Linear drives SLM, with guided slide

FESTO

Linear drives SLM, with guided slide

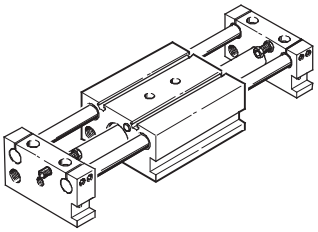
Key features

Version

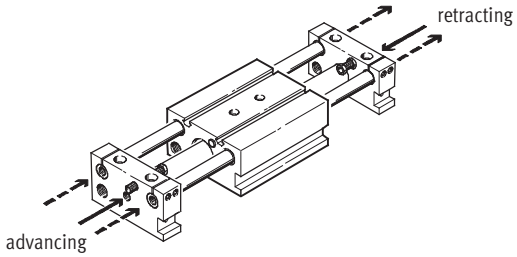
The linear drive SLM is a combination of a slide unit and a rodless linear drive. The drive moves the slide. The transmission of movement is accomplished via a magnetic coupling. The modular system allows for individualised end-position cushioning and end-position sensing solutions.

Basic unit

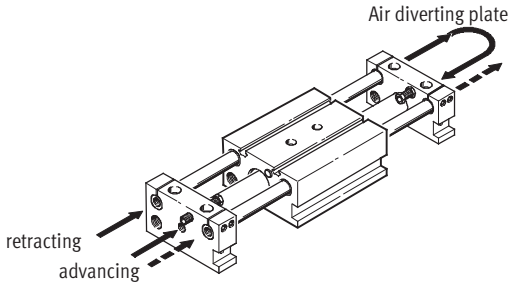
SLM-...-G



SLM-...-GL
with hollow guide rods

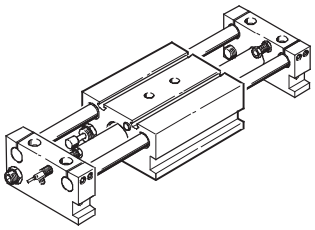


SLM-...-GU
with hollow guide rods, air diverting plate and supply port on one side



Standard unit

SLM-...-S
with two self-adjusting shock absorbers and two inductive proximity sensors with PNP output



Linear drives SLM, with guided slide

Key features

Multi-axis combinations

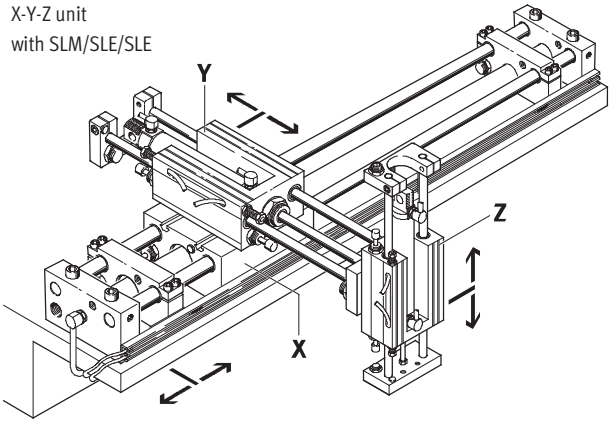
The linear drive SLM can be combined with the linear unit SLE to produce a range of 2-axis or 3-axis systems.
➔ www.festo.com

These multi-axis configurations are formed by screwing the units together, either directly or using an adapter plate. A linear unit SLE can be combined with another linear unit SLE using either method, however direct mounting is almost always required for a linear drive SLM and linear unit SLE. The centring pins and sleeves required to secure the units together are included in the scope of delivery.

Linear unit SLE
➔ Internet: sle

X	Y	Z
2 axes		
SLM-12	SLE-10	–
SLM-16[1)]	SLE-10	–
SLM-20	SLE-16	–
SLM-25[2)]	SLE-16	–
SLM-32	SLE-20 or SLE-25	–
SLM-40	SLE-32	–
3 axes		
SLM-20	SLE-16	SLE-10
SLM-25[2)]	SLE-16	SLE-10
SLM-32	SLE-20 or SLE-25	SLE-16
SLM-40	SLE-32	SLE-20 or SLE-25

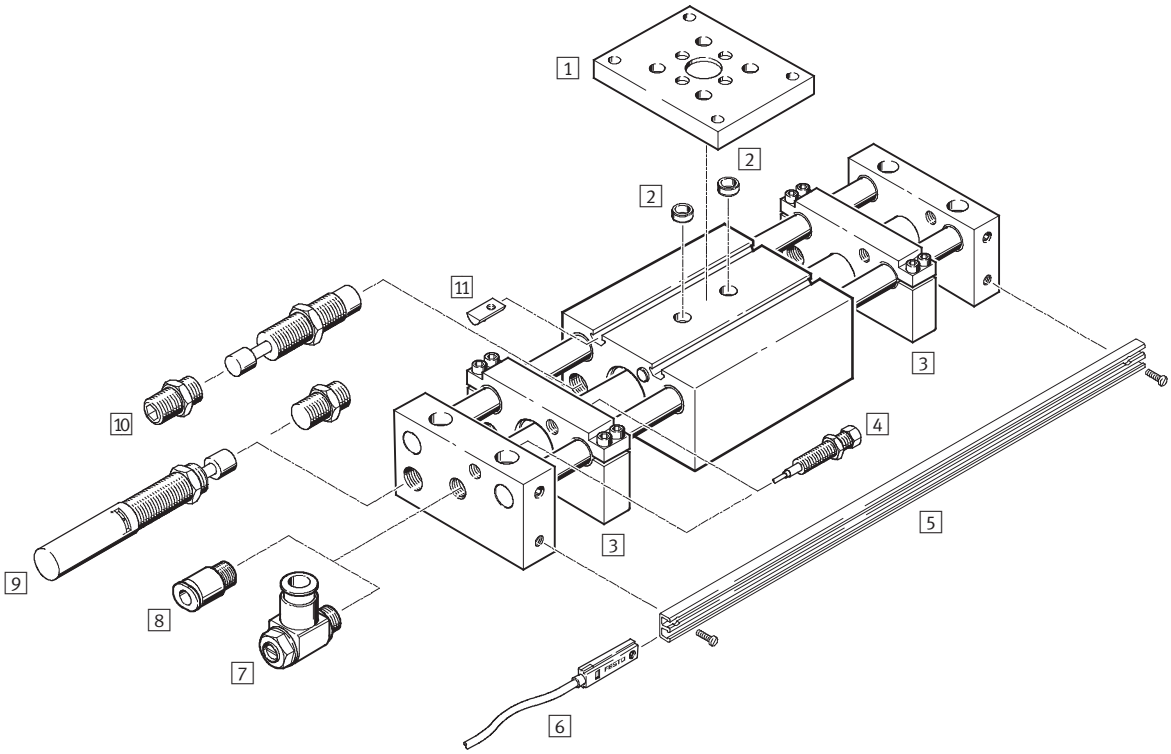
X-Y-Z unit
with SLM/SLE/SLE



1) An adapter plate SLEP-10 (➔ 16) is required for mounting (direct mounting is not possible).
2) An adapter plate SLEP-16 (➔ 16) is required for mounting (direct mounting is not possible).

Linear drives SLM, with guided slide

Peripherals overview



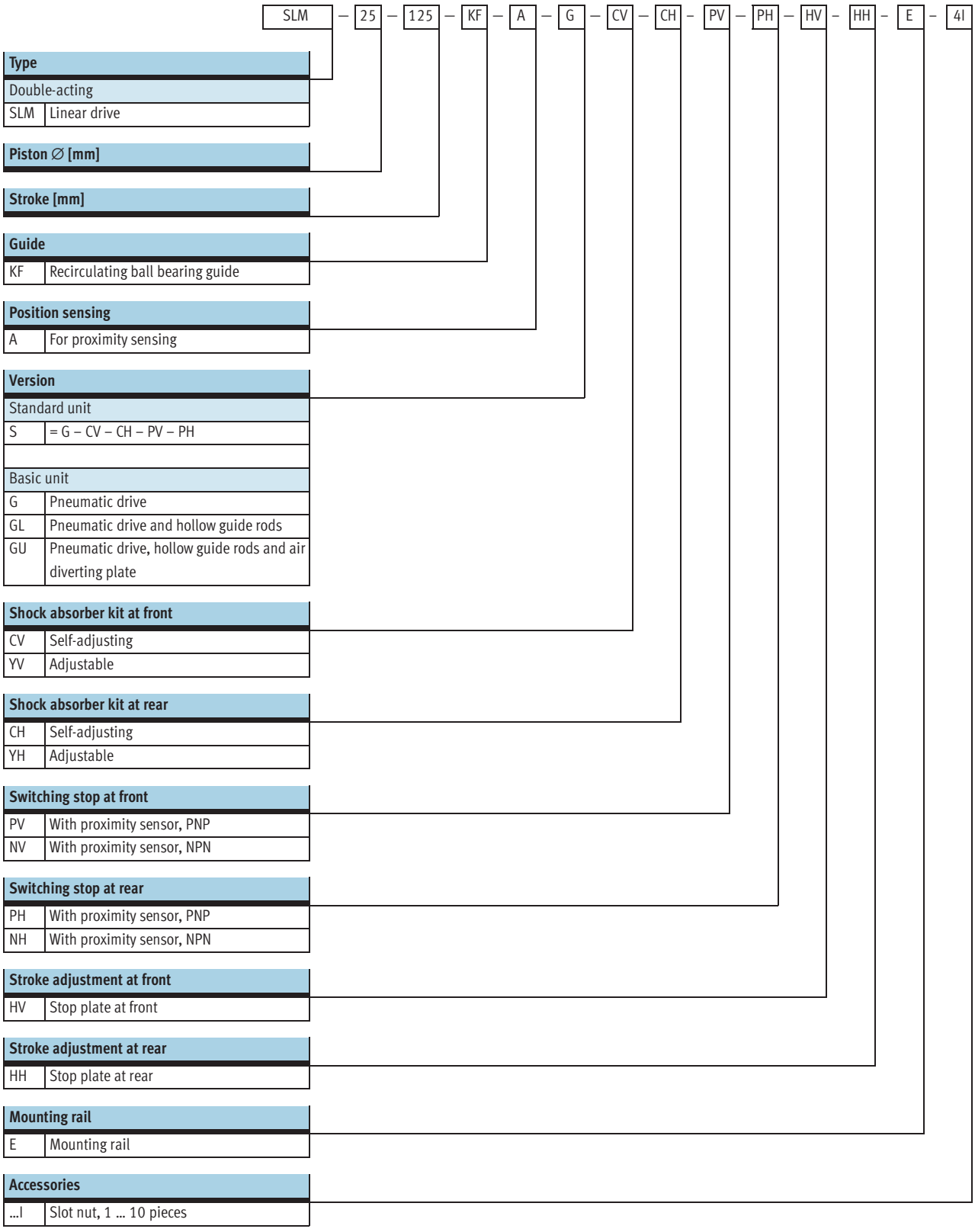
Linear drives SLM, with guided slide

Peripherals overview

Accessories		
	Brief description	➔ Page/Internet
1 Adapter plate SLEP	For multi-axis combinations	16
2 Centring sleeve ZBH	For centring loads and attachments on the slide	17
3 Stop plate SLM-...-KF-A	For variable stroke adjustment	17
4 Switching stop with proximity sensor SL-...-SIE-PS/SL-...-SIE-NS	Can be integrated in the end or stop plate	16
5 Mounting rail SLZS/SLMS	For mounting proximity sensors SME/SMT-8	17
6 Proximity sensor SME/SMT-8	Can be integrated in the mounting rail SLZS/SLMS	17
7 One-way flow control valve GRLA	For speed regulation	18
8 Push-in fitting QS	For connecting compressed air tubing with standard O.D.	quick star
9 Shock absorber kit, adjustable SLZ-...-KF-A	For slowing higher speeds to a stop	15
10 Shock absorber kit, self-adjusting SLZ-...-YSR-C	For slowing higher speeds to a stop	15
11 Slot nut NST	For mounting loads and attachments on the slide	17

Linear drives SLM, with guided slide

Type code



Type	
Double-acting	
SLM	Linear drive

Piston ∅ [mm]	

Stroke [mm]	

Guide	
KF	Recirculating ball bearing guide

Position sensing	
A	For proximity sensing

Version	
Standard unit	
S	= G – CV – CH – PV – PH
Basic unit	
G	Pneumatic drive
GL	Pneumatic drive and hollow guide rods
GU	Pneumatic drive, hollow guide rods and air diverting plate

Shock absorber kit at front	
CV	Self-adjusting
YV	Adjustable

Shock absorber kit at rear	
CH	Self-adjusting
YH	Adjustable

Switching stop at front	
PV	With proximity sensor, PNP
NV	With proximity sensor, NPN

Switching stop at rear	
PH	With proximity sensor, PNP
NH	With proximity sensor, NPN

Stroke adjustment at front	
HV	Stop plate at front

Stroke adjustment at rear	
HH	Stop plate at rear

Mounting rail	
E	Mounting rail

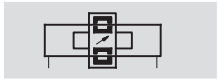
Accessories	
...I	Slot nut, 1 ... 10 pieces

Linear drives SLM, with guided slide

Technical data

FESTO

Function



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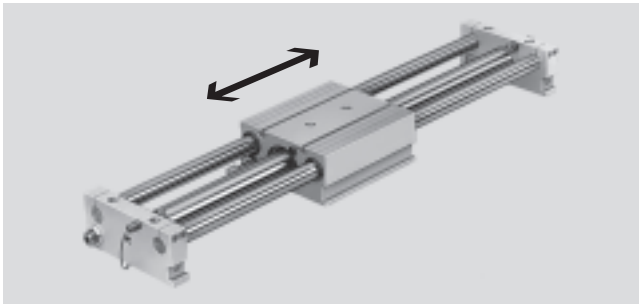


12 ... 40 mm

10 ... 1500 mm

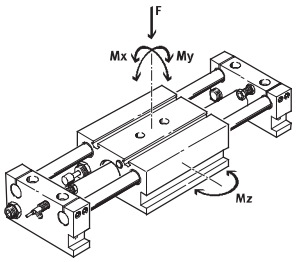
General technical data							
Piston ∅		12	16	20	25	32	40
Stroke	[mm]	10 ... 500	10 ... 800		10 ... 1500		
Pneumatic connection		M5		G1⁄8			G1⁄4
Mode of operation		Double-acting					
Constructional design		Slide unit					
		Rodless linear drive					
End-position cushioning via shock absorber		Self-adjusting at both ends					
		–	–	Adjustable at both ends			
Position sensing		For proximity sensing					
Type of mounting		Via through-holes					
		Via female thread					
Mounting position		Any					
Protection against torsion/guide		Guide rods with slide/ball bearing guide					

Operating and environmental conditions							
Piston ∅		12	16	20	25	32	40
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:–:–]					
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will always be required)					
Operating pressure	[bar]	≤7					
Ambient temperature[1)]	[°C]	–20 ... +60					

1) Note operating range of proximity sensors.

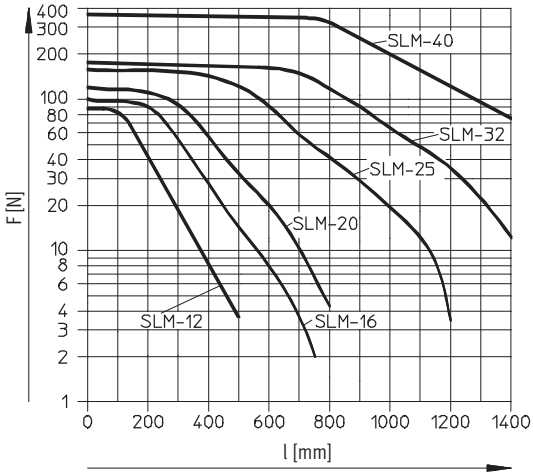
Forces [N]							
Piston ∅		12	16	20	25	32	40
Theoretical force at 6 bar, advancing		68	121	188	295	483	754
Theoretical force at 6 bar, retracting		68	121	188	295	483	754
Breakaway force of the magnetic coupling		100	160	270	400	680	1050

Permissible dynamic load

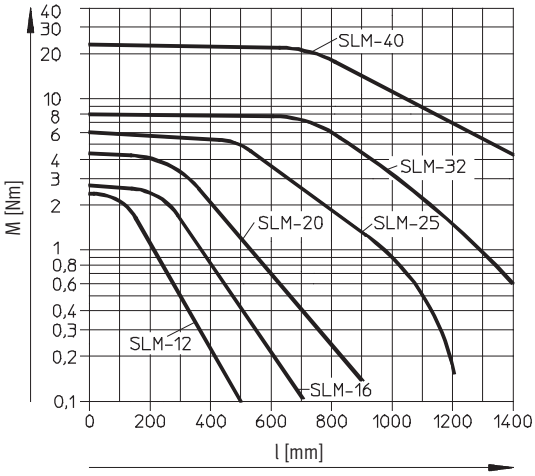


F = Load
M ≥ M_x
M ≥ M_y
M ≥ M_z

Permissible effective load F as a function of the stroke l



Permissible torque M as a function of the stroke l

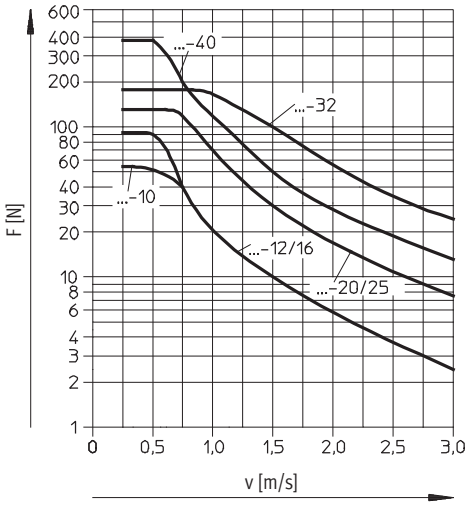


Permissible shock absorber load F as a function of the impact velocity v

with horizontal installation

$F \geq m_L \times g$

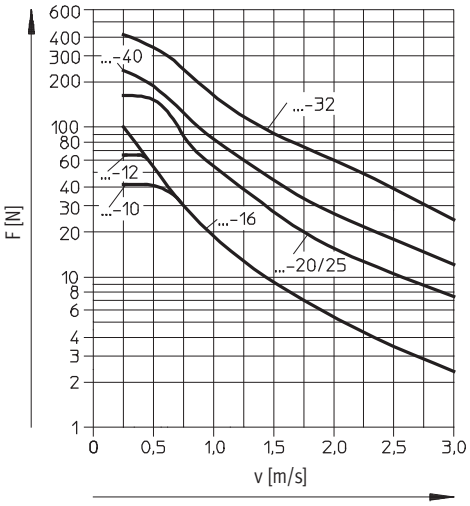
g = 9.81 N/mm²
m_L = Load [kg]



with vertical installation

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

g = 9.81 N/mm²
m_E = Moving load (dead weight) [kg]
m_L = Load [kg]



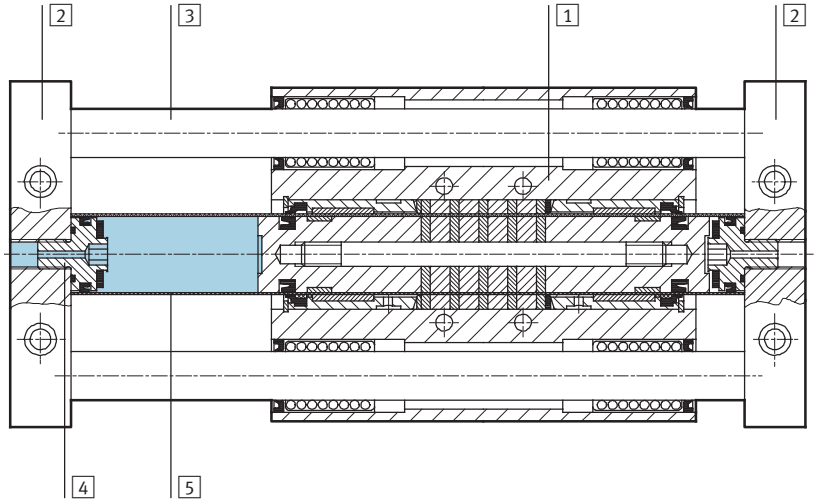
Linear drives SLM, with guided slide

Technical data

Weights [g]						
Piston ∅	12	16	20	25	32	40
Basic weight with 0 mm stroke	1110	1730	2620	3800	6400	9550
Additional weight per 10 mm stroke	10	15	21	36	55	85
Moving load	620	1080	1400	2150	3150	5080

Materials

Sectional view



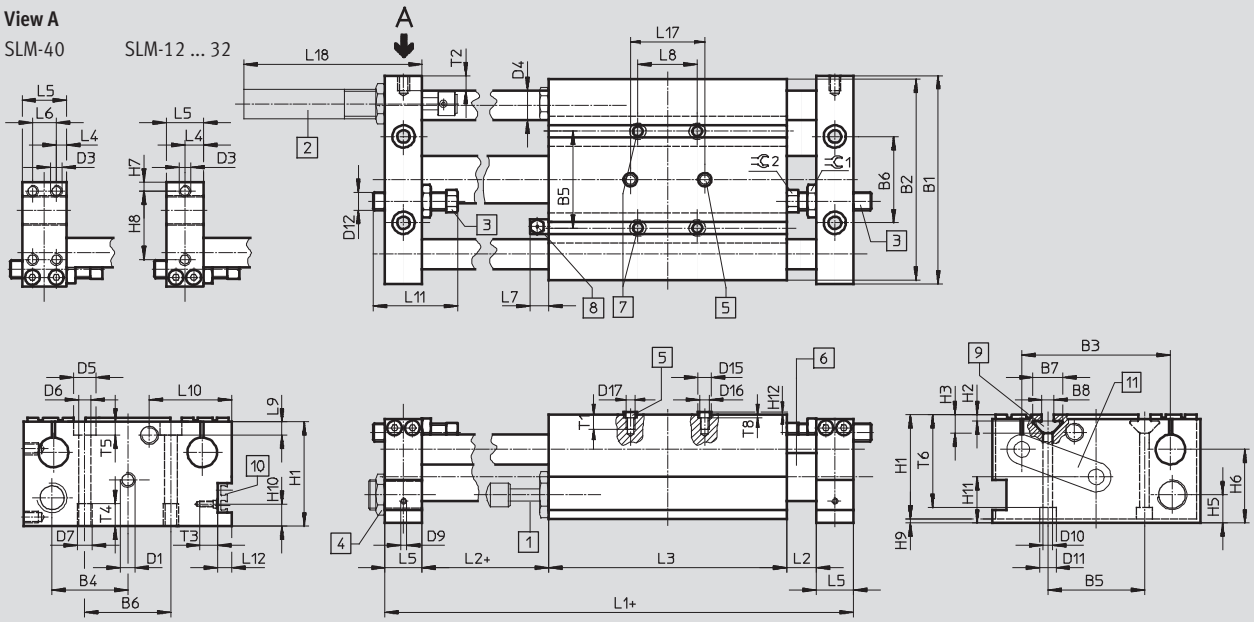
Linear drive		
1	Slide	Wrought aluminium alloy
2	End plate	Wrought aluminium alloy
3	Guide rod	Steel
4	Cylinder barrel attachment	Wrought aluminium alloy
5	Cylinder barrel	High-alloy stainless steel
–	Stop plate	Wrought aluminium alloy
–	Seals	Nitrile rubber

Dimensions

Download CAD data ➔ **www.festo.com**

View A

SLM-40 SLM-12 ... 32



1 Self-adjusting shock absorber, for front and rear mounting

2 Adjustable shock absorber, for front and rear mounting on the end plate

3 Switching stop with proximity sensor, PNP/NPN, for front and rear mounting

4 Shock absorber stop

5 Centring sleeves (2 included in scope of delivery)

6 Pneumatic linear drive

7 Mounting thread/through-hole

8 Lubrication nipple

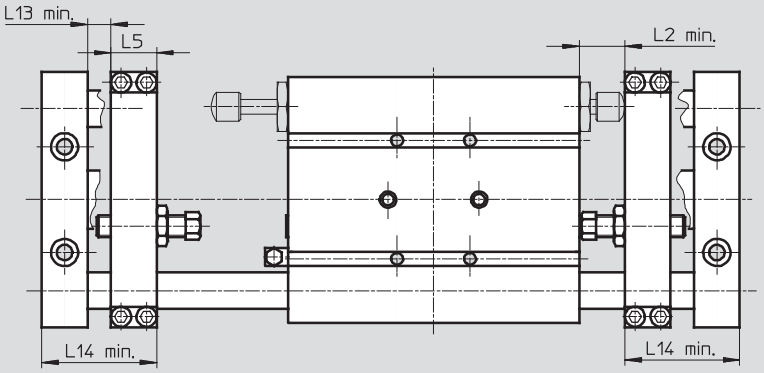
9 Slot nut

10 Mounting rail for proximity sensor SME/SMT-8

11 Air diverting plate

\+ = plus stroke length

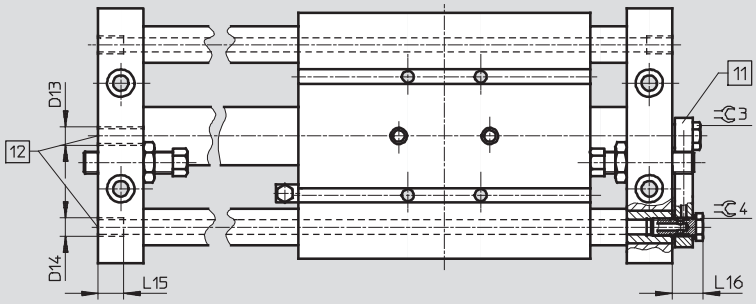
with stop plate



Note

In the case of stroke settings with stop plates front and/or rear, the stroke is reduced by L5 and L13 min at each end.

with hollow guide rod and air diverting plate



11 Air diverting plate

12 Supply port

Linear drives SLM, with guided slide

Technical data

∅ [mm]	B1	B2	B3 ±0.03	B4	B5 ±0.2	B6 ±0.2	B7	B8	D1	D3	D4 ∅ h6	D5 ∅	D6 ∅	D7	D9	D10 ∅
12	74	71	52	26.5	26	35	11.6	5	M5	M5	8	10	5.3	M6	M4	5.3
16	84	80	58	31	32	40	11.6	5	M5	M5	10	10	5.3	M6	M4	5.5
20	100	96	72	36.5	40	47	11.6	5	G⅛	M6	12	11	6.8	M8	M4	5.5
25	114	110	80	39.5	45	48	11.6	5	G⅛	M6	16	10.5	6.8	M8	M4	5.5
32	140	135	100	51	65	58	20	8	G⅛	M8	20	15	8.5	M10	M4	6.6
40	166	160	118	63	75	78	20	8	G¼	M6	25	15	8.5	M10	M4	6.6

∅ [mm]	D11 ∅	D12	D13	D14	D15 ∅ H7	D16 ∅	D17	H1	H2	H3	H5	H6	H7	H8 ±0.2	H9
12	9	M6x0.75	M5	–	9	6.4	M6	38	1.8	6.4	11.5	27	3.5	31	2
16	10	M6x0.75	M5	M5	9	6.4	M6	40	1.8	6.4	12	28.5	4.5	31	2
20	10	M8x1	G⅛	M5	9	6.4	M6	50	1.8	6.4	16	36	5	40	2
25	10	M8x1	G⅛	G⅛	9	6.4	M6	55	1.8	6.4	14	36.5	5	34	2
32	11	M12x1	G⅛	G⅛	9	6.4	M6	70	4.5	12.5	19	49.5	6	46	3
40	11	M12x1	G¼	G¼	9	6.4	M6	75	4.5	12.5	19	51	5.5	51.5	3

∅ [mm]	H10	H11	H12	L1	L2	L3	L4	L5	L6	L7	L8 ±0.2	L9	L10	L11	L12	L13
12	16	15.5	1.9	139	12	85	7.5	15	–	11	19	6.5	37	33	–	7
16	16	19	1.9	154	12	100	7.5	15	–	11	32	6	31.5	33	–	7
20	16	22	1.9	192	16	120	10	20	–	12.5	26	8	44	45	–	10
25	16	25	1.9	212	16	140	10	20	–	12.5	26	8	45	45	–	10
32	14.8	31	1.9	250	20	160	12.5	25	–	12.5	40	9	55.5	57	9.5	13
40	15.8	36.5	1.9	270	20	180	6.5	25	12	12.5	50	9	61.5	57	10	13

∅ [mm]	L14	L15	L16	L17[1)]	L18	T1	T2	T3	T4	T5	T6	T8 +0.2	⌭1	⌭2	⌭3	⌭4
12	37	–	–	40	–	10	7	12	10	5.7	30.5	2.1	10	8	–	–
16	37	8	12.5	40	–	10	6.5	12	10	5.7	34.3	2.1	10	8	13	–
20	50	8	19.5	40	97	10	9	12	12	6.8	44	2.1	13	11	13	8
25	50	10	19.5	40	97	10	9	12	12	6.8	49.3	2.1	13	11	13	–
32	63	14	15.5	40	115	10	10	12	15	9	62.5	2.1	19	13	13	–
40	63	15	17	40	115	10	10	12	16	9	61	2.1	19	13	17	–

1) Tolerance for centring hole: ±0.03 mm
Tolerance for thread: ±0.1 mm

Linear drives SLM, with guided slide

Ordering data – Modular products

FESTO

M Mandatory data

Module No.	Drive function		Size		Stroke		Guide		Position sensing		Basic unit	
32 781	SLM		12		10 ... 1500		KF		A		G	
32 782			16								GL	
32 783			20								GU	
32 784			25									
32 785			32									
32 786			40									
Ordering example												
32 784	**SLM**	–	**25**	–	**900**	–	**KF**	–	**A**	–	**GU**	–

Ordering table

Size		12	16	20	25	32	40	Conditions	Code		Enter code
M	Module No.	**32 781**	**32 782**	**32 783**	**32 784**	**32 785**	**32 786**				
	Drive function	Linear unit							**SLM**		SLM
	Size [mm]	12	16	20	25	32	40		**-...**		
	Stroke [mm]	10 ... 500	10 ... 800		10 ... 1500				**-...**		
	Guide	Via ball bearings							**-KF**		-KF
	Position sensing	For proximity sensing							**-A**		-A
	Basic unit	Linear unit with pneumatic drive							**-G**		
		–	Linear unit with pneumatic drive and hollow guide rods						**-GL**		
		–	Linear unit with pneumatic drive, hollow guide rods and air diverting plate						**-GU**		

Transfer order code

	SLM	–		–		–	KF	–	A	–		–

Linear drives SLM, with guided slide

Ordering data – Modular products

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[0] Options

Shock absorber at front	Shock absorber at rear	Sensor at front	Sensor at rear	Stroke adjustment at front	Stroke adjustment at rear	Mounting rail	Slot nut
CV YV	CH YH	PV NV	PH NH	HV	HH	E	...I
CV –	**CH** –	**PV** –	**PH** –	**HV** –	**HH** –	**E** –	**4I**

Ordering table

Size			12	16	20	25	32	40	Conditions	Code		Enter code
↓	Shock absorber	at front	Self-adjusting shock absorber, with stop at front							**-CV**		
[0]			–	–	Adjustable shock absorber, with stop at front					**-YV**		
		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**		
	Stroke adjustment	at front	Stop plate at front						[1]	**-HV**		
		at rear	Stop plate at rear						[2]	**-HH**		
	Mounting rail		Mounting rail							**-E**		
	Slot nut		1 ... 10							**-...I**		

[1] **HV** Not in combination with YV

[2] **HH** Not in combination with YH

Transfer order code

	–		–		–		–		–		–		–		–	

Linear drives SLM, with guided slide

Ordering data – Modular products, package solution

FESTO

M Mandatory data

Module No.	Drive function		Size		Stroke		Guide		Position sensing		Standard unit
32 781 32 782 32 783 32 784 32 785 32 786	SLM	–	12 16 20 25 32 40	–	10 … 1500	–	KF	–	A	–	S
Ordering example											
32 782	**SLM**	–	**16**	–	**750**	–	**KF**	–	**A**	–	**S**

Ordering table

Size		12	16	20	25	32	40	Condi-tions	Code		Enter code
M	Module No.	**32 781**	**32 782**	**32 783**	**32 784**	**32 785**	**32 786**				
	Drive function	Linear unit							**SLM**		SLM
	Size [mm]	12	16	20	25	32	40		**-...**		
	Stroke [mm]	10 … 500	10 … 800		10 … 1500				**-...**		
	Guide	Via ball bearings							**-KF**		-KF
	Position sensing	For proximity sensing							**-A**		-A
	Standard unit	Package solution S = G-CV-CH-PV-PH							**-S**		-S

Transfer order code

	SLM	–		–		–	**KF**	–	**A**	–	**S**

Shock absorber kit
SLZ-...-YSR-C, self-adjusting
(order code CV, CH)

Material:
YSR-8-8-C: Nickel-plated brass
YSR-12-12-C, YSR-16-20-C: Galvanised steel
Free of copper, PTFE and silicone

Ordering data			
For ∅ [mm]	Including shock absorber Technical data ➔ Internet: ysr	Part No.	Type
12, 16	YSR-8-8-C	**115 315**	**SLZ-16-YSR-C**
20, 25	YSR-12-12-C	**115 316**	**SLZ-25-YSR-C**
32, 40	YSR-16-20-C	**115 317**	**SLZ-32-YSR-C**

Shock absorber kit
SLZ-...-KF-A, adjustable
(order code YV, YH)

Material:
Galvanised steel

Ordering data			
For ∅ [mm]	Including shock absorber Technical data ➔ Internet: dysr	Part No.	Type
20, 25	DYSR-12-12-Y5	**114 032**	**SLZ-25-KF-A**
32, 40	DYSR-16-20-Y5	**114 033**	**SLZ-32-KF-A**

Switching stop SL-...-SIE-PS
(order code PV, PH)
Kit with inductive proximity sensor
PNP

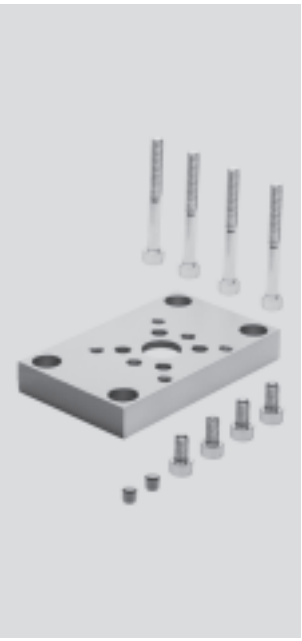
Switching stop SL-...-SIE-NS
(order code NV, NH)
Kit with inductive proximity sensor
NPN

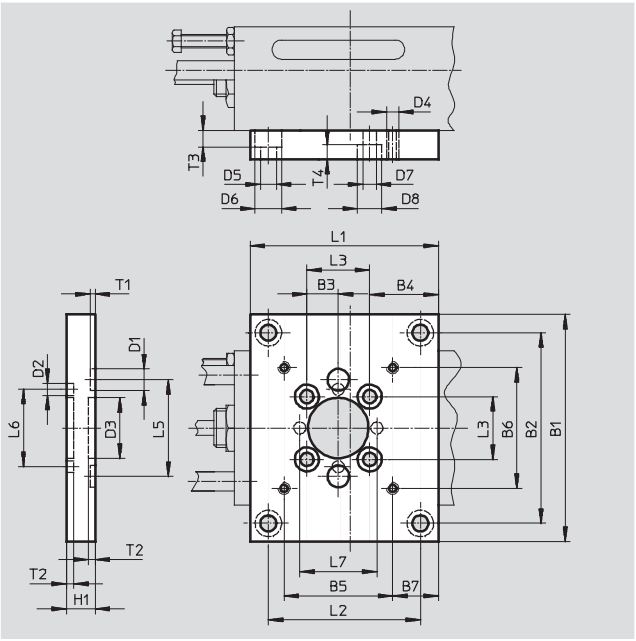
Ordering data

For ∅ [mm]	Switch output	Including proximity sensor Technical data ➔ Internet: sien	Part No.	Type
12, 16	PNP	SIEN-4B-PS-K-L	**116 251**	**SL-10/16-SIE-PS**
	NPN	SIEN-4B-NS-K-L	**116 252**	**SL-10/16-SIE-NS**
20, 25	PNP	SIEN-4B-PS-K-L	**116 253**	**SL-20/25-SIE-PS**
	NPN	SIEN-4B-NS-K-L	**116 254**	**SL-20/25-SIE-NS**
32, 40	PNP	SIEN-6,5B-PS-K-L	**117 525**	**SL-32/50-SIE-PS**
	NPN	SIEN-6,5B-NS-K-L	**117 526**	**SL-32/50-SIE-NS**

Adapter plate SLEP

Material:
Wrought aluminium alloy



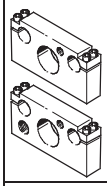
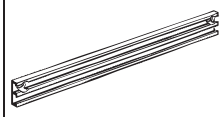


Dimensions and ordering data

For ∅ [mm]	B1	B2	B3	B4	B5	B6	B7	D1 ∅ H7	D2 ∅ H7	D3 ∅ G7	D4	D5 ∅	D6 ∅	D7 ∅	D8 ∅	H1	L1	L2
16	82	68	9.5	20	32	32	13.5	9	5	14	M5	5.5	10	5.5	10	12	50	36
25	94	79	13	23.5	45	26	14	9	5	25	M5	6.6	11	5.5	10	12	73	58

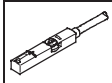
For ∅ [mm]	L3	L5	L6	L7	T1	T2	T3	T4	Weight [g]	Part No.	Type
16	19	40	28	–	2.1	3	5.7	6.7	122	**150 909**	**SLEP-10**
25	26	40	32	32	2.1	3	6.8	6.7	205	**150 910**	**SLEP-16**

Ordering data – Accessories

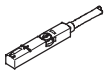
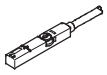
	For ∅ [mm]	Material	Order code	Part No.	Type	PU[1]
Stop plate SLM-...-KF-A						
	12	Wrought aluminium alloy	HV, HH	**119 527**	**SLM-12-...-KF-A**	1
	16			**119 528**	**SLM-16-...-KF-A**	1
	20			**119 529**	**SLM-20-...-KF-A**	1
	25			**119 530**	**SLM-25-...-KF-A**	1
	32			**119 531**	**SLM-32-...-KF-A**	1
	40			**119 532**	**SLM-40-...-KF-A**	1
Mounting rail SLZS/SLMS for proximity sensor						
	12	Wrought aluminium alloy	E	**150 916**	**SLZS-16-...-...**	1
	16			**152 744**	**SLMS-16-...-...**	1
	20			**150 917**	**SLZS-25-...-...**	1
	25			**152 745**	**SLMS-25-...-...**	1
	32			**150 918**	**SLZS-32-...-...**	1
	40			**150 919**	**SLZS-40-...-...**	1
Slot nut NST					Technical data ➔ Internet: nst	
	12 ... 25	Non-alloyed tempered steel Free of copper, PTFE and silicone	I	**150 914**	**NST-5-M5**	1
	32, 40			**150 915**	**NST-8-M6**	1
Centring sleeve ZBH					Technical data ➔ Internet: zbh	
	16 ... 40	Stainless steel Free of copper, PTFE and silicone	–	**150 927**	**ZBH-9**	10

1) Packaging unit quantity

Ordering data – Proximity sensors for T-slot, magnetic reed Technical data ➔ Internet: smt

	Type of mounting	Switch output	Electrical connection	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with cylinder profile	Contacting	Cable, 3-wire	2.5	**543 862**	**SME-8M-DS-24V-K-2,5-OE**
				5.0	**543 863**	**SME-8M-DS-24V-K-5,0-OE**
			Cable, 3-wire	2.5	**543 872**	**SME-8M-ZS-24V-K-2,5-OE**
			Plug M8x1, 3-pin	0.3	**543 861**	**SME-8M-DS-24V-K-0,3-M8D**
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	2.5	**150 855**	**SME-8-K-LED-24**
			Plug M8x1, 3-pin	0.3	**150 857**	**SME-8-S-LED-24**
N/C contact						
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	7.5	**160 251**	**SME-8-O-K-LED-24**

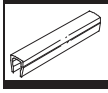
Ordering data – Proximity sensors for T-slot, magneto-resistive — Technical data ➔ Internet: sme

	Type of mounting	Switch output	Electrical connection	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with cylinder profile	PNP	Cable, 3-wire	2.5	**543 867**	**SMT-8M-PS-24V-K-2,5-OE**
			Plug M8x1, 3-pin	0.3	**543 866**	**SMT-8M-PS-24V-K-0,3-M8D**
			Plug M12x1, 3-pin	0.3	**543 869**	**SMT-8M-PS-24V-K-0,3-M12**
		NPN	Cable, 3-wire	2.5	**543 870**	**SMT-8M-NS-24V-K-2,5-OE**
			Plug M8x1, 3-pin	0.3	**543 871**	**SMT-8M-NS-24V-K-0,3-M8D**
	Insertable in the slot lengthwise, flush with the cylinder profile	PNP	Cable, 3-wire	2.5	**175 436**	**SMT-8-PS-K-LED-24-B**
			Plug M8x1, 3-pin	0.3	**175 484**	**SMT-8-PS-S-LED-24-B**
N/C contact						
	Insertable in the slot from above, flush with cylinder profile	PNP	Cable, 3-wire	7.5	**543 873**	**SMT-8M-PO-24V-K7,5-OE**

Ordering data – Connecting cables — Technical data ➔ 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	**541 333**	**NEBU-M8G3-K-2.5-LE3**
			5	**541 334**	**NEBU-M8G3-K-5-LE3**
	Straight socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	**541 363**	**NEBU-M12G5-K-2.5-LE3**
			5	**541 364**	**NEBU-M12G5-K-5-LE3**
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	**541 338**	**NEBU-M8W3-K-2.5-LE3**
			5	**541 341**	**NEBU-M8W3-K-5-LE3**
	Angled socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	**541 367**	**NEBU-M12W5-K-2.5-LE3**
			5	**541 370**	**NEBU-M12W5-K-5-LE3**

Ordering data – Slot cover for T-slot

	Mounting	Length [m]	Part No.	Type
	Insertable from above	2x 0.5	**151 680**	**ABP-5-S**

Ordering data – One-way flow control valves — Technical data ➔ Internet: grla

	Connection		Material	Part No.	Type
	Thread	For tubing OD			
	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**
	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**

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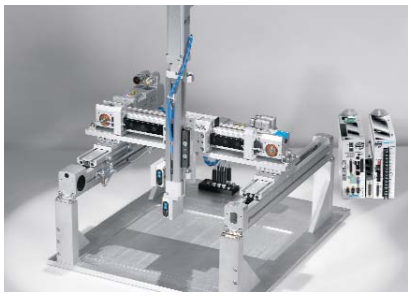

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