



- Gentle stopping without impact vibrations or noise
- Simple activation via valve terminal
- Single-acting or double-acting

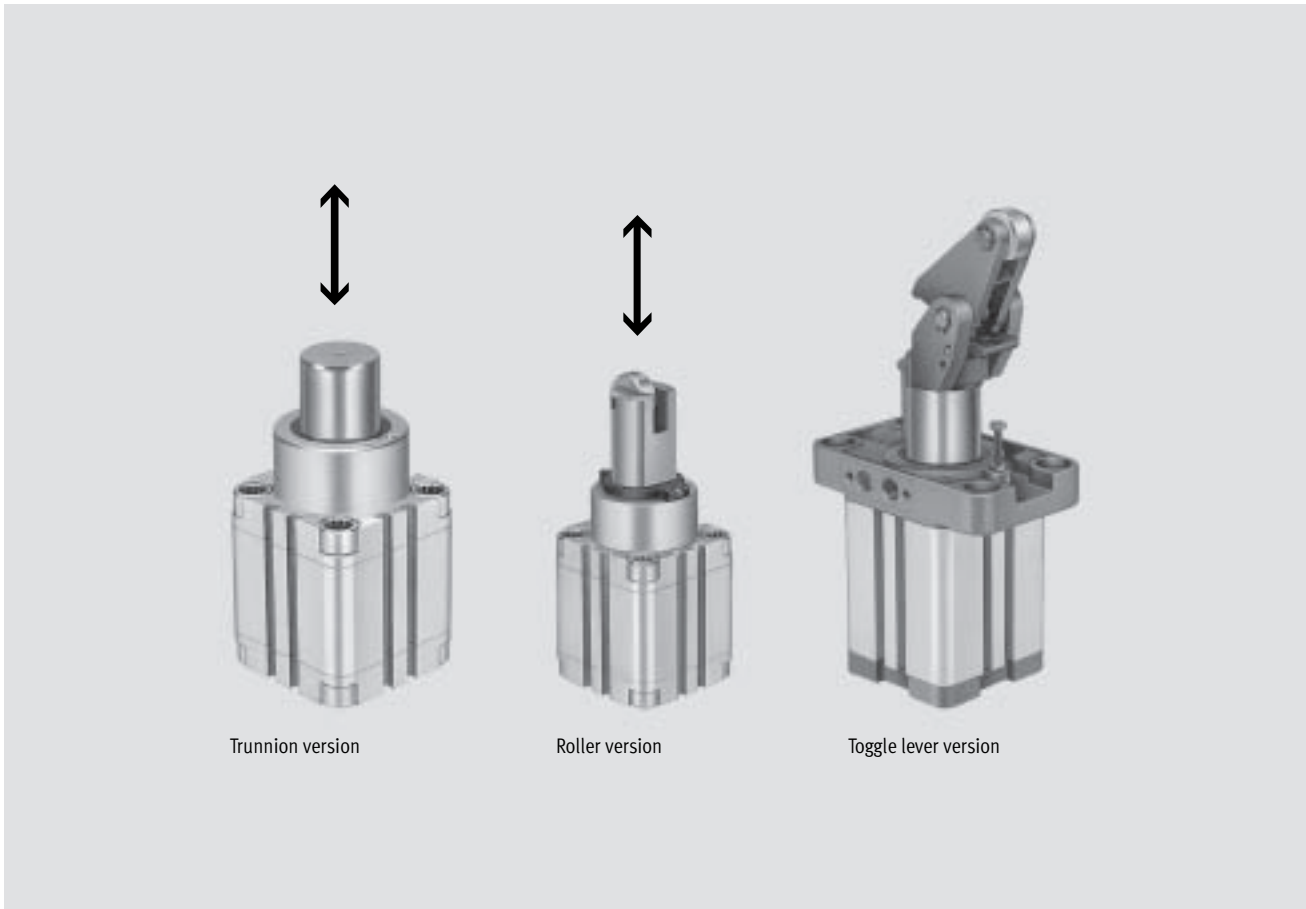
# Stopper cylinders STA/STAF

Features

FESTO

Special-function drives  
Stopper cylinders

5.2



Trunnion version

Roller version

Toggle lever version

## Brief description

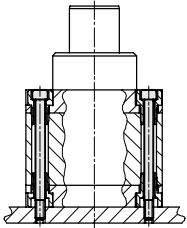
- Single-acting or double-acting
- Variants
  - Trunnion
  - Roller
  - Toggle lever
- Solenoid valves mounted directly to flange plate
- Fast and simple set-up of conveyor lines
- Workpiece carriers, pallets and packages weighing up to 300 kg can be safely stopped
- Gentle stopping without impact vibrations or noise with toggle lever version
- Simple activation via valve terminal (e.g. in combination with other cylinders at an assembly station)
- Flanged solenoid valve on individual stopper cylinders permits fast actuation even over long distances
- Space saving sensing with integrated proximity sensors

# Stopper cylinders STA/STAF

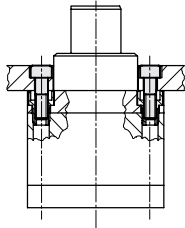
Features

**Mounting options**

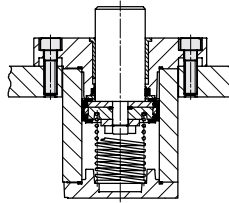
Through-hole mounting



Direct mounting

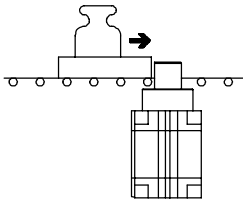


Flange mounting

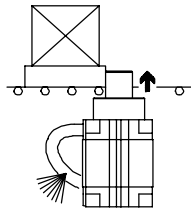


**Application options and versions**

For large masses



Safety

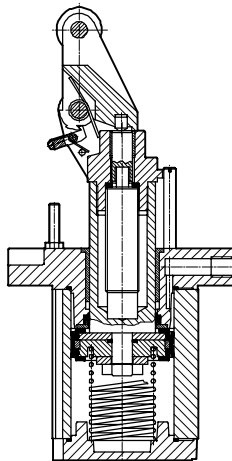
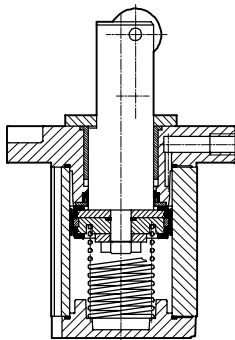
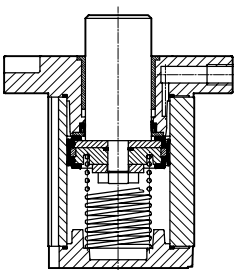


by means of piston rod spring return  
in the event of pressure failure

Highly effective, low noise level

Toggle lever version with integrated  
shock absorber facilitates precise and  
gentle stopping of the workpiece  
carrier

**Trunnion version      Roller version      Toggle lever version**



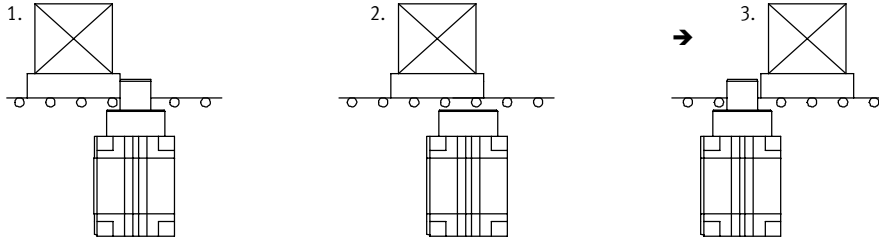
# Stopper cylinders STA/STAF

Features

FESTO

## Trunnion version

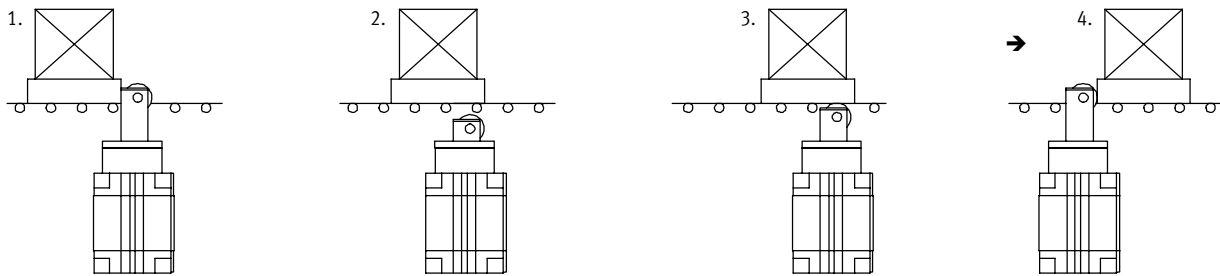
Technical data → 1 / 5.2-11



1. Sudden braking of the workpiece carrier via the piston rod.
2. The workpiece carrier is released by activating the cylinder. The control system must hold the piston down until the workpiece carrier has passed the stopper cylinder.
3. The piston rod then advances by means of spring force or compressed air. The next workpiece carrier can then be stopped.

## Roller version

Technical data → 1 / 5.2-15



1. Sudden braking of the workpiece carrier via the piston rod.
2. The workpiece carrier is released by activating the cylinder.
3. The piston rod then advances by means of spring force or compressed air until the roller makes contact with the workpiece carrier. The workpiece carrier continues to move forward.
4. After the workpiece carrier has passed, the piston rod advances to the end position. The next workpiece carrier can then be stopped.

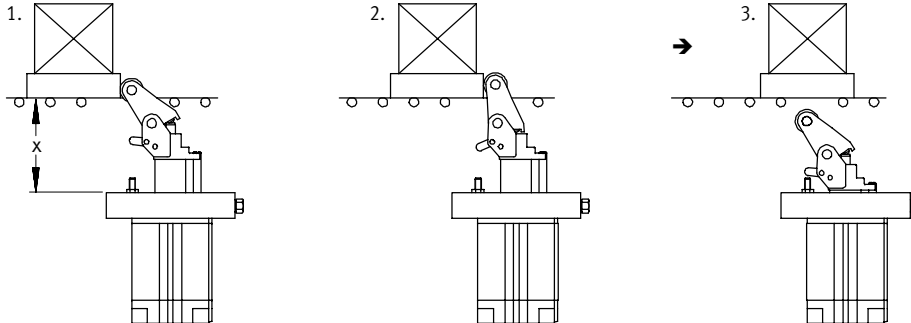
# Stopper cylinders STA/STAF

Features

FESTO

## Toggle lever version

Technical data → 1 / 5.2-19

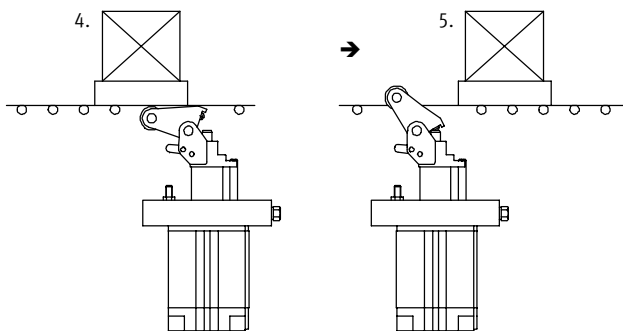


1. Gentle stopping of heavy loads via a hydraulic shock absorber in the piston rod.

2. The toggle lever is latched into the retracted end position so that the workpiece carrier cannot be pushed back by the shock absorber.

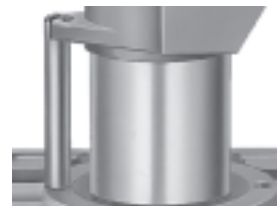
3. The workpiece carrier is released by means of compressed air, and the toggle lever is released simultaneously.

|              |                  |
|--------------|------------------|
| X = STAF-32: | 62.8 ... 63.4 mm |
| STAF-50:     | 96.5 ... 99.5 mm |
| STAF-80:     | 163 ... 166 mm   |



4. The piston is extended by means of spring force or compressed air. The toggle lever tips back which prevents the workpiece carrier from being lifted.

5. The toggle lever is raised by means of spring force and stops the next workpiece carrier.



Protection against rotation:  
The guide rod always aligns the toggle lever precisely to the approaching workpiece carrier.




Integrated shock absorber: Absorbs impact energy and stops the workpiece carrier gently, and with low noise levels. The impact energy can be adjusted using the regulating screw in the toggle lever.



Detenting roller lever: The workpiece carrier cannot be pushed back by the shock absorber.



Locking mechanism for disabling the stopper function: The workpiece carrier is able to pass the holding point without activating the cylinder.

 Note  
Trunnion or roller type stopper cylinders can be mounted in any position. Stopper cylinders with toggle lever must be mounted in the vertical, upright position.

Special-function drives  
Stopper cylinders

5.2

# Stopper cylinders STA/STAF

Features




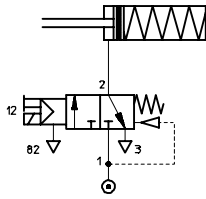
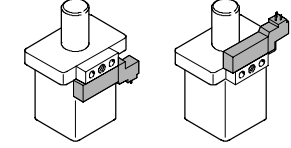
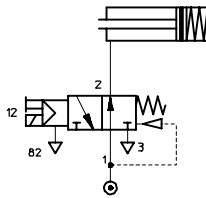
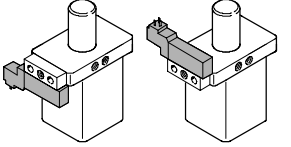
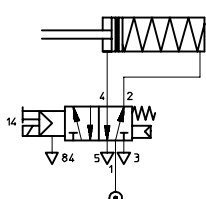
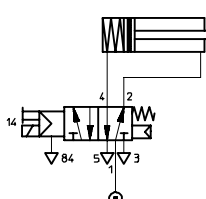
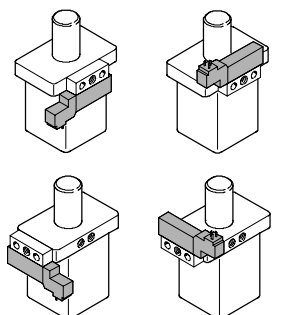
## Mounting options for solenoid valves and valve functions

An MEH, MEBH, MOEH or MOEBH solenoid valve can be mounted on the stopper cylinder for quick, direct actuation of the cylinder. This type of

actuation is only possible for stopper cylinders with flange mounting. The valve must be mounted on the flange

plate via a ZVA valve sub-base. The position of the piston rod when the solenoid valve is in the normal

position depends upon the valve type and the position of the valve on the cylinder.

| Application  | Piston rod initial position   | Required solenoid valve   | Type of mounting for the solenoid valve with sub-base ZVA                             |
|--|---|---|---|
|  | <b>Single-acting</b><br>   | Normally extended<br>173 125 MEH-3/2-5,0-B<br>172 999 MEBH-3/2-5,0-B    |    |
|  |                           | Normally retracted<br>173 429 MOEH-3/2-5,0-B<br>173 002 MOEBH-3/2-5,0-B |   |
|  | <b>Double-acting</b><br> | Normally extended<br>173 128 MEH-5/2-5,0-B<br>173 005 MEBH-5/2-5,0-B    |   |
|  |                          | Normally retracted<br>173 128 MEH-5/2-5,0-B<br>173 005 MEBH-5/2-5,0-B   |  |

Special-function drives  
Stopper cylinders

5.2



Note

Cylinders are always supplied single-acting with spring. If a double-acting stopper cylinder is required, the filter

nipple in the exhaust port must be removed. The exhaust port is then used as a supply port.

Solenoid valves MEH, MEBH  
→ Volume 2

# Stopper cylinders STA/STAF

Features



## Selection aid

Complete the following three steps for quick and accurate selection of a suitable stopper cylinder:

1. If gentle cushioning is required in your application in order to avoid vibration and shifting of the workpiece, and to reduce noise, use a stopper cylinder with toggle lever (graph 2).
2. Check to see whether or not the stopper cylinder covers the desired working range (see graph 1 and selection example).
3. Check to see whether or not the installation dimensions for the selected cylinder fulfil your requirements.

## Example

A workpiece carrier and workpiece with a total weight of 200 kg moving at a speed of 17.5 m/min is to be stopped gently. The intersection of the horizontal and the vertical lines in graph 2 (impact load and impact

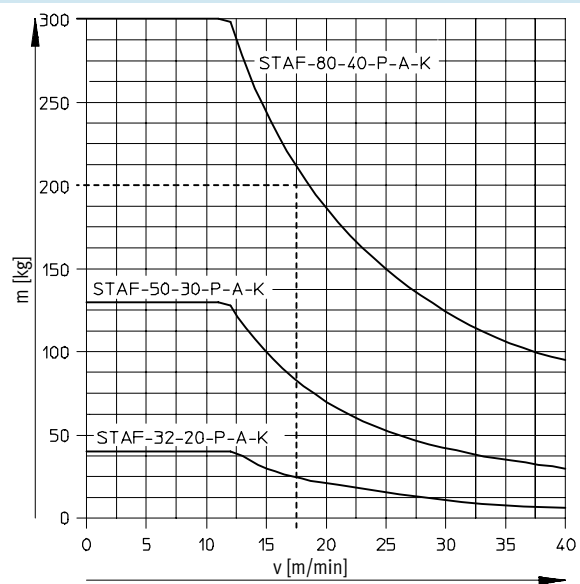
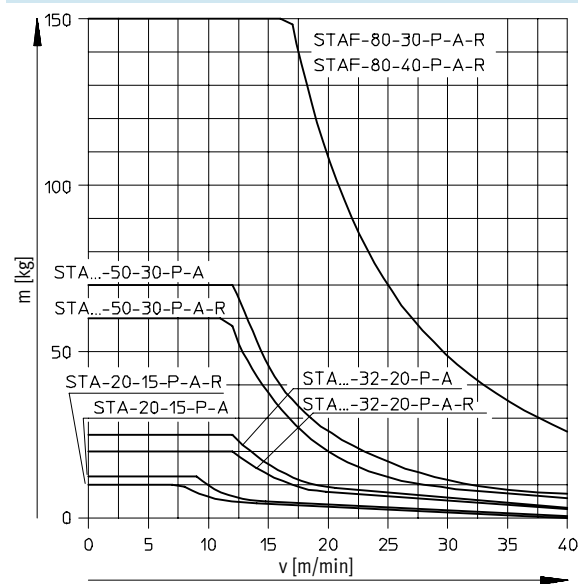
velocity respectively) is within the working range of the stopper cylinder (with toggle lever) STAF-80-40-P-A-K, i.e. this stopper cylinder fulfils the requirement and can be utilised. The maximum permissible kinetic

impact energy on the piston rod of stopper cylinders must not be exceeded. Mechanical failure of the cylinder may otherwise result. The values in the graph presuppose the use of a flexible buffer on the

workpiece carrier with a deformation capacity of 1 mm for trunnion and roller type stopper cylinders.

## Impact velocity $v$ as a function of the impact mass $m$

Graph 1: Trunnion or roller version      Graph 2: Toggle lever version<sup>1)</sup>



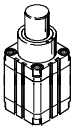
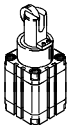
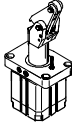
1) Energy values apply at room temperature  $T = 20\text{ °C}$

- Note  
Cushioning time is increased for partial loads

# Stopper cylinders STA/STAF

Product range overview



| Function                | Design  | Type                 | Piston $\varnothing$ | Stroke | Type of mounting |             | Cushioning | Position sensing | → Page     |  |
|-------------------------|---|----------------------|----------------------|--------|------------------|-------------|------------|------------------|------------|--|
|                         |   |                      | [mm]                 | [mm]   | Direct           | With flange | P          | A                |            |  |
| Single or double-acting | <b>Basic version</b>  |                      |                      |        |                  |             |            |                  |            |  |
|                         |  | Trunnion version     | 20                   | 15     | ■                | –           | ■          | ■                | 1 / 5.2-11 |  |
|                         |   |                      | 32                   | 20     | ■                | ■           | ■          | ■                |            |  |
|                         |   |                      | 50                   | 30     | ■                | ■           | ■          | ■                |            |  |
|                         |  | Roller version       | 20                   | 15     | ■                | –           | ■          | ■                | 1 / 5.2-15 |  |
|                         |   |                      | 32                   | 20     | ■                | ■           | ■          | ■                |            |  |
|                         |   |                      | 50                   | 30     | ■                | ■           | ■          | ■                |            |  |
|                         |   |                      | 80                   | 30, 40 | –                | ■           | ■          | ■                |            |  |
|                         |  | Toggle lever version | 32                   | 20     | –                | ■           | ■          | ■                | 1 / 5.2-19 |  |
|                         |   |                      | 50                   | 30     | –                | ■           | ■          | ■                |            |  |
|                         |   |                      | 80                   | 40     | –                | ■           | ■          | ■                |            |  |

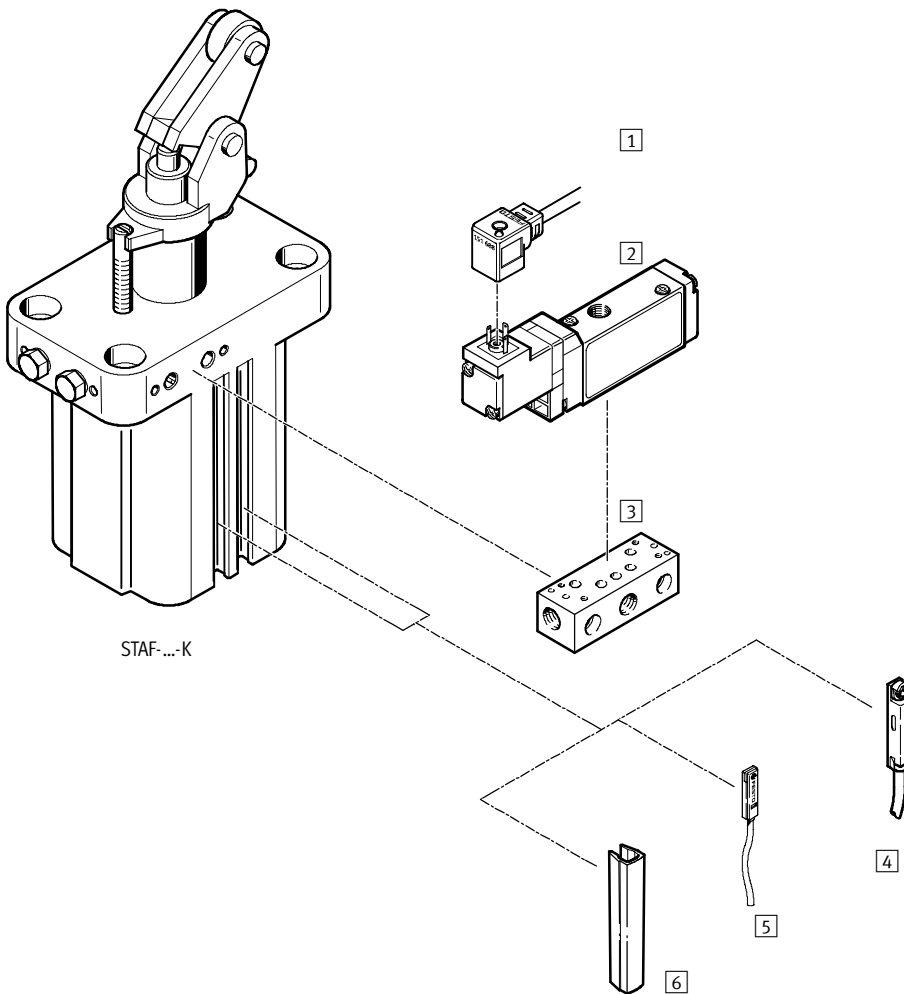
Special-function drives  
Stopper cylinders

5.2



# Stopper cylinders STA/STAF

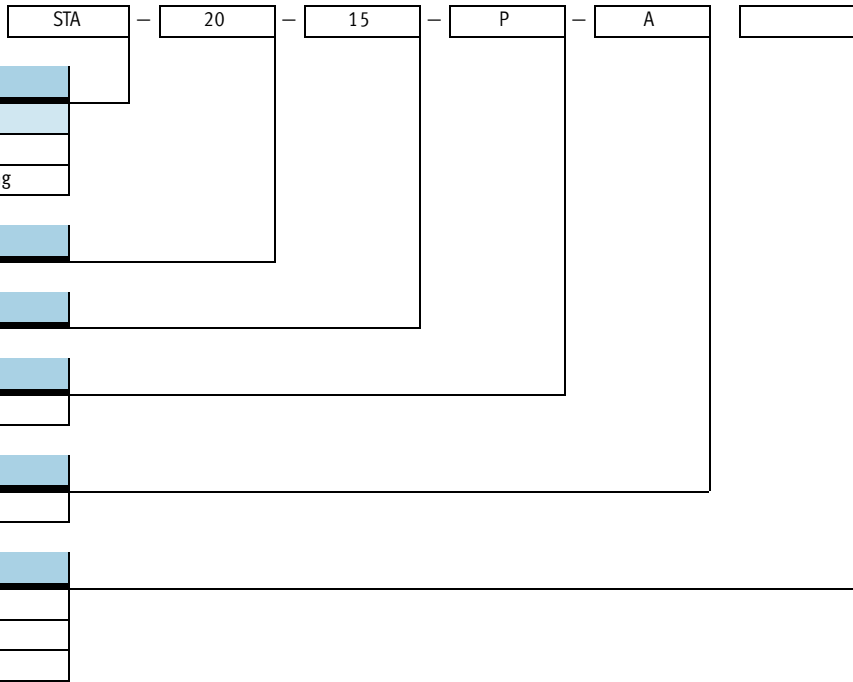
Peripherals overview



| Accessories |                                 |   |
|-------------|---------------------------------|---|
|             | Brief description               | → Page  |
| 1           | Plug socket with cable<br>KMEB  | Volume 2  |
| 2           | 3/2-way valve<br>MEBH           | For fast and direct actuation of the stopper cylinder<br>Volume 2               |
| 3           | Sub-base<br>ZVA                 | For stopper cylinder with flange<br>1 / 5.2-22                                  |
| 4           | Proximity sensors<br>SME/SMT-8F | Can be integrated in the cylinder profile barrel from above<br>1 / 5.2-24       |
| 5           | Proximity sensors<br>SME/SMT-8  | Can be integrated flush with the cylinder profile barrel<br>1 / 5.2-24          |
| 6           | Slot cover<br>ABP               | To protect the sensor cable and keep dirt out of the sensor slots<br>1 / 5.2-24 |

# Stopper cylinders STA/STAF

Type codes



# Stopper cylinders STA/STAF, trunnion

Technical data

Function



- Diameter  
20 ... 50 mm
- Stroke length  
15 ... 30 mm
- [www.festo.com/en/Spare\\_parts\\_service](http://www.festo.com/en/Spare_parts_service)

**Note**  
Contact with liquids must be avoided during use.

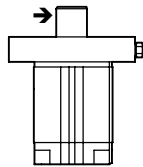


| General technical data            |   |            |                 |                 |
|-----------------------------------|---|------------|-----------------|-----------------|
| Piston $\varnothing$              |   | 20         | 32              | 50              |
| Pneumatic connection              | STA   | M5         | G $\frac{1}{8}$ | G $\frac{1}{8}$ |
|                                   | STAF  | -          | M5              | G $\frac{1}{8}$ |
| Stroke                            | [mm]  | 15         | 20              | 30              |
| Piston rod $\varnothing$          | [mm]  | 12         | 20              | 32              |
| Operating pressure                | [bar]   | 10         |                 |                 |
| Operating medium                  | Filtered compressed air, lubricated or unlubricated |            |                 |                 |
| Design                            | Piston cylinder with spring return                  |            |                 |                 |
| Cushioning                        | Non-adjustable                                      |            |                 |                 |
| Position sensing                  | Via proximity sensor                                |            |                 |                 |
| Type of mounting                  | Via through-holes                                   |            |                 |                 |
|                                   | Using female threads                                |            |                 |                 |
| Mounting position                 | Any   |            |                 |                 |
| Mode of operation                 | Single-acting or double-acting                      |            |                 |                 |
| Protection against torsion        | None  |            |                 |                 |
| Ambient temperature <sup>1)</sup> | [°C]  | +5 ... +60 |                 |                 |

1) Note operating range of proximity sensors

| Forces [N]           |  |           |           |           |
|----------------------|--|-----------|-----------|-----------|
| Piston $\varnothing$ |  | 20        | 32        | 50        |
| Impact force         |  | 260       | 1,000     | 2,900     |
| Spring force         |  | 13 ... 18 | 20 ... 42 | 47 ... 64 |

Impact force is the basis for the calculation of permissible impact energy. Depending upon the type of load to be stopped, it is advisable to use a flexible buffer to cushion the impact, reduce noise levels and to optimise impact energy.



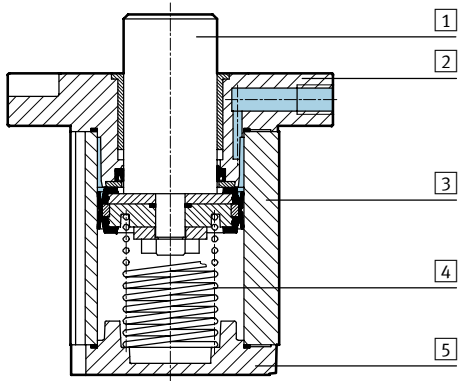
→ = Direction of impact force

# Stopper cylinders STA/STAF, trunnion

Technical data

## Materials

Sectional view



### Stopper cylinder

|   |                  |                                   |
|---|------------------|-----------------------------------|
| 1 | Piston rod       | Stainless steel                   |
| 2 | Flange           | Die-cast aluminium                |
| 3 | Cylinder barrel  | Anodised aluminium                |
| 4 | Springs          | Spring steel                      |
| 5 | Plug cap         | Anodised aluminium                |
| - | Seals            | Polyurethane                      |
| - | Note on material | Free of copper, PTFE and silicone |

# Stopper cylinders STA/STAF, trunnion

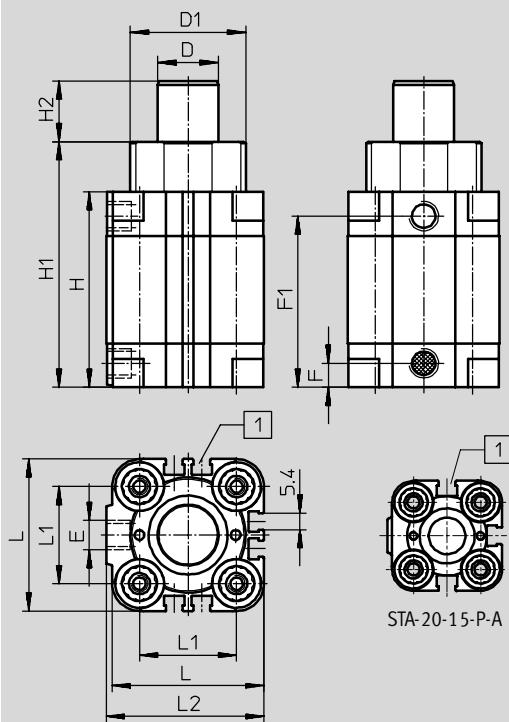
Technical data



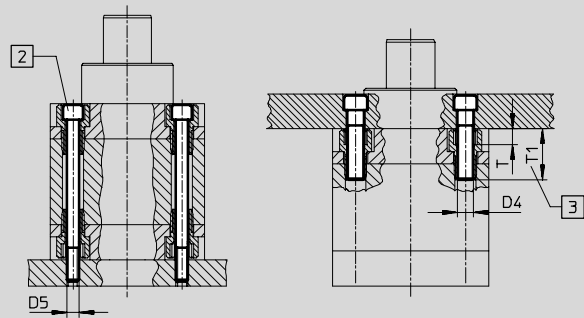
## Dimensions

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

### Direct mounting



STA-20-15-P-A



- - Note

The socket head screw may only be inserted via the bearing cap for design reasons.

1 Sensor slot for proximity sensor SME/SMT-8

2 Socket head screw to DIN 912, screwed through

3 Recommended minimum screw-in depth

| ∅    | Stroke | D  | D1 | D4 | D5 | E               | F | F1   | H    | H1   | H2 | L  | L1 | L2   | T | T1 |
|------|--------|----|----|----|----|-----------------|---|------|------|------|----|----|----|------|---|----|
| [mm] | [mm]   | ∅  | ∅  |    |    |                 |   |      |      |      |    |    |    |      |   |    |
| 20   | 15     | 12 | 26 | M5 | M4 | M5              | 8 | 45   | 53   | 64.5 | 15 | 36 | 22 | 37.5 | 4 | 18 |
| 32   | 20     | 20 | 38 | M6 | M5 | G $\frac{1}{8}$ | 8 | 56.5 | 64.5 | 80.5 | 20 | 50 | 32 | 52   | 5 | 20 |
| 50   | 30     | 32 | 53 | M8 | M6 | G $\frac{1}{8}$ | 8 | 67.5 | 75.5 | 99.5 | 30 | 68 | 50 | 71   | 6 | 20 |

# Stopper cylinders STA/STAF, trunnion

Technical data



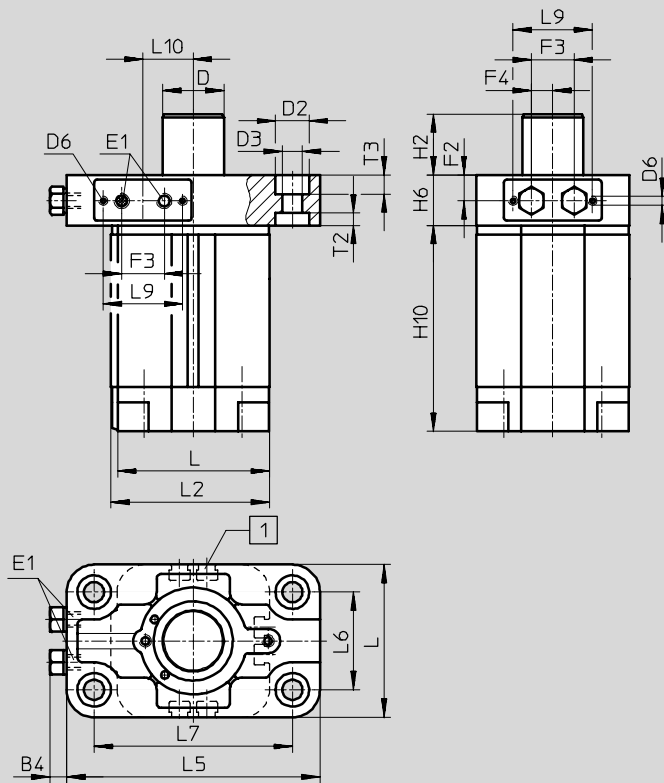
Special-function drives  
Stopper cylinders

5.2

## Dimensions

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

### Flange mounting



1 Sensor slot for proximity sensor  
SME/SMT-8

| ∅    | Stroke | B4  | D  | D2 | D3  | D6 | E1              | F2  | F3 | F4 | H2 |
|------|--------|-----|----|----|-----|----|-----------------|-----|----|----|----|
| [mm] | [mm]   |     | ∅  | ∅  | ∅   |    |                 |     |    |    |    |
| 32   | 20     | 4.5 | 20 | 11 | 6.6 | M3 | M5              | 8.5 | 14 | 7  | 20 |
| 50   | 30     | 4.5 | 32 | 15 | 9   | M4 | G $\frac{1}{8}$ | 9   | 17 | 8  | 30 |

| ∅    | Stroke | H6   | H10  | L  | L2 | L5  | L6 | L7 | L9 | L10  | T2 | T2  |
|------|--------|------|------|----|----|-----|----|----|----|------|----|-----|
| [mm] | [mm]   |      |      |    |    |     |    |    |    |      |    |     |
| 32   | 20     | 16.5 | 67.5 | 50 | 52 | 83  | 32 | 65 | 26 | 16.5 | 4  | 6.2 |
| 50   | 30     | 18   | 85   | 68 | 71 | 111 | 45 | 90 | 36 | 7    | 5  | 5   |

## Ordering data

| Piston ∅<br>[mm] | Stroke<br>[mm] | Direct mounting |               | Flange mounting |                |
|------------------|----------------|-----------------|---------------|-----------------|----------------|
|                  |                | Part No.        | Type          | Part No.        | Type           |
| 20               | 15             | 164 887         | STA-20-15-P-A | -               | -              |
| 32               | 20             | 164 888         | STA-32-20-P-A | 164 890         | STAF-32-20-P-A |
| 50               | 30             | 164 889         | STA-50-30-P-A | 164 891         | STAF-50-30-P-A |

# Stopper cylinders STA/STAF, roller

Technical data

FESTO

Function



- Diameter  
20 ... 80 mm
- Stroke length  
15 ... 40 mm
- [www.festo.com/en/Spare\\_parts\\_service](http://www.festo.com/en/Spare_parts_service)

**Note**  
Contact with liquids must be avoided during use.

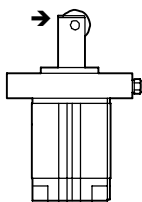


| General technical data            |   |            |                 |                 |                 |
|-----------------------------------|---|------------|-----------------|-----------------|-----------------|
| Piston $\varnothing$              |   | 20         | 32              | 50              | 80              |
| Pneumatic connection              | STA   | M5         | G $\frac{1}{8}$ | G $\frac{1}{8}$ | -               |
|                                   | STAF  | -          | M5              | G $\frac{1}{8}$ | G $\frac{1}{8}$ |
| Stroke                            | [mm]  | 15         | 20              | 30              | 30/40           |
| Piston rod $\varnothing$          | [mm]  | 12         | 20              | 32              | 50              |
| Operating pressure                | [bar]   | 10         |                 |                 |                 |
| Operating medium                  | Filtered compressed air, lubricated or unlubricated |            |                 |                 |                 |
| Design                            | Piston cylinder with spring return                  |            |                 |                 |                 |
| Cushioning                        | Non-adjustable                                      |            |                 |                 |                 |
| Position sensing                  | Via proximity sensor                                |            |                 |                 |                 |
| Type of mounting                  | Via through-holes                                   |            |                 |                 |                 |
|                                   | Using female threads                                |            |                 |                 |                 |
| Mounting position                 | Any   |            |                 |                 |                 |
| Mode of operation                 | Single-acting or double-acting                      |            |                 |                 |                 |
| Protection against torsion        | Flat-sided piston rod                               |            |                 |                 |                 |
| Ambient temperature <sup>1)</sup> | [°C]  | +5 ... +60 |                 |                 |                 |

1) Note operating range of proximity sensors

| Forces [N]           |  |           |           |           |                           |
|----------------------|--|-----------|-----------|-----------|---------------------------|
| Piston $\varnothing$ |  | 20        | 32        | 50        | 80                        |
| Stroke               |  | 15        | 20        | 30        | 30    40                  |
| Impact force         |  | 170       | 830       | 2,300     | 14,600    13,300          |
| Spring force         |  | 13 ... 18 | 20 ... 42 | 47 ... 64 | 79 ... 115    101 ... 170 |

Impact force is the basis for the calculation of permissible impact energy. Depending upon the type of load to be stopped, it is advisable to use a flexible buffer to cushion the impact, reduce noise levels and to optimise impact energy.



→ = Direction of impact force

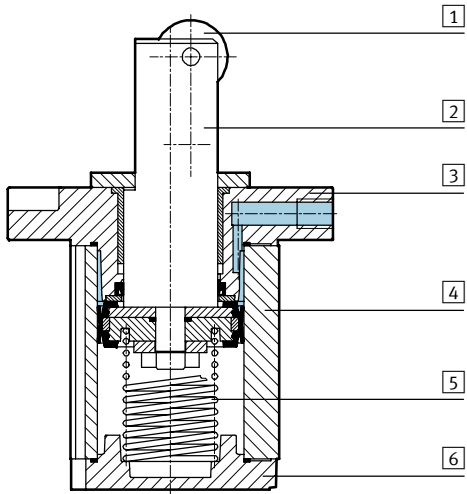
# Stopper cylinders STA/STAF, roller

Technical data



## Materials

Sectional view



| Stopper cylinder |   |
|------------------|---|
| 1                | Roller<br>Polymer                                     |
| 2                | Piston rod<br>Stainless steel                         |
| 3                | Flange<br>Die-cast aluminium                          |
| 4                | Cylinder barrel<br>Anodised aluminium                 |
| 5                | Springs<br>Spring steel                               |
| 6                | Plug cap<br>Anodised aluminium                        |
| -                | Seals<br>Polyurethane                                 |
| -                | Note on material<br>Free of copper, PTFE and silicone |

Special-function drives  
Stopper cylinders

5.2



# Stopper cylinders STA/STAF, roller

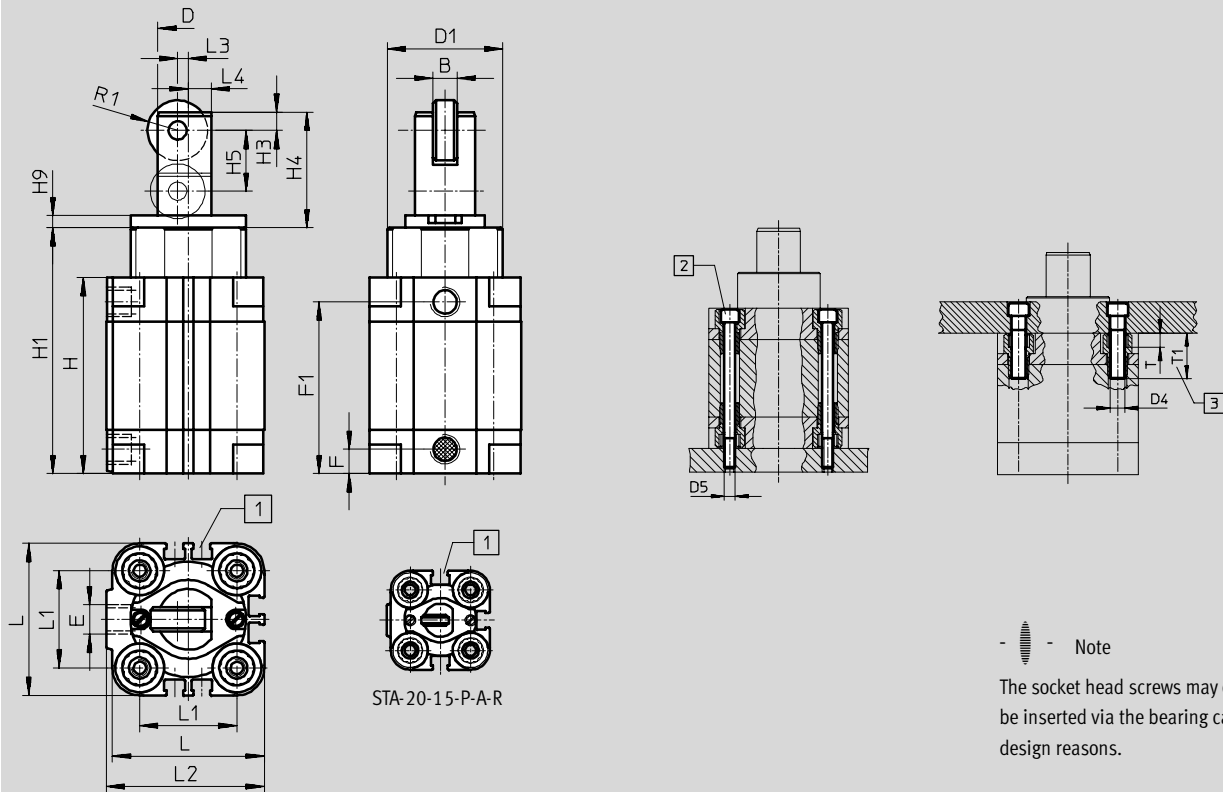
Technical data



## Dimensions

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

Direct mounting



STA-20-15-P-A-R

1 Sensor slot for proximity sensor SME/SMT-8

2 Socket head screw to DIN 912, screwed through

3 Recommended minimum screw-in depth

Note  
The socket head screws may only be inserted via the bearing cap for design reasons.

| ∅    | Stroke | B  | D  | D1 | D4 | D5 | E               | F | F1   | H    | H1   | H3 |
|------|--------|----|----|----|----|----|-----------------|---|------|------|------|----|
| [mm] | [mm]   |    | ∅  | ∅  |    |    |                 |   |      |      |      |    |
| 20   | 15     | 4  | 12 | 26 | M5 | M4 | M5              | 8 | 45   | 53   | 64.5 | 3  |
| 32   | 20     | 8  | 20 | 38 | M6 | M5 | G $\frac{1}{8}$ | 8 | 56.5 | 64.5 | 80.5 | 6  |
| 50   | 30     | 10 | 32 | 53 | M8 | M6 | G $\frac{1}{8}$ | 8 | 67.5 | 75.5 | 99.5 | 6  |

| ∅    | Stroke | H4   | H5 | H9 | L  | L1 | L2   | L3  | L4  | R1   | T | T1 |
|------|--------|------|----|----|----|----|------|-----|-----|------|---|----|
| [mm] | [mm]   |      |    |    |    |    |      |     |     |      |   |    |
| 20   | 15     | 24   | 15 | 4  | 36 | 22 | 37.5 | 2   | 4.5 | 5    | 4 | 18 |
| 32   | 20     | 38   | 20 | 4  | 50 | 32 | 52   | 3.5 | 7.5 | 9    | 5 | 20 |
| 50   | 30     | 50.5 | 30 | 5  | 68 | 50 | 71   | 7   | 12  | 12.5 | 6 | 20 |

# Stopper cylinders STA/STAF, roller

Technical data



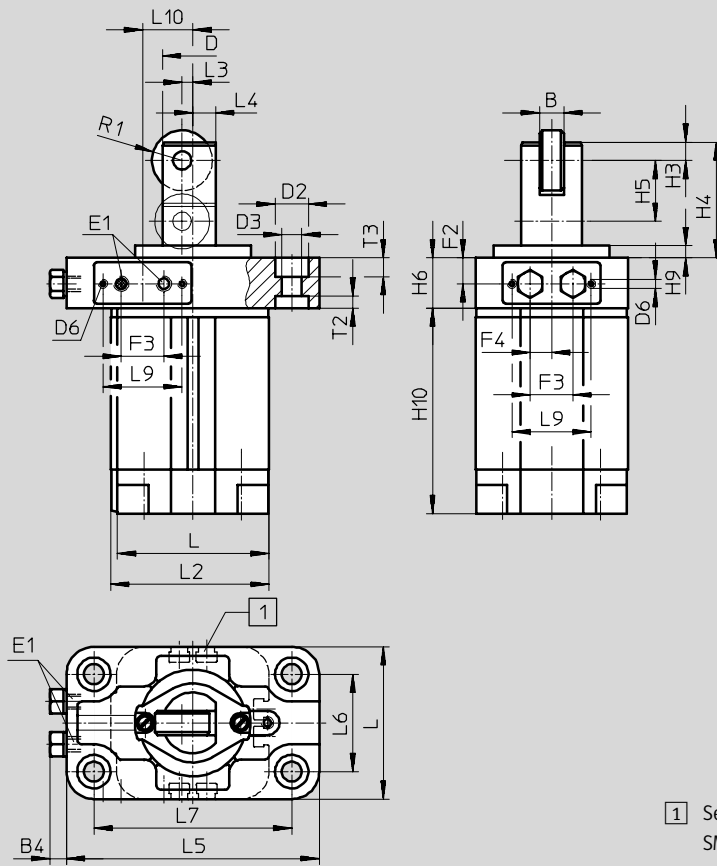
Special-function drives  
Stopper cylinders

5.2

## Dimensions

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

### Flange mounting



1 Sensor slot for proximity sensor  
SME/SMT-8

| ∅    | Stroke | B  | B4  | D  | D2 | D3  | D6 | E1              | F2  | F3 | F4  | H3 | H4   | H5 | H6   |
|------|--------|----|-----|----|----|-----|----|-----------------|-----|----|-----|----|------|----|------|
| [mm] | [mm]   |    |     | ∅  | ∅  | ∅   |    |                 |     |    |     |    |      |    |      |
| 32   | 20     | 8  | 4.5 | 20 | 11 | 6.6 | M3 | M5              | 8.5 | 14 | 7   | 6  | 38   | 20 | 16.5 |
| 50   | 30     | 10 | 4.5 | 32 | 15 | 9   | M4 | G $\frac{1}{8}$ | 9   | 17 | 8   | 6  | 50.5 | 30 | 18   |
| 80   | 30     | 18 | 4.5 | 50 | 18 | 11  | M4 | G $\frac{1}{8}$ | 11  | 17 | 4.5 | 10 | 63   | 30 | 22   |
|      | 73     |    |     |    |    |     |    |                 |     |    |     |    | 40   |    |      |

| ∅    | Stroke | H9 | H10  | L   | L2  | L3  | L4  | L5  | L6 | L7  | L9 | L10  | R1   | T2 | T3  |
|------|--------|----|------|-----|-----|-----|-----|-----|----|-----|----|------|------|----|-----|
| [mm] | [mm]   |    |      |     |     |     |     |     |    |     |    |      |      |    |     |
| 32   | 20     | 4  | 67.5 | 50  | 52  | 3.5 | 7.5 | 83  | 32 | 65  | 26 | 16.5 | 9    | 4  | 6.2 |
| 50   | 30     | 5  | 85   | 68  | 71  | 7   | 12  | 111 | 45 | 90  | 36 | 7    | 12.5 | 5  | 5   |
| 80   | 30     | 8  | 119  | 107 | 111 | 11  | 18  | 160 | 63 | 135 | 36 | 18.5 | 18   | 6  | 6   |
|      | 129    |    |      |     |     |     |     |     |    |     |    |      |      |    |     |

## Ordering data

| Piston ∅<br>[mm] | Stroke<br>[mm] | Direct mounting |                 | Flange mounting |                  |
|------------------|----------------|-----------------|-----------------|-----------------|------------------|
|                  |                | Part No.        | Type            | Part No.        | Type             |
| 20               | 15             | 164 883         | STA-20-15-P-A-R | -               | -                |
| 32               | 20             | 164 884         | STA-32-20-P-A-R | 164 892         | STAF-32-20-P-A-R |
| 50               | 30             | 164 885         | STA-50-30-P-A-R | 164 893         | STAF-50-30-P-A-R |
| 80               | 30             | -               | -               | 164 886         | STAF-80-30-P-A-R |
| 80               | 40             | -               | -               | 164 894         | STAF-80-40-P-A-R |

# Stopper cylinders STA/STAF, toggle lever

Technical data

Function



- - Diameter  
32 ... 80 mm
- - Stroke length  
20 ... 40 mm
- - [www.festo.com/en/Spare\\_parts\\_service](http://www.festo.com/en/Spare_parts_service)

- Note  
Contact with liquids must be avoided during use.

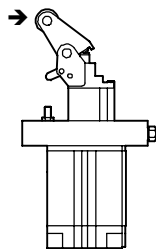


| General technical data                 |   |                 |                 |
|--|---|-----------------|-----------------|
| Piston $\varnothing$                   | 32  | 50              | 80              |
| Pneumatic connection                   | M5  | G $\frac{1}{8}$ | G $\frac{1}{8}$ |
| Stroke [mm]                            | 20  | 30              | 40              |
| Piston rod $\varnothing$ [mm]          | 20  | 32              | 50              |
| Operating pressure [bar]               | 10  |                 |                 |
| Operating medium                       | Filtered compressed air, lubricated or unlubricated |                 |                 |
| Design                                 | Piston cylinder with spring return                  |                 |                 |
| Cushioning                             | Non-adjustable                                      |                 |                 |
| Position sensing                       | Via proximity sensor                                |                 |                 |
| Type of mounting                       | Via through-holes                                   |                 |                 |
| Mounting position                      | Vertical, upright                                   |                 |                 |
| Mode of operation                      | Single-acting or double-acting                      |                 |                 |
| Protection against torsion             | Guide rod   |                 |                 |
| Ambient temperature <sup>1)</sup> [°C] | +5 ... +60  |                 |                 |

1) Note operating range of proximity sensors

| Forces [N]           |           |           |             |
|----------------------|-----------|-----------|-------------|
| Piston $\varnothing$ | 32        | 50        | 80          |
| Impact force         | 480       | 1,200     | 6,400       |
| Spring force         | 20 ... 42 | 47 ... 64 | 101 ... 170 |

Impact force is the basis for the calculation of permissible impact energy. Depending upon the type of load to be stopped, it is advisable to use a flexible buffer to cushion the impact, reduce noise levels and to optimise impact energy.



→ = Direction of impact force

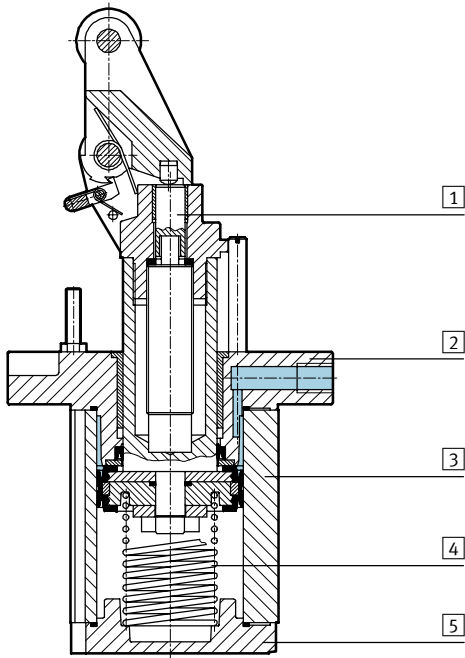
# Stopper cylinders STA/STAF, toggle lever

Technical data



## Materials

Sectional view



| Stopper cylinder |   |
|------------------|---|
| 1                | Piston rod<br>Stainless steel                         |
| 2                | Flange<br>Die-cast aluminium                          |
| 3                | Cylinder barrel<br>Anodised aluminium                 |
| 4                | Springs<br>Spring steel                               |
| 5                | Plug cap<br>Anodised aluminium                        |
| -                | Seals<br>Polyurethane                                 |
| -                | Note on material<br>Free of copper, PTFE and silicone |

# Stopper cylinders STA/STAF, toggle lever

Technical data

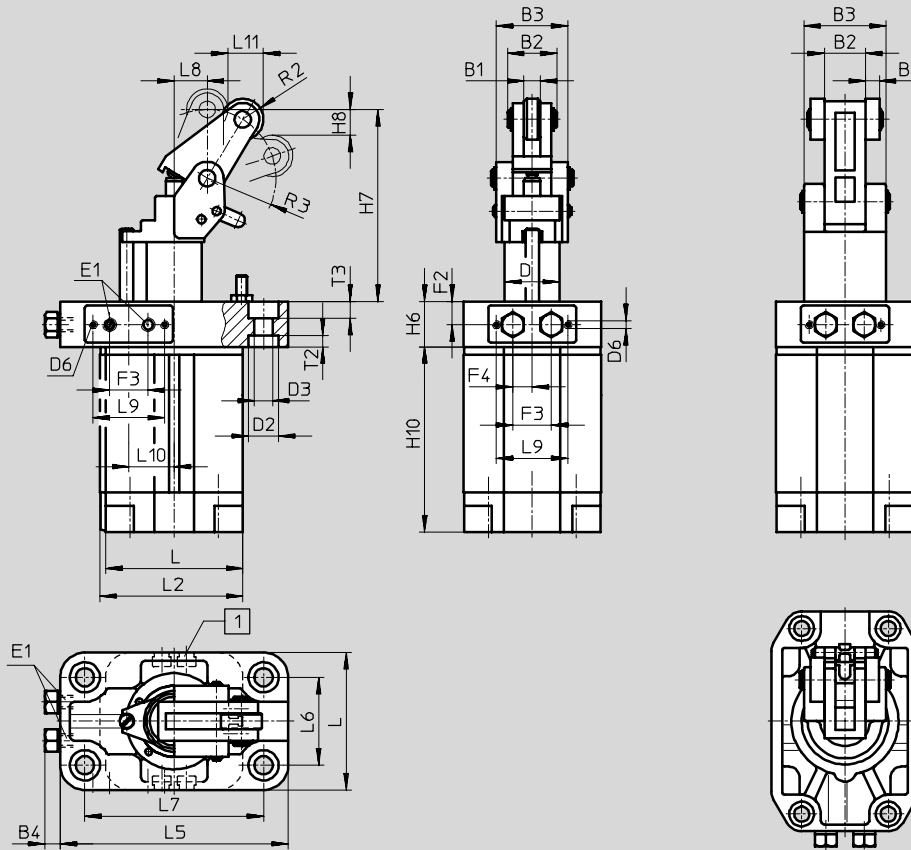


## Dimensions

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

### Flange mounting

STAF-80-40-P-A-K:  
Toggle lever with double roller



1 Sensor slot for proximity sensor SME/SMT-8

| ∅    | Stroke | B1 | B2 | B3 | B4  | D  | D2 | D3  | D6 | E1              | F2  | F3 | F4  | H6   | H7    | H8  |
|------|--------|----|----|----|-----|----|----|-----|----|-----------------|-----|----|-----|------|-------|-----|
| [mm] | [mm]   |    |    |    |     | ∅  | ∅  | ∅   |    |                 |     |    |     |      |       |     |
| 32   | 20     | 6  | 18 | 26 | 4.5 | 20 | 11 | 6.6 | M3 | M5              | 8.5 | 14 | 7   | 16.5 | 70    | 9.5 |
| 50   | 30     | 10 | 27 | 38 | 4.5 | 32 | 15 | 9   | M4 | G $\frac{1}{8}$ | 9   | 17 | 8   | 18   | 106   | 12  |
| 80   | 40     | 10 | 30 | 60 | 4.5 | 50 | 18 | 11  | M4 | G $\frac{1}{8}$ | 11  | 17 | 4.5 | 22   | 182.5 | 23  |

| ∅    | Stroke | H10  | L   | L2  | L5  | L6 | L7  | L8 | L9 | L10  | L11 | R2  | R3 | T2 | T3  |
|------|--------|------|-----|-----|-----|----|-----|----|----|------|-----|-----|----|----|-----|
| [mm] | [mm]   |      |     |     |     |    |     |    |    |      |     |     |    |    |     |
| 32   | 20     | 67.5 | 50  | 52  | 83  | 32 | 65  | 12 | 26 | 16.5 | 13  | 7.5 | 25 | 4  | 6.2 |
| 50   | 30     | 85   | 68  | 71  | 111 | 45 | 90  | 21 | 36 | 7    | 17  | 11  | 39 | 5  | 5   |
| 80   | 40     | 129  | 107 | 111 | 160 | 63 | 135 | 30 | 36 | 18.5 | 34  | 16  | 60 | 6  | 6   |

## Ordering data

| Piston ∅<br>[mm] | Stroke<br>[mm] | Direct mounting |      | Flange mounting |                  |
|------------------|----------------|-----------------|------|-----------------|------------------|
|                  |                | Part No.        | Type | Part No.        | Type             |
| 32               | 20             | -               | -    | 164 880         | STAF-32-20-P-A-K |
| 50               | 30             | -               | -    | 164 881         | STAF-50-30-P-A-K |
| 80               | 40             | -               | -    | 164 895         | STAF-80-40-P-A-K |

# Stopper cylinders STA/STAF

Accessories



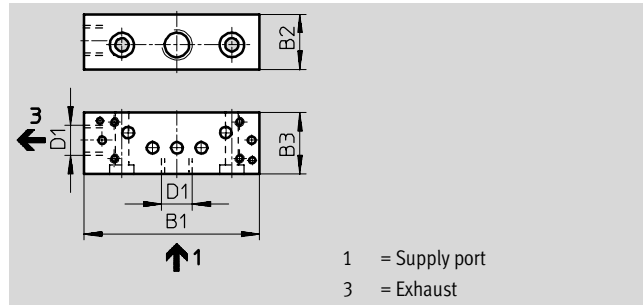
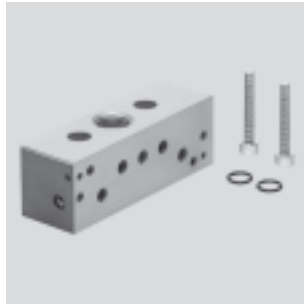
## Sub-base ZVA

for stopper cylinder with flange

Material:

Wrought aluminium alloy

Free of copper, PTFE and silicone



| Dimensions and ordering data |      |    |    |                 |                   |        |                      |
|------------------------------|------|----|----|-----------------|-------------------|--------|----------------------|
| For $\varnothing$            | B1   | B2 | B3 | D1              | CRC <sup>1)</sup> | Weight | Part No. Type        |
| [mm]                         |      |    |    |                 |                   | [g]    |                      |
| 32                           | 56   | 18 | 20 | G $\frac{1}{8}$ | 2                 | 50     | <b>164 896 ZVA-1</b> |
| 50/80                        | 57.5 | 18 | 20 | G $\frac{1}{8}$ | 2                 | 52     | <b>164 897 ZVA-2</b> |

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

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

# Stopper cylinders STA/STAF

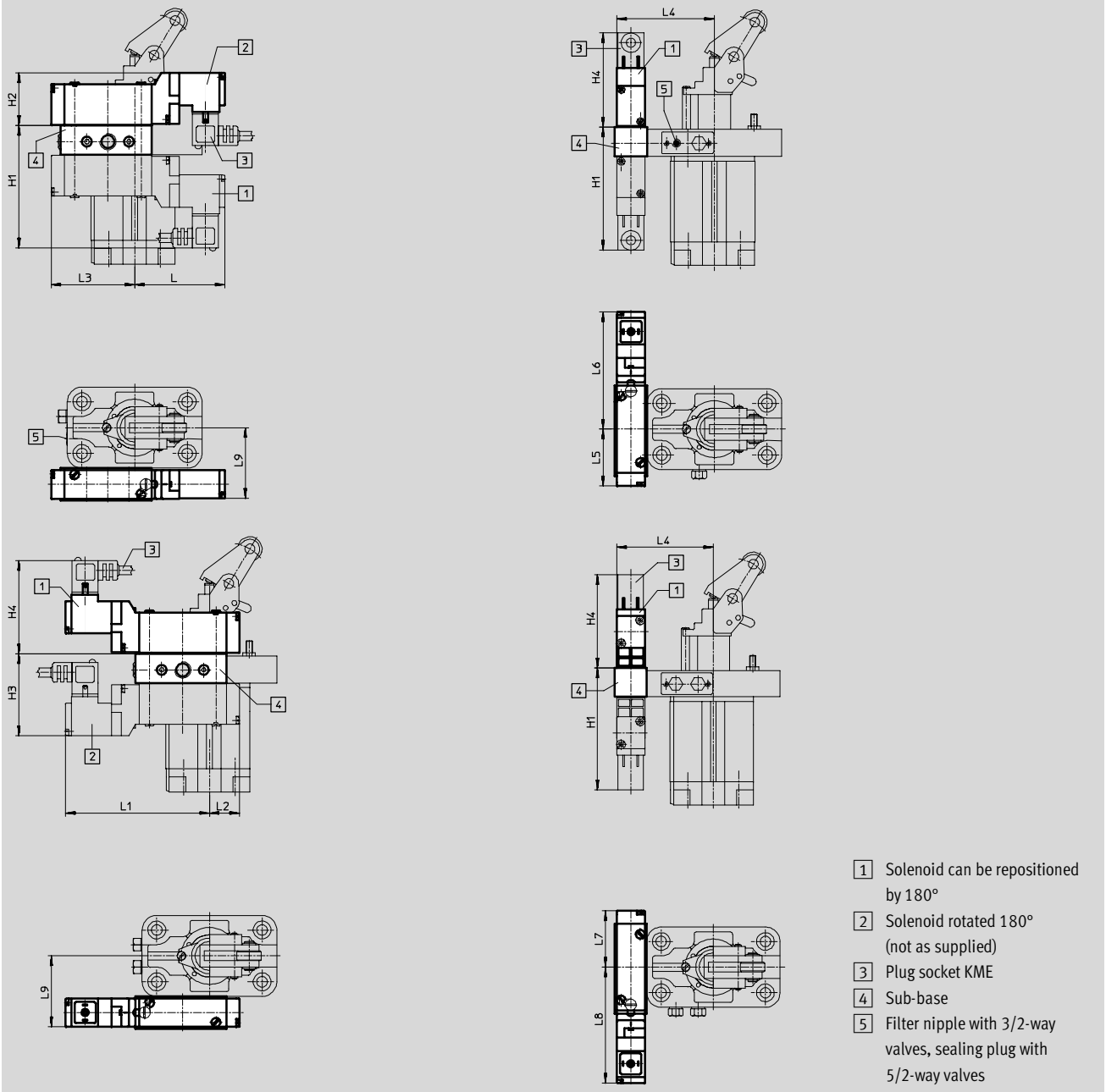
Accessories



## Dimensions

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

Mounting dimensions for solenoid valves with sub-base ZVA on stopper cylinders



- 1 Solenoid can be repositioned by 180°
- 2 Solenoid rotated 180° (not as supplied)
- 3 Plug socket KME
- 4 Sub-base
- 5 Filter nipple with 3/2-way valves, sealing plug with 5/2-way valves

| For Ø [mm] | L    | L1   | L2   | L3   | L4 | L5 | L6 |
|------------|------|------|------|------|----|----|----|
| 32         | 55.5 | 88.5 | 18.5 | 51.5 | 59 | 35 | 72 |
| 50         | 65   | 79   | 28   | 42   | 73 | 36 | 71 |
| 80         | 48.5 | 95.5 | 11.5 | 58.5 | 98 | 39 | 68 |

| For Ø [mm] | L7 | L8 | L9 | H1   | H2   | H3   | H4   |
|------------|----|----|----|------|------|------|------|
| 32         | 35 | 72 | 42 | 74.5 | 33.5 | 48.5 | 59.5 |
| 50         | 34 | 73 | 52 | 77   | 31   | 31   | 57   |
| 80         | 31 | 76 | 71 | 79   | 29   | 53   | 56   |

# Stopper cylinders STA/STAF

Accessories



Special-function drives  
Stopper cylinders

5.2

| Ordering data – Proximity sensors for slot type 8, magneto-resistive |                 |               |                       |         |          |                  | Technical data → 1 / 10.2-13 |                        |  |
|--|-----------------|---------------|-----------------------|---------|----------|------------------|------------------------------|------------------------|--|
|  | Mounting        | Switch output | Electrical connection |         |          | Cable length [m] | Part No.                     | Type                   |  |
|  |                 |               | Cables                | M8 plug | M12 plug |                  |                              |                        |  |
| <b>NO contact</b>  |                 |               |                       |         |          |                  |                              |                        |  |
|  | Via accessories | PNP           | 3-wire                | –       | –        | 2.5              | 525 898                      | SMT-8F-PS-24V-K2,5-OE  |  |
|  |                 | NPN           |                       |         |          |                  | 525 909                      | SMT-8F-NS-24V-K2,5-OE  |  |
|  |                 | –             | 2-wire                | –       | –        | 2.5              | 525 908                      | SMT-8F-ZS-24V-K2,5-OE  |  |
|  |                 | PNP           | –                     | 3-pin   | –        | 0.3              | 525 899                      | SMT-8F-PS-24V-K0,3-M8D |  |
|  |                 | NPN           |                       |         |          |                  | 525 910                      | SMT-8F-NS-24V-K0,3-M8D |  |
|  |                 | PNP           | –                     | –       | 3-pin    | 0.3              | 525 900                      | SMT-8F-PS-24V-K0,3-M12 |  |
|  | Via accessories | PNP           | 3-wire                | –       | –        | 2.5              | 175 436                      | SMT-8-PS-K-LED-24-B    |  |
|  |                 |               | –                     | 3-pin   | –        | 0.3              | 175 484                      | SMT-8-PS-S-LED-24-B    |  |
| <b>NC contact</b>  |                 |               |                       |         |          |                  |                              |                        |  |
|  | Via accessories | PNP           | 3-wire                | –       | –        | 7.5              | 525 911                      | SMT-8F-PO-24V-K7,5-OE  |  |

| Ordering data – Proximity sensors for slot type 8, magnetic reed |                 |                       |         |                  |          |                        | Technical data → 1 / 10.2-16 |  |
|--|-----------------|-----------------------|---------|------------------|----------|------------------------|------------------------------|--|
|  | Mounting        | Electrical connection |         | Cable length [m] | Part No. | Type                   |                              |  |
|  |                 | Cables                | M8 plug |                  |          |                        |                              |  |
| <b>NO contact</b>  |                 |                       |         |                  |          |                        |                              |  |
|  | Via accessories | 3-wire                | –       | 2.5              | 525 895  | SME-8F-DS-24V-K2,5-OE  |                              |  |
|  |                 |                       |         | 5.0              | 525 897  | SME-8F-DS-24V-K5,0-OE  |                              |  |
|  |                 | 2-wire                | –       | 2.5              | 525 907  | SME-8F-ZS-24V-K2,5-OE  |                              |  |
|  |                 |                       |         | 0.3              | 525 896  | SME-8F-DS-24V-K0,3-M8D |                              |  |
|  | Via accessories | 3-wire                | –       | 2.5              | 150 855  | SME-8-K-LED-24         |                              |  |
|  |                 |                       |         | 0.3              | 150 857  | SME-8-S-LED-24         |                              |  |
| <b>NC contact</b>  |                 |                       |         |                  |          |                        |                              |  |
|  | Via accessories | 3-wire                | –       | 7.5              | 525 906  | SME-8F-DO-24V-K7,5-OE  |                              |  |

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

| Ordering data – Slot cover for slot type 8 |                       |            |                 |
|--|-----------------------|------------|-----------------|
|  | Mounting              | Length [m] | Part No. Type   |
|  | Insertable from above | 2x 0.5     | 151 680 ABP-5-S |

Core Range