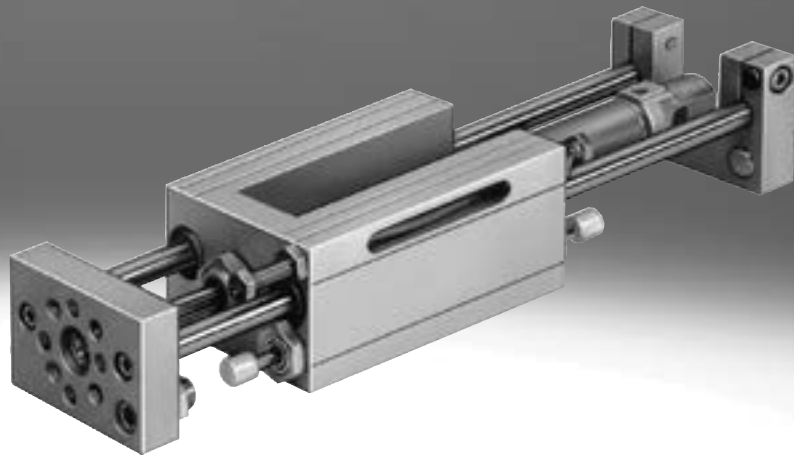


## Linear drive units SLE

**FESTO**



### Key features

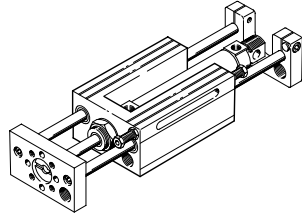
#### Design

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

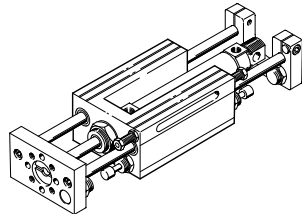
##### SLE-...-G



#### Standard unit

##### SLE-...-S

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



Type codes

<b>001</b>	<b>Series</b>
<b>SLE</b>	Linear drive unit

<b>002</b>	<b>Size</b>
<b>10</b>	10
<b>16</b>	16
<b>20</b>	20
<b>25</b>	25
<b>32</b>	32
<b>40</b>	40
<b>50</b>	50

<b>003</b>	<b>Stroke</b>
<b>...</b>	10 ... 500

<b>004</b>	<b>Guide</b>
<b>KF</b>	Recirculating ball bearing guide

<b>005</b>	<b>Position sensing</b>
<b>A</b>	For proximity sensor

<b>006</b>	<b>Solution package</b>
<b>S</b>	Solution package=G - CV - CH - PV - PH

<b>007</b>	<b>Basic unit</b>
<b>G</b>	Linear drive unit with pneumatic drive

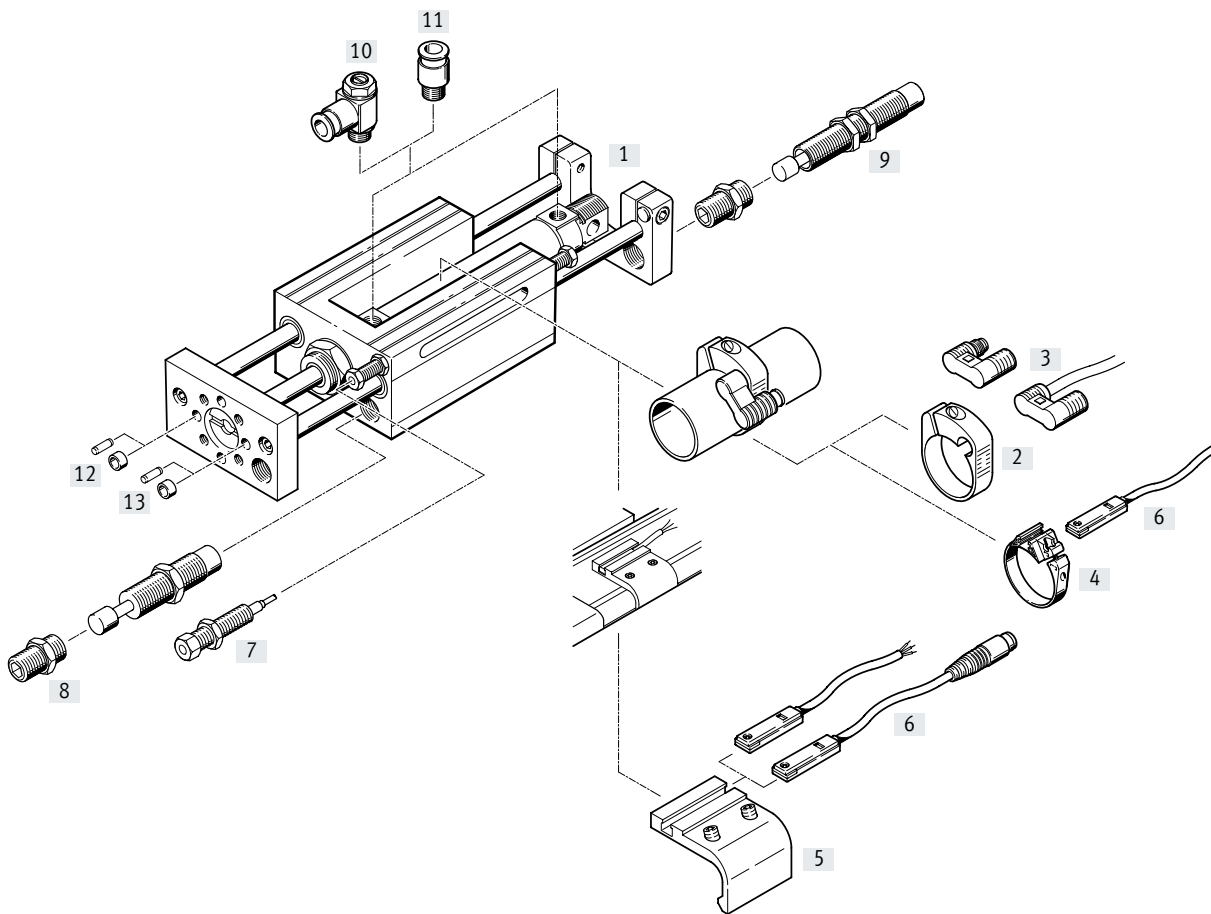
<b>008</b>	<b>Shock absorber at front</b>
	None
<b>CV</b>	Shock absorber, self-adjusting, with stop, at front
<b>YV</b>	Shock absorber, adjustable, with stop at front

<b>009</b>	<b>Shock absorber at rear</b>
	None
<b>CH</b>	Shock absorber, self-adjusting, with stop at rear
<b>YH</b>	Shock absorber, adjustable, with stop at rear

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

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

Peripherals overview

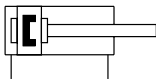


## Peripherals overview

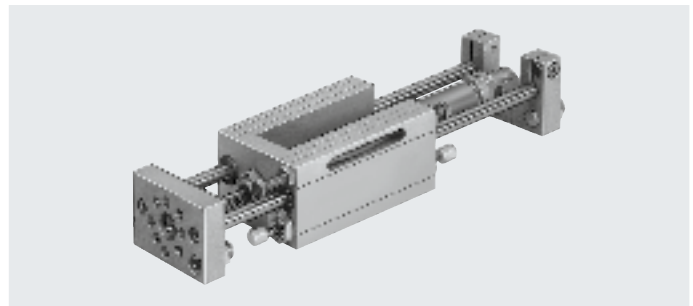
Accessories		Brief description	Piston $\varnothing$ 10 ... 20 mm	Piston $\varnothing$ 25 mm	Piston $\varnothing$ 32 ... 50 mm	→ Page/Internet
[1]	Standards-based cylinder DSNU	Drive for the flange plate	■	■	–	15
	Standards-based cylinder DNC	Drive for the flange plate	–	–	■	15
[2]	Mounting kit SMBR	To 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



www.festo.com



- 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						

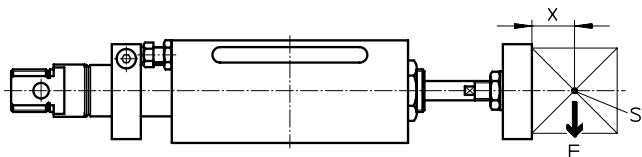
Operating and environmental conditions							
Piston $\varnothing$	10	16	20	25	32	40	50
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]						
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)						
Operating pressure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

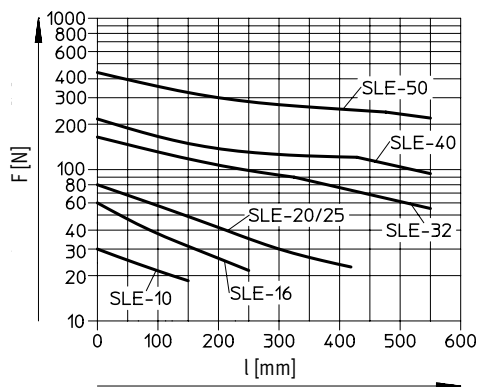
Data sheet

Permissible dynamic load

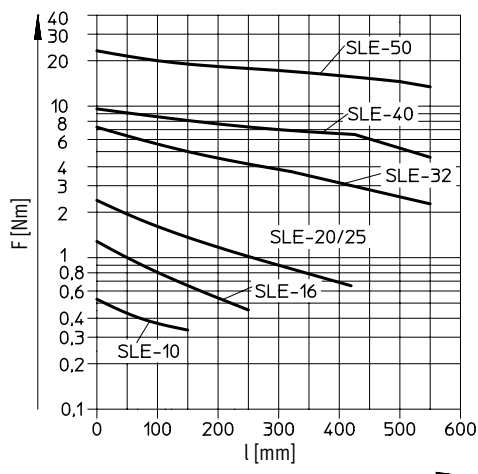


- S = Centre of gravity of the payload
- X = 25 mm
- F = Payload

Permissible payload F as a function of stroke l



Permissible torque M as a function of stroke l



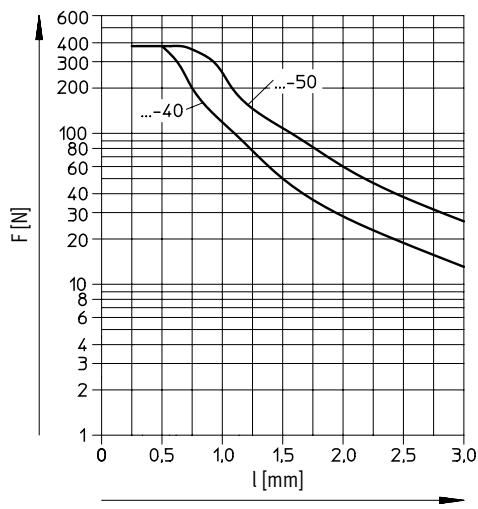
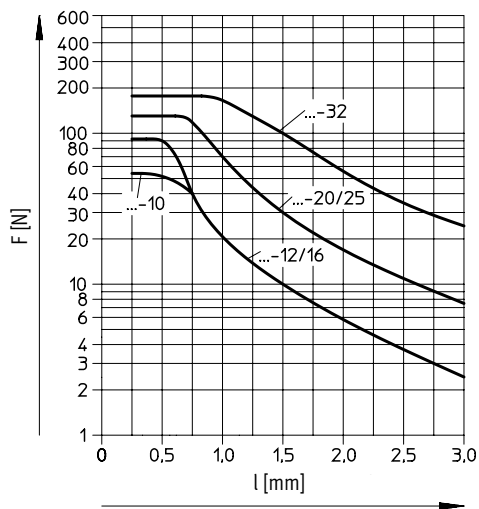
Permissible shock absorber load F as a function of impact velocity v

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

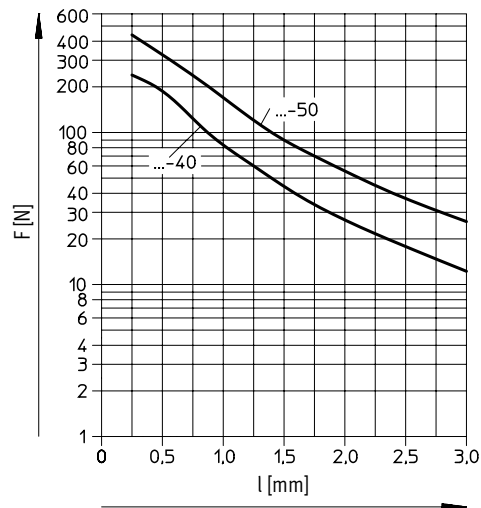
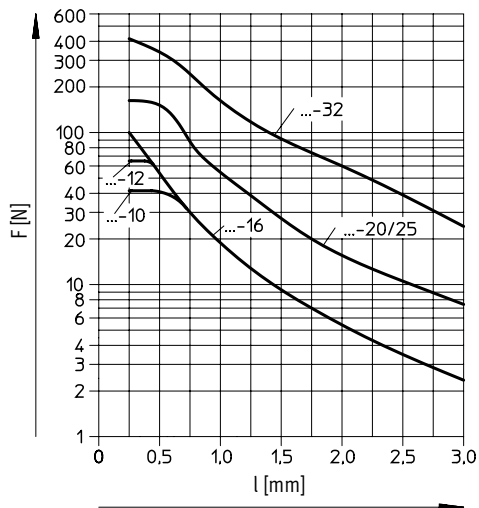
With vertical installation

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

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

$m_E$  = Moving mass  
(dead weight) [kg]

$m_L$  = Load [kg]



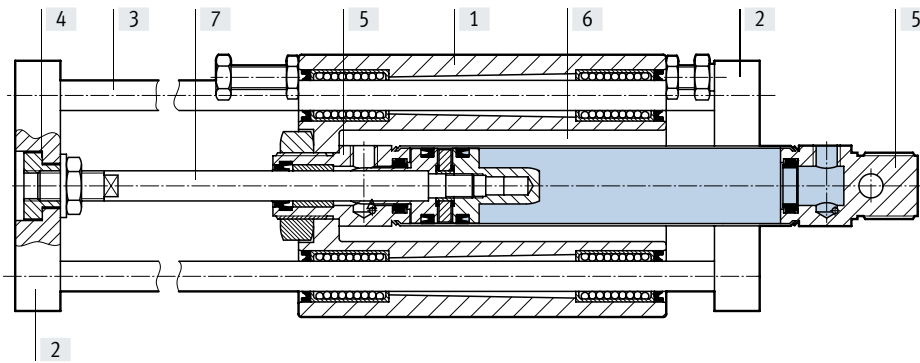
Weight [g]							
Piston $\varnothing$	10	16	20	25	32	40	50
Product weight with 0 mm stroke	560	913	1882	1942	4300	6175	9200
Additional weight per 10 mm stroke	10	13	19	23	57	85	125
Moving mass with 0 mm stroke	160	230	500	500	1500	2200	3600
Additional mass per 10 mm stroke	8	8	12	12	31	49	77



## Data sheet

### Materials

Sectional view



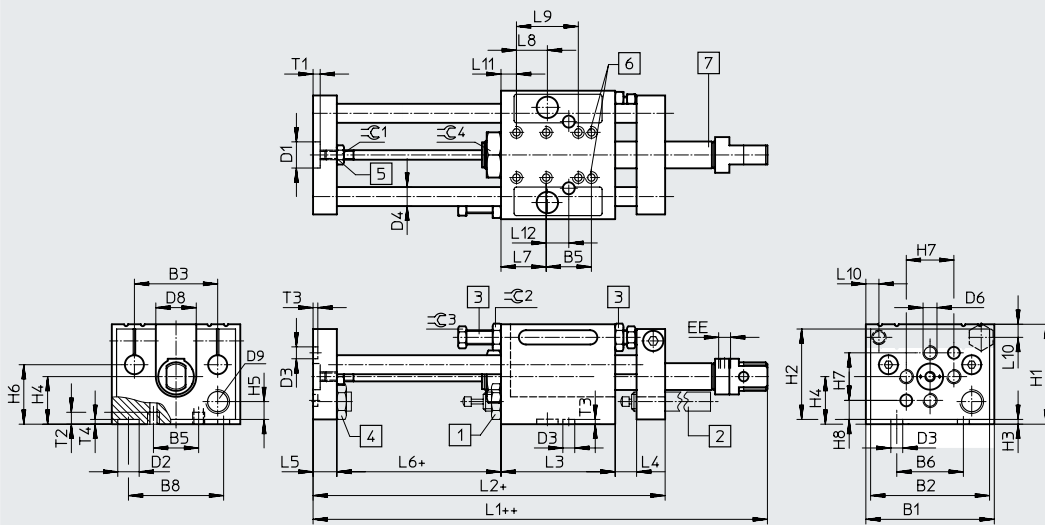
Linear drive unit		
[1] Housing	$\varnothing 10 \dots 25$	Die-cast aluminium
	$\varnothing 32 \dots 50$	Wrought aluminium alloy
[2] Yoke/end plate		Aluminium
[3] Guide rod		Tempered steel
[4] Coupling		Steel
[5] Bearing and end caps	$\varnothing 10 \dots 25$	Wrought aluminium alloy
	$\varnothing 32 \dots 50$	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](http://www.festo.com)

Piston  $\varnothing$  10 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

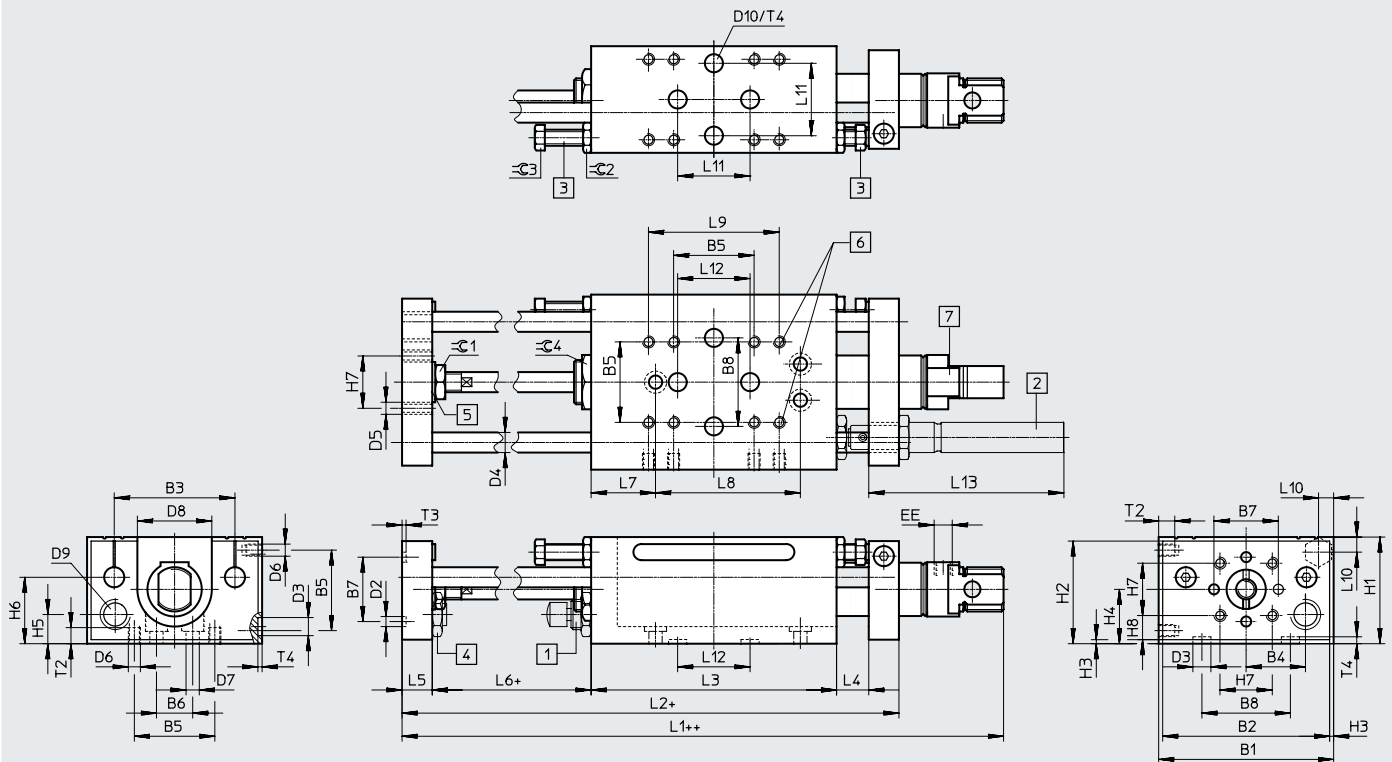
+ = plus stroke length  
 ++ = plus 2x stroke length

Data sheet

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Piston  $\varnothing$  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

$\varnothing$	B1	B2	B3	B4	B5	B6	B7	B8	D2	D3	D4	D5	D6	D7	D8
[mm]			$\pm 0.03$					$\pm 0.03$	$\varnothing$ H7	$\varnothing$ H7	$\varnothing$ h6			$\varnothing$	
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

$\varnothing$	D9	D10	EE	H1	H2	H3	H4	H5	H6	H7	H8	L1	L2	L3	L4
[mm]		$\varnothing$ H7							$\pm 0.1$						
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

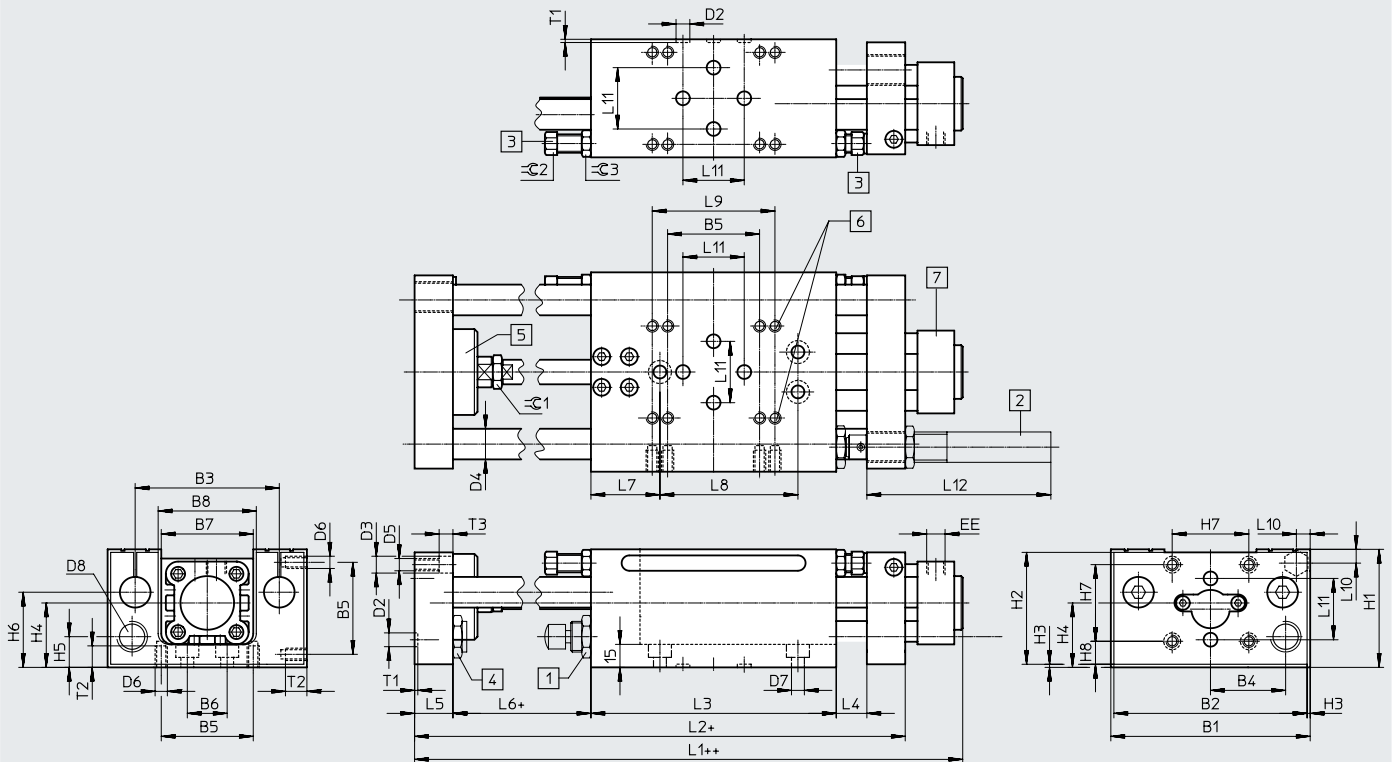
$\varnothing$	L5	L6	L7	L8	L9	L10	L11	L12	L13	T2	T3	T4	$\varnothing$ 1	$\varnothing$ 2	$\varnothing$ 3	$\varnothing$ 4
[mm]				$\pm 0.2$			$\pm 0.03$	$\pm 0.03$								
16	12	21	21	54	40	6	-	32	-	7	2	2	10	10	8	19
20	15	29	32	72	65	7.5	40	40	97	8	2	2.1 <sup>+0.2</sup>	13	13	11	27
25	15	29	32	72	65	7.5	40	40	97	8	2	2.1 <sup>+0.2</sup>	17	13	11	27

Data sheet

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Piston  $\varnothing$  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

$\varnothing$	B1	B2	B3	B4	B5	B6	B7	B8	D2	D3	D4	D5	D6	D7
[mm]			$\pm 0.03$						$\varnothing$ H7	$\varnothing$	$\varnothing$ h6			$\varnothing$
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

$\varnothing$	D8	EE	H1	H2	H3	H4	H5	H6	H7	H8	L1	L2
[mm]								$\pm 0.1$				
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

$\varnothing$	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	T1	T2	T3	$\approx \varnothing 1$	$\approx \varnothing 2$	$\approx \varnothing 3$
[mm]									$\pm 0.03$	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.	<b>150088</b>	<b>150090</b>	<b>150091</b>	<b>150092</b>	<b>150093</b>	<b>150094</b>	<b>150921</b>				
Function	Linear drive unit								<b>SLE</b>	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								<b>-KF</b>	-KF	
Position sensing	Via proximity switch								<b>-A</b>	-A	
Basic unit	Linear drive unit with pneumatic drive								<b>-G</b>	-G	
Shock absorber	At front	Self-adjusting shock absorber, with stop at front								<b>-CV</b>	
	At rear	Self-adjusting shock absorber, with stop at rear								<b>-CH</b>	
		-	-	Adjustable shock absorber, with stop at rear					<b>-YH</b>		
Sensor (bonded)	At front	Inductive sensor with 2.5 m cable, PNP, with stop sleeve at front								<b>-PV</b>	
		Inductive sensor with 2.5 m cable, NPN, with stop sleeve at front								<b>-NV</b>	
	At rear	Inductive sensor with 2.5 m cable, PNP, with stop sleeve at rear								<b>-PH</b>	
		Inductive sensor with 2.5 m cable, NPN, with stop sleeve at rear								<b>-NH</b>	

### Ordering data – Modular products, package solution

Ordering table										
Size	10	16	20	25	32	40	50	Conditions	Code	Enter code
Module no.	<b>150088</b>	<b>150090</b>	<b>150091</b>	<b>150092</b>	<b>150093</b>	<b>150094</b>	<b>150921</b>			
Function	Linear drive unit								<b>SLE</b>	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								<b>-KF</b>	-KF
Position sensing	Via proximity switch								<b>-A</b>	-A
Standard unit	Package solution S = G-CV-CH-PV-PH								<b>-S</b>	-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 → <a href="http://www.festo.com">www.festo.com</a>		
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 → <a href="http://www.festo.com">www.festo.com</a>		
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

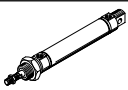
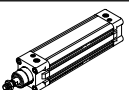



Ordering data		Part no.	Type
For ø [mm]	Switching output	Includes proximity switch → <a href="http://www.festo.com">www.festo.com</a>	
10, 16	PNP	SIEN-4B-PS-K-L	SL-10/16-SIE-PS
	NPN	SIEN-4B-NS-K-L	SL-10/16-SIE-NS
20, 25	PNP	SIEN-4B-PS-K-L	SL-20/25-SIE-PS
	NPN	SIEN-4B-NS-K-L	SL-20/25-SIE-NS
32, 40, 50	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 <sup>1)</sup>
Centring pin ZBS <span style="float: right;">Data sheets → Internet: zbs</span>					
	10 ... 20	Stainless steel Free of copper and PTFE	<b>150928</b>	<b>ZBS-5</b>	10
Centring sleeve ZBH <span style="float: right;">Data sheets → Internet: zbh</span>					
	25 ... 50	Stainless steel Free of copper and PTFE	<b>8137184</b>	<b>ZBH-9-B</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	<b>14325</b>	<b>DSNU-10-...-P-A</b>		32	<b>163304</b>	<b>DNC-32-...-PPV-A</b>
	16	<b>14320</b>	<b>DSNU-16-...-PPV-A</b>		40	<b>163336</b>	<b>DNC-40-...-PPV-A</b>
	20	<b>14321</b>	<b>DSNU-20-...-PPV-A</b>		50	<b>163368</b>	<b>DNC-50-...-PPV-A</b>
	25	<b>14322</b>	<b>DSNU-25-...-PPV-A</b>				




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					
<b>N/O</b>									
	With accessories	PNP	3-wire	–	2.5	In-line	<b>152836</b>	<b>SMT0-4U-PS-K-LED-24</b>	
			–	3-pin	–	In-line	<b>152742</b>	<b>SMT0-4U-PS-S-LED-24</b>	
		NPN	3-wire	–	2.5	In-line	<b>152837</b>	<b>SMT0-4U-NS-K-LED-24</b>	
			–	3-pin	–	In-line	<b>152743</b>	<b>SMT0-4U-NS-S-LED-24</b>	



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						
<b>N/O</b>									
	With accessories	3-wire	–	2.5	In-line	<b>36198</b>	<b>SME0-4U-K-LED-24</b>		
			5	In-line	<b>175401</b>	<b>SME0-4U-K5-LED-24</b>			
		–	3-pin	–	In-line	<b>151526</b>	<b>SME0-4U-S-LED-24-B</b>		

Ordering data – Mounting kit for proximity switches SME0/SMT0-4U				Data sheets → Internet: smbr	
Designation	For ø	Part no.	Type		
	10	<b>19273</b>	<b>SMBR-10</b>		
	16	<b>19275</b>	<b>SMBR-16</b>		
	20	<b>19276</b>	<b>SMBR-20</b>		
	25	<b>19277</b>	<b>SMBR-25</b>		

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
<b>N/O</b>						
	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
<b>N/C</b>						
	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
<b>N/O</b>						
	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
	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
<b>N/C</b>						
	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
		10		193146	GRLA-1/4-QS-6-D
	G1/4	6		193147	GRLA-1/4-QS-8-D
		8		193148	GRLA-1/4-QS-10-D
		10			