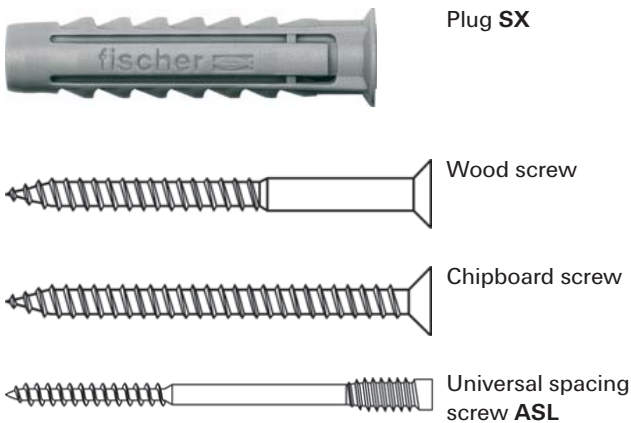


Plug SX

Expands in 4 directions - for an unbeatably firm grip in solid building materials.

OVERVIEW



General fixings

Suitable for:

- Concrete
- Prestressed hollow-core concrete slabs
- Natural stone with dense structure
- Solid brick
- Solid sand-lime brick
- Solid block made from lightweight concrete
- Aircrete
- Solid panel made from gypsum
- Vertically perforated brick
- Perforated sand-lime block
- Hollow block made from lightweight concrete
- Slabs made of perforated bricks
- Hollow concrete blocks etc.

For fixing of:

- Pictures
- Motion detectors
- Lamps
- Skirting
- Electric switches
- Small wall-mounted shelves
- Towel rails
- Lightweight mirror cabinets
- Letter boxes
- Hanging baskets
- Curtain rails



DESCRIPTION

- Nylon expansion fixing
- For use with wood, chipboard and self-tapping screws and ASL spacing screws (see chapter spacing screws).
- SX long versions for higher anchoring depth in perforated building materials, aircrete and to bridge plaster.

Advantages/Benefits

- 4-way expansion form lock guarantees highest grip.
- Anti-rotation lugs prevent the plug rotating in the drill hole.
- The special spread-free neck prevents damage of tiles and plaster.
- Simple and quick push-through installation reduces installation time.
- Integrated hammer-in-stop enables - with pre-assembled screw - push-through installation.
- The fixing's collar prevents it slipping deeper into the drilled hole.
- Temperature-resistant from -40° to +80°C.
- The plug's geometry allows the use of wood and chipboard screws between 2 and 12 mm.

SX - ADVANTAGES AT A GLANCE

Screw tolerance

The SX can be safely used with a wide range of screw types and screw diameter. It is also especially suitable for chipboard screws.

Turning stop

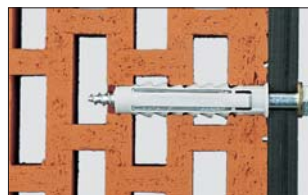
The robust turning stop holds the SX plug firmly in place in the drill hole.

4-way expansion

The new 4-way expansion guarantees top retaining values.

Slip-through stop

The wide plug rim prevents the SX plug slipping into the drill hole.



INSTALLATION

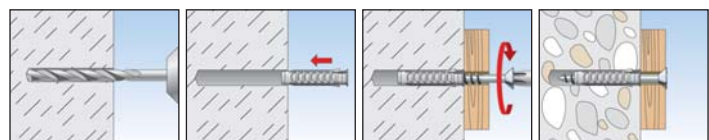
Type of installation

- Pre-positioned and push-through installation.

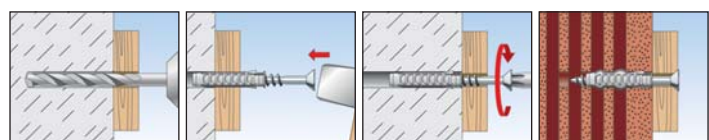
Installation information

- The required screw length is given by the anchorage depth + the thickness of the fixture and the screw diameter, see page 221.
- Push-through installation requires the largest possible screw diameter.
- Drill only in a rotary motion (hammer switched off) in perforated and hollow bricks and aerated concrete.
- For safety relevant applications under permanent tensile load, nylon plugs are not allowed. Therefore nylon plugs may not be used for suspensions from the ceiling like lightnings.

Pre-positioned installation



Push-through installation



FIXING PRINCIPLES

In detail: The general principles for installation, the correct drilling procedure and much more on page 26.

TECHNICAL DATA



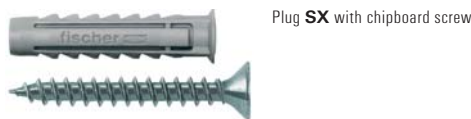
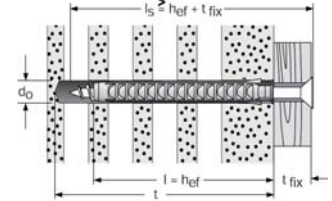
Plug **SX**



Plug **SX** - long version

| Type | Art.No. | drill | | min. drill hole depth | plug length = min. anchoring depth | | chipboard screw | qty. per box |
|-------------|---------------|---------------|-------------|-----------------------|------------------------------------|----------------------------|-----------------|--------------|
| | | d_o [mm] | t [mm] | | $l = h_{ef}$ [mm] | $d_s \times l_s$ [Ø mm] | | |
| SX 4 x 20 | 070004 | 4 | 25 | 20 | 2 - 3 | 200 | | |
| SX 5 x 25 | 070005 | 5 | 35 | 25 | 3 - 4 | 100 | | |
| SX 6 x 30 | 070006 | 6 | 40 | 30 | 4 - 5 | 100 | | |
| SX 6 x 50 * | 024827 | 6 | 60 | 50 | 4 - 5 | 100 | | |
| SX 6 x 50 R | 078185 | 6 | 60 | 50 | 4 - 5 | 100 | | |
| SX 8 x 40 | 070008 | 8 | 50 | 40 | 4,5 - 6 | 100 | | |
| SX 8 x 65 | 024828 | 8 | 75 | 65 | 4,5 - 6 | 50 | | |
| SX 10 x 50 | 070010 | 10 | 70 | 50 | 6 - 8 | 50 | | |
| SX 10 x 80 | 024829 | 10 | 95 | 80 | 6 - 8 | 25 | | |
| SX 12 x 60 | 070012 | 12 | 80 | 60 | 8 - 10 | 25 | | |
| SX 14 x 70 | 070014 | 14 | 90 | 70 | 10 - 12 | 20 | | |
| SX 16 x 80 | 070016 | 16 | 100 | 80 | 12 (1/2") | 10 | | |

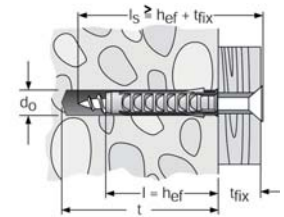
* without collar



Plug **SX** with chipboard screw

| Type | Art.No. | drill | | min. drill hole depth | plug length = min. anchoring depth | | max. usable length | chipboard screw | qty. per box |
|----------------|------------------|---------------|-------------|-----------------------|------------------------------------|-------------------|--------------------|-----------------|--------------|
| | | d_o [mm] | t [mm] | | $l = h_{ef}$ [mm] | t_{fix} [mm] | | | |
| SX 6 x 30 S/10 | 1) 070021 | 6 | 40 | 30 | 10 | 4,5 x 40 | 50 | | |
| SX 8 x 40 S/20 | 1) 070022 | 8 | 50 | 40 | 20 | 5 x 60 | 50 | | |

1) Fixing set consisting of fixing and chipboard screw.



LOADS

Recommended loads N_{rec} [kN] and mean ultimate loads N_U [kN]. These values apply to the use of wood screws with the given screw diameter. When use chipboard screws these values should be reduced by 30%.

| Fixing type | SX 5 x 25 | | SX 6 x 30 | | SX 6 x 50 SX 6 x 50 R | | SX 8 x 40 | | SX 8 x 65 | | SX 10 x 50 | | SX 10 x 80 | | SX 12 x 60 | | SX 14 x 70 | | SX 16 x 80 | |
|--|-----------|-------|-----------|-------|--------------------------|-----------------|-----------|-------|-----------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|
| | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U |
| Wood screw diameter [mm] | 4 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 8 | 8 | 8 | 8 | 10 | 10 | 12 | 12 | 12 | 12 |
| Substrate | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U | N_{rec} | N_U |
| Concrete \geq C12/C15 | 0.3 | 2.0 | 0.7 | 4.9 | 0.8 | 5.8 | 0.7 | 8.5 | 0.7 | 5.0 | 1.2 | 8.5 | 1.2 | 8.5 | 1.7 | 12.0 | 2.0 | 14.1 | 2.6 | 18.0 |
| Solid brick \geq Mz12 (DIN 105) | 0.3 | 1.6 | 0.3 | 2.2 | 0.6 | 4.4 | 0.65 | 4.5 | 0.6 | 4.1 | 0.65 | 4.5 | 1.2 | 8.5 | 0.7 | 5.0 | 0.8 | 5.6 | 0.9 | 6.9 |
| Solid sand-lime brick \geq KS12 (DIN 106) | 0.3 | 2.0 | 0.5 | 3.5 | 0.8 | 5.4 | 1.2 | 8.5 | 0.6 | 4.2 | 1.2 | 8.5 | 1.2 | 8.5 | 1.7 | 12.0 | 2.0 | 14.1 | 2.6 | 18.0 |
| Vertical perforated brick \geq H12 (p \geq 1.0 kg/dm ³ , DIN 105) | 0.07 | 0.5 | 0.07 | 0.5 | - ¹⁾ | - ¹⁾ | 0.17 | 1.2 | 0.17 | 1.2 | 0.17 | 1.2 | 0.5 | 3.5 | 0.26 | 1.8 | 0.4 | 3.1 | 0.6 | 4.1 |
| Perforated sand-lime brick \geq KSL12 (DIN 106) | 0.17 | 1.2 | 0.3 | 2.1 | 0.3 | 2.7 | 0.3 | 2.0 | 0.35 | 2.3 | 0.3 | 2.0 | 0.8 | 5.5 | 0.3 | 2.0 | 0.3 | 2.2 | 0.4 | 2.8 |
| Aerated concrete \geq PB2 | 0.03 | 0.2 | 0.03 | 0.2 | - ¹⁾ | - ¹⁾ | 0.09 | 0.6 | 0.04 | 0.3 | 0.09 | 0.6 | 0.2 | 1.4 | 0.14 | 1.0 | 0.3 | 2.2 | 0.4 | 2.8 |
| Aerated concrete \geq PB4 | 0.09 | 0.6 | 0.09 | 0.6 | 0.15 | 1.0 | 0.3 | 2.0 | 0.14 | 1.0 | 0.3 | 2.0 | 0.6 | 4.2 | 0.45 | 3.1 | 0.5 | 3.4 | 0.6 | 4.0 |

¹⁾ Due to large range of scatter of the test results not suitable, the failure of the substrate varies so greatly that no reproducible values can be given.

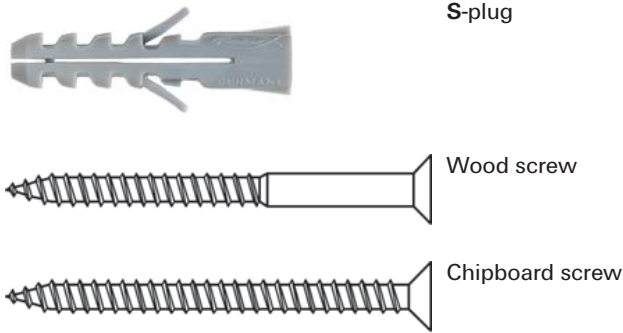
Distance from component edges (edge and corner distance a_r) in concrete.

| Fixing | Screw diameter [mm] | Edge/corner distance [mm] |
|------------|---------------------|---------------------------|
| SX 6 x 30 | 5 | 35 |
| SX 8 x 40 | 6 | 40 |
| SX 10 x 50 | 8 | 50 |
| SX 12 x 60 | 10 | 65 |

S-Plug

The classics. Often copied - never equalled !

OVERVIEW



Suitable for:

- Concrete
- Natural stone with dense structure
- Solid brick
- Solid sand-lime brick
- Solid block made from lightweight concrete
- Hollow concrete blocks etc.



For fixing of:

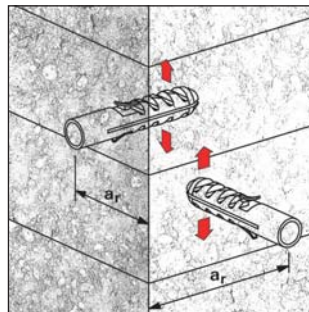
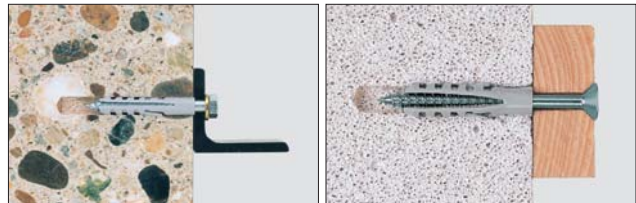
- Pictures
- Motion detectors
- Lamps
- Skirting
- Electric switches
- Small wall-mounted shelves
- Towel rails
- Lightweight mirror cabinets
- Letter boxes
- Hanging baskets
- Curtain rails

DESCRIPTION

- Nylon expansion fixing.
- For use with wood-, chipboard-, and self-tapping screws (see chapter safety-screws)

Advantages/Benefits

- Anti-rotation lugs stop the plug rotating in the drill hole.
- The wide neck is subject to no expansion pressure and prevents surface damage to tiles and plaster.
- Temperature-resistant from -40° to +80°C.
- Can be used with wood and chipboard screws from 2 mm to 16 mm.

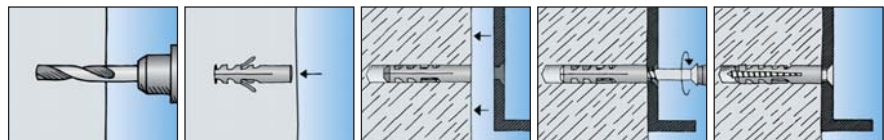


- The edge distance a_r must be at least once the anchorage length. For installations close to the edge we recommend turning the plug in a way that the direction of expansion acts parallel to the edge.

INSTALLATION

Type of installation

- Pre-positioned and push-through installation.



Installation information

- Determination of the minimum screw length:
 - Fixing length
 - + Thickness of plaster and/or insulation
 - + Fixture thickness
 - + 1x screw diameter
- Drill only in a rotary motion (hammer switched off) in perforated and hollow bricks and aircrete.
- For safety relevant applications under permanent tensile load, nylon plugs are not allowed. Therefore nylon plugs may not be used for suspensions from the ceiling like lightnings.

FIXING PRINCIPLES

In detail: The general principles for installation, the correct drilling procedure and much more on page 26.

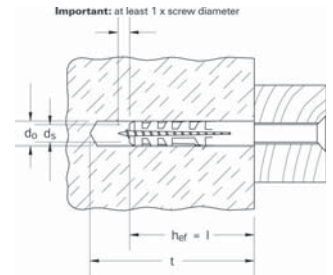
TECHNICAL DATA



S-plug

| Type | Art.No. | drill-Ø | | min. drill hole depth | plug length = min. anchorage depth | | wood or chipboard screw min / max | qty. per box |
|---------|---------|---------------|-------------|-----------------------|------------------------------------|-----------------|-----------------------------------|--------------|
| | | d_0 [mm] | t [mm] | | $l = h_{ef}$ [mm] | d_s [Ø mm] | | |
| S 4 | 050104 | 4 | 25 | 20 | 2 - 3 | 200 | | |
| S 5 | 050105 | 5 | 35 | 25 | 3 - 4 | 100 | | |
| S 6 | 050106 | 6 | 40 | 30 | 4 - 5 | 100 | | |
| S 8 | 050108 | 8 | 55 | 40 | 4,5 - 6 | 100 | | |
| S 10 | 050110 | 10 | 70 | 50 | 6 - 8 | 50 | | |
| S 12 | 050112 | 12 | 80 | 60 | 8 - 10 | 25 | | |
| S 14 | 050114 | 14 | 90 | 75 | 10 - 12 | 20 | | |
| S 16 | 050116 | 16 | 100 | 80 | 12 (1/2") | 10 | | |
| S 20 | 050120 | 20 | 120 | 90 | 16 | 5 | | |
| S 5 DP | 050124 | 5 | 35 | 25 | 3 - 4 | 200 | | |
| S 6 DP | 050125 | 6 | 40 | 30 | 4 - 5 | 200 | | |
| S 8 DP | 050126 | 8 | 55 | 40 | 4,5 - 6 | 200 | | |
| S 10 DP | 050127 | 10 | 70 | 50 | 6 - 8 | 100 | | |

DP = Double pack



BOXES

Stacking box ST



fischerbox



UX/SX Assortment box



| Type | Art.No. | contents | Qty. per box |
|----------------------|---------|--|--------------|
| ST 1 S8 S | 060510 | 34 plugs S 8, 34 countersunk wood screws SH 4,5 x 45 | 1 |
| ST 1 S6 S | 060509 | 50 plugs S 6, 50 countersunk wood screws SH 5 x 60 | 1 |
| ST 1 S6/8 | 060499 | 50 plugs S 6, 30 plugs S 8 | 1 |
| UX/SX Assortment box | 043540 | 60 plugs SX 6 x 30, 50 plugs SX 8 x 40, 20 plugs SX 10 x 50, 60 plugs UX 5 x 30 R, 40 plugs UX 6 x 50 R, 50 plugs UX 8 x 50 R, 10 plugs UX 10 x 60 R | - |
| Box UX 6.8.10 | 093182 | 100 plugs UX 6 x 35, 70 plugs UX 8 x 50, 20 plugs UX 10 x 60 | 1 |
| Box SX 5.6.8 | 030191 | 100 plugs SX 5 x 25, 100 plugs SX 6 x 30, 100 plugs SX 8 x 40 | 1 |
| Box S 6.8.10 | 060515 | 100 plugs S 6, 100 plugs S 8, 25 plugs S 10 | 1 |
| Box S 5.6.8 | 060513 | 100 plugs S 5, 100 plugs S 6, 100 plugs S 8 | 1 |
| Box empty | 060500 | - | 1 |

LOADS

Recommended loads N_{rec} [kN] and characteristic (5% fractile) loads N_{Rk} [kN]. These values apply to the use of wood screws with the given screw diameter. When use chipboard screws these values should be reduced by 30%.

| Fixing type | S 4 | | S 5 | | S 6 | | S 8 | | S 10 | | S 12 | | S 14 | | S 16 | | S 20 | |
|--|----------------|----------|----------------|----------|----------------|----------|----------------|----------|----------------|---------------|----------------|---------------|----------------|---------------|----------------|---------------|----------------|---------------|
| | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} |
| Wood screw diameter [mm] | 3 | | 4 | | 5 | | 6 | | 8 | | 10 | | 12 | | 12 | | 16 | |
| Substrate | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} | $N_{rec}^{1)}$ | N_{Rk} |
| Concrete \geq C12/15 | 0.16 | 0.8 | 0.28 | 1.4 | 0.4 | 2.0 | 0.66 | 3.3 | 1.22 | 6.1 | 1.80 | 9.0 | 2.38 | 11.9 | 2.26 | 11.3 | 3.88 | 19.4 |
| Solid brick \geq Mz 12 (DIN 105) | 0.14 | 0.7 | 0.24 | 1.2 | 0.38 | 1.9 | 0.66 | 3.3 | ²⁾ | ²⁾ | ²⁾ | ²⁾ | ²⁾ | ²⁾ | ²⁾ | ²⁾ | ²⁾ | ²⁾ |
| Sand-lime solid brick \geq KS 12 (DIN 106) | 0.14 | 0.7 | 0.24 | 1.2 | 0.38 | 1.9 | 0.66 | 3.3 | ²⁾ | ²⁾ | ²⁾ | ²⁾ | ²⁾ | ²⁾ | ²⁾ | ²⁾ | ²⁾ | ²⁾ |
| Aerated concrete \geq PB2 | - | - | - | - | 0.05 | 0.25 | 0.07 | 0.35 | 0.16 | 0.8 | 0.28 | 1.4 | 0.4 | 2.0 | ²⁾ | ²⁾ | ²⁾ | ²⁾ |

¹⁾ Safety factors for the material (γ_M) and for the load (γ_L) included.

²⁾ Due to large range of scatter of test results not suitable, the failure of the substrate varies so greatly that no reproducible values can be given.