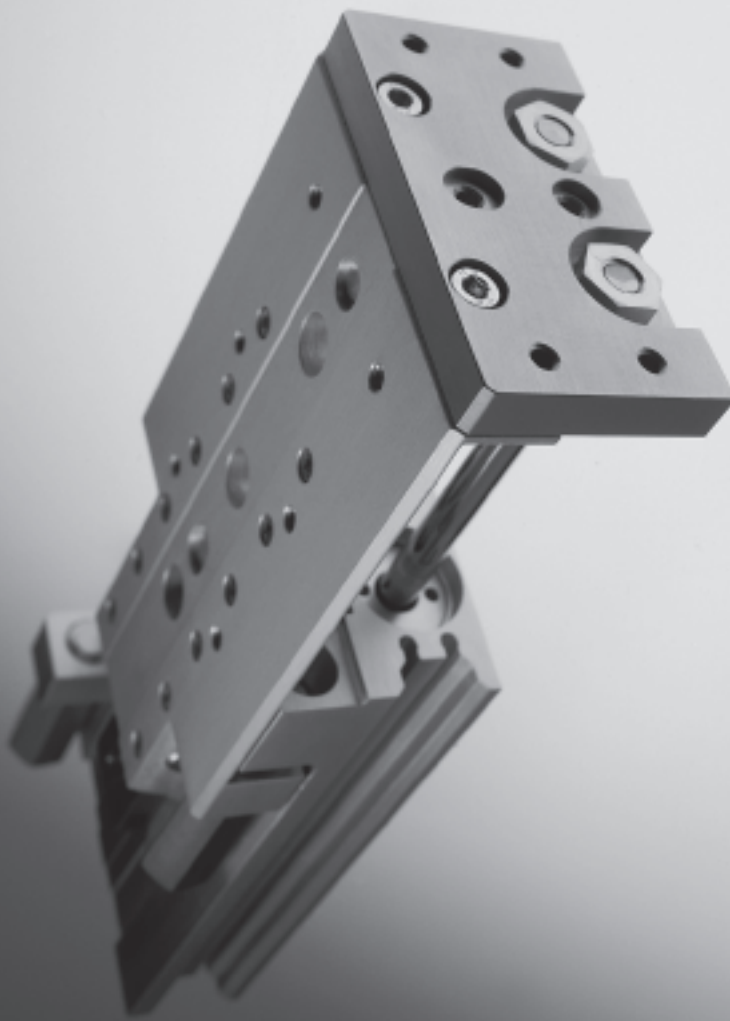




- Precise and rigid guide
- Highly flexible
- Adjustable end-position cushioning

Mini slides SLT/SLS/SLF

Key features

General information

- Double-acting drives
- Precise and rigid guide
- Versatile air connections
- Sensors can be integrated
- Highly flexible thanks to versatile, direct assembly and connection options on:
 - Drive body
 - Slide
 - Yoke plate

Mini slides SLT



- Powerful
- Compact design through air connections at rear
- Two adjustable end-position cushioning systems:
 - Flexible cushioning elements
 - Hydraulic shock absorbers
- Extremely compact drive thanks to cushioning systems integrated in the profile section
- Versatile combination options include:
 - Drives
 - Grippers
- System product for handling and assembly technology

Mini slides SLS



- Slim design
- Integrated end-position cushioning:
 - Flexible cushioning elements

Mini slides SLF



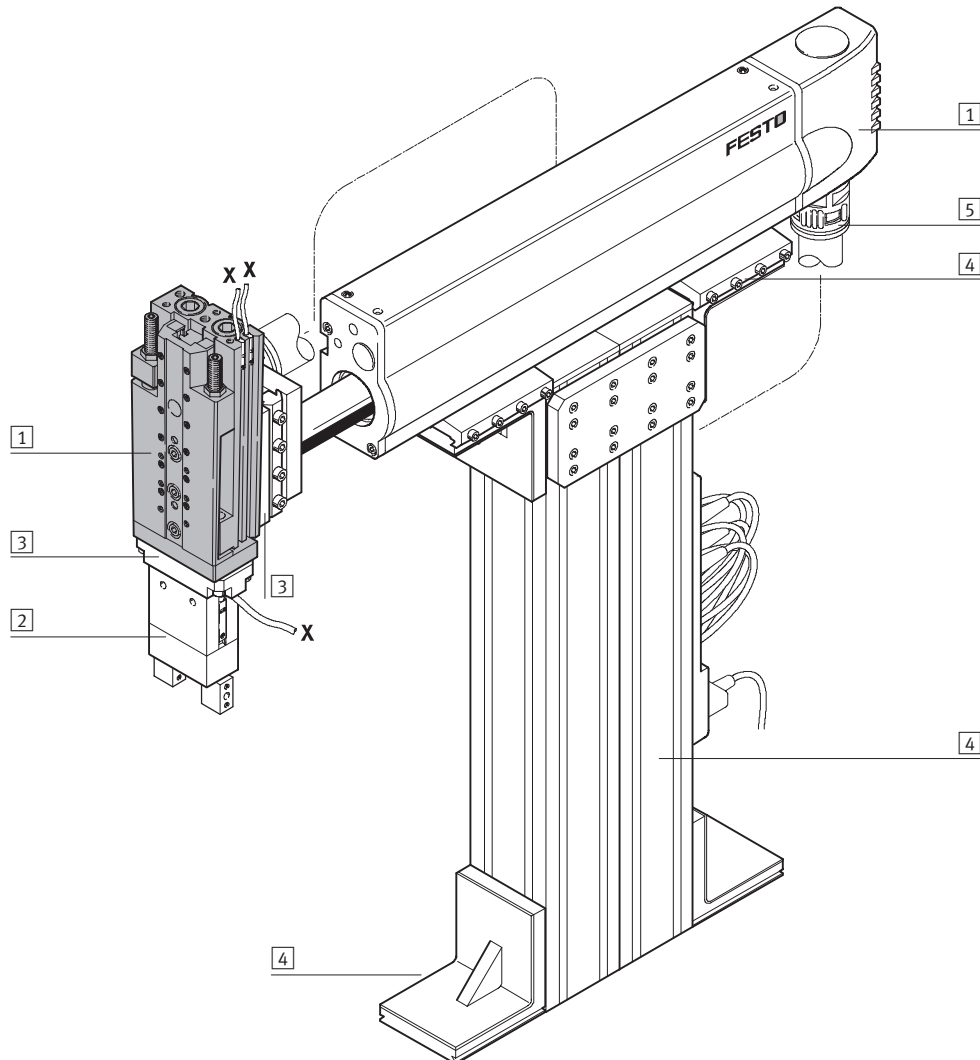
- Flat
- Adjustable end-position cushioning
 - Flexible cushioning elements
- Versatile combination options on:
 - Drives
- System product for handling and assembly technology

Mini slides SLT/SLS/SLF

System example

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System product for handling and assembly technology



Drives with linear guides
Slides

6.1

System elements and accessories		
	Brief description	→ Page
1 Drives	Diverse possible combinations in handling and assembly technology	Volume 1
2 Grippers	Wide range of variation options within handling and assembly technology	Volume 1
3 Adapters	For drive/drive and drive/gripper combinations	Volume 5
4 Basic components	Profiles and profile connections as well as profile/drive connections	Volume 5
5 Installation components	For achieving a clear-cut, safe layout of electrical cables and tubing	Volume 5
– Axes	Diverse possible combinations in handling and assembly technology	Volume 5
– Motors	Servo and stepper motors, with or without gearing	Volume 5

Mini slides SLT/SLS/SLF

Key features

FESTO

Drive

Mini slides SLT/SLS/SLF are driven with double-acting cylinders.

SLT: with two pistons

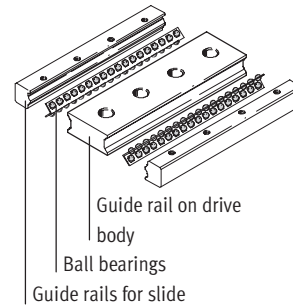
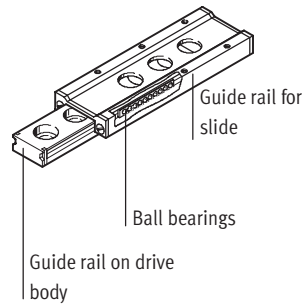
SLS/SLF: with one piston

Guide

SLT-/SLS-/SLF-6/-10/-16

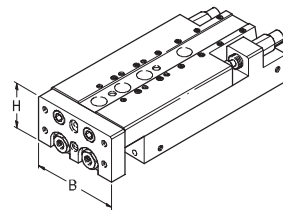
SLT-20/-25

The slide moves on a pre-loaded, backlash-free precision ball bearing cage guide of high rigidity with high torque and load absorption.



The powerful mini slide

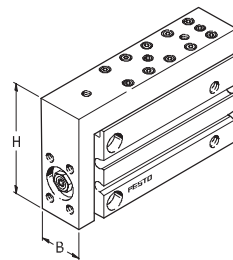
SLT



Piston Ø	Width (W)	x	Height (H)
2x 6 mm	35	x	20 mm
2x 10 mm	50	x	30 mm
2x 16 mm	66	x	40 mm
2x 20 mm	85	x	49 mm
2x 25 mm	104	x	60 mm

The super slim mini slide

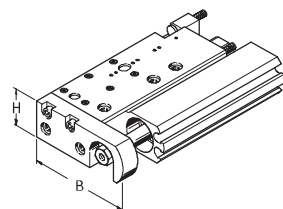
SLS



Piston Ø	Width (W)	x	Height (H)
6 mm	16	x	39 mm
10 mm	20	x	45 mm
16 mm	24	x	51 mm

The extremely flat mini slide

SLF



Piston Ø	Width (W)	x	Height (H)
6 mm	46	x	11 mm
10 mm	48	x	15 mm
16 mm	62	x	21 mm

Mini slides SLT/SLS/SLF

Key features

FESTO

Versatile

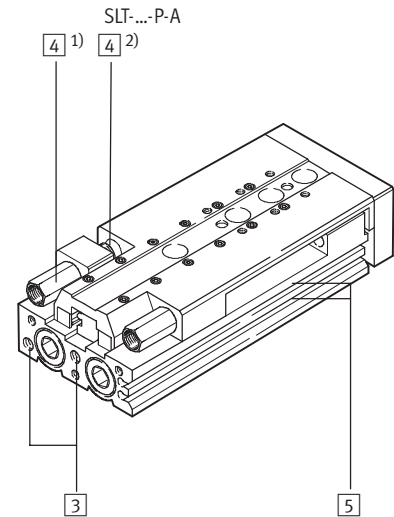
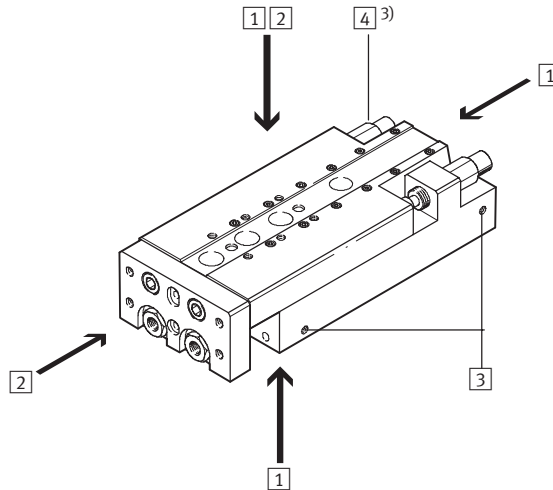
through

SLT

- Attachment
- Mounting
- Air connection
- End-position cushioning
- Sensors

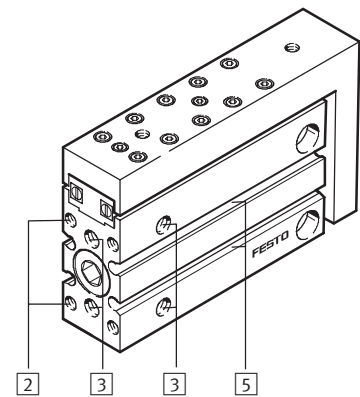
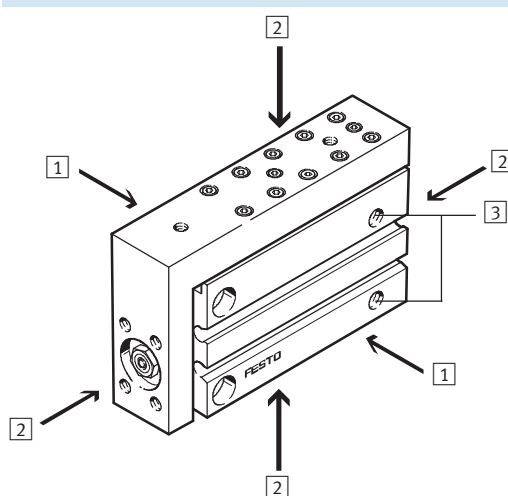
- 1 Attachment:
The drive can be directly attached via through or threaded holes (with appropriate screws and centring sleeves ZBH).
- 2 Mounting surface:
Direct attachment of devices and loads is made possible with threaded holes in the slide and the yoke plate (using appropriate screws and centring sleeves ZBS/ZBH) (e.g. SLT: semi-rotary drives and grippers).

SLT-...-CC-B



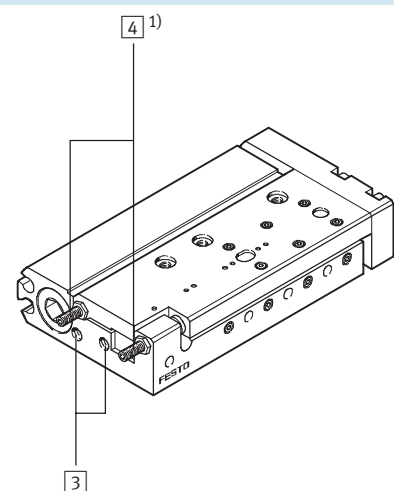
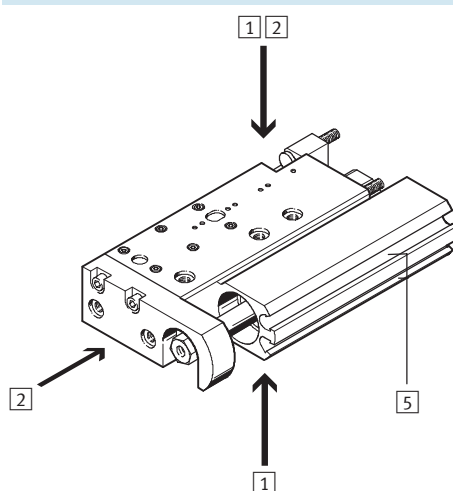
- 3 Versatile air connections
- 4 Adjustable end-position cushioning systems:
1) SLT-...-P-A/SLF-...-P-A with flexible cushioning elements in the end positions
2) SLT-...-P-A with stop PF-...-SLT allows precise, metallic positioning in the end positions
3) SLT-...-A-CC-B with hydraulic shock absorbers YSRT on rear cover for optimum end-position adjustment

SLS



- 5 Sensors can be integrated
Sensor slots for one or more proximity sensors SME/SMT-10. For space-saving, reliable sensing of piston positions. Proximity sensors can be freely moved and clamped in their slots.

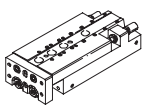
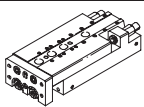
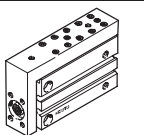
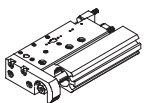
SLF



Mini slides SLT/SLS/SLF

Product range overview

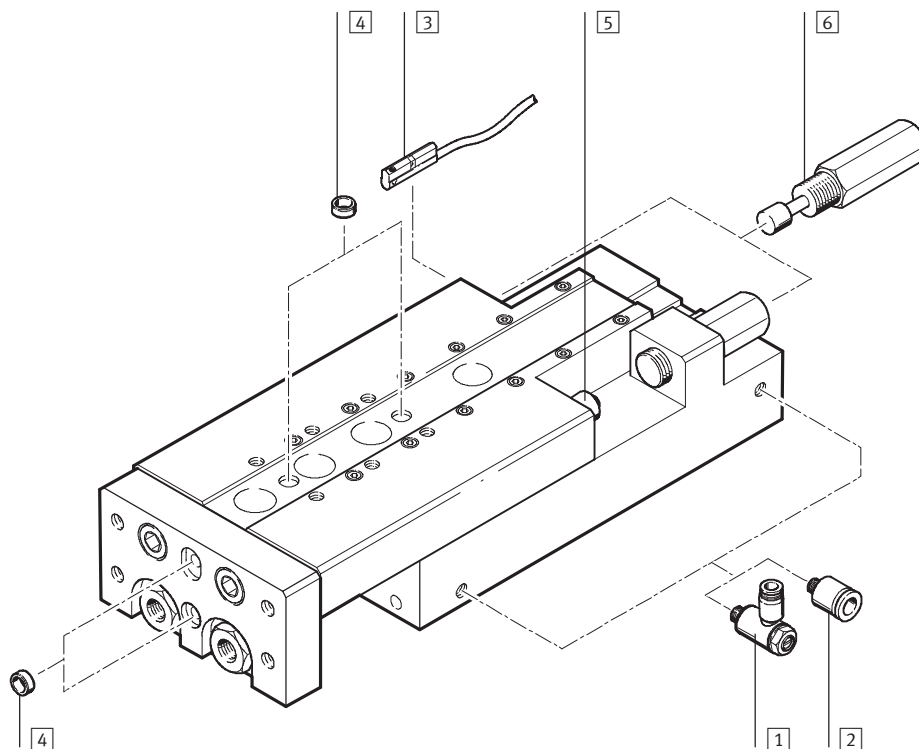
FESTO

Function	Design	Piston $\varnothing$	Stroke	Cushioning		Position sensing	→ Page
		[mm]	[mm]	flexible cushioning elements	hydraulic shock absorbers		
Double-acting	Powerful, SLT-...-P-A						
		6, 10, 16, 20, 25	10, 20, 30, 40, 50, 80, 100, 125, 150, 200	■	—	■	1 / 6.1-7
	Powerful, SLT-...-A-CC-B						
		10, 16, 20, 25	30, 40, 50, 80, 100, 125, 150, 200	—	■	■	1 / 6.1-7
	Slim, SLS-...-P-A						
		6, 10, 16	5, 10, 15, 20, 25, 30	■	—	■	1 / 6.1-21
Double-acting	Flat, SLF-...-P-A						
		6, 10, 16	10, 20, 30, 40, 50, 80	■	—	■	1 / 6.1-29

Mini slides SLT

Peripherals overview

FESTO

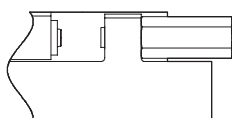


 Note
End stops must not be removed.

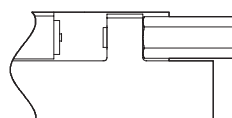
Accessories		
	Brief description	→ Page
1	One-way flow control valve GRLA	For speed regulation
2	Push-in fitting QS	For connecting compressed air tubing with standard external diameters
3	Proximity sensor SME/SMT-10	Sensor slots for one or more proximity sensors
4	Centring pin/sleeve ZBS/ZBH	For centring loads and attachments
5	Cushioning with stop PF	Precision metal stop for small loads at slow speed. At an operating pressure > 3 bar, the stop ensures precise, metal-to-metal contact. The stop can be retrofitted.
6	Cushioning with shock absorber YSRT	For large loads and high speed. Ensures precise, metal-to-metal contact after the cushioning.
7	Cushioning P	Standard version with flexible cushioning elements. Low-cost, no metal-to-metal contact.

Cushioning variants

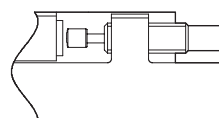
7 SLT-...-P-A
with cushioning P



5 SLT-...-P-A
with cushioning PF
(stop can be retrofitted)



6 SLT-...-CC-B
with cushioning YSRT



Mini slides SLT

Type codes

FESTO

		SLT	–	16	–	80	–	P	–	A
Type										
Double-acting										
SLT	Mini-slide									
Piston Ø [mm]										
Stroke [mm]										
Cushioning										
P	Flexible cushioning, non-adjustable									
Position sensing										
A	Via proximity sensor									

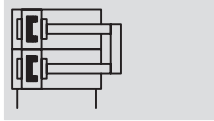
		SLT	–	16	–	80	–	A	–	CC	–	B
Type												
Double-acting												
SLT	Mini-slide											
Piston Ø [mm]												
Stroke [mm]												
Position sensing												
A	Via proximity sensor											
Cushioning												
CC	Linear, self-adjusting shock absorber											
Version												
B	B series											

Mini slides SLT

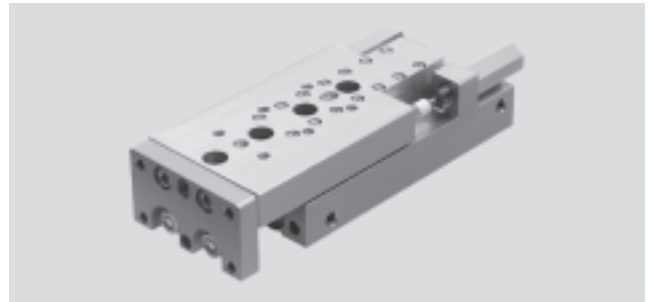
Technical data

FESTO

Function



[www.festo.com/en/
Spare_parts_service](http://www.festo.com/en/Spare_parts_service)



- $\varnothing$ - Diameter
6 ... 25 mm
- I - Stroke length
10 ... 200 mm

General technical data							
Piston Ø			6	10	16	20	25
Pneumatic connection			M5			G1/8	
Design			Kinematic yolk system				
Guide			Parallel piston rods, ball bearing guide				
Cushioning	Cushioning P		Non-adjustable at either end				
	Shock absorber		–	Self-adjusting at both ends			
Position sensing			Via proximity sensor				
Type of mounting			Via through-holes				
			Via female thread				
Mounting position			Any				
Adjustable end-position range	Per end stop	[mm]	7	4	12		
	Per shock absorber	[mm]	–	4	5	12	
Cushioning length with shock absorbers		[mm]	–	5		8	12
Max. advancing speed		[m/s]	0.5 ¹⁾	0.8			
Max. retracting speed		[m/s]	0.5 ¹⁾	0.8			
Repetition accuracy	Stop PF	[mm]	0.02				
	Shock absorber	[mm]	–	0.02			

1) Must be throttled externally

Operating and environmental conditions					
Piston $\varnothing$	6	10	16	20	25
Operating medium	Dried compressed air, lubricated or unlubricated				
Operating pressure	[bar]	1.5 ... 10	1 ... 10		
Ambient temperature ¹⁾	[°C]	–20 ... +60			
Corrosion resistance class CRC ²⁾		1			

1) Note operating range of proximity sensors

2) Corrosion resistance class 1 according to Festo standard 940 070

Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers

Forces [N] and impact energy [Nm]					
Piston $\varnothing$	6	10	16	20	25
Theoretical force at 6 bar, advancing	34	94	242	376	590
Theoretical force at 6 bar, retracting	25	79	218	317	495
Max. impact energy at the end positions ¹⁾	Stop PF ²⁾	0.0005	0.007	0.015	0.030
	Cushioning p ²⁾	0.016	0.1	0.3	0.4
	Shock absorber CC ²⁾	–	1	2	3
					10

1) Loads moved by the slides must be taken into consideration for the calculation of end-position cushioning energy

2) Note also the graphs illustrating piston speed as a function of working load → 1 / 6.1-11

Mini slides SLT

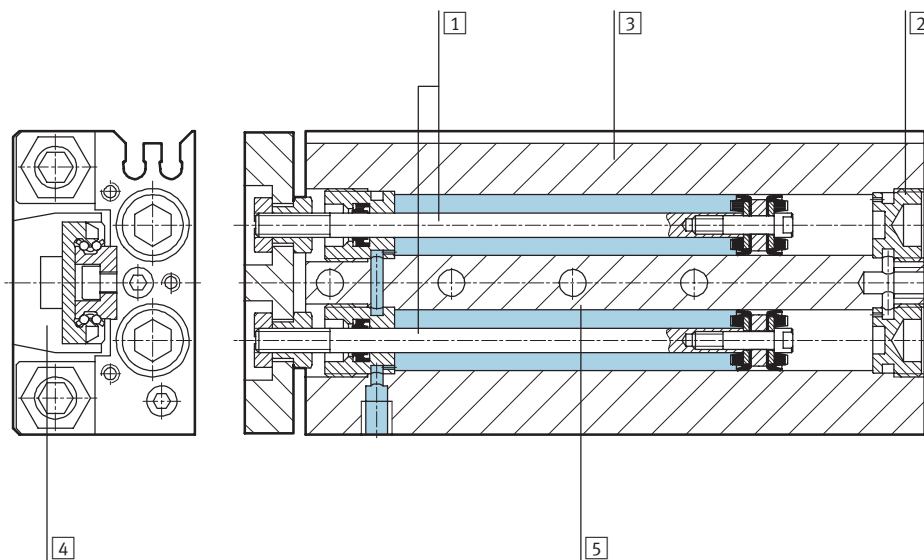
Technical data

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Weights [g]						
Piston Ø	Stroke	6	10	16	20	25
Product weight	10	177	365	635	1192	1905
	20	194	365	630	1182	1890
	30	210	398	665	1173	1900
	40	235	421	725	1260	2047
	50	270	480	815	1396	2197
	80	–	631	1075	1820	2762
	100	–	–	1280	2138	3182
	125			1540	2535	3714
	150			1665	2933	4243
	200			–	3728	5300
Moving load	10	39	134	265	530	880
	20	45	153	286	580	970
	30	56				
	40	61				
	50	76				
	80	–	270	550	780	1272
	100	–	–	640	910	1460
	125			735	1007	1695
	150			830	1104	1950
	200			–	1201	2393

Materials

Sectional view



Mini slide	
1	Piston rod
2	Cap
3	Housing
4	Slide
5	Guide
–	Seals
Note on materials	

High-alloy steel
Wrought aluminium alloy, anodised
Wrought aluminium alloy, anodised
Wrought aluminium alloy, anodised
Tempered steel
Thermoplastic rubber, hydrogenated nitrile rubber, nitrile rubber
Free of copper, PTFE and silicone

Mini slides SLT

Technical data

FESTO

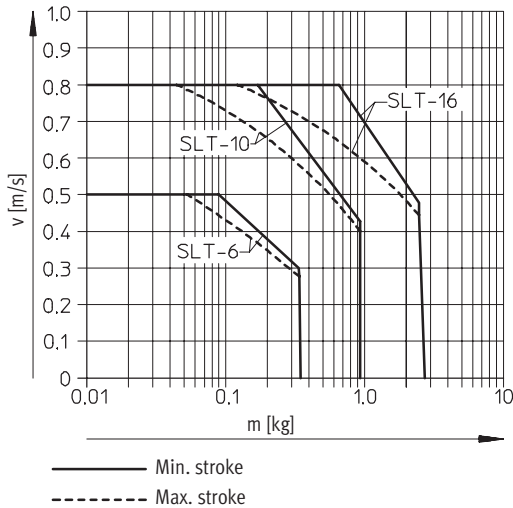
Piston speed v as a function of working load m

The piston speed as a function of working load illustrated in these

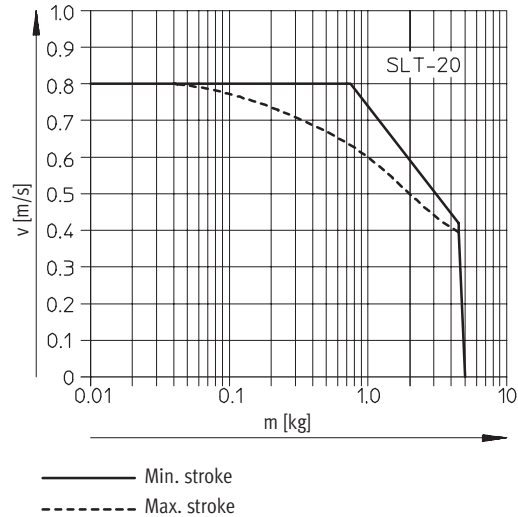
graphs may not be exceeded as the kinetic impact or residual energy in

the end positions can result in damage to the drive.

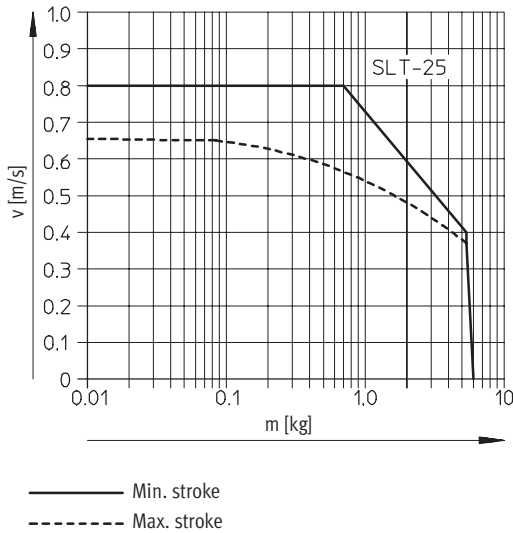
SLT-6/-10/-16-...-P-A



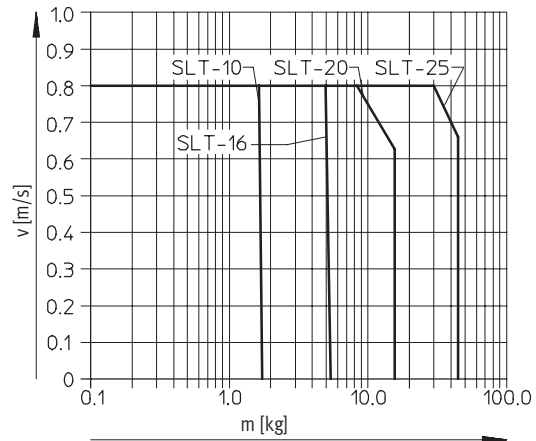
SLT-20-...-P-A



SLT-25-...-P-A



SLT-10/-16/-20/-25-...-A-CC-B



Note

For the mini slide SLT with shock absorbers, the speed should not be less than 0.1 m/s, as otherwise the service life of the shock absorber will be reduced.

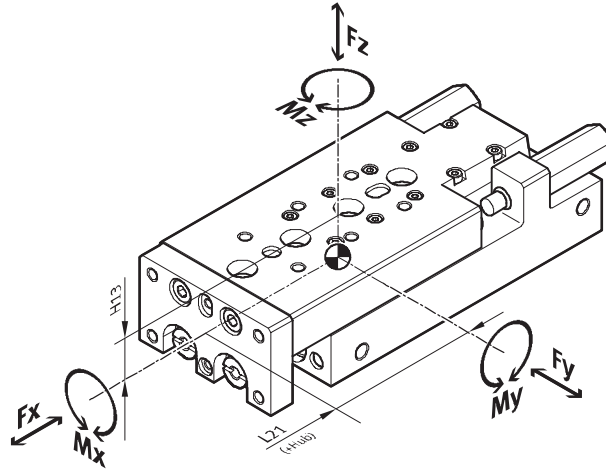
Mini slides SLT

Technical data

FESTO

Dynamic characteristic load values

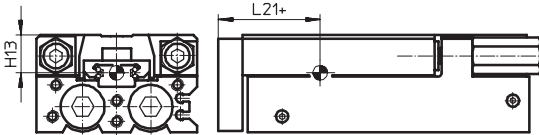
Torques are indicated with reference to the centre of the guide.
They must not be exceeded during dynamic operation. Special attention must be paid to the cushioning phase.



If the drive is simultaneously subjected to several of the indicated forces and torques, the following equation must be satisfied in addition to the indicated maximum loads.

$$\frac{|F_y|}{F_{y_{max}}} + \frac{|F_z|}{F_{z_{max}}} + \frac{|M_x|}{M_{x_{max}}} + \frac{|M_y|}{M_{y_{max}}} + \frac{|M_z|}{M_{z_{max}}} \leq 1$$

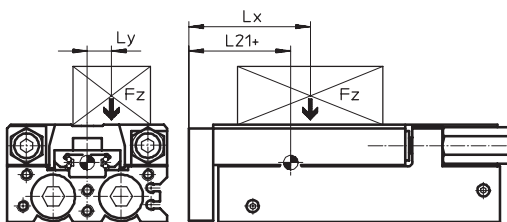
Position of guide centre



+ plus stroke length

Calculation example

Given:



Mini slide = SLT-10
Stroke length = 80 mm
Lever arm L_x = 50 mm
Lever arm L_y = 30 mm
Mass F_z = 0.8 kg
Acceleration a = 0 m/s²

To be found:

F_y , F_z , M_x , M_y , M_z
and
verification of function with combined load

Solution:

$L_{21} = 41$ mm from table

$F_y = 0$ N

$F_z = m \times g$
 $= 0.8 \text{ kg} \times 9.81 \text{ m/s}^2 = 7.848 \text{ N}$

$M_x = m \times g \times L_y$
 $= 0.8 \text{ kg} \times 9.81 \text{ m/s}^2 \times 30 \text{ mm} = 0.236 \text{ Nm}$

$M_y = m \times g \times [(L_{21} + \text{stroke}) - L_x]$
 $= 0.8 \text{ kg} \times 9.81 \text{ m/s}^2 [(41 \text{ mm} + 80 \text{ mm}) - 50 \text{ mm}] = 0.557 \text{ Nm}$

$M_z = 0$ Nm

Combined load:

$$\frac{|F_y|}{F_{y_{max}}} + \frac{|F_z|}{F_{z_{max}}} + \frac{|M_x|}{M_{x_{max}}} + \frac{|M_y|}{M_{y_{max}}} + \frac{|M_z|}{M_{z_{max}}} = 0 + \frac{7.848 \text{ N}}{410 \text{ N}} + \frac{0.236 \text{ Nm}}{4.3 \text{ Nm}} + \frac{0.557 \text{ Nm}}{1.5 \text{ Nm}} + 0 = 0.445 \leq 1$$

Mini slides SLT

Technical data

FESTO

Permissible forces and torques						Geometric characteristics	
Piston Ø	Stroke	F _y max [N]	F _z max [N]	M _x max, M _y max [Nm]	M _z max [Nm]	H13 [mm]	L21 [mm]
6							
	10	200	200	1.1	0.7	7	21.5
	20	160	160	1.1	0.7		21.5
	30	140	140	0.7	0.5		21.5
	40	150	150	0.9	0.5		25
	50	190	190	1.4	0.5		30.5
10							
	10	470	470	2.1	1.6	13	24.5
	20	370	370	1.7	1.4		24.5
	30	390	390	2.5	1.4		28.5
	40	350	350	2.2	1.3		28.5
	50	390	390	3.1	1.4		33.5
	80	410	410	4.3	1.5		41
16							
	10	820	820	6.1	4.2	16	33
	20	650	650	4.7	3.4		33
	30	530	530	4.2	3.0		31.5
	40	490	490	3.8	2.7		31.5
	50	510	510	4.6	2.8		35
	80	520	520	6.0	2.8		41.5
	100	600	600	9.1	3.2		51.5
	125	960	960	12.6	3.5		66.5
	150	660	960	12.6	3.5		66.5
20							
	10	1,600	1,600	16	18	16.5	38.5
	20	1,270	1,270	13	14		38.5
	30	1,110	1,110	11	12		38.5
	40	930	930	10	11		38.5
	50	1,080	1,080	9	10		41
	80	1,030	1,030	14	11		48.5
	100	1,160	1,160	18	11		58
	125	1,380	1,380	37	17		71
	150	1,300	1,300	47	17		79
	200	1,170	1,170	64	17		92.5
25							
	10	1,840	1,840	19	21	23.5	45.5
	20	1,460	1,460	16	16		45.5
	30	1,280	1,280	14	14		45.5
	40	1,310	1,310	13	12		45.5
	50	1,080	1,080	12	11		45.5
	80	1,030	1,030	14	11		50.5
	100	1,160	1,160	18	11		60
	125	1,380	1,380	37	17		72.5
	150	1,300	1,300	47	17		80.5
	200	1,170	1,170	64	17		94.5

Mini slides SLT

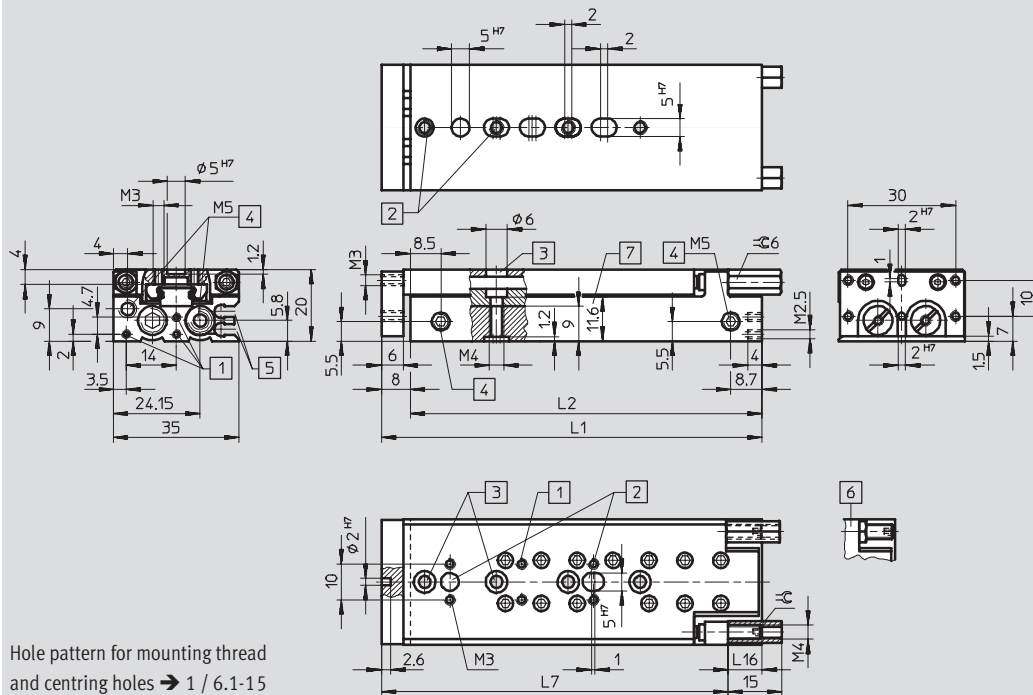
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering

Ø 6



Hole pattern for mounting thread and centring holes → 1 / 6.1-15

- 1 Mounting thread
- 2 Centring holes (centring sleeves included in scope of delivery)
- 3 Through-holes for mounting the drive
- 4 Supply ports
- 5 Sensor slots for proximity sensor SME/SMT-10
- 6 Slim lock nuts are supplied loose
- 7 Through-hole length for mounting screws

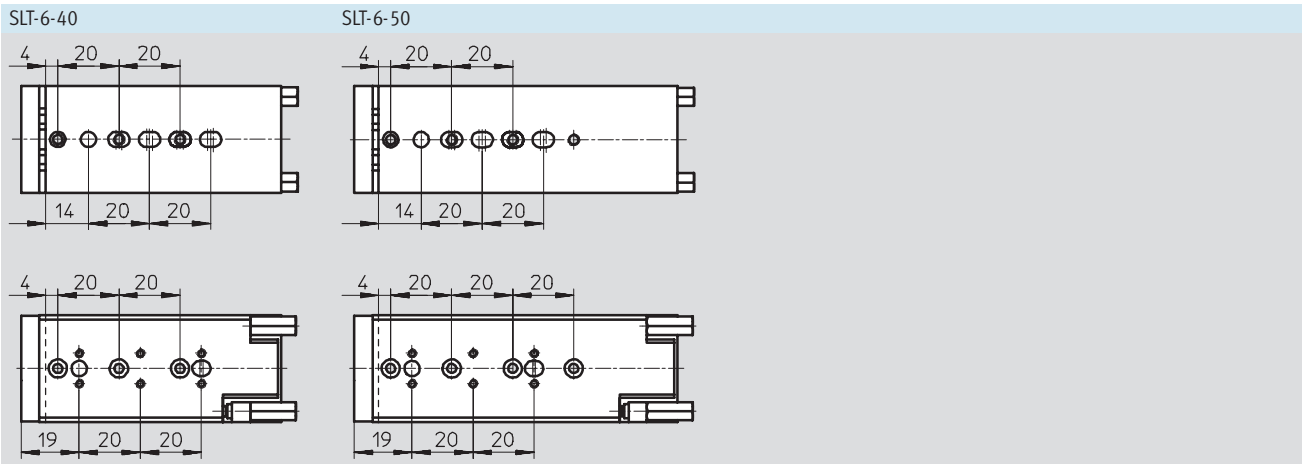
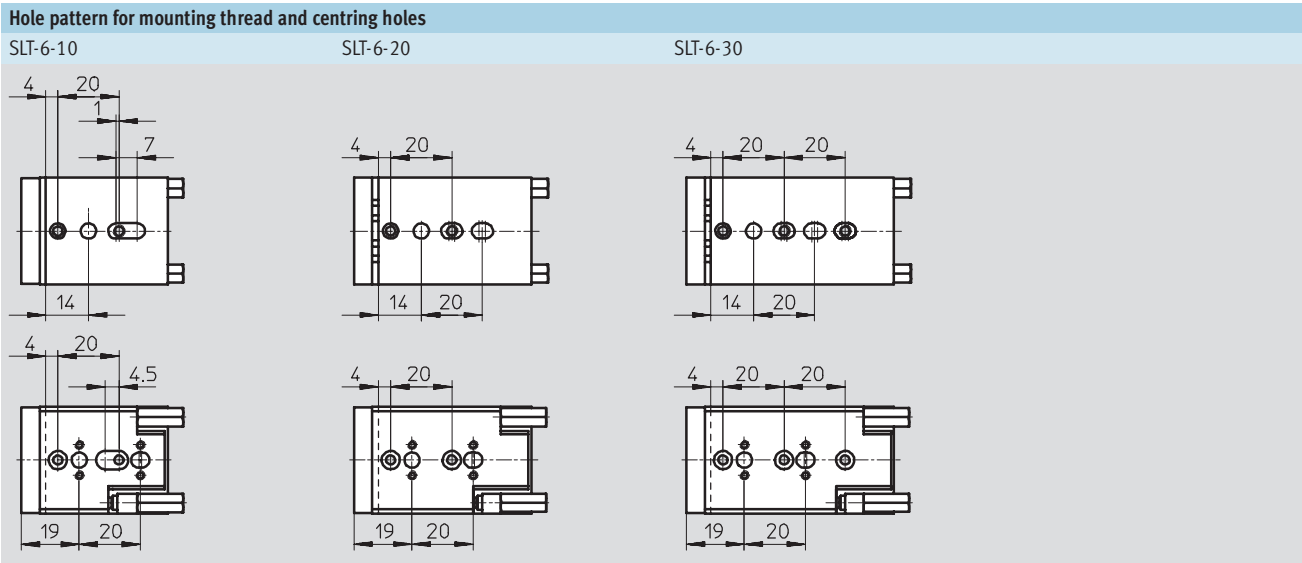
Ø	Stroke	L1	L2	L7	L16	≙
[mm]	[mm]				1)	1)
6	10	48	40	38	14	2
	20	58	50	48		
	30	68	60	58		
	40	85	77	75		
	50	106	98	96		

1) With flexible cushioning

Mini slides SLT

Technical data

FESTO



Mini slides SLT

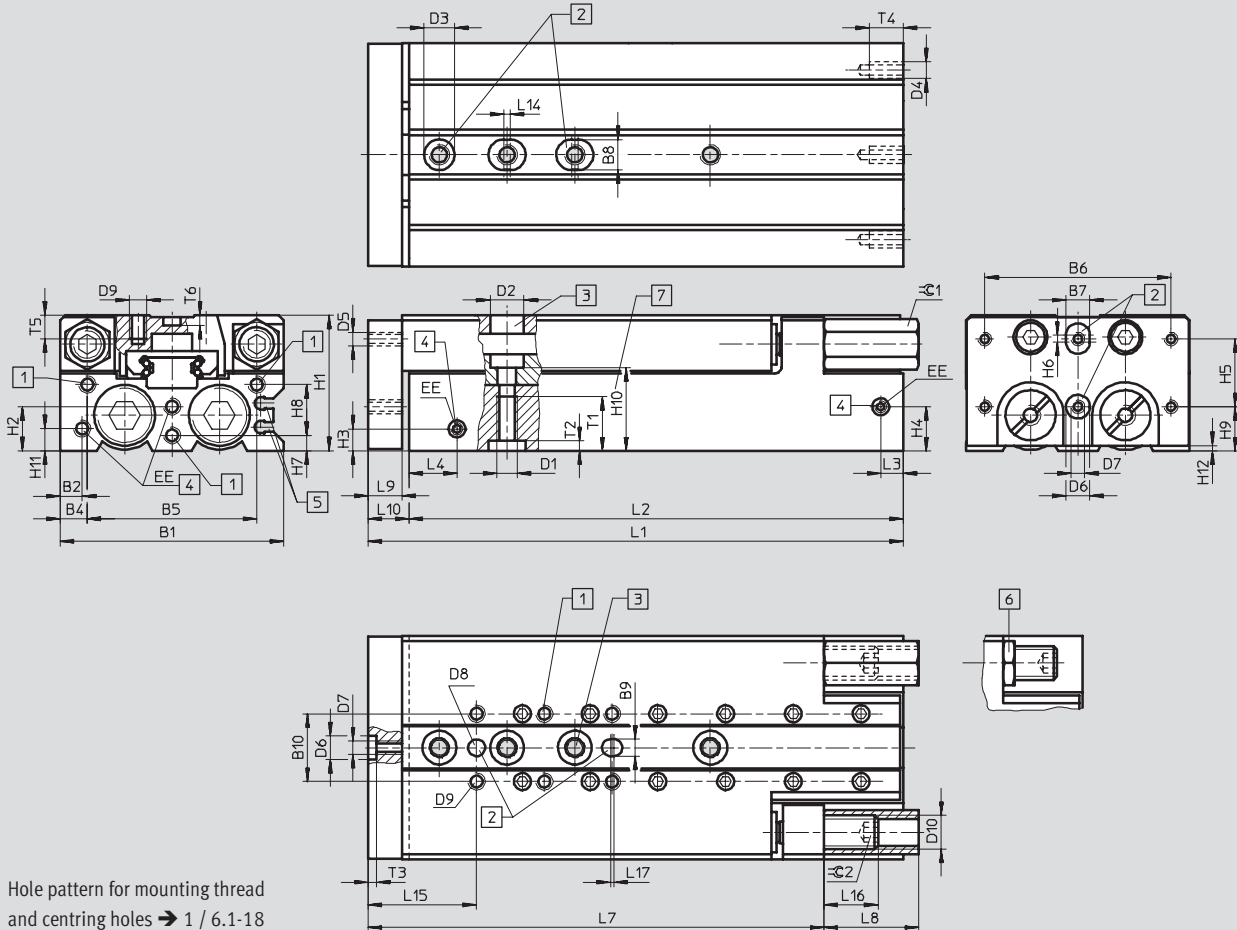
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering

Ø 10-...-25



Hole pattern for mounting thread and centring holes → 1 / 6.1-18

- 1 Mounting thread
- 2 Centring holes (centring sleeves included in scope of delivery)
- 3 Through-holes for mounting the drive
- 4 Supply ports
- 5 Sensor slots for proximity sensor SME/SMT-10
- 6 Slim lock nuts are supplied loose
- 7 Through-hole length for mounting screws

Ø	B1	B2	B4	B5	B6	B7	B8	B9	B10	D1	D2	D3	D4	D5	D6	D7
[mm]						H7	H7	H7			Ø	Ø H7			Ø H7	
10	50	5.5	10	30	40	5	7	5	20	M5	8	7	M3	M4	5	M3
16	66	6.5	8	50	55	7	9			M6	10	9	M5	M5	7	M4
20	85	7	15	55	70	9	12	9	40	M8	11	12			9	M5
25	104	8	12	80	80	12		12					M6	M6	12	M6

Ø	D8	D9	D10	EE	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12
[mm]	Ø H7															
10	5	M4	M8x1	M5	30	9.4	5.5	11	20	2	4	10	5	15.15	5.5	1.5
16	5	M5	M10x1		40	13	6.5	13			4.5	15	13	20	6.5	1.5
20	9		M12x1	G1/8	49	19.5	9	19.7			6	19	16	30.5	9	2.5
25	12	M6	M16x1	G1/8	60	21	10	21	40		5	25	10	34.5	10	1.5

Mini slides SLT

Technical data

FESTO

Ø	Stroke	L1	L2	L3	L4	L7	L8	L9	L10	L14	L15					
[mm]	[mm]									min.						
10	10	72	62	7	11.7	62.5	15	8	10	2	25					
	20	72														
	30	82				72	72.5					25				
	40	92				82										
	50	112				102	92.5									
	80	162				152	140.5									
16	10	80	68	6.7	14.2	63.5	22	10	12	2	32					
	20															
	30	87	75			70.5	28									
	40	97	85			80.5										
	50	112	100			90.5										
	80	158	146			134.5										
	100	199	187			176.5										
	125	257	245	8.2	16.6	233.5										
	150	282	270			258.5										
	20	10	97	85	11.5	15.2	74					28	10	12	2	25
20																
30																
40		107	95	84			37									
50		122	110	92												
80		167	155	135												
100		203	191	171												
125		262	250	10.3	17.5	208	59									
150		302	290			249										
200		377	365			323										
25	10	108	94	10.7	18.7	88.5	25	12	14	2	30					
	20															
	30															
	40	118	104			92.5	34									
	50	131	117			102.5	51									
	80	177	163			132.5										
	100	210	196			159.5										
	125	264	250	10	21.5	212.5	57									
	150	304	290			252.5										
	200	379	365			328.5										

Ø	L16		L17	T1	T2	T3	T4	T5	T6	≈ 1	≈ 2	
[mm]	1)	2)	min.								1)	2)
10	21.7	8	1	12	1.5	1.3	7	8	1.2	10	2.5	4
16	23.5	16		16	2.1	1.6	10	7		13	3	5
20	34	17.5		20	2.6	2.1		10	2.1	15	4	6
25	49.5	18				2.6	12	11	2.6	19	5	8

- 1) With hydraulic shock absorbers
2) With flexible cushioning

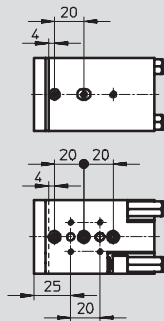
Mini slides SLT

Technical data

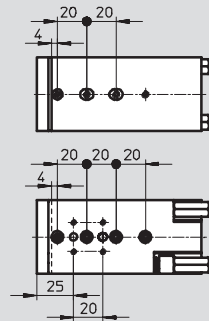
FESTO

Hole pattern for mounting thread and centring holes

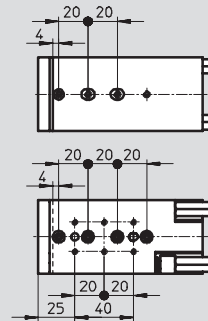
SLT-10-10 ... 30



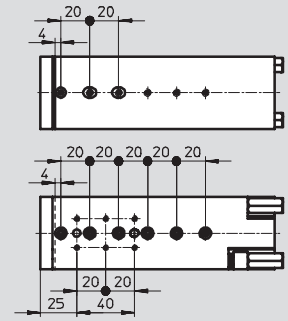
SLT-10-40



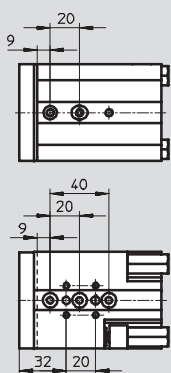
SLT-10-50



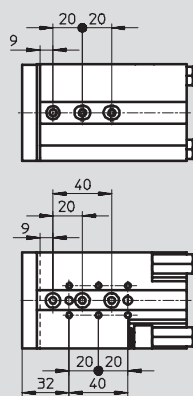
SLT-10-80



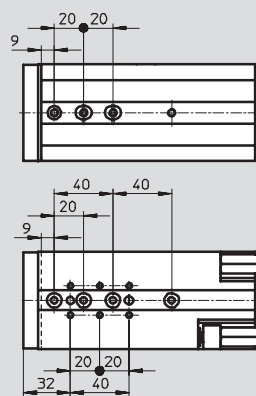
SLT-16-10 ... 40



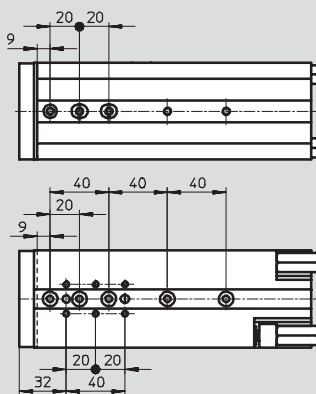
SLT-16-50



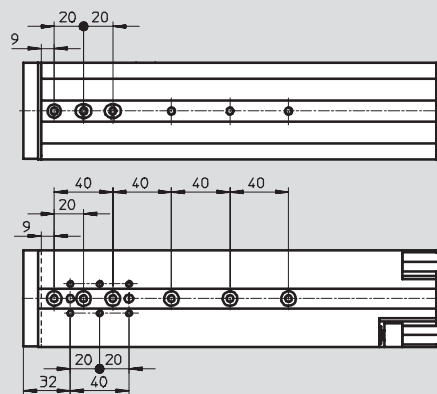
SLT-16-80



SLT-16-100



SLT-16-125/-150



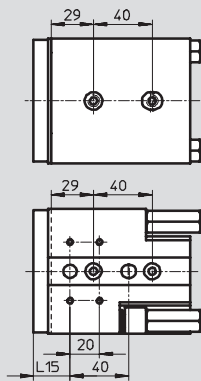
Mini slides SLT

Technical data

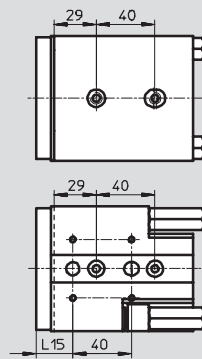
FESTO

Hole pattern for mounting thread and centring holes

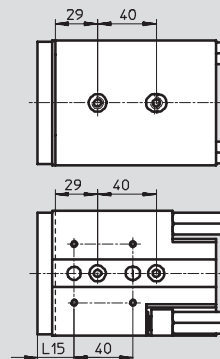
SLT-20-10 ... 40



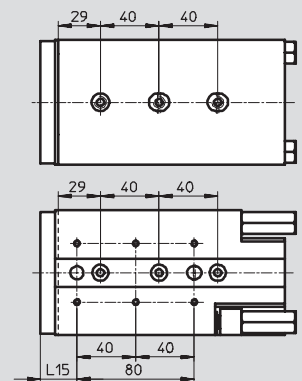
SLT-25-10 ... 40



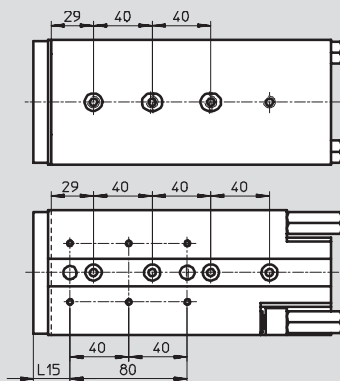
SLT-20/-25-50



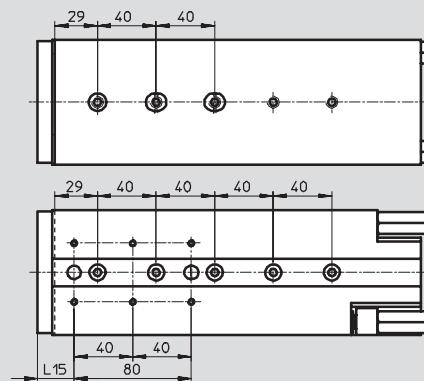
SLT-20/-25-80



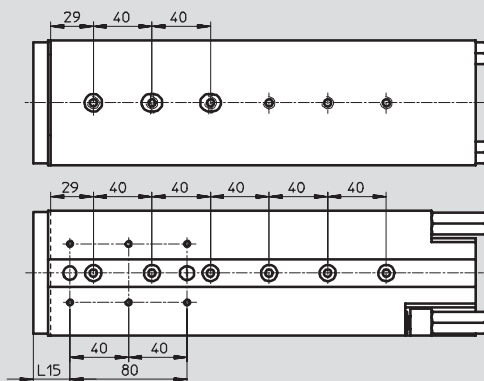
SLT-20/-25-100



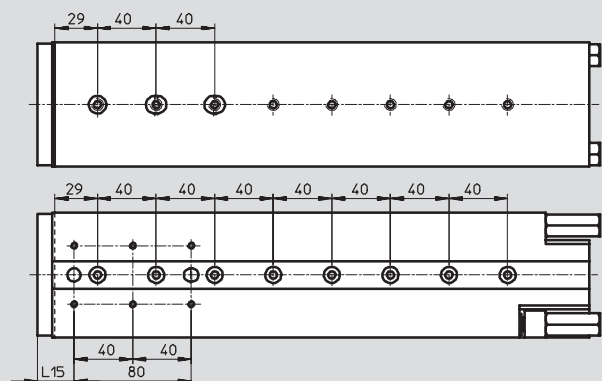
SLT-20/-25-125



SLT-20/-25-150



SLT-20/-25-200



Mini slides SLT

Technical data

FESTO

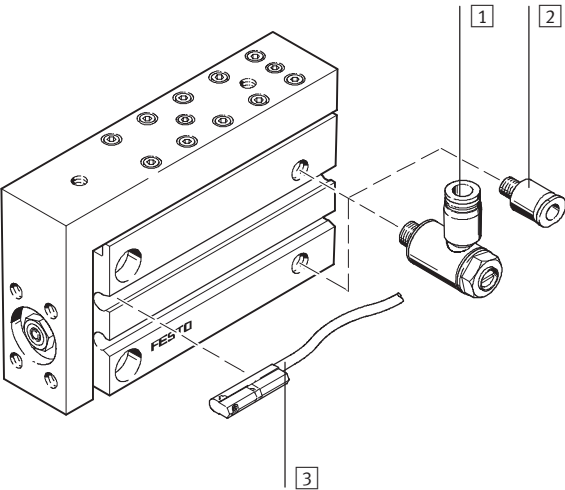
Ordering data					
Ø	Stroke	SLT-...-P-A		SLT-...-A-CC-B	
[mm]	[mm]	Part No.	Type	Part No.	Type
6					
	10	170 549	SLT-6-10-P-A	–	
	20	170 550	SLT-6-20-P-A		
	30	170 551	SLT-6-30-P-A		
	40	170 552	SLT-6-40-P-A		
	50	170 553	SLT-6-50-P-A		
10					
	10	170 554	SLT-10-10-P-A	–	
	20	170 555	SLT-10-20-P-A		
	30	170 556	SLT-10-30-P-A	197 891	SLT-10-30-A-CC-B
	40	170 557	SLT-10-40-P-A	197 892	SLT-10-40-A-CC-B
	50	170 558	SLT-10-50-P-A	197 893	SLT-10-50-A-CC-B
	80	170 559	SLT-10-80-P-A	197 894	SLT-10-80-A-CC-B
16					
	10	170 560	SLT-16-10-P-A	–	
	20	170 561	SLT-16-20-P-A		
	30	170 562	SLT-16-30-P-A	197 895	SLT-16-30-A-CC-B
	40	170 563	SLT-16-40-P-A	197 896	SLT-16-40-A-CC-B
	50	170 564	SLT-16-50-P-A	197 897	SLT-16-50-A-CC-B
	80	170 565	SLT-16-80-P-A	197 898	SLT-16-80-A-CC-B
	100	170 566	SLT-16-100-P-A	197 899	SLT-16-100-A-CC-B
	125	188 412	SLT-16-125-P-A	197 900	SLT-16-125-A-CC-B
	150	188 413	SLT-16-150-P-A	197 901	SLT-16-150-A-CC-B
20					
	10	170 567	SLT-20-10-P-A	–	
	20	170 568	SLT-20-20-P-A		
	30	170 569	SLT-20-30-P-A	197 902	SLT-20-30-A-CC-B
	40	170 570	SLT-20-40-P-A	197 903	SLT-20-40-A-CC-B
	50	170 571	SLT-20-50-P-A	197 904	SLT-20-50-A-CC-B
	80	170 572	SLT-20-80-P-A	197 905	SLT-20-80-A-CC-B
	100	170 573	SLT-20-100-P-A	197 906	SLT-20-100-A-CC-B
	125	188 416	SLT-20-125-P-A	197 907	SLT-20-125-A-CC-B
	150	188 417	SLT-20-150-P-A	197 908	SLT-20-150-A-CC-B
	200	188 418	SLT-20-200-P-A	197 909	SLT-20-200-A-CC-B
25					
	10	170 574	SLT-25-10-P-A	–	
	20	170 575	SLT-25-20-P-A		
	30	170 576	SLT-25-30-P-A	197910	SLT-25-30-A-CC-B
	40	170 577	SLT-25-40-P-A	197911	SLT-25-40-A-CC-B
	50	170 578	SLT-25-50-P-A	197912	SLT-25-50-A-CC-B
	80	170 579	SLT-25-80-P-A	197913	SLT-25-80-A-CC-B
	100	170 580	SLT-25-100-P-A	197914	SLT-25-100-A-CC-B
	125	188 422	SLT-25-125-P-A	197915	SLT-25-125-A-CC-B
	150	188 423	SLT-25-150-P-A	197916	SLT-25-150-A-CC-B
	200	188 424	SLT-25-200-P-A	197917	SLT-25-200-A-CC-B

Mini slides SLS

Peripherals overview and type codes



Peripherals overview



Accessories		
	Brief description	→ Page
1	One-way flow control valve GRLA	For speed regulation 1 / 6.1-38
2	Push-in fitting QS	For connecting compressed air tubing with standard external diameters Volume 3
3	Proximity sensor SME/SMT-10	Sensor slots for one or more proximity sensors 1 / 6.1-39

Type codes

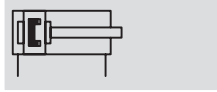
		SLS	–	16	–	10	–	P	–	A
Type										
Double-acting										
SLS	Mini slide									
Piston Ø [mm]										
Stroke [mm]										
Cushioning										
P	Flexible cushioning, non-adjustable									
Position sensing										
A	Via proximity sensor									

Mini slides SLS

Technical data

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Function



[www.festo.com/en/
Spare_parts_service](http://www.festo.com/en/Spare_parts_service)



- $\varnothing$ - Diameter
6 ... 16 mm
- | - Stroke length
5 ... 30 mm

General technical data			
Piston $\varnothing$	6	10	16
Pneumatic connection	M5		
Design	Kinematic yoke system		
Guide	Via ball bearings		
Cushioning	Non-adjustable at either end		
Position sensing	Via proximity sensor		
Type of mounting	Via through-holes		
	Via female thread		
Assembly position	Any		
Max. advancing speed	[m/s]	0.5 ¹⁾	0.8
Max. retracting speed	[m/s]	0.5 ¹⁾	0.8

1) Must be throttled externally

Operating and environmental conditions			
Piston Ø	6	10	16
Operating medium	Dried compressed air, lubricated or unlubricated		
Operating pressure [bar]	1.5 ... 10	1 ... 10	
Ambient temperature ¹⁾ [°C]	-20 ... +60		
Corrosion resistance class CRC ²⁾	1		

1) Note operating range of proximity sensors

2) Corrosion resistance class 1 according to Festo standard 940 070

Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers

Forces [N] and impact energy [Nm]			
Piston $\varnothing$	6	10	16
Theoretical force at 6 bar, advancing	17	47	121
Theoretical force at 6 bar, retracting	13	39	104
Max. impact energy at the end positions ¹⁾	Cushioning p ²⁾ 0.008	0.05	0.15

1) Loads moved by the slides must be taken into consideration for the calculation of end-position cushioning energy

2) Note also the graph illustrating piston speed as a function of working load → 1 / 6.1-24

Mini slides SLS

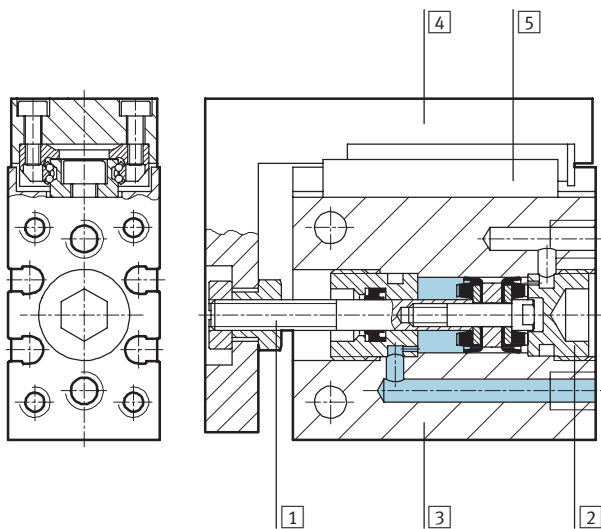
Technical data

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Weights [g]				
Piston Ø	Stroke	6	10	16
Product weight	5	69	103	195
	10	75	112	195
	15	86	126	228
	20	92	136	
	25	103	154	259
	30	109	163	272
Moving load	5	37	49	97
	10	40	51	98
	15	48	59	111
	20	49	60	113
	25	56	69	125
	30		70	130

Materials

Sectional view



Mini slide		
1	Piston rod	High-alloy steel
2	Cap	Wrought aluminium alloy, anodised
3	Housing	Wrought aluminium alloy, anodised
4	Slide	Wrought aluminium alloy, anodised
5	Guide	Tempered steel
–	Seals	Thermoplastic rubber, hydrogenated nitrile rubber, nitrile rubber
	Note on materials	Free of copper, PTFE and silicone

Mini slides SLS

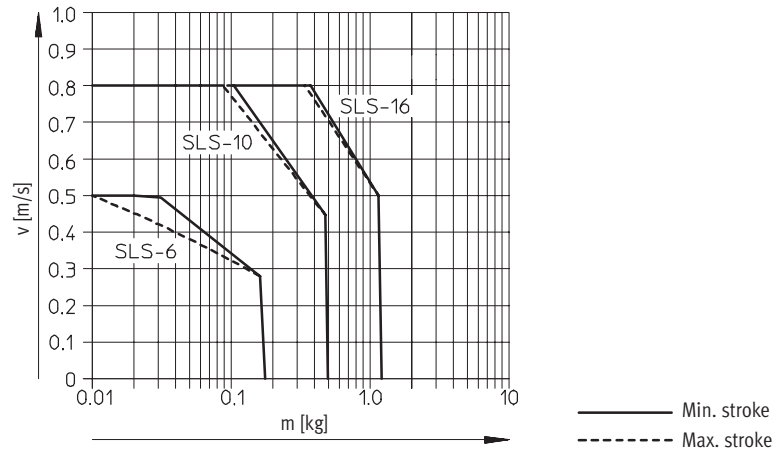
Technical data

FESTO

Piston speed v as a function of working load m

SLS-6/-10/-16-...-P-A

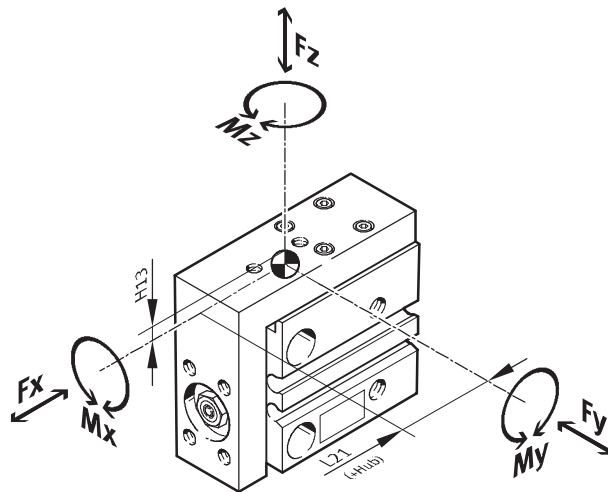
The piston speed as a function of working load illustrated in this graph may not be exceeded as the kinetic impact or residual energy in the end positions can result in damage to the drive.



Dynamic characteristic load values

Torques are indicated with reference to the centre of the guide.

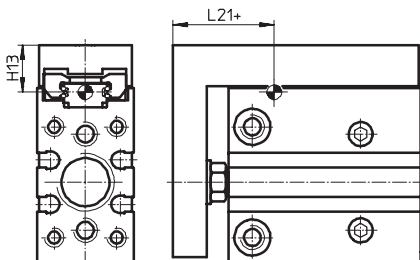
They must not be exceeded during dynamic operation. Special attention must be paid to the cushioning phase.



If the drive is simultaneously subjected to several of the indicated forces and torques, the following equation must be satisfied in addition to the indicated maximum loads.

$$\frac{|F_y|}{F_{y_{\max}}} + \frac{|F_z|}{F_{z_{\max}}} + \frac{|M_x|}{M_{x_{\max}}} + \frac{|M_y|}{M_{y_{\max}}} + \frac{|M_z|}{M_{z_{\max}}} \leq 1$$

Position of guide centre



+ plus stroke length

Mini slides SLS

Technical data

FESTO

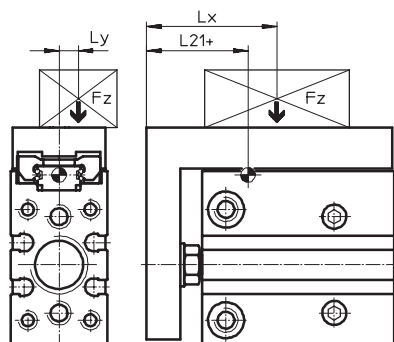
Permissible forces and torques						Geometric characteristics	
Piston ∅	Stroke	Fy _{max} [N]	Fz _{max} [N]	Mx _{max} , My _{max} [Nm]	Mz _{max} [Nm]	H13 [mm]	L21 [mm]
6							
	5	220	220	0.6	0.5	8.5	20.5
	10	170	170	0.6	0.5		20.5
	15	180	180	0.9	0.6		23
	20	160	160	0.9	0.6		23
	25	150	150	0.9	0.6		23
	30	140	140	0.9	0.6		23
10							
	5	220	220	0.6	0.5	10	27.5
	10	170	170	0.6	0.5		27.5
	15	170	170	1.1	0.7		36
	20	150	150	1.1	0.7		36
	25	140	140	1.1	0.7		36
	30	130	130	1.1	0.7		36
16							
	5	590	590	2.1	1.6	11	30.5
	10	470	470	2.1	1.6		30.5
	15	410	410	1.7	1.3		30.5
	20	370	370	1.7	1.3		30.5
	25	410	410	2.5	1.4		34
	30	390	390	2.5	1.4		34

Drives with linear guides
Slides

6.1

Calculation example

Given:



Mini slide = SLS-10
Stroke length = 20 mm
Lever arm L_x = 5 mm
Lever arm L_y = 20 mm
Mass F_z = 0.495 kg
Acceleration a = 0 m/s²

To be found:

F_y, F_z, M_x, M_y, M_z
and
verification of function with combined load

Solution:

L21 = 36 mm from table

F_y = 0 N

F_z = m x g
= 0.495 kg x 9.81 m/s² = 4.856 N

M_x = m x g x L_y
= 0.495 kg x 9.81 m/s² x 20 mm = 0.097 Nm

M_y = m x g x [(L21+stroke)-L_x]
= 0.495 kg x 9.81 m/s² [(36 mm + 20 mm) - 5 mm] = 0.248 Nm

M_z = 0 Nm

Combined load:

$$\frac{|F_y|}{F_{y_{\max}}} + \frac{|F_z|}{F_{z_{\max}}} + \frac{|M_x|}{M_{x_{\max}}} + \frac{|M_y|}{M_{y_{\max}}} + \frac{|M_z|}{M_{z_{\max}}} = 0 + \frac{4.856\text{N}}{150\text{N}} + \frac{0.097\text{Nm}}{1.1\text{Nm}} + \frac{0.248\text{Nm}}{1.1\text{Nm}} + 0 = 0.345 \leq 1$$

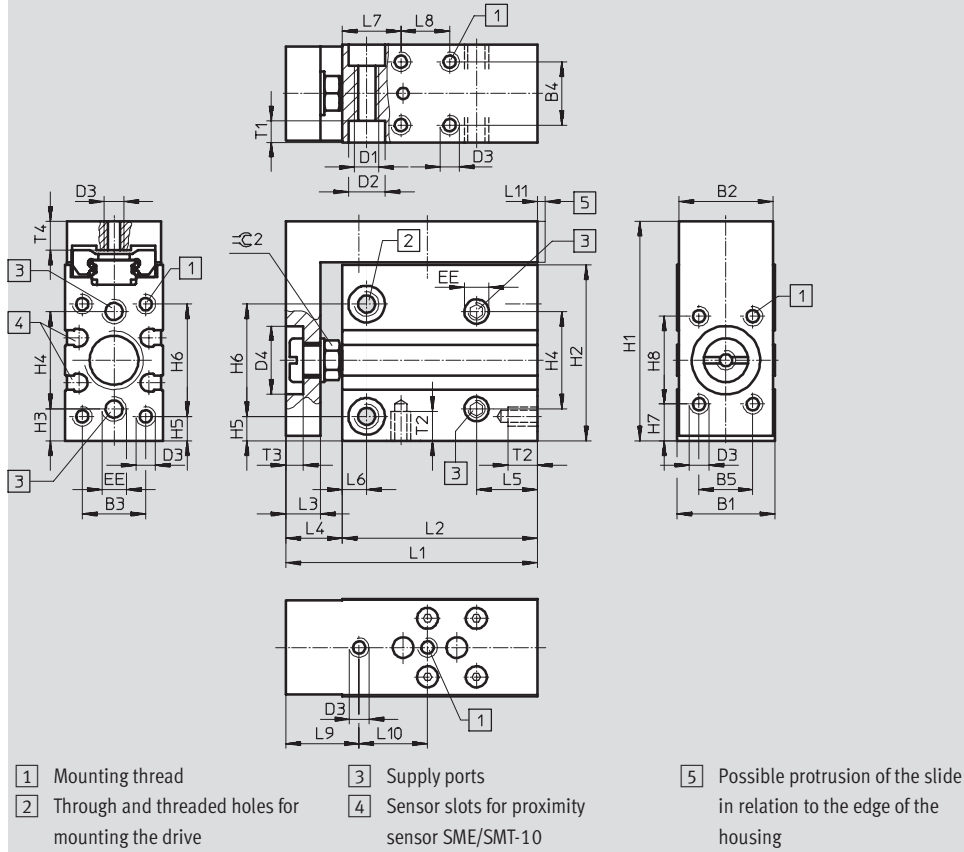
Mini slides SLS

Technical data

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering



Ø [mm]	Stroke [mm]	B1	B2	B3	B4	B5	D1	D2 Ø	D3	D4 Ø H11	EE	H1
6	5	16	15.3	10.5	10	9	M4	6	M3	12	M5	39
	10											
	15											
	20											
	25											
	30											
10	5	20	19.3	13	13	11	M5	7.5	M4	14	M5	45
	10											
	15											
	20											
	25											
	30											
16	5	24	23.3	17	17	16	M5	7.5	M4	19.5	M5	51
	10											
	15											
	20											
	25											
	30											

Mini slides SLS

Technical data

FESTO

Ø	Stroke	H2	H3	H4	H5	H6	H7	H8	L1	L2	L3	L4	L5
[mm]	[mm]												
6	5	31	6	17	5	19	7	15	46	37.5	6	8.5	10
	10								51	42.5			
	15								56	47.5			
	20								61	52.5			
	25								66	57.5			
	30								71	62.5			
10	5	36	6.5	20	5	23	7.5	18	51.5	40	7	11.5	12.5
	10								56.5	45			
	15								61.5	50			
	20								66.5	55			
	25								73.5	62			
	30								78.5	67			
16	5	41	6.5	25	5.5	27	6	26	66	52	10	14	12.5
	10								76	62			
	15								86	72			
	20								91	77			
	25												
	30												

Ø	Stroke	L6	L7	L8	L9	L10	L11	T1	T2	T3	T4	±0.2
[mm]	[mm]											
6	5	4	10	10	13	20	-	3.3	4.8	3	5	7
	10			15		25						
	15			20		30						
	20			25		40						
	25			30								
	30			35								
10	5	5	12	10	15	14	Max. 0.75	4.4	6	3.5	6	8
	10			14		19						
	15			18		25						
	20			24		30						
	25			32		40						
	30			35		45						
16	5	5	12	20	18	24	Max. 0.75	4.4	6	5	6	13
	10			20		35						
	15			30		45						
	20			40		50						
	25			45								
	30			45		55						

Mini slides SLS

Technical data

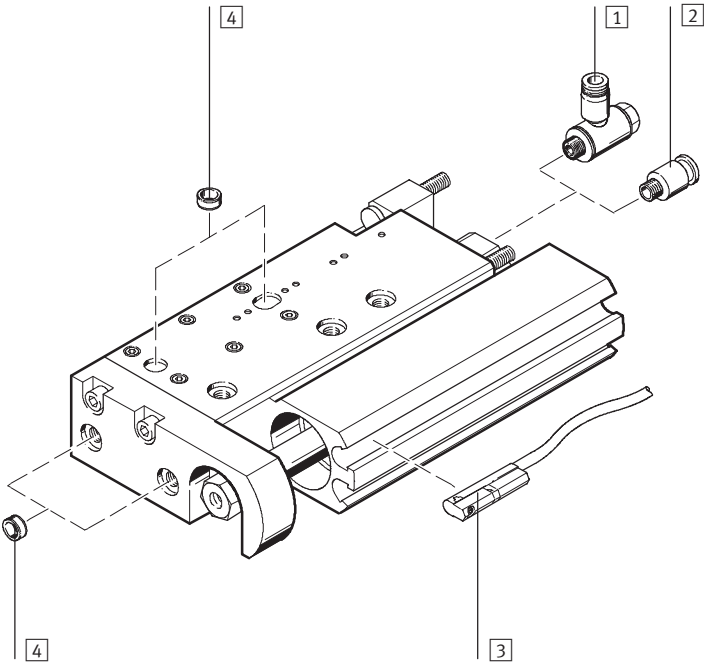
FESTO

Ordering data			
Ø [mm]	Stroke [mm]	Part No.	Type
6			
	5	170 485	SLS-6-5-P-A
	10	170 486	SLS-6-10-P-A
	15	170 487	SLS-6-15-P-A
	20	170 488	SLS-6-20-P-A
	25	170 489	SLS-6-25-P-A
	30	170 490	SLS-6-30-P-A
10			
	5	170 491	SLS-10-5-P-A
	10	170 492	SLS-10-10-P-A
	15	170 493	SLS-10-15-P-A
	20	170 494	SLS-10-20-P-A
	25	170 495	SLS-10-25-P-A
	30	170 496	SLS-10-30-P-A
16			
	5	170 497	SLS-16-5-P-A
	10	170 498	SLS-16-10-P-A
	15	170 499	SLS-16-15-P-A
	20	170 500	SLS-16-20-P-A
	25	170 501	SLS-16-25-P-A
	30	170 502	SLS-16-30-P-A

Mini slides SLF

Peripherals overview and type codes

Peripherals overview



 Note
End stops must not be removed.

Accessories		
	Brief description	→ Page
1	One-way flow control valve GRLA	1 / 6.1-38
2	Push-in fitting QS	Volume 3
3	Proximity sensor SME/SMT-10	1 / 6.1-39
4	Centring pin/sleeve ZBS/ZBH	1 / 6.1-38

Type codes

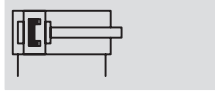
		SLF	–	16	–	20	–	P	–	A
Type										
Double-acting										
SLF	Mini slide									
Piston Ø [mm]										
Stroke [mm]										
Cushioning										
P	Flexible cushioning, non-adjustable									
Position sensing										
A	Via proximity sensor									

Mini slides SLF

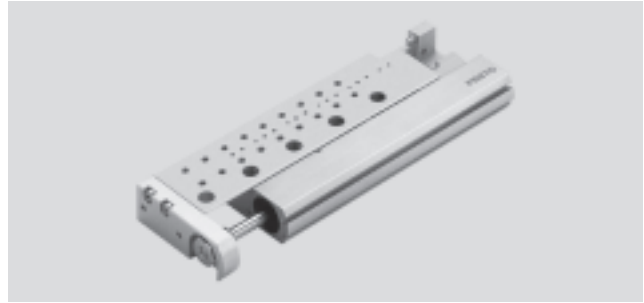
Technical data

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Function



[www.festo.com/en/
Spare_parts_service](http://www.festo.com/en/Spare_parts_service)



-  - Diameter
6 ... 16 mm
-  - Stroke length
10 ... 80 mm

General technical data			
Piston Ø	6	10	16
Pneumatic connection	M5		
Design	Kinematic yoke system		
Guide	Via ball bearings		
Cushioning	Non-adjustable at either end		
Position sensing	Via proximity sensor		
Type of mounting	Via through-holes Via female thread		
Assembly position	Any		
Adjustable end- position range	Per end stop [mm]	5	
Max. advancing speed	[m/s]	0.5 ¹⁾	0.8
Max. retracting speed	[m/s]	0.5 ¹⁾	0.8

1) Must be throttled externally

Operating and environmental conditions			
Piston Ø	6	10	16
Operating medium	Dried compressed air, lubricated or unlubricated		
Operating pressure [bar]	1.5 ... 10	1 ... 10	
Ambient temperature ¹⁾ [°C]	-20 ... +60		
Corrosion resistance class CRC ²⁾	1		

1) Note operating range of proximity sensors

2) Corrosion resistance class 1 according to Festo standard 940 070

Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers

Forces [N] and impact energy [Nm]			
Piston Ø	6	10	16
Theoretical force at 6 bar, advancing	17	47	121
Theoretical force at 6 bar, retracting	13	40	104
Max. impact energy at the end positions ¹⁾	Cushioning p ²⁾ 0.016	0.05	0.1

1) Loads moved by the slides must be taken into consideration for the calculation of end-position cushioning energy

2) Note also the graph illustrating piston speed as a function of working load → 1 / 6.1-32

Mini slides SLF

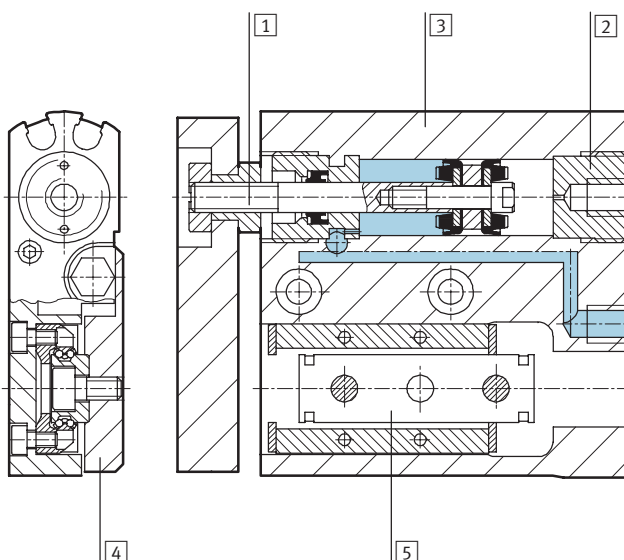
Technical data

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Weights [g]				
Piston Ø		6	10	16
Product weight	10	68	90	214
	20	84	110	243
	30	100	130	274
	40	–	147	303
	50		183	361
	80		–	485
Moving load	10	44	38	94
	20	53	43	106
	30	62	49	119
	40	–	55	128
	50		66	145
	80		–	189

Materials

Sectional view



Mini slide		
1	Piston rod	High-alloy steel
2	Cap	Wrought aluminium alloy, anodised
3	Housing	Wrought aluminium alloy, anodised
4	Slide	Wrought aluminium alloy, anodised
5	Guide	Tempered steel
–	Seals	Thermoplastic rubber, hydrogenated nitrile rubber, nitrile rubber
Note on materials		Free of copper, PTFE and silicone

Mini slides SLF

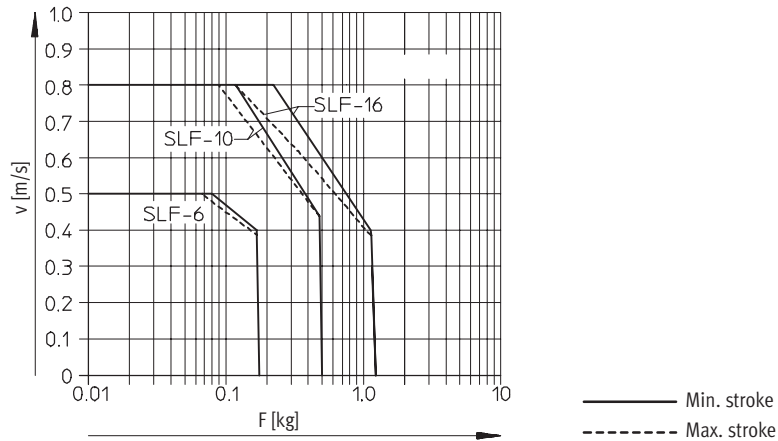
Technical data

FESTO

Piston speed v as a function of working load m

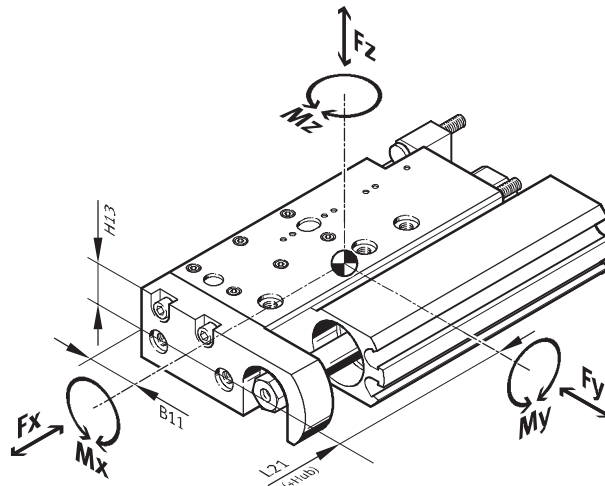
SLF-6/-10/-16-...-P-A

The piston speed as a function of working load illustrated in this graph may not be exceeded as the kinetic impact or residual energy in the end positions can result in damage to the drive.



Characteristic load values

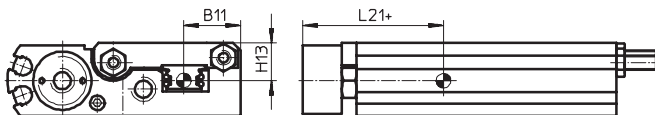
Torques are indicated with reference to the centre of the guide. They must not be exceeded during dynamic operation. Special attention must be paid to the cushioning phase.



If the drive is simultaneously subjected to several of the indicated forces and torques, the following equation must be satisfied in addition to the indicated maximum loads.

$$\frac{|F_y|}{F_{y_{max}}} + \frac{|F_z|}{F_{z_{max}}} + \frac{|M_x|}{M_{x_{max}}} + \frac{|M_y|}{M_{y_{max}}} + \frac{|M_z|}{M_{z_{max}}} \leq 1$$

Position of guide centre



+ plus stroke length

Mini slides SLF

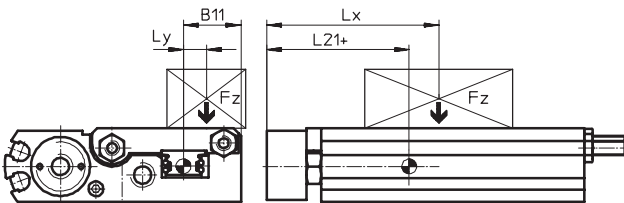
Technical data

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Permissible forces and torques						Geometric characteristics		
Piston Ø	Stroke	F _y max [N]	F _z max [N]	M _x max, M _y max [Nm]	M _z max [Nm]	B11 [mm]	H13 [mm]	L21 [mm]
6								
	10	170	170	0.6	0.5	14	7	22
	20	150	150	1.1	0.7			21
	30	130	130	1.1	0.7			21
10								
	10	170	170	0.6	0.5	11.5	8	23
	20	150	150	1.1	0.7			25
	30	130	130	1.1	0.7			25
	40	150	150	0.9	0.5			29
	50	190	190	1.4	0.5			34.5
16								
	10	470	470	2.1	1.6	14	11.5	27.5
	20	370	370	1.7	1.3			27.5
	30	390	390	2.5	1.4			31.5
	40	350	350	2.2	1.3			31.5
	50	390	390	3.1	1.4			36
	80	410	410	4.3	1.5			43.5

Calculation example

Given:



Mini slide = SLF-10
 Stroke length = 20 mm
 Lever arm L_x = 5 mm
 Lever arm L_y = 20 mm
 Mass F_z = 0.495 kg
 Acceleration a = 0 m/s²

To be found:

F_y, F_z, M_x, M_y, M_z
 and
 verification of function with combined load

Solution:

L21 = 25 mm from table

F_y = 0 N

F_z = m x g
 = 0.495 kg x 9.81 m/s² = 4.856 N

M_x = m x g x L_y
 = 0.495 kg x 9.81 m/s² x 20 mm = 0.097 Nm

M_y = m x g x [(L21+stroke)-L_x]
 = 0.495 kg x 9.81 m/s² [(25 mm + 20 mm) - 5 mm] = 0.194 Nm

M_z = 0 Nm

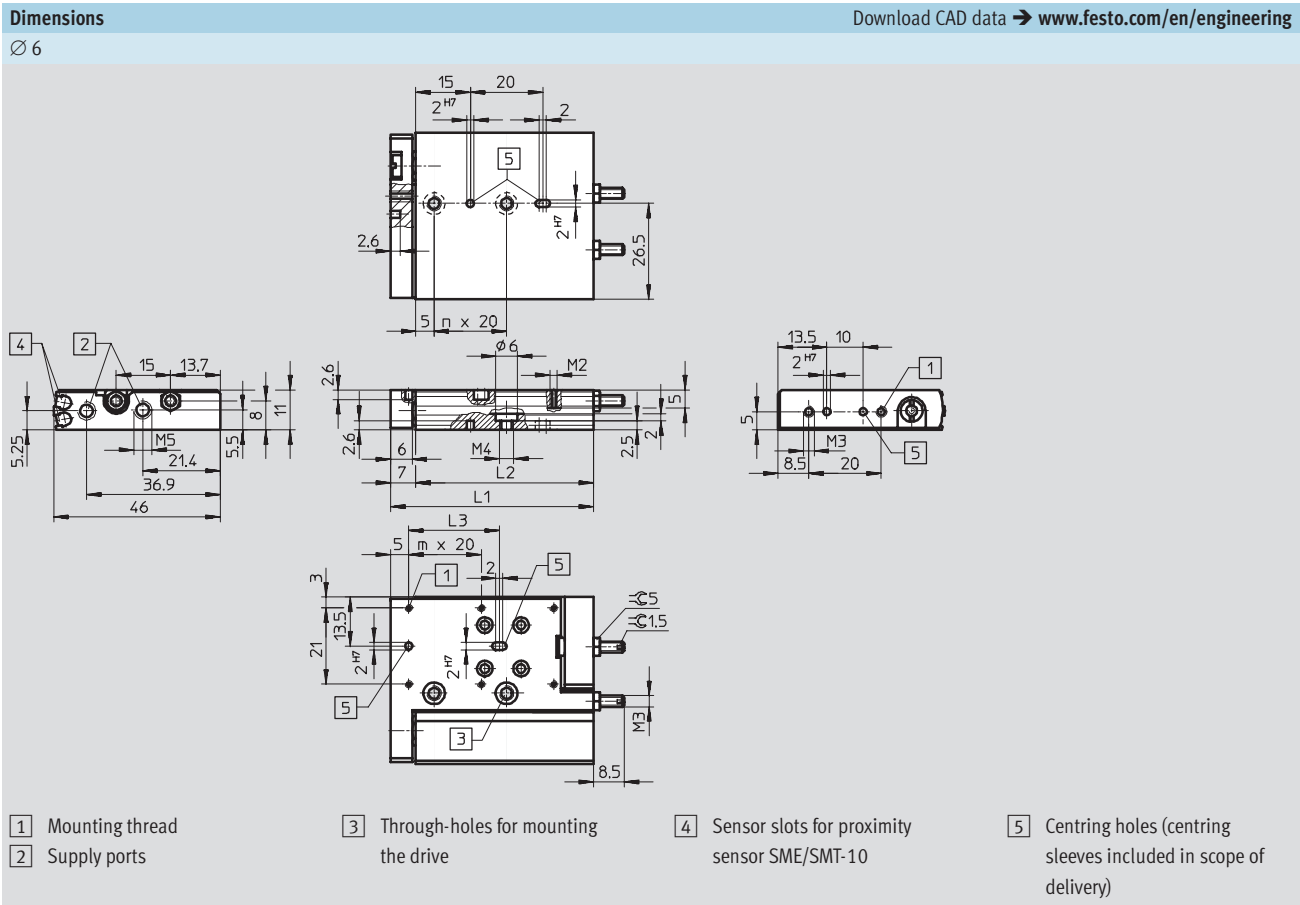
Combined load:

$$\frac{|F_y|}{F_{y\max}} + \frac{|F_z|}{F_{z\max}} + \frac{|M_x|}{M_{x\max}} + \frac{|M_y|}{M_{y\max}} + \frac{|M_z|}{M_{z\max}}$$

$$= 0 + \frac{4.856\text{N}}{150\text{N}} + \frac{0.097\text{Nm}}{1.1\text{Nm}} + \frac{0.194\text{Nm}}{1.1\text{Nm}} + 0 = 0.297 \leq 1$$

Mini slides SLF

Technical data

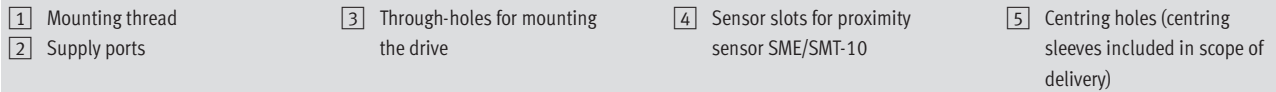


Ø	Stroke	L1	L2	L3	m	n
[mm]	[mm]					
6	10	56	49	20	2	1
	20	66	59			2
	30	76	69	40	3	

Technical data

Dimensions

Ø 10



Ø	Stroke	L1	L2	L3	L4	m	n	p
[mm]	[mm]							
10	10	59.5	48.5	20	20	1	1	-
	20	69.5	58.5					
	30	79.5	68.5					
	40	89.5	78.5	40	40	2	3	
	50	109.5	98.5			1	2	

Mini slides SLF

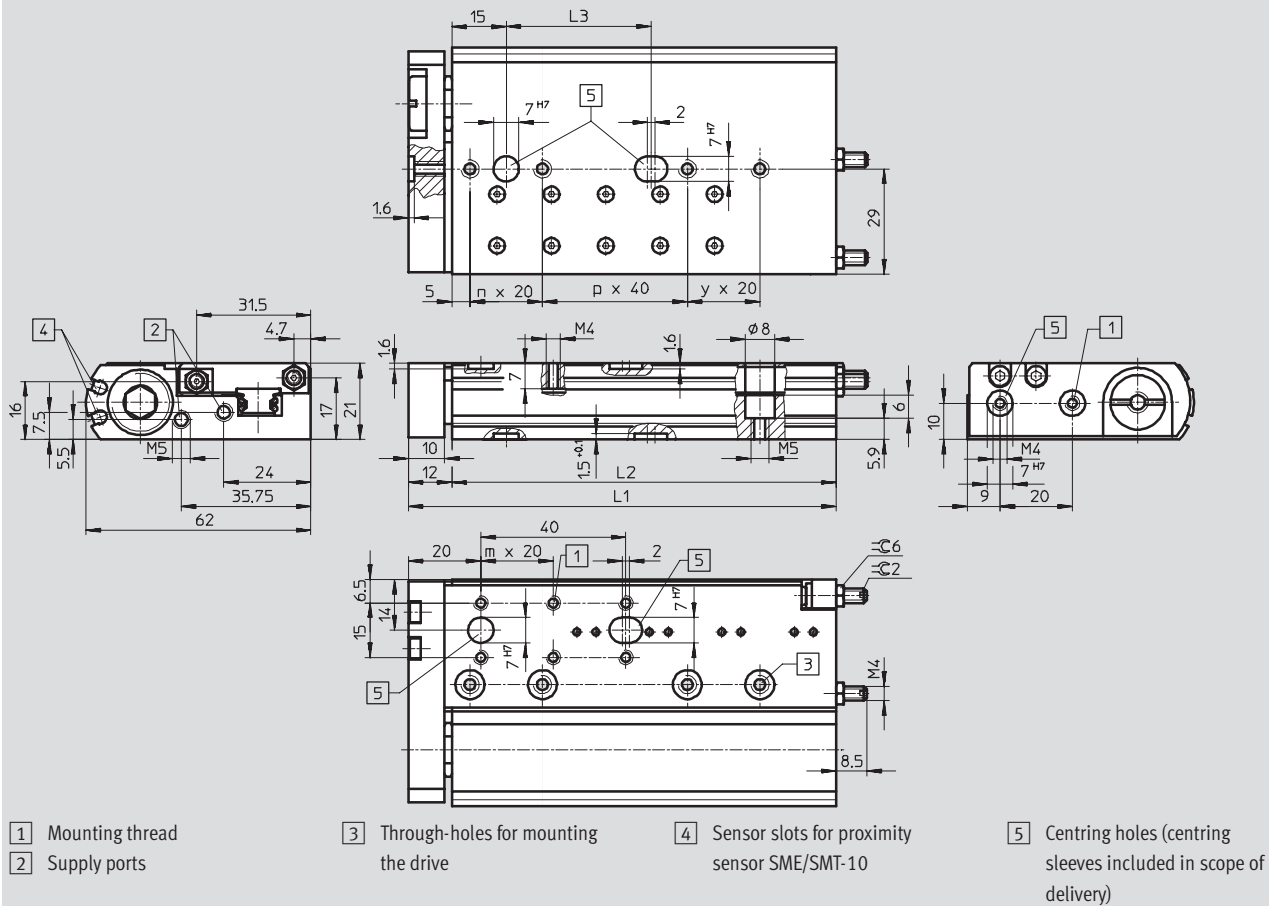
Technical data

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Dimensions

Download CAD data → www.festo.com/en/engineering

Ø 16



Ø	Stroke	L1	L2	L3	m	n	p	y
[mm]	[mm]							
16	10	68	56	20	1	1	-	-
	20	78	66			2		
	30	88	76		2	3		
	40	98	86	40		1	1	
	50	118	106				2	-
	80	160	148					

Mini slides SLF

Technical data

FESTO

Ordering data			
Ø [mm]	Stroke [mm]	Part No.	Type
6			
	10	170 503	SLF-6-10-P-A
	20	170 504	SLF-6-20-P-A
	30	170 505	SLF-6-30-P-A
10			
	10	170 506	SLF-10-10-P-A
	20	170 507	SLF-10-20-P-A
	30	170 508	SLF-10-30-P-A
	40	170 509	SLF-10-40-P-A
	50	170 510	SLF-10-50-P-A
16			
	10	170 511	SLF-16-10-P-A
	20	170 512	SLF-16-20-P-A
	30	170 513	SLF-16-30-P-A
	40	170 514	SLF-16-40-P-A
	50	170 515	SLF-16-50-P-A
	80	170 516	SLF-16-80-P-A

Mini slides SLT/SLS/SLF

Accessories

FESTO

Ordering data									
		6		10		16		20	
		Part No.	Type	Part No.	Type	Part No.	Type	Part No.	Type
Centring pins/sleeves for SLT ¹⁾								Technical data → 1 / 10.1-18	
	Housing	189 652	ZBH-5	186 717	ZBH-7	150 927	ZBH-9	189 653	ZBH-12
	Slide	189 652	ZBH-5	189 652	ZBH-5	189 652	ZBH-5	150 927	ZBH-9
	Yoke	525 273	ZBS-02	189 652	ZBH-5	186 717	ZBH-7	150 927	ZBH-9
Centring pins/sleeves for SLF ¹⁾								Technical data → 1 / 10.1-18	
	Housing	525 273	ZBS-02	189 652	ZBH-5	186 717	ZBH-7	–	–
	Slide								
	Yoke								
Shock absorber for SLT-...-A-CC-B								Technical data → 1 / 9.0-2	
	–	–		649 653	YSRT-5-5-C	649 654	YSRT-7-5-C	649 655	YSRT-8-8-C
								649 656	YSRT-12-12-C
Stop, metallic for SLT-...-P-A ²⁾									
	–	539 278	PF-06-SLT	539 279	PF-10-SLT	539 280	PF-16-SLT	539 281	PF-20-SLT
								539 282	PF-25-SLT

1) Scope of delivery: 10 per pack

2) Scope of delivery: 2 per pack

Ordering data – One-way flow control valves					Technical data → Volume 2	
	Connection		Material	Part No.		Type
	Thread	For tubing O.D.				
	M5	3	Metal design	193 137	GRLA-M5-QS-3-D	
		4		193 138	GRLA-M5-QS-4-D	
	G1/8	4		193 143	GRLA-1/8-QS-4-D	
		6		193 144	GRLA-1/8-QS-6-D	

 Core Range

Mini slides SLT/SLS/SLF

Accessories

FESTO

Ordering data – Proximity sensors for C-slot, magneto-resistive								Technical data → 1 / 10.2-52	
	Mounting	Switch output	Electrical connection		Cable length [m]	Connection direction	Part No.	Type	
			Cable	Plug M8					
N/O contact									
	Insertable from above	PNP	3-wire	–	2.5	In-line	525 915	SMT-10F-PS-24V-K2,5L-OE	
			–	3-pin	0.3	In-line	525 916	SMT-10F-PS-24V-K0,3L-M8D	
						Lateral	526 675	SMT-10F-PS-24V-K0,3Q-M8D	
	Insertable from end	PNP	–	3-pin	0.3	In-line	173 220	SMT-10-PS-SL-LED-24	
			3-wire	–	2.5		173 218	SMT-10-PS-KL-LED-24	

Ordering data – Proximity sensors for C-slot, magnetic reed							Technical data → 1 / 10.2-55	
	Mounting	Electrical connection		Cable length [m]	Connection direction	Part No.	Type	
		Cable	Plug M8					
N/O contact								
	Insertable from above	–	3-pin	0.3	In-line	525 914	SME-10F-DS-24V-K0,3L-M8D	
		3-wire	–	2.5	In-line	525 913	SME-10F-DS-24V-K2,5L-OE	
		2-wire				526 672	SME-10F-ZS-24V-K2,5L-OE	
	Insertable from end	–	3-pin	0.3	In-line	173 212	SME-10-SL-LED-24	
		3-wire	–	2.5		173 210	SME-10-KL-LED-24	

Ordering data – Plug sockets with cable							Technical data➔ 1 / 10.2-109	
	Mounting	Switch output		Connection	Cable length [m]	Part No.	Type	
		PNP	NPN					
Straight socket								
	Union nut M8	■	■	3-pin	2.5	159 420	SIM-M8-3GD-2,5-PU	
					5	159 421	SIM-M8-3GD-5-PU	
Angled socket								
	Union nut M8	■	■	3-pin	2.5	159 422	SIM-M8-3WD-2,5-PU	
					5	159 423	SIM-M8-3WD-5-PU	

 Core Range