	Shock absorber at rear
	None
CH	Shock absorber, self-adjusting, with stop at rear
YH	Shock absorber, adjustable, with stop at rear

010	Sensor at front
	None
PV	Inductive proximity sensor, PNP, cable 2.5 m, stop sleeve, at front
NV	Inductive proximity sensor, NPN, 2.5 m cable, stop sleeve, at front

011	Sensor at rear
	None
PH	Inductive proximity sensor, PNP, cable 2.5 m, stop sleeve, rear
NH	Inductive proximity sensor, NPN, cable 2.5 m, stop sleeve, at rear

Peripherals overview

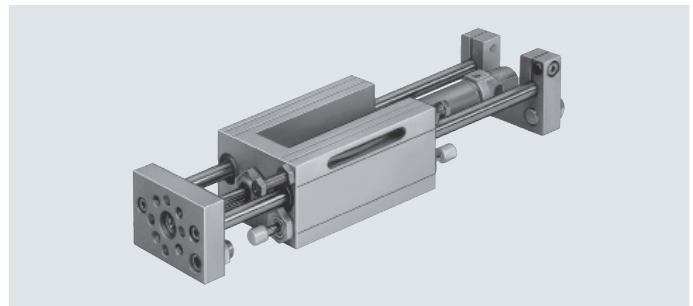
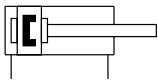


Peripherals overview

Accessories		Brief description	Piston \varnothing 10 ... 20 mm	Piston \varnothing 25 mm	Piston \varnothing 32 ... 50 mm	→ Page/Internet
[1]	Standards-based cylinder DSNU	Drive for the flange plate	■	■	–	15
	Standards-based cylinder DNC	Drive for the flange plate	–	–	■	15
[2]	Mounting kit SMBR	To be attached to standards-based cylinder DSNU	■	■	–	15
[3]	Proximity switch SMEO/SMTO-4U	Can be integrated in mounting kit SMBR	■	■	–	15
[4]	Mounting kit SMBR-8	To be attached to standards-based cylinder DSNU	■ \varnothing 20	■	–	16
[5]	Mounting kit SMB-8-FENG	To be attached to standards-based cylinder DNC	–	–	■	16
[6]	Proximity switch SME/SMT-8	Can be integrated in mounting kit SMBR-8 or SMB-8-FENG	■ \varnothing 20	■	■	16
[7]	Switching stop with proximity switch SL...-SIE-PS/SL...-SIE-NS	Can be integrated in end plate	■	■	■	14
[8]	Shock absorber kit, self-adjusting SLE...-YSR-C	Higher speeds can be decelerated using shock absorbers	■	■	■	14
[9]	Shock absorber kit, adjustable SLZ...-KF-A	Higher speeds can be decelerated using shock absorbers	■ \varnothing 20	■	■	14
[10]	One-way flow control valve GRLA	For regulating speed	■	■	■	17
[11]	Push-in fitting QS	For connecting compressed air tubing with standard O.D.	■	■	■	qs
[12]	Centring pin ZBS	For centring loads and attachments	■	–	–	15
[13]	Centring sleeve ZBH	For centring loads and attachments	–	■	■	15

Data sheet

Function



- Diameter
10 ... 50 mm
- Stroke length
10 ... 500 mm

General technical data							
Piston \varnothing	10	16	20	25	32	40	50
Stroke [mm]	10 ... 100	10 ... 200	10 ... 320		10 ... 500		
Pneumatic connection	M5		G1/8			G1/4	
Mode of operation	Double-acting						
Design	Linear drive unit						
	Standards-based cylinder						
End-position cushioning via shock absorber	Self-adjusting at both ends						
	-		Adjustable at rear				
Position sensing	Via proximity switch						
Type of mounting	Via through-hole						
	With female thread						
Mounting position	Any						
Protection against rotation/guide	Guide rods with yoke/ball bearing guide						

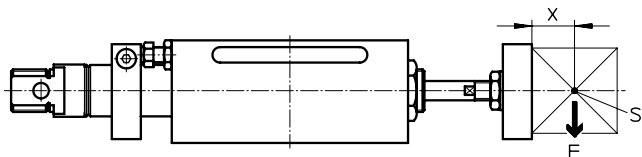
Operating and environmental conditions							
Piston \varnothing	10	16	20	25	32	40	50
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]						
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)						
Operating pressure	[MPa]	0.25 ... 1			0.15 ... 1.2		
	[psi]	35 ... 145			21 ... 180		
	[bar]	2.5 ... 10			1.5 ... 12		
	Ambient temperature ¹⁾ [°C]	-20 ... +80					

1) Note operating range of proximity switches.

Forces [N]							
Piston \varnothing	10	16	20	25	32	40	50
Theoretical force at 6 bar, advancing	47	121	188	295	483	754	1178
Theoretical force at 6 bar, retracting	40	104	158	247	415	633	990

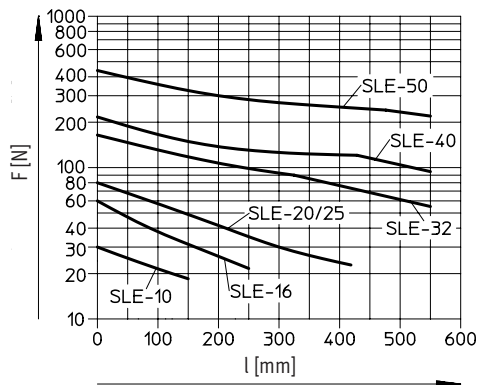
Data sheet

Permissible dynamic load

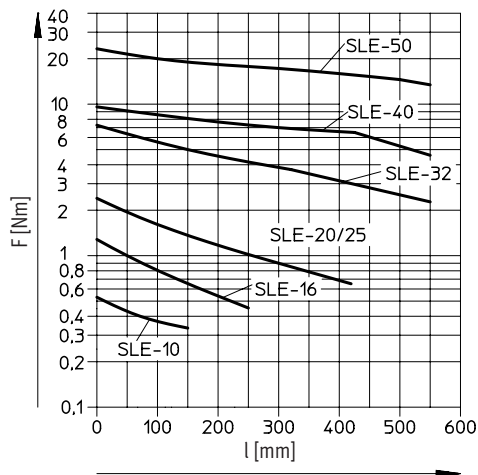


- S = Centre of gravity of the payload
- X = 25 mm
- F = Payload

Permissible payload F as a function of stroke l



Permissible torque M as a function of stroke l



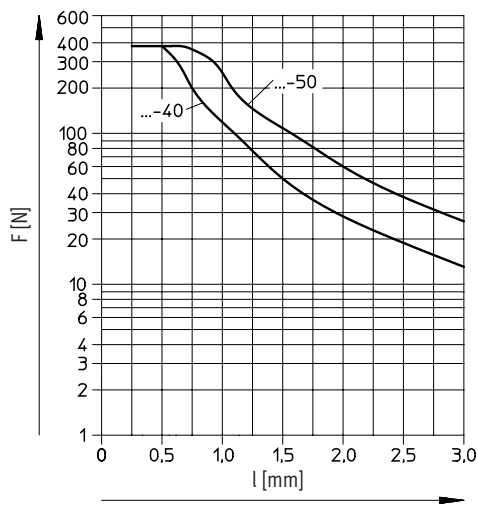
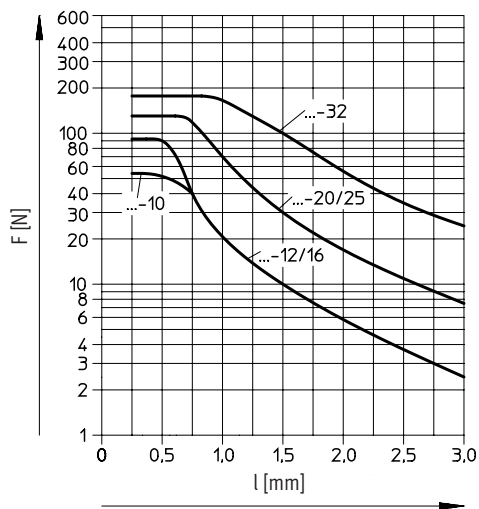
Permissible shock absorber load F as a function of impact velocity v

With horizontal installation

$F \geq m_L \times g$

$g = 9.81 \text{ m/s}^2$

$m_L = \text{Load [kg]}$



Data sheet

Permissible shock absorber load F as a function of impact velocity v

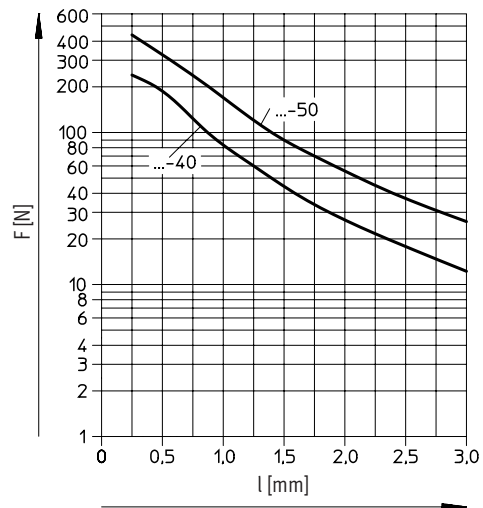
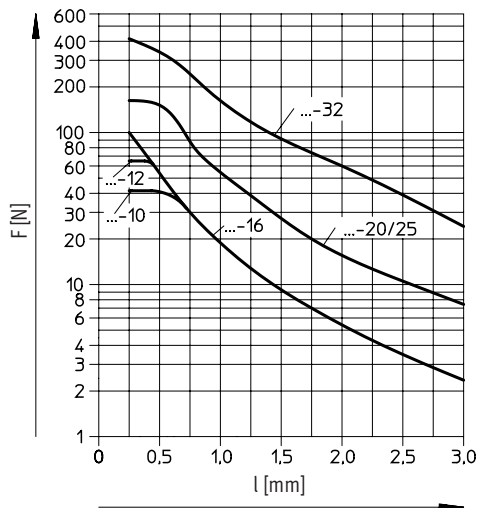
With vertical installation

$$F \geq (m_L + m_E) \times g$$

$$g = 9.81 \text{ m/s}^2$$

m_E = Moving mass
(dead weight) [kg]

m_L = Load [kg]

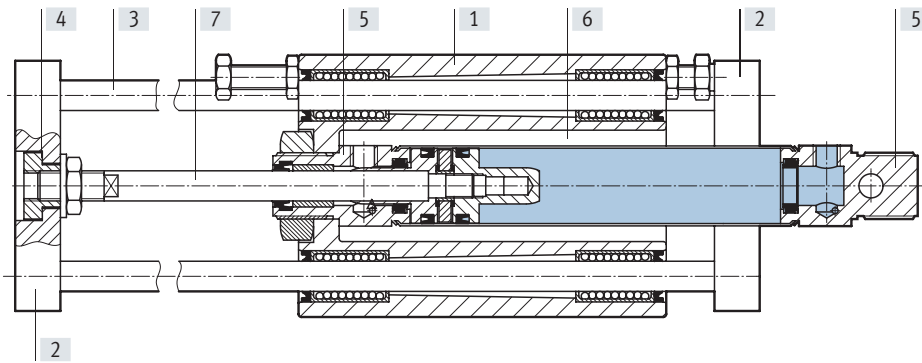


Weight [g]							
Piston \varnothing	10	16	20	25	32	40	50
Product weight with 0 mm stroke	560	913	1882	1942	4300	6175	9200
Additional weight per 10 mm stroke	10	13	19	23	57	85	125
Moving mass with 0 mm stroke	160	230	500	500	1500	2200	3600
Additional mass per 10 mm stroke	8	8	12	12	31	49	77

Data sheet

Materials

Sectional view



Linear drive unit

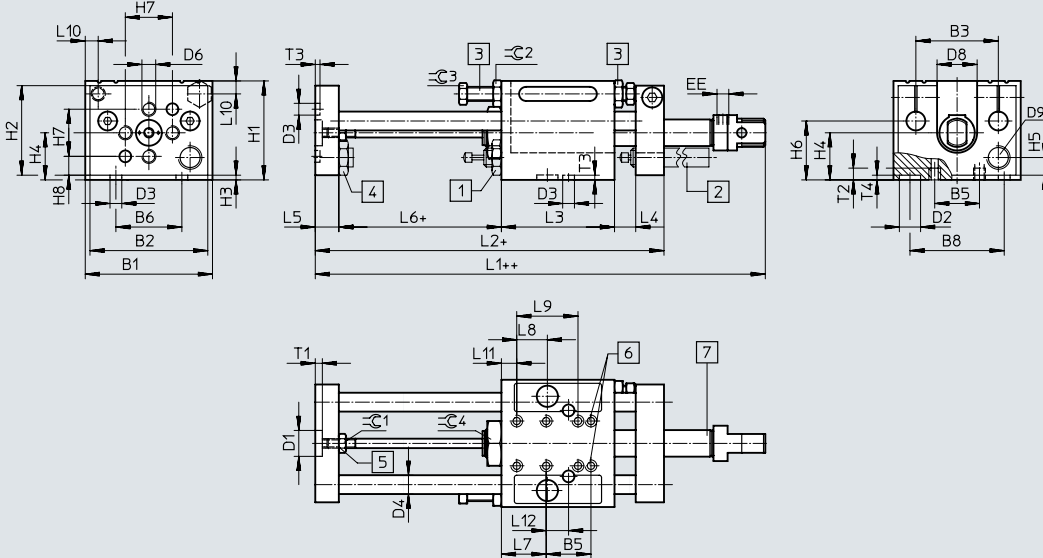
[1]	Housing	$\varnothing 10 \dots 25$	Die-cast aluminium
		$\varnothing 32 \dots 50$	Wrought aluminium alloy
[2]	Yoke/end plate		Aluminium
[3]	Guide rod		Tempered steel
[4]	Coupling		Steel
[5]	Bearing and end caps	$\varnothing 10 \dots 25$	Wrought aluminium alloy
		$\varnothing 32 \dots 50$	Die-cast aluminium
[6]	Cylinder barrel	$\varnothing 10 \dots 25$	High-alloy stainless steel
		$\varnothing 32 \dots 50$	Wrought aluminium alloy
[7]	Piston rod	$\varnothing 10 \dots 25$	High-alloy stainless steel
		$\varnothing 32 \dots 50$	High-alloy steel
-	Seals		Polyurethane, nitrile rubber

Data sheet

Dimensions

Download CAD data → www.festo.com

Piston \varnothing 10 mm



- | | | | |
|--|--|--|----------------------------|
| [1] Self-adjusting shock absorber, for front and rear mounting | [3] Switching stop with proximity switch, PNP/NPN, for front and rear mounting | [5] Compensating coupling for radial and axial alignment | + = plus stroke length |
| [2] Adjustable shock absorber, can only be mounted to the yoke at the rear | [4] Stop for shock absorber | [6] Mounting thread | ++ = plus 2x stroke length |
| | | [7] Drive DSNU | |

\varnothing	B1	B2	B3	B5	B6	B8	D1	D2	D3	D4	D5	D6	D8	D9
[mm]			± 0.03		± 0.03	± 0.03	\varnothing	\varnothing	\varnothing	\varnothing			\varnothing	
10	54	50	35	19	28	40	11	9	5	8	M5	M6	17	M10x0.75

\varnothing	EE	H1	H2	H3	H4	H5	H6	H7 ¹⁾	H8	L1	L2	L3	L4	L5
[mm]								± 0.03						
10	M5	42	38	2	20	7.5	25	20	8	91	96	48	9	10

\varnothing	L6	L7	L8	L9	L10	L11	L12	T1	T2	T3	T4	$\approx C1$	$\approx C2$	$\approx C3$	$\approx C4$
[mm]											+0.2				
10	19	19	13	26	5.5	6.5	9.5	3	5	2	2.1	7	10	8	19

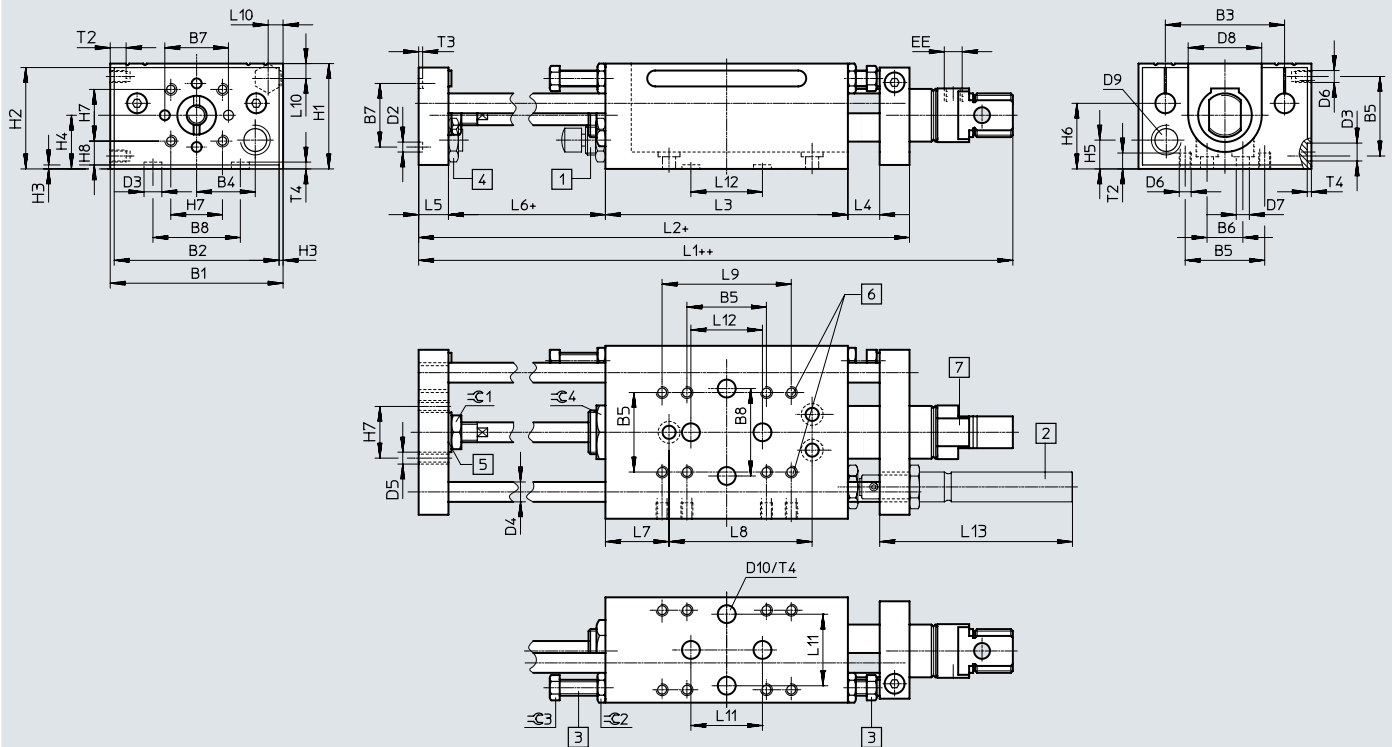
1) Tolerance for centring hole: ± 0.03 mm

Data sheet

Dimensions

Download CAD data → www.festo.com

Piston Ø 16 ... 25 mm



- [1] Self-adjusting shock absorber, for front and rear mounting
 - [2] Adjustable shock absorber, can only be mounted to the yoke at the rear
 - [3] Switching stop with proximity switch, PNP/NPN, for front and rear mounting
 - [4] Stop for shock absorber
 - [5] Compensating coupling for radial and axial alignment
 - [6] Mounting thread
 - [7] Drive DSNU
- + = plus stroke length
++ = plus 2x stroke length

∅	B1	B2	B3	B4	B5	B6	B7	B8	D2	D3	D4	D5	D6	D7	D8
[mm]			±0.03					±0.03	∅ H7	∅ H7	∅ h6			∅	
16	64	60	44	22	26	14	28	40	5	9	8	M6	M5	5.5	26
20	87	83	60	29.5	40	18	32	40	5	9	10	M6	M6	6.6	37
25	87	83	60	29.5	40	18	32	40	5	9	10	M6	M6	6.6	37

∅	D9	D10	EE	H1	H2	H3	H4	H5	H6	H7	H8	L1	L2	L3	L4
[mm]		∅ H7							±0.1						
16	M10x0.75	5	M5	43	39	2	22	10	25	19	10.5	116	143	86	12
20	M15x1	9	G1/8	53	49	2	27	14.5	33	26	12	145.5	197	122	16
25	M15x1	9	G1/8	53	49	2	27	14.5	33	26	12	149	197	122	16

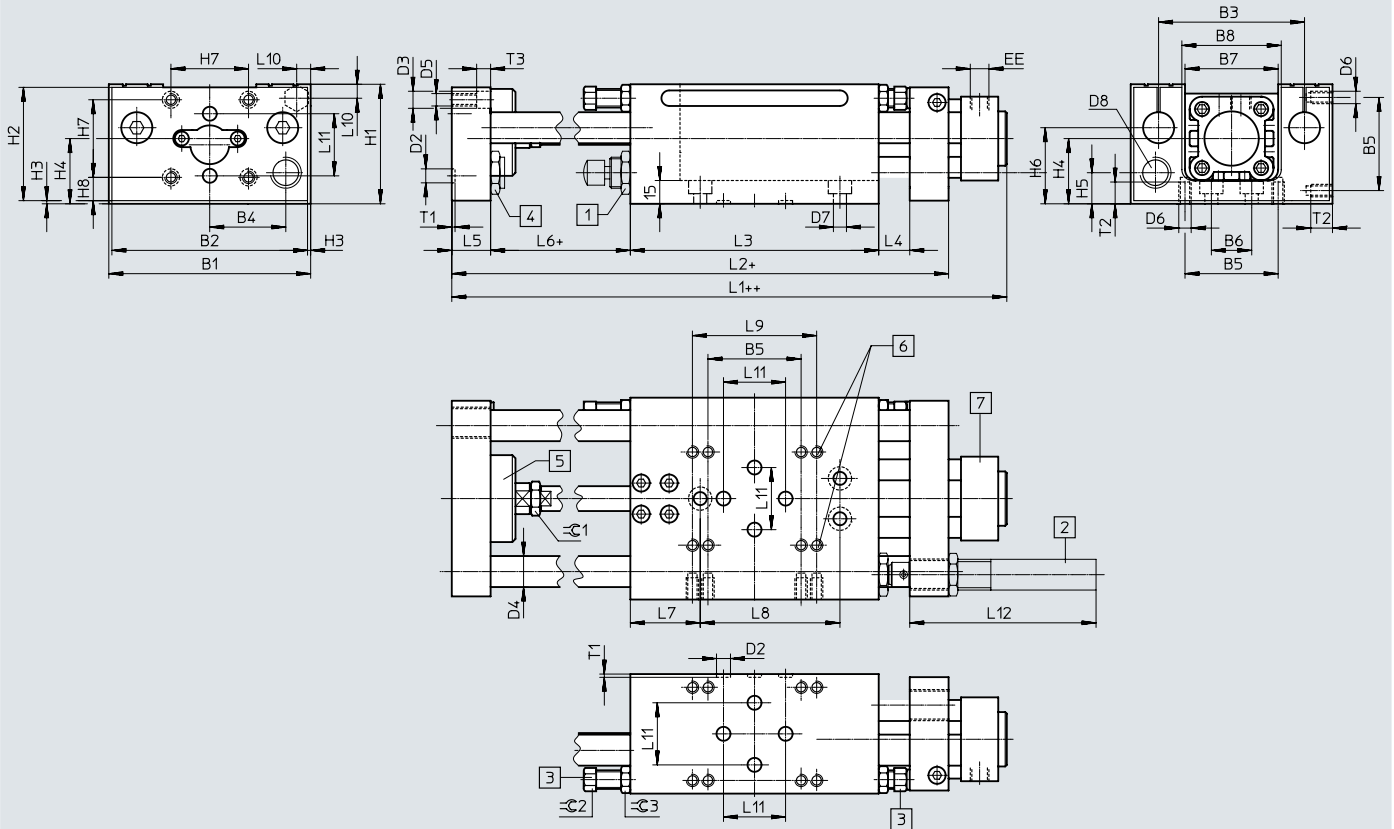
∅	L5	L6	L7	L8	L9	L10	L11	L12	L13	T2	T3	T4	∅C1	∅C2	∅C3	∅C4
[mm]				±0.2			±0.03	±0.03								
16	12	21	21	54	40	6	-	32	-	7	2	2	10	10	8	19
20	15	29	32	72	65	7.5	40	40	97	8	2	2.1 ^{+0.2}	13	13	11	27
25	15	29	32	72	65	7.5	40	40	97	8	2	2.1 ^{+0.2}	17	13	11	27

Data sheet

Dimensions

Download CAD data → www.festo.com

Piston Ø 32 ... 50 mm



- [1] Self-adjusting shock absorber, for front and rear mounting
 - [2] Adjustable shock absorber, can only be mounted to the yoke at the rear
 - [3] Switching stop with proximity switch, PNP/NPN, for front and rear mounting
 - [4] Stop for shock absorber
 - [5] Compensating coupling for radial and axial alignment
 - [6] Mounting thread
 - [7] Drive DNC
- + = plus stroke length
++ = plus 2x stroke length

∅	B1	B2	B3	B4	B5	B6	B7	B8	D2	D3	D4	D5	D6	D7
[mm]			±0.03						∅ H7	∅	∅ h6			∅
32	115	111	84	41.5	50	26	52	55	9	11	16	M8	M6	8.4
40	130	126	94	49	60	26	60	64	9	11	20	M8	M8	8.4
50	154	150	113	58	60	30	72	76	9	15	25	M10	M8	8.4

∅	D8	EE	H1	H2	H3	H4	H5	H6	H7	H8	L1	L2
[mm]								±0.1				
32	M20x1.25	G1/8	70	66	2	40.5	17	43	40	18.5	172	250
40	M20x1.25	G1/4	77	73	2	46	20	49	50	15	196	260
50	M24x1.25	G1/4	90	86	2	53.5	19	52	60	16.5	213	305

∅	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	T1	T2	T3	∅C1	∅C2	∅C3
[mm]									±0.03	max.	+0.2					
32	160	20	20	30	45	90	75	9	40	115	2.1	10	7.3	17	13	15
40	160	20	25	30	45	90	80	9	40	115	2.1	14	9	19	13	15
50	192	25	25	38	66	90	80	10	40	138	2.1	14	11	24	13	15

Ordering data – Modular product system

Ordering table										
Size	10	16	20	25	32	40	50	Conditions	Code	Enter code
Module no.	150088	150090	150091	150092	150093	150094	150921			
Function	Linear drive unit								SLE	SLE
Size [mm]	10	16	20	25	32	40	50		-...	
Stroke [mm]	10 ... 100	10 ... 200	10 ... 320		10 ... 500				-...	
Guide	With linear ball bearings								-KF	-KF
Position sensing	Via proximity switch								-A	-A
Basic unit	Linear drive unit with pneumatic drive								-G	-G
Shock absorber	At front	Self-adjusting shock absorber, with stop at front						-CV		
	At rear	Self-adjusting shock absorber, with stop at rear						-CH		
		-	-	Adjustable shock absorber, with stop at rear				-YH		
Sensor (bonded)	At front	Inductive sensor with 2.5 m cable, PNP, with stop sleeve at front						-PV		
		Inductive sensor with 2.5 m cable, NPN, with stop sleeve at front						-NV		
	At rear	Inductive sensor with 2.5 m cable, PNP, with stop sleeve at rear						-PH		
		Inductive sensor with 2.5 m cable, NPN, with stop sleeve at rear						-NH		

Ordering data – Modular products, package solution

Ordering table										
Size	10	16	20	25	32	40	50	Conditions	Code	Enter code
Module no.	150088	150090	150091	150092	150093	150094	150921			
Function	Linear drive unit								SLE	SLE
Size [mm]	10	16	20	25	32	40	50		-...	
Stroke [mm]	10 ... 100	10 ... 200	10 ... 320		10 ... 500				-...	
Guide	With linear ball bearings								-KF	-KF
Position sensing	Via proximity switch								-A	-A
Standard unit	Package solution S = G-CV-CH-PV-PH								-S	-S

Accessories

Shock absorber kit

SLE- ...-YSR-C, self-adjusting

(Order code: CV, CH)

Material:

YSR-8-8-C: Nickel-plated brass

YSR-12-12-C, YSR-16-20-C,

YSR-20-25-C: Galvanised steel

Free of copper and PTFE



Ordering data		Part no.	Type
For ø [mm]	Includes shock absorber → www.festo.com		
10	YSR-8-8-C	116246	SLE-10-YSR-C
16	YSR-8-8-C	116247	SLE-16-YSR-C
20, 25	YSR-12-12-C	116248	SLE-20/25-YSR-C
32	YSR-16-20-C	116249	SLE-32-YSR-C
40	YSR-16-20-C	116250	SLE-40-YSR-C
50	YSR-20-25-C	118698	SLE-50-YSR-C

Shock absorber kit

SLZ- ...-KF-A, adjustable

(Order code: YV, YH)

Material:

Galvanised steel



Ordering data		Part no.	Type
For ø [mm]	Includes shock absorber → www.festo.com		
20, 25	DYSR-12-12-Y5	114032	SLZ-25-KF-A
32, 40	DYSR-16-20-Y5	114033	SLZ-32-KF-A
50	DYSR-20-25-Y5	114034	SLZ-50-KF-A

Switching stop SL- ...-SIE-PS

(Order code: PV, PH)

Kit with inductive proximity switch PNP

Switching stop SL- ...-SIE-NS



(Order code: NV, NH)

Kit with inductive proximity switch NPN

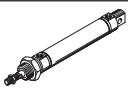
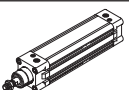



Ordering data		Part no.	Type
For ø [mm]	Switching output	Includes proximity switch → www.festo.com	
10, 16	PNP	SIEN-4B-PS-K-L	SL-10/16-SIE-PS
	NPN	SIEN-4B-NS-K-L	SL-10/16-SIE-NS
20, 25	PNP	SIEN-4B-PS-K-L	SL-20/25-SIE-PS
	NPN	SIEN-4B-NS-K-L	SL-20/25-SIE-NS
32, 40, 50	PNP	SIEN-6.5B-PS-K-L	SL-32/50-SIE-PS
	NPN	SIEN-6.5B-NS-K-L	SL-32/50-SIE-NS


Accessories


Ordering data – Accessories					
	For ø [mm]	Material	Part no.	Type	PJ ¹⁾
Centring pin ZBS Data sheets → Internet: zbs					
	10 ... 20	Stainless steel Free of copper and PTFE	150928	ZBS-5	10
Centring sleeve ZBH Data sheets → Internet: zbh					
	25 ... 50	Stainless steel Free of copper and PTFE	8137184	ZBH-9-B	10

1) Packaging unit



Ordering data – Standards-based cylinders				Data sheets → Internet: standards-based cylinder			
Designation	For ø	Part no.	Type	Designation	For ø	Part no.	Type
Standards-based cylinder DSNU				Standards-based cylinder DNC			
	10	14325	DSNU-10-...-P-A		32	163304	DNC-32-...-PPV-A
	16	14320	DSNU-16-...-PPV-A		40	163336	DNC-40-...-PPV-A
	20	14321	DSNU-20-...-PPV-A		50	163368	DNC-50-...-PPV-A
	25	14322	DSNU-25-...-PPV-A				




Ordering data – Proximity switches, round design, magneto-resistive								Data sheets → Internet: smto	
	Mounting	Switching output	Electrical connection		Cable length [m]	Outlet direction of connection	Part no.	Type	
			Cable	Plug M8					
N/O									
	With accessories	PNP	3-wire	–	2.5	In-line	152836	SMT0-4U-PS-K-LED-24	
			–	3-pin	–	In-line	152742	SMT0-4U-PS-S-LED-24	
		NPN	3-wire	–	2.5	In-line	152837	SMT0-4U-NS-K-LED-24	
			–	3-pin	–	In-line	152743	SMT0-4U-NS-S-LED-24	



Ordering data – Proximity switches, round design, magnetic reed							Data sheets → Internet: smeo	
	Mounting	Electrical connection		Cable length [m]	Outlet direction of connection	Part no.	Type	
		Cable	Plug M8					
N/O								
	With accessories	3-wire	–	2.5	In-line	36198	SMEO-4U-K-LED-24	
				5	In-line	175401	SMEO-4U-K5-LED-24	
		–	3-pin	–	In-line	151526	SMEO-4U-S-LED-24-B	

Ordering data – Mounting kit for proximity switches SMEO/SMT0-4U				Data sheets → Internet: smbr	
Designation	For ø	Part no.	Type		
	10	19273	SMBR-10		
	16	19275	SMBR-16		
	20	19276	SMBR-20		
	25	19277	SMBR-25		



Accessories


Ordering data – Proximity switches for T-slot, magneto-resistive						Data sheets → Internet: smt
	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part no.	Type
N/O						
	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						
	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						
	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
			Cable, 2-wire	5.0	543863	SME-8M-DS-24V-K-5.0-OE
			Plug M8x1, 3-pin	2.5	543872	SME-8M-ZS-24V-K-2.5-OE
			Plug M8x1, 3-pin	0.3	543861	SME-8M-DS-24V-K-0.3-M8D
	Inserted in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	2.5	150855	SME-8-K-LED-24
			Plug M8x1, 3-pin	0.3	150857	SME-8-S-LED-24
N/C						
	Inserted in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	7.5	160251	SME-8-O-K-LED-24

Ordering data – Mounting kits for proximity switches SME/SMT-8				Data sheets → Internet: smb			
Designation	For ø	Part no.	Type	Designation	For ø	Part no.	Type
	20	175095	SMBR-8-20		32	175705	SMB-8-FENG-32/40
	25	175096	SMBR-8-25		40		
					50	175706	SMB-8-FENG-50/63

Accessories

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

Ordering data – One-way flow control valves					Data sheets → Internet: grla
	Connection Thread	For tubing O.D.	Material	Part no.	Type
	M5	3	Metal design	193137	GRLA-M5-QS-3-D
		4		193138	GRLA-M5-QS-4-D
		6		193139	GRLA-M5-QS-6-D
	G1/8	3		193142	GRLA-1/8-QS-3-D
		4		193143	GRLA-1/8-QS-4-D
		6		193144	GRLA-1/8-QS-6-D
		8		193145	GRLA-1/8-QS-8-D
	G1/4	6		193146	GRLA-1/4-QS-6-D
		8		193147	GRLA-1/4-QS-8-D
		10		193148	GRLA-1/4-QS-10-D

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