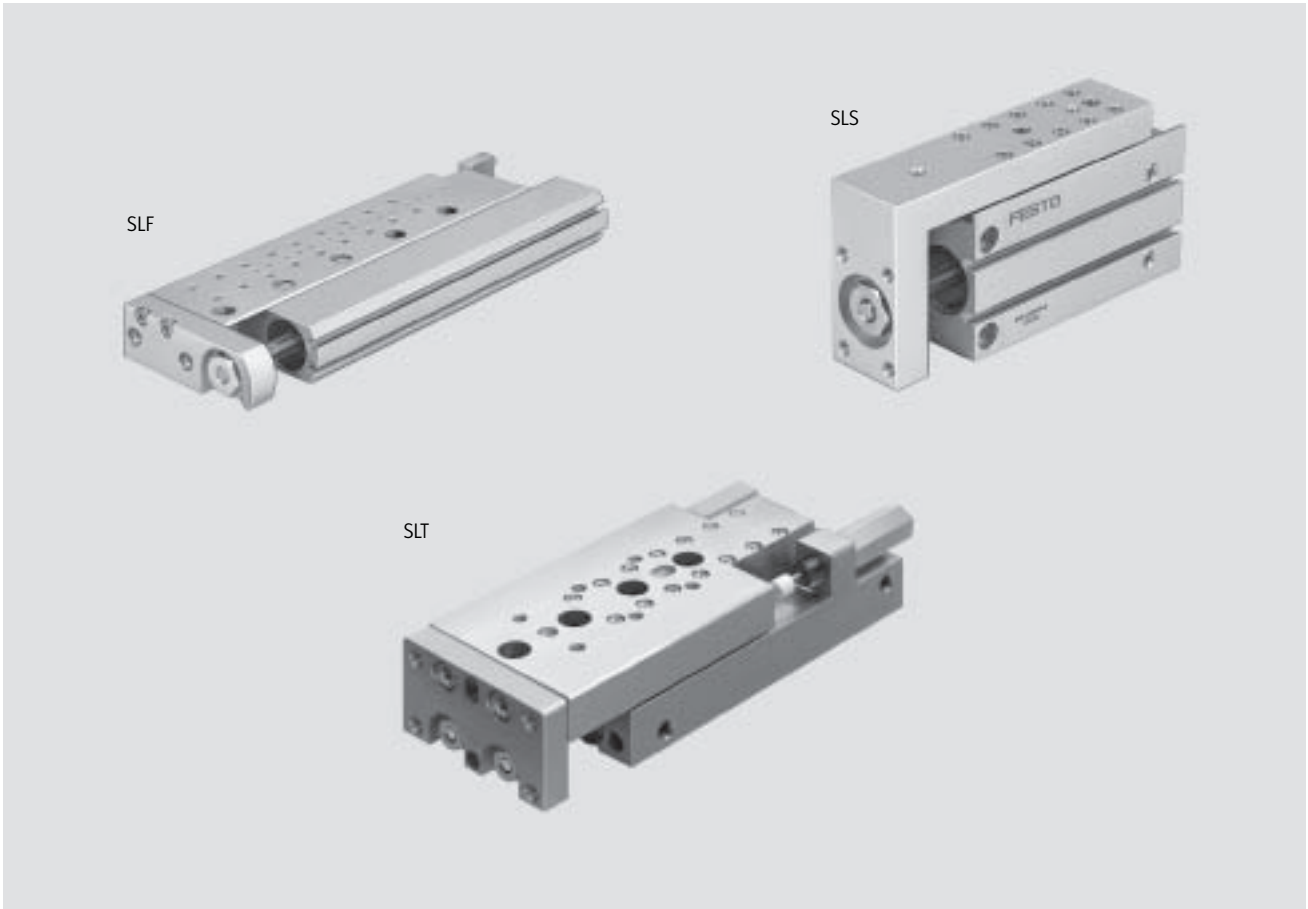


- Precision, rigid guide
- Highly flexible
- Adjustable end-position cushioning

# Mini slides SLT/SLS/SLF

Features



### SLT/SLS/SLF

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

### SLT

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

### SLS

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

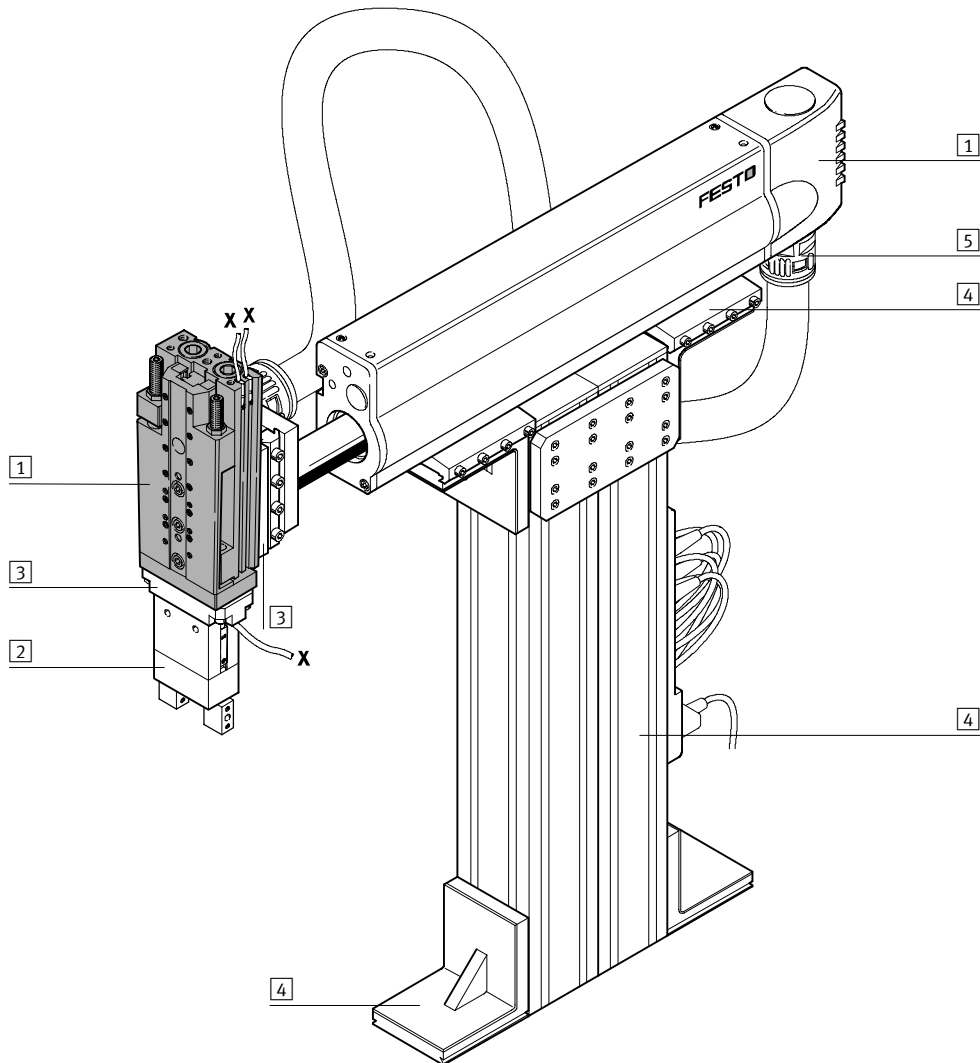
### SLF

- 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
1	Drives	Diverse possible combinations in handling and assembly technology Volume 1
2	Gripper	Diverse variation options in handling and assembly technology Volume 1
3	Adapter	For drive/drive and drive/gripper combinations Volume 5
4	Basic mounting 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

Features



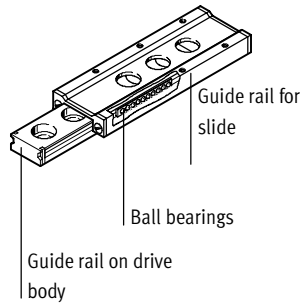
## Drive

Mini slides SLF/SLS/SLT are driven via double-acting cylinders.  
 SLF/SLS: with one piston  
 SLT: with two pistons

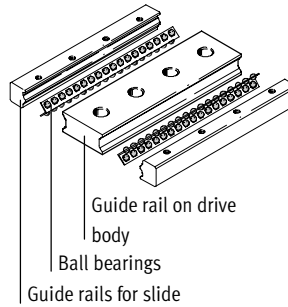
## Guide

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

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

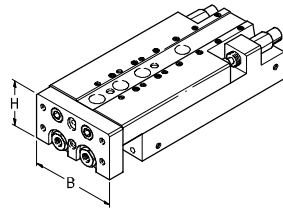


SLT-20-/25



## The powerful mini slide

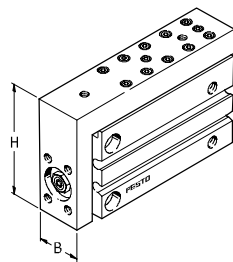
SLT



Piston $\varnothing$	Width (W)	x	Height (H)
<b>2x 6 mm</b>	35	x	20 mm
<b>2x 10 mm</b>	50	x	30 mm
<b>2x 16 mm</b>	66	x	40 mm
<b>2x 20 mm</b>	85	x	49 mm
<b>2x 25 mm</b>	104	x	60 mm

## The super slim mini slide

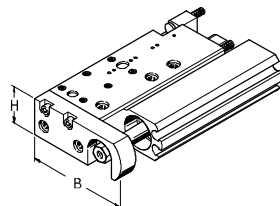
SLS



Piston $\varnothing$	Width (W)	x	Height (H)
6 mm	<b>16</b>	x	39 mm
10 mm	<b>20</b>	x	45 mm
16 mm	<b>24</b>	x	51 mm

## The extremely flat mini slide

SLF



Piston $\varnothing$	Width (W)	x	Height (H)
6 mm	46	x	<b>11 mm</b>
10 mm	48	x	<b>15 mm</b>
16 mm	62	x	<b>21 mm</b>

# Mini slides SLT/SLS/SLF

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).

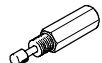
**2** Mounting surface:  
Direct attachment of devices and loads is made possible with threaded holes in the slide and the yoke plate (using appropriate screws and centring sleeves ZBS/ZBH) (e.g. SLT: rotary drives and grippers).

**3** Versatile air connections

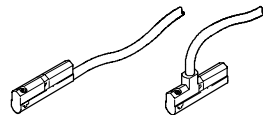
**4** Adjustable end-position cushioning systems:  
1) Flexible cushioning elements for mini slides SLF/SLT



2) Hydraulic shock absorbers YSRT with internal hexagon socket on rear cover for optimum end-position adjustment for mini slide SLT-...-A-CC-B

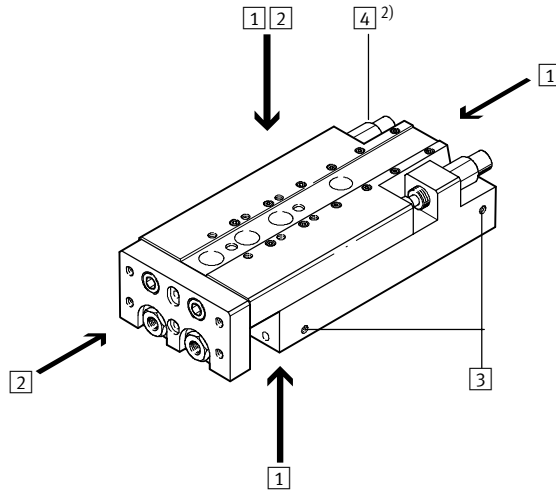


**5** Sensors can be integrated  
Sensor slots for one or more proximity sensors SME/SMT-10.

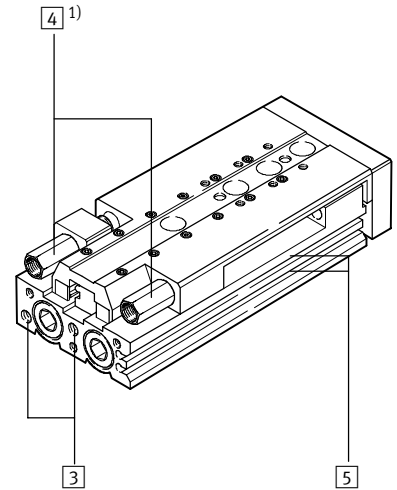


For space-saving, reliable sensing of piston positions. Proximity sensors can be freely moved and clamped in their slots.

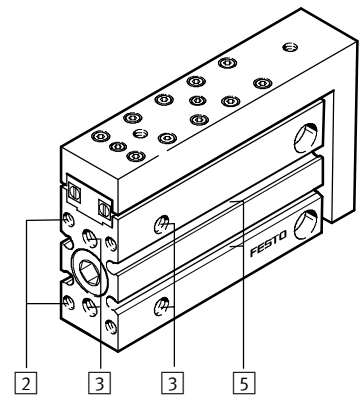
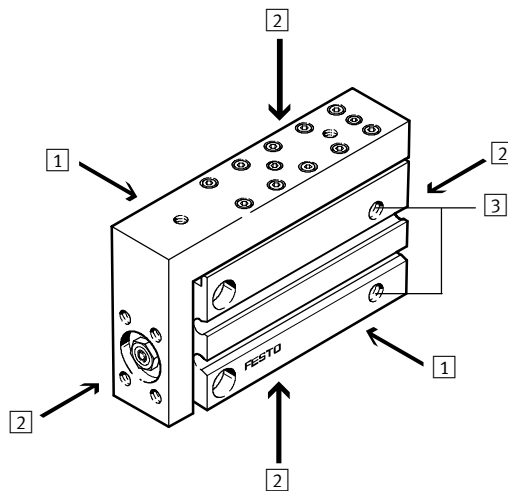
SLT  
SLT-...-CC-B



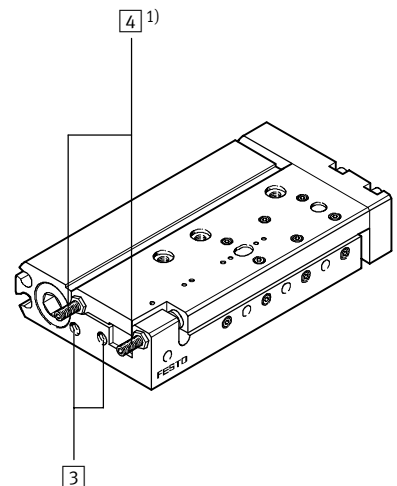
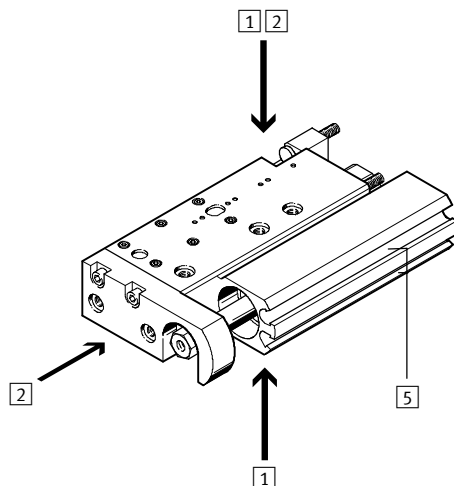
SLT-...-P-A



SLS



SLF



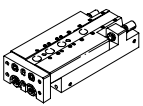
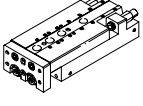
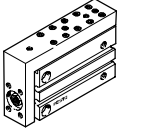
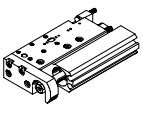
# Mini slides SLT/SLS/SLF

Product range overview



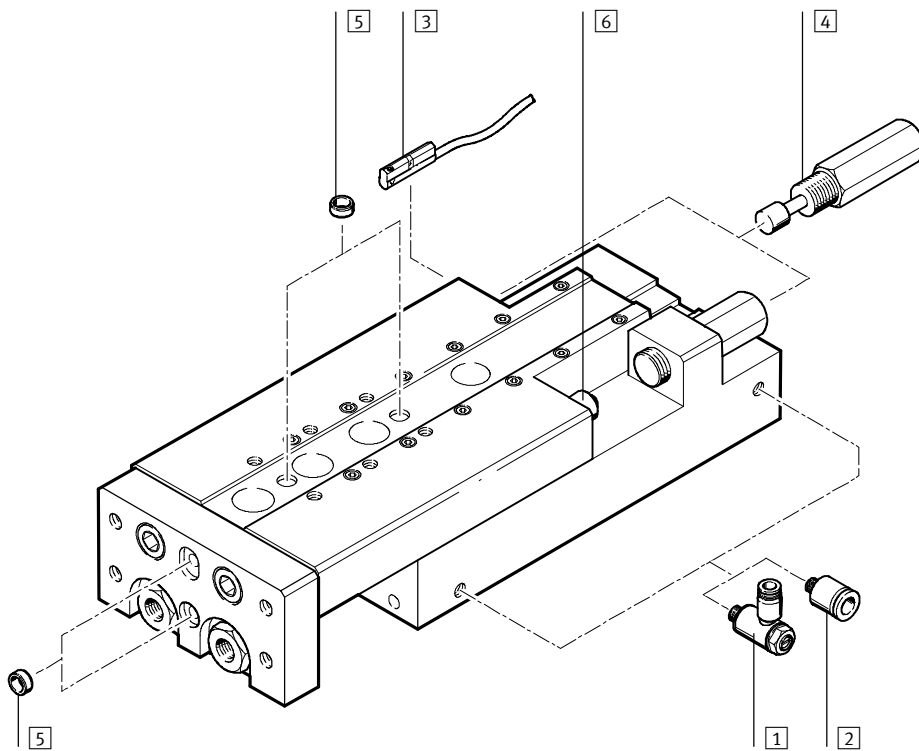
Drives with linear guides  
Slides

## 6.1

Function	Design	Piston $\varnothing$ [mm]	Stroke [mm]	Cushioning		Position sensing	→ Page
				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	
Flat, SLF-...-P-A							
	6, 10, 16	10, 20, 30, 40, 50, 80	■	-	■	1 / 6.1-29	

# Mini slide SLT

Peripherals overview



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-10	1 / 6.1-39
4	Shock absorber YSRT	1 / 6.1-38
5	Centring pin/sleeve ZBS/ZBH	1 / 6.1-38
6	Stop PF	1 / 6.1-38

# Mini slide SLT

Type codes



SLT - 16 - 80 - P - A

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

SLT - 16 - 80 - A - CC - B

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

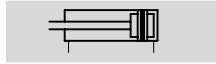


# Mini slide SLT

Technical data



FESTO

Function



[www.festo.com/en/Spare\\_parts\\_service](http://www.festo.com/en/Spare_parts_service)



-  Diameter  
6 ... 25 mm
-  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	P	Non-adjustable at either end					
	CC	Self-adjusting at both ends					
Position sensing	Via proximity sensor						
Type of mounting	With through-holes						
	With 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 <sup>1)</sup>	0.8				
Max. retracting speed	[m/s]	0.5 <sup>1)</sup>	0.8				
Repetition accuracy <sup>2)</sup>	[mm]	-	0.02				

- 1) Must be throttled externally.  
2) For SLT-...-CC

Operating and environmental conditions							
Piston Ø	6		10		16	20	25
Operating medium	Dried compressed air, lubricated or unlubricated						
Operating pressure	[bar]	1.5 ... 10	1 ... 10				
Ambient temperature <sup>1)</sup>	[°C]	-20 ... +60					
Corrosion resistance class CRC <sup>2)</sup>		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	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 <sup>1)</sup>	Stop PF <sup>2)</sup>		0,0005	0,007	0,015	0,030	0,060
	Cushioning P <sup>2)</sup>		0.016	0.1	0.3	0.4	0.5
	Shock absorber <sup>2)</sup>		-	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 slide SLT

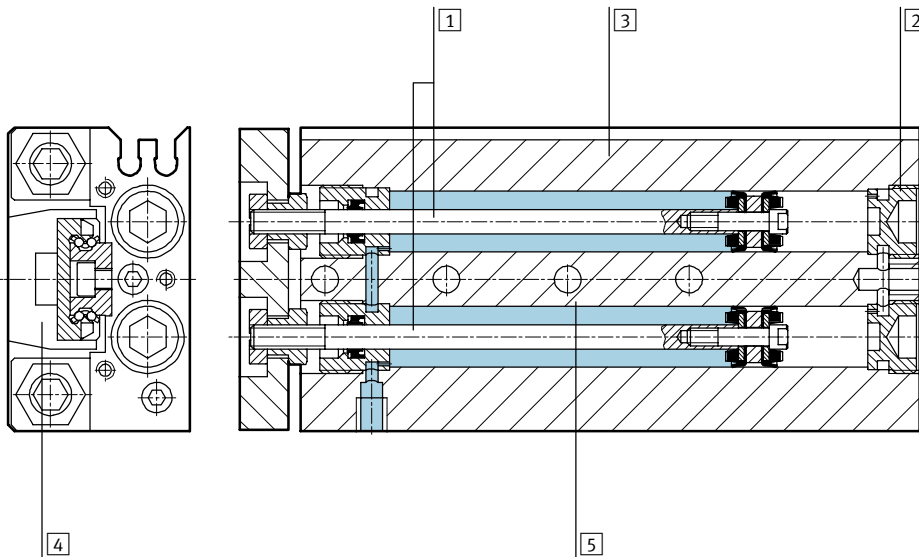
Technical data



Weights [g]						
Piston Ø		6	10	16	20	25
Product weight with respective stroke	10 mm	177	365	635	1192	1905
	20 mm	194	365	630	1182	1890
	30 mm	210	398	665	1173	1900
	40 mm	235	421	725	1260	2047
	50 mm	270	480	815	1396	2197
	80 mm	–	631	1075	1820	2762
	100 mm		–	1280	2138	3182
	125 mm			1540	2535	3714
	150 mm			1665	2933	4243
	200 mm			–	3728	5300
Moving load with respective stroke	10 mm	39	134	265	530	880
	20 mm	45				
	30 mm	56	153	286		
	40 mm	61	165	330	580	970
	50 mm	76	195	390	635	1043
	80 mm	–	270	550	780	1272
	100 mm		–	640	910	1460
	125 mm			735	1007	1695
	150 mm			830	1104	1950
	200 mm			–	1201	2393

## Materials

Sectional view



Mini slide	
1	Piston rod High-alloy steel
2	Plug 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 material Free of copper, PTFE and silicone

# Mini slide SLT

Technical data

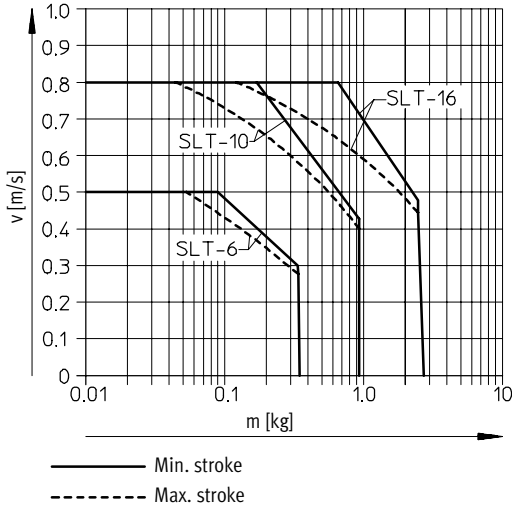
## Piston speed $v$ as a function of working load $m$

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

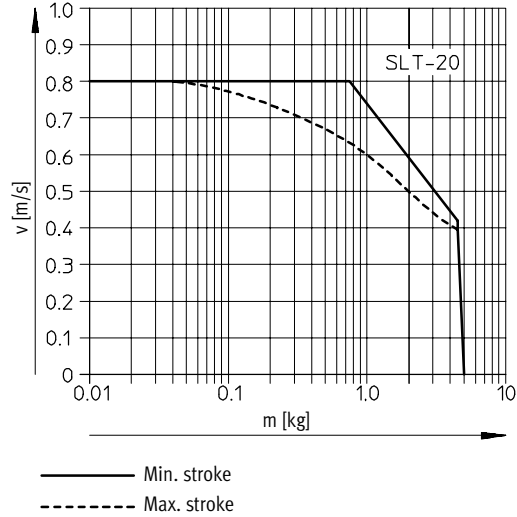
graphs may not be exceeded as the kinetic impact or residual energy in

the end positions can result in damage to the drive.

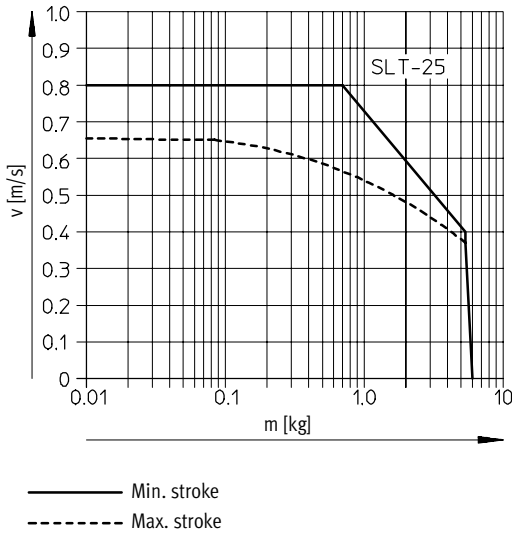
SLT-6/-10/-16-...-P-A



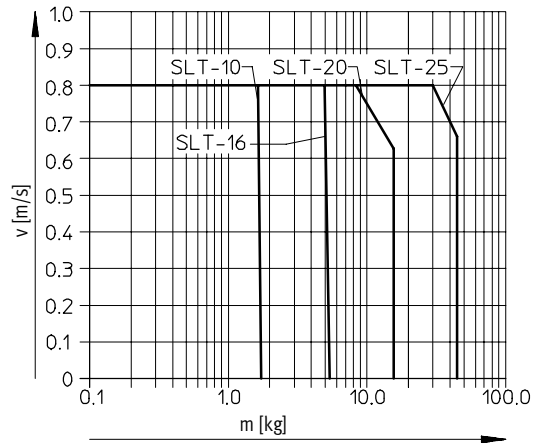
SLT-20-...-P-A




SLT-25-...-P-A



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



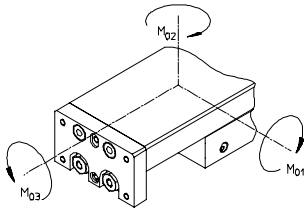
 Note  
 For the mini slide SLT with shock absorbers, the speed should not be less than 0.1 m/s, as otherwise the service life of the shock absorber will be reduced.

# Mini slide SLT

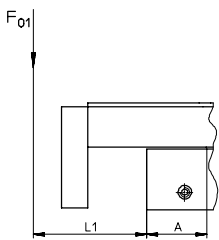
Technical data



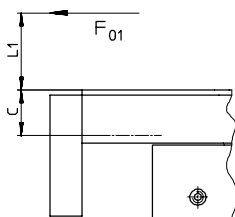
## Permissible loads static/dynamic



### Longitudinal torque

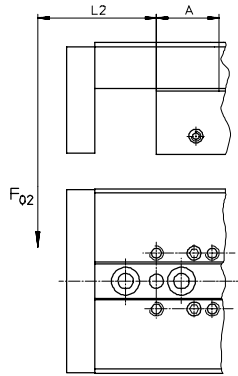


$$F_{01} \leq \frac{M_{01perm.}}{L_1 + A}$$

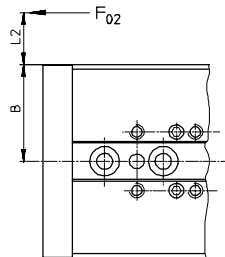


$$F_{01} \leq \frac{M_{01perm.}}{L_1 + C}$$

### Yawing torque

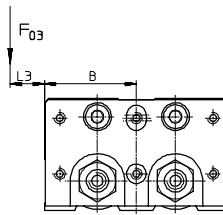


$$F_{02} \leq \frac{M_{02perm.}}{L_2 + A}$$

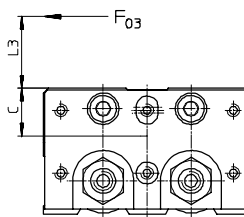


$$F_{02} \leq \frac{M_{02perm.}}{L_2 + B}$$

### Lateral torque



$$F_{03} \leq \frac{M_{03perm.}}{L_3 + B}$$



$$F_{03} \leq \frac{M_{03perm.}}{L_3 + C}$$

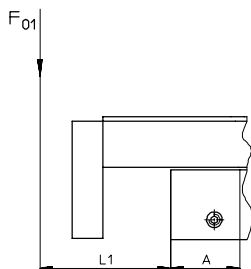
### Combined load

The following torque equation must be satisfied with combined load:

$$\frac{M_1}{M_{1perm.}} + \frac{M_2}{M_{2perm.}} + \frac{M_3}{M_{3perm.}} \leq 1$$

### Calculation example

Static load



Given:

Mini slide = SLT-16  
 Stroke length = 30 mm  
 Lever arm  $L_1$  = 0.040 m  
 Torque  $M_{01perm.}$  = 18 Nm  
 Correction factor  $A$  = 20.7 mm  
 = 0.0207 m

To be found:

$$F_{01} \leq \frac{M_{01perm.}}{L_1 + A}$$

Calculation:

$$F_{01} \leq \frac{18 \text{ Nm}}{0.040 \text{ m} + 0.0207 \text{ m}}$$

$$F_{01} \leq 296.54 \text{ N}$$

# Mini slide SLT

Technical data



Permissible loads								Correction factors				
Piston Ø [mm]	Stroke [mm]	static			dynamic			A [mm]	B [mm]	C [mm]		
		M <sub>01</sub> [Nm]	M <sub>02</sub> [Nm]	M <sub>03</sub> [Nm]	M <sub>01</sub> [Nm]	M <sub>02</sub> [Nm]	M <sub>03</sub> [Nm]					
<b>6</b>												
	20	3	3	3	1.1	1.1	0.7	12.5	17.5	7.2		
	30				0.7	0.7	4	0.9			0.5	13.5
	40				0.9	0.9						16
	50			8	8	5	1.4	1.4			21.2	
<b>10</b>												
	10	6	6	8	2.1	2.1	1.6	14.2	25	11.8		
	20				1.7	1.7	1.4	19.2				
	30	10	10	10	2.5	2.5	1.3		24.2			
	40				2.2	2.2						
	50	16	16	13	3.1	3.1	1.4	31.7				
	80	27	27	17	4.3	4.3	1.5					
<b>16</b>												
	10	18	18	19	6.1	6.1	4.2	20.7	33	15.3		
	20				4.7	4.7	3.4					
	30				4.2	4.2	3.0					
	40				3.8	3.8	2.7					
	50	21	21	20	4.6	4.6	2.8	24				
	80	34	34	27	6	6		31				
	100	60	60	36	9.1	9.1	3.2	41				
	125	109	109	49	12.6	12.6	3.5	54				
	150											
<b>20</b>												
	10	45	45	73	16	16	18	25	42.5	16.8		
	20				13	13	14					
	30				11	11	12					
	40				10	10	11					
	50				9	9	10					
	80				90	90	101				14	14
	100	119	119	123	18	18		41.7				
	125	156	156	148	37	37	17	31.5				
	150	199	199		47	47		39.5				
	200	270	270		64	64		53				
<b>25</b>												
	10	75	75	88	19	19	21	29.7	52	23		
	20				16	16	16					
	30				14	14	14					
	40				13	13	12					
	50				12	12	11					
	80				90	90	101				14	14
	100	119	119	123	18	18		41.7				
	125	156	156	148	37	37	17	31.5				
	150	199	199		47	47		39.5				
	200	270	270		64	64		53.5				

# Mini slide SLT

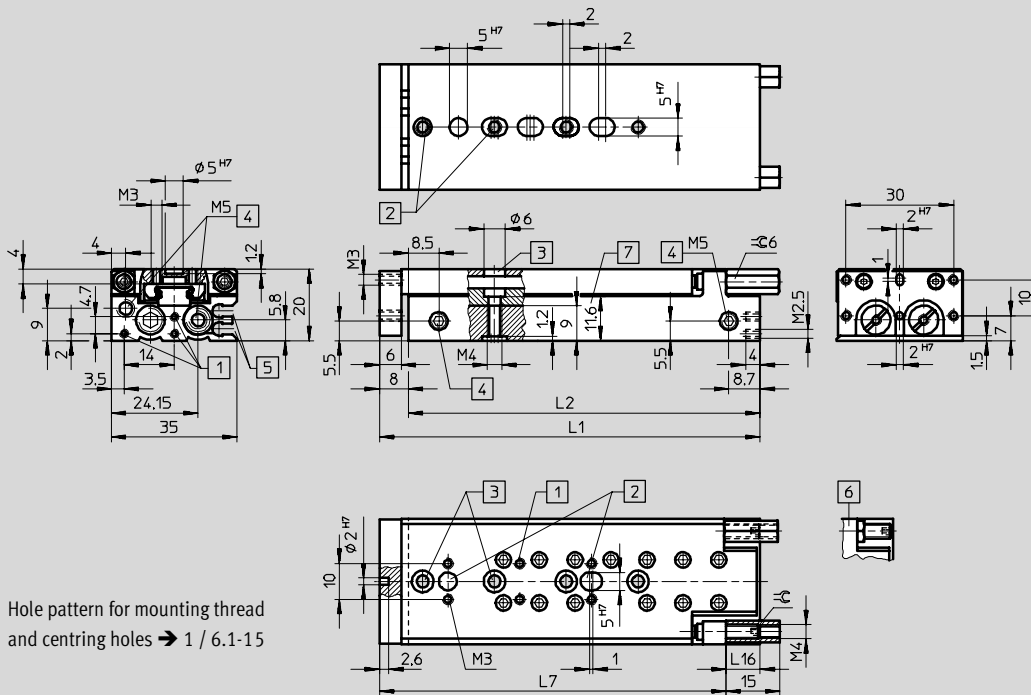
Technical data



## Dimensions

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

Piston Ø6 mm



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 SME-/SMT-10 proximity sensors
- 6) Slim lock nuts are supplied loose
- 7) Through-hole length for mounting screws

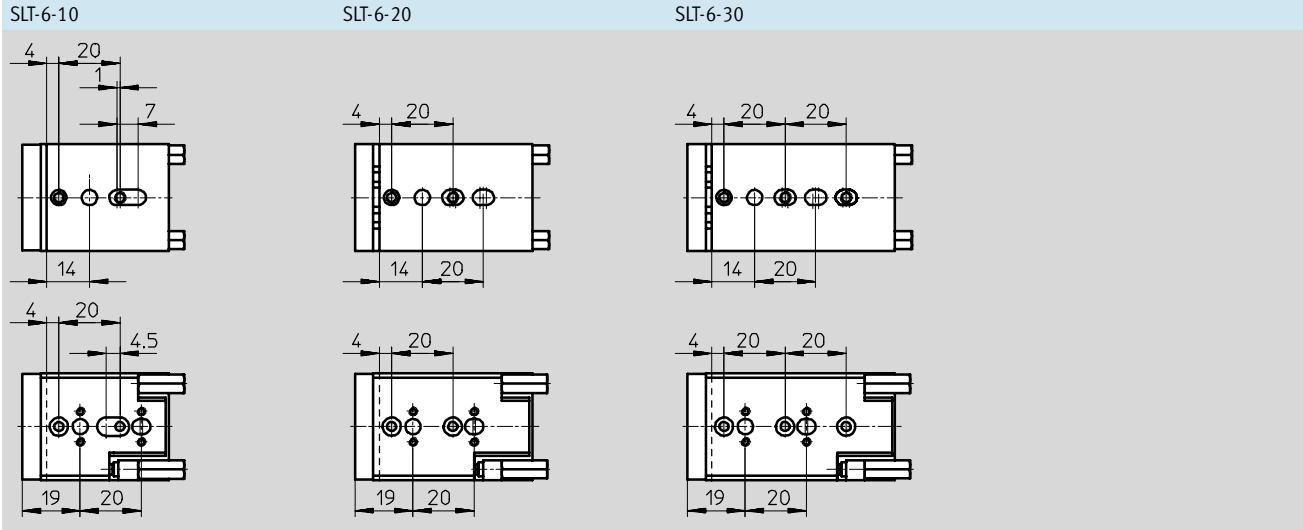
Ø	Stroke	L1	L2	L16	⌀
[mm]	[mm]			1)	1)
6	10	48	40	14	2
	20	58	50		
	30	68	60		
	40	85	77		
	50	106	98		

1) with flexible end-position cushioning

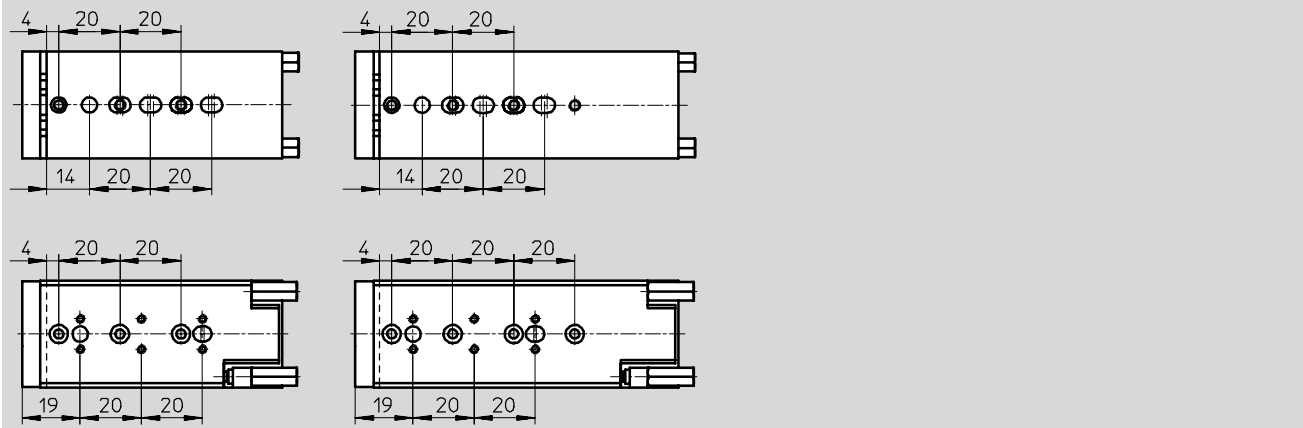
# Mini slide SLT

Technical data

## Hole pattern for mounting thread and centring holes



SLT-6-40	SLT-6-50
----------	----------



# Mini slide SLT

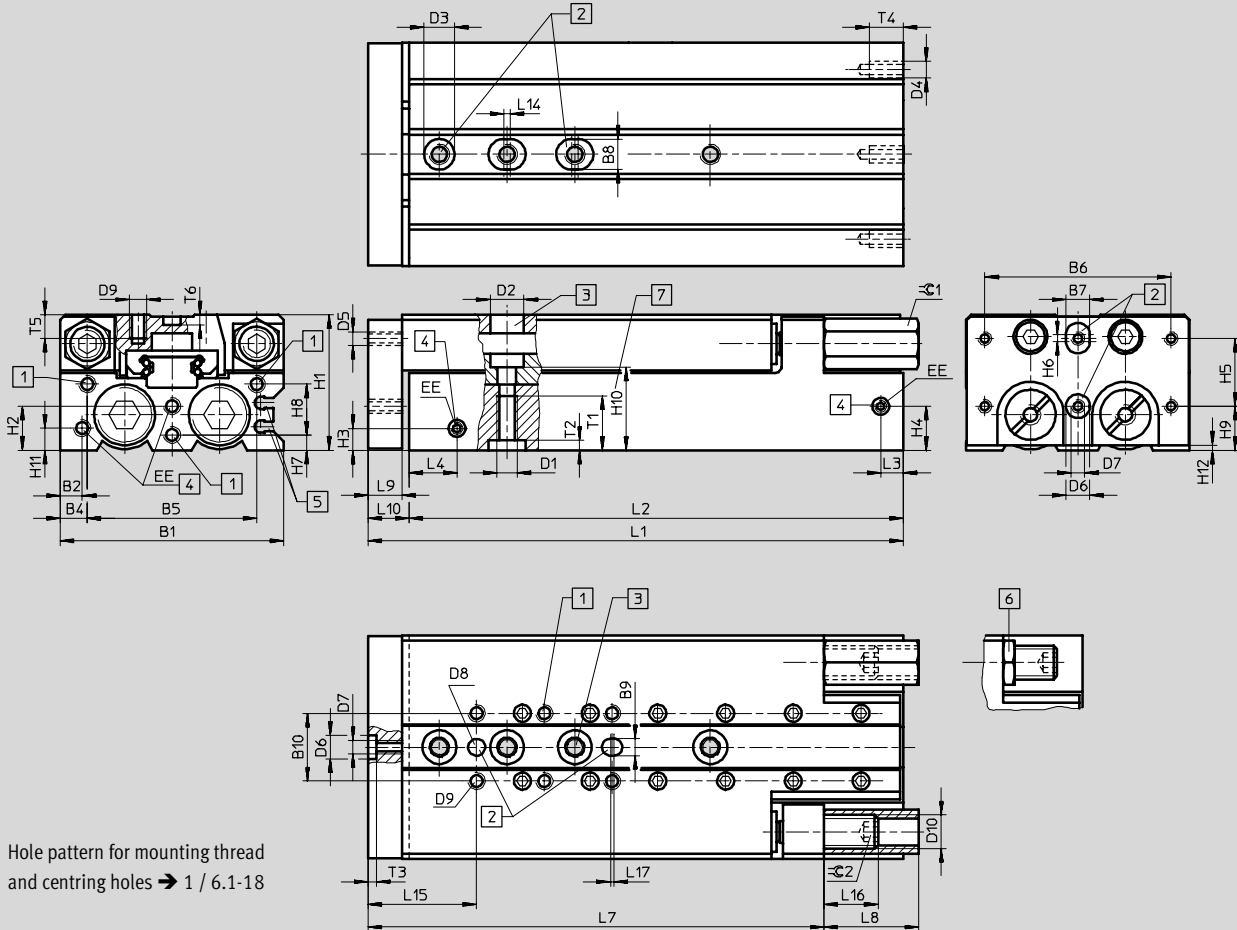
Technical data



## Dimensions

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

Piston Ø 10...-25 mm



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 SME-/SMT-10 proximity sensors
- 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			Ø	
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 slide SLT

Technical data

FESTO

∅	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									
	40	92	82			25						
	50	112	102									
	80	162	152									
16	10	80	68	6.7	14.2	63.5	22	10	12	2	32	
	20		75									
	30	87	75				28					
	40	97	85									
	50	112	100									
	80	158	146									
	100	199	187									
	125	257	245			8.2						16.6
	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									
	80	167	155									
	100	203	191			171	59					
	125	262	250			208						
	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									
	80	177	163									
	100	210	196			159.5	57					
	125	264	250			212.5						
	150	304	290			252.5						
	200	379	365			328.5						

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

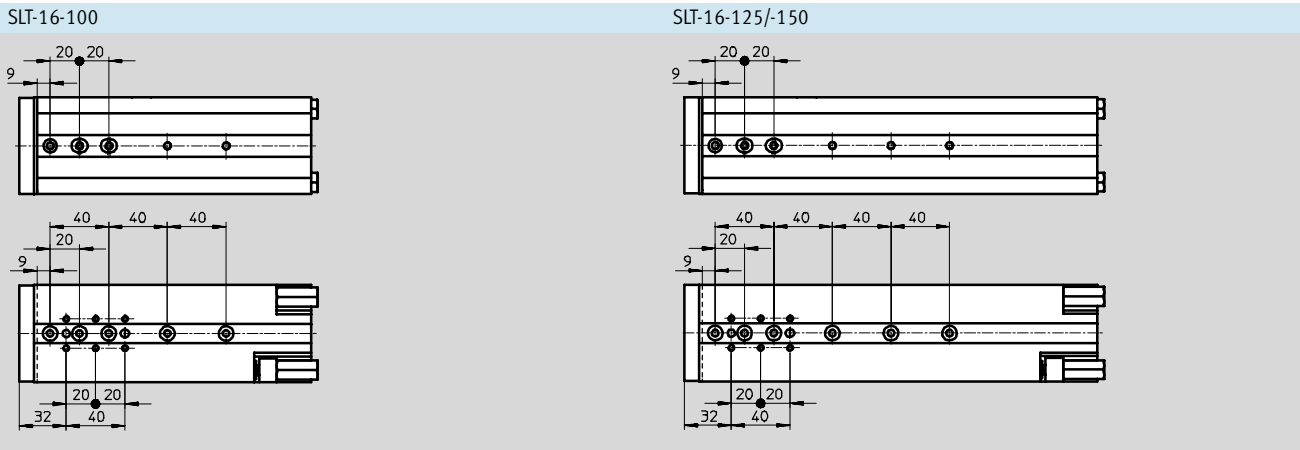
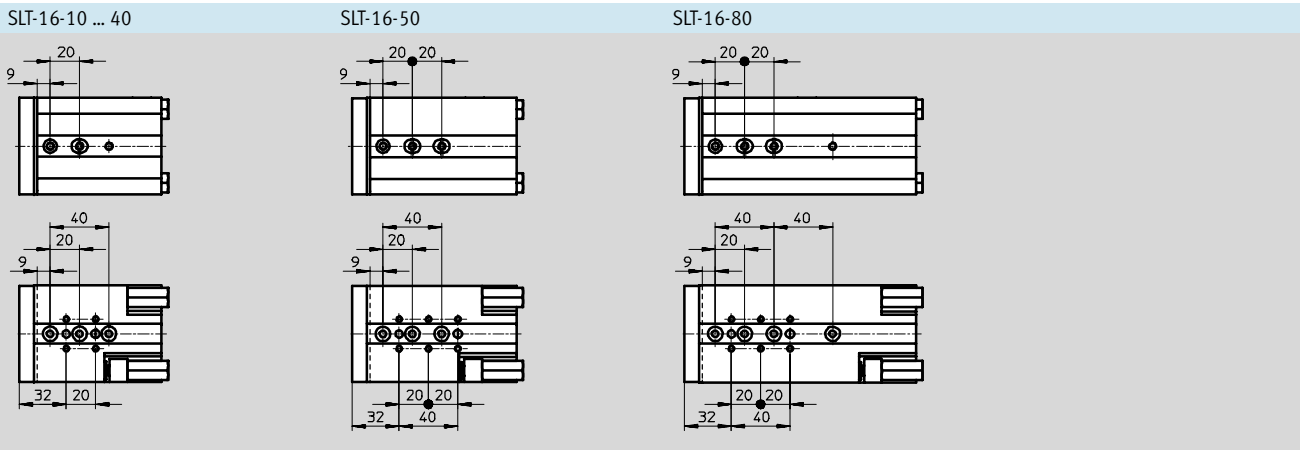
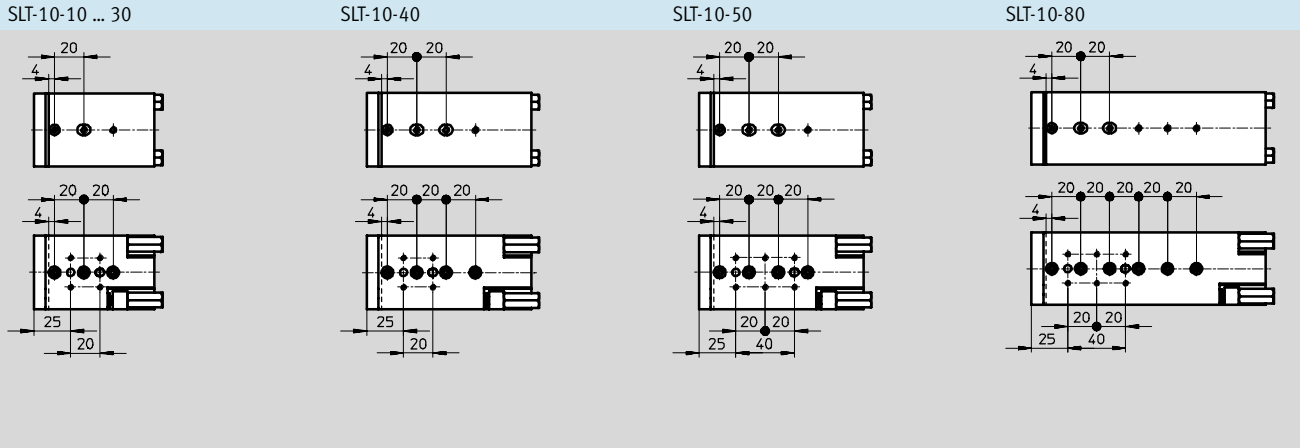
# Mini slide SLT

Technical data



Drives with linear guides  
Slides

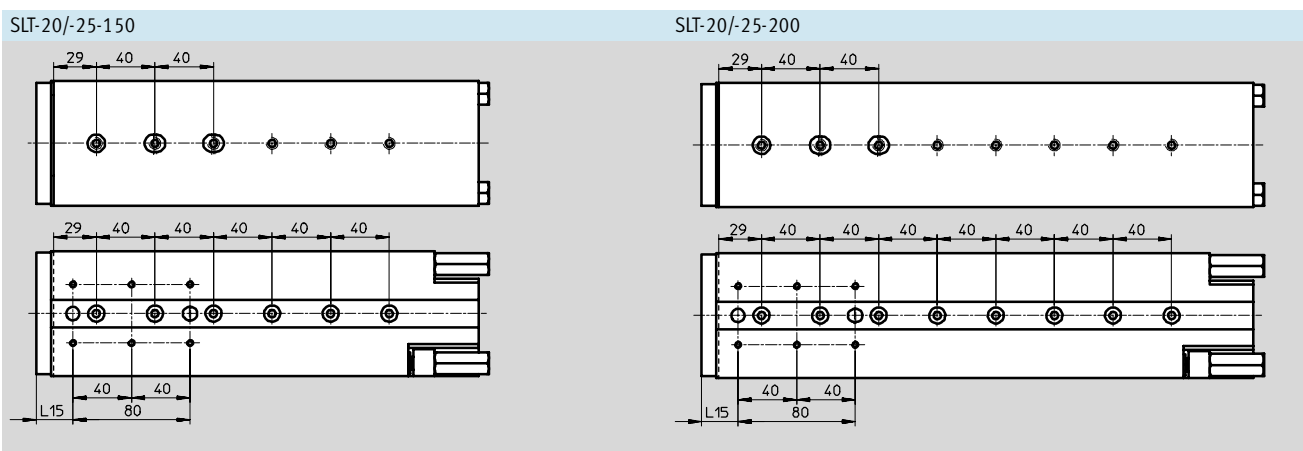
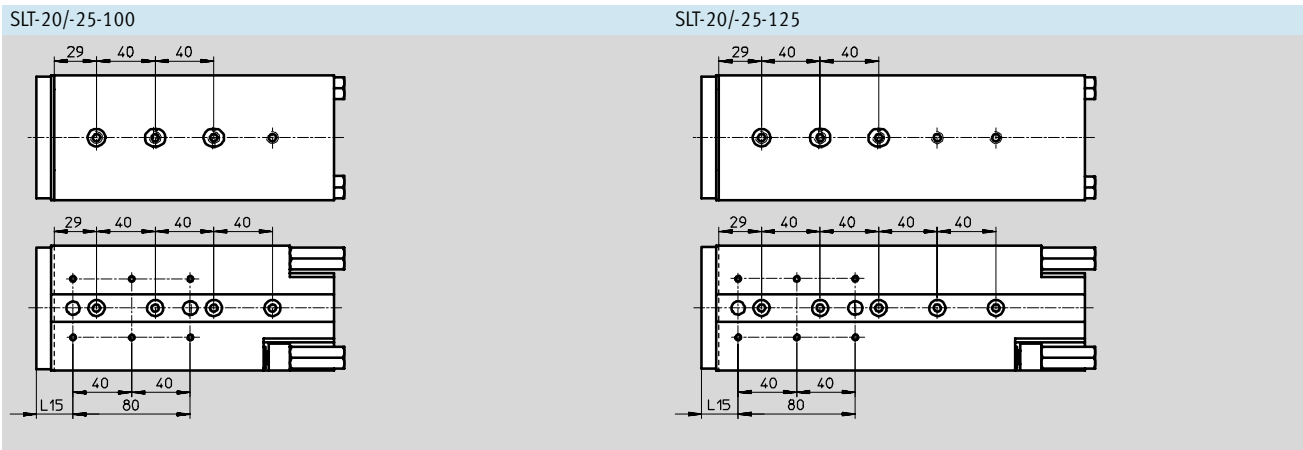
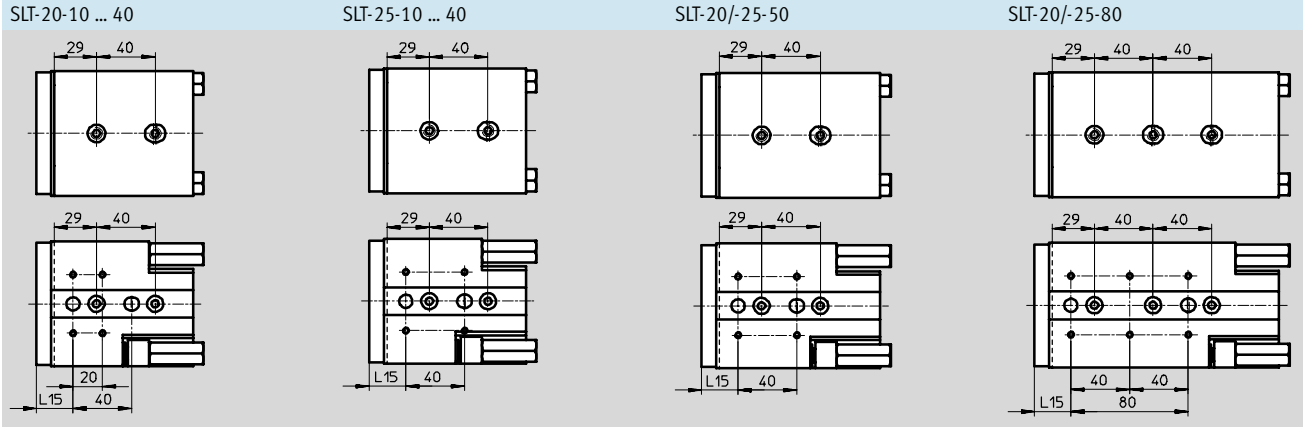
## Hole pattern for mounting thread and centring holes



# Mini slide SLT

Technical data

## Hole pattern for mounting thread and centring holes



# Mini slide SLT

Technical data

**FESTO**

Drives with linear guides  
Slides

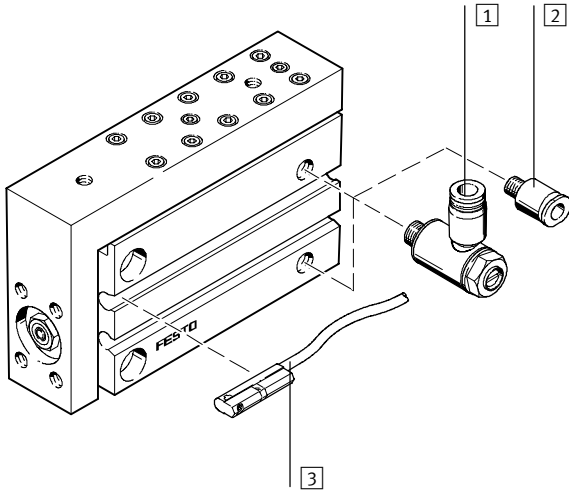
6.1

Ordering data					
Piston Ø [mm]	Stroke [mm]	SLT-...-P-A		SLT-...-A-CC-B	
		Part No.	Type	Part No.	Type
<b>6</b>					
	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	-	
<b>10</b>					
	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
<b>16</b>					
	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
<b>20</b>					
	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
<b>25</b>					
	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 slide 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 O.D. Volume 3
3	Proximity sensors SME-10	Sensor slots for one or more proximity sensors 1 / 6.1-39

## Type codes

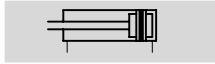
		SLS	-	16	-	10	-	P	-	A
<b>Type</b>										
Double-acting										
SLS	Mini slide									
<b>Piston Ø [mm]</b>										
<b>Stroke [mm]</b>										
<b>Cushioning</b>										
P	Flexible cushioning, non-adjustable									
<b>Position sensing</b>										
A	Via proximity sensor									

# Mini slide SLS

Technical data





## Function



[www.festo.com/en/Spare\\_parts\\_service](http://www.festo.com/en/Spare_parts_service)



-  - Diameter  
6 ... 16 mm

-  - Stroke length  
5 ... 30 mm

General technical data			
Piston $\varnothing$	6	10	16
Pneumatic connection	M5		
Design	Kinematic yolk system		
Guide	Via ball bearings		
Cushioning	Non-adjustable at either end		
Position sensing	Via proximity sensor		
Type of mounting	With through-holes Via female threads		
Mounting position	Any		
Max. advancing speed	[m/s]	0.5 <sup>1)</sup>	0.8
Max. retracting speed	[m/s]	0.5 <sup>1)</sup>	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 <sup>1)</sup>	[°C]	-20 ... +60	
Corrosion resistance class CRC <sup>2)</sup>	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 <sup>1)</sup>	Cushioning p <sup>2)</sup> 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.

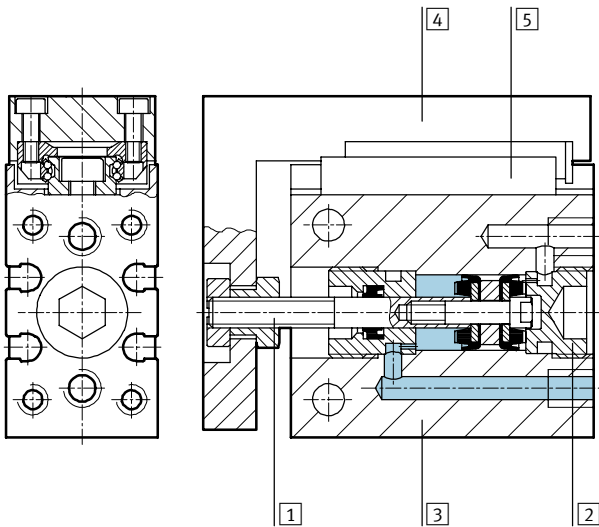
# Mini slide SLS

Technical data

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

## Materials

Sectional view



Mini slide		
1	Piston rod	High-alloy steel
2	Plug 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 material	Free of copper, PTFE and silicone

# Mini slide SLS

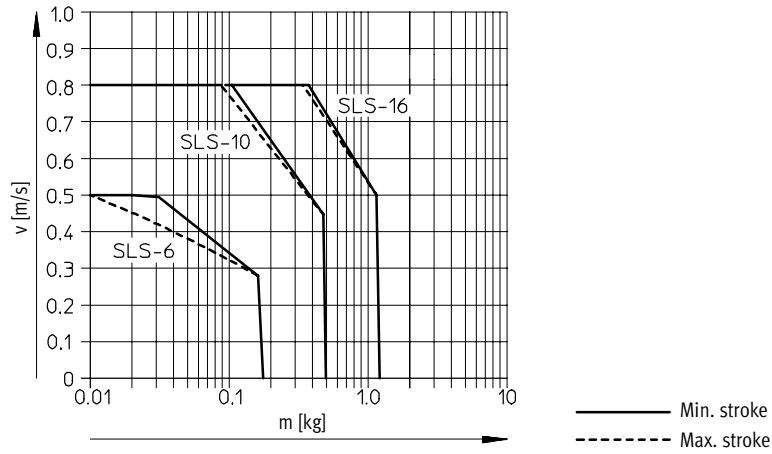
Technical data



## 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.

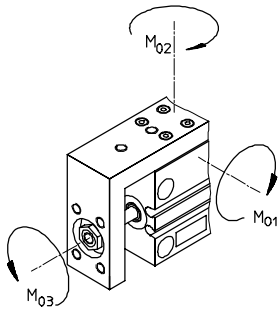


Drives with linear guides  
Slides

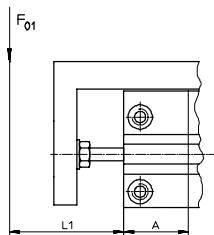
6.1

## Permissible loads

static/dynamic

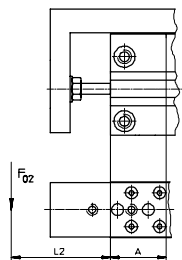


### Longitudinal torque



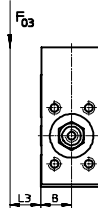
$$F_{01} \leq \frac{M_{01perm.}}{L_1 + A}$$

### Yawing torque



$$F_{02} \leq \frac{M_{02perm.}}{L_2 + A}$$

### Lateral torque

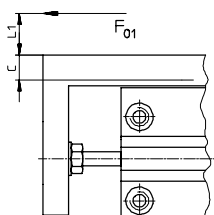


$$F_{03} \leq \frac{M_{03perm.}}{L_3 + B}$$

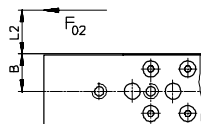
### Combined load

The following torque equation must be satisfied with combined load:

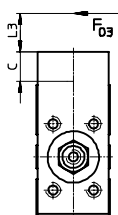
$$\frac{M_1}{M_{1perm.}} + \frac{M_2}{M_{2perm.}} + \frac{M_3}{M_{3perm.}} \leq 1$$



$$F_{01} \leq \frac{M_{01perm.}}{L_1 + C}$$



$$F_{02} \leq \frac{M_{02perm.}}{L_2 + B}$$



$$F_{03} \leq \frac{M_{03perm.}}{L_3 + C}$$



# Mini slide SLS

Technical data



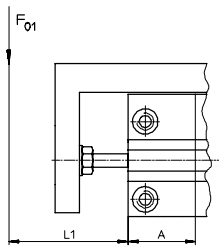
Permissible loads								Correction factors								
Piston Ø [mm]	Stroke [mm]	static			dynamic			A [mm]	B [mm]	C [mm]						
		M <sub>01</sub> [Nm]	M <sub>02</sub> [Nm]	M <sub>03</sub> [Nm]	M <sub>01</sub> [Nm]	M <sub>02</sub> [Nm]	M <sub>03</sub> [Nm]									
<b>6</b>																
	5	2	2	2.5	0.6	0.6	0.5	11.5	8	7.5						
	10															
	15							3			3	3.2	0.9	0.9	0.6	14
	20															
	25															
	30															
<b>10</b>																
	5	2	2	2.5	0.6	0.6	0.5	11.5	10	9						
	10															
	15	3.2	3.2	3.4	1.1	1.1	0.7	14								
	20															
	25															
	30															
<b>16</b>																
	5	6	6	7.5	2.1	2.1	1.6	16	12	9.5						
	10															
	15				1.7	1.7	1.3									
	20															
	25	10	10	10	2.5	2.5	1.4				21					
	30															

## Calculation example

Static load

Given:

To be found:



Mini slide = SLS-16  
 Stroke length = 30 mm  
 Lever arm  $L_1$  = 0.040 m  
 Torque  $M_{01perm.}$  = 10 Nm  
 Correction factor A = 21 mm  
 = 0.021 m

$$F_{01} \leq \frac{M_{01perm.}}{L_1 + A}$$

Calculation:

$$F_{01} \leq \frac{10 \text{ Nm}}{0.040 \text{ m} + 0.021 \text{ m}}$$

$$F_{01} \leq 163.93 \text{ N}$$

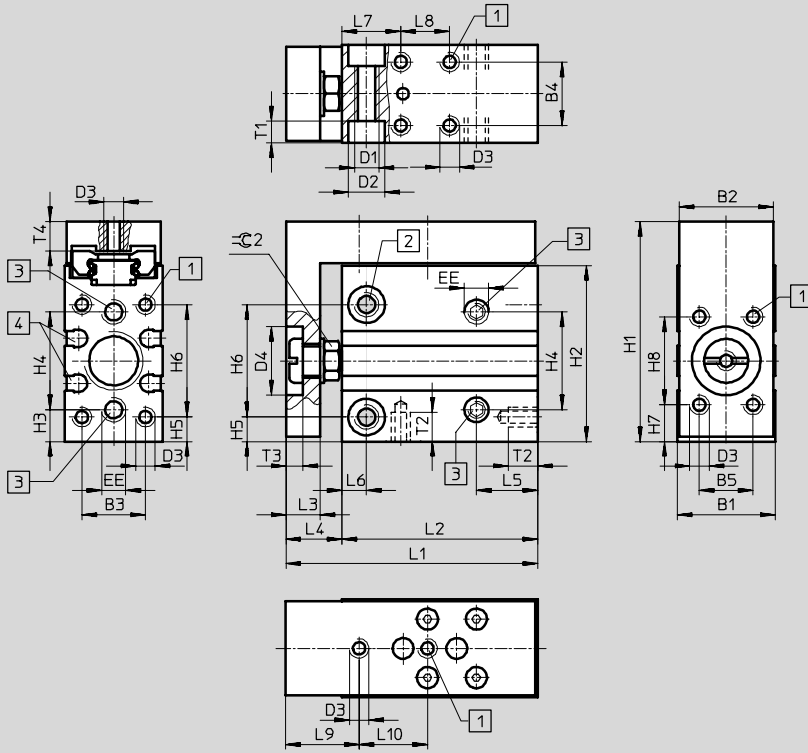
# Mini slide SLS

Technical data



## Dimensions

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



- 1 Mounting thread
- 2 Through and threaded holes for mounting the drive
- 3 Supply ports
- 4 Sensor slots for SME-/SMT-10 proximity sensors

∅	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 slide SLS

Technical data



∅	Stroke	H2	H3	H4	H5	H6	H7	H8	L1	L2	L3	L4
[mm]	[mm]											
6	5	31	6	17	5	19	7	15	46	37.5	6	8.5
	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
	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
	10								76	62		
	15								86	72		
	20								91	77		
	25											
	30											

∅	Stroke	L5	L6	L7	L8	L9	L10	T1	T2	T3	T4	±0.2
[mm]	[mm]											
6	5	10	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	12.5	5	12	10	15	14	4.4	6	3.5	6	8
	10				14		19					
	15				18		25					
	20				24		30					
	25				32		40					
	30				35		45					
16	5	12.5	5	12	20	18	24	4.4	6	5	6	13
	10				20		35					
	15				30		45					
	20				40		50					
	25				45							
	30				45		55					

# Mini slide SLS

Technical data

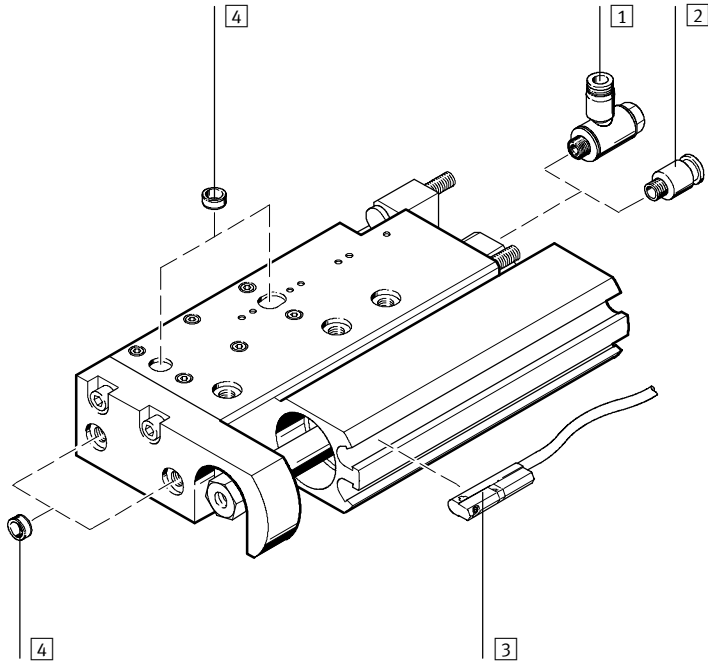
FESTO

Ordering data			
Piston $\varnothing$ [mm]	Stroke [mm]	Part No.	Type
<b>6</b>			
	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
<b>10</b>			
	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
<b>16</b>			
	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 slide SLF

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 O.D.	Volume 3
3	Proximity sensors SME-10	Sensor slots for one or more proximity sensors	1 / 6.1-39
4	Centring pin/sleeve ZBS/ZBH	For centring loads and attachment components	1 / 6.1-38

## Type codes

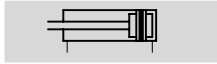
	SLF	-	16	-	20	-	P	-	A
<b>Type</b>									
Double-acting									
SLF	Mini slide								
<b>Piston Ø [mm]</b>									
<b>Stroke [mm]</b>									
<b>Cushioning</b>									
P	Flexible cushioning, non-adjustable								
<b>Position sensing</b>									
A	Via proximity sensor								

# Mini slide SLF

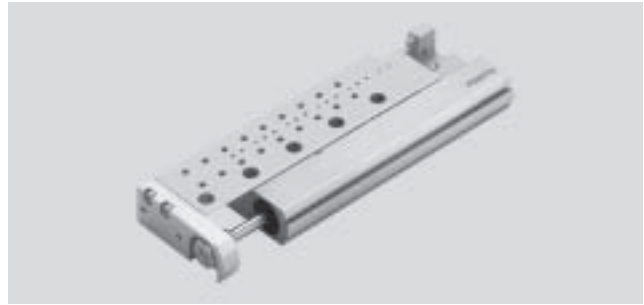
Technical data



FESTO

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 yolk system			
Guide	Via ball bearings			
Cushioning	Non-adjustable at either end			
Position sensing	Via proximity sensor			
Type of mounting	With through-holes With female thread			
Mounting position	Any			
Adjustable end position range	Per end stop	[mm]	5	
Max. advancing speed	[m/s]	0.5 <sup>1)</sup>	0.8	
Max. retracting speed	[m/s]	0.5 <sup>1)</sup>	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 <sup>1)</sup>	[°C]	-20 ... +60		
Corrosion resistance class CRC <sup>2)</sup>	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 <sup>1)</sup>	Cushioning p <sup>2)</sup>	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.

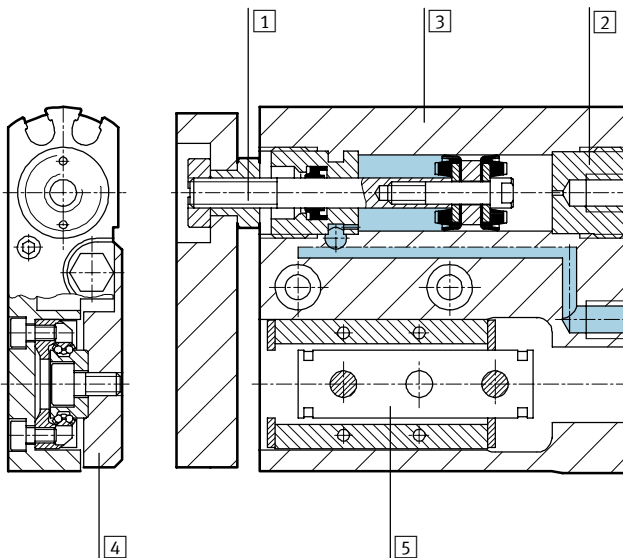
# Mini slide SLF

Technical data

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

## Materials

Sectional view



Mini slide		
1	Piston rod	High-alloy steel
2	Plug 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 material	Free of copper, PTFE and silicone

# Mini slide SLF

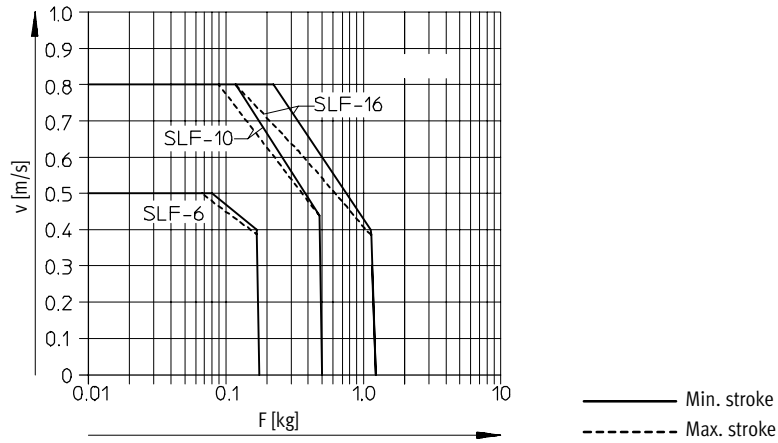
Technical data



## 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.

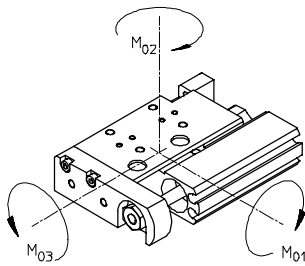


Drives with linear guides  
Slides

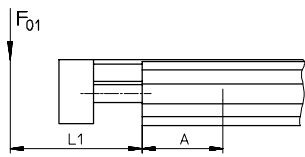
6.1

## Permissible loads

static/dynamic

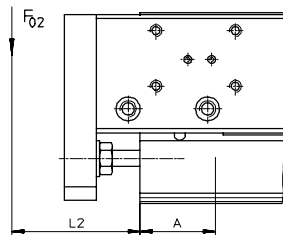


### Longitudinal torque



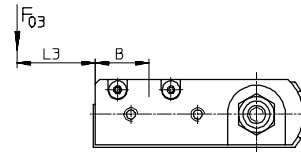
$$F_{01} \leq \frac{M_{01perm.}}{L_1 + A}$$

### Yawing torque



$$F_{02} \leq \frac{M_{02perm.}}{L_2 + A}$$

### Lateral torque

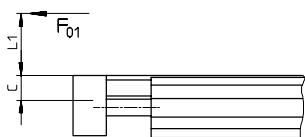


$$F_{03} \leq \frac{M_{03perm.}}{L_3 + B}$$

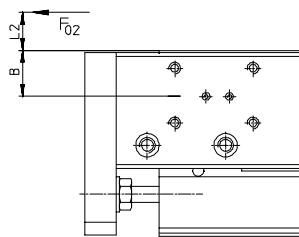
### Combined load

The following torque equation must be satisfied with combined load:

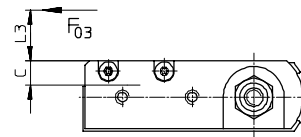
$$\frac{M_1}{M_{1perm.}} + \frac{M_2}{M_{2perm.}} + \frac{M_3}{M_{3perm.}} \leq 1$$



$$F_{01} \leq \frac{M_{01perm.}}{L_1 + C}$$



$$F_{02} \leq \frac{M_{02perm.}}{L_2 + B}$$



$$F_{03} \leq \frac{M_{03perm.}}{L_3 + C}$$



# Mini slide SLF

Technical data



Permissible loads								Correction factors		
Piston $\varnothing$ [mm]	Stroke [mm]	static			dynamic			A [mm]	B [mm]	C [mm]
		$M_{01}$ [Nm]	$M_{02}$ [Nm]	$M_{03}$ [Nm]	$M_{01}$ [Nm]	$M_{02}$ [Nm]	$M_{03}$ [Nm]			
<b>6</b>										
	10	2	2	2.5	0.6	0.6	0.5	16	13	6
	20	3.2	3.2	3.4	1.1	1.1	0.7	14.5		
	30									
<b>10</b>										
	10	2	2	2.5	0.6	0.6	0.5	14	12	8
	20	3.2	3.2	3.4	1.1	1.1	0.7	16.5		
	30							18		
	40	3	3	4	0.9	0.9	0.5	19		
	50	8	8	5	1.4	1.4		24		
<b>16</b>										
	10	6	6	7.5	2.1	2.1	1.6	16	14.5	11.5
	20				1.7	1.7	1.3	22		
	30	10	10	10	2.5	2.5	1.4	22.5		
	40				2.2	2.2	1.3			
	50	16	16	13	3.1	3.1	1.4	27		
	80	27	27	17	4.3	4.3	1.5	33		

## Calculation example

<p>Static load</p>	<p>Given:</p> <ul style="list-style-type: none"> <li>Mini slide = SLF-10</li> <li>Stroke length = 30 mm</li> <li>Lever arm <math>L_1</math> = 0.040 m</li> <li>Torque <math>M_{01perm.}</math> = 3.2 Nm</li> <li>Correction factor A = 18 mm = 0.018 m</li> </ul>	<p>To be found:</p> $F_{01} \leq \frac{M_{01perm.}}{L_1 + A}$ <p>Calculation:</p> $F_{01} \leq \frac{3.2 \text{ Nm}}{0.040 \text{ m} + 0.018 \text{ m}}$ $F_{01} \leq 55.17 \text{ N}$
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# Mini slide SLF

Technical data



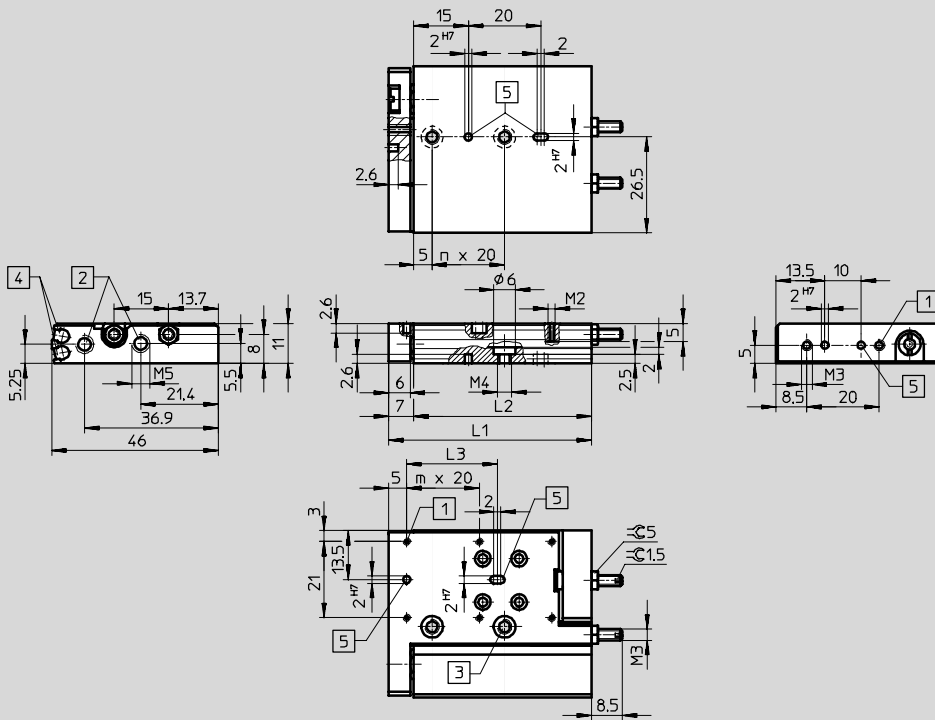
Drives with linear guides  
Slides

6.1

## Dimensions

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

Piston Ø6 mm



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

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

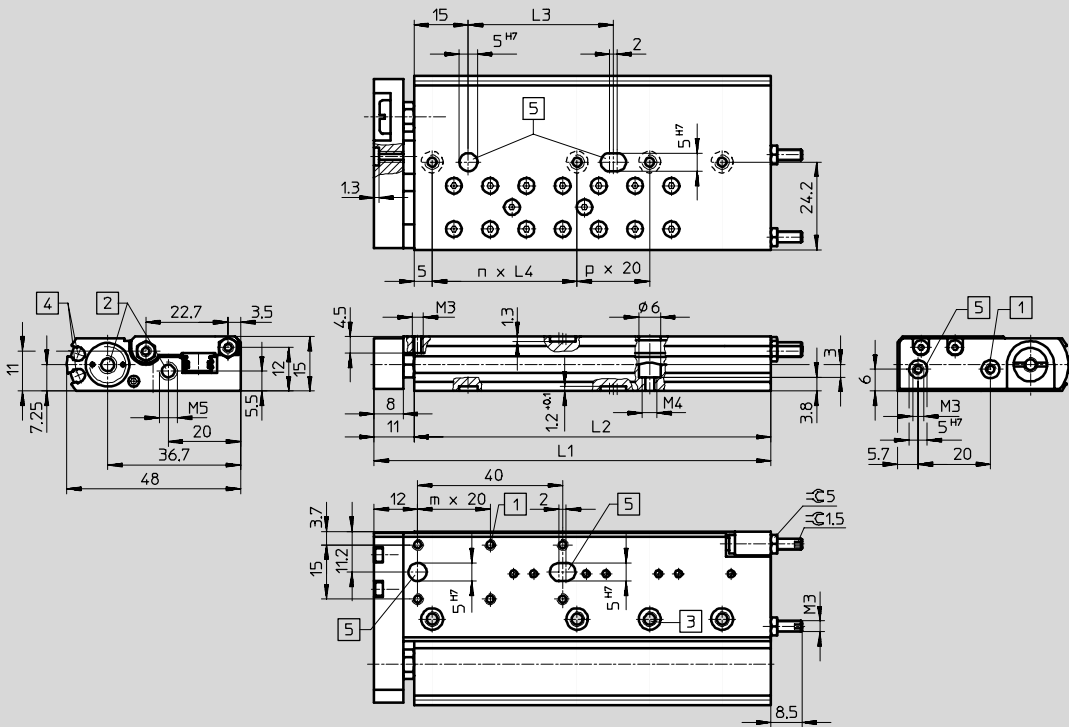
# Mini slide SLF

Technical data

**Dimensions**

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

Piston Ø10 mm



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

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	2	
	50	109.5	98.5			1	3	

# Mini slide SLF

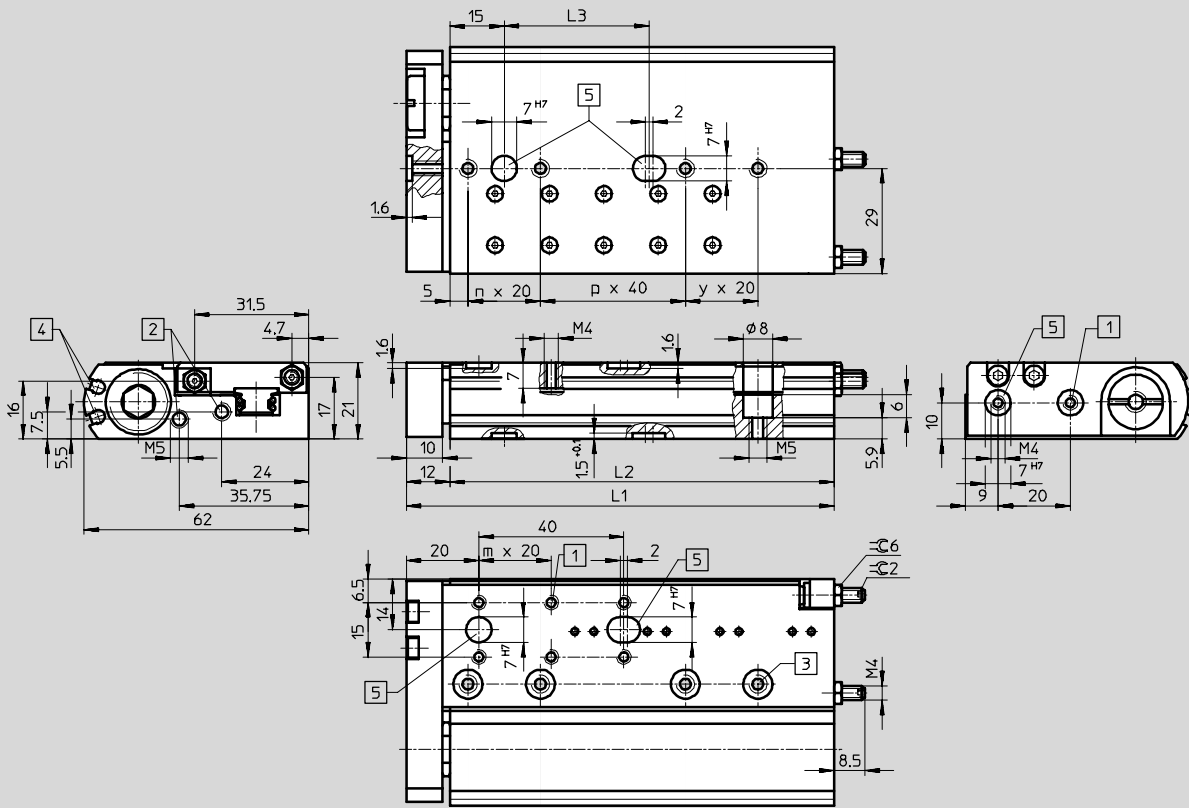
Technical data



## Dimensions

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

Piston Ø16 mm



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

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		3			
	40	98	86	40	2	1	1	
	50	118	106			1	2	
	80	160	148					

# Mini slide SLF

Technical data

**FESTO**

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

# Mini slides SLT/SLS/SLF

Accessories



Drives with linear guides  
Slides

## 6.1

Ordering data											
Piston Ø		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 <sup>1)</sup>										Technical data → 1 / 10.1-19	
	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 <sup>1)</sup>										Technical data → 1 / 10.1-19	
	Housing	525 273	ZBS-02	189 652	ZBH-5	186 717	ZBH-7	-	-	-	-
	Slide										
	Yoke										
Shock absorber for SLT...-A-CC-B										Technical data YSR → 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 <sup>2)</sup>											
	-	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) Metallic fixed stop for lighter loads at low speed.  
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



Ordering data – Proximity sensor for slot type 10, magneto-resistive							Technical data → 1 / 10.2-47		
	Mounting	Switch output	Electrical connection		Cable length [m]	Connection direction	Part No.	Type	
			Cable	M8 plug					
NO 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	
			–	3-pin	0.3	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 sensor for slot type 10, magnetic reed							Technical data → 1 / 10.2-50	
	Mounting	Electrical connection		Cable length [m]	Connection direction	Part No.	Type	
		Cable	M8 plug					
NO 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	–	0.3		526 672	SME-10F-ZS-24V-K2,5L-OE	
	Insertable from end	3-wire	–	0.3	In-line	173 212	SME-10-SL-LED-24	
		–	3-pin	2.5		173 210	SME-10-KL-LED-24	

Ordering data – Plug sockets						Technical data → 1 / 10.2-100	
	Mounting	Switch output		Connection	Cable length [m]	Part No.	Type
		PNP	NPN				
Straight socket							
	M8 union nut			3-pin	2.5	159 420	SIM-M8-3GD-2,5-PU
					5	159 421	SIM-M8-3GD-5-PU
Angled plug socket							
	M8 union nut			3-pin	2.5	159 422	SIM-M8-3WD-2,5-PU
					5	159 423	SIM-M8-3WD-5-PU

 Core Range

