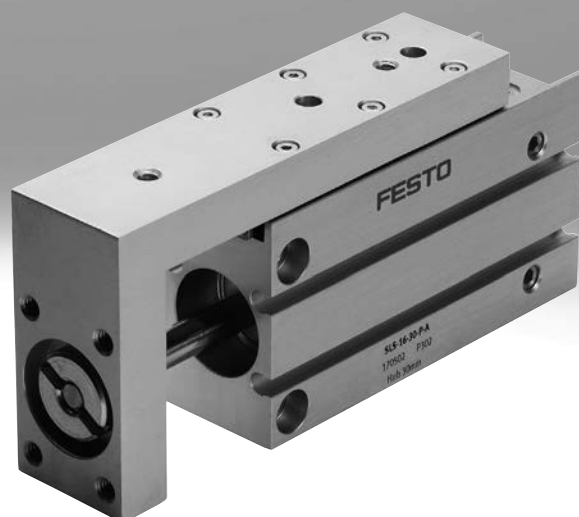


Mini slides SLS/SLF

FESTO



Key features

General

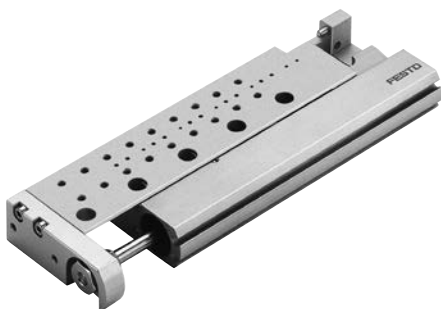
- Double-acting drives
- Precise and rigid guide
- Versatile air connections
- Sensors can be integrated
- Highly flexible thanks to versatile assembly and mounting options on:
 - Drive body
 - Slide
 - Yoke plate

Mini slide SLS



- Slim design
- Integrated end-position cushioning:
 - Elastic cushioning components

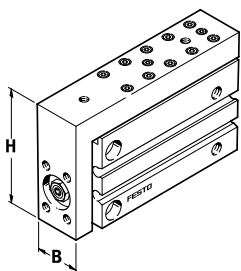
Mini slide SLF



- Flat design
- Adjustable end-position cushioning
 - Elastic cushioning components
- Versatile combination options on:
 - Drives
- System product for handling and assembly technology

The slim mini slide

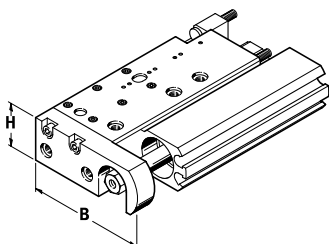
SLS



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

The flat mini slide

SLF

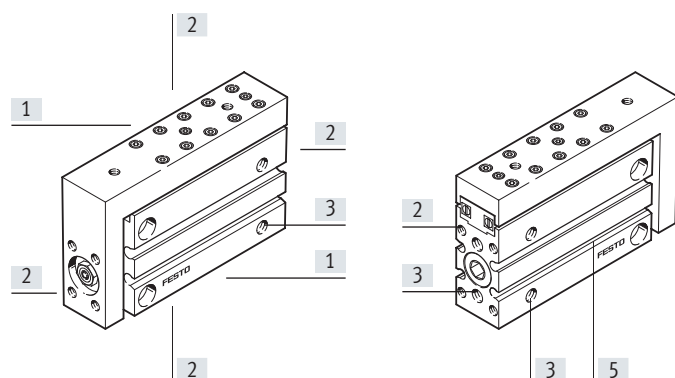


| Piston diameter | | Width (W) | x | Height (H) |
|-----------------|----|-----------|---|--------------|
| 6 mm | 46 | x | | 11 mm |
| 10 mm | 48 | x | | 15 mm |
| 16 mm | 62 | x | | 21 mm |

Key features

Versatile

Mini slide SLS



[1] Mounting surface:

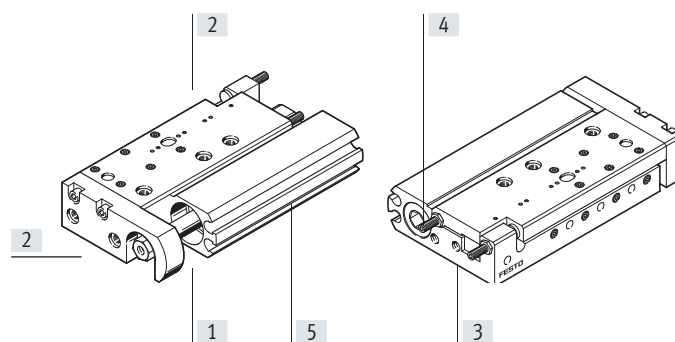
The drive can be directly attached via through-holes or threaded holes (with appropriate screws).

[2] Mounting surface:

Devices and loads can be directly attached via threaded holes in the slide and the yoke plate (with appropriate screws).

[3] Versatile air connections

Mini slide SLF



[4] Adjustable end-position cushioning systems on SLF....-P-A with elastic cushioning components in the end positions

[5] Sensors can be integrated

Sensor slots for one or more proximity switches SME/SMT-10.

For space-saving, reliable sensing of piston positions. Proximity switches can be freely moved and clamped in the sensor slots provided.

Type codes

| 001 | Series |
|-----|---------------------------|
| SLS | Mini slide, double-acting |

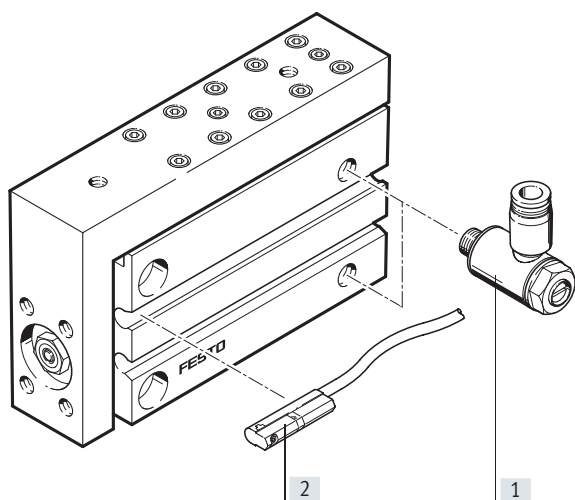
| 002 | Size |
|-----|------|
| 6 | 6 |
| 10 | 10 |
| 16 | 16 |

| 003 | Stroke |
|-----|--------|
| 5 | 5 |
| 10 | 10 |
| 15 | 15 |
| 20 | 20 |
| 25 | 25 |
| 30 | 30 |

| 004 | Cushioning |
|-----|---|
| P | Elastic cushioning rings/plates on both sides |

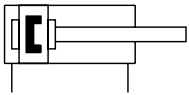
| 005 | Position sensing |
|-----|----------------------|
| A | For proximity sensor |

Peripherals overview

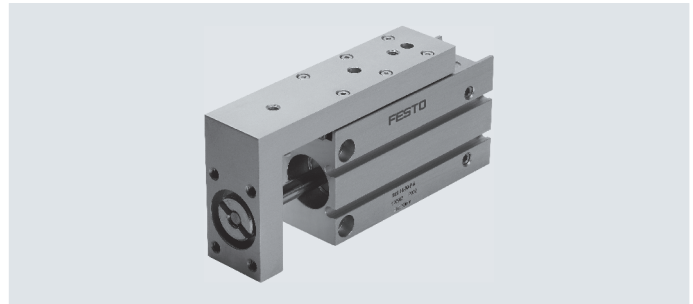


| Accessories | | Description | → Page/Internet |
|-------------|------------------------------------|--|-----------------|
| [1] | One-way flow control valve GRLA | For speed regulation | 22 |
| | Push-in fitting QS | For connecting compressed air tubing with standard outside diameters | qs |
| [2] | Proximity switch SME/SMT-10 | Sensor slots for one or several proximity switches | 22 |

Data sheet



www.festo.com



- Diameter
6 ... 16 mm
- Stroke length
5 ... 30 mm

| General technical data | | | | |
|------------------------|-------|--|-----|----|
| Piston diameter | | 6 | 10 | 16 |
| Pneumatic connection | | M5 | | |
| Design | | Piston, piston rod, slide, yoke, ball bearing cage guide | | |
| Guide | | Ball bearing-guided | | |
| Cushioning | | Non-adjustable at both ends | | |
| Position sensing | | For proximity switch | | |
| Type of mounting | | With through-hole With female thread | | |
| 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 diameter | | 6 | 10 | 16 |
| Operating medium | | Compressed air to ISO 8573-1:2010 [7:4:4] | | |
| Note on the operating/pilot medium | | Lubricated operation possible (in which case lubricated operation will always be required) | | |
| Operating pressure | [bar] | 1.5 ... 10 | 1 ... 10 | |
| Ambient temperature ¹⁾ | [°C] | -20 ... +60 | | |

1) Note operating range of proximity switches.

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

1) Loads moved by the slides must be taken into consideration when calculating the end-position cushioning energy.

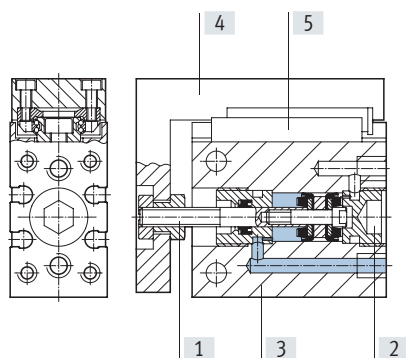
2) Note also the graph illustrating piston speed as a function of payload → page 8

Data sheet

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

Materials

Sectional view



Mini slide

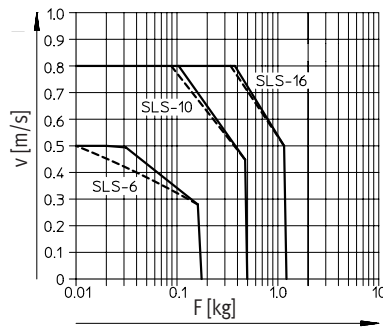
| | | |
|-----|-------------------|---|
| [1] | Piston rod | High-alloy steel |
| [2] | Cover | Anodised wrought aluminium alloy |
| [3] | Housing | Anodised wrought aluminium alloy |
| [4] | Slide | Anodised wrought aluminium alloy |
| [5] | Guide | Tempered steel |
| - | Seals | Thermoplastic rubber, hydrogenated nitrile rubber, nitrile rubber |
| | Note on materials | Free of copper and PTFE |

Data sheet

Piston speed v as a function of payload m

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

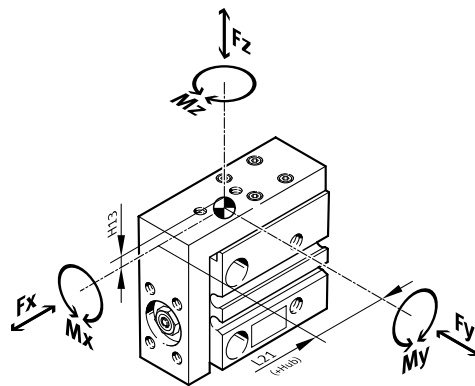
The piston speed as a function of payload illustrated in this graph must not be exceeded as the kinetic impact or residual energy in the end positions can result in damage to the drive.



— Min. stroke
- - - - - Max. stroke

Dynamic characteristic load values

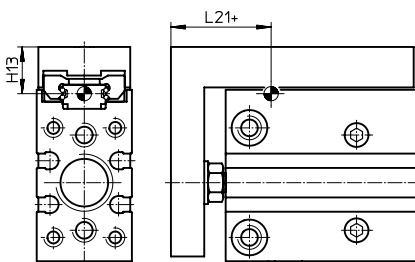
The indicated torques refer to the centre of the guide.
These values must not be exceeded during dynamic operation. Special attention must be paid to the deceleration phase.



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

$$f_v = \frac{|F_{y1}|}{F_{y2}} + \frac{|F_{z1}|}{F_{z2}} + \frac{|M_{x1}|}{M_{x2}} + \frac{|M_{y1}|}{M_{y2}} + \frac{|M_{z1}|}{M_{z2}} \leq 1$$

Position of the guide centre



+ plus stroke length

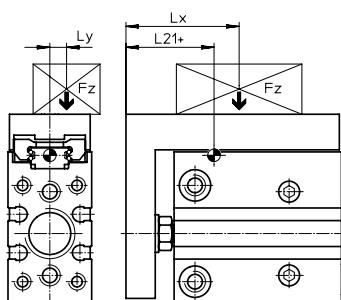
Data sheet

| Permissible forces and torques | | | | | | Geometric characteristics | |
|--------------------------------|--------|----------------------|----------------------|---------------------------------------|-----------------------|---------------------------|-------------|
| Piston diameter | Stroke | $F_{y_{max}}$ [N] | $F_{z_{max}}$ [N] | $M_{x_{max}}$, $M_{y_{max}}$ [Nm] | $M_{z_{max}}$ [Nm] | H13 [mm] | L21 [mm] |
| 6 | | | | | | | |
| | 5 | 220 | 220 | 0.6 | 0.5 | 8.5 | 20.5 |
| | 10 | 170 | 170 | 0.6 | 0.5 | | 20.5 |
| | 15 | 180 | 180 | 0.9 | 0.6 | | 23 |
| | 20 | 160 | 160 | 0.9 | 0.6 | | 23 |
| | 25 | 150 | 150 | 0.9 | 0.6 | | 23 |
| | 30 | 140 | 140 | 0.9 | 0.6 | | 23 |
| 10 | | | | | | | |
| | 5 | 220 | 220 | 0.6 | 0.5 | 10 | 27.5 |
| | 10 | 170 | 170 | 0.6 | 0.5 | | 27.5 |
| | 15 | 170 | 170 | 1.1 | 0.7 | | 36 |
| | 20 | 150 | 150 | 1.1 | 0.7 | | 36 |
| | 25 | 140 | 140 | 1.1 | 0.7 | | 36 |
| | 30 | 130 | 130 | 1.1 | 0.7 | | 36 |
| 16 | | | | | | | |
| | 5 | 590 | 590 | 2.1 | 1.6 | 11 | 30.5 |
| | 10 | 470 | 470 | 2.1 | 1.6 | | 30.5 |
| | 15 | 410 | 410 | 1.7 | 1.3 | | 30.5 |
| | 20 | 370 | 370 | 1.7 | 1.3 | | 30.5 |
| | 25 | 410 | 410 | 2.5 | 1.4 | | 34 |
| | 30 | 390 | 390 | 2.5 | 1.4 | | 34 |

Calculation example

Given:

To be calculated:



Mini slide = SLS-10

Stroke length =

20 mm

Lever arm L_x = 5 mmLever arm L_y = 20 mmMass $F_z = 0.495$ kgAcceleration $a = 0$ m/s² F_y, F_z, M_x, M_y, M_z

and

verification of operation with
combined load

Solution:

 $L_{21} = 36$ mm from table

$$F_y = 0 \text{ N}$$

$$F_z = m \times g$$

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

$$M_x = m \times g \times L_y$$

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

$$M_y = m \times g \times [(L_{21} + \text{Hub}) - L_x]$$

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

$$M_z = 0 \text{ Nm}$$

Combined load:

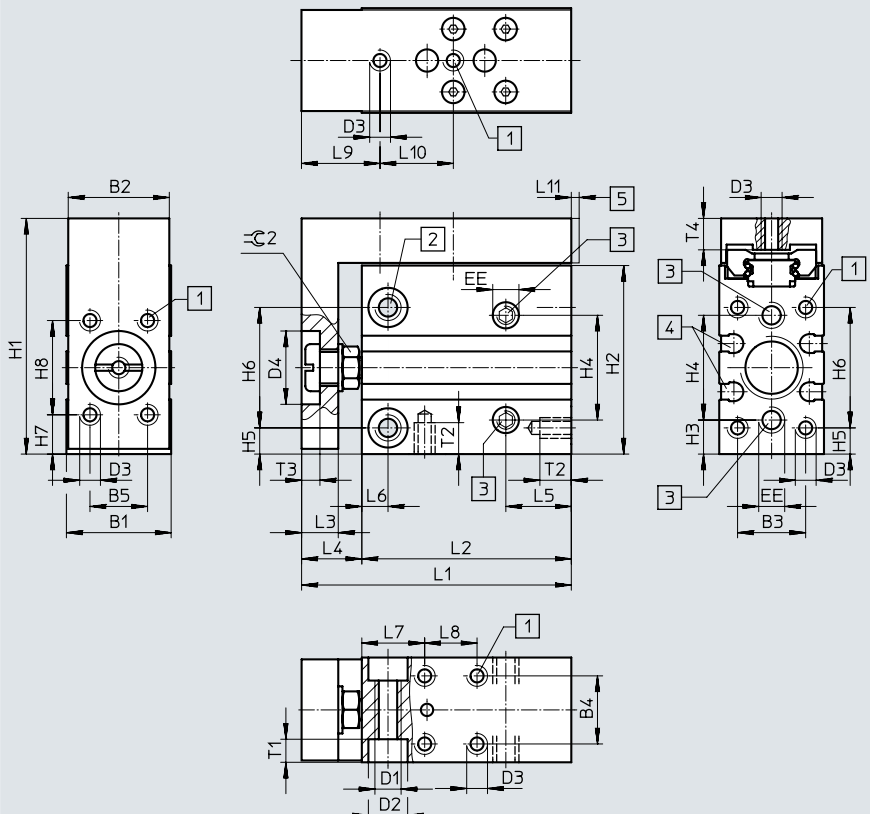
$$f_v = \frac{|F_{y1}|}{F_{y2}} + \frac{|F_{z1}|}{F_{z2}} + \frac{|M_{x1}|}{M_{x2}} + \frac{|M_{y1}|}{M_{y2}} + \frac{|M_{z1}|}{M_{z2}} \leq 1$$

$$= 0 + \frac{4,856 \text{ N}}{150 \text{ N}} + \frac{0,097 \text{ Nm}}{1,1 \text{ Nm}} + \frac{0,248 \text{ Nm}}{1,1 \text{ Nm}} + 0 = 0,345 \leq 1$$

Data sheet

Dimensions

Download CAD data → www.festo.com



- [1] Mounting thread
- [2] Through-holes and threaded holes for mounting the drive
- [3] Compressed air supply ports
- [4] Sensor slot for proximity switch SME/SMT-10
- [5] Possible protrusion of the slide in relation to the edge of the housing

| ∅ | Stroke | B1 | B2 | B3 | B4 | B5 | D1 | D2 ∅ | D3 | D4 ∅ H11 | EE | H1 |
|------|--------|------|------|------|----|----|----|---------|----|----------------|----|----|
| [mm] | [mm] | +0.4 | | | | | | | | | | |
| 6 | 5 | 16 | 15.3 | 10.5 | 10 | 9 | M4 | 6 | M3 | 12 | M5 | 39 |
| | 10 | | | | | | | | | | | |
| | 15 | | | | | | | | | | | |
| | 20 | | | | | | | | | | | |
| | 25 | | | | | | | | | | | |
| 10 | 5 | 20 | 19.3 | 13 | 13 | 11 | M5 | 7.5 | M4 | 14 | M5 | 45 |
| | 10 | | | | | | | | | | | |
| | 15 | | | | | | | | | | | |
| | 20 | | | | | | | | | | | |
| | 25 | | | | | | | | | | | |
| 16 | 5 | 24 | 23.3 | 17 | 17 | 16 | M5 | 7.5 | M4 | 19.5 | M5 | 51 |
| | 10 | | | | | | | | | | | |
| | 15 | | | | | | | | | | | |
| | 20 | | | | | | | | | | | |
| | 25 | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |

Data sheet

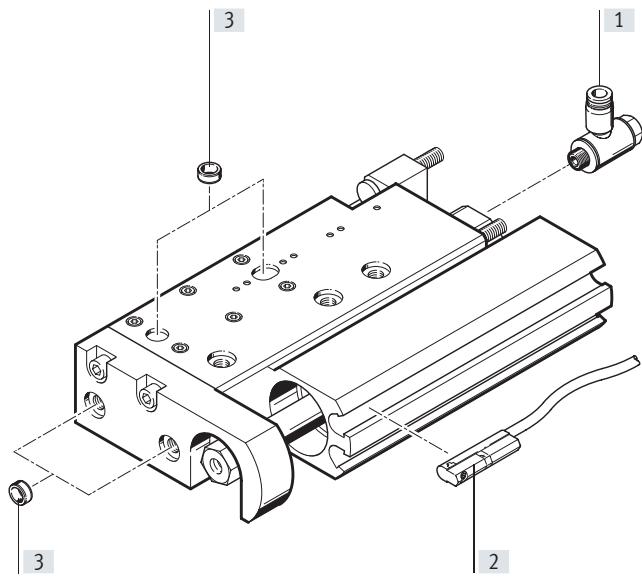
| ∅ [mm] | Stroke [mm] | H2 | H3 | H4 | H5 | H6 | H7 | H8 | L1 | L2 | L3 | L4 | L5 |
|-----------|----------------|----|-----|----|-----|----|-----|----|------|------|----|------|------|
| 6 | 5 | 31 | 6 | 17 | 5 | 19 | 7 | 15 | 46 | 37.5 | 6 | 8.5 | 10 |
| | 10 | | | | | | | | 51 | 42.5 | | | |
| |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

| ∅ [mm] | Stroke [mm] | L6 | L7 | L8 | L9 | L10 | L11 | T1 | T2 | T3 | T4 | ⌀ 2 |
|-----------|----------------|----|----|----|----|-----|-----------|-----|-----|-----|----|-----|
| 6 | 5 | 4 | 10 | 10 | 13 | 20 | - | 3.3 | 4.8 | 3 | 5 | 7 |
| | 10 | | | 15 | | 25 | | | | | | |
| | 15 | | | 20 | | 30 | | | | | | |
| | 20 | | | 25 | | 40 | | | | | | |
| | 25 | | | 30 | | | | | | | | |
| | 30 | | | 35 | | | | | | | | |
| 10 | 5 | 5 | 12 | 10 | 15 | 14 | Max. 0.75 | 4.4 | 6 | 3.5 | 6 | 8 |
| | 10 | | | 14 | | 19 | | | | | | |
| | 15 | | | 18 | | 25 | | | | | | |
| | 20 | | | 24 | | 30 | | | | | | |
| | 25 | | | 32 | | 40 | | | | | | |
| | 30 | | | 35 | | 45 | | | | | | |
| 16 | 5 | 5 | 12 | 20 | 18 | 24 | Max. 0.75 | 4.4 | 6 | 5 | 6 | 13 |
| | 10 | | | 20 | | 35 | | | | | | |
| | 15 | | | 30 | | 45 | | | | | | |
| | 20 | | | | | 50 | | | | | | |
| | 25 | | | 40 | | | | | | | | |
| | 30 | | | 45 | | 55 | | | | | | |

Data sheet

| Ordering data | | | |
|---------------|----------------|---------------|----------------------|
| ∅ [mm] | Stroke [mm] | Part no. | Type |
| 6 | | | |
| | 5 | 170485 | SLS-6-5-P-A |
| | 10 | 170486 | SLS-6-10-P-A |
| | 15 | 170487 | SLS-6-15-P-A |
| | 20 | 170488 | SLS-6-20-P-A |
| | 25 | 170489 | SLS-6-25-P-A |
| | 30 | 170490 | SLS-6-30-P-A |
| 10 | | | |
| | 5 | 170491 | SLS-10-5-P-A |
| | 10 | 170492 | SLS-10-10-P-A |
| | 15 | 170493 | SLS-10-15-P-A |
| | 20 | 170494 | SLS-10-20-P-A |
| | 25 | 170495 | SLS-10-25-P-A |
| | 30 | 170496 | SLS-10-30-P-A |
| 16 | | | |
| | 5 | 170497 | SLS-16-5-P-A |
| | 10 | 170498 | SLS-16-10-P-A |
| | 15 | 170499 | SLS-16-15-P-A |
| | 20 | 170500 | SLS-16-20-P-A |
| | 25 | 170501 | SLS-16-25-P-A |
| | 30 | 170502 | SLS-16-30-P-A |

Peripherals overview



Note
End stops must not be removed.

| Accessories | | Description | → Page/Internet |
|-------------|------------------------------------|--|-----------------|
| [1] | One-way flow control valve GRLA | For speed regulation | 22 |
| | Push-in fitting QS | For connecting compressed air tubing with standard outside diameters | qs |
| [2] | Proximity switch SME/SMT-10 | Sensor slots for one or several proximity switches | 22 |
| [3] | Centring pin/sleeve ZBS/ZBH | For centring loads and attachments | 22 |

Type codes

| 001 | Series |
|-----|---------------------------|
| SLF | Mini slide, double-acting |

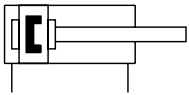
| 002 | Size |
|-----|------|
| 6 | 6 |
| 10 | 10 |
| 16 | 16 |

| 003 | Stroke |
|-----|--------|
| 10 | 10 |
| 20 | 20 |
| 30 | 30 |
| 40 | 40 |
| 50 | 50 |
| 80 | 80 |

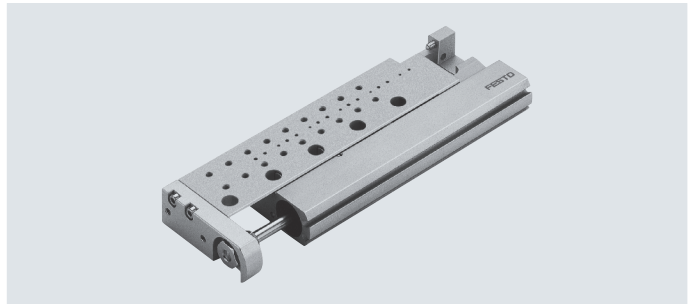
| 004 | Cushioning |
|-----|---|
| P | Elastic cushioning rings/plates on both sides |

| 005 | Position sensing |
|-----|----------------------|
| A | For proximity sensor |

Data sheet



www.festo.com



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

| General technical data | | | | |
|-------------------------------|--------------|--|-------------------|-----|
| Piston diameter | | 6 | 10 | 16 |
| Pneumatic connection | | M5 | | |
| Design | | Piston, piston rod, slide, yoke, ball bearing cage guide | | |
| Guide | | Ball bearing-guided | | |
| Cushioning | | Non-adjustable at both ends | | |
| Position sensing | | For proximity switch | | |
| Type of mounting | | With through-hole 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 diameter | | 6 | 10 | 16 |
| Operating medium | | Compressed air to ISO 8573-1:2010 [7:4:4] | | |
| Note on the operating/pilot medium | | Lubricated operation possible (in which case lubricated operation will always be required) | | |
| Operating pressure | | [bar] | 1.5 ... 10 | 1 ... 10 |
| Ambient temperature ¹⁾ | | [°C] | -20 ... +60 | |

1) Note operating range of proximity switches.

| Forces [N] and impact energy [Nm] | | | | |
|---|----------------------------|-------|------|-----|
| Piston diameter | | 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 when calculating the end-position cushioning energy.

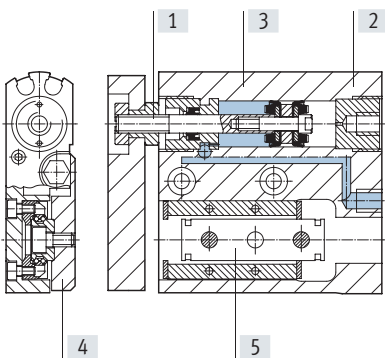
2) Note also the graph illustrating piston speed as a function of payload → page 16

Data sheet

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

Materials

Sectional view



Mini slide

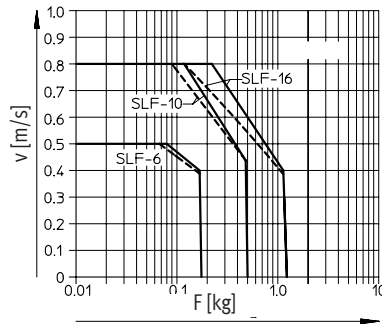
| | | |
|-----|-------------------|---|
| [1] | Piston rod | High-alloy steel |
| [2] | Cover | Anodised wrought aluminium alloy |
| [3] | Housing | Anodised wrought aluminium alloy |
| [4] | Slide | Anodised wrought aluminium alloy |
| [5] | Guide | Tempered steel |
| – | Seals | Thermoplastic rubber, hydrogenated nitrile rubber, nitrile rubber |
| | Note on materials | Free of copper and PTFE |

Data sheet

Piston speed v as a function of payload m

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

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

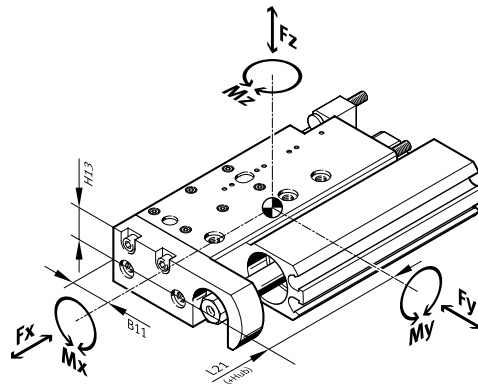


— Min. stroke
- - - - - Max. stroke

Characteristic load values

The indicated torques refer to the centre of the guide.

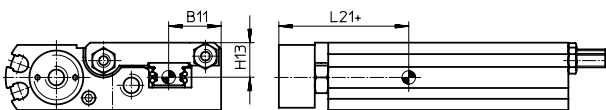
These values must not be exceeded during dynamic operation. Special attention must be paid to the deceleration phase.



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

$$f_v = \frac{|F_{y1}|}{F_{y2}} + \frac{|F_{z1}|}{F_{z2}} + \frac{|M_{x1}|}{M_{x2}} + \frac{|M_{y1}|}{M_{y2}} + \frac{|M_{z1}|}{M_{z2}} \leq 1$$

Position of the guide centre



+ plus stroke length

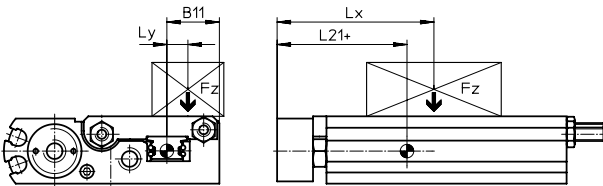
Data sheet

| Permissible forces and torques | | | | | Geometric characteristics | | | |
|--------------------------------|--------|----------------------|----------------------|------------------------------------|---------------------------|-------------|-------------|-------------|
| Piston diameter | Stroke | $F_{y_{max}}$ [N] | $F_{z_{max}}$ [N] | $M_{x_{max}}, M_{y_{max}}$ [Nm] | $M_{z_{max}}$ [Nm] | B11 [mm] | H13 [mm] | L21 [mm] |
| 6 | | | | | | | | |
| | 10 | 170 | 170 | 0.6 | 0.5 | 14 | 7 | 22 |
| | 20 | 150 | 150 | 1.1 | 0.7 | | | 21 |
| | 30 | 130 | 130 | 1.1 | 0.7 | | | 21 |
| 10 | | | | | | | | |
| | 10 | 170 | 170 | 0.6 | 0.5 | 11.5 | 8 | 23 |
| | 20 | 150 | 150 | 1.1 | 0.7 | | | 25 |
| | 30 | 130 | 130 | 1.1 | 0.7 | | | 25 |
| | 40 | 150 | 150 | 0.9 | 0.5 | | | 29 |
| | 50 | 190 | 190 | 1.4 | 0.5 | | | 34.5 |
| 16 | | | | | | | | |
| | 10 | 470 | 470 | 2.1 | 1.6 | 14 | 11.5 | 27.5 |
| | 20 | 370 | 370 | 1.7 | 1.3 | | | 27.5 |
| | 30 | 390 | 390 | 2.5 | 1.4 | | | 31.5 |
| | 40 | 350 | 350 | 2.2 | 1.3 | | | 31.5 |
| | 50 | 390 | 390 | 3.1 | 1.4 | | | 36 |
| | 80 | 410 | 410 | 4.3 | 1.5 | | | 43.5 |

Calculation example

Given:

To be calculated:



Mini slide = SLF-10

Stroke length =

20 mm

Lever arm L_x = 5 mmLever arm L_y = 20 mmMass F_z = 0.495 kgAcceleration a = 0 m/s²

To be calculated:

 F_y, F_z, M_x, M_y, M_z

and

verification of operation with
combined load

Solution:

 $L_{21} = 25$ mm from table

$$F_y = 0 \text{ N}$$

$$F_z = m \times g$$

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

$$M_x = m \times g \times L_y$$

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

$$M_y = m \times g \times [(L_{21} + \text{Hub}) - L_x]$$

$$= 0.495 \text{ kg} \times 9.81 \text{ m/s}^2 [(25 \text{ mm} + 20 \text{ mm}) - 5 \text{ mm}] = 0.194 \text{ Nm}$$

$$M_z = 0 \text{ Nm}$$

Combined load:

$$f_v = \frac{|F_{y1}|}{F_{y2}} + \frac{|F_{z1}|}{F_{z2}} + \frac{|M_{x1}|}{M_{x2}} + \frac{|M_{y1}|}{M_{y2}} + \frac{|M_{z1}|}{M_{z2}} \leq 1$$

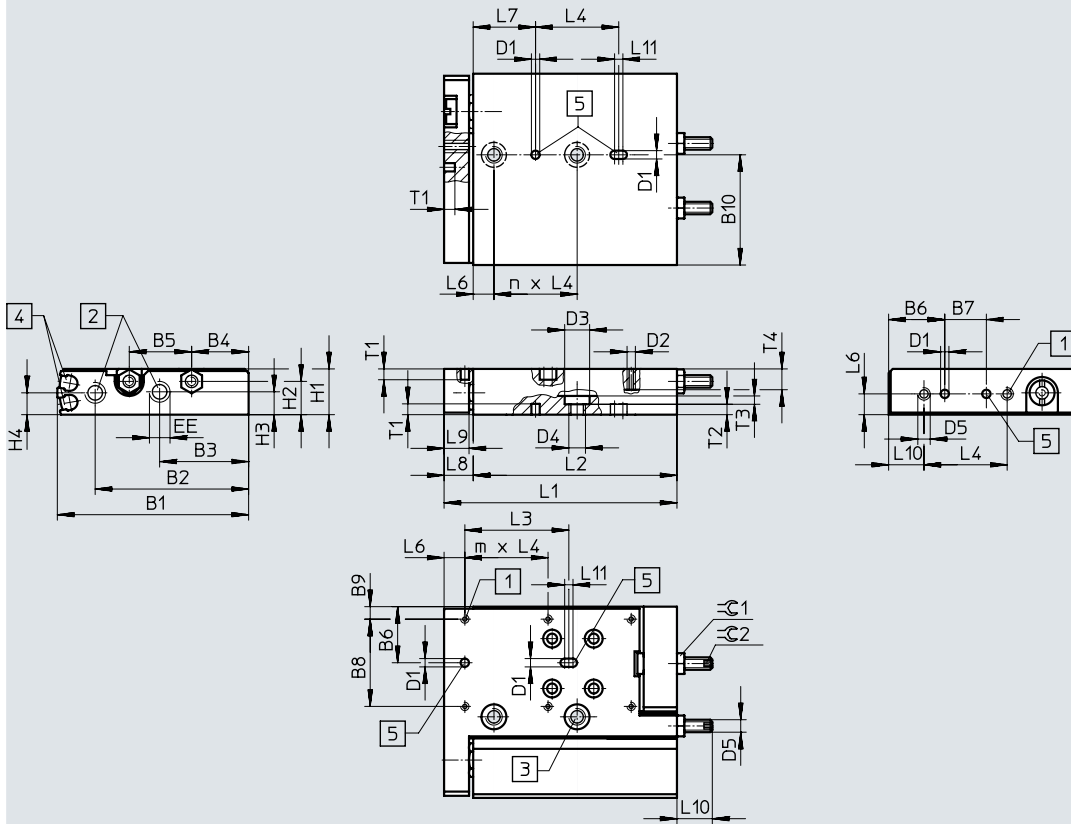
$$= 0 + \frac{4,856 \text{ N}}{150 \text{ N}} + \frac{0,097 \text{ Nm}}{1,1 \text{ Nm}} + \frac{0,194 \text{ Nm}}{1,1 \text{ Nm}} + 0 = 0,297 \leq 1$$

Data sheet

Dimensions

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∅ 6



- [1] Mounting thread
- [2] Compressed air supply ports
- [3] Through-holes for mounting the drive
- [4] Sensor slot for proximity switch SME/SMT-10
- [5] Centring holes (centring sleeves included in the scope of delivery)

| ∅ | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | D1 ∅ H7 |
|---|----|------|------|------|----|------|----|----|----|------|---------------|
| 6 | 46 | 36.9 | 21.4 | 13.7 | 15 | 13.5 | 10 | 21 | 3 | 26.5 | 2 |

| ∅ | D2 | D3 ∅ | D4 | D5 | EE | H1 | H2 | H3 | H4 | L4 | L6 |
|---|----|---------|----|----|----|----|----|-----|------|----|----|
| 6 | M2 | 6 | M4 | M3 | M5 | 11 | 8 | 5.5 | 5.25 | 20 | 5 |

| ∅ | L7 | L8 | L9 | L10 | L11 | T1 | T2 | T3 | T4 | ⊕C1 | ⊕C2 |
|---|----|----|----|-----|-----|-----|-----|----|----|-----|-----|
| 6 | 15 | 7 | 6 | 8.5 | 2 | 2.6 | 2.5 | 2 | 5 | 5 | 1.5 |

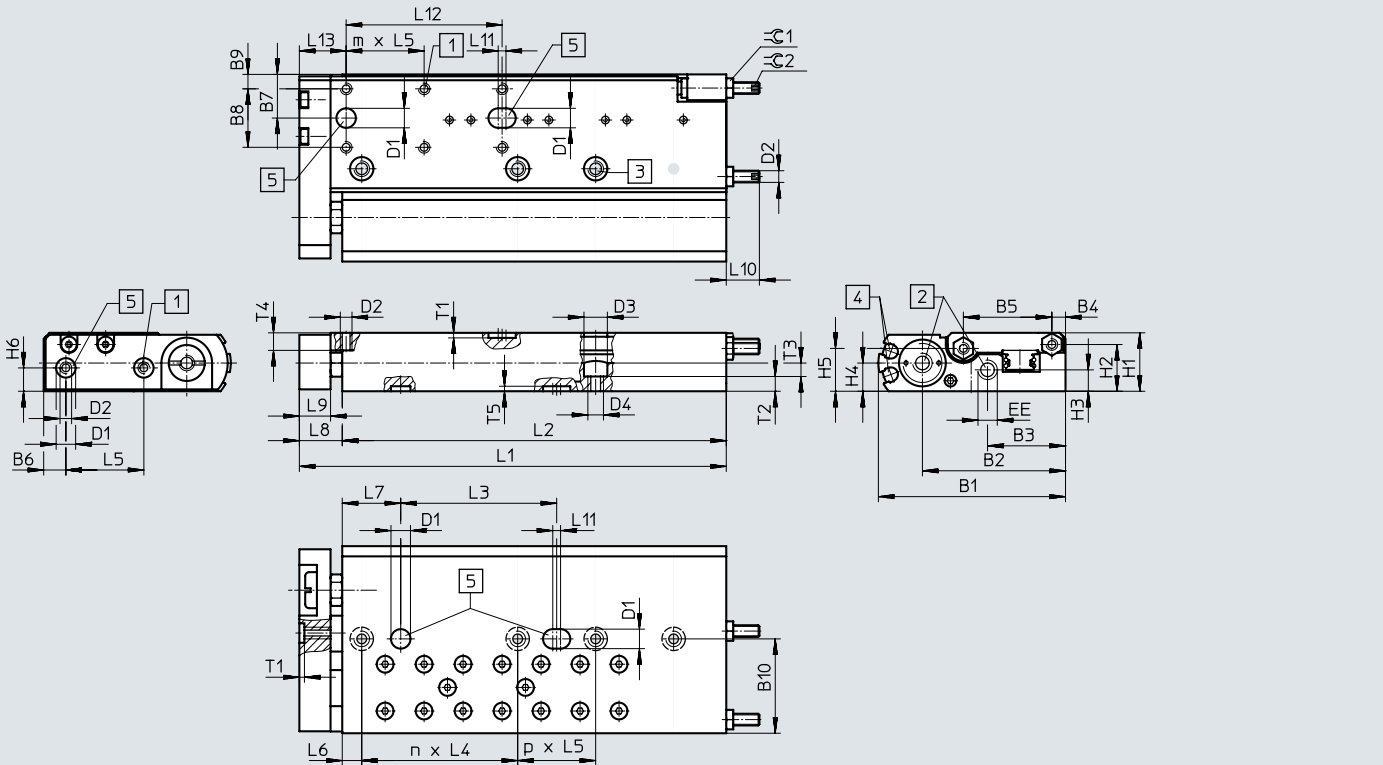
| ∅ | Stroke | L1 | L2 | L3 | m | n |
|---|--------|----|----|----|---|---|
| 6 | 10 | 56 | 49 | 20 | 2 | 1 |
| | 20 | 66 | 59 | 20 | 2 | 2 |
| | 30 | 76 | 69 | 40 | 3 | 2 |

Data sheet

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Dimensions

∅ 10



- [1] Mounting thread
- [2] Compressed air supply ports
- [3] Through-holes for mounting the drive
- [4] Sensor slot for proximity switch SME/SMT-10
- [5] Centring holes (centring sleeves included in the scope of delivery)

| | | | | | | | | | | | | | |
|------|----|------|----|-----|------|-----|------|----|-----|------|---------------|----|---------|
| ∅ | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | D1 ∅ H7 | D2 | D3 ∅ |
| [mm] | | | | | | | | | | | | | |
| 10 | 48 | 36.7 | 20 | 3.5 | 22.7 | 5.7 | 11.2 | 15 | 3.7 | 24.2 | 5 | M3 | 6 |

| | | | | | | | | | | | | |
|------|----|----|----|----|-----|------|----|----|----|----|----|----|
| ∅ | D4 | EE | H1 | H2 | H3 | H4 | H5 | H6 | L5 | L6 | L7 | L8 |
| [mm] | | | | | | | | | | | | |
| 10 | M4 | M5 | 15 | 12 | 5.5 | 7.25 | 11 | 6 | 20 | 5 | 15 | 11 |

| | | | | | | | | | | | | |
|------|----|-----|-----|-----|-----|-----|-----|----|-----|------|----|-----|
| ∅ | L9 | L10 | L11 | L12 | L13 | T1 | T2 | T3 | T4 | T5 | ≙1 | ≙2 |
| [mm] | | | | | | | | | | +0.1 | | |
| 10 | 8 | 8.5 | 2 | 40 | 12 | 1.3 | 3.8 | 3 | 4.5 | 1.2 | 5 | 1.5 |

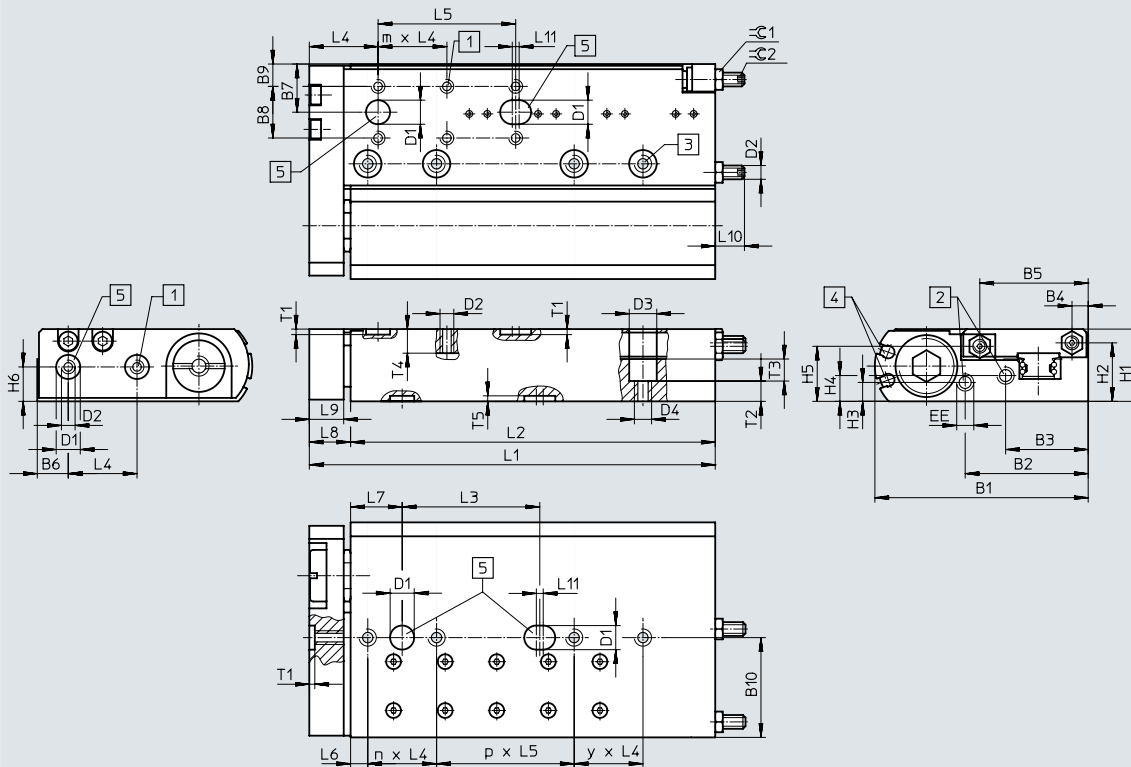
| | | | | | | | | |
|------|--------|-------|------|----|----|---|---|---|
| ∅ | Stroke | L1 | L2 | L3 | L4 | m | n | p |
| [mm] | [mm] | | | | | | | |
| 10 | 10 | 59.5 | 48.5 | 20 | 20 | 1 | 1 | - |
| | 20 | 69.5 | 58.5 | | | | | |
| | 30 | 79.5 | 68.5 | | | | | |
| | 40 | 89.5 | 78.5 | 40 | 2 | 2 |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

Data sheet

Dimensions

Download CAD data → www.festo.com

∅ 16



- [1] Mounting thread
- [2] Compressed air supply ports
- [3] Through-holes for mounting the drive
- [4] Sensor slot for proximity switch SME/SMT-10
- [5] Centring holes (centring sleeves included in the scope of delivery)

| ∅ | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | D1 ∅ H7 | D2 | D3 ∅ |
|----|----|-------|----|-----|------|----|----|----|-----|-----|---------------|----|---------|
| 16 | 62 | 35.75 | 24 | 4.7 | 31.5 | 9 | 14 | 15 | 6.5 | 29 | 7 | M4 | 8 |

| ∅ | D4 | EE | H1 | H2 | H3 | H4 | H5 | H6 | L4 | L5 | L6 | L7 |
|----|----|----|----|----|-----|-----|----|----|----|----|----|----|
| 16 | M5 | M5 | 21 | 17 | 5.5 | 7.5 | 16 | 10 | 20 | 40 | 5 | 15 |


| ∅ | L8 | L9 | L10 | L11 | T1 | T2 | T3 | T4 | T5 | ≈C1 | ≈C2 | |
|----|----|----|-----|-----|-----|-----|----|----|-----|------|-----|---|
| 16 | 12 | 10 | 8.5 | 2 | 1.6 | 5.9 | 6 | 7 | 1.5 | +0.1 | 6 | 2 |

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


Data sheet


| Ordering data | | | |
|---------------|----------------|---------------|---------------|
| ∅ [mm] | Stroke [mm] | Part no. | Type |
| 6 | | | |
| | 10 | 170503 | SLF-6-10-P-A |
| | 20 | 170504 | SLF-6-20-P-A |
| | 30 | 170505 | SLF-6-30-P-A |
| 10 | | | |
| | 10 | 170506 | SLF-10-10-P-A |
| | 20 | 170507 | SLF-10-20-P-A |
| | 30 | 170508 | SLF-10-30-P-A |
| | 40 | 170509 | SLF-10-40-P-A |
| | 50 | 170510 | SLF-10-50-P-A |
| 16 | | | |
| | 10 | 170511 | SLF-16-10-P-A |
| | 20 | 170512 | SLF-16-20-P-A |
| | 30 | 170513 | SLF-16-30-P-A |
| | 40 | 170514 | SLF-16-40-P-A |
| | 50 | 170515 | SLF-16-50-P-A |
| | 80 | 170516 | SLF-16-80-P-A |


Accessories



| Ordering data | | | | | | | |
|--|---------|----------|-------|----------|---------|----------------------------------|---------|
| | | 6 | | 10 | | 16 | |
| | | Part no. | Type | Part no. | Type | Part no. | Type |
| Centring pins/sleeves for SLF ¹⁾ | | | | | | Data sheets → Internet: zbh, zbs | |
|  | Housing | 525273 | ZBS-2 | 8146543 | ZBH-5-B | 8146544 | ZBH-7-B |
| | Slide | | | | | | |
| | Yoke | | | | | | |

1) Scope of delivery: 10 per pack

| Ordering data – One-way flow control valves | | | | | Data sheets → Internet: grla | |
|--|------------|-----------------|---------------|----------|------------------------------|--|
| | Connection | | Material | Part no. | Type | |
| | Thread | For tubing O.D. | | | | |
|  | M5 | 3 | Metal version | 193137 | GRLA-M5-QS-3-D | |
| | | 4 | | 193138 | GRLA-M5-QS-4-D | |

| Ordering data – Proximity switches for C-slot, magneto-resistive | | | | | | Data sheets → Internet: smt |
|--|-----------------------------------|------------------|---|------------------|----------|-----------------------------|
| | Type of mounting | Switching output | Electrical connection, outlet direction of connection | Cable length [m] | Part no. | Type |
| N/O contact | | | | | | |
|  | Insertable in the slot from above | PNP | Cable, 3-wire, in-line | 2.5 | 551373 | SMT-10M-PS-24V-E-2,5-L-OE |
| | | | Plug M8x1, 3-pin, in-line | 0.3 | 551375 | SMT-10M-PS-24V-E-0,3-L-M8D |
| | | | Plug M8x1, 3-pin, crosswise | 0.3 | 551376 | SMT-10M-PS-24V-E-0,3-Q-M8D |


| Ordering data – Proximity switches for C-slot, magnetic reed | | | | | | Data sheets → Internet: sme |
|--|-----------------------------------|------------------|---|------------------|----------|-----------------------------|
| | Type of mounting | Switching output | Electrical connection, outlet direction of connection | Cable length [m] | Part no. | Type |
| N/O contact | | | | | | |
|  | Insertable in the slot from above | Contacting | Plug M8x1, 3-pin, in-line | 0.3 | 551367 | SME-10M-DS-24V-E-0,3-L-M8D |
| | | | Cable, 3-wire, in-line | 2.5 | 551365 | SME-10M-DS-24V-E-2,5-L-OE |
| | | | Cable, 2-wire, in-line | 2.5 | 551369 | SME-10M-ZS-24V-E-2,5-L-OE |

| Ordering data – Connecting cables | | | | | | Data sheets → Internet: nebu |
|--|------------------------------|------------------------------|------------------|----------|---------------------|------------------------------|
| | Electrical connection, left | Electrical connection, right | Cable length [m] | Part no. | Type | |
|  | Straight socket, M8x1, 3-pin | Cable, open end, 3-wire | 2.5 | 541333 | NEBU-M8G3-K-2.5-LE3 | |
| | | | 5 | 541334 | NEBU-M8G3-K-5-LE3 | |
|  | Angled socket, M8x1, 3-pin | Cable, open end, 3-wire | 2.5 | 541338 | NEBU-M8W3-K-2.5-LE3 | |
| | | | 5 | 541341 | NEBU-M8W3-K-5-LE3 | |

Accessories

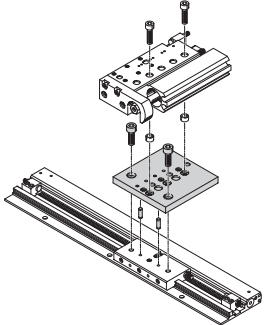
Adapter kit HAPS

Material:
Wrought aluminium alloy
Free of copper and PTFE
RoHS-compliant

 **Note**
The kit includes the individual mounting interface as well as the necessary mounting material.

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Permissible drive/drive combinations with adapter kit

| Combination | [1] Drive size | [2] Drive size | Adapter kit | | | Quantity required | PE ²⁾ |
|---|----------------|----------------|-------------------|---------------|----------------|-------------------|------------------|
| | | | KBK ¹⁾ | Part no. | Type | | |
| SLG/SLF | SLG | SLF | HAPS | | | | |
|  | 8, 12 | 6, 10 | 2 | 189533 | HAPS-11 | 1 | 1 |
| | 12 | 16 | | 189533 | HAPS-11 | 1 | 1 |
| | 18 | 10, 16 | | 189534 | HAPS-12 | 1 | 1 |

- 1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
- 2) Packaging unit quantity.

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