

Mini slides SLT/SLS/SLF



Mini slides SLT/SLS/SLF

Key features

FESTO

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

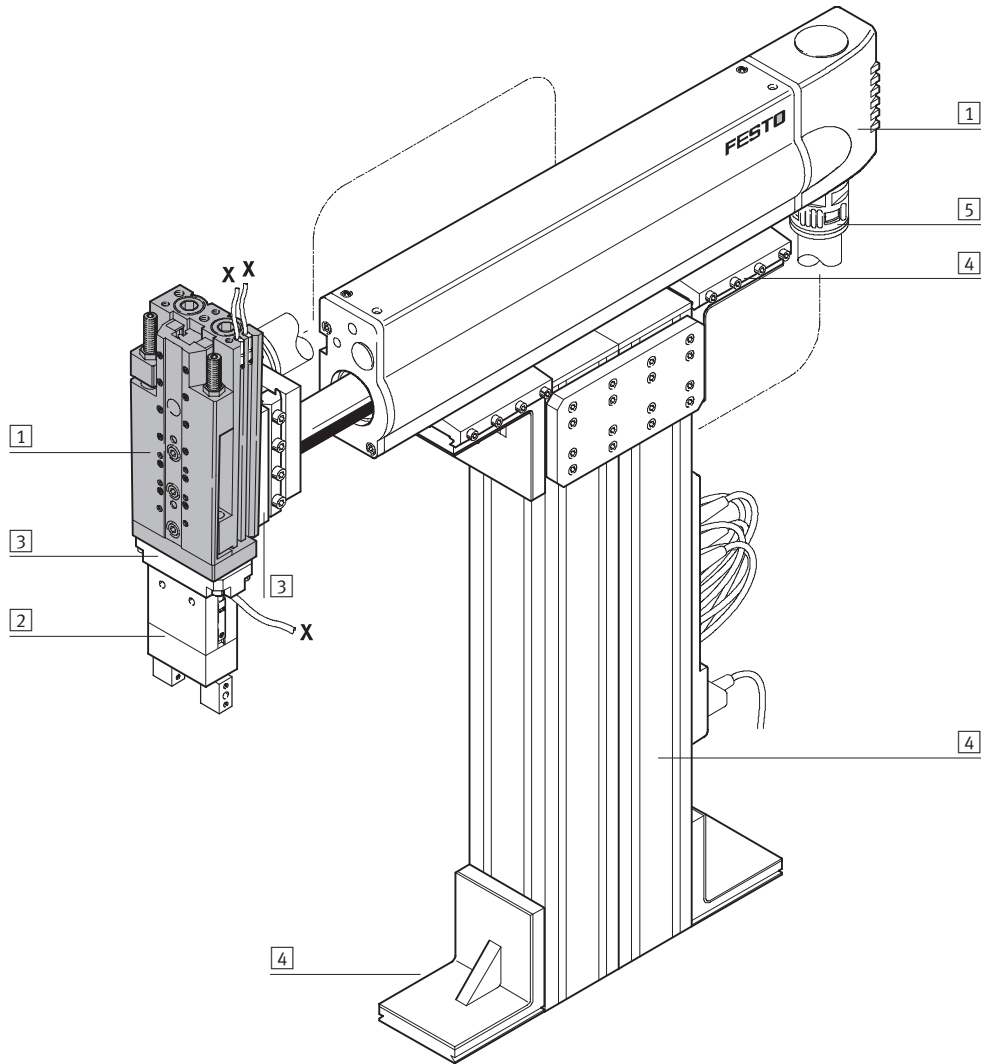


- Flat
- Adjustable end-position cushioning
 - Flexible cushioning elements
- Versatile combination options on:
 - Drives
- System product for handling and assembly technology

Mini slides SLT/SLS/SLF

System example

System product for handling and assembly technology



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

Mini slides SLT/SLS/SLF

Key features

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Drive

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

SLT: with two pistons

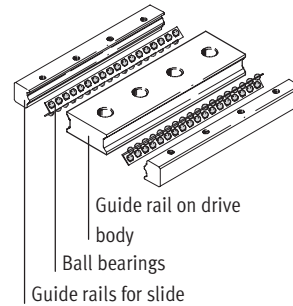
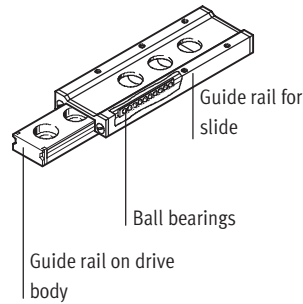
SLS/SLF: with one piston

Guide

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

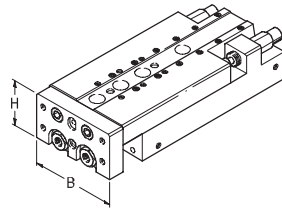
SLT-20/-25

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

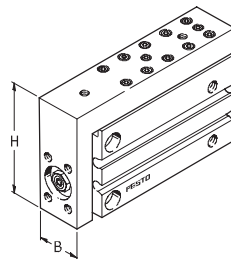
SLT



Piston \varnothing	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

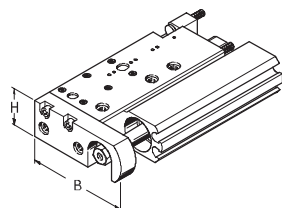
SLS



Piston \varnothing	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 \varnothing	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

Versatile

through

- 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).

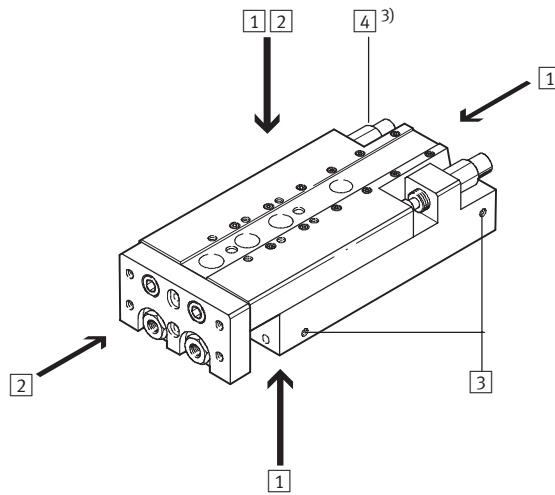
3 Versatile air connections

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

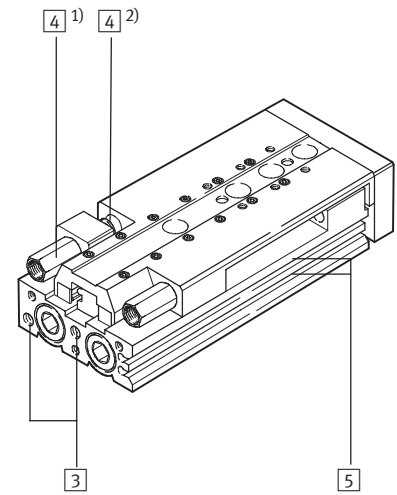
5 Sensors can be integrated
Sensor slots for one or more proximity sensors SME/SMT-10. For space-saving, reliable sensing of piston positions. Proximity sensors can be freely moved and clamped in their slots.

SLT

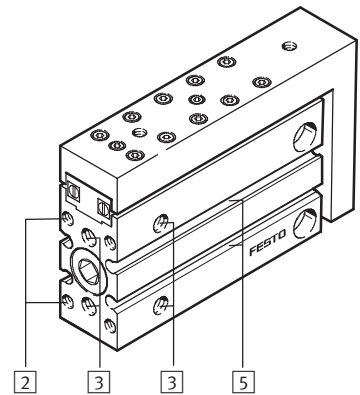
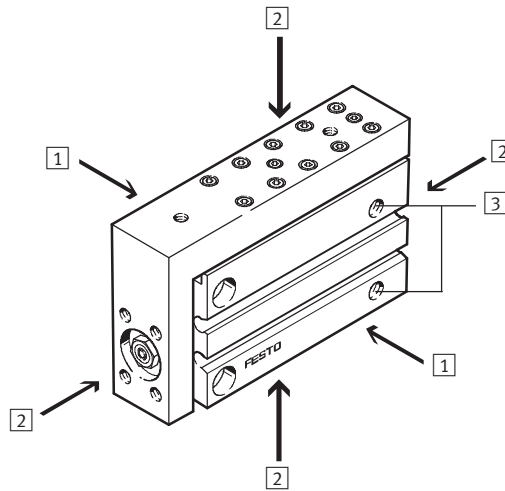
SLT-...-CC-B



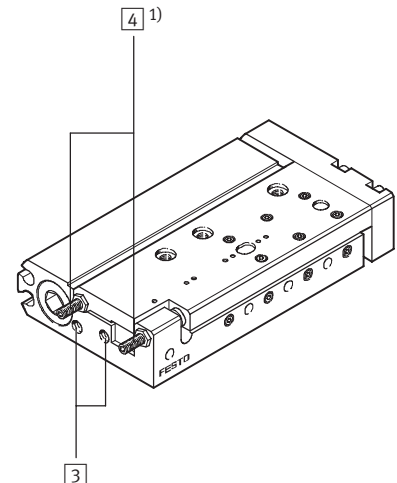
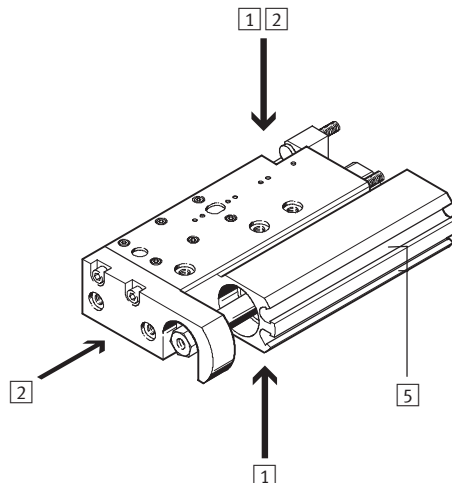
SLT-...-P-A



SLS

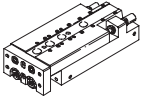
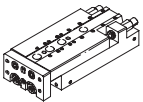
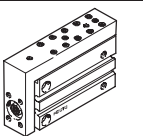
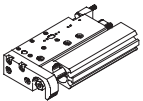


SLF



Mini slides SLT/SLS/SLF

Product range overview

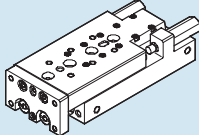
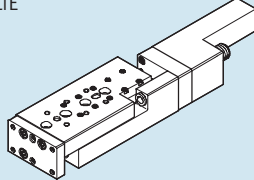
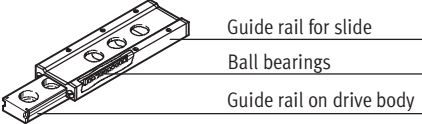
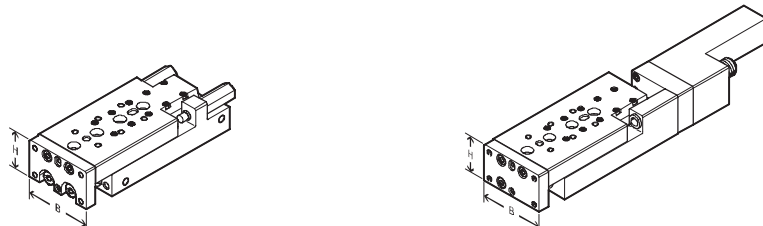
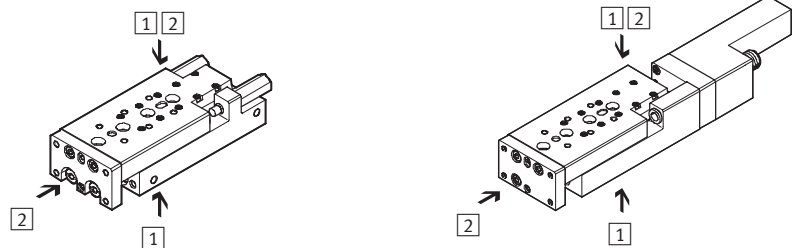
Function	Design	Piston Ø [mm]	Stroke [mm]	Cushioning		Position sensing	→ Page/ Internet
				flexible cushioning elements	hydraulic shock absorbers		
Double- acting	Powerful, SLF-...-P-A						
		6, 10, 16, 20, 25	10, 20, 30, 40, 50, 80, 100, 125, 150, 200	■	-	■	7
	Powerful, SLF-...-A-CC-B						
		10,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

Mini slides SLT

Key features

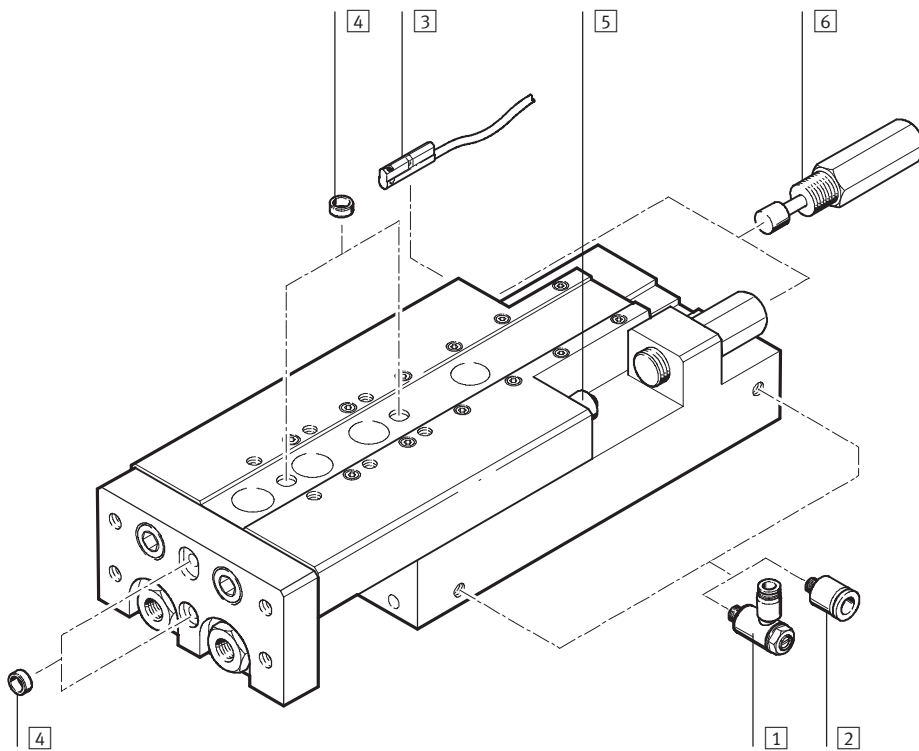


Comparison between pneumatic mini slide SLT and electric mini slide SLTE

	Pneumatic: SLT	Electric: SLTE												
														
Advantages														
	<ul style="list-style-type: none"> • High feed force • High speed • Fast positioning time • Compact length 	<ul style="list-style-type: none"> • Gentle starting and stopping • Constant and precise speed (2 ... 200 mm/s) • Flexible positioning without mechanical devices • Programmable drive profile 												
Guide														
<ul style="list-style-type: none"> • Preloaded, backlash-free, precise and rigid ball bearing cage guide • High torque and load absorption 	 <p>Guide rail for slide Ball bearings Guide rail on drive body</p>													
Dimensions														
<ul style="list-style-type: none"> • Identical width and height dimensions <table border="1"> <thead> <tr> <th>Type</th> <th>Width (B)</th> <th>x</th> <th>Height (H)</th> </tr> </thead> <tbody> <tr> <td>SLT(E)-10</td> <td>50</td> <td>x</td> <td>30 mm</td> </tr> <tr> <td>SLT(E)-16</td> <td>66</td> <td>x</td> <td>40 mm</td> </tr> </tbody> </table>	Type	Width (B)	x	Height (H)	SLT(E)-10	50	x	30 mm	SLT(E)-16	66	x	40 mm		
Type	Width (B)	x	Height (H)											
SLT(E)-10	50	x	30 mm											
SLT(E)-16	66	x	40 mm											
Interfaces														
<ul style="list-style-type: none"> • Identical mounting and attachment options <p>1 Mounting surfaces: Direct mounting using threaded holes and through-holes</p> <p>2 Attachment surfaces: Direct mounting of loads and devices (e.g. SLT: semi-rotary drives and grippers) by means of threaded holes in slide and yoke plate</p>														
Technical data														
Piston \varnothing	[mm]	6 ... 25	10, 16											
Stroke	[mm]	10 ... 200	50 ... 150											
Max. speed	[m/s]	0.8	0.2											
Repetition accuracy at end positions	[mm]	± 0.02	± 0.1											
Intermediate positions		None	Any											

Mini slides SLT

Peripherals overview

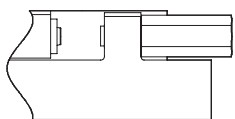


Note
End stops must not be removed.

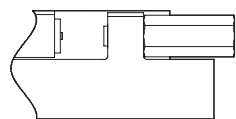
Accessories		
	Brief description	→ Page/Internet
1	One-way flow control valve GRLA	38
2	Push-in fitting QS	quick star
3	Proximity sensor SME/SMT-10	39
4	Centring pin/sleeve ZBS/ZBH	38
5	Cushioning with stop PF	38
6	Cushioning with shock absorber YSRT	38
7	Cushioning P	20

Cushioning variants

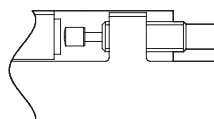
7 SLT...-P-A
with cushioning P



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

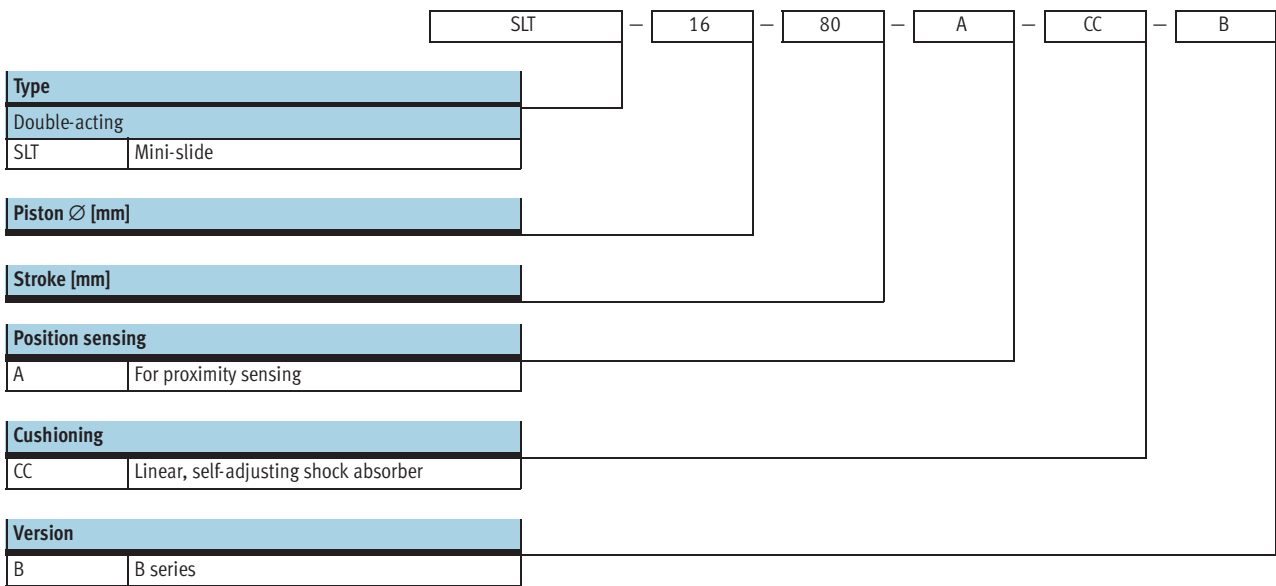
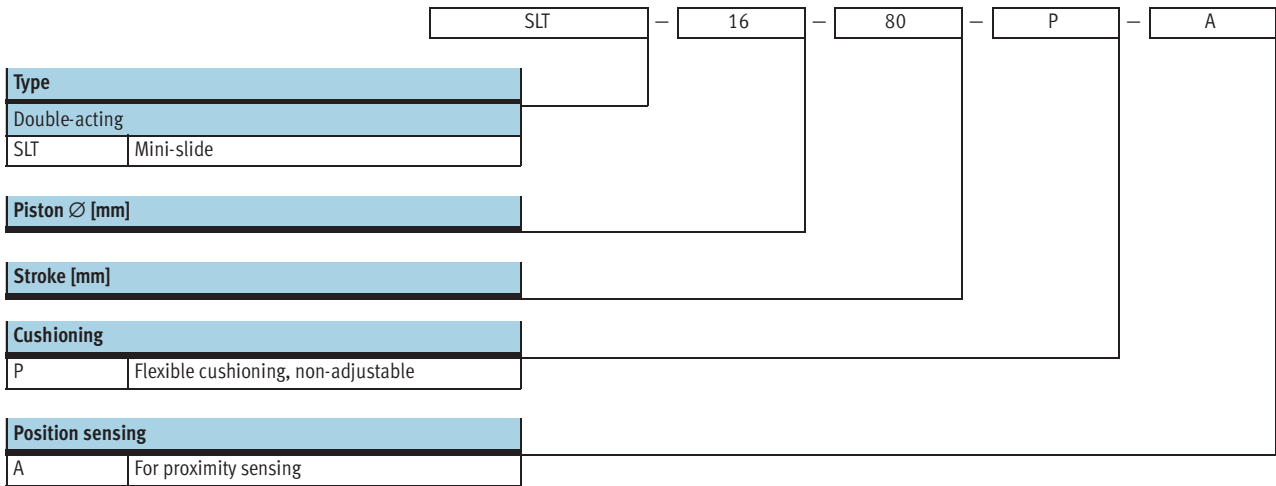


6 SLT...-CC-B
with cushioning YSRT



Mini slides SLT

Type codes

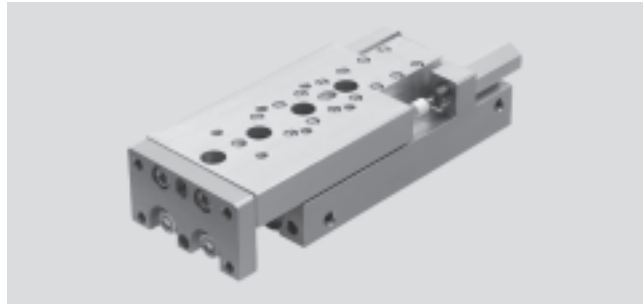
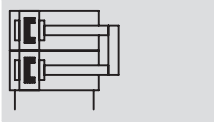


Mini slides SLT

Technical data

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Function



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

General technical data				6	10	16	20	25
Piston \varnothing				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				For proximity sensing				
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]		-			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				6	10	16	20	25
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]				6	10	16	20	25
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	0.060
	Cushioning P ²⁾			0.016	0.1	0.3	0.4	0.5
	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 → 11

Mini slides SLT

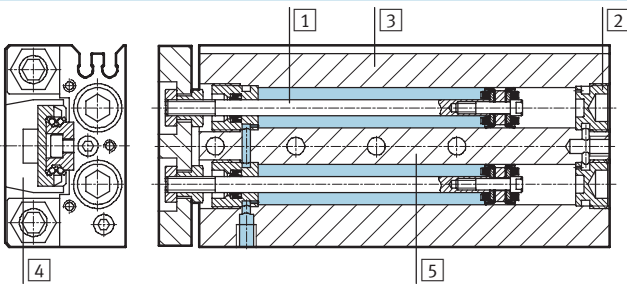
Technical data

FESTO

Weights [g]												
Piston Ø		6		10		16		20		25		
Stroke		1	2	1	2	1	2	1	2	1	2	
1	Product weight	10	128	42	304	125	588	255	1,132	533	1,866	920
2	Moving load	20	145	47	298	122	568	250	1,117	526	1,852	905
		30	161	53	334	141	617	265	1,112	518	1,835	891
		40	184	64	365	149	690	298	1,199	548	2,002	964
		50	223	85	427	179	762	327	1,347	608	2,152	1,036
		80	-	-	581	247	1,030	451	1,767	793	2,767	1,326
		100	-	-	-	-	1,247	543	2,088	924	3,209	1,516
		125	-	-	-	-	1,655	749	2,681	1,143	4,030	1,899
		150	-	-	-	-	1,802	797	2,923	1,253	4,549	2,087
		200	-	-	-	-	-	-	3,666	1,490	5,520	2,544

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	Hydrogenated nitrile rubber
Note on materials		Free of copper, PTFE and silicone

Piston speed v as a function of working load m

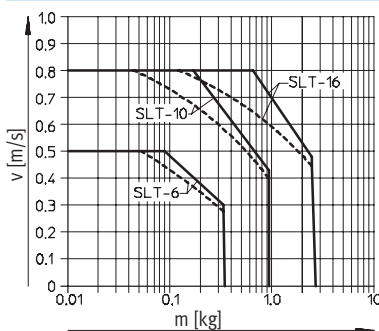
The piston speed as a function of working load may not be exceeded as the kinetic impact or residual energy

in the end positions can result in damage to the drive.

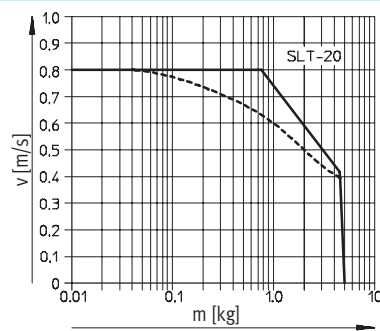
For the mini slide SLT with shock absorbers, the speed should not be less than 0.1 m/s, as otherwise the

service life of the shock absorber will be reduced.

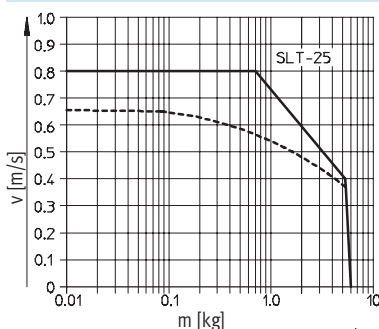
SLT-6/-10/-16-...-P-A



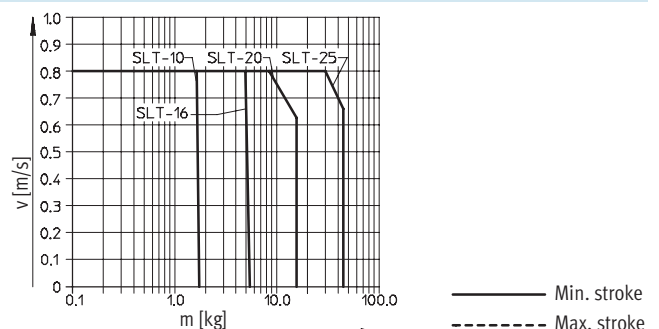
SLT-20-...-P-A



SLT-25-...-P-A



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

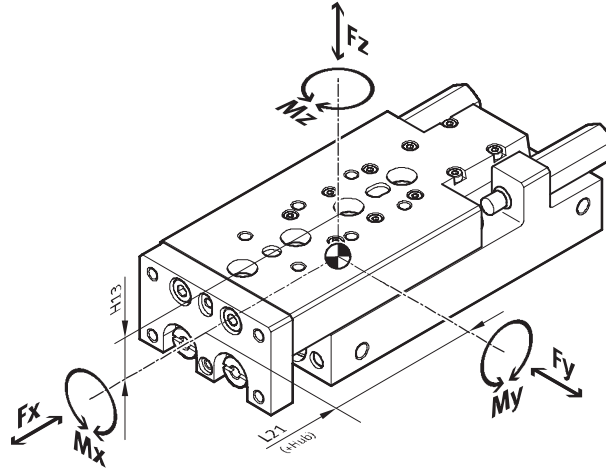


Mini slides SLT

Technical data

Dynamic characteristic load values

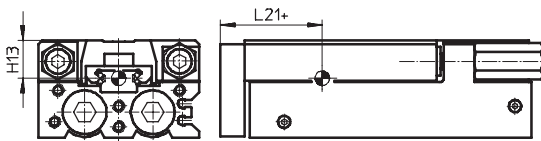
Torques are indicated with reference to the centre of the guide.
They must not be exceeded during dynamic operation. Special attention must be paid to the cushioning phase.



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.

$$\frac{|F_y|}{F_{y\max.}} + \frac{|F_z|}{F_{z\max.}} + \frac{|M_x|}{M_{x\max.}} + \frac{|M_y|}{M_{y\max.}} + \frac{|M_z|}{M_{z\max.}} \leq 1$$

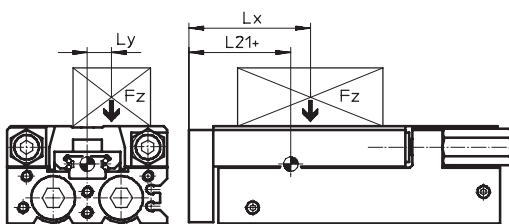
Position of guide centre



+ plus stroke length

Calculation example

Given:



To be found:

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

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:

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

$$= 0 + \frac{7.848 \text{ N}}{410 \text{ N}} + \frac{0.2366 \text{ Nm}}{4.3 \text{ Nm}} + \frac{0.557 \text{ Nm}}{1.5 \text{ Nm}} + 0 = 0.445 \leq 1$$

Mini slides SLT

Technical data

FESTO

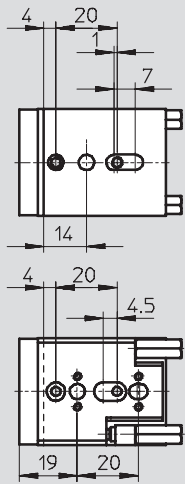
Permissible forces and torques						Geometric characteristics	
Piston \varnothing	Stroke	F _y max [N]	F _z max [N]	M _x max, M _y max [Nm]	M _z max [Nm]	H13 [mm]	L21 [mm]
6							
	10	200	200	1.1	0.7	7	21.5
	20	160	160	1.1	0.7		21.5
	30	140	140	0.7	0.5		21.5
	40	150	150	0.9	0.5		25
	50	190	190	1.4	0.5		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	660	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

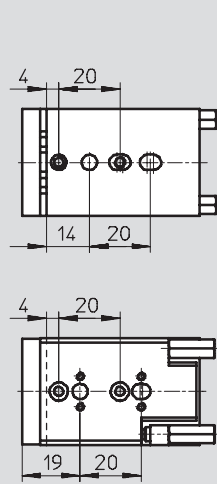
Technical data

Hole pattern for mounting thread and centring holes

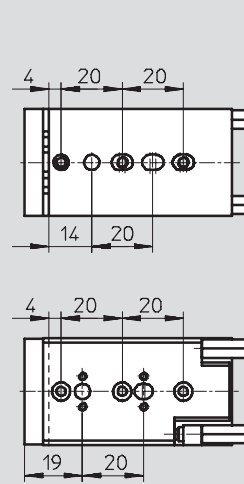
SLT-6-10



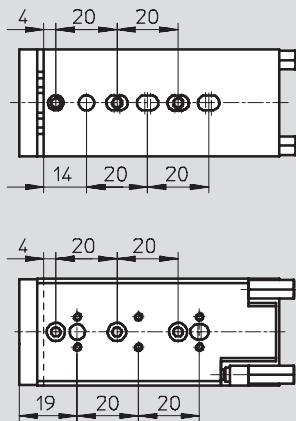
SLT-6-20



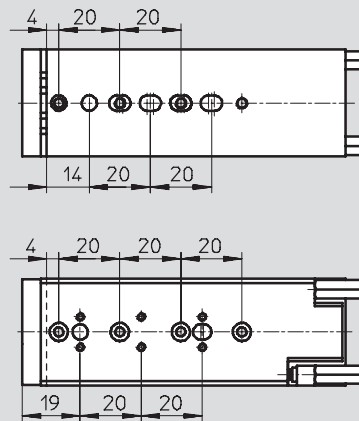
SLT-6-30



SLT-6-40



SLT-6-50



Mini slides SLT

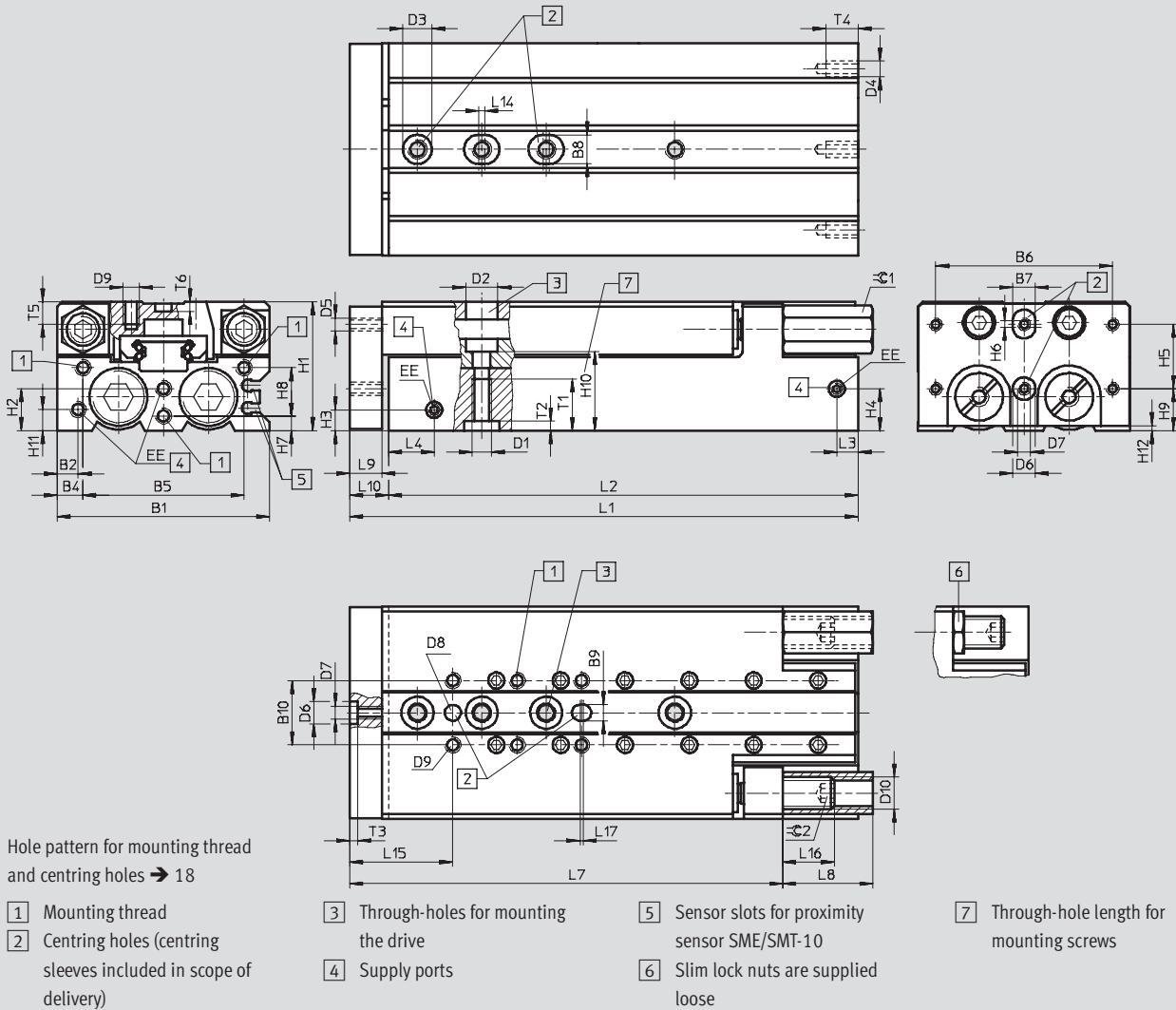
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com

∅ 10-...-25



∅	B1	B2	B4	B5	B6	B7	B8	B9	B10	D1	D2	D3	D4	D5	D6	D7
[mm]						H7	H7	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

∅	D8	D9	D10	EE	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12
[mm]	∅															
	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	G $\frac{3}{8}$	49	19.5	9	19.7			6	19	16	30.5	9	2.5
25	12	M6	M16x1	G $\frac{3}{8}$	60	21	10	21	40		5	25	10	34.5	10	1.5

Mini slides SLT

Technical data

FESTO

∅ [mm]	Stroke [mm]	L1	L2	L3	L4	L7	L8	L9	L10	L14 min.	L15	
10	10	72	62	7	11.7	62.5	15	8	10	2	25	
	20	72										72.5
	30	82	72			25						
	40	92	82									
	50	112	102									
	80	162	152									
16	10	80	68	6.7	14.2	63.5	22	10	12	2	32	
	20	87										75
	30		87			75	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
20		107		95	84							
30			107			95		37				
40		122	110	92								
50		167	155	135								
80		203	191	171								
100		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
	20	118					104		92.5			
	30		118	104				102.5				
	40	131	117	132.5			51					
	50	177	163	159.5			57					
	80	210	196	212.5								
	100	264	250	10			21.5	252.5				
	125	304	290	328.5								
	150	379	365									

∅ [mm]	L16		L17 min.	T1	T2	T3	T4	T5	T6	≈ 1	≈ 2	
	1)	2)									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	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

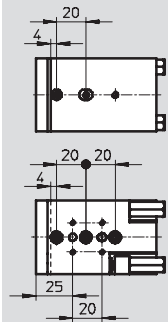
Mini slides SLT

Technical data

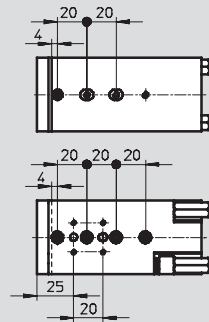
FESTO

Hole pattern for mounting thread and centring holes

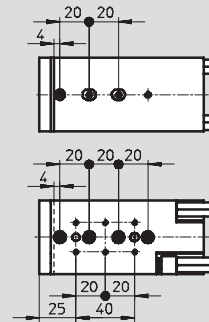
SLT-10-10 ... 30



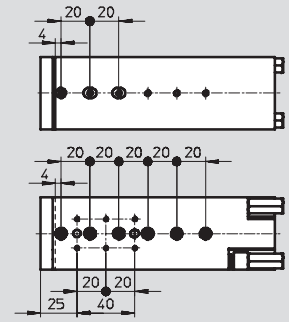
SLT-10-40



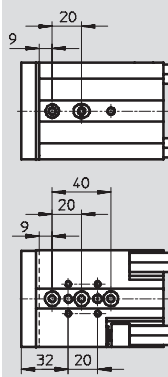
SLT-10-50



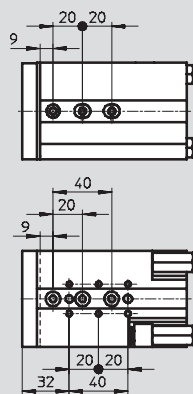
SLT-10-80



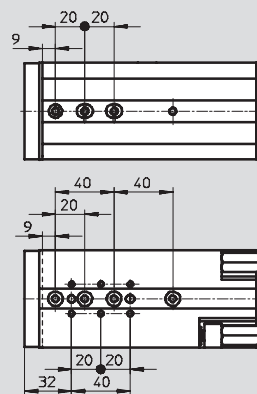
SLT-16-10 ... 40



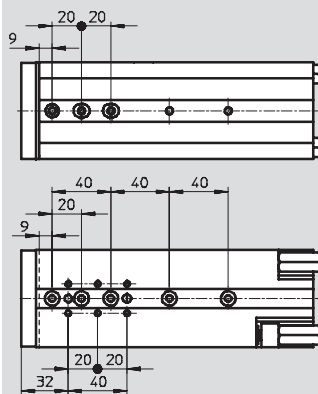
SLT-16-50



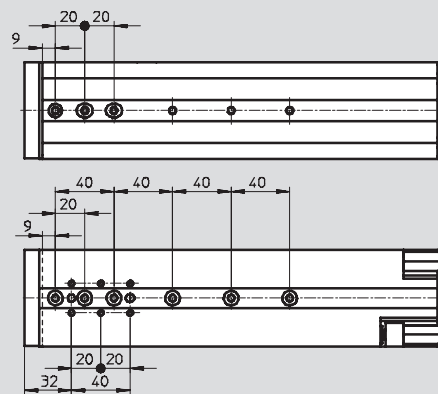
SLT-16-80



SLT-16-100



SLT-16-125/-150

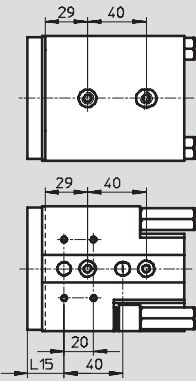


Mini slides SLT

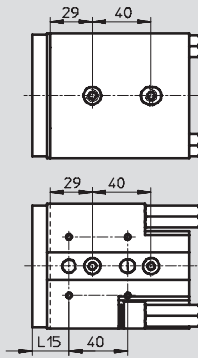
Technical data

Hole pattern for mounting thread and centring holes

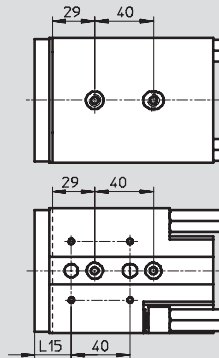
SLT-20-10 ... 40



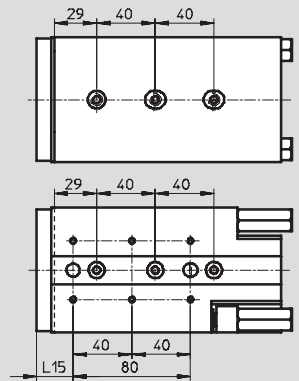
SLT-25-10 ... 40



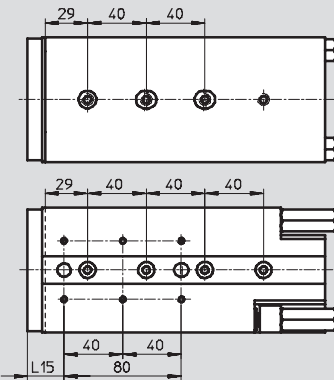
SLT-20/-25-50



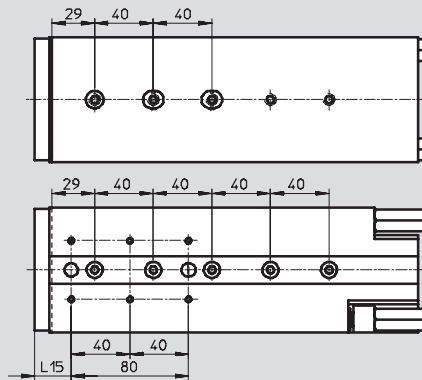
SLT-20/-25-80



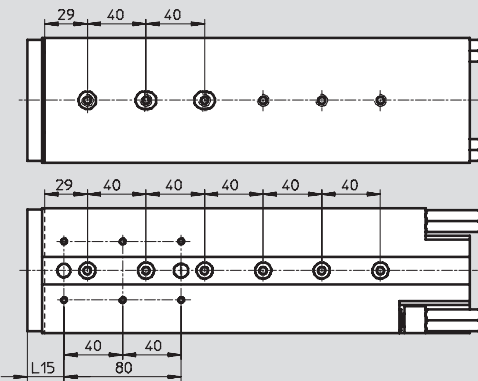
SLT-20/-25-100



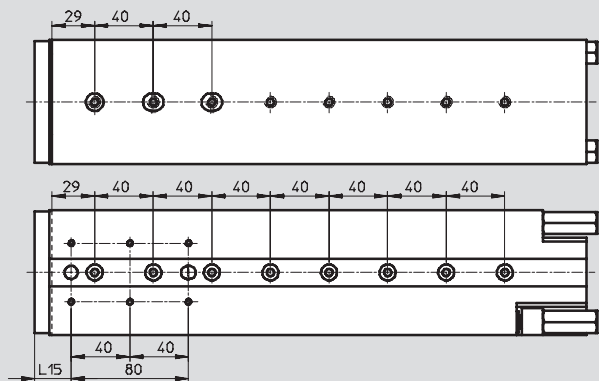
SLT-20/-25-125



SLT-20/-25-150



SLT-20/-25-200



Mini slides SLT

Technical data

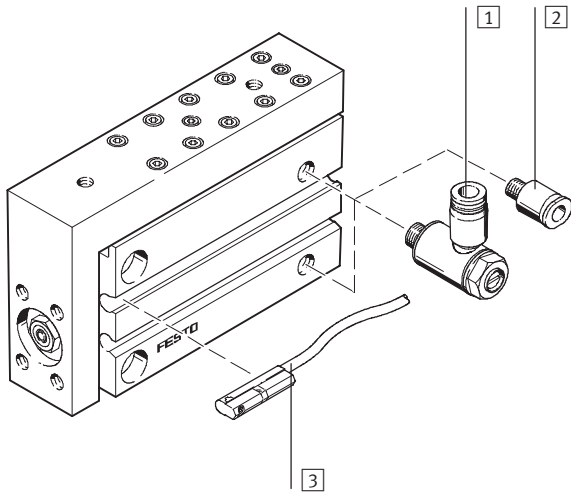
FESTO

Ordering data					
∅ [mm]	Stroke [mm]	SLT-...-P-A		SLT-...-A-CC-B	
		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/Internet
1	One-way flow control valve GRLA	For speed regulation	38
2	Push-in fitting QS	For connecting compressed air tubing with standard external diameters	quick star
3	Proximity sensor SME/SMT-10	Sensor slots for one or more proximity sensors	39

Type codes

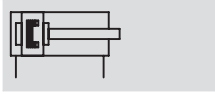
		SLS	-	16	-	10	-	P	-	A
Type										
Double-acting										
SLS	Mini slide									
Piston Ø [mm]										
Stroke [mm]										
Cushioning										
P	Flexible cushioning, non-adjustable									
Position sensing										
A	For proximity sensing									



Mini slides SLS

Technical data

FESTO

Function



-  - Diameter
6 ... 16 mm
-  - Stroke length
5 ... 30 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	For proximity sensing		
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 Ø	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 → 24

Mini slides SLS

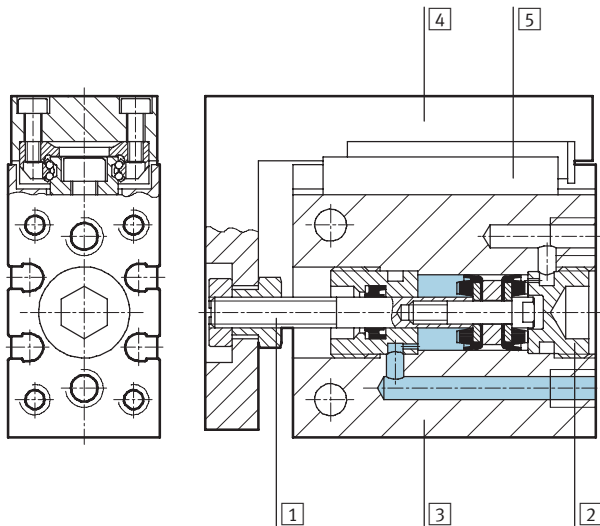
Technical data

FESTO

Weights [g]				
Piston Ø	Stroke	6	10	16
Product weight	5	97	130	225
	10	104	139	226
	15	113	149	256
	20	120	164	257
	25	131	182	291
	30	141	191	301
Moving load	5	28	41	92
	10	28	44	92
	15	32	49	100
	20	33	51	101
	25	37	60	111
	30	38	62	115

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

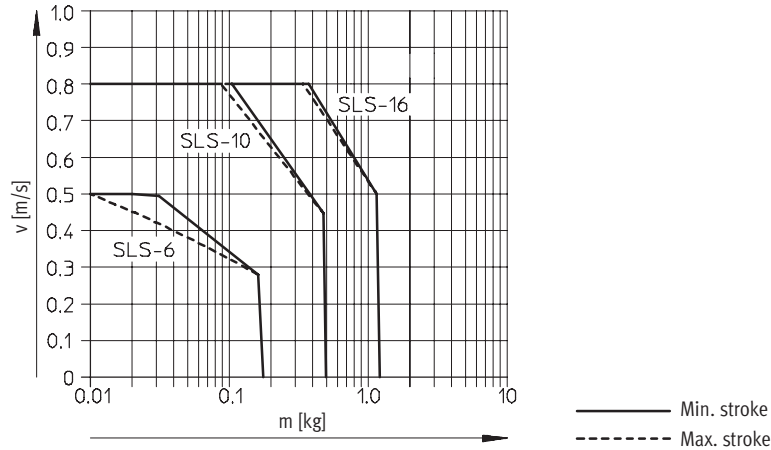
Mini slides SLS

Technical data

Piston speed v as a function of working load m

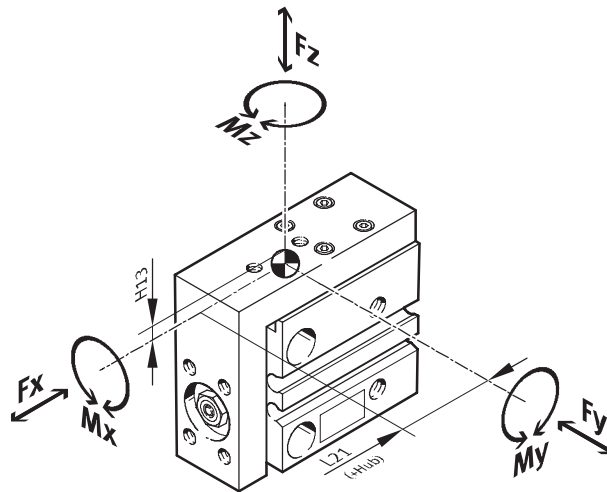
SLS-6/-10/-16...-P-A

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

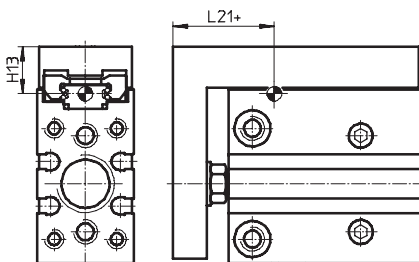
Torques are indicated with reference to the centre of the guide. They must not be exceeded during dynamic operation. Special attention must be paid to the cushioning phase.



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

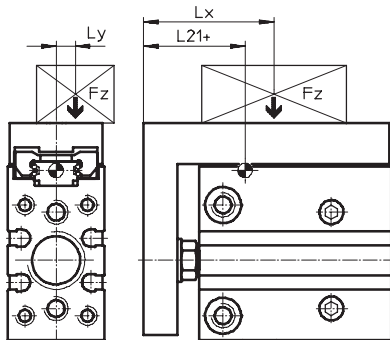
FESTO

Permissible forces and torques						Geometric characteristics	
Piston \varnothing	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							
	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

Calculation example

Given:

To be found:



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

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

Solution:

$L_{21} = 36$ mm from table

$F_y = 0$ N

$F_z = m \times g$
 $= 0.495 \text{ kg} \times 9.81 \text{ m/s}^2 = 4.856 \text{ N}$

$M_x = m \times g \times L_y$
 $= 0.495 \text{ kg} \times 9.81 \text{ m/s}^2 \times 20 \text{ mm} = 0.097 \text{ Nm}$

$M_y = m \times g \times [(L_{21} + \text{stroke}) - L_x]$
 $= 0.495 \text{ kg} \times 9.81 \text{ m/s}^2 \times [(36 \text{ mm} + 20 \text{ mm}) - 5 \text{ mm}] = 0.248 \text{ Nm}$

$M_z = 0$ Nm

Combined load:

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

$$= 0 + \frac{4.856 \text{ N}}{150 \text{ N}} + \frac{0.097 \text{ Nm}}{1.1 \text{ Nm}} + \frac{0.248 \text{ Nm}}{1.1 \text{ Nm}} + 0 = 0.345 \leq 1$$

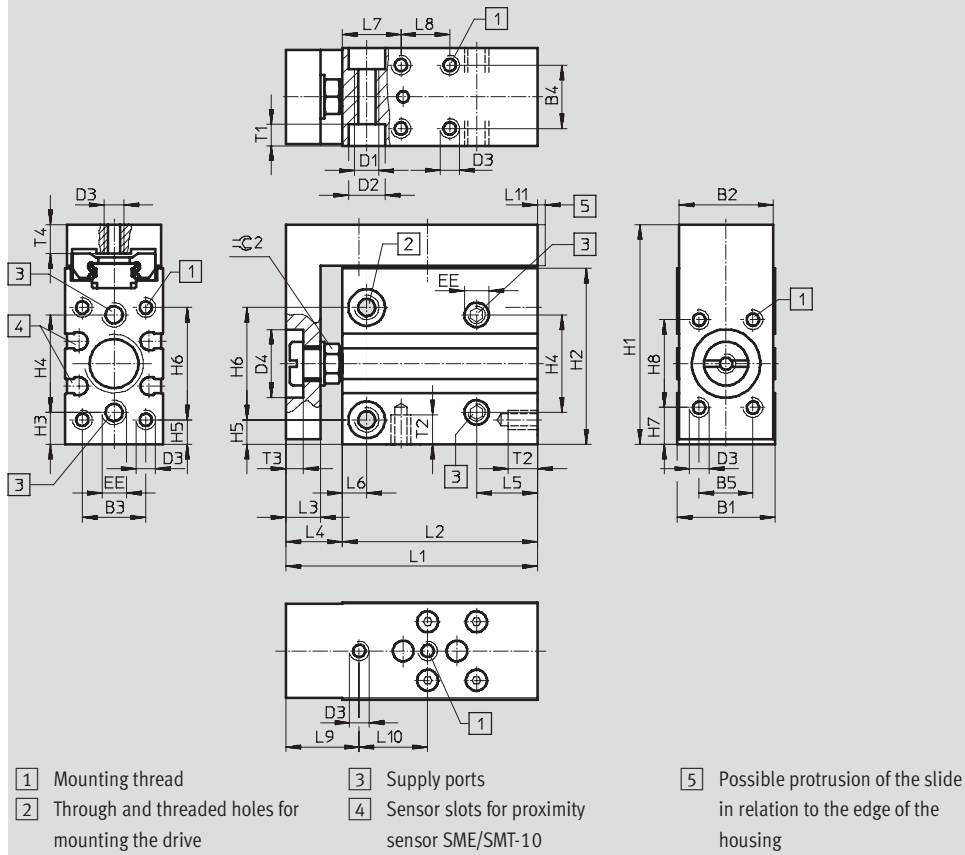
Mini slides SLS

Technical data

FESTO

Dimensions

Download CAD data → www.festo.com



∅	Stroke	B1	B2	B3	B4	B5	D1	D2	D3	D4	EE	H1
[mm]	[mm]							∅		∅ H11		
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



∅ [mm]	Stroke [mm]	H2	H3	H4	H5	H6	H7	H8	L1	L2	L3	L4	L5
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												

∅ [mm]	Stroke [mm]	L6	L7	L8	L9	L10	L11	T1	T2	T3	T4	≈ 2
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

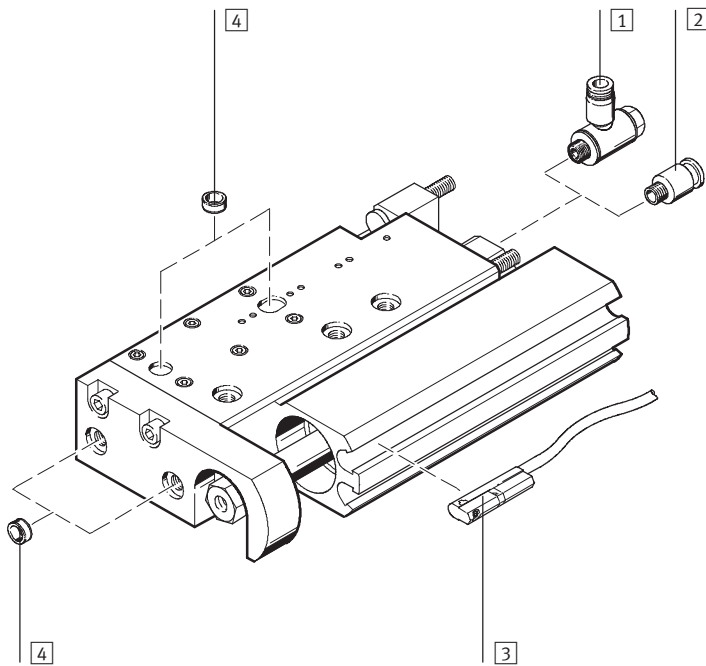
FESTO


Ordering data			
∅ [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/Internet
1	One-way flow control valve GRLA	For speed regulation 38
2	Push-in fitting QS	For connecting compressed air tubing with standard external diameters quick star
3	Proximity sensor SME/SMT-10	Sensor slots for one or more proximity sensors 39
4	Centring pin/sleeve ZBS/ZBH	For centring loads and attachments 38

Type codes

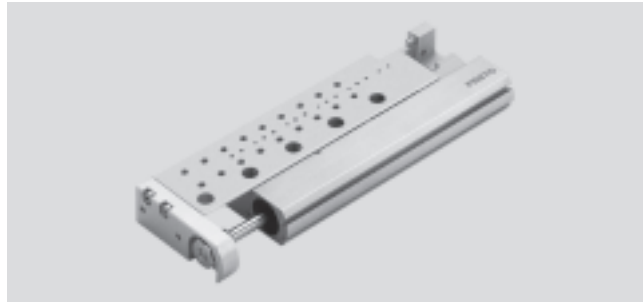
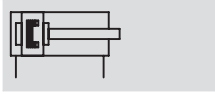
	SLF	-	16	-	20	-	P	-	A
Type									
Double-acting									
SLF	Mini slide								
Piston Ø [mm]									
Stroke [mm]									
Cushioning									
P	Flexible cushioning, non-adjustable								
Position sensing									
A	For proximity sensor								


Mini slides SLF


Technical data

FESTO

Function



-  - Diameter
6 ... 16 mm

-  - Stroke length
10 ... 80 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	For proximity sensing		
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 \varnothing	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	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 → 32

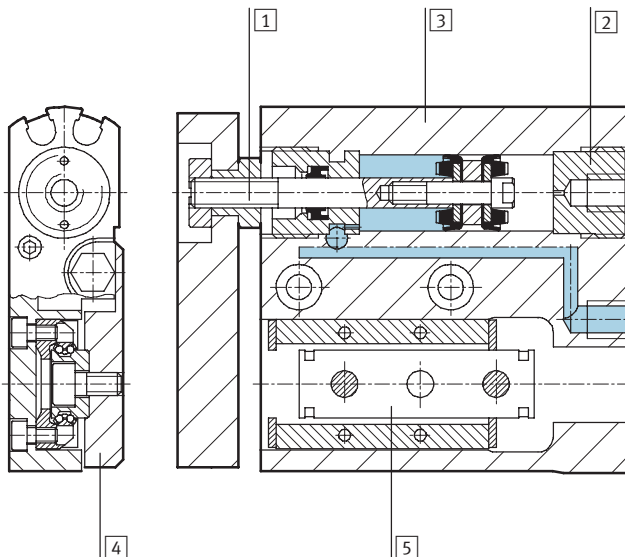
Mini slides SLF

Technical data

Weights [g]				
Piston Ø		6	10	16
Product weight	10	108	135	257
	20	124	156	291
	30	138	171	319
	40	–	178	353
	50	–	227	407
	80	–	–	539
Moving load	10	32	41	99
	20	37	48	109
	30	48	58	122
	40	–	60	133
	50	–	79	153
	80	–	–	199

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	

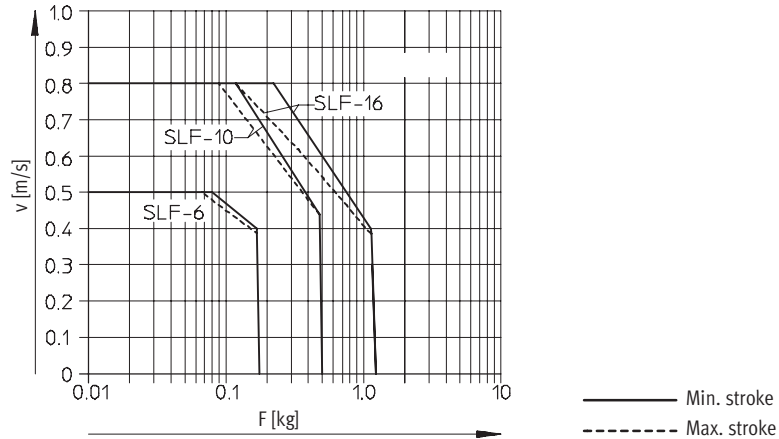
Mini slides SLF

Technical data

Piston speed v as a function of working load m

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

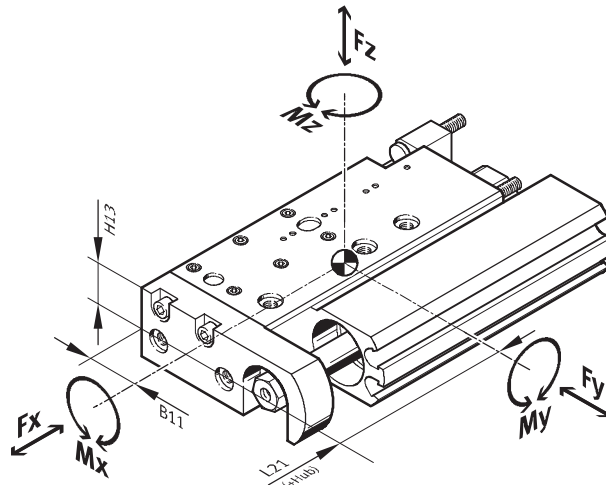
The piston speed as a function of working load illustrated in this graph may not be exceeded as the kinetic impact or residual energy in the end positions can result in damage to the drive.



Characteristic load values

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

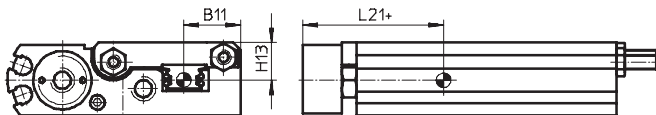
They must not be exceeded during dynamic operation. Special attention must be paid to the cushioning phase.



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

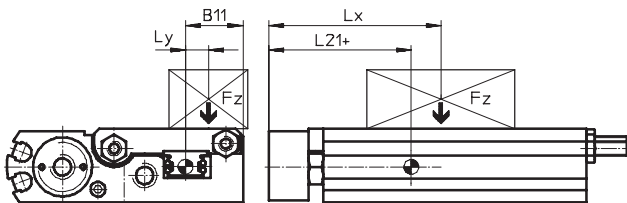
FESTO

Permissible forces and torques						Geometric characteristics		
Piston \varnothing	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:

To be found:



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

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

Solution:

$L_{21} = 25$ mm from table

$F_y = 0$ N

$F_z = m \times g$
 $= 0.495 \text{ kg} \times 9.81 \text{ m/s}^2 = 4.856$ N

$M_x = m \times g \times L_y$
 $= 0.495 \text{ kg} \times 9.81 \text{ m/s}^2 \times 20 \text{ mm} = 0.097$ Nm

$M_y = m \times g \times [(L_{21} + \text{stroke}) - L_x]$
 $= 0.495 \text{ kg} \times 9.81 \text{ m/s}^2 [(25 \text{ mm} + 20 \text{ mm}) - 5 \text{ mm}] = 0.194$ 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

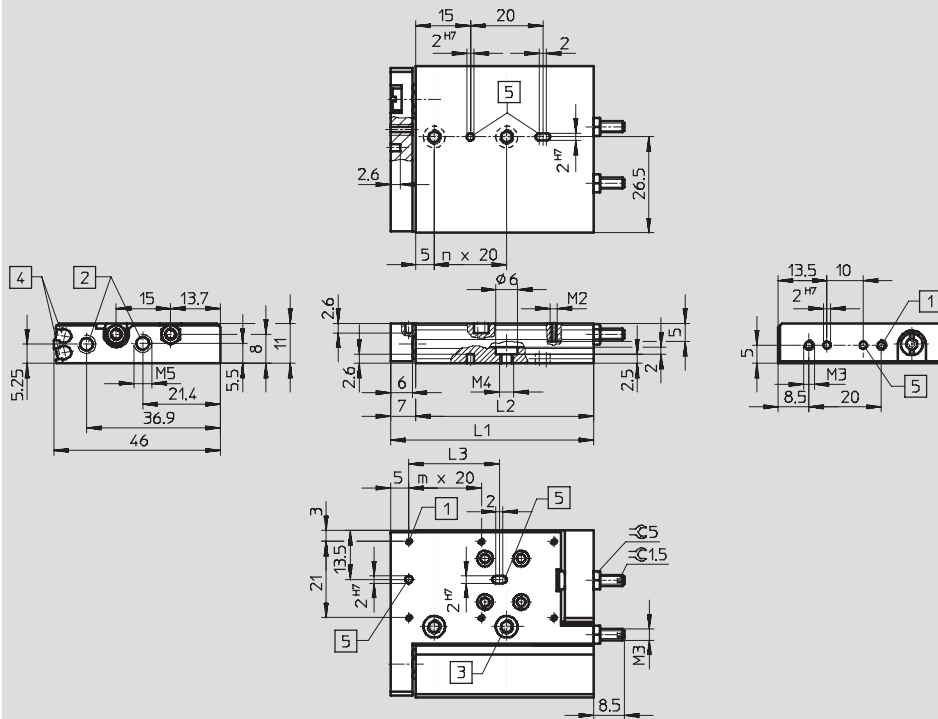
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com

∅ 6



- 1 Mounting thread
- 2 Supply ports
- 3 Through-holes for mounting the drive
- 4 Sensor slots for proximity sensor SME/SMT-10
- 5 Centring holes (centring sleeves included in scope of delivery)

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

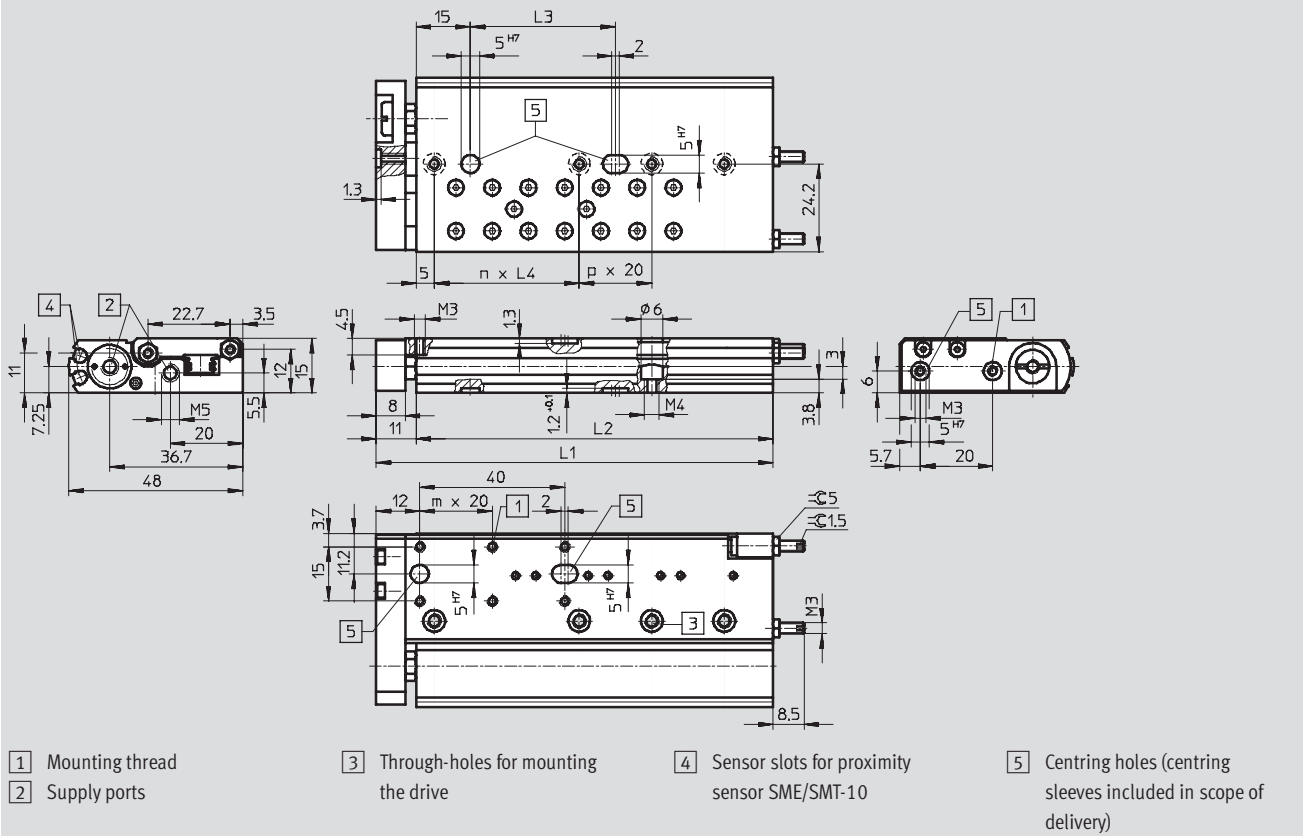
Mini slides SLF

Technical data

Dimensions

Download CAD data → www.festo.com

∅ 10



- 1 Mounting thread
- 2 Supply ports
- 3 Through-holes for mounting the drive
- 4 Sensor slots for proximity sensor SME/SMT-10
- 5 Centring holes (centring sleeves included in scope of delivery)

∅	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				2	
	30	79.5	68.5			3		
	40	89.5	78.5	40	40	1	2	
	50	109.5	98.5					

Mini slides SLF

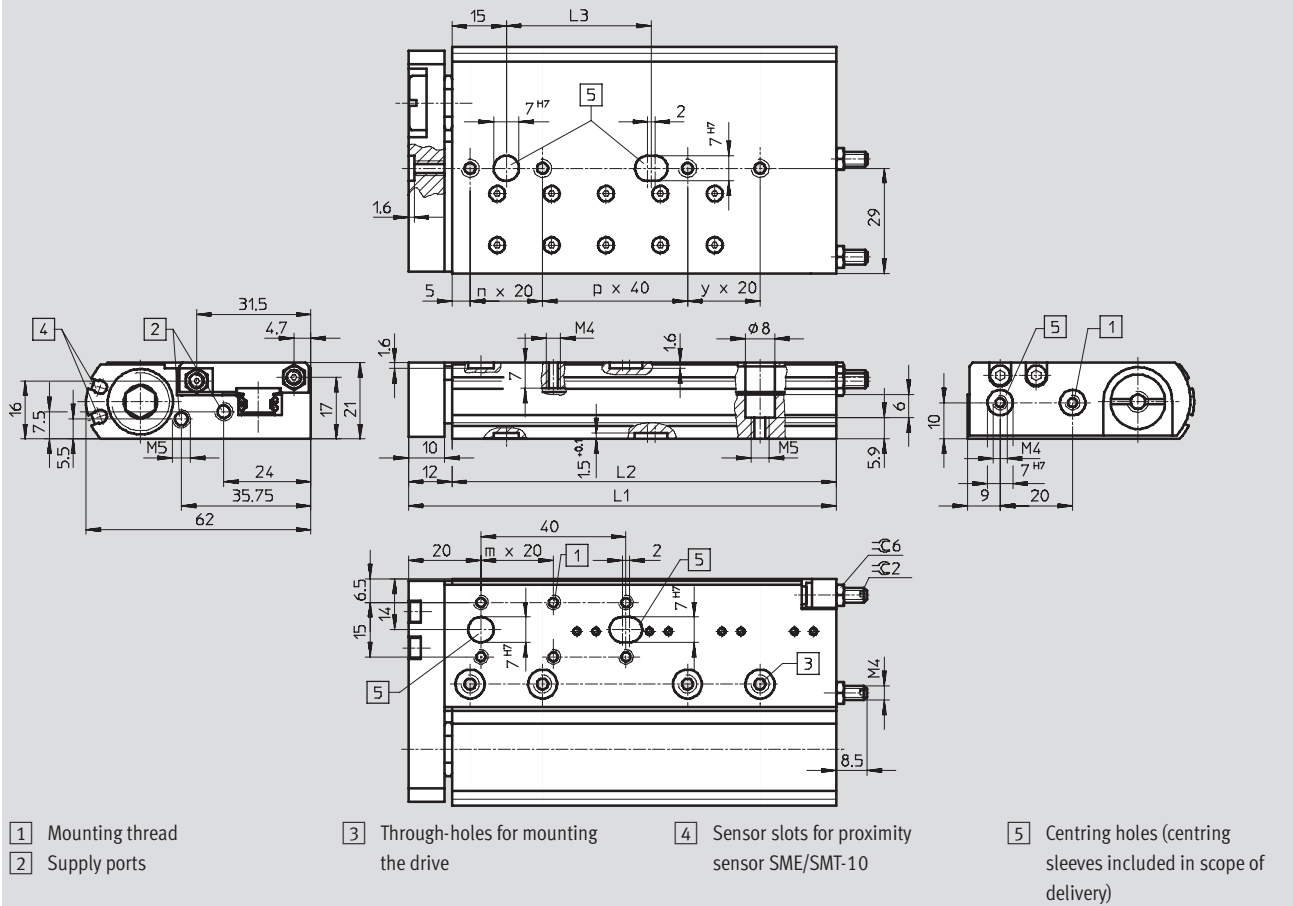
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com

∅ 16



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

Mini slides SLF





Technical data

Ordering data			
∅ [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		25	
		Part No.	Type	Part No.	Type	Part No.	Type	Part No.	Type	Part No.	Type
Centring pins/sleeves for SLT ¹⁾										Technical data → Internet: zbh	
	Housing	189 652	ZBH-5	186 717	ZBH-7	150 927	ZBH-9	189 653	ZBH-12	189 653	ZBH-12
	Slide	189 652	ZBH-5	189 652	ZBH-5	189 652	ZBH-5	150 927	ZBH-9	189 653	ZBH-12
	Yoke	525 273	ZBS-02	189 652	ZBH-5	186 717	ZBH-7	150 927	ZBH-9	189 653	ZBH-12
Centring pins/sleeves for SLF ¹⁾										Technical data → Internet: zbh	
	Housing	525 273	ZBS-02	189 652	ZBH-5	186 717	ZBH-7	–	–	–	–
	Slide										
	Yoke										
Shock absorber for SLT-...-A-CC-B										Technical data → Internet: ysrt	
	–	–		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 → Internet: grla	
	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	
	G ¹ / ₈	4		193 143	GRLA- ¹ / ₈ -QS-4-D	
		6		193 144	GRLA- ¹ / ₈ -QS-6-D	



Mini slides SLT/SLS/SLF

Accessories

FESTO

Ordering data – Proximity sensors for C-slot, magneto-resistive					Technical data → Internet: smt	
	Type of mounting	Switch output	Electrical connection, connection direction	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with cylinder profile	PNP	Cable, 3-wire, in-line	2.5	525 915	SMT-10F-PS-24V-K2,5L-OE
			Plug M8x1, 3-pin, in-line	0.3	525 916	SMT-10F-PS-24V-K0,3L-M8D
			Plug M8x1, 3-pin, lateral	0.3	526 675	SMT-10F-PS-24V-K0,3Q-M8D
	Insertable in the slot lengthwise	PNP	Plug M8x1, 3-pin, in-line	0.3	173 220	SMT-10-PS-SL-LED-24
			Cable, 3-wire, in-line	2.5	173 218	SMT-10-PS-KL-LED-24

Ordering data – Proximity sensors for C-slot, magnetic reed					Technical data → Internet: sme	
	Type of mounting	Switch output	Electrical connection, connection direction	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with cylinder profile	Contacting	Plug M8x1, 3-pin, in-line	0.3	525 914	SME-10F-DS-24V-K0,3L-M8D
			Cable, 3-wire, in-line	2.5	525 913	SME-10F-DS-24V-K2,5L-OE
			Cable, 2-wire, in-line	2.5	526 672	SME-10F-ZS-24V-K2,5L-OE
	Insertable in the slot lengthwise	Contacting	Plug M8x1, 3-pin, in-line	0.3	173 212	SME-10-SL-LED-24
			Cable, 3-wire, in-line	2.5	173 210	SME-10-KL-LED-24

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
	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