Linear drives SLM, with guide

FESTO

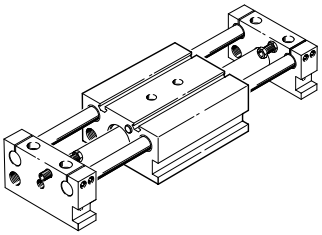
Key features

Design

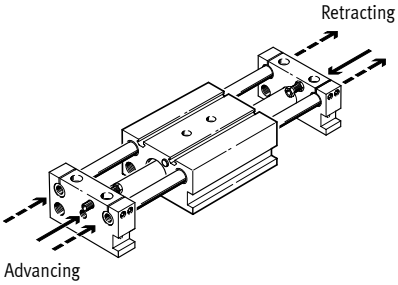
The linear drive SLM is a combination of a slide unit and a rodless linear drive.
The drive moves the slide. The movement is transferred via a magnetic coupling.
The modular system enables customised end-position cushioning and end-position sensing solutions.

Basic unit

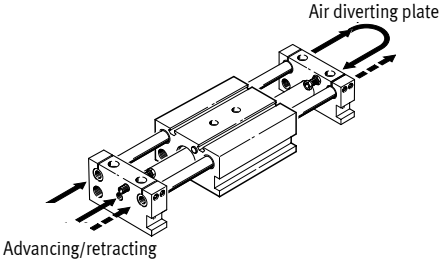
SLM-...-G



SLM-...-GL
with hollow guide rods

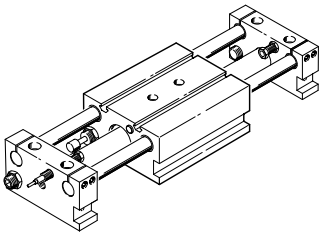


SLM-...-GU
with hollow guide rods, air diverting plate and supply port on one side



Standard unit

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



Type codes

001	Series	
SLM	Linear drive	

002	Piston diameter	
12	12	
16	16	
20	20	
25	25	
32	32	
40	40	

003	Stroke	
...	10 ... 1500	

004	Guide	
KF	Recirculating ball bearing guide	

005	Position sensing	
A	For proximity sensor	

006	Basic unit	
G	Linear drive unit with pneumatic drive	
GL	Linear drive unit with pneumatic drive and hollow guide rods	
GU	Linear drive unit with pneumatic drive and hollow guide rods and reversing plate	

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

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

009	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	

010	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	

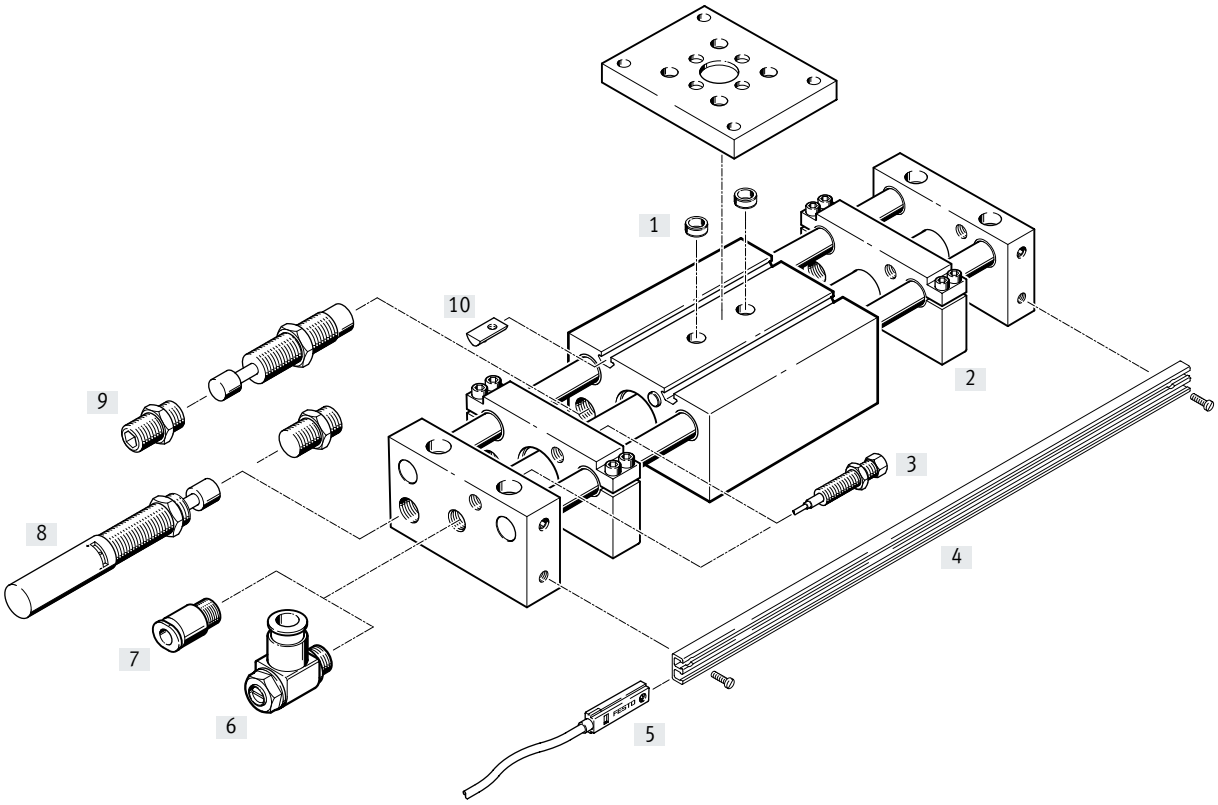
011	Stroke adjustment at front	
	None	
HV	Stop plate at front	

012	Stroke adjustment at rear	
	None	
HH	Stop plate at rear	

013	Mounting rail	
	None	
E	Mounting rail	

014	Slot nut	
	None	
...I	1 ... 10 units	

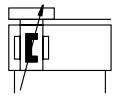
Peripherals overview



Accessories

		Description	→ Page/Internet
[1]	Centring sleeve ZBH	For centring loads and attachments on the slide	13
[2]	Stop plate SLM-...-KF-A	For variable stroke adjustment	13
[3]	Switching stop with proximity switch SL-...-SIE-PS/SL-...-SIE-NS	Can be integrated in the end or stop plate	12
[4]	Mounting rail SLZS/SLMS	For mounting proximity switches SME/SMT-8	13
[5]	Proximity switches SME/SMT-8	Can be integrated in the mounting rail SLZS/SLMS	13
[6]	One-way flow control valve GRLA	For regulating speed	14
[7]	Push-in fitting QS	For connecting tubing with standard O.D.	qs
[8]	Shock absorber kit, adjustable SLZ-...-KF-A	For higher speeds decelerating	12
[9]	Shock absorber kit, self-adjusting SLZ-...-YSR-C	For higher speeds decelerating	12
[10]	Slot nut NST	For mounting loads and attachments on the slide	13

Data sheet



www.festo.com

- Diameter
  12 ... 40 mm
- Stroke length
  10 ... 1500 mm

General technical data							
Piston ø		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					
Design		Slide unit					
		Rodless linear drive					
End-position cushioning via shock absorber		Self-adjusting at both ends					
		–	–	Adjustable at both ends			
Position sensing		Via proximity switch					
Type of mounting		With through-hole					
		Via female thread					
Mounting position		Any					
Protection against rotation/guide		Guide rods with slide/ball guide					

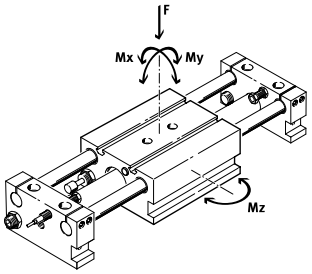
Operating and environmental conditions							
Piston ø		12	16	20	25	32	40
Operating medium		Compressed air to ISO 8573-1:2010 [7:–:–]					
Note on operating/ pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)					
Operating pressure	[bar]	≤7					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

1) Note operating range of proximity switches.

Forces [N]						
Piston ø	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

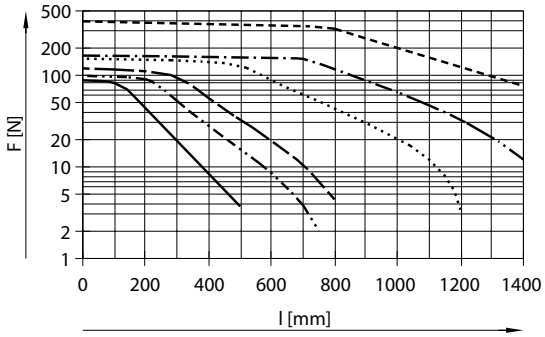
Data sheet

Permissible dynamic load



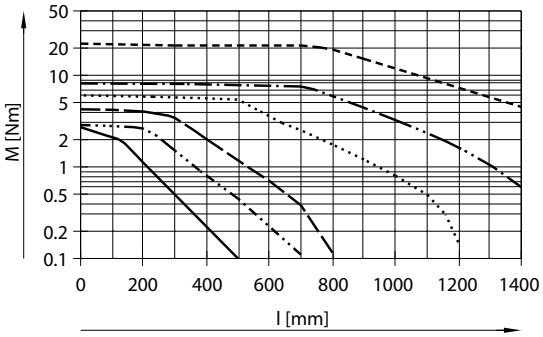
F = load
M ≥ M_x
M ≥ M_y
M ≥ M_z

Permissible payload F as a function of stroke l



SLM-12
SLM-16
SLM-20
SLM-25
SLM-32
SLM-40

Permissible torque M as a function of stroke l



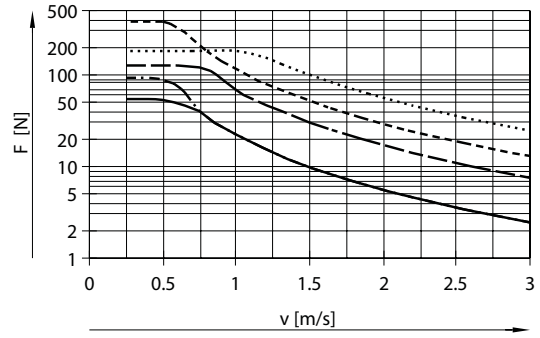
SLM-12
SLM-16
SLM-20
SLM-25
SLM-32
SLM-40

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

with horizontal installation

$F \geq m_L \times g$

g = 9.81 N/mm²
m_L = load [kg]

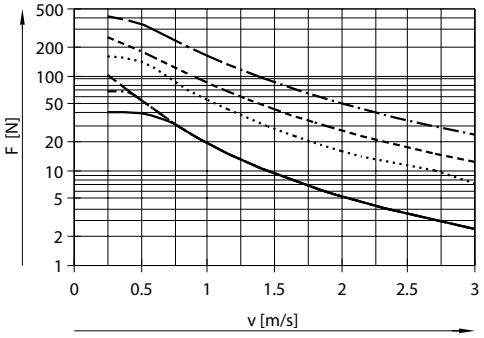


SLM-12
SLM-16
SLM-20
SLM-25
SLM-32
SLM-40

with vertical installation

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

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



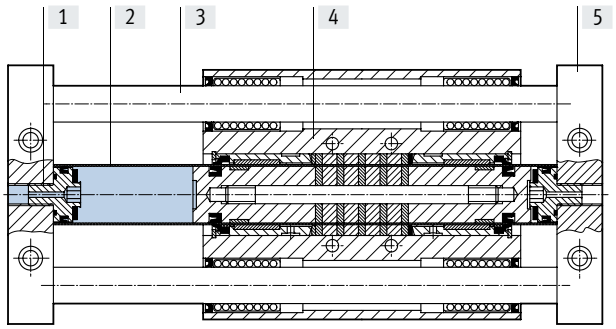
SLM-12
SLM-16
SLM-20
SLM-25
SLM-32
SLM-40

Data sheet

Weight [g]						
Piston ø	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 mass	620	1080	1400	2150	3150	5080

Materials

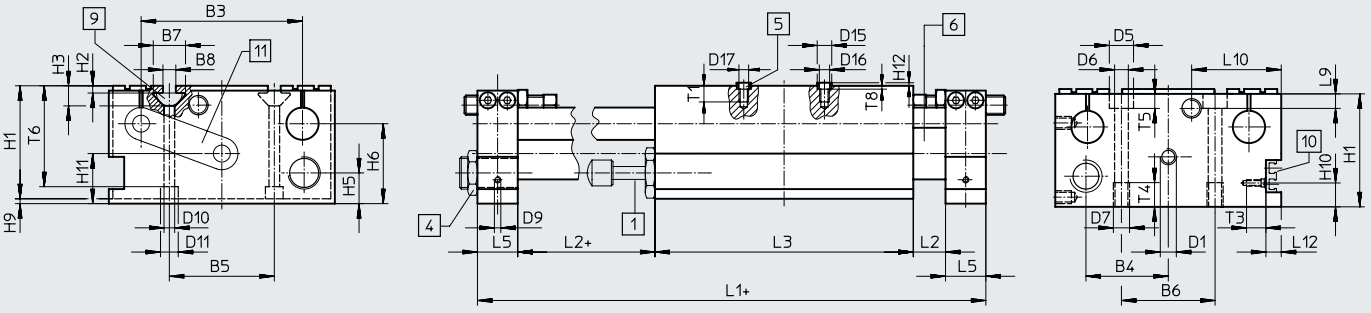
Sectional view



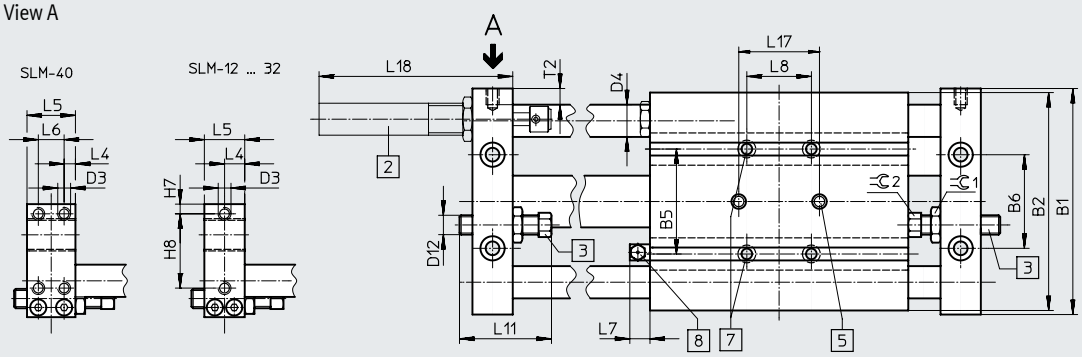
Linear drive		
[1]	Cylinder barrel attachment	Wrought aluminium alloy
[2]	Cylinder barrel	High-alloy stainless steel
[3]	Guide rod	Steel
[4]	Slide	Wrought aluminium alloy
[5]	End plate	Wrought aluminium alloy
–	Stop plate	Wrought aluminium alloy
–	Seals	NBR

Data sheet

Dimensions Download CAD data ➔ www.festo.com

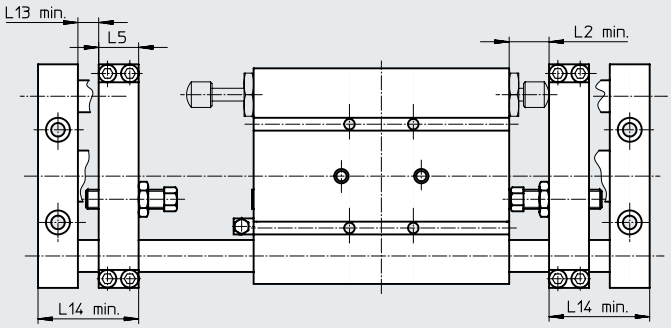


View A



[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 switch, PNP/NPN, for front and rear mounting
[4] Stop for shock absorber
[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 switch SME/SMT-8
[11] Air diverting plate
\+ = plus stroke length

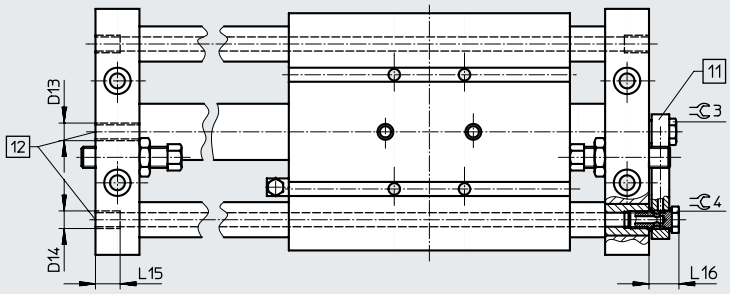
With stop plate



Note

When using the stop plate at the front and/or rear, the stroke is reduced by at least the dimensions L5 and L13 for each side. If using a shock absorber or switching stop with proximity switch at the front and/or rear, the stroke is additionally reduced by at least dimension L2 per side.

With hollow guide rod and air diverting plate



[11] Air diverting plate
[12] Supply port

Data sheet

ø [mm]	B1	B2	B3 ±0.03	B4	B5 ±0.2	B6 ±0.2	B7	B8	D1	D3	D4 ø h6	D5 ø	D6 ø	D7	D9	D10 ø
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	G1/8	M6	12	11	6.8	M8	M4	5.5
25	114	110	80	39.5	45	48	11.6	5	G1/8	M6	16	10.5	6.8	M8	M4	5.5
32	140	135	100	51	65	58	20	8	G1/8	M8	20	15	8.5	M10	M4	6.6
40	166	160	118	63	75	78	20	8	G1/4	M6	25	15	8.5	M10	M4	6.6

ø [mm]	D11 ø	D12	D13	D14	D15 ø H7	D16 ø	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	G1/8	M5	9	6.4	M6	50	1.8	6.4	16	36	5	40	2
25	10	M8x1	G1/8	G1/8	9	6.4	M6	55	1.8	6.4	14	36.5	5	34	2
32	11	M12x1	G1/8	G1/8	9	6.4	M6	70	4.5	12.5	19	49.5	6	46	3
40	11	M12x1	G1/4	G1/4	9	6.4	M6	75	4.5	12.5	19	51	5.5	51.5	3

ø [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

ø [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

Ordering data – Modular product system

Ordering table

Size		12	16	20	25	32	40	Conditions	Code		Enter code
Module no.		**32781**	**32782**	**32783**	**32784**	**32785**	**32786**				
Function		Linear drive unit							**SLM**		SLM
Size	[mm]	12	16	20	25	32	40		**-...**		
Stroke	[mm]	10 ... 500	10 ... 800		10 ... 1500				**-...**		
Guide		Via linear bushings							**-KF**		-KF
Position sensing		Via proximity switch							**-A**		-A
Basic unit		Linear drive unit with pneumatic drive							**-G**		
		–	Linear drive unit with pneumatic drive and hollow guide rods						**-GL**		
		–	Linear drive unit with pneumatic drive, hollow guide rods and air diverting plate						**-GU**		
Shock absorber	At front	Self-adjusting shock absorber, with stop at front							**-CV**		
		–	–	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**		

Ordering data – Modular products, package solution

Ordering table

Size	12	16	20	25	32	40	Conditions	Code		Enter code
Module no.	**32781**	**32782**	**32783**	**32784**	**32785**	**32786**				
Function	Linear drive unit							**SLM**		SLM
Size [mm]	12	16	20	25	32	40		**-...**		
Stroke [mm]	10 ... 500	10 ... 800		10 ... 1500				**-...**		
Guide	Via linear bushings							**-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
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 and PTFE

Ordering data

For ø [mm]	Includes shock absorber Data sheets ➔ Internet: ysr	Part no.	Type
12, 16	YSR-8-8-C	**115315**	**SLZ-16-YSR-C**
20, 25	YSR-12-12-C	**115316**	**SLZ-25-YSR-C**
32, 40	YSR-16-20-C	**115317**	**SLZ-32-YSR-C**

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

Material:
Galvanised steel

Ordering data

For ø [mm]	Includes shock absorber Data sheets ➔ Internet: dysr	Part no.	Type
20, 25	DYSR-12-12-Y5	**114032**	**SLZ-25-KF-A**
32, 40	DYSR-16-20-Y5	**114033**	**SLZ-32-KF-A**

Switching stop SL- ...-SIE-PS
(Order code: PV, PH)
Kit with inductive proximity switch PNP

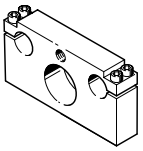
Switching stop SL- ...-SIE-NS
(Order code: NV, NH)
Kit with inductive proximity switch NPN

Ordering data

For ø [mm]	Switching output	Includes proximity switch Data sheets ➔ Internet: sien	Part no.	Type
12, 16	PNP	SIEN-4B-PS-K-L	**116251**	**SL-10/16-SIE-PS**
	NPN	SIEN-4B-NS-K-L	**116252**	**SL-10/16-SIE-NS**
20, 25	PNP	SIEN-4B-PS-K-L	**116253**	**SL-20/25-SIE-PS**
	NPN	SIEN-4B-NS-K-L	**116254**	**SL-20/25-SIE-NS**
32, 40	PNP	SIEN-6.5B-PS-K-L	**117525**	**SL-32/50-SIE-PS**
	NPN	SIEN-6.5B-NS-K-L	**117526**	**SL-32/50-SIE-NS**

Accessories

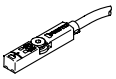
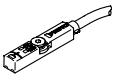
Ordering data – Accessories

	For ø [mm]	Material	Order code	Part no.	Type	PU[1]
Stop plate SLM-...-KF-A						
	12	Wrought aluminium alloy	HV, HH	**119527**	**SLM-12-...-KF-A**	1
	16			**119528**	**SLM-16-...-KF-A**	1
	20			**119529**	**SLM-20-...-KF-A**	1
	25			**119530**	**SLM-25-...-KF-A**	1
	32			**119531**	**SLM-32-...-KF-A**	1
	40			**119532**	**SLM-40-...-KF-A**	1
Mounting rail SLZS/SLMS for proximity switch						
	12	Wrought aluminium alloy	E	**150916**	**SLZS-16-...-...**	1
	16			**152744**	**SLMS-16-...-...**	1
	20			**150917**	**SLZS-25-...-...**	1
	25			**152745**	**SLMS-25-...-...**	1
	32			**150918**	**SLZS-32-...-...**	1
	40			**150919**	**SLZS-40-...-...**	1
Slot nut NST					Data sheets ➔ Internet: nst	
	12 ... 25	Non-alloyed tempered steel Free of copper and PTFE	I	**150914**	**NST-5-M5**	1
	32, 40			**150915**	**NST-8-M6**	1
Centring sleeve ZBH					Data sheets ➔ Internet: zbh	
	16 ... 40	Stainless steel Free of copper and PTFE	–	**8137184**	**ZBH-9-B**	10

1) Packaging unit

Ordering data – Proximity switches for T-slot, magneto-resistive

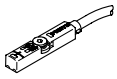
Data sheets ➔ Internet: smt

	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part no.	Type
N/O 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**

Accessories

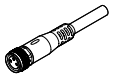
Ordering data – Proximity switches for T-slot, magnetic reed

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**

Ordering data – Connecting cables

Data sheets → Internet: nebu

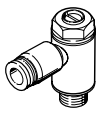
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	**541333**	**NEBU-M8G3-K-2.5-LE3**
			5	**541334**	**NEBU-M8G3-K-5-LE3**
	Straight socket, M12x1, 5-pin	Cable, open end, 3-wire	2.5	**541363**	**NEBU-M12G5-K-2.5-LE3**
			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 – Slot cover for T-slot

	Mounting	Length [m]	Part no.	Type
	Inserted from above	2x 0.5	**151680**	**ABP-5-S**

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**