

## Linear drives SLM, with guide

**FESTO**



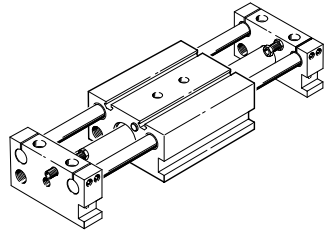
## Key features

### 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.

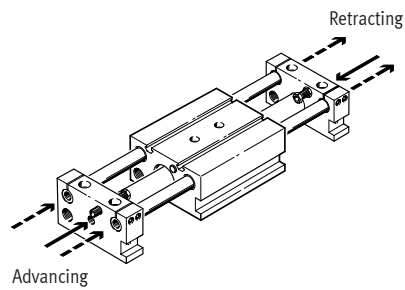
### Basic unit

#### SLM-...-G



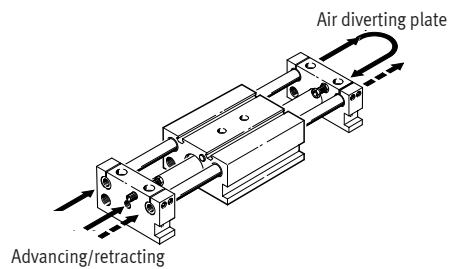
#### SLM-...-GL

with hollow guide rods



#### SLM-...-GU

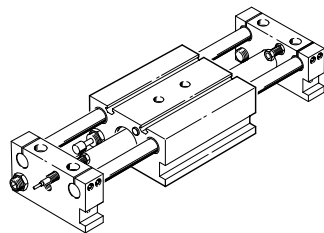
with hollow guide rods, air diverting plate and supply port on one side



### Standard unit

#### SLM-...-S

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

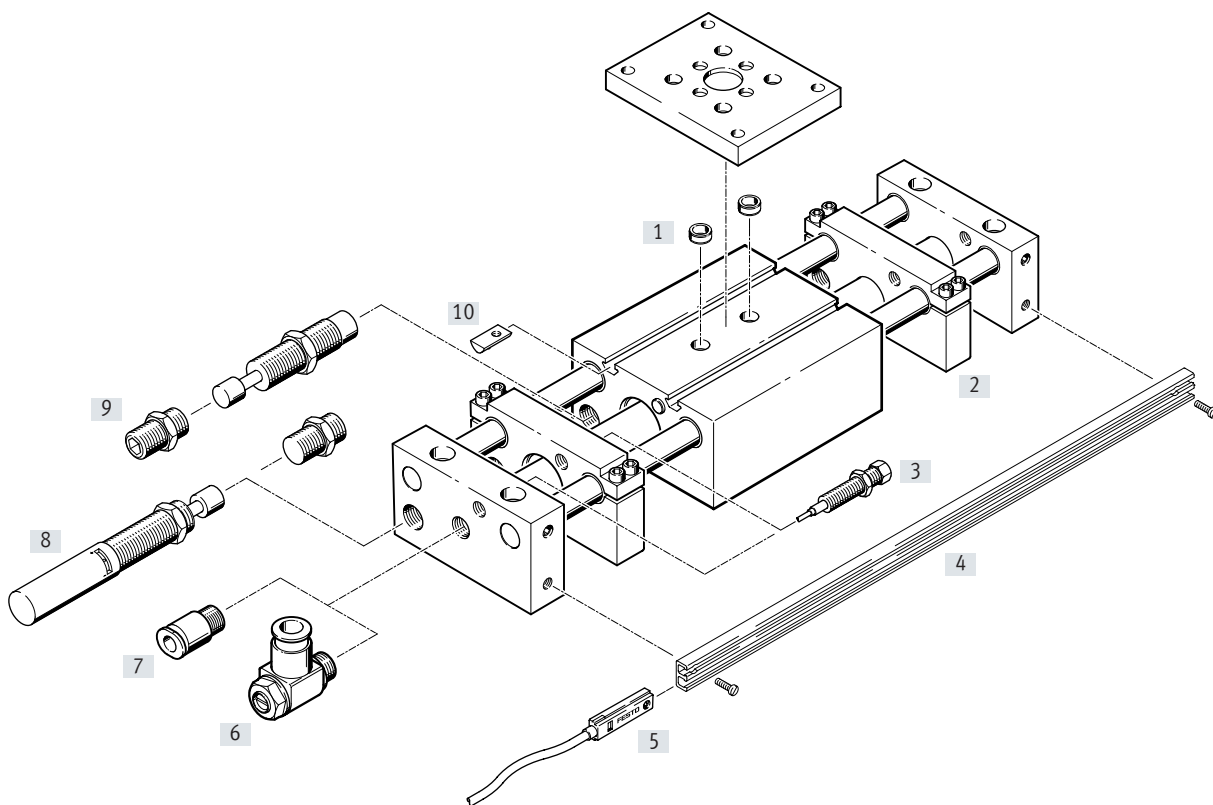


## Type codes

<b>001</b>	<b>Series</b>	
<b>SLM</b>	Linear drive	
<b>002</b>	<b>Piston diameter</b>	
<b>12</b>	12	
<b>16</b>	16	
<b>20</b>	20	
<b>25</b>	25	
<b>32</b>	32	
<b>40</b>	40	
<b>003</b>	<b>Stroke</b>	
<b>...</b>	10 ... 1500	
<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>Basic unit</b>	
<b>G</b>	Linear drive unit with pneumatic drive	
<b>GL</b>	Linear drive unit with pneumatic drive and hollow guide rods	
<b>GU</b>	Linear drive unit with pneumatic drive and hollow guide rods and reversing plate	
<b>007</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	

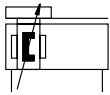
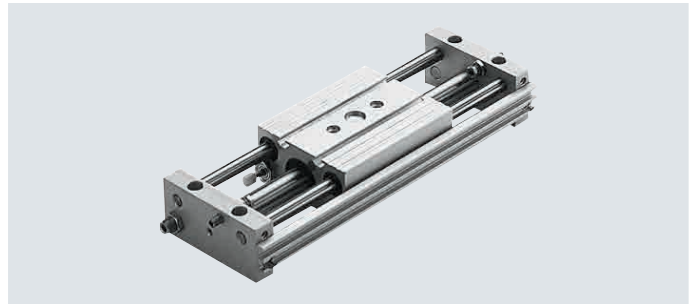
<b>008</b>	<b>Shock absorber at rear</b>	
	None	
<b>CH</b>	Shock absorber, self-adjusting, with stop at rear	
<b>YH</b>	Shock absorber, adjustable, with stop at rear	
<b>009</b>	<b>Sensor at front</b>	
	None	
<b>PV</b>	Inductive proximity sensor, PNP, cable 2.5 m, stop sleeve, at front	
<b>NV</b>	Inductive proximity sensor, NPN, 2.5 m cable, stop sleeve, at front	
<b>010</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	
<b>011</b>	<b>Stroke adjustment at front</b>	
	None	
<b>HV</b>	Stop plate at front	
<b>012</b>	<b>Stroke adjustment at rear</b>	
	None	
<b>HH</b>	Stop plate at rear	
<b>013</b>	<b>Mounting rail</b>	
	None	
<b>E</b>	Mounting rail	
<b>014</b>	<b>Slot nut</b>	
	None	
<b>...I</b>	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](http://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 <sup>1)</sup> [°C]	-20 ... +60					

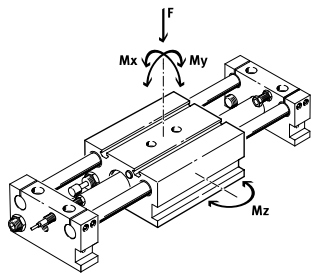
1) Note operating range of proximity switches.

**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

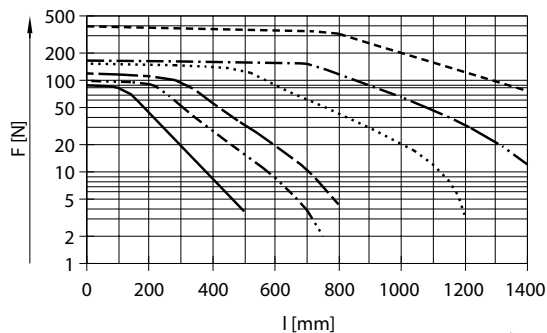
Data sheet

Permissible dynamic load



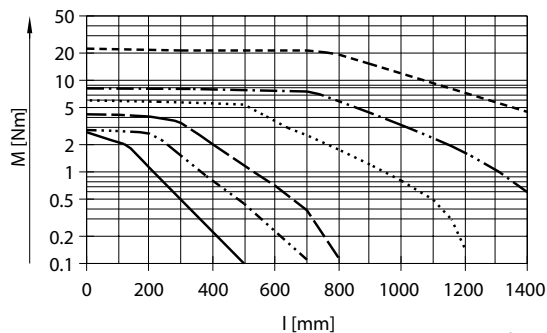
F = load  
 $M \geq M_x$   
 $M \geq M_y$   
 $M \geq M_z$

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

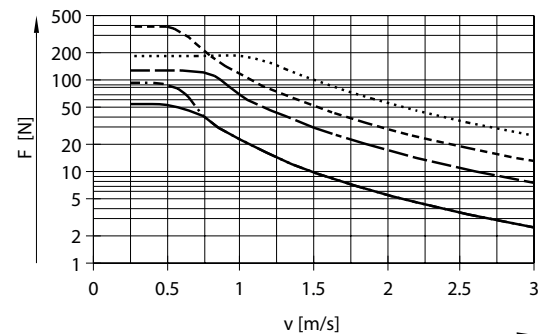
Permissible shock absorber load F as a function of impact velocity v

with horizontal installation

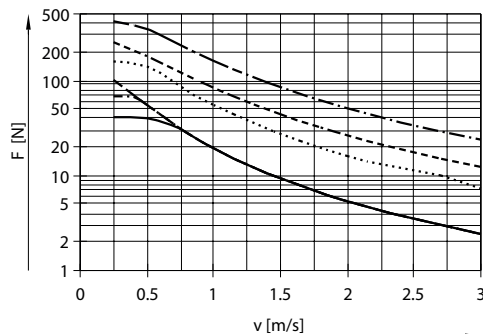
$F \geq m_L \times g$                        $g = 9.81 \text{ N/mm}^2$   
 $m_L = \text{load [kg]}$

with vertical installation

$F \geq (m_L + m_E) \times g$                        $g = 9.81 \text{ N/mm}^2$   
 $m_E = \text{moving mass (dead weight) [kg]}$   
 $m_L = \text{load [kg]}$



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



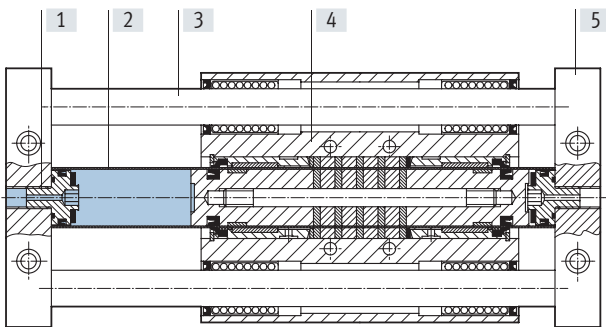
- SLM-12
- ..... SLM-16
- SLM-20
- ..... SLM-25
- SLM-32
- SLM-40

## Data sheet

Weight [g]						
Piston $\varnothing$	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



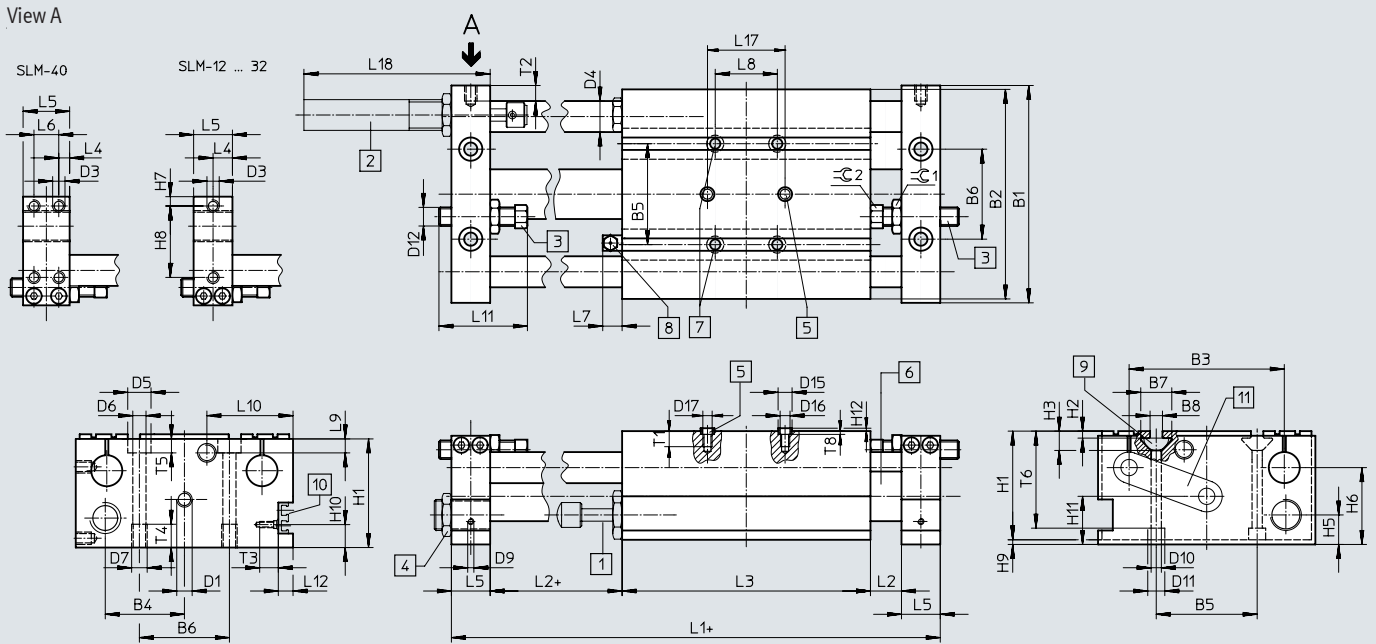
#### Linear drive

[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

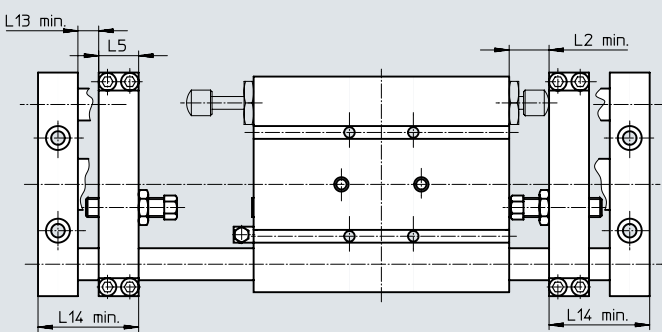
Dimensions

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



- [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

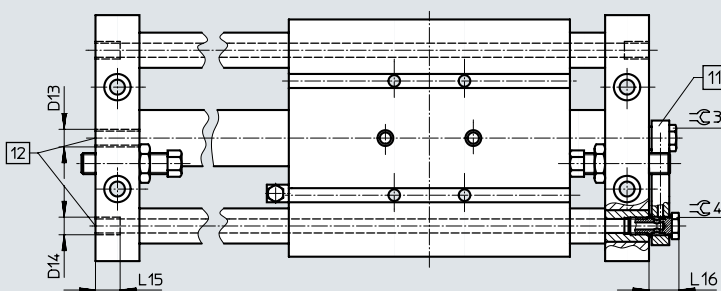
With stop plate



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

∅ [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	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

∅ [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	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

∅ [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 <sup>1)</sup>	L18	T1	T2	T3	T4	T5	T6	T8 +0.2	≈C1	≈C2	≈C3	≈C4
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.	<b>32781</b>	<b>32782</b>	<b>32783</b>	<b>32784</b>	<b>32785</b>	<b>32786</b>					
Function	Linear drive unit								<b>SLM</b>	SLM	
Size [mm]	12	16	20	25	32	40		-...			
Stroke [mm]	10 ... 500	10 ... 800	10 ... 1500						-...		
Guide	Via linear bushings								<b>-KF</b>	-KF	
Position sensing	Via proximity switch								<b>-A</b>	-A	
Basic unit	Linear drive unit with pneumatic drive								<b>-G</b>		
	-	Linear drive unit with pneumatic drive and hollow guide rods							<b>-GL</b>		
	-	Linear drive unit with pneumatic drive, hollow guide rods and air diverting plate							<b>-GU</b>		
Shock absorber	At front	Self-adjusting shock absorber, with stop at front								<b>-CV</b>	
		-	-	Adjustable shock absorber, with stop at front					<b>-YV</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>	
Stroke adjustment	At front	Stop plate at front							[1]	<b>-HV</b>	
	At rear	Stop plate at rear							[2]	<b>-HH</b>	
Mounting rail	Mounting rail								<b>-E</b>		
Slot nut	1 ... 10								<b>-...J</b>		

## Ordering data – Modular products, package solution

Ordering table									
Size	12	16	20	25	32	40	Conditions	Code	Enter code
Module no.	<b>32781</b>	<b>32782</b>	<b>32783</b>	<b>32784</b>	<b>32785</b>	<b>32786</b>			
Function	Linear drive unit							<b>SLM</b>	SLM
Size [mm]	12	16	20	25	32	40		-...	
Stroke [mm]	10 ... 500	10 ... 800		10 ... 1500				-...	
Guide	Via linear bushings							<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 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		Part no.	Type
For ø [mm]	Includes shock absorber Data sheets → Internet: ysr		
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		Part no.	Type
For ø [mm]	Includes shock absorber Data sheets → Internet: dysr		
20, 25	DYSR-12-12-Y5	114032	SLZ-25-KF-A
32, 40	DYSR-16-20-Y5	114033	SLZ-32-KF-A

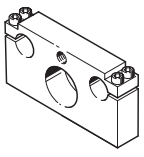



### Switching stop SL- ...-SIE-PS (Order code: PV, PH) Kit with inductive proximity switch PNP

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

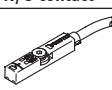
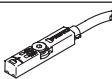


Ordering data		Part no.	Type
For ø [mm]	Switching output Includes proximity switch Data sheets → Internet: sien		
12, 16	PNP	SIEN-4B-PS-K-L	SL-10/16-SIE-PS
	NPN	SIEN-4B-NS-K-L	SL-10/16-SIE-NS
20, 25	PNP	SIEN-4B-PS-K-L	SL-20/25-SIE-PS
	NPN	SIEN-4B-NS-K-L	SL-20/25-SIE-NS
32, 40	PNP	SIEN-6.5B-PS-K-L	SL-32/50-SIE-PS
	NPN	SIEN-6.5B-NS-K-L	SL-32/50-SIE-NS

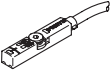
## Accessories

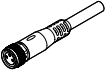

Ordering data – Accessories						
	For ø [mm]	Material	Order code	Part no.	Type	PJ <sup>1)</sup>
<b>Stop plate SLM-...-KF-A</b>						
	12	Wrought aluminium alloy	HV, HH	119527	SLM-12-...-KF-A	1
	16			119528	SLM-16-...-KF-A	1
	20			119529	SLM-20-...-KF-A	1
	25			119530	SLM-25-...-KF-A	1
	32			119531	SLM-32-...-KF-A	1
	40			119532	SLM-40-...-KF-A	1
<b>Mounting rail SLZS/SLMS for proximity switch</b>						
	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
<b>Slot nut NST</b> <span style="float: right;">Data sheets → Internet: nst</span>						
	12 ... 25	Non-alloyed tempered steel	I	150914	NST-5-M5	1
	32, 40	Free of copper and PTFE		150915	NST-8-M6	1
<b>Centring sleeve ZBH</b> <span style="float: right;">Data sheets → Internet: zbh</span>						
	16 ... 40	Stainless steel Free of copper and PTFE	–	150927	ZBH-9	10

1) Packaging unit

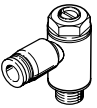
Ordering data – Proximity switches for T-slot, magneto-resistive						
	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part no.	Type
<b>N/O contact</b>						
	Inserted in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-wire	2.5	574335	SMT-8M-A-PS-24V-E-2.5-OE
			Plug M8x1, 3-pin	0.3	574334	SMT-8M-A-PS-24V-E-0.3-M8D
		NPN	Plug M12x1, 3-pin	0.3	574337	SMT-8M-A-PS-24V-E-0.3-M12
			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 contact</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

## 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
<b>N/O contact</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

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

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