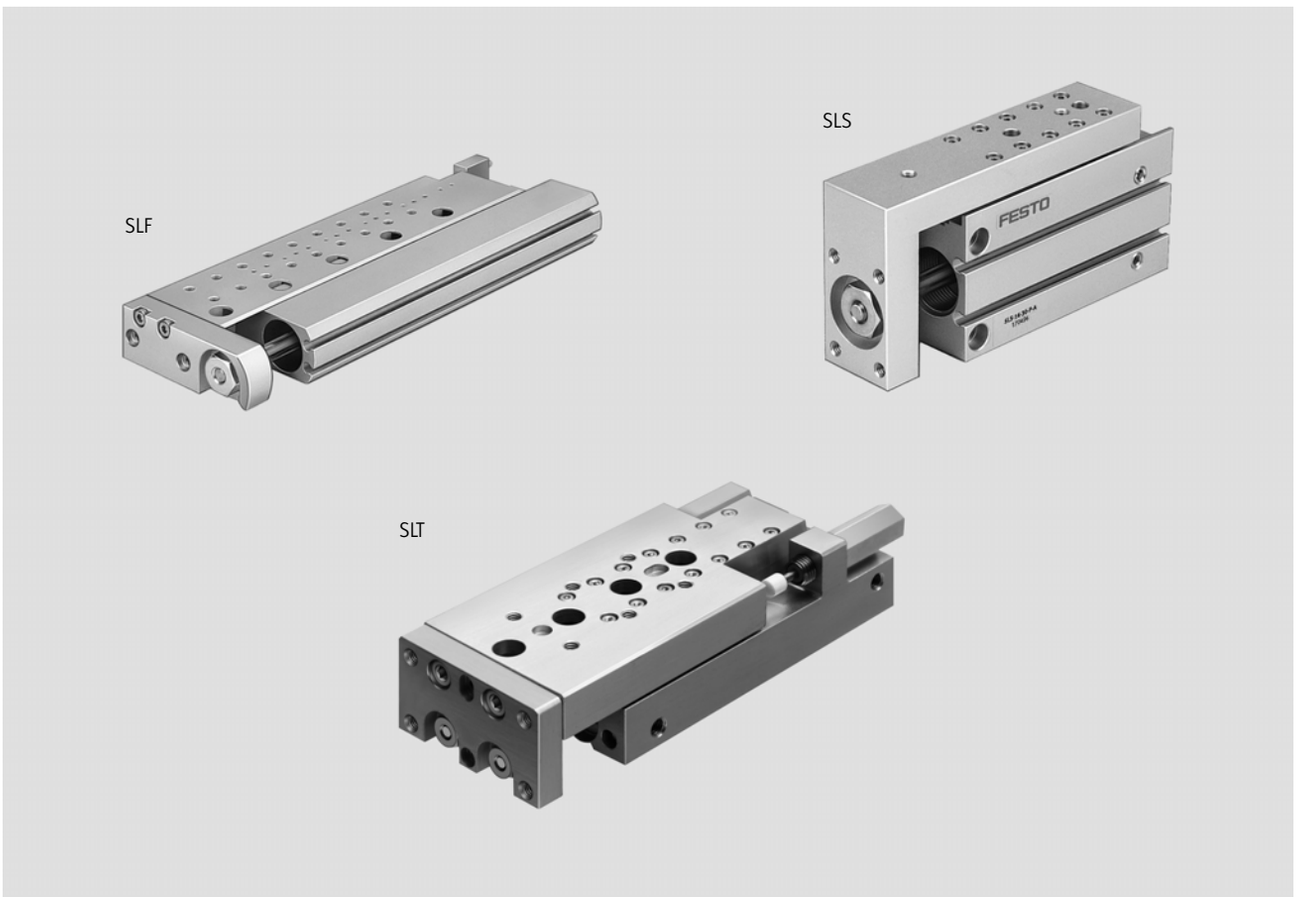
Mini slides SLT/SLS/SLF

FESTO

- 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

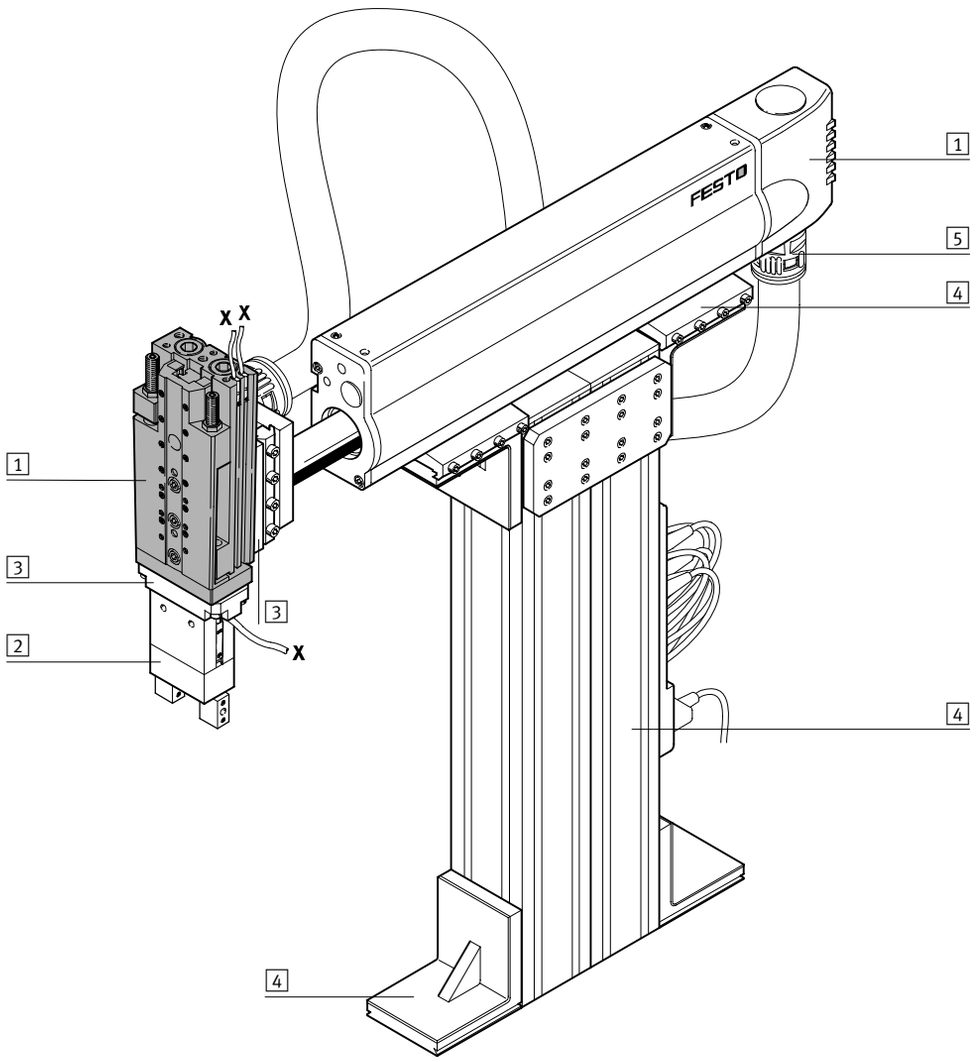
SLF

- 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 www.festo.com Volume 1
2	Gripper	Diverse variation options in handling and assembly technology	Volume 1 www.festo.com Volume 2
3	Adapter	For drive/drive and drive/gripper combinations	Volume 5 www.festo.com Volume 2
4	Basic mounting components	Profiles and profile connections as well as profile/drive connections	Volume 5 www.festo.com Volume 1
5	Installation components	For achieving a clear-cut, safe layout of electrical cables and tubing	Volume 5 www.festo.com Volume 1

–	Axes	Diverse possible combinations in handling and assembly technology	Volume 5 www.festo.com Volume 1
–	Motors	Servo and stepper motors, with or without gearing	Volume 5 www.festo.com Volume 1

Mini slides SLT/SLS/SLF

Features

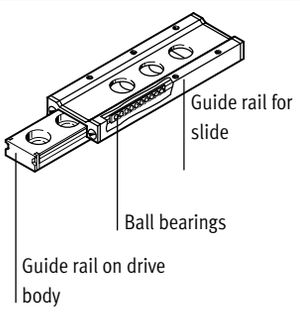
Drive

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

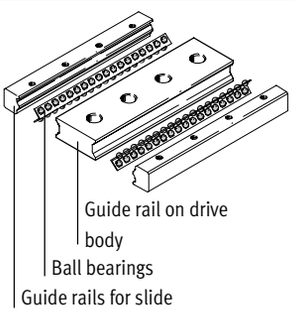
Guide

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

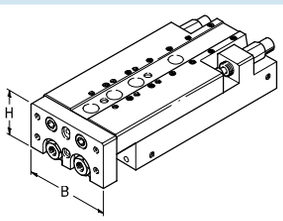


SLT-20/-25



The powerful mini slide

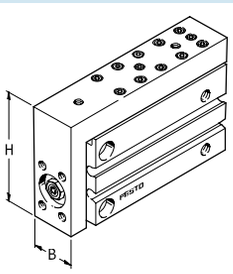
SLT



Piston ∅	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

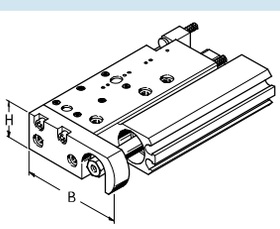
SLS



Piston ∅	**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 ∅	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

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).

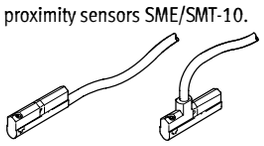
2 Mounting surface:
Direct attachment of devices and loads is made possible with threaded holes in the slide and the yoke plate (using appropriate screws and centring sleeves ZBS/ZBH) (e.g. SLT: rotary drives and grippers).

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

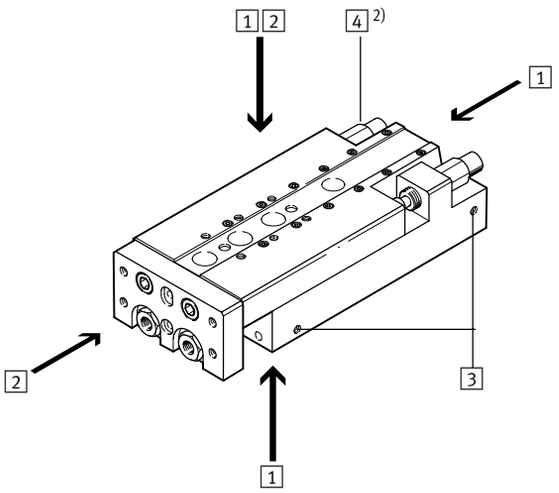
5 Sensors can be integrated
Sensor slots for one or more proximity sensors SME/SMT-10.



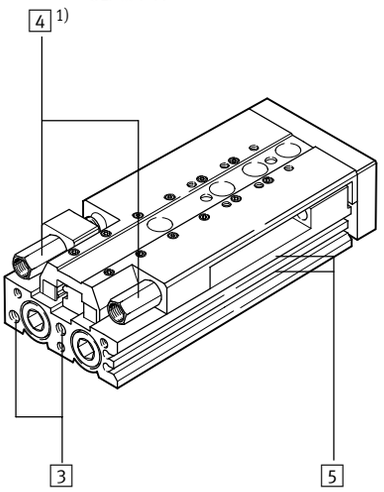
For space-saving, reliable sensing of piston positions. Proximity sensors can be freely moved and clamped in their slots.

SLT

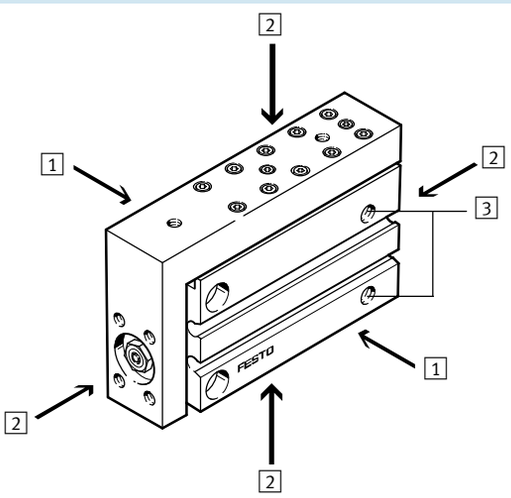
SLT-...-CC-B

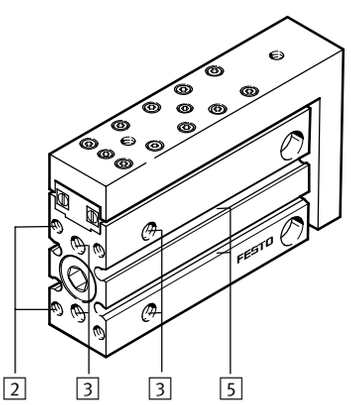


SLT-...-P-A

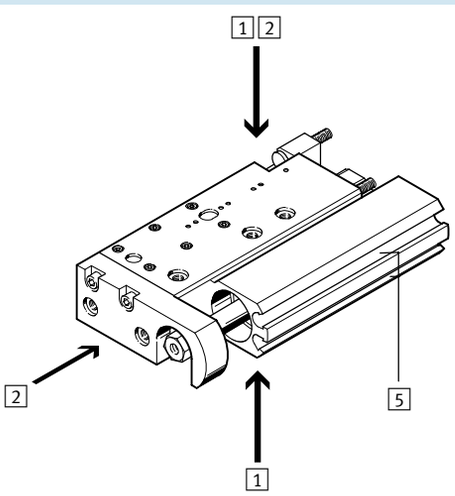


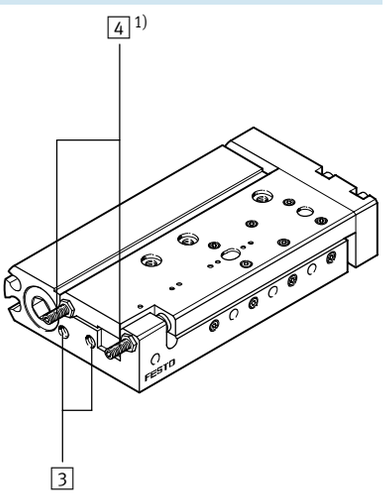
SLS





SLF

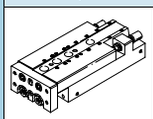
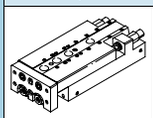
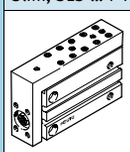
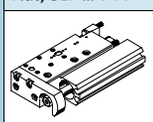




Mini slides SLT/SLS/SLF

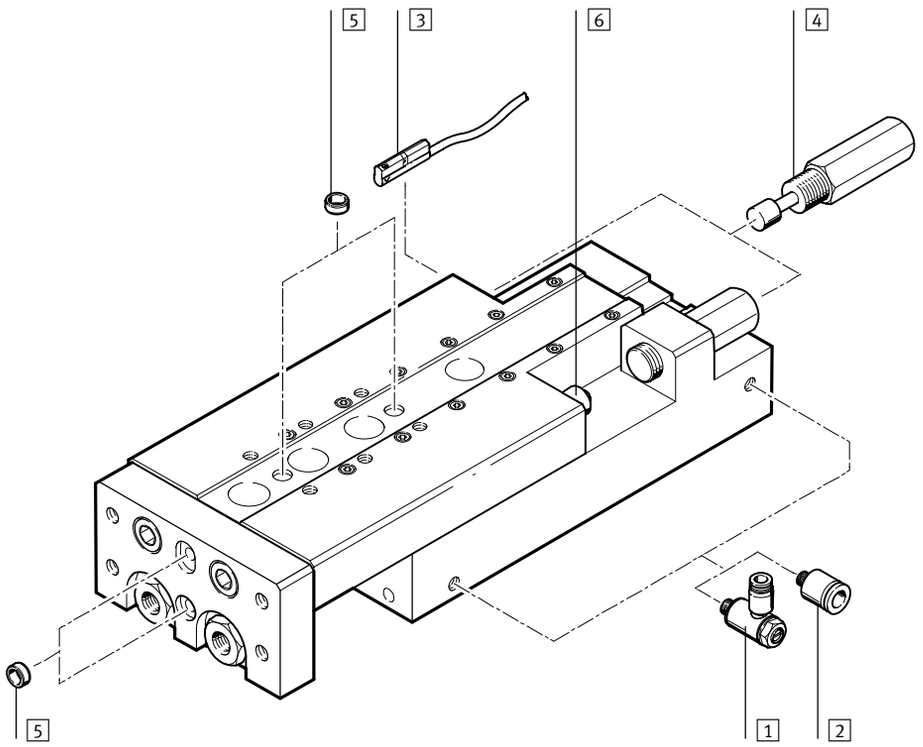
Product range overview

FESTO

Function	Design	Piston ∅ [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 / 6.1-8
	Powerful, SLT-...-A-CC-B						
		10, 16, 20, 25	30, 40, 50, 80, 100, 125, 150, 200,	–	■	■	1 / 6.1-8
	Slim, SLS-...-P-A						
		6, 10, 16	5, 10, 15, 20, 25, 30	■	–	■	1 / 6.1-22
	Flat, SLF-...-P-A						
		6, 10, 16	10, 20, 30, 40, 50, 80	■	–	■	1 / 6.1-31

Mini slide SLT

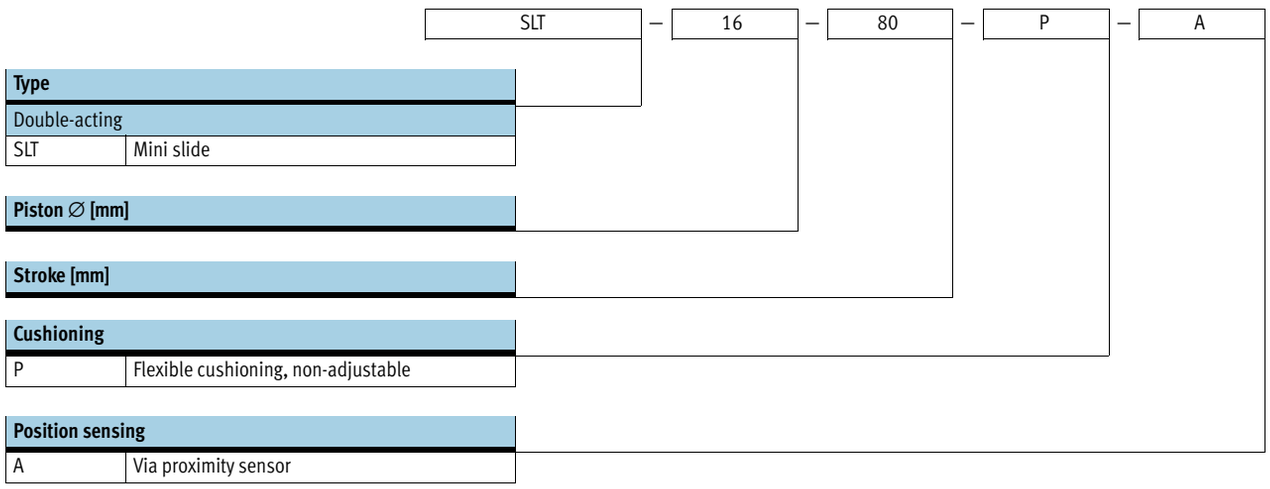
Peripherals overview

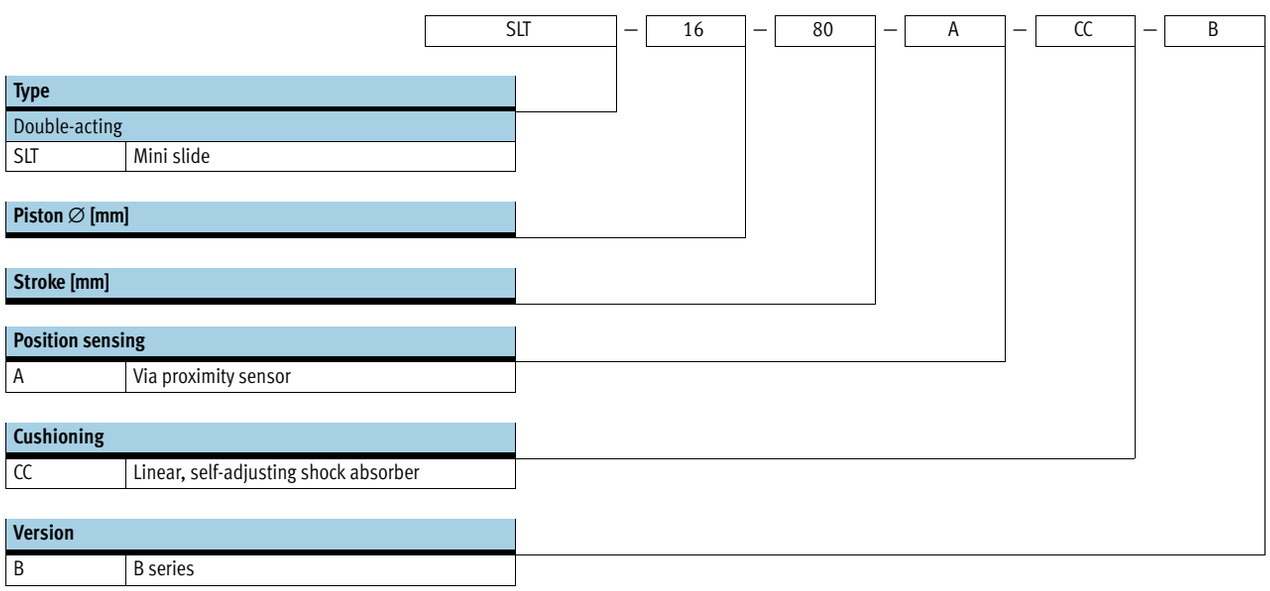


Accessories			
		Brief description	**➔ Page**
1	One-way flow control valve GRLA	For speed regulation	1 / 6.1-40
2	Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3 www.festo.com
3	Proximity sensor SME-10	Sensor slots for one or more proximity sensors	1 / 6.1-41
4	Shock absorber YSRT	Optional with shock absorber YSRT	1 / 6.1-40
5	Centring pin/sleeve ZBS/ZBH	For centring loads and attachment components	1 / 6.1-40
6	Stop PF	Precision metal stop for small loads at slow speed. At an operating pressure > 3 bar, the stop ensures precise, metallic contact. The stop can be retrofitted.	1 / 6.1-40

Mini slide SLT

Type codes



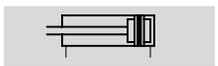


Mini slide SLT

Technical data

FESTO

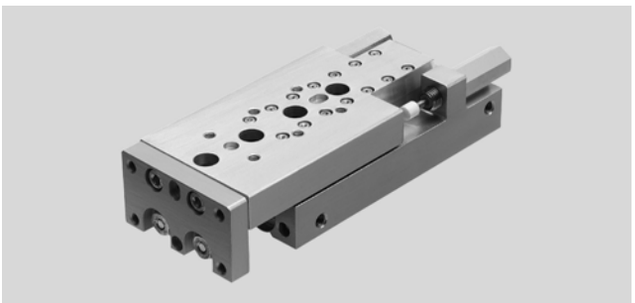
Function



Diameter
6 ... 25 mm

Stroke length
10 ... 200 mm

www.festo.com/en/
Spare_parts_service



General technical data							
Piston ∅			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[1]	0.8			
Max. retracting speed		[m/s]	0.5[1]	0.8			
Repetition accuracy[2]		[mm]	–	0.02			

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

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

1) Note operating range of proximity sensors
2) Corrosion resistance class 1 according to Festo standard 940 070
Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

Forces [N] and impact energy [Nm]							
Piston ∅			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[2]		–	1	2	3	10

1) Loads moved by the slides must be taken into consideration for the calculation of end-position cushioning energy.
2) Note also the graphs illustrating piston speed as a function of working load ➔ 1 / 6.1-12.

Mini slide SLT

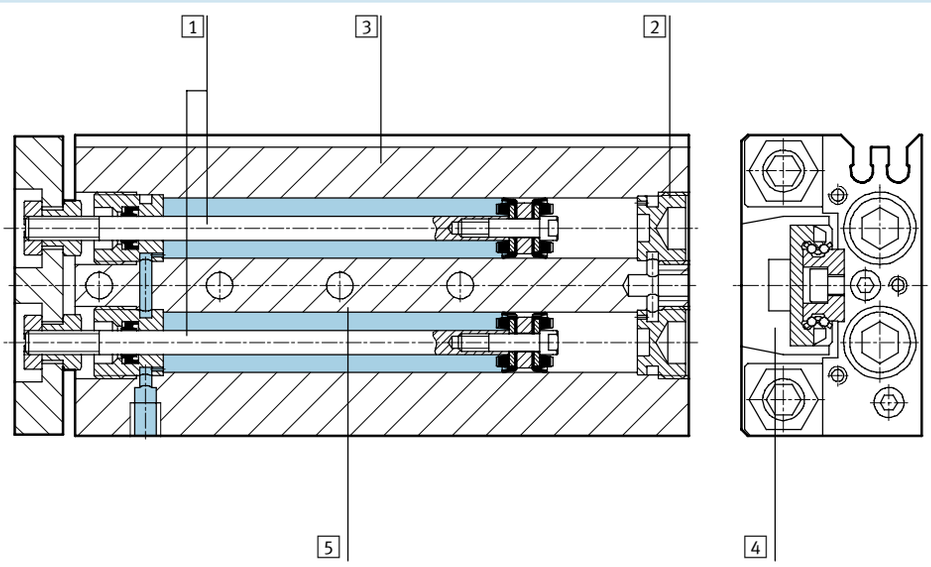
Technical data

FESTO

Weights [g]						
Piston ∅		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

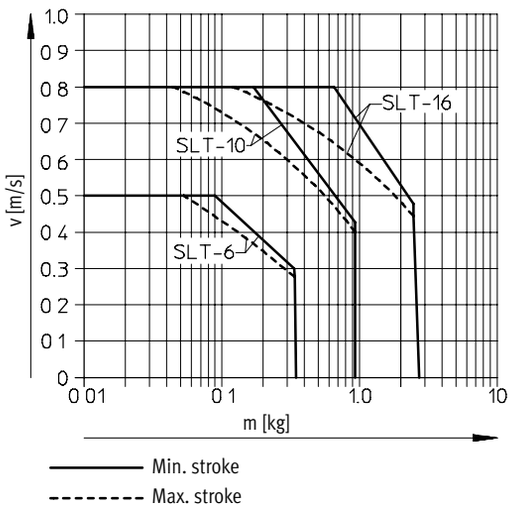
Technical data

FESTO

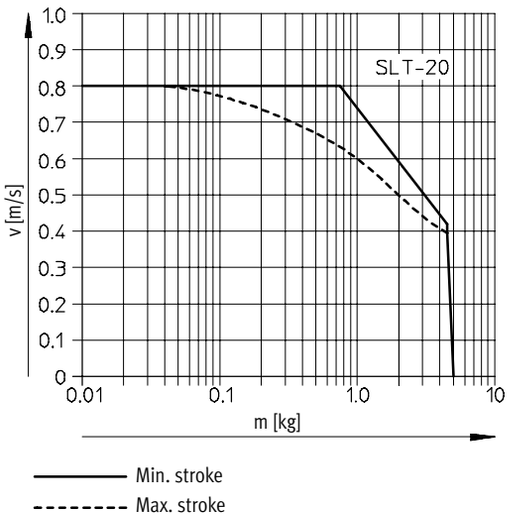
Piston speed v as a function of working load m

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

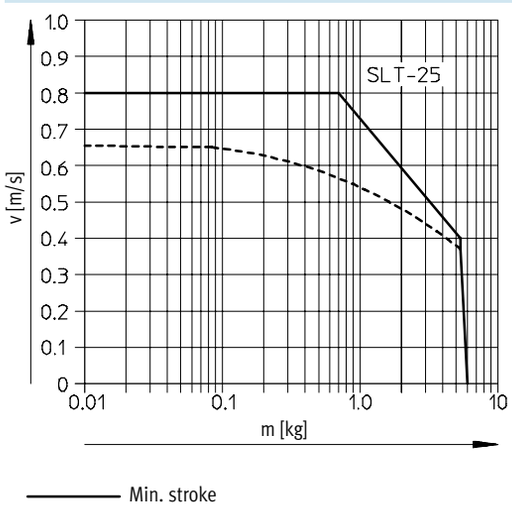
SLT-6/-10/-16-...-P-A



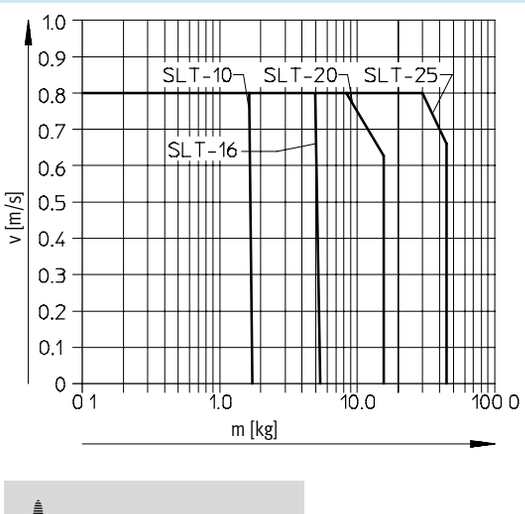
SLT-20-...-P-A



SLT-25-...-P-A



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



Note

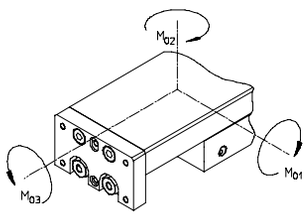
For the mini slide SLT with shock absorbers, the speed should not be less than 0.1 m/s, as otherwise the service life of the shock absorber will be reduced.

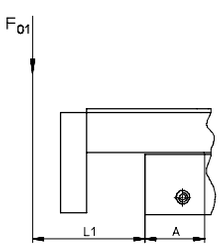
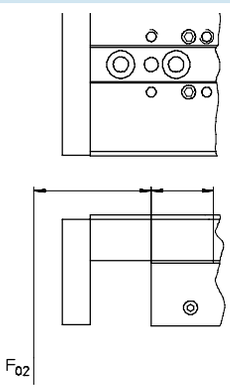
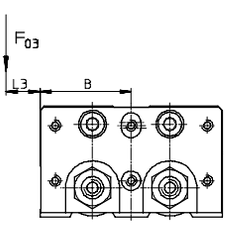
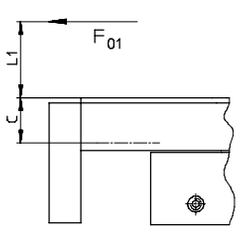
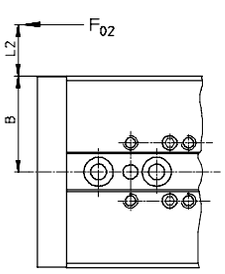
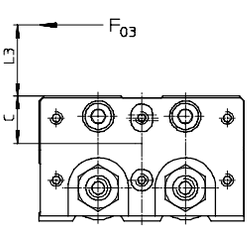
Mini slide SLT

Technical data

Permissible loads

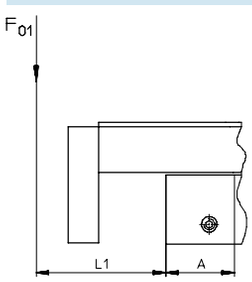
static/dynamic



Longitudinal torque	Yawing torque	Lateral torque	Combined load
 $F_{01} \leq \frac{M_{01perm.}}{L_1 + A}$	 $F_{02} \leq \frac{M_{02perm.}}{L_2 + A}$	 $F_{03} \leq \frac{M_{03perm.}}{L_3 + B}$	The following torque equation must be satisfied with combined load: $\frac{M_1}{M_{1perm.}} + \frac{M_2}{M_{2perm.}} + \frac{M_3}{M_{3perm.}} \leq 1$
 $F_{01} \leq \frac{M_{01perm.}}{L_1 + C}$	 $F_{02} \leq \frac{M_{02perm.}}{L_2 + B}$	 $F_{03} \leq \frac{M_{03perm.}}{L_3 + C}$	

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:

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

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

Mini slide SLT

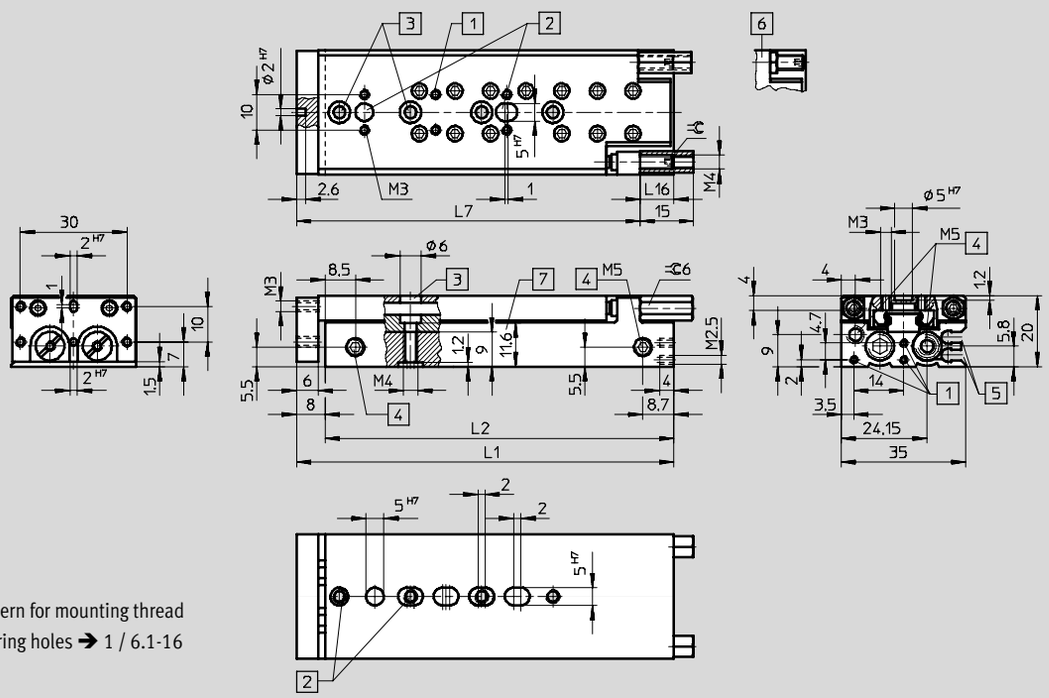
Technical data

FESTO

Permissible loads								Correction factors		
Piston ∅	Stroke	static			dynamic					
		M_{01}	M_{02}	M_{03}	M_{01}	M_{02}	M_{03}	A	B	C
[mm]	[mm]	[Nm]	[Nm]	[Nm]	[Nm]	[Nm]	[Nm]	[mm]	[mm]	[mm]
6										
	20	3	3	3	1.1	1.1	0.7	12.5	17.5	7.2
	30				0.7	0.7	0.5	13.5		
	40			4	0.9	0.9		16		
	50	8	8	5	1.4	1.4		21.2		
10										
	10	6	6	8	2.1	2.1	1.6	14.2	25	11.8
	20				1.7	1.7	1.4			
	30	10	10	10	2.5	2.5		19.2		
	40				2.2	2.2	1.3			
	50	16	16	13	3.1	3.1	1.4	24.2		
	80	27	27	17	4.3	4.3	1.5	31.7		
16										
	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									
20										
	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	11	34.5		
	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		
25										
	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		34.5		
	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		

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Piston ∅ 6 mm



Hole pattern for mounting thread and centring holes ➔ 1 / 6.1-16

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

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

1) with flexible end-position cushioning

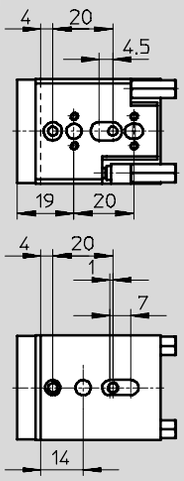
Mini slide SLT

Technical data

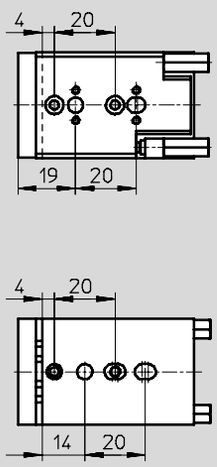
FESTO

Hole pattern for mounting thread and centring holes

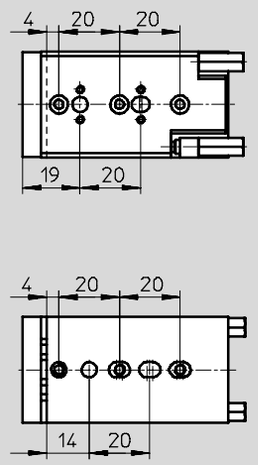
SLT-6-10



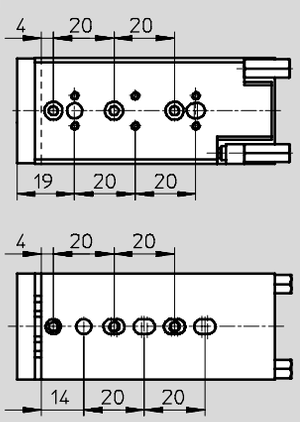
SLT-6-20



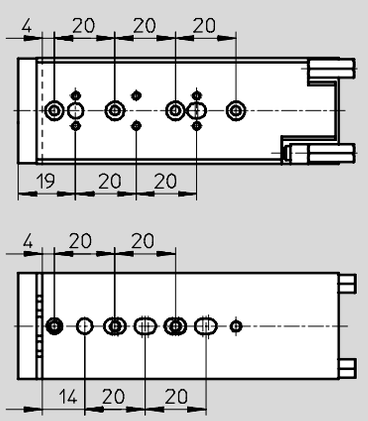
SLT-6-30



SLT-6-40



SLT-6-50

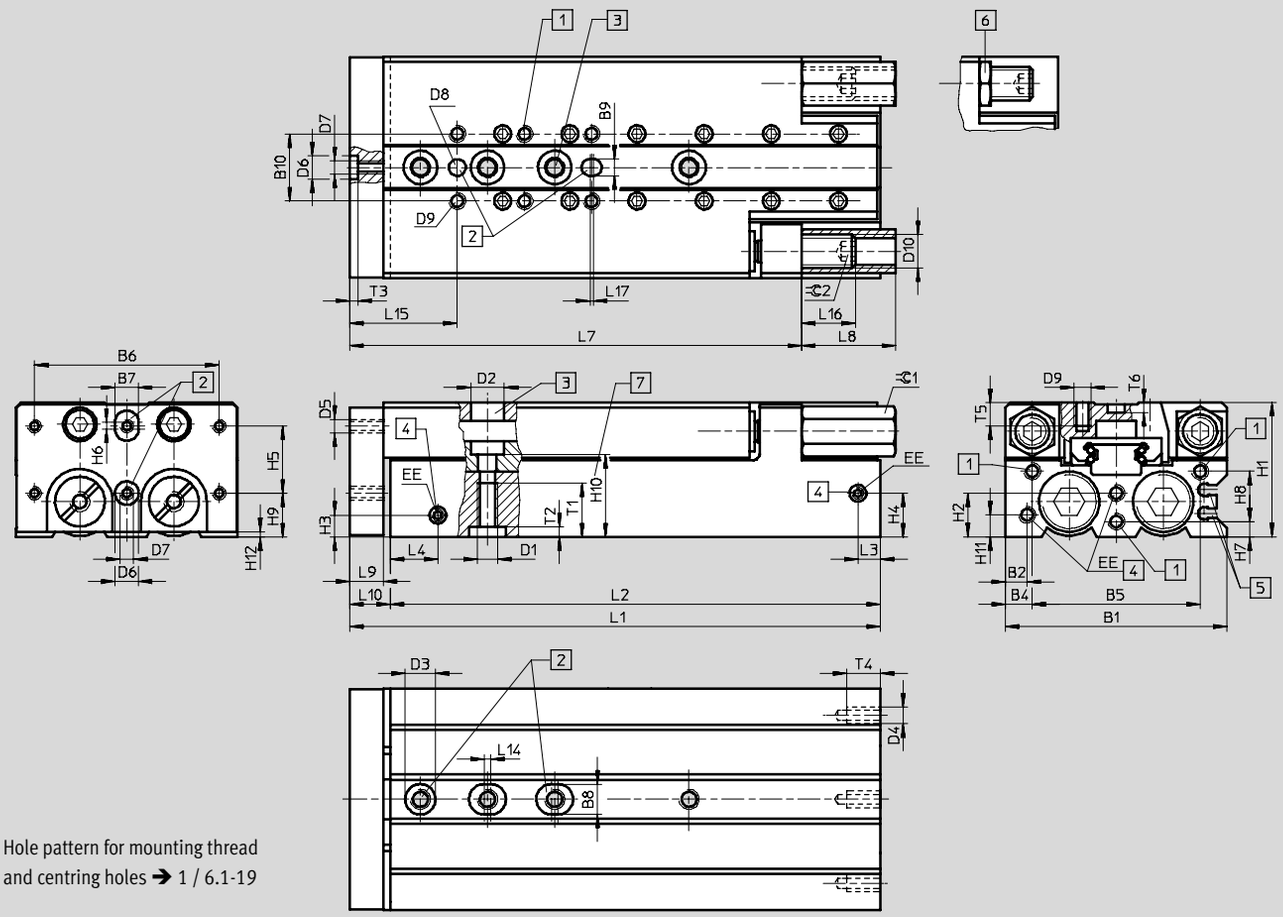


Mini slide SLT

Technical data

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Piston ∅ 10-...-25 mm



Hole pattern for mounting thread and centring holes ➔ 1 / 6.1-19

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

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

∅ [mm]	D8 ∅ H7	D9	D10	EE	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12
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	G⅛	49	19.5	9	19.7			6	19	16	30.5	9	2.5
25	12	M6	M16x1	G⅛	60	21	10	21	40		5	25	10	34.5	10	1.5

Mini slide SLT

Technical data

FESTO

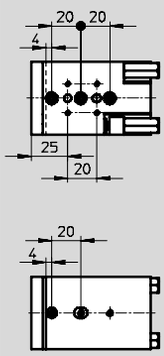
Ø [mm]	Stroke [mm]	L1	L2	L3	L4	L7	L8	L9	L10	L14 min.	L15
10	10	72	62	7	11.7	62.5	15	8	10	2	25
	20	72									
	30	82	72			72.5					
	40	92	82				25				
	50	112	102			92.5					
	80	162	152			140.5					
16	10	80	68	6.7	14.2	63.5	22	10	12	2	32
	20										
	30	87	75			70.5					
	40	97	85			80.5					
	50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

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

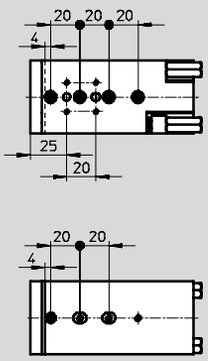
1) with hydraulic shock absorbers
2) with flexible cushioning

Hole pattern for mounting thread and centring holes

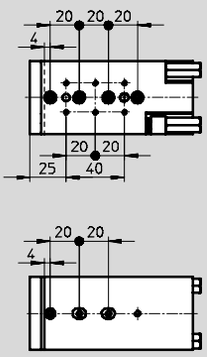
SLT-10-10 ... 30



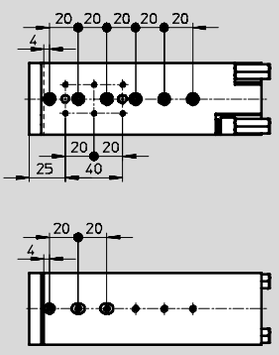
SLT-10-40



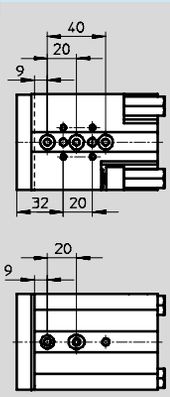
SLT-10-50



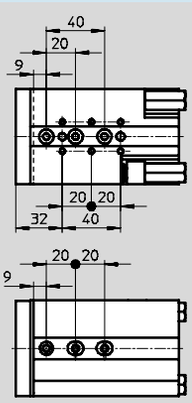
SLT-10-80



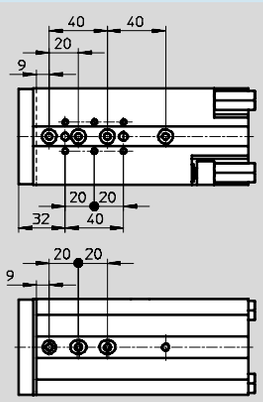
SLT-16-10 ... 40



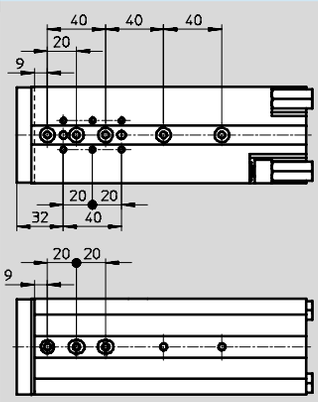
SLT-16-50



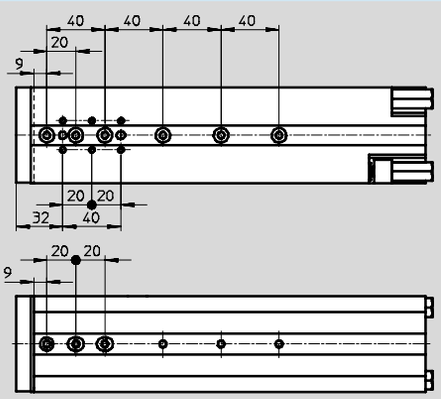
SLT-16-80



SLT-16-100



SLT-16-125/-150



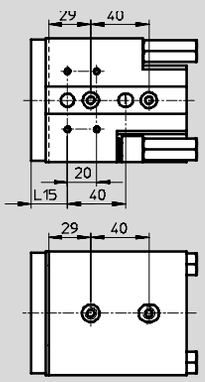
Mini slide SLT

Technical data

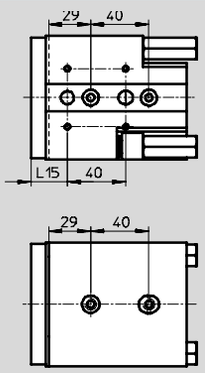
FESTO

Hole pattern for mounting thread and centring holes

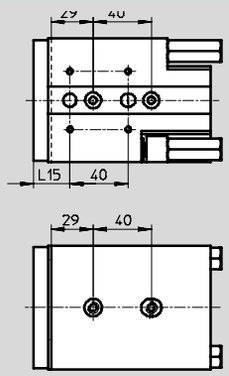
SLT-20-10 ... 40



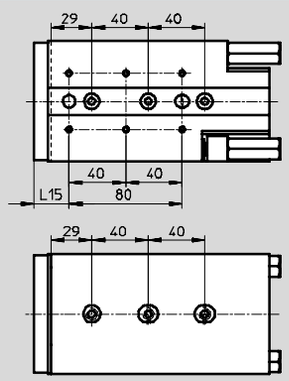
SLT-25-10 ... 40



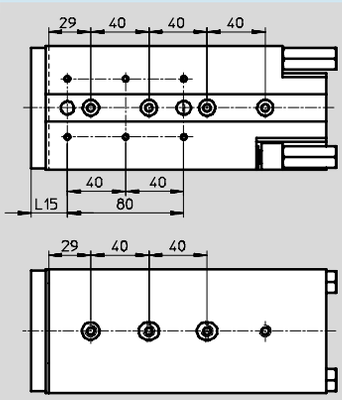
SLT-20/-25-50



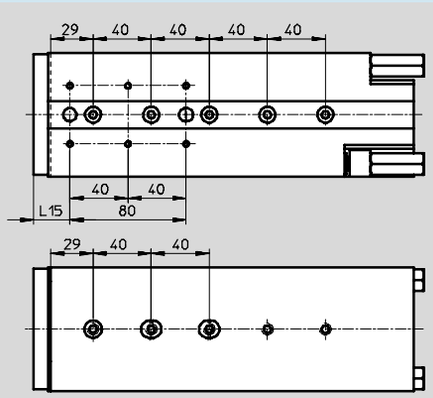
SLT-20/-25-80



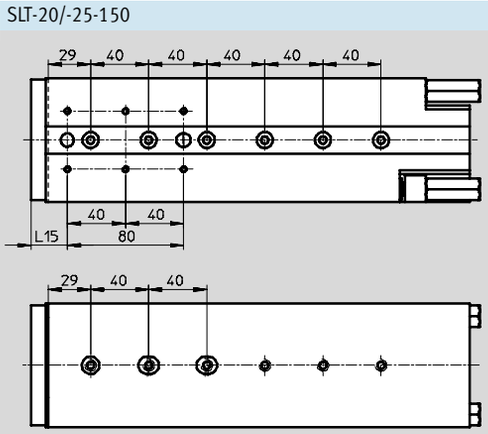
SLT-20/-25-100



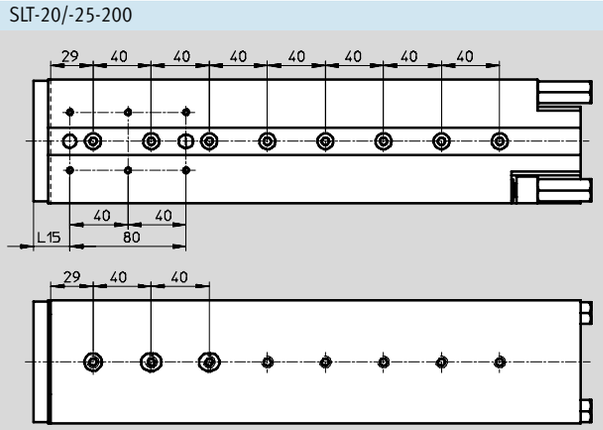
SLT-20/-25-125



SLT-20/-25-150



SLT-20/-25-200



Mini slide SLT

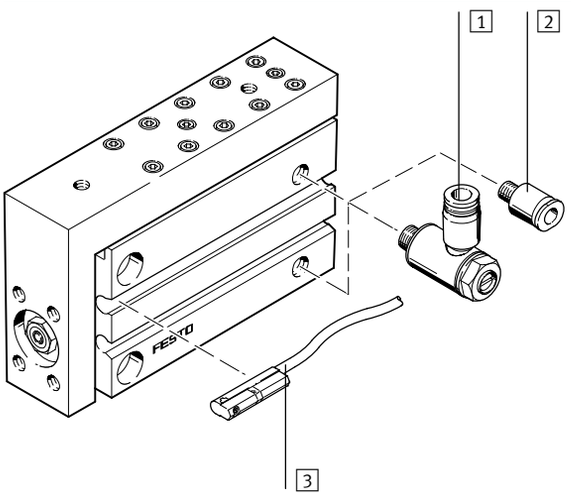
Technical data

Ordering data					
Piston ∅ [mm]	Stroke [mm]	SLT-...-P-A Part No.	Type	SLT-...-A-CC-B 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 slide SLS

Peripherals overview and type codes

Peripherals overview



Accessories			
		Brief description	**➔ Page**
1	One-way flow control valve GRLA	For speed regulation	1 / 6.1-40
2	Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3 www.festo.com
3	Proximity sensors SME-10	Sensor slots for one or more proximity sensors	1 / 6.1-41

Type codes

SLS – 16 – 10 – P – A

Type	
Double-acting	
SLS	Mini slide

Piston ∅ [mm]

Stroke [mm]

Cushioning	
P	Flexible cushioning, non-adjustable

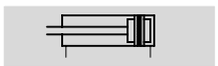
Position sensing	
A	Via proximity sensor

Mini slide SLS

Technical data

FESTO

Function



- Ø - Diameter
  6 ... 16 mm

- I - Stroke length
  5 ... 30 mm

www.festo.com/en/
Spare_parts_service

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		
		Via female threads		
Mounting 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 Cushioning P[2)] at the end positions[1)]	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 / 6.1-26.

Mini slide SLS

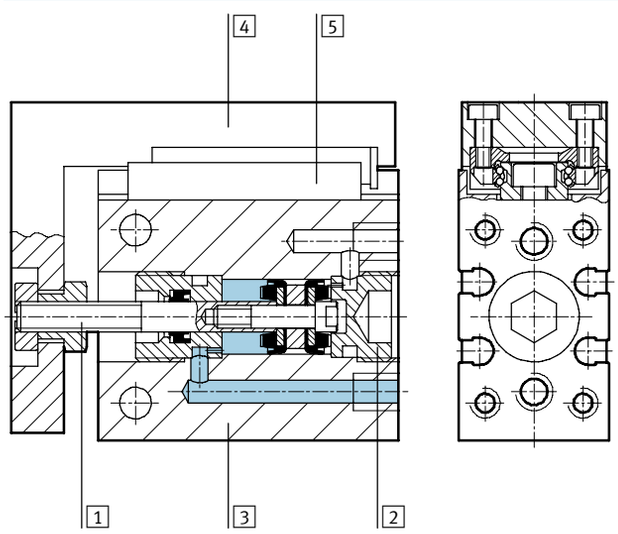
Technical data

FESTO

Weights [g]				
Piston ∅		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

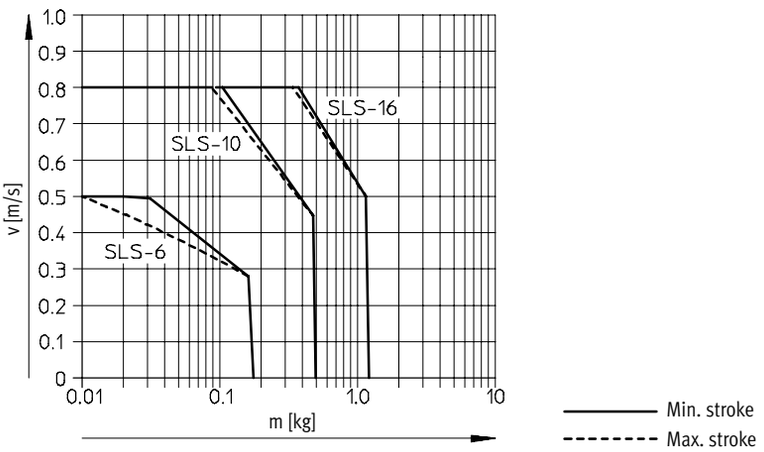
Technical data

FESTO

Piston speed v as a function of working load m

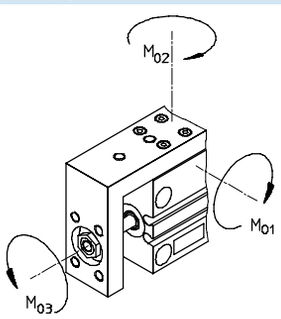
SLS-6/-10/-16-...-P-A

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

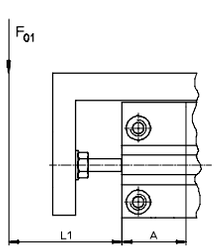


Permissible loads

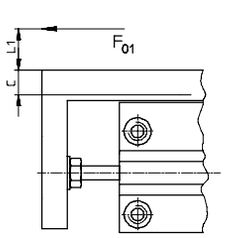
static/dynamic



Longitudinal torque

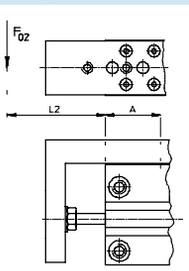


$$F_{01} \leq \frac{M_{01perm.}}{L_1 + A}$$

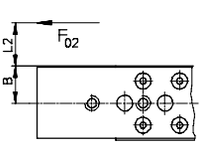


$$F_{01} \leq \frac{M_{01perm.}}{L_1 + C}$$

Yawing torque

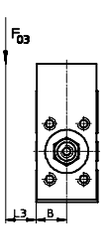


$$F_{02} \leq \frac{M_{02perm.}}{L_2 + A}$$

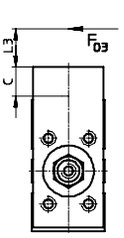


$$F_{02} \leq \frac{M_{02perm.}}{L_2 + B}$$

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:

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

Mini slide SLS

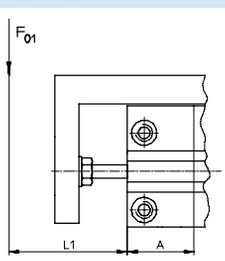
Technical data

FESTO

Permissible loads								Correction factors		
Piston ∅	Stroke	static			dynamic					
		M_{01}	M_{02}	M_{03}	M_{01}	M_{02}	M_{03}	A	B	C
[mm]	[mm]	[Nm]	[Nm]	[Nm]	[Nm]	[Nm]	[Nm]	[mm]	[mm]	[mm]
6										
	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									
10										
	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									
16										
	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:

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

To be found:

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

Calculation:

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

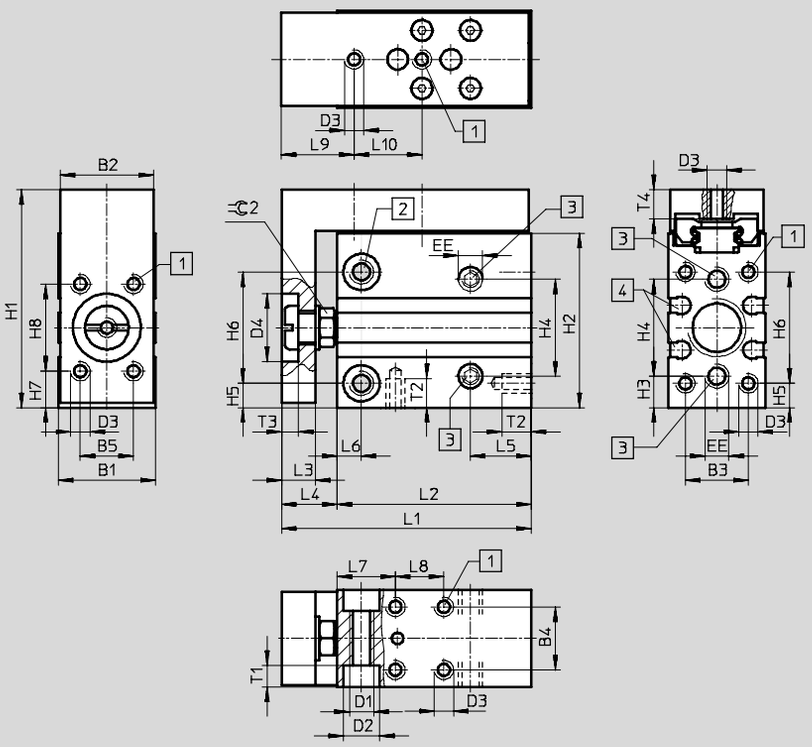
$$F_{01} \leq 163.93\ N$$

Mini slide SLS

Technical data

FESTO

Dimensions Download CAD data ➔ **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

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

Mini slide SLS

Technical data

∅ [mm]	Stroke [mm]	H2	H3	H4	H5	H6	H7	H8	L1	L2	L3	L4
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											
	15								76	62		
	20											
	25								86	72		
	30								91	77		

∅ [mm]	Stroke [mm]	L5	L6	L7	L8	L9	L10	T1	T2	T3	T4	⇄ 2
6	5	10	4	10	10	13	20	3.3	4.8	3	5	7
	10				15							
	15				20		25					
	20				25		30					
	25				30		40					
	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						50					
	25				40							
	30				45		55					

Mini slide SLS

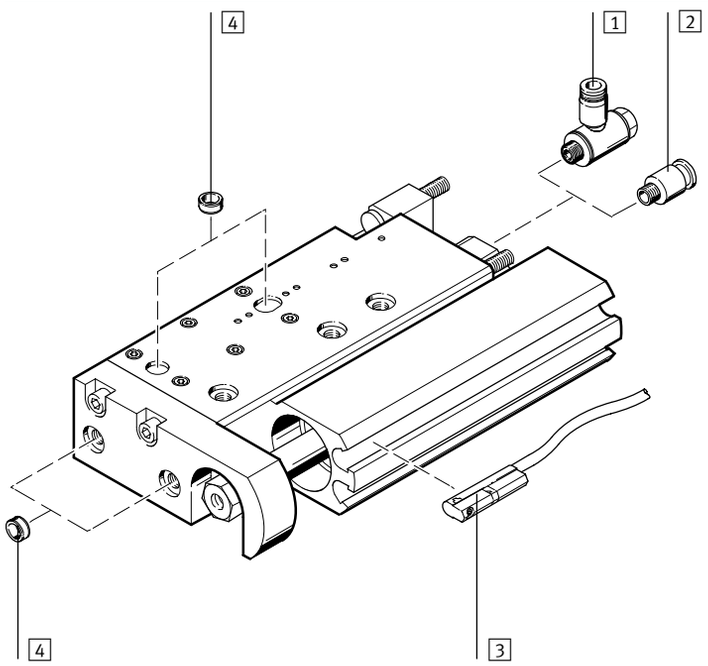
Technical data

Ordering data			
Piston ∅ [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 slide SLF

Peripherals overview and type codes

Peripherals overview



Accessories			
		Brief description	**➔ Page**
1	One-way flow control valve GRLA	For speed regulation	1 / 6.1-40
2	Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3 www.festo.com
3	Proximity sensors SME-10	Sensor slots for one or more proximity sensors	1 / 6.1-41
4	Centring pin/sleeve ZBS/ZBH	For centring loads and attachment components	1 / 6.1-40

Type codes

SLF	–	16	–	20	–	P	–	A

Type	
Double-acting	
SLF	Mini slide

Piston ∅ [mm]

Stroke [mm]

Cushioning	
P	Flexible cushioning, non-adjustable

Position sensing	
A	Via proximity sensor

Mini slide SLF

Technical data

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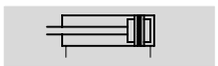
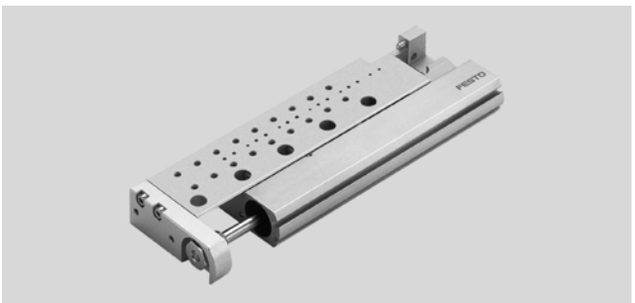
Function



Diameter
6 ... 16 mm

Stroke length
10 ... 80 mm

www.festo.com/en/
Spare_parts_service



General technical data				
Piston ∅			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[1)]	0.8	
Max. retracting speed		[m/s]	0.5[1)]	0.8	

1) Must be throttled externally.

Operating and environmental conditions				
Piston ∅		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 ∅		6	10	16
Theoretical force at 6 bar, advancing		17	47	121
Theoretical force at 6 bar, retracting		13	40	104
Max. impact energy at the end positions[1)]	Cushioning P[2)]	0.016	0.05	0.1

1) Loads moved by the slides must be taken into consideration for the calculation of end-position cushioning energy.
2) Note also the graph illustrating piston speed as a function of working load ➔ 1 / 6.1-34.

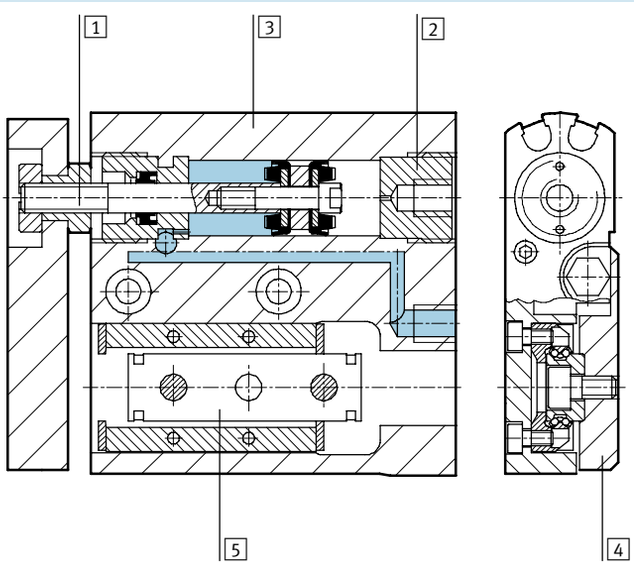
Mini slide SLF

Technical data

Weights [g]				
Piston ∅		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

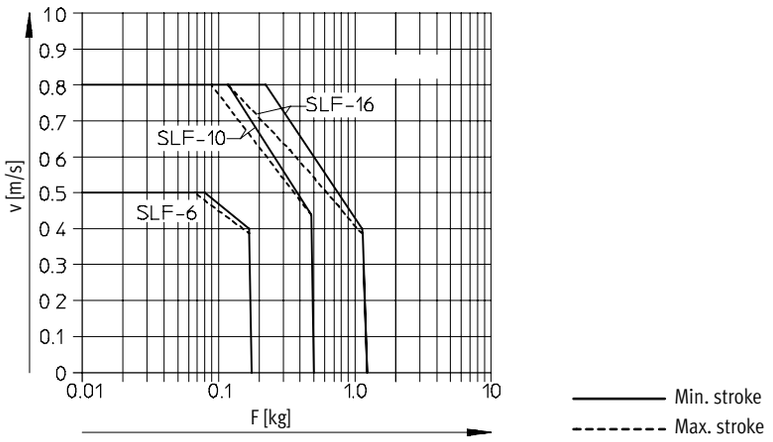
Technical data

FESTO

Piston speed v as a function of working load m

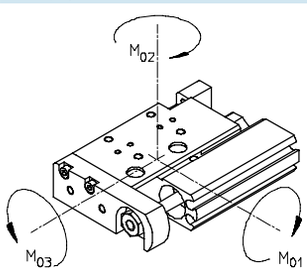
SLF-6/-10/-16-...-P-A

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

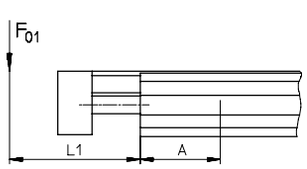


Permissible loads

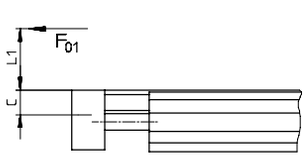
static/dynamic



Longitudinal torque

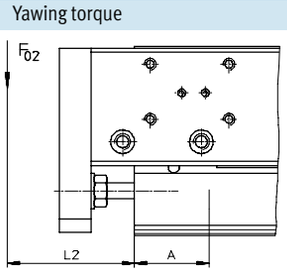


$$F_{01} \leq \frac{M_{01perm.}}{L_1 + A}$$

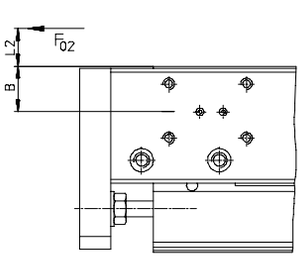


$$F_{01} \leq \frac{M_{01perm.}}{L_1 + C}$$

Yawing torque

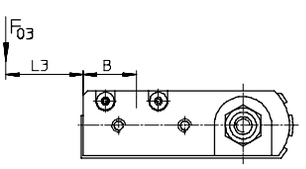


$$F_{02} \leq \frac{M_{02perm.}}{L_2 + A}$$

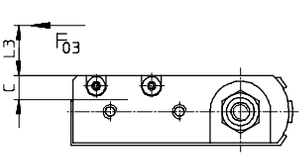


$$F_{02} \leq \frac{M_{02perm.}}{L_2 + B}$$

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:

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

Mini slide SLF

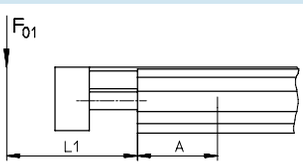
Technical data

FESTO

Permissible loads								Correction factors		
Piston ∅	Stroke	static			dynamic					
		M_{01}	M_{02}	M_{03}	M_{01}	M_{02}	M_{03}	A	B	C
[mm]	[mm]	[Nm]	[Nm]	[Nm]	[Nm]	[Nm]	[Nm]	[mm]	[mm]	[mm]
6										
	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									
10										
	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		
16										
	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

Static load



Given:

Mini slide = SLF-10
Stroke length =30 mm
Lever arm L_1 = 0.040 m
Torque $M_{01perm.}$ = 3.2 Nm
Correction factor A = 18 mm
= 0.018 m

To be found:

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

Calculation:

$$F_{01} \leq \frac{3.2\ Nm}{0.040\ m + 0.018\ m}$$

$$F_{01} \leq 55.17\ N$$

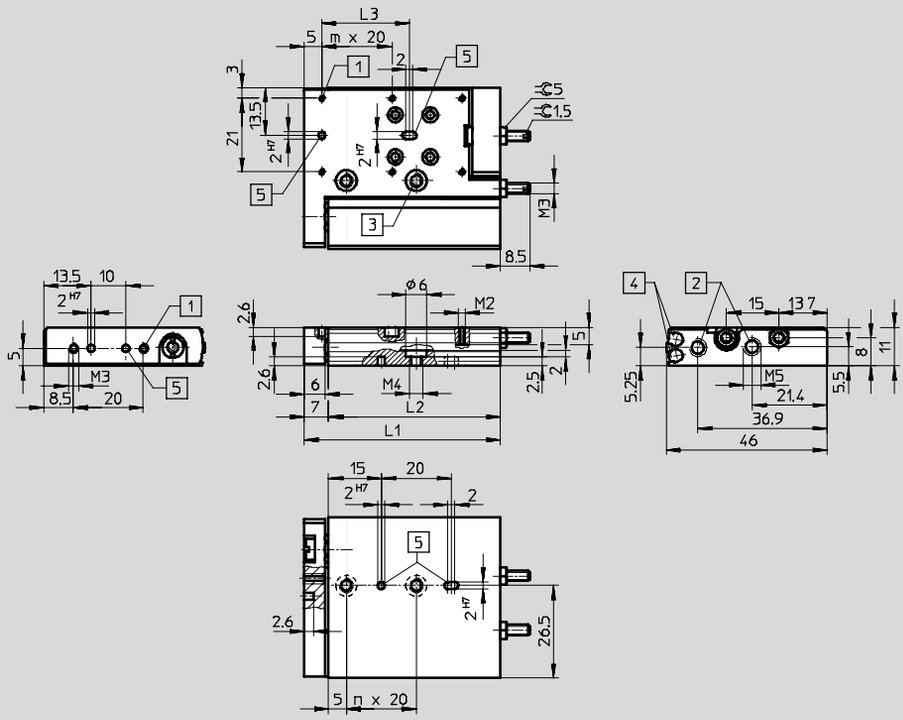
Mini slide SLF

Technical data

FESTO

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Piston ∅ 6 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)

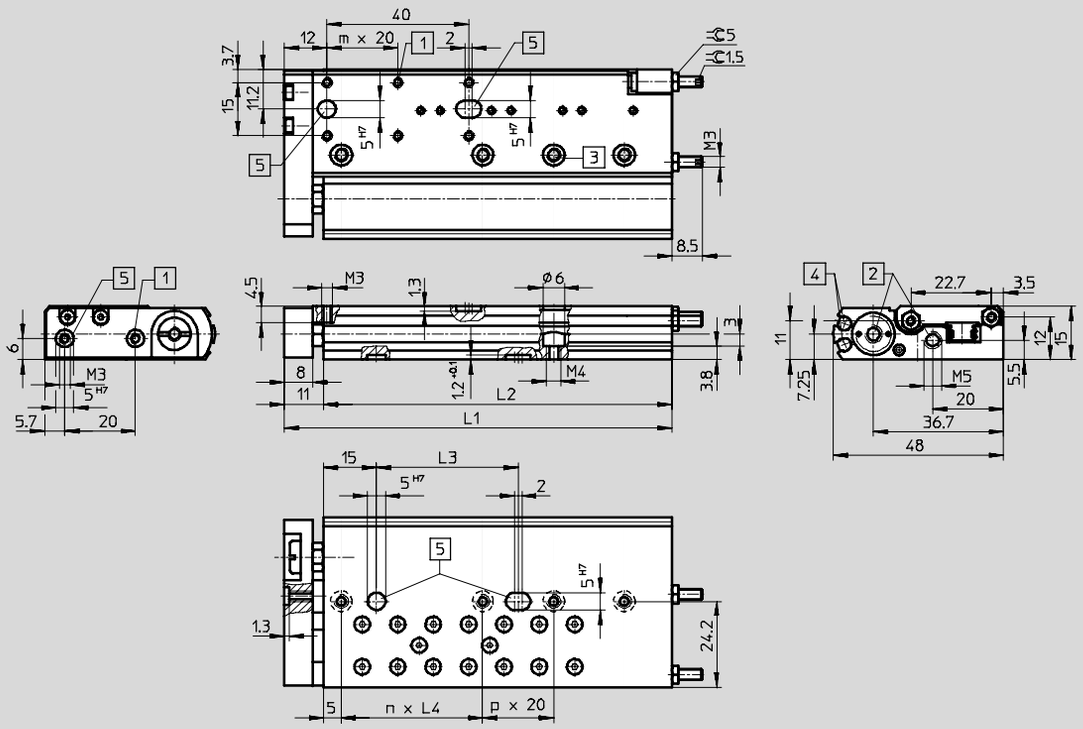
∅ [mm]	Stroke [mm]	L1	L2	L3	m	n
6	10	56	49	20	2	1
	20	66	59			2
	30	76	69	40	3	

Mini slide SLF

Technical data

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Piston ∅ 10 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)

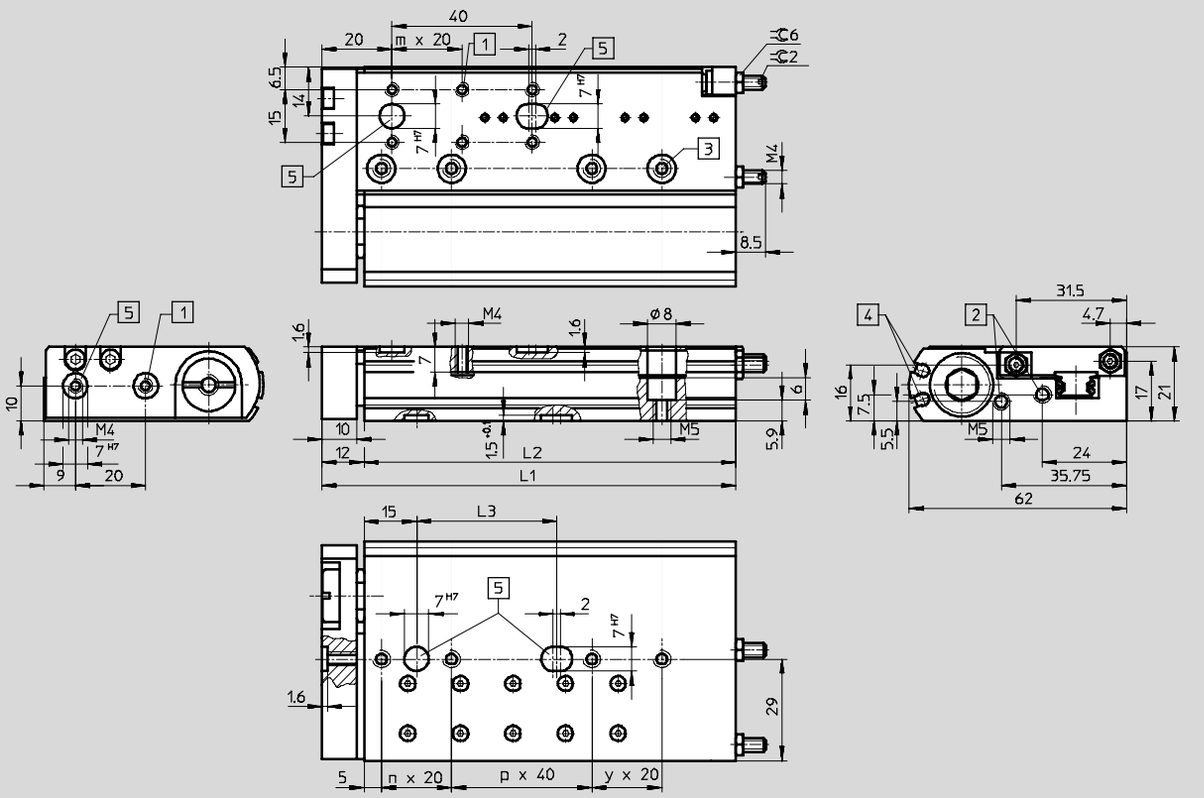
∅ [mm]	Stroke [mm]	L1	L2	L3	L4	m	n	p
10	10	59.5	48.5	20	20	1	1	–
	20	69.5	58.5					
	30	79.5	68.5			2	2	
	40	89.5	78.5	40			3	
	50	109.5	98.5		40		1	2

Mini slide SLF

Technical data

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Piston ∅ 16 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)

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

Mini slide SLF

Technical data

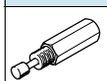
FESTO

Ordering data			
Piston ∅ [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**

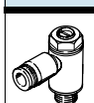
Mini slides SLT/SLS/SLF

Accessories

FESTO

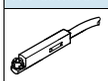
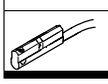
Ordering data											
Piston ∅		6		10		16		20		25	
		Part No.	Type	Part No.	Type	Part No.	Type	Part No.	Type	Part No.	Type
Centring pins/sleeves for SLT[1]											Technical data ➔ NO TAG
Centring pins/sleeves for SLT[1]											Technical data ➔ www.festo.com
	Housing	**189 652**	**ZBH-5**	**186 717**	**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 ➔ NO TAG
Centring pins/sleeves for SLF[1]											Technical data ➔ www.festo.com
	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 ➔ NO TAG
Shock absorber for SLT-...-A-CC-B											Technical data YSR ➔ www.festo.com
	–	–		**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) Metallic fixed stop for lighter loads at low speed.
Scope of delivery: 2 per pack

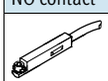
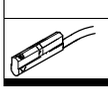
Ordering data – One-way flow control valves					Technical data ➔ Volume 2
Ordering data – One-way flow control valves					Technical data ➔ www.festo.com
	Connection		Material	Part No.	Type
	Thread	For tubing O.D.			
	M5	3	Metal design	**193 137**	**GRLA-M5-QS-3-D**
		4		**193 138**	**GRLA-M5-QS-4-D**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

Core Range

Ordering data – Proximity sensor for slot type 10, magneto-resistive Technical data ➔ NO TAG
Ordering data – Proximity sensor for slot type 10, magneto-resistive Technical data ➔ www.festo.com

	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**
						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 ➔ NO TAG
Ordering data – Proximity sensor for slot type 10, magnetic reed Technical data ➔ www.festo.com

	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				**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 ➔ NO TAG
Ordering data – Plug sockets Technical data ➔ www.festo.com

	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