



## PRESTATIEVERKLARING



DoP: 0092

voor fischer constructieplug SXR / SXRL (Kunststof verbindingen voor gebruik in beton en metselwerk) – NL

1. Unieke identificatiecode van het producttype: **DoP: 0092**
2. Beoogd(e) gebruik(en): **Voor gebruik in systemen zoals gevels of dragende elementen die bijdragen aan de stabiliteit van het systeem, zie bijlage, in het bijzonder bijlages B 1 tot en met B 5**
3. Fabrikant: **fischerwerke GmbH & Co. KG, Klaus-Fischer-Straße 1, 72178 Waldachtal, Duitsland**
4. Gemachtigde: --
5. Het systeem of de systemen voor de beoordeling en verificatie van de prestatiebestendigheid: **2+**
6. Europees beoordelingsdocument: **ETAG 020, 2012-03**

Europese technische beoordeling: **ETA-07/0121; 2017-03-30**

Technische beoordelingsinstantie: **DIBt**

Aangemelde instantie(s): **1343 – MPA Darmstadt**

7. Aangegeven prestatie(s):

### Veiligheid bij brand (BWR 2)

- **Brandgedrag: Verankeringen voldoen aan de vereisten voor klasse A1**
- **Brand weerstand: Zie bijlage, in het bijzonder bijlage C 2**

### Veiligheid en toegankelijkheid (BWR 4), Mechanische weerstand en stabiliteit (BWR 1)

- **Karakteristieke weerstand voor trek- en afschuif belastingen: Zie bijlage, in het bijzonder bijlages C 1, C 3 – C 20**
- **Karakteristieke weerstand voor buigmoment: Zie bijlage, in het bijzonder bijlage C 1**
- **Verplaatsingen ten gevolge van schuif- en trek belasting: Zie bijlage, in het bijzonder bijlages C 2**
- **H.o.h. afstanden en afmetingen van element: Zie bijlage, in het bijzonder bijlage B 3 – B 4**

8. Geëigende technische documentatie en/of specifieke technische documentatie: ---

De prestaties van het hierboven omschreven product zijn conform de aangegeven prestaties. Deze prestatieverklaring wordt in overeenstemming met Verordening (EU) nr. 305/2011 onder de exclusieve verantwoordelijkheid van de hierboven vermelde fabrikant verstrekt.

Ondertekend voor en namens de fabrikant door:

Andreas Bucher, Dipl.-Ing.

Wolfgang Hengesbach, Dipl.-Ing., Dipl.-Wirtsch.-Ing.

Tumlingen, 2017-04-06

- Deze prestatieverklaring is opgesteld in verschillende talen. Bij een geschil over de interpretatie prevaleert de engelse versie.
- De bijlage bevat vrijwillige en aanvullende informatie in de Engelse taal boven op de (taal-neutraal gespecificeerde) wettelijke voorschriften.

**Specific part**

**1 Technical description of the product**

The fischer frame fixing in the range SXR 8, SXRL 8, SXR 10, SXRL 10 and SXRL 14 is a plastic anchor consisting of a plastic sleeve made of polyamide and an accompanying specific screw of galvanised steel, of galvanised steel with an additional Duplex-coating or of stainless steel.

The plastic sleeve is expanded by screwing in the specific screw which presses the sleeve against the wall of the drilled hole.

The product description is given in Annex A.

**2 Specification of the intended use in accordance with the applicable European Assessment Document**

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchors of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

**3 Performance of the product and references to the methods used for its assessment**

**3.1 Mechanical resistance and stability (BWR 1)**

The essential characteristics regarding mechanical resistance and stability are included under the Basic Works Requirement Safety in use.

**3.2 Safety in case of fire (BWR 2)**

| Essential characteristic | Performance                                  |
|--------------------------|--|
| Reaction to fire         | Anchorage satisfy requirements for Class A 1 |
| Resistance to fire       | See Annex C 2                                |

**3.3 Safety and accessibility (BWR 4)**

| Essential characteristic                              | Performance                 |
|---|-----------------------------|
| Characteristic resistance for tension and shear loads | See Annexes C 1, C 3 – C 20 |
| Characteristic resistance for bending moments         | See Annex C 1               |
| Displacements under shear and tension loads           | See Annex C 2               |
| Anchor distances and dimensions of members            | See Annex B 3, B 4          |

**3.4 General aspects**

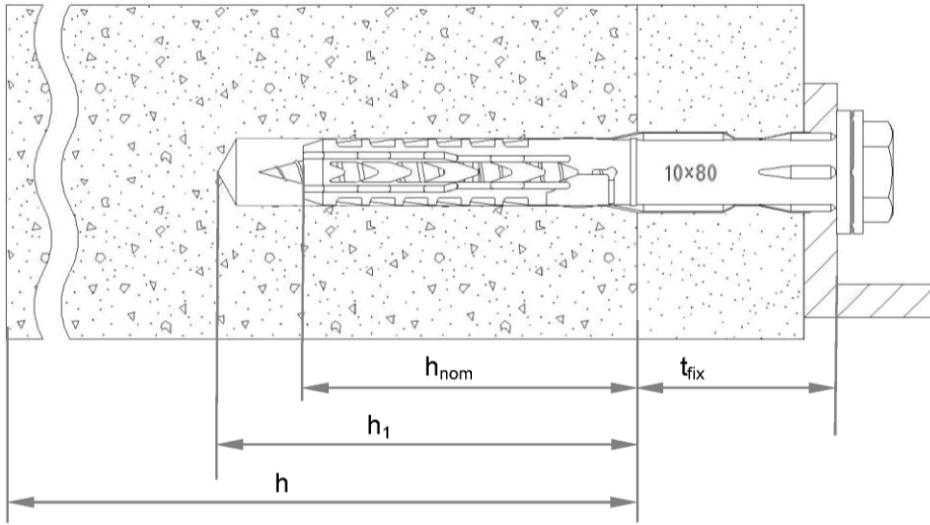
The verification of durability is part of testing the essential characteristics. Durability is only ensured if the specifications of intended use according to Annex B are taken into account.

**4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base**

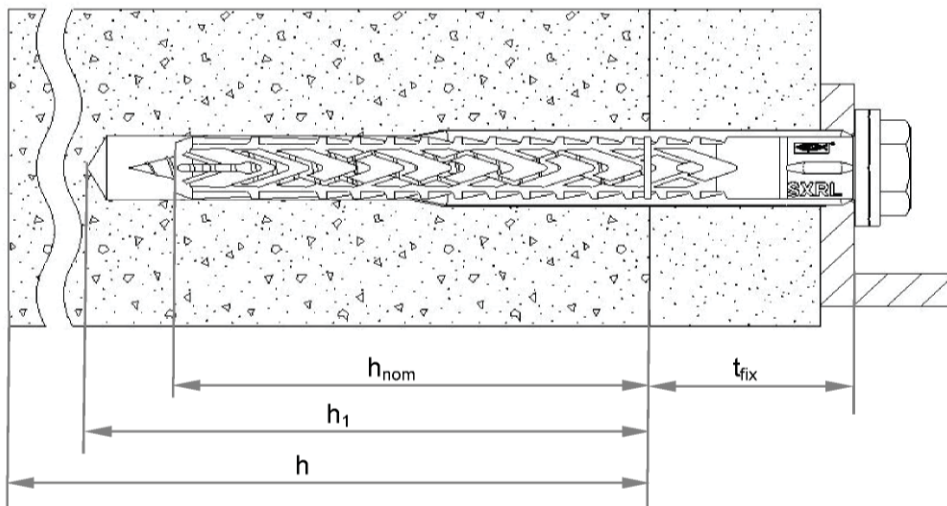
In accordance with guideline for European technical approval ETAG 020, March 2012 used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011 the applicable European legal act is: 97/463/EC.

The system to be applied is: 2+

**SXR**



**SXRL (e.g. with  $h_{nom2}$ )**



**Legend**

- $h_{nom}$  = overall plastic anchor embedment depth in the base material
- $h_1$  = depth of drill hole to deepest point
- $h$  = thickness of member (wall)
- $t_{fix}$  = thickness of fixture and / or non-load bearing layer

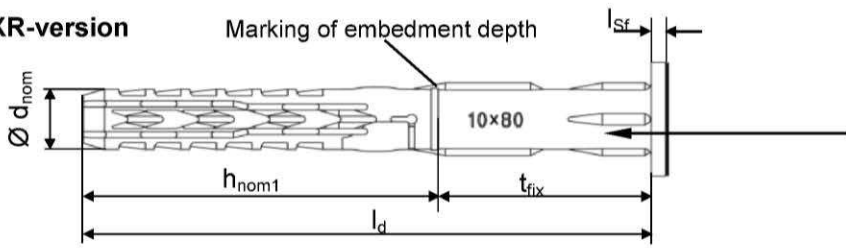
**fischer frame fixing SXR / SXRL**

**Product description**  
Installed anchor

**Annex A 1**

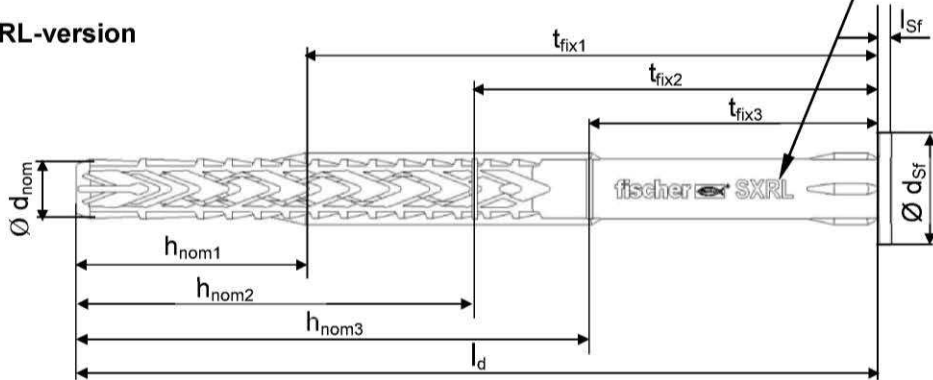
**Anchor sleeves – flat collar versions of SXR and SXRL**

**SXR-version**



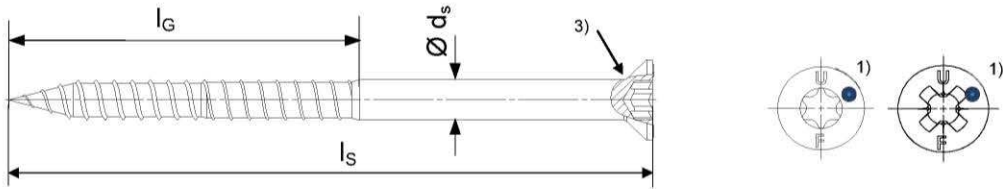
Marking:  
 Brand  
 Anchor type  
 Size  
 e.g. SXR 10x80  
 e.g. SXRL 14x100

**SXRL-version**



Countersunk sleeve version also available for both versions

**Countersunk screws**



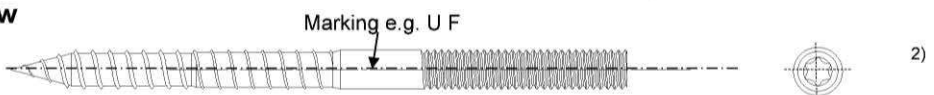
**Hexagonal screw with washer**



**Hexagonal screw**



**Stud screw**



- 1) Additional marking for the special screw, stainless steel version: „A4“.
- 2) Internal driving feature for Torx bit is optional for hexagonal head and for stud screw
- 3) Optional additional version with underhead ribs

**fischer frame fixing SXR / SXRL**

**Product description**  
 Anchor types / special screws

**Annex A 2**

Table A3.1: Dimensions [mm]

| Anchor type | Anchor sleeve      |                    |                    |                               |                   |                    |                    |                       | Special screw                |                           |               |                 |
|-------------|--------------------|--------------------|--------------------|-------------------------------|-------------------|--------------------|--------------------|-----------------------|------------------------------|---------------------------|---------------|-----------------|
|             | $h_{nom1}$<br>[mm] | $h_{nom2}$<br>[mm] | $h_{nom3}$<br>[mm] | $\varnothing d_{nom}$<br>[mm] | $t_{fix}$<br>[mm] | min. $l_d$<br>[mm] | max. $l_d$<br>[mm] | $l_{sf}^{1)}$<br>[mm] | $\varnothing d_{sf}$<br>[mm] | $\varnothing d_s$<br>[mm] | $l_G$<br>[mm] | $l_s$<br>[mm]   |
| SXR 8       | 50                 | -                  | -                  | 8                             | $\geq 1$          | 51                 | 360                | 1,8                   | > 15,0                       | 6,0                       | $\geq 55$     | $\geq l_d + 6$  |
| SXRL 8      | 50                 | 70                 | 90                 | 8                             | $\geq 1$          | 51                 | 360                | 1,8                   | > 15,0                       | 6,0                       | $\geq 55$     | $\geq l_d + 6$  |
| SXR 10      | 50                 | -                  | -                  | 10                            | $\geq 1$          | 51                 | 360                | 2,2                   | > 18,5                       | 7,0                       | $\geq 57$     | $\geq l_d + 7$  |
| SXRL 10     | 50 <sup>2)</sup>   | 70                 | 90                 | 10                            | $\geq 1$          | 51                 | 360                | 2,2                   | > 18,5                       | 7,0                       | $\geq 77$     | $\geq l_d + 7$  |
| SXRL 14     | -                  | 70                 | 90                 | 14                            | $\geq 1$          | 71                 | 600                | 3,1                   | > 24,0                       | 9,6                       | $\geq 63$     | $\geq l_d + 10$ |

<sup>1)</sup> Only valid for flat collar version

<sup>2)</sup> Marking optional

Table A3.2: Materials

| Name          | Material  |
|---------------|---|
| Anchor sleeve | Polyamide, PA6, colour grey   |
| Special screw | <ul style="list-style-type: none"> <li>- Steel gvz A2G or A2F acc. to EN ISO 4042:2001</li> <li style="text-align: center;"><b>or</b></li> <li>- Steel gvz A2G or A2F acc. to EN ISO 4042:2001+ Duplex-coating type Delta-Seal in three layers (total layer thickness <math>\geq 6 \mu\text{m}</math>)</li> <li style="text-align: center;"><b>or</b></li> <li>- Stainless steel acc. to EN 10 088-3:2014, e.g. 1.4401, 1.4571, 1.4578, 1.4362</li> </ul> |

fischer frame fixing SXR / SXRL

**Product description**  
Dimensions and materials

**Annex A 3**

## Specifications of intended use

### Anchorage subject to:

- Static and quasi-static loads.
- Multiple fixing of non-structural applications.

### Base materials:

- Reinforced or unreinforced normal weight concrete with strength classes  $\geq$  C12/15 (use category "a"), according to EN 206-1:2000.
- Solid brick masonry (use category "b"), according to Annex C3 – C7.  
 Note: The characteristic resistance is also valid for larger brick sizes and higher compressive strength of the masonry unit.
- Hollow brick masonry (use category "c"), according to Annex C7 – C19.
- Autoclaved aerated concrete (use category "d"), according to Annex C20.
- Mortar strength class of the masonry  $\geq$  M2,5 according to EN 998-2:2010.
- For other base materials of the use categories "a", "b", "c" and "d" the characteristic resistance of the anchor may be determined by job site tests according to ETAG 020, Annex B, Edition March 2012.

### Temperature Range:

#### SXR 8 and 10 and SXRL 8

- c: - 40 °C to 50 °C (max. short term temperature + 50 °C and max long term temperature + 30 °C)
- b: - 40 °C to 80 °C (max. short term temperature + 80 °C and max long term temperature + 50 °C)

#### SXRL 10 and 14

- c: - 20 °C to 50 °C (max. short term temperature + 50 °C and max long term temperature + 30 °C)
- b: - 20 °C to 80 °C (max. short term temperature + 80 °C and max long term temperature + 50 °C)

### Use conditions (Environmental conditions):

- Structures subject to dry internal conditions (zinc coated steel, stainless steel).
- The specific screw made of galvanised steel or galvanised steel with an additional Duplex-coating may also be used in structures subject to external atmospheric exposure, if the area of the head of the screw is protected against moisture and driving rain after mounting of the fixing unit in this way, that intrusion of moisture into the anchor shaft is prevented. Therefore there shall be an external cladding or a ventilated rainscreen mounted in front of the head of the screw and the head of the screw itself shall be coated with a soft plastic, permanently elastic bitumen-oil-combination coating (e.g. undercoating or body cavity protection for cars).
- Structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition, if no particular aggressive conditions exist (stainless steel).  
 Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used).

### Design:

- The anchorages are to be designed in accordance with the ETAG 020, Annex C under the responsibility of an engineer experienced in anchorages and masonry work.
- Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored, the nature and strength of the base materials and the dimensions of the anchorage members as well as of the relevant tolerances. The position of the anchor is indicated on the design drawings.
- Fasteners are only to be used for multiple use for non-structural application, according to ETAG 020, Edition March 2012.

### Installation:

- Hole drilling by the drilling method according to Annex C3 – C20 for use categories "b", "c" and "d".
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Installation temperature from SXR 8/10, SXRL 8 and SXRL 14:      - 5 °C to + 40 °C  
   SXRL 10:   - 20 °C to + 40 °C
- Exposure to UV due to solar radiation of the not protected anchor  $\leq$  6 weeks.

fischer frame fixing SXR / SXRL

Intended use  
Specifications

Annex B 1

**Table B2.1: Installation parameters**

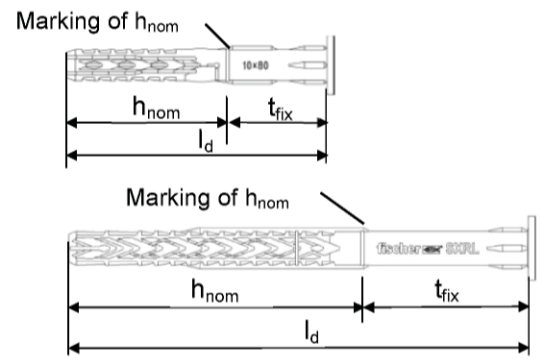
| Anchor type  |                      | SXR 8 | SXRL 8 | SXR 10                  | SXRL 10                 | SXRL 14 |
|--|----------------------|-------|--------|-------------------------|-------------------------|---------|
| Drill hole diameter  | $d_0 =$ [mm]         | 8     | 8      | 10                      | 10                      | 14      |
| Cutting diameter of drill bit  | $d_{cut} \leq$ [mm]  | 8,45  | 8,45   | 10,45                   | 10,45                   | 14,45   |
| Overall plastic anchor embedment depth in the base material <sup>1) 2)</sup> | $h_{nom1} \geq$ [mm] | 50    | 50     | 50                      | 50                      | -       |
|  | $h_{nom2} \geq$ [mm] | -     | 70     | -                       | 70                      | 70      |
|  | $h_{nom3} \geq$ [mm] | -     | 90     | -                       | 90                      | 90      |
| Depth of drill hole to deepest point <sup>1)</sup>                           | $h_{1,1} \geq$ [mm]  | 60    | 60     | 60                      | 60                      | -       |
|  | $h_{1,2} \geq$ [mm]  | -     | 80     | -                       | 80                      | 85      |
|  | $h_{1,3} \geq$ [mm]  | -     | 100    | -                       | 100                     | 105     |
| Diameter of clearance hole in the fixture                                    | $d_f \leq$ [mm]      | 8,5   | 9,5    | 10,5/12,5 <sup>3)</sup> | 10,5/12,5 <sup>3)</sup> | 15,4    |

<sup>1)</sup> See Annex A1.

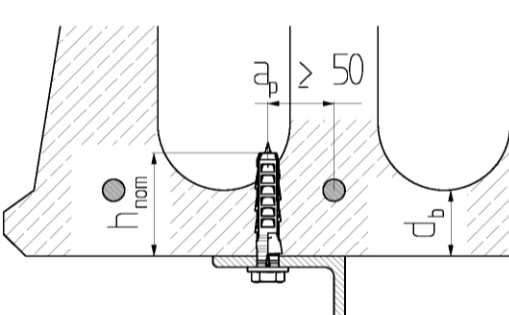
<sup>2)</sup> For hollow and perforated masonry: If the embedment depth is higher than  $h_{nom}$  given in the Table B2.1, job site tests have to be carried out according to ETAG 020, Annex B.

<sup>3)</sup> See Table C2.1.

**Table B2.2: Assignment of  $h_{nom}$ ,  $l_d$  and  $t_{fix}$  for use in thin concrete slabs (e.g. weather resistant shells of external wall panels) and pre-stressed concrete core slabs**

| Anchor type   | SXR 10 / SXRL 10 |      |                      |                |
|---|------------------|------|----------------------|----------------|
|   | $l_d$            |      | $h_{nom} \geq 50$ mm |                |
|   | SXR              | SXRL | $t_{fix, min}$       | $t_{fix, max}$ |
| Use category "a"<br><br> | 52               | -    | 1                    | 2              |
|   | 60               | -    | 1                    | 10             |
|   | 80               | 80   | 21                   | 30             |
|   | 100              | 100  | 41                   | 50             |
|   | 120              | 120  | 61                   | 70             |
|   | 140              | 140  | 81                   | 90             |
|   | 160              | 160  | 101                  | 110            |
|   | 180              | 180  | 121                  | 130            |
|   | 200              | 200  | 141                  | 150            |
|   | 230              | 230  | 171                  | 180            |
|   | 260              | 260  | 201                  | 210            |
|   | -                | 290  | 231                  | 240            |
|   |                  | [mm] |                      |                |

**Table B2.3: Installation parameters for use in pre-stressed hollow concrete core slabs**

| Anchor type   | SXRL 10   |           |             |          |
|---|---|-----------|-------------|----------|
|  | Mirror thickness  | $d_b$     | $\geq$ [mm] | 30       |
|   | Overall plastic anchor embedment depth in the base material | $h_{nom}$ | [mm]        | 50 to 59 |

fischer frame fixing SXR / SXRL

**Intended use**

Installation parameters, parameters for use in thin skins (weather resistant concrete skins of external wall panels) and pre-stressed hollow concrete core slabs

**Annex B 2**



**Table B3.1: Minimum thickness of member, edge distance and spacing in concrete**

| Anchor Type | $h_{nom} \geq$<br>[mm] | Concrete Strength class | Min. thickness of member $h_{min}$<br>[mm] | Characteristic edge distance $c_{cr,N}$<br>[mm] | Characteristic spacing $s_{cr,N}$<br>[mm] | Min. spacing and edge distances <sup>1)</sup><br>[mm]              |
|-------------|------------------------|-------------------------|--|---|---|--|
| SXR 8       | 50                     | $\geq$ C16/20           | 100  | 50  | 65  | $s_{min} = 50$ for $c \geq 50$<br>$c_{min} = 50$ for $s \geq 50$   |
|             |                        | C12/15                  |  | 70  | 70  | $s_{min} = 70$ for $c \geq 70$<br>$c_{min} = 70$ for $s \geq 70$   |
| SXRL 8      | 50                     | $\geq$ C16/20           | 80   | 60  | 75  | $s_{min} = 60$ for $c \geq 60$<br>$c_{min} = 60$ for $s \geq 60$   |
|             |                        | C12/15                  |  | 85  | 90  | $s_{min} = 85$ for $c \geq 85$<br>$c_{min} = 85$ for $s \geq 85$   |
|             | 70                     | $\geq$ C16/20           | 100  | 60  | 90  | $s_{min} = 60$ for $c \geq 60$<br>$c_{min} = 60$ for $s \geq 60$   |
|             |                        | C12/15                  |  | 85  | 105                                       | $s_{min} = 85$ for $c \geq 85$<br>$c_{min} = 85$ for $s \geq 85$   |
| SXR 10      | 50                     | $\geq$ C16/20           | 100 <sup>4)</sup>                          | 100   | 90  | $s_{min} = 50$ for $c \geq 150$<br>$c_{min} = 60$ for $s \geq 70$  |
|             |                        | C12/15                  |  | 140   | 100                                       | $s_{min} = 70$ for $c \geq 210$<br>$c_{min} = 85$ for $s \geq 100$ |
| SXRL 10     | 50                     | $\geq$ C16/20           | 100 <sup>4)</sup>                          | 100   | 105                                       | $s_{min} = 50$ for $c \geq 100$<br>$c_{min} = 50$ for $s \geq 125$ |
|             |                        | C12/15                  |  | 140   | 120                                       | $s_{min} = 70$ for $c \geq 140$<br>$c_{min} = 70$ for $s \geq 175$ |
|             | 70 <sup>2)</sup>       | $\geq$ C16/20           |  | 100   | 105                                       | $s_{min} = 50$ for $c \geq 100$<br>$c_{min} = 50$ for $s \geq 125$ |
|             |                        | C12/15                  |  | 140   | 120                                       | $s_{min} = 70$ for $c \geq 140$<br>$c_{min} = 70$ for $s \geq 175$ |
| SXRL 14     | 70 <sup>3)</sup>       | $\geq$ C16/20           | 110  | 100   | 120                                       | $s_{min} = 60$ for $c \geq 100$<br>$c_{min} = 60$ for $s \geq 125$ |
|             |                        | C12/15                  |  | 140   | 135                                       | $s_{min} = 85$ for $c \geq 140$<br>$c_{min} = 85$ for $s \geq 175$ |

1) Intermediate values by linear interpolation.

2) Values valid for reinforced concrete.

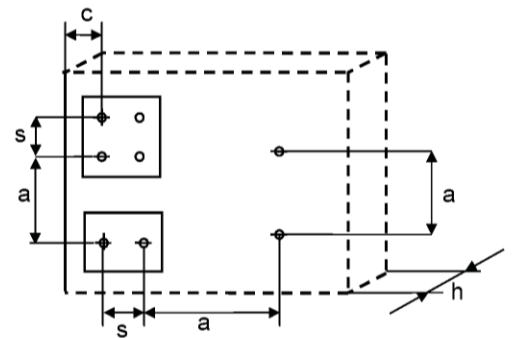
Please note: Values for non-reinforced concrete are  $h_{min} = 110$  mm and  $c_{min} = s_{min} = 80$  mm for concrete  $\geq$  C16/20 and  $c_{min} = s_{min} = 110$  mm for C12/15.

3) Please note: Values for non-reinforced concrete are  $h_{min} = 110$  mm and  $c_{min} = 100$  and  $s_{min} = 80$  mm for concrete  $\geq$  C16/20 and  $c_{min} = 140$  and  $s_{min} = 110$  mm for C12/15.

4) Also valid for thin concrete slabs  $h \geq 40$  mm,  $h_{nom} = 50$  mm to 59 mm

Fixing points with a spacing  $a \leq s_{cr,N}$  are considered as a group with a max. characteristic resistance  $N_{RK,p}$  acc. to Table C1.3. For a spacing  $a > s_{cr,N}$  the anchors are considered as single anchors, each with a characteristic resistance  $N_{RK,p}$  acc. to Table C1.3.

**Scheme of distance and spacing in concrete**



**fischer frame fixing SXR / SXRL**

**Intended use**

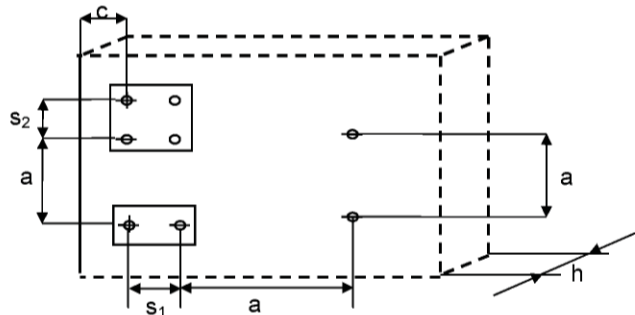
Edge distances and spacings for use in concrete

**Annex B 3**

**Table B4.1: Minimum thickness of member, edge distance and spacing in masonry**

| Anchor type   | SXR 8 | SXRL 8 | SXR 10 | SXRL 10 | SXRL 14 |
|---|-------|--------|--------|---------|---------|
| Minimum thickness of member $h_{min}$ [mm]                      | 100   | 115    | 100    | 110     | 115     |
| <b>Single anchor</b>  |       |        |        |         |         |
| Minimum spacing $a_{min}$ [mm]                                  | 250   | 250    | 250    | 250     | 250     |
| Minimum edge distance $c_{min}$ [mm]                            | 100   | 100    | 100    | 100     | 100     |
| <b>Anchor group</b>   |       |        |        |         |         |
| Minimum spacing perpendicular to free edge $s_{1,min}$ [mm]     | 100   | 100    | 100    | 100     | 100     |
| Minimum spacing parallel to free edge $s_{2,min}$ [mm]          | 100   | 100    | 100    | 100     | 100     |
| Minimum edge distance $c_{min}$ [mm]                            | 100   | 100    | 100    | 100     | 100     |
| Distance between anchor groups and / or single anchors $a$ [mm] | 250   |        |        |         |         |

**Scheme of distance and spacing in masonry and aerated concrete AAC**



**Table B4.2: Minimum thickness of member, edge distance and spacing in aerated concrete AAC**

| Anchor type   | SXRL 8            | SXR 10 | SXRL 10           | SXRL 14                 |
|---|-------------------|--------|-------------------|-------------------------|
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]                 | ≥ 2 to < 6        | ≥ 6    | ≥ 2               | ≥ 2                     |
| Nominal embedment depth $h_{nom} \geq$ [mm]                     | 70 and 90         | 50     | 70                | 90                      |
| Minimum thickness of member $h_{min}$ [mm]                      | 175               | 100    | 100               | 120                     |
| <b>Single anchor</b>  |                   |        |                   |                         |
| Minimum spacing $a_{min}$ [mm]                                  | 250               | 250    | 250               | 250                     |
| Minimum edge distance $c_{min}$ [mm]                            | 60                | 80     | 100               | 120                     |
| <b>Anchor group</b>   |                   |        |                   |                         |
| Minimum spacing perpendicular to free edge $s_{1,min}$ [mm]     | 80                | 110    | 200               | 100 / 120 <sup>1)</sup> |
| Minimum spacing parallel to free edge $s_{2,min}$ [mm]          | 80                | 110    | 400 <sup>2)</sup> | 100 / 120 <sup>1)</sup> |
| Minimum edge distance $c_{min}$ [mm]                            | 90                | 110    | 100               | 120                     |
| Distance between anchor groups and / or single anchors $a$ [mm] | 250 <sup>2)</sup> |        |                   |                         |

<sup>1)</sup> Valid for AAC ≥ 600 kg/m<sup>3</sup>

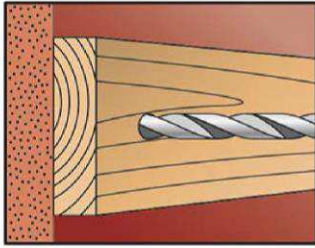
<sup>2)</sup> For SXR 10  $a \geq 400$  mm

**fischer frame fixing SXR / SXRL**

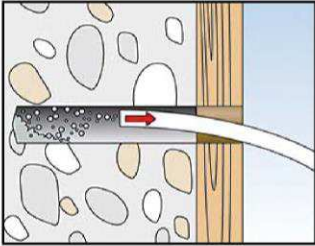
**Intended use**  
Edge distances and spacing for use in masonry and in autoclaved aerated concrete AAC

**Annex B 4**

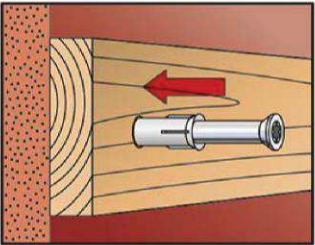
**Installation instructions (the following pictures show fixing through timber)**



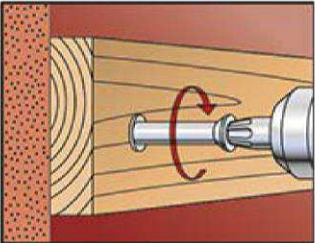
1. Drill the bore hole acc. to Table B2.1 using the drill method described in the corresponding Annex C.



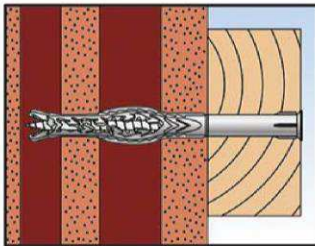
2. Use category „a“, „b“, „d“: Remove dust from borehole.



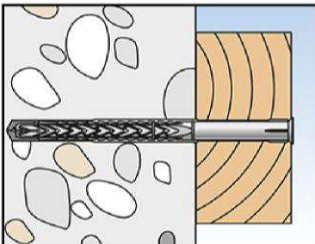
3. Insert anchor (screw and plug) by using a hammer until the collar of the plastic sleeve is flush with the surface of the fixture.



4. The screw is screwed-in until the head of the screw touches the sleeve. The anchor is correctly mounted, when the head of the screw fits tight on the surface and cannot be screwed-in any further.



5. Correctly installed anchor in hollow masonry.



6. Correctly installed anchor in concrete.

**fischer frame fixing SXR / SXRL**

**Intended use**  
Installation instructions

**Annex B 5**

**Table C1.1: Characteristic bending resistance of the screw**

| Anchor type   | SXR 8 / SXRL 8   |                 | SXR 10 / SXRL 10           |                 | SXRL 14            |                    |                    |                    |
|---|------------------|-----------------|----------------------------|-----------------|--------------------|--------------------|--------------------|--------------------|
|   | galvanised steel | stainless steel | galvanised steel           | stainless steel | galvanised steel   |                    | stainless steel    |                    |
| Overall plastic anchor embedment depth in the base material |                  |                 |                            |                 | $h_{nom2}$<br>70mm | $h_{nom3}$<br>90mm | $h_{nom2}$<br>70mm | $h_{nom3}$<br>90mm |
| Characteristic bending resistance $M_{Rk,s}$ [Nm]           | 12,4             | 12,0            | 20,6<br>23,6 <sup>2)</sup> | 20,6            | 48,7               | 62,5               | 47,0               | 60,5               |
| Partial safety factor $\gamma_{Ms}$ <sup>1)</sup>           | 1,25             | 1,29            | 1,29                       | 1,29            | 1,25               |                    | 1,29               |                    |

<sup>1)</sup> In absence of other national regulations.

<sup>2)</sup> Only for SXRL 10: "High load" screw version on request only for countersunk screws – head marking is ●●

**Table C1.2: Characteristic resistance of the screw**

| Failure of expansion element (special screw)      |  | SXR 8 / SXRL 8   |                 | SXR 10 / SXRL 10           |                 | SXRL 14          |                 |
|---|--|------------------|-----------------|----------------------------|-----------------|------------------|-----------------|
|   |  | galvanised steel | stainless steel | galvanised steel           | stainless steel | galvanised steel | stainless steel |
| Characteristic tension resistance $N_{Rk,s}$ [kN] |  | 14,8             | 14,3            | 21,7<br>24,9 <sup>2)</sup> | 21,7            | 43,4             | 42,0            |
| Partial safety factor $\gamma_{Ms}$ <sup>1)</sup> |  | 1,50             | 1,45            | 1,55                       | 1,55            | 1,50             | 1,55            |
| Characteristic shear resistance $V_{Rk,s}$ [kN]   |  | 7,4              | 7,1             | 10,8<br>12,4 <sup>2)</sup> | 10,8            | 21,7             | 21,0            |
| Partial safety factor $\gamma_{Ms}$ <sup>1)</sup> |  | 1,25             | 1,29            | 1,29                       | 1,29            | 1,25             | 1,29            |

<sup>1)</sup> In absence of other national regulations.

<sup>2)</sup> Only for SXRL 10: "High load" screw version on request only for countersunk screws – head marking is ●●

**Table C1.3: Characteristic resistance for use in concrete (use cat. "a")**

| Pull-out failure (plastic sleeve)  |                 |                  | SXR 8                    | SXRL 8  | SXR 10 | SXRL 10                  | SXRL 14 |
|--|-----------------|------------------|--------------------------|---------|--------|--------------------------|---------|
| Embedment depth $h_{nom}$ [mm]   |                 |                  | 50                       | 50 70   | 50     | 50 70                    | 70      |
| <b>Concrete <math>\geq</math> C12/15</b>   |                 |                  |                          |         |        |                          |         |
| Characteristic resistance 30/50 °C   | $N_{Rk,p}$ [kN] |                  | 3,0                      | 4,0 5,0 | 5,0    | 5,5 6,5                  | 8,5     |
| Characteristic resistance 50/80 °C   | $N_{Rk,p}$ [kN] |                  | 2,5<br>3,0 <sup>2)</sup> | 4,0 5,0 | 4,5    | 5,0 6,5                  | 8,5     |
| <b>Concrete <math>\geq</math> C12/15 (e.g. weather resistant shells of external wall panels)</b> |                 |                  |                          |         |        |                          |         |
| Characteristic resistance 30/50 °C   | $N_{Rk}$ [kN]   | $h \geq 40$ mm   | -                        | - -     | 3,5    | 2,5<br>3,0 <sup>2)</sup> | - -     |
| Characteristic resistance 50/80 °C   | $N_{Rk}$ [kN]   | $h \geq 40$ mm   | -                        | - -     | 3,0    | 2,5<br>3,0 <sup>2)</sup> | - -     |
| <b>Concrete <math>\geq</math> C45/55 in pre-stressed concrete core slabs</b>                     |                 |                  |                          |         |        |                          |         |
| Characteristic resistance 50/80 °C   | $N_{Rk}$ [kN]   | $d_b \geq 30$ mm | -                        | - -     | -      | 3,5<br>4,0 <sup>3)</sup> | - -     |
|  |                 | $d_b \geq 40$ mm | -                        | - -     | -      | 5,5<br>6,0 <sup>3)</sup> | - -     |
| Partial safety factor $\gamma_{Mc}$ <sup>1)</sup>  |                 |                  | 1,8                      |         |        |                          |         |

<sup>1)</sup> In absence of other national regulations.

<sup>2)</sup> Value corresponds to concrete class  $\geq$  C16/20.

<sup>3)</sup> only valid for temperature range 30 / 50 °C

**fischer frame fixing SXR / SXRL****Performances**

Characteristic resistance and characteristic bending resistance of the screw  
Characteristic resistance for use in concrete

**Annex C 1**

**Table C2.1: Displacements<sup>1)</sup> under tension and shear loading in concrete and masonry**

| Anchor type | h <sub>nom</sub> [mm] | F [kN] | Tension load <sup>2)</sup> |                      | Shear load <sup>2)</sup> |                         |
|-------------|-----------------------|--------|----------------------------|----------------------|--------------------------|-------------------------|
|             |                       |        | δ <sub>NO</sub> [mm]       | δ <sub>N∞</sub> [mm] | δ <sub>VO</sub> [mm]     | δ <sub>V∞</sub> [mm]    |
| SXR 8       | 50                    | 1,2    | 0,65                       | 1,30                 | 1,02                     | 1,53                    |
| SXRL 8      | 50                    | 1,6    | 0,56                       | 1,12                 | 2,00                     | 3,00                    |
|             | 70                    | 2,0    | 0,64                       | 1,28                 | 2,30                     | 3,45                    |
| SXR 10      | 50                    | 2,0    | 1,29                       | 2,58                 | 1,15/3,05 <sup>3)</sup>  | 1,74/4,58 <sup>3)</sup> |
| SXRL 10     | 50                    | 2,2    | 0,58                       | 1,16                 | 1,96                     | 2,94                    |
|             | 70                    | 2,6    | 1,67                       | 3,34                 | 1,15/3,05 <sup>3)</sup>  | 1,74/4,58 <sup>3)</sup> |
| SXRL 14     | 70                    | 3,40   | 0,39                       | 0,63                 | 2,79                     | 4,19                    |

<sup>1)</sup> Valid for all ranges of temperatures.

<sup>2)</sup> Intermediate values by linear interpolation.

<sup>3)</sup> Valid for diameter in the clearance hole ≤ 12,5 mm (see Table B2.1).

**Table C2.2: Displacements<sup>1)</sup> under tension and shear loading in autoclaved aerated concrete AAC**

| Anchor type | f <sub>b</sub> [N/mm <sup>2</sup> ] | h <sub>nom</sub> [mm] | F [kN]    | Tension load <sup>2)</sup> |                      | Shear load <sup>2)</sup> |                      |
|-------------|-------------------------------------|-----------------------|-----------|----------------------------|----------------------|--------------------------|----------------------|
|             |                                     |                       |           | δ <sub>NO</sub> [mm]       | δ <sub>N∞</sub> [mm] | δ <sub>VO</sub> [mm]     | δ <sub>V∞</sub> [mm] |
| SXRL 8      | ≥ 2                                 | 70/90                 | 0,14/0,21 | 0,45/0,55                  | 0,90/1,10            | 0,28/0,42                | 0,42/0,63            |
|             | ≥ 6                                 | 70/90                 | 1,07      | 0,73/0,80                  | 1,46/1,60            | 2,14                     | 3,21                 |
| SXR 10      | ≥ 2                                 | 50                    | 0,32      | 0,03                       | 0,06                 | 0,21                     | 0,31                 |
| SXRL 10     | ≥ 2                                 | 70/90                 | 0,32      | 0,23                       | 0,46                 | 0,64                     | 0,96                 |
|             | ≥ 6                                 | 70/90                 | 1,43      | 0,65                       | 1,30                 | 2,86                     | 4,29                 |
| SXRL 14     | ≥ 2                                 | 70/90                 | 0,32/0,43 | 0,19/0,25                  | 0,38/0,50            | 0,64/0,86                | 0,96/1,29            |
|             | ≥ 3                                 | 70/90                 | 0,60/0,77 | 0,23/0,31                  | 0,45/0,63            | 1,19/1,54                | 1,79/2,31            |
|             | ≥ 4                                 | 70/90                 | 0,88/1,11 | 0,26/0,38                  | 0,53/0,76            | 1,75/2,22                | 2,62/3,33            |
|             | ≥ 6                                 | 70/90                 | 1,43/1,79 | 0,34/0,51                  | 0,68/1,02            | 2,86/3,58                | 4,29/5,37            |

<sup>1)</sup> Valid for all ranges of temperatures.

<sup>2)</sup> Intermediate values by linear interpolation.

**Table C2.3: Values under fire exposure in concrete C20/25 to C50/60 in any load direction, no permanent centric tension load and without lever arm**

| Anchor type                | Fire resistance class | F <sup>1)</sup> |
|----------------------------|-----------------------|-----------------|
| SXR 10 / SXRL 10 / SXRL 14 | R 90                  | ≤ 0,8 kN        |

<sup>1)</sup> F<sub>RK</sub> / (γ<sub>m</sub> × γ<sub>F</sub>)

fischer frame fixing SXR / SXRL

**Performances**

Displacements under tension and shear loading in concrete, masonry and aerated concrete  
Characteristic values under fire exposure in concrete

**Annex C 2**

**Table C3.1: Characteristic resistance  $F_{Rk}$  in [kN] in solid masonry (use category "b")**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method                                 | Min. compressive strength $f_b$<br>[N/mm <sup>2</sup> ] /<br>bulk density<br>$\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{Rk}$ [kN]<br>50/80°C |                          |                          |               |   |   |                          |   |               |  |
|--|---|--|--------------------------|--------------------------|---------------|---|---|--------------------------|---|---------------|--|
|  |   | SXR 8  | SXRL 8                   |                          |               | SXR 10  | SXRL 10                                       |                          | SXRL 14                                       |               |  |
|  |   | h <sub>nom</sub> [mm]                              |                          |                          |               |   |   |                          |   |               |  |
|  |   | ≥ 50   | ≥ 50                     | ≥ 70                     | ≥ 90          | ≥ 50  | ≥ 50  | ≥ 70                     | ≥ 70  | ≥ 90          |  |
| Clay brick Mz,<br>acc. to EN 771-1:2011<br>e.g. <i>Schlagmann</i><br><b>3 DF</b> (240x175x113)<br>by hammer drilling                         | 20/1,8  | 3,0  | -                        | -                        | -             | 2,0<br>4,0 <sup>4)</sup><br>4,5 <sup>6)</sup> | -   | -                        | -   | -             |  |
|  | 10/1,8  | 2,0  | -                        | -                        | -             | 1,5<br>3,0 <sup>4)</sup>                      | -   | -                        | -   | -             |  |
| Clay brick Mz,<br>acc. to EN 771-1:2011<br>e.g. <i>Schlagmann</i><br>e.g. <i>Ebersdobler</i><br><b>NF</b> (240x115x71)<br>by hammer drilling | 36/1,8  | 2,5  | 3,0                      | 4,0<br>4,5 <sup>3)</sup> | <sup>8)</sup> | 5,0   | 3,5   | 4,0<br>5,5 <sup>3)</sup> | 4,0<br>6,0 <sup>4)</sup><br>7,0 <sup>6)</sup> | <sup>8)</sup> |  |
|  | 20/1,8  | 2,5  | 3,0                      | 4,0<br>4,5 <sup>3)</sup> | <sup>8)</sup> | 3,0<br>3,5 <sup>2)</sup>                      | 3,5   | 4,0<br>5,5 <sup>3)</sup> | 4,0<br>6,0 <sup>4)</sup><br>7,0 <sup>6)</sup> | <sup>8)</sup> |  |
|  | 12/1,8  | 2,0  | 2,0                      | 2,5                      | <sup>8)</sup> | 2,0   | 2,0   | 4,0<br>5,5 <sup>3)</sup> | 3,0<br>4,5 <sup>4)</sup><br>5,0 <sup>6)</sup> | <sup>8)</sup> |  |
|  | 10/1,8  | 2,0  | 2,0                      | 2,5                      | <sup>8)</sup> | 2,0   | -   | 3,5<br>4,5 <sup>3)</sup> | 3,0<br>4,5 <sup>4)</sup><br>5,0 <sup>6)</sup> | <sup>8)</sup> |  |
| Clay brick Mz,<br>acc. to EN 771-1:2011<br>e.g. <i>Wienerberger, DK</i><br><b>DF</b> (240x115x52)<br>by hammer drilling                      | 28/1,8  | 3,0  | 2,5                      | 3,0<br>3,5 <sup>2)</sup> | <sup>8)</sup> | 3,0   | 3,0<br>4,5 <sup>3)</sup><br>5,0 <sup>5)</sup> | 5,5<br>6,5 <sup>3)</sup> | -   | -             |  |
|  | 20/1,8  | 2,0  | 2,5                      | 3,0<br>3,5 <sup>2)</sup> | <sup>8)</sup> | 2,0   | 3,0<br>4,5 <sup>3)</sup><br>5,0 <sup>5)</sup> | 4,0<br>4,5 <sup>3)</sup> | -   | -             |  |
|  | 16/1,8  | 1,5  | 2,5                      | 3,0<br>3,5 <sup>2)</sup> | <sup>8)</sup> | 1,5   | 3,0<br>4,5 <sup>3)</sup><br>5,0 <sup>5)</sup> | 3,0<br>3,5 <sup>3)</sup> | -   | -             |  |
|  | 12/1,8  | 1,5  | 1,5<br>2,0 <sup>2)</sup> | 2,0<br>2,5 <sup>2)</sup> | <sup>8)</sup> | 1,2   | 2,5<br>3,5 <sup>3)</sup>                      | 2,5<br>3,0 <sup>3)</sup> | -   | -             |  |
|  | 10/1,8  | 1,5  | 1,2<br>1,5 <sup>2)</sup> | <sup>8)</sup>            | <sup>8)</sup> | 1,2   | -   | 2,5<br>3,0 <sup>3)</sup> | -   | -             |  |
| Partial safety factor  | $\gamma_{Mm}$ <sup>1)</sup>   | 2,5  |                          |                          |               |   |   |                          |   |               |  |

<sup>1)</sup> In absence of other national regulations.

<sup>2)</sup> Only valid for temperature range 30/50° C.

<sup>3)</sup> Only valid for edge distance  $c \geq 150$  mm; intermediate values by linear interpolation.

<sup>4)</sup> Only valid for edge distance  $c \geq 200$  mm; intermediate values by linear interpolation.

<sup>5)</sup> Only valid for edge distance  $c \geq 150$  mm for temperature range 30/50° C; intermediate values by linear interpolation.

<sup>6)</sup> Only valid for edge distance  $c \geq 200$  mm for temperature range 30/50° C; intermediate values by linear interpolation.

<sup>8)</sup> Values of lower  $h_{nom}$  can also be taken for next higher  $h_{nom}$ .

fischer frame fixing SXR / SXRL

Performances

Characteristic resistance for use in solid masonry

Annex C 3

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method                         | Min. compressive strength $f_b$ [N/mm <sup>2</sup> ] / bulk density $\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{RK}$ [kN]<br>50/80°C |        |      |        |                          |                          |                          |   |      |  |
|--|--|--|--------|------|--------|--------------------------|--------------------------|--------------------------|---|------|--|
|  |  | SXR 8  | SXRL 8 |      | SXR 10 | SXRL 10                  |                          | SXRL 14                  |   |      |  |
|  |  | h <sub>nom</sub> [mm]                              |        |      |        |                          |                          |                          |   |      |  |
|  |  | ≥ 50   | ≥ 50   | ≥ 70 | ≥ 90   | ≥ 50                     | ≥ 50                     | ≥ 70                     | ≥ 70  | ≥ 90 |  |
| <b>Calcium silicate solid brick KS,</b><br>acc. to EN 771-2:2011<br>e.g. <i>KS Wemding NF</i> (240x115x71)<br>by hammer drilling     | 36/2,0   | -  | -      | -    | -      | 5,0                      | 3,5<br>4,0 <sup>3)</sup> | 8)                       | -   | -    |  |
|  | 20/2,0   | -  | -      | -    | -      | 3,0<br>3,5 <sup>2)</sup> | 3,5<br>4,0 <sup>3)</sup> | 8)                       | -   | -    |  |
|  | 20/1,8   | 2,5  | 2,5    | 3,0  | 8)     | 2,5<br>4,0 <sup>4)</sup> | -                        | 3,5                      | 4,5<br>5,0 <sup>4)</sup><br>6,0 <sup>6)</sup>   | 8)   |  |
|  | 10/2,0   | -  | -      | -    | -      | 2,0                      | 2,0<br>2,5 <sup>3)</sup> | 8)                       | -   | -    |  |
|  | 10/1,8   | 2,0  | 2,0    | 2,0  | 8)     | 1,5                      | -                        | 2,5                      | 3,0<br>3,5 <sup>4)</sup><br>4,0 <sup>6)</sup>   | 8)   |  |
| <b>Calcium silicate solid brick KS,</b><br>acc. to EN 771-2:2011<br>e.g. <i>KS Wemding 12 DF</i> (495x175x240)<br>by hammer drilling | 28/2,0   | 3,0  | -      | -    | -      | 5,0                      | -                        | -                        | -   | -    |  |
|  | 20/2,0   | 3,0  | -      | -    | -      | 4,5                      | -                        | -                        | -   | -    |  |
|  | 20/1,8   | -  | -      | -    | -      | -                        | -                        | 6,5<br>8,5 <sup>4)</sup> | 4,0<br>11,0 <sup>4)</sup><br>11,5 <sup>6)</sup> | 8)   |  |
|  | 16/1,8   | -  | -      | -    | -      | -                        | -                        | 6,5<br>8,5 <sup>4)</sup> | 4,0<br>11,0 <sup>4)</sup><br>11,5 <sup>6)</sup> | 8)   |  |
|  | 12/1,8   | -  | -      | -    | -      | -                        | -                        | 6,5<br>8,5 <sup>4)</sup> | 4,0<br>11,0 <sup>4)</sup><br>11,5 <sup>6)</sup> | 8)   |  |
|  | 10/2,0   | 2,5  | -      | -    | -      | 3,0                      | -                        | -                        | -   | -    |  |
|  | 10/1,8   | -  | -      | -    | -      | -                        | -                        | 5,5<br>7,0 <sup>4)</sup> | 3,5<br>9,0 <sup>4)</sup><br>9,5 <sup>6)</sup>   | 8)   |  |
|  | 8/1,8  | -  | -      | -    | -      | -                        | -                        | 4,0<br>5,5 <sup>4)</sup> | 2,5<br>7,5 <sup>4)</sup>                        | 8)   |  |
| Partial safety factor  | $\gamma_{Mm}$ <sup>1)</sup>  | 2,5  |        |      |        |                          |                          |                          |   |      |  |

1) In absence of other national regulations.

2) Only valid for temperature range 30/50° C.

3) Only valid for edge distance  $c \geq 150$  mm; intermediate values by linear interpolation.

4) Only valid for edge distance  $c \geq 200$  mm; intermediate values by linear interpolation.

5) Only valid for edge distance  $c \geq 150$  mm for temperature range 30/50° C; intermediate values by linear interpolation.

6) Only valid for edge distance  $c \geq 200$  mm for temperature range 30/50° C; intermediate values by linear interpolation.

8) Values of lower  $h_{nom}$  can also be taken for next higher  $h_{nom}$ .

|   |                  |
|---|------------------|
| <b>fischer frame fixing SXR / SXRL</b>                                    | <b>Annex C 4</b> |
| <b>Performances</b><br>Characteristic resistance for use in solid masonry |                  |

**Table C5.1: Characteristic resistance  $F_{Rk}$  in [kN] in solid masonry (use category "b")**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method                                   | Min. compressive strength $f_b$ [N/mm <sup>2</sup> ] / bulk density $\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{Rk}$ [kN]<br>50/80°C |   |  |      |                           |  |                          |                          |      |
|--|--|--|---|--|------|---------------------------|--|--------------------------|--------------------------|------|
|  |  | SXR 8  | SXRL 8  |  |      | SXR 10                    | SXRL 10  |                          | SXRL 14                  |      |
|  |  | h <sub>nom</sub> [mm]                              |   |  |      |                           |  |                          |                          |      |
|  |  | ≥ 50   | ≥ 50  | ≥ 70   | ≥ 90 | ≥ 50                      | ≥ 50   | ≥ 70                     | ≥ 70                     | ≥ 90 |
| <b>Calcium silicate solid brick KS</b> ,<br>acc. to EN 771-2:2011<br><i>e.g. KS Wemding</i><br><b>8 DF</b> (495x115x240)<br>by hammer drilling | 16/2,0   | -  | 3,0<br>4,5 <sup>3)</sup><br>5,0 <sup>6)</sup> | 3,5<br>5,0 <sup>3)</sup><br>6,0 <sup>4)</sup><br>6,5 <sup>6)</sup> | 8)   | -                         | 3,5<br>5,0 <sup>3)</sup><br>6,0 <sup>4)</sup><br>6,5 <sup>6)</sup> | 8)                       | -                        | -    |
|  | 12/2,0   | -  | 2,5<br>3,0 <sup>3)</sup><br>3,5 <sup>5)</sup> | 2,5<br>4,0 <sup>3)</sup><br>4,5 <sup>4)</sup><br>5,0 <sup>6)</sup> | 8)   | -                         | 2,5<br>4,0 <sup>3)</sup><br>4,5 <sup>4)</sup><br>5,0 <sup>6)</sup> | 8)                       | -                        | -    |
| <b>Lightweight solid brick Vbl</b> ,<br>acc. to EN 771-3:2011<br><i>e.g. KLB</i><br><b>2 DF</b> (240x115x113)<br>by hammer drilling            | 4/1,4  | -  | -   | -  | -    | 0,75                      | -  | 2,5                      | -                        | -    |
|  | 2/1,4  | -  | -   | -  | -    | 0,4                       | -  | 1,2                      | -                        | -    |
|  | 2/1,2  | 0,9  | 0,4<br>0,5 <sup>2)</sup>                      | 0,9<br>1,2 <sup>2)</sup>   | 8)   | 0,75<br>0,9 <sup>3)</sup> | 0,4  | 8)                       | 0,9<br>1,2 <sup>2)</sup> | 8)   |
| <b>Lightweight solid brick Vbl</b> ,<br>acc. to EN 771-3:2011<br><i>e.g. KLB</i><br><b>8 DF</b> (490x240x115)<br>by hammer drilling            | 12/1,8   | 2,5  | -   | -  | -    | -                         | -  | 3,0<br>4,5 <sup>3)</sup> | -                        | -    |
|  | 10/1,8   | 2,5  | -   | -  | -    | -                         | -  | 2,5<br>3,5 <sup>3)</sup> | -                        | -    |
|  | 8/1,8  | 2,5  | -   | -  | -    | -                         | -  | 2,0<br>3,0 <sup>3)</sup> | -                        | -    |
|  | 8/1,6  | -  | -   | -  | -    | 3,0                       | -  | -                        | -                        | -    |
|  | 6/1,8  | 2,0  | -   | -  | -    | -                         | -  | 1,5<br>2,0 <sup>3)</sup> | -                        | -    |
|  | 6/1,6  | -  | -   | -  | -    | 2,0                       | -  | -                        | -                        | -    |
|  | 4/1,8  | 1,2  | -   | -  | -    | -                         | -  | 0,9<br>1,5 <sup>3)</sup> | -                        | -    |
|  | 2/1,2  | -  | -   | -  | -    | 1,2                       | -  | -                        | -                        | -    |
| 2/1,0  | 1,2  | -  | -   | -  | -    | -                         | -  | -                        | -                        |      |
| Partial safety factor  | $\gamma_{Mm}$ <sup>1)</sup>  | 2,5  |   |  |      |                           |  |                          |                          |      |

1) In absence of other national regulations.

2) Only valid for temperature range 30/50° C.

3) Only valid for edge distance  $c \geq 150$  mm; intermediate values by linear interpolation.4) Only valid for edge distance  $c \geq 200$  mm; intermediate values by linear interpolation.5) Only valid for edge distance  $c \geq 150$  mm for temperature range 30/50° C; intermediate values by linear interpolation.6) Only valid for edge distance  $c \geq 200$  mm for temperature range 30/50° C; intermediate values by linear interpolation.8) Values of lower  $h_{nom}$  can also be taken for next higher  $h_{nom}$ .

fischer frame fixing SXR / SXRL

Performances

Characteristic resistance for use in solid masonry

Annex C 5



**Table C6.1: Characteristic resistance  $F_{RK}$  in [kN] in solid masonry (use category “b”)**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method               | Min. compressive strength $f_b$<br>[N/mm <sup>2</sup> ] /<br>bulk density<br>$\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{RK}$ [kN]<br>50/80°C |                           |                          |      |                          |                          |                          |   |      |
|--|---|--|---------------------------|--------------------------|------|--------------------------|--------------------------|--------------------------|---|------|
|  |   | SXR 8  | SXRL 8                    |                          |      | SXR 10                   | SXRL 10                  |                          | SXRL 14                                       |      |
|  |   | $h_{nom}$ [mm]                                     |                           |                          |      |                          |                          |                          |   |      |
|  |   | ≥ 50   | ≥ 50                      | ≥ 70                     | ≥ 90 | ≥ 50                     | ≥ 50                     | ≥ 70                     | ≥ 70  | ≥ 90 |
| Lightweight solid brick Vbl,<br>acc. to EN 771-3:2011<br>e.g. KLB<br>8 DF (245x240x240)<br>by hammer drilling              | 10/1,6  | -  | 2,0<br>2,5 <sup>2)</sup>  | 3,0<br>4,0 <sup>5)</sup> | 8)   | 2,5                      | 3,0<br>3,5 <sup>5)</sup> | 7,5                      | 3,5<br>6,0 <sup>4)</sup><br>7,0 <sup>6)</sup> | 8)   |
|  | 8/1,6   | -  | 1,5<br>2,0 <sup>2)</sup>  | 2,5<br>3,5 <sup>5)</sup> | 8)   | 2,5                      | 2,5<br>3,0 <sup>5)</sup> | 6,0                      | 3,0<br>5,0 <sup>4)</sup><br>6,0 <sup>6)</sup> | 8)   |
|  | 6/1,6   | -  | 1,2<br>1,5 <sup>2)</sup>  | 2,0<br>2,5 <sup>5)</sup> | 8)   | 2,5                      | 2,0                      | 4,5                      | 2,0<br>3,5 <sup>4)</sup><br>4,5 <sup>6)</sup> | 8)   |
|  | 6/1,4   | 0,9  | -                         | -                        | -    | -                        | -                        | -                        | -   | -    |
|  | 4/1,6   | -  | 0,75<br>0,9 <sup>2)</sup> | 1,2<br>1,5 <sup>5)</sup> | 8)   | 0,9                      | 1,2<br>1,5 <sup>5)</sup> | 3,0                      | 1,5<br>2,5 <sup>4)</sup><br>3,0 <sup>6)</sup> | 8)   |
|  | 4/1,4   | 0,6<br>0,75 <sup>2)</sup>                          | -                         | -                        | -    | -                        | -                        | -                        | -   | -    |
|  | 2/1,6   | -  | 0,4<br>0,5 <sup>2)</sup>  | 0,6<br>0,9 <sup>5)</sup> | 8)   | 0,5                      | 0,6                      | 1,5                      | -   | -    |
| Lightweight solid brick Vbl,<br>acc. to EN 771-3:2011,<br>e.g. Liapor Super-K<br>16 DF (500x240x248)<br>by hammer drilling | 2/0,8   | -  | -                         | -                        | -    | -                        | -                        | 0,5                      | -   | -    |
| Lightweight solid brick Vbl,<br>acc. to EN 771-3:2011,<br>e.g. Tarmac<br>(440x100x215)<br>by hammer drilling               | 6/1,4   | -  | -                         | -                        | -    | 2,0<br>2,5 <sup>4)</sup> | -                        | 2,0<br>3,0 <sup>3)</sup> | -   | -    |
|  | 4/1,4   | -  | -                         | -                        | -    | 1,2<br>1,5 <sup>4)</sup> | -                        | 1,2<br>2,0 <sup>3)</sup> | -   | -    |
| Partial safety factor  | $\gamma_{Mm}$ <sup>1)</sup>   | 2,5  |                           |                          |      |                          |                          |                          |   |      |

<sup>1)</sup> In absence of other national regulations.

<sup>2)</sup> Only valid for temperature range 30/50° C.

<sup>3)</sup> Only valid for edge distance  $c \geq 150$  mm; intermediate values by linear interpolation.

<sup>4)</sup> Only valid for edge distance  $c \geq 200$  mm; intermediate values by linear interpolation.

<sup>5)</sup> Only valid for edge distance  $c \geq 150$  mm for temperature range 30/50° C; intermediate values by linear interpolation.

<sup>6)</sup> Only valid for edge distance  $c \geq 200$  mm for temperature range 30/50° C; intermediate values by linear interpolation.

<sup>8)</sup> Values of lower  $h_{nom}$  can also be taken for next higher  $h_{nom}$ .

fischer frame fixing SXR / SXRL

Performances

Characteristic resistance for use in solid masonry

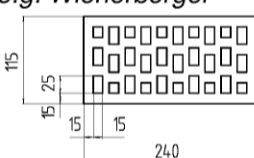
Annex C 6

**Table C7.1: Characteristic resistance  $F_{Rk}$  in [kN] in solid masonry (use category “b”)**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method                        | Min. compressive strength $f_b$ [N/mm <sup>2</sup> ] / bulk density $\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{Rk}$ [kN]<br>50/80°C |        |      |      |                          |         |      |         |      |  |
|---|--|--|--------|------|------|--------------------------|---------|------|---------|------|--|
|   |  | SXR 8  | SXRL 8 |      |      | SXR 10                   | SXRL 10 |      | SXRL 14 |      |  |
|   |  | h <sub>nom</sub> [mm]                              |        |      |      |                          |         |      |         |      |  |
|   |  | ≥ 50   | ≥ 50   | ≥ 70 | ≥ 90 | ≥ 50                     | ≥ 50    | ≥ 70 | ≥ 70    | ≥ 90 |  |
| <b>Solid brick normal concrete Vbn</b> ,<br>acc. to EN 771-3:2011<br>e.g. <i>Adolf Blatt</i><br>(240x245x240)<br>by hammer drilling | 20/1,8   | 2,5  | -      | -    | -    | 4,5                      | -       | -    | -       | -    |  |
|   | 16/1,8   | 2,5  | -      | -    | -    | 3,5                      | -       | -    | -       | -    |  |
|   | 12/1,8   | 2,5  | -      | -    | -    | 3,0                      | -       | -    | -       | -    |  |
|   | 10/1,8   | 1,5  | -      | -    | -    | 3,0                      | -       | -    | -       | -    |  |
|   | 8/1,8  | 1,5  | -      | -    | -    | -                        | -       | -    | -       | -    |  |
|   | 4/1,8  | 0,75   | -      | -    | -    | -                        | -       | -    | -       | -    |  |
| <b>Solid brick normal concrete Vbn</b> ,<br>acc. to EN 771-3:2011<br>e.g. <i>Tarmac GB</i><br>(440x100x215)<br>by hammer drilling   | 16/1,8   | -  | -      | -    | -    | 4,0<br>4,5 <sup>2)</sup> | -       | 5,5  | -       | -    |  |
|   | 10/1,8   | -  | -      | -    | -    | 2,5<br>3,0 <sup>2)</sup> | -       | 3,5  | -       | -    |  |
| Partial safety factor $\gamma_{Mm}$ <sup>1)</sup>   |  | 2,5  |        |      |      |                          |         |      |         |      |  |

Footnotes see C7.2

**Table C7.2: Characteristic resistance  $F_{Rk}$  in [kN] in hollow or perforated masonry (use category “c”)**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method  | Min. compressive strength $f_b$ [N/mm <sup>2</sup> ] / bulk density $\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{Rk}$ [kN]<br>50/80°C |        |    |    |                          |         |     |         |    |  |
|---|--|--|--------|----|----|--------------------------|---------|-----|---------|----|--|
|   |  | SXR 8  | SXRL 8 |    |    | SXR 10                   | SXRL 10 |     | SXRL 14 |    |  |
|   |  | h <sub>nom</sub> [mm]                              |        |    |    |                          |         |     |         |    |  |
|   |  | 50   | 50     | 70 | 90 | 50                       | 50      | 70  | 70      | 90 |  |
| <b>Perforated clay brick HLz Form B</b> , acc. to EN 771-1:2011<br>e.g. <i>Wienerberger</i><br><br><b>2 DF (240x115x113)</b><br>by rotary drilling | 20/1,2   | 1,2  | -      | -  | -  | 2,5<br>3,0 <sup>5)</sup> | -       | 2,0 | -       | -  |  |
|   | 20/1,0   | -  | -      | -  | -  | 2,0                      | -       | -   | -       | -  |  |
|   | 12/1,2   | -  | -      | -  | -  | -                        | -       | 1,2 | -       | -  |  |
|   | 10/1,2   | -  | -      | -  | -  | 1,5<br>2,0 <sup>2)</sup> | -       | -   | -       | -  |  |
|   | 10/1,0   | -  | -      | -  | -  | 1,2                      | -       | -   | -       | -  |  |
|   | 8/1,2  | 0,5  | -      | -  | -  | -                        | -       | -   | -       | -  |  |
| Partial safety factor $\gamma_{Mm}$ <sup>1)</sup>   |  | 2,5  |        |    |    |                          |         |     |         |    |  |

<sup>1)</sup> In absence of other national regulations.

<sup>2)</sup> Only valid for temperature range 30/50° C.

<sup>5)</sup> Only valid for edge distance  $c \geq 150$  mm at temperature range 30/50° C; intermediate values by linear interpolation.

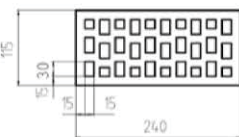
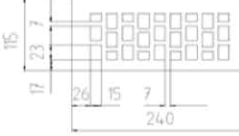
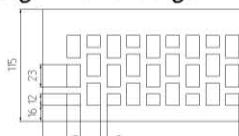
**fischer frame fixing SXR / SXRL**

**Performances**

Characteristic resistance for use in solid masonry and in hollow or perforated masonry

**Annex C 7**

**Table C8.1: Characteristic resistance  $F_{Rk}$  in [kN] in hollow or perforated masonry (use category “c”)**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method  | Min. compressive strength $f_b$<br>[N/mm <sup>2</sup> ] /<br>bulk density<br>$\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{Rk}$ [kN]<br>50/80°C |                          |                           |                          |        |         |                          |                          |    |
|---|---|--|--------------------------|---------------------------|--------------------------|--------|---------|--------------------------|--------------------------|----|
|   |   | SXR 8  | SXRL 8 <sup>7)</sup>     |                           |                          | SXR 10 | SXRL 10 |                          | SXRL 14 <sup>7)</sup>    |    |
|   |   | $h_{nom}$ [mm]                                     |                          |                           |                          |        |         |                          |                          |    |
|   |   | 50   | 50                       | 70                        | 90                       | 50     | 50      | 70                       | 70                       | 90 |
| <b>Perforated clay brick HLz</b><br>acc. to EN 771-1:2011<br>e.g. Wienerberger<br>     | 28/1,2  |  | 1,2<br>1,5 <sup>2)</sup> | 1,5<br>2,0 <sup>2)</sup>  | 1,5<br>2,0 <sup>2)</sup> | -      | -       | 2,0                      | -                        | -  |
|   | 20/1,2  |  | 0,9<br>1,2 <sup>2)</sup> | 0,9<br>1,2 <sup>2)</sup>  | 1,2<br>1,5 <sup>2)</sup> | -      | -       | 1,2                      | -                        | -  |
|   | 12/1,0  | 0,6  | -                        | -                         | -                        | 0,9    | -       | 0,75                     | -                        | -  |
|   | 10/1,2  | -  | 0,6                      | 0,6<br>0,75 <sup>2)</sup> | 0,6<br>0,9 <sup>2)</sup> | -      | -       | -                        | -                        | -  |
|   | 2 DF (240x115x113)<br>by rotary drilling  | 10/1,0   | -                        | -                         | -                        | 0,75   | -       | 0,6                      | -                        | -  |
|   | 8/1,0   | 0,4  | -                        | -                         | -                        | 0,6    | -       | -                        | -                        | -  |
| <b>Perforated clay brick VHLz</b><br>acc. to EN 771-1:2011,<br>e.g. Wienerberger<br> | 48/1,6  | -  | -                        | -                         | -                        | -      | -       | 4,5<br>5,0 <sup>2)</sup> | 4,5<br>5,0 <sup>2)</sup> |    |
|   | 28/1,6  | -  | -                        | -                         | -                        | -      | -       | 2,5<br>3,0 <sup>2)</sup> | 2,5<br>3,0 <sup>2)</sup> |    |
|   | 20/1,6  | -  | -                        | -                         | -                        | -      | -       | 1,5<br>2,0 <sup>2)</sup> | 1,5<br>2,0 <sup>2)</sup> |    |
| <b>Perforated clay brick VHLz</b><br>acc. to EN 771-1:2011,<br>e.g. Wienerberger<br> | 48/1,6  | -  | 2,5                      | 2,5                       | 1,5<br>2,0 <sup>2)</sup> | 2,5    | -       | 4,5                      | -                        | -  |
|   | 36/1,6  | -  | 2,0                      | 2,0                       | 1,2<br>1,5 <sup>2)</sup> | 2,0    | -       | 3,0                      | -                        | -  |
|   | 28/1,6  | -  | 1,5                      | 1,5                       | 0,9<br>1,2 <sup>2)</sup> | 1,5    | -       | 2,5                      | -                        | -  |
|   | 20/1,6  | -  | 0,9                      | 0,9                       | 0,6<br>0,9 <sup>2)</sup> | 0,9    | -       | 1,5                      | -                        | -  |
|   | 12/1,6  | -  | 0,6                      | 0,6                       | 0,4<br>0,5 <sup>2)</sup> | 0,6    | -       | 0,9                      | -                        | -  |
|   | 10/1,6  | -  | -                        | -                         | -                        | -      | -       | 0,9                      | -                        | -  |
| Partial safety factor   | $\gamma_{Mm}$ <sup>1)</sup>   | 2,5  |                          |                           |                          |        |         |                          |                          |    |

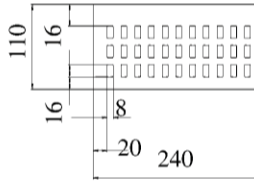
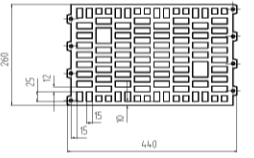
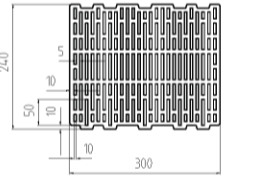
- 1) In absence of other national regulations.
- 2) Only valid for temperature range 30/50° C.
- 3) Only valid for edge distance  $c \geq 150$  mm; intermediate values by linear interpolation.
- 4) Only valid for edge distance  $c \geq 200$  mm; intermediate values by linear interpolation.
- 5) Only valid for edge distance  $c \geq 150$  mm at temperature range 30/50° C; intermediate values by linear interpolation.
- 6) Only valid for edge distance  $c \geq 200$  mm at temperature range 30/50° C; intermediate values by linear interpolation.
- 7) The lowest load of two consecutive embedment depths may be used for the intermediate embedment depths.

fischer frame fixing SXR / SXRL

**Performances**  
 Characteristic resistance for use in hollow or perforated masonry

**Annex C 8**

**Table C9.1: Characteristic resistance  $F_{Rk}$  in [kN] in hollow or perforated masonry (use category “c”)**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method   | Min. compressive strength $f_b$<br>[N/mm <sup>2</sup> ] /<br>bulk density<br>$\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{Rk}$ [kN]<br>50/80°C |        |    |        |                          |    |         |    |    |
|--|---|--|--------|----|--------|--------------------------|----|---------|----|----|
|  |   | SXR 8  | SXRL 8 |    | SXR 10 | SXRL 10                  |    | SXRL 14 |    |    |
|  |   | h <sub>nom</sub> [mm]                              |        |    |        |                          |    |         |    |    |
|  |   | 50   | 50     | 70 | 90     | 50                       | 50 | 70      | 70 | 90 |
| <b>Perforated clay brick HLz acc. to EN 771-1:2011+A1:2014, e.g. Wienerberger, BS</b><br> | 28/1,5  | 2,5  | -      | -  | -      | 2,5                      | -  | -       | -  | -  |
|  | 20/1,5  | 1,2<br>1,5 <sup>2)</sup>                           | -      | -  | -      | 2,0                      | -  | -       | -  | -  |
|  | 10/1,5  | 0,6<br>0,9 <sup>2)</sup>                           | -      | -  | -      | 1,2                      | -  | -       | -  | -  |
| <b>Perforated clay brick HLz Form B, acc. to EN 771-1:2011 e.g. Schlagmann</b><br>      | 8/0,9   | 0,9  | -      | -  | -      | -                        | -  | -       | -  | -  |
|  | 6/0,9   | 0,6  | -      | -  | -      | -                        | -  | -       | -  | -  |
|  | 4/0,9   | 0,4  | -      | -  | -      | -                        | -  | -       | -  | -  |
| <b>Perforated clay brick HLz acc. to EN 771-1:2011 e.g. Schlagmann Poroton T14</b><br>  | 6/0,7   | -  | -      | -  | -      | 0,3<br>0,4 <sup>2)</sup> | -  | 0,5     | -  | -  |
| <b>Partial safety factor <math>\gamma_{Mm}</math><sup>1)</sup></b>   |   | <b>2,5</b>   |        |    |        |                          |    |         |    |    |

1) In absence of other national regulations.

2) Only valid for temperature range 30/50° C.

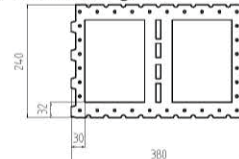

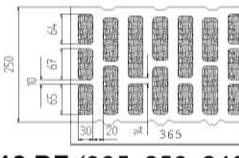
**fischer frame fixing SXR / SXRL**

**Performances**

Characteristic resistance for use in hollow or perforated masonry

**Annex C 9**

**Table C10.1: Characteristic resistance  $F_{Rk}$  in [kN] in hollow or perforated masonry (use category “c”)**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method  | Min. compressive strength $f_b$<br>[N/mm <sup>2</sup> ] /<br>bulk density<br>$\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{Rk}$ [kN]<br>50/80°C |        |    |    |            |         |             |            |            |
|---|---|--|--------|----|----|------------|---------|-------------|------------|------------|
|   |   | SXR 8  | SXRL 8 |    |    | SXR 10     | SXRL 10 |             | SXRL 14    |            |
|   |   | h <sub>nom</sub> [mm]                              |        |    |    |            |         |             |            |            |
|   |   | 50   | 50     | 70 | 90 | 50         | 50      | 70          | 70         | 90         |
| <b>Perforated clay brick HLz Form B,</b><br>acc. to<br>EN 771-1:2011,<br>e.g. <i>Schlagmann Planfüllziegel</i><br> | 6/0,7   | <b>1,2</b>   | -      | -  | -  | <b>2,0</b> | -       | -           | -          | -          |
|   | 4/0,7   | <b>0,75</b>  | -      | -  | -  | -          | -       | -           | -          | -          |
|   | 2/0,7   | <b>0,4</b>   | -      | -  | -  | -          | -       | -           | -          | -          |
| <b>Perforated clay brick HLz acc. to</b><br>EN 771-1:2011<br>e.g. <i>Schlagmann</i><br>                          | 12/1,0  | -  | -      | -  | -  | -          | -       | -           | <b>2,0</b> | <b>2,5</b> |
|   | 10/1,0  | -  | -      | -  | -  | -          | -       | -           | <b>2,0</b> | <b>2,0</b> |
|   | 8/1,0   | -  | -      | -  | -  | -          | -       | -           | <b>1,5</b> | <b>1,5</b> |
|   | 6/1,0   | -  | -      | -  | -  | -          | -       | -           | <b>1,2</b> | <b>1,2</b> |
| <b>Perforated clay brick HLz acc. to</b><br>EN 771-1:2011,<br>e.g. <i>Schlagmann Poroton S11</i><br>             | 8/0,8   | -  | -      | -  | -  | -          | -       | <b>1,5</b>  | -          | -          |
|   | 6/0,8   | -  | -      | -  | -  | -          | -       | <b>1,2</b>  | -          | -          |
|   | 4/0,8   | -  | -      | -  | -  | -          | -       | <b>0,75</b> | -          | -          |
| Partial safety factor   | $\gamma_{Mm}$ <sup>1)</sup>   | <b>2,5</b>   |        |    |    |            |         |             |            |            |

<sup>1)</sup> In absence of other national regulations.

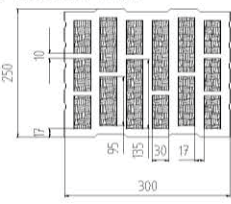
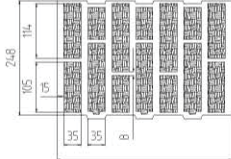
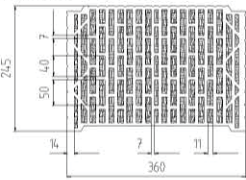
fischer frame fixing SXR / SXRL

**Performances**

Characteristic resistance for use in hollow or perforated masonry

**Annex C 10**

**Table C11.1: Characteristic resistance  $F_{Rk}$  in [kN] in hollow or perforated masonry (use category "c")**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method   | Min. compressive strength $f_b$<br>[N/mm <sup>2</sup> ] /<br>bulk density<br>$\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{Rk}$ [kN]<br>50/80°C |        |    |        |         |    |         |    |    |
|--|---|--|--------|----|--------|---------|----|---------|----|----|
|  |   | SXR 8  | SXRL 8 |    | SXR 10 | SXRL 10 |    | SXRL 14 |    |    |
|  |   | $h_{nom}$ [mm]                                     |        |    |        |         |    |         |    |    |
|  |   | 50   | 50     | 70 | 90     | 50      | 50 | 70      | 70 | 90 |
| <b>Perforated clay brick HLz</b> acc. to EN 771-1:2011<br><i>e.g. Schlagmann Poroton S10</i><br>              | 6/0,7   | -  | -      | -  | -      | -       | -  | 1,5     | -  | -  |
|  | 4/0,7   | -  | -      | -  | -      | -       | -  | 0,9     | -  | -  |
| <b>Perforated clay brick HLz</b> acc. to EN 771-1:2011<br><i>e.g. Schlagmann Poroton T8</i><br>             | 4/0,6   | -  | -      | -  | -      | -       | -  | 1,2     | -  | -  |
|  | 2/0,6   | -  | -      | -  | -      | -       | -  | 0,6     | -  | -  |
| <b>Perforated clay brick HLz</b> acc. to EN 771-1:2011,<br><i>e.g. Hörl &amp; Hartmann Coriso WS 09</i><br> | 6/0,8   | -  | -      | -  | -      | -       | -  | 0,9     | -  | -  |
|  | 4/0,8   | -  | -      | -  | -      | -       | -  | 0,6     | -  | -  |
|  | 2/0,8   | -  | -      | -  | -      | -       | -  | 0,3     | -  | -  |
| Partial safety factor  | $\gamma_{Mm}$ <sup>1)</sup>   | 2,5  |        |    |        |         |    |         |    |    |

See footnotes Annex C10

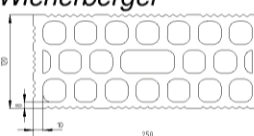
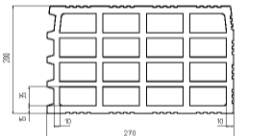
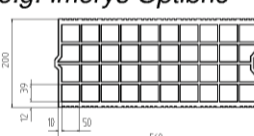
fischer frame fixing SXR / SXRL

**Performances**

Characteristic resistance for use in hollow or perforated masonry

Annex C 11

**Table C12.1: Characteristic resistance  $F_{Rk}$  in [kN] in hollow or perforated masonry (use category “c”)**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method   | Min. compressive strength $f_b$<br>[N/mm <sup>2</sup> ] /<br>bulk density<br>$\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{Rk}$ [kN]<br>50/80°C |                      |                           |                          |                           |    |                       |    |    |
|--|---|--|----------------------|---------------------------|--------------------------|---------------------------|----|-----------------------|----|----|
|  |   | SXR 8  | SXRL 8 <sup>7)</sup> |                           | SXR 10                   | SXRL 10                   |    | SXRL 14 <sup>7)</sup> |    |    |
|  |   | h <sub>nom</sub> [mm]                              |                      |                           |                          |                           |    |                       |    |    |
|  |   | 50   | 50                   | 70                        | 90                       | 50                        | 50 | 70                    | 70 | 90 |
| <b>Perforated clay brick HLz</b> acc. to EN 771-1:2011<br><i>e.g. Doppio Uni IT Wienerberger</i><br><br>(250x120x190)<br>by rotary drilling | 20/0,9  | -  | 1,2                  | 0,9<br>1,5 <sup>2)</sup>  | 1,5<br>2,0 <sup>2)</sup> | -                         | -  | -                     | -  | -  |
|  | 16/0,9  | -  | 0,9                  | 0,9<br>1,2 <sup>2)</sup>  | 1,2<br>1,5 <sup>2)</sup> | -                         | -  | -                     | -  | -  |
|  | 12/0,9  | -  | 0,75                 | 0,6<br>0,75 <sup>2)</sup> | 0,9<br>1,2 <sup>2)</sup> | -                         | -  | -                     | -  | -  |
| <b>Perforated clay brick HLz</b> acc. to EN 771-1:2011,<br><i>e.g. Imerys Gelimatic</i><br><br>(500x200x270)<br>by rotary drilling        | 6/0,6   | -  | -                    | -                         | -                        | 0,6<br>0,75 <sup>6)</sup> | -  | 1,5                   | -  | -  |
|  | 4/0,6   | -  | -                    | -                         | -                        | -                         | -  | 0,9                   | -  | -  |
|  | 2/0,6   | -  | -                    | -                         | -                        | -                         | -  | 0,5                   | -  | -  |
| <b>Perforated clay brick HLz</b> acc. to EN 771-1:2011,<br><i>e.g. Imerys Optibric</i><br><br>(560x200x275)<br>by rotary drilling         | 10/0,6  | -  | -                    | -                         | -                        | 1,2                       | -  | 1,5                   | -  | -  |
|  | 8/0,6   | -  | -                    | -                         | -                        | -                         | -  | 1,2                   | -  | -  |
|  | 6/0,6   | -  | -                    | -                         | -                        | -                         | -  | 0,9                   | -  | -  |
|  | 4/0,6   | -  | -                    | -                         | -                        | -                         | -  | 0,6                   | -  | -  |
| Partial safety factor  | $\gamma_{Mm}$ <sup>1)</sup>   | 2,5  |                      |                           |                          |                           |    |                       |    |    |

1) In absence of other national regulations.

2) Only valid for temperature range 30/50° C.

6) Only valid for edge distance  $c \geq 200$  mm for temperature range 30/50° C; intermediate values by linear interpolation.

7) The lowest load of two consecutive embedment depths may be used for the intermediate embedment depths.

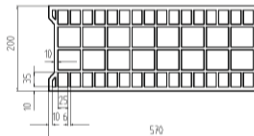
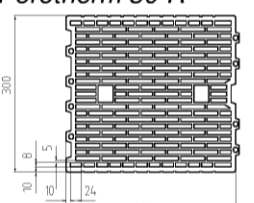
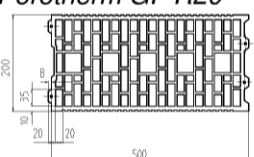
fischer frame fixing SXR / SXRL

**Performances**

Characteristic resistance for use in hollow or perforated masonry

**Annex C 12**

**Table C13.1: Characteristic resistance  $F_{Rk}$  in [kN] in hollow or perforated masonry (use category "c")**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method  | Min. compressive strength $f_b$ [N/mm <sup>2</sup> ] / bulk density $\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{Rk}$ [kN] |        |    |        |  |    |         |    |    |
|---|--|---|--------|----|--------|--|----|---------|----|----|
|   |  | 50/80°C                                 |        |    |        |  |    |         |    |    |
|   |  | SXR 8                                   | SXRL 8 |    | SXR 10 | SXRL 10  |    | SXRL 14 |    |    |
|   |  | $h_{nom}$ [mm]                          |        |    |        |  |    |         |    |    |
|   |  | 50                                      | 50     | 70 | 90     | 50   | 50 | 70      | 70 | 90 |
| <b>Perforated clay brick HLz</b> acc. to EN 771-1:2011, e.g. <i>Bouyer Leroux BGV</i> (570x200x315)<br><br>by rotary drilling                  | 6/0,6  | -                                       | -      | -  | -      | 0,75<br>0,9 <sup>3)</sup><br>1,2 <sup>5)</sup> | -  | 0,9     | -  | -  |
| <b>Perforated clay brick HLz</b> acc. to EN 771-1:2011, e.g. <i>Wienerberger Porotherm 30 R</i><br><br>(370x300x250)<br>by rotary drilling   | 10/0,7   | -                                       | -      | -  | -      | 0,5<br>0,6 <sup>3)</sup>                       | -  | -       | -  | -  |
| <b>Perforated clay brick HLz</b> acc. to EN 771-1:2011, e.g. <i>Wienerberger Porotherm GF R20</i><br><br>(560x200x275)<br>by rotary drilling | 10/0,7   | -                                       | -      | -  | -      | 0,6<br>0,75 <sup>3)</sup>                      | -  | 0,9     | -  | -  |
| Partial safety factor $\gamma_{Mm}$ <sup>1)</sup>   |  | 2,5                                     |        |    |        |  |    |         |    |    |

1) In absence of other national regulations.

3) Only valid for edge distance  $c \geq 150$  mm; intermediate values by linear interpolation.

5) Only valid for edge distance  $c \geq 150$  mm for temperature range 30/50° C; intermediate values by linear interpolation.

7) The lowest load of two consecutive embedment depths may be used for the intermediate embedment depths.

fischer frame fixing SXR / SXRL

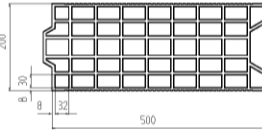
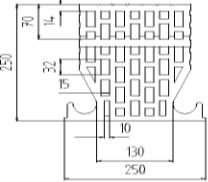
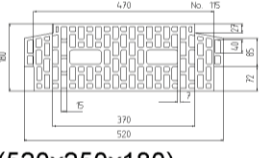
Performances

Characteristic resistance for use in hollow or perforated masonry

Annex C 13



**Table C14.1: Characteristic resistance  $F_{RK}$  in [kN] in hollow or perforated masonry (use category "c")**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method  | Min. com-<br>pressive<br>strength $f_b$<br>[N/mm <sup>2</sup> ] /<br>bulk density<br>$\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{RK}$ [kN]<br>50/80°C |        |    |    |  |        |             |    |         |  |
|---|---|--|--------|----|----|--|--------|-------------|----|---------|--|
|   |   | SXR 8  | SXRL 8 |    |    |  | SXR 10 | SXRL 10     |    | SXRL 14 |  |
|   |   | $h_{nom}$ [mm]                                     |        |    |    |  |        |             |    |         |  |
|   |   | 50   | 50     | 70 | 90 | 50                                     | 50     | 70          | 70 | 90      |  |
| <b>Perforated clay brick</b><br><b>HLz</b> acc. to<br>EN 771-1:2011,<br><i>e.g. Terreal Calibric</i><br><br>(500x200x220)<br>by rotary drilling  | 8/0,7   | -  | -      | -  | -  | <b>0,6</b><br><b>0,75<sup>6)</sup></b> | -      | <b>0,9</b>  | -  | -       |  |
|   | 6/0,7   | -  | -      | -  | -  | -                                      | -      | <b>0,75</b> | -  | -       |  |
|   | 4/0,7   | -  | -      | -  | -  | -                                      | -      | <b>0,4</b>  | -  | -       |  |
| <b>Perforated clay</b><br><b>ceiling brick</b> acc. to<br>DIN 4159:2014-05,<br><i>e.g. Hörl &amp; Hartmann</i><br><i>ceiling block</i><br><br>(250x250x190)<br>by rotary drilling                                  | 10/0,7  | -  | -      | -  | -  | -                                      | -      | <b>2,0</b>  | -  | -       |  |
|   | 8/0,7   | -  | -      | -  | -  | -                                      | -      | <b>1,5</b>  | -  | -       |  |
|   | 6/0,7   | -  | -      | -  | -  | -                                      | -      | <b>1,2</b>  | -  | -       |  |
| <b>Perforated clay</b><br><b>ceiling brick</b><br>acc. to<br>EN 15037-3:2011,<br><i>e.g. Hörl &amp; Hartmann</i><br><i>block for beam-and-</i><br><i>block ceilings</i><br><br>(520x250x180)<br>by rotary drilling | 8/0,7   | -  | -      | -  | -  | -                                      | -      | <b>1,5</b>  | -  | -       |  |
|   | 6/0,7   | -  | -      | -  | -  | -                                      | -      | <b>1,2</b>  | -  | -       |  |
|   | 4/0,7   | -  | -      | -  | -  | -                                      | -      | <b>0,9</b>  | -  | -       |  |
| Partial safety factor   | $\gamma_{Mm}$ <sup>1)</sup>   | <b>2,5</b>   |        |    |    |  |        |             |    |         |  |

1) In absence of other national regulations.

3) Only valid for edge distance  $c \geq 150$  mm; intermediate values by linear interpolation.

6) Only valid for edge distance  $c \geq 200$  mm for temperature range 30/50°C; intermediate values by linear interpolation.

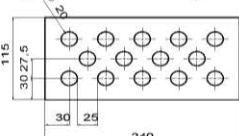
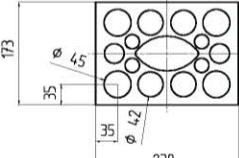
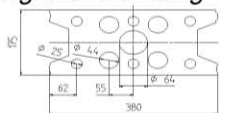
**fischer frame fixing SXR / SXRL**

**Performances**

Characteristic resistance for use in hollow or perforated masonry

**Annex C 14**

**Table C15.1: Characteristic resistance  $F_{Rk}$  in [kN] in hollow or perforated masonry (use category "c")**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method  | Min. compressive strength $f_b$<br>[N/mm <sup>2</sup> ] /<br>bulk density<br>$\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{Rk}$ [kN]<br>50/80°C |                           |                          |                           |                          |         |     |                          |                           |
|---|---|--|---------------------------|--------------------------|---------------------------|--------------------------|---------|-----|--------------------------|---------------------------|
|   |   | SXR 8  | SXRL 8 <sup>7)</sup>      |                          |                           | SXR 10                   | SXRL 10 |     | SXRL 14 <sup>7)</sup>    |                           |
|   |   | $h_{nom}$ [mm]                                     |                           |                          |                           |                          |         |     |                          |                           |
|   |   | 50   | 50                        | 70                       | 90                        | 50                       | 50      | 70  | 70                       | 90                        |
| <b>Hollow calcium silicate brick KSL</b><br>acc. to EN 771-2:2011<br><i>e.g. KS Wemding</i><br><br><b>2 DF (240x115x113)</b><br>by hammer drilling   | 20/1,4  | -  | 2,0                       | 2,5                      | 2,5                       | -                        | -       | -   | -                        | -                         |
|   | 12/1,4  | 2,0  | 1,2                       | 1,5                      | 1,5                       | 2,0<br>2,5 <sup>2)</sup> | -       | 2,5 | 1,5<br>2,0 <sup>2)</sup> | 2,5                       |
|   | 10/1,4  | 1,5  | -                         | -                        | -                         | 2,0                      | -       | 2,0 | 1,5                      | 2,0                       |
|   | 8/1,4   | 1,2  | -                         | -                        | -                         | 1,5                      | -       | 1,5 | 1,2                      | 1,5                       |
|   | 6/1,4   | 0,9  | -                         | -                        | -                         | -                        | -       | -   | 0,9                      | 1,2                       |
| <b>Hollow calcium silicate brick KSL</b><br>acc. to EN 771-2:2011<br><i>e.g. KS Wemding</i><br><br><b>3 DF (240x175x113)</b><br>by hammer drilling | 20/1,4  | 1,2<br>1,5 <sup>2)</sup>                           | -                         | -                        | -                         | -                        | -       | -   | -                        | -                         |
|   | 16/1,4  | 0,9<br>1,2 <sup>2)</sup>                           | -                         | -                        | -                         | -                        | -       | 2,0 | -                        | -                         |
|   | 12/1,4  | 0,75<br>0,9 <sup>2)</sup>                          | -                         | -                        | -                         | -                        | -       | 1,5 | -                        | -                         |
|   | 10/1,4  | 0,6<br>0,75 <sup>2)</sup>                          | -                         | -                        | -                         | -                        | -       | 1,2 | -                        | -                         |
|   | 8/1,4   | 0,5<br>0,6 <sup>2)</sup>                           | -                         | -                        | -                         | -                        | -       | 1,0 | -                        | -                         |
| 6/1,4   | -   | -  | -                         | -                        | -                         | -                        | 0,75    | -   | -                        |                           |
| <b>Hollow calcium silicate brick KSL</b><br>acc. to EN 771-2:2011<br><i>e.g. KS Wemding</i><br><br><b>9 DF (380x175x240)</b><br>by hammer drilling | 20/1,4  | -  | 0,6<br>0,75 <sup>2)</sup> | 1,5<br>2,0 <sup>2)</sup> | 0,9<br>1,2 <sup>2)</sup>  | -                        | -       | 3,5 | 3,5<br>4,0 <sup>2)</sup> | 1,5<br>2,0 <sup>2)</sup>  |
|   | 12/1,4  | -  | 0,4<br>0,5 <sup>2)</sup>  | 0,9<br>1,2 <sup>2)</sup> | 0,5<br>0,75 <sup>2)</sup> | -                        | -       | 2,0 | 2,0<br>2,5 <sup>2)</sup> | 0,9<br>1,2 <sup>2)</sup>  |
|   | 10/1,4  | -  | -                         | -                        | -                         | -                        | -       | 2,0 | 1,5<br>2,0 <sup>2)</sup> | 0,75<br>0,9 <sup>2)</sup> |
| Partial safety factor   | $\gamma_{Mm}$ <sup>1)</sup>   | 2,5  |                           |                          |                           |                          |         |     |                          |                           |

1) In absence of other national regulations.

2) Only valid for temperature range 30/50° C.

7) The lowest load of two consecutive embedment depths may be used for the intermediate embedment depths.

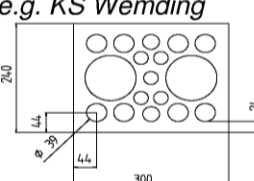
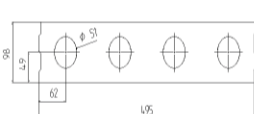
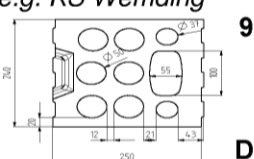
fischer frame fixing SXR / SXRL

**Performances**

Characteristic resistance for use in hollow or perforated masonry

Annex C 15

**Table C16.1: Characteristic resistance  $F_{RK}$  in [kN] in hollow or perforated masonry (use category “c”)**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method  | Min. compressive strength $f_b$<br>[N/mm <sup>2</sup> ] /<br>bulk density<br>$\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{RK}$ [kN]<br>50/80°C |        |    |        |  |    |            |    |    |
|---|---|--|--------|----|--------|--|----|------------|----|----|
|   |   | SXR 8  | SXRL 8 |    | SXR 10 | SXRL 10  |    | SXRL 14    |    |    |
|   |   | $h_{nom}$ [mm]                                     |        |    |        |  |    |            |    |    |
|   |   | 50   | 50     | 70 | 90     | 50   | 50 | 70         | 70 | 90 |
| <b>Hollow calcium silicate brick KSL</b><br>acc. to EN 771-2:2011<br>e.g. <i>KS Wemding</i><br><br><b>5 DF (300x240x113)</b><br>by hammer drilling | 16/1,4  | <b>2,0</b>   | -      | -  | -      | <b>3,0</b><br><b>3,5<sup>5)</sup></b>                            | -  | -          | -  | -  |
|   | 12/1,4  | <b>1,5</b>   | -      | -  | -      | -  | -  | -          | -  | -  |
|   | 10/1,4  | <b>1,2</b>   | -      | -  | -      | <b>1,5</b>   | -  | -          | -  | -  |
|   | 8/1,4   | <b>0,9</b>   | -      | -  | -      | -  | -  | -          | -  | -  |
|   | 6/1,4   | <b>0,75</b><br><b>0,9<sup>2)</sup></b>             | -      | -  | -      | -  | -  | -          | -  | -  |
| <b>Hollow calcium silicate brick KSL</b><br>acc. to EN 771-2:2011<br>e.g. <i>KS Wemding, P10</i><br><br>(495x98x245)<br>by hammer drilling       | 6/1,2   | <b>1,2</b><br><b>1,5<sup>2)</sup></b>              | -      | -  | -      | <b>1,5</b><br><b>2,0<sup>3)</sup></b><br><b>2,5<sup>5)</sup></b> | -  | -          | -  | -  |
|   | 4/1,2   | <b>0,75</b><br><b>0,9<sup>2)</sup></b>             | -      | -  | -      | -  | -  | -          | -  | -  |
|   | 2/1,2   | <b>0,4</b><br><b>0,5<sup>2)</sup></b>              | -      | -  | -      | -  | -  | -          | -  | -  |
| <b>Hollow calcium silicate brick KSL</b><br>acc. to EN 771-2:2011<br>e.g. <i>KS Wemding</i><br><br>(250x238x240)<br>by hammer drilling           | 12/1,4  | -  | -      | -  | -      | -  | -  | <b>2,0</b> | -  | -  |
|   | 10/1,4  | -  | -      | -  | -      | -  | -  | <b>1,5</b> | -  | -  |
|   | 8/1,4   | -  | -      | -  | -      | -  | -  | <b>1,2</b> | -  | -  |
|   | 6/1,4   | -  | -      | -  | -      | -  | -  | <b>0,9</b> | -  | -  |
| Partial safety factor   | $\gamma_{Mm}$ <sup>1)</sup>   | <b>2,5</b>   |        |    |        |  |    |            |    |    |

1) In absence of other national regulations.

2) Only valid for temperature range 30/50° C.

3) Only valid for edge distance  $c \geq 150$  mm; intermediate values by linear interpolation.

5) Only valid for edge distance  $c \geq 150$  mm for temperature range 30/50° C; intermediate values by linear interpolation.

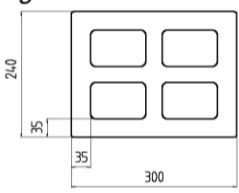
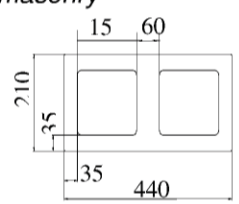
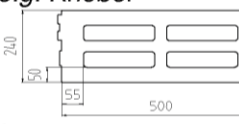
**fischer frame fixing SXR / SXRL**

**Performances**

Characteristic resistance for use in hollow or perforated masonry

**Annex C 16**

**Table C17.1: Characteristic resistance  $F_{RK}$  in [kN] in hollow or perforated masonry (use category “c”)**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method  | Min. compressive strength $f_b$<br>[N/mm <sup>2</sup> ] /<br>bulk density<br>$\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{RK}$ [kN]<br>50/80°C |                          |                          |                          |         |                          |                       |                          |      |
|---|---|--|--------------------------|--------------------------|--------------------------|---------|--------------------------|-----------------------|--------------------------|------|
|   |   | SXR 8  | SXRL 8 <sup>7)</sup>     |                          | SXR 10                   | SXRL 10 |                          | SXRL 14 <sup>7)</sup> |                          |      |
|   |   | h <sub>nom</sub> [mm]                              |                          |                          |                          |         |                          |                       |                          |      |
|   |   | 50   | 50                       | 70                       | 90                       | 50      | 50                       | 70                    | 70                       | 90   |
| <b>Hollow brick light-weight concrete Hbl</b><br>acc. to EN 771-3,<br><i>e.g. KLB</i><br><br>(300x240x240)<br>by hammer drilling                 | 2/1,2   | -  | -                        | -                        | -                        | 1,5     | -                        | -                     | -                        | -    |
| <b>Hollow brick light-weight concrete Hbl</b><br>acc. to EN 771-3,<br><i>e.g. Roadstone masonry</i><br><br>(440x210x215)<br>by hammer drilling | 10/1,2  | 2,5  | 2,0                      | 2,0<br>2,5 <sup>2)</sup> | 0,4<br>0,6 <sup>2)</sup> | -       | -                        | 2,5                   | 3,0                      | -    |
|   | 8/1,2   | 2,0  | 1,5                      | 1,5<br>2,0 <sup>2)</sup> | 0,3<br>0,5 <sup>2)</sup> | 2,5     | -                        | 2,0                   | 2,5                      | -    |
|   | 6/1,2   | 1,5  | 1,2                      | 1,2<br>1,5 <sup>2)</sup> | 0,3                      | 2,0     | -                        | 1,5                   | 2,0                      | -    |
|   | 4/1,2   | -  | -                        | -                        | -                        | -       | -                        | 0,9                   | 1,2                      | -    |
|   | 2/1,2   | -  | -                        | -                        | -                        | -       | -                        | 0,5                   | 0,6                      | -    |
| <b>Hollow brick light-weight concrete Hbl</b><br>acc. to EN 771-3,<br><i>e.g. Knobel</i><br><br>(500x240x240)<br>by rotary drilling            | 6/0,8   | -  | 1,5                      | 2,5                      | 1,5<br>2,0 <sup>2)</sup> | -       | 2,5                      | -                     | -                        | -    |
|   | 4/0,8   | -  | 0,9                      | 1,5                      | 0,9<br>1,2 <sup>2)</sup> | -       | 1,5                      | -                     | -                        | -    |
|   | 2/0,8   | -  | 0,5                      | 0,75                     | 0,5<br>0,6 <sup>2)</sup> | -       | 0,75                     | -                     | -                        | -    |
|   | 2/0,7   | -  | 1,5<br>2,0 <sup>2)</sup> | 2,0<br>2,5 <sup>2)</sup> | 1,5<br>2,0 <sup>2)</sup> | -       | 2,0<br>2,5 <sup>2)</sup> | 2,5                   | 1,2<br>1,5 <sup>2)</sup> | 0,75 |
| Partial safety factor   | $\gamma_{Mm}$ <sup>1)</sup>   | 2,5  |                          |                          |                          |         |                          |                       |                          |      |

1) In absence of other national regulations.

2) Only valid for temperature range 30/50° C.

7) The lowest load of two consecutive embedment depths may be used for the intermediate embedment depths.

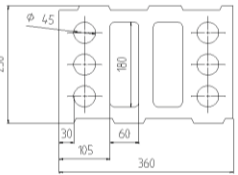
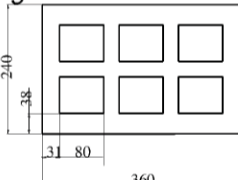
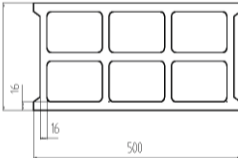
fischer frame fixing SXR / SXRL

**Performances**

Characteristic resistance for use in hollow or perforated masonry

**Annex C 17**

**Table C18.1: Characteristic resistance  $F_{Rk}$  in [kN] in hollow or perforated masonry (use category “c”)**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method   | Min. compressive strength $f_b$<br>[N/mm <sup>2</sup> ] /<br>bulk density<br>$\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{Rk}$ [kN]<br>50/80°C |        |    |        |   |    |         |    |    |
|--|---|--|--------|----|--------|---|----|---------|----|----|
|  |   | SXR 8  | SXRL 8 |    | SXR 10 | SXRL 10                                       |    | SXRL 14 |    |    |
|  |   | $h_{nom}$ [mm]                                     |        |    |        |   |    |         |    |    |
|  |   | 50   | 50     | 70 | 90     | 50  | 50 | 70      | 70 | 90 |
| <b>Hollow brick light-weight concrete Hbl</b><br>acc. to EN 771-3,<br>e.g. <i>KLB</i><br><br>(360x250x250)<br>by hammer drilling                  | 2/0,9   | -  | -      | -  | -      | -   | -  | 0,75    | -  | -  |
| <b>Hollow brick light-weight concrete Hbl</b><br>acc. to EN 771-3:2011,<br>e.g. <i>KLB</i><br><br>(360x240x240)<br>by hammer drilling           | 6/1,0   | 1,5  | -      | -  | -      | -   | -  | -       | -  | -  |
| <b>Hollow brick light-weight concrete Hbl</b><br>acc. to EN 771-3:2011,<br>e.g. <i>Sepa Parpaing</i><br><br>(500x200x200)<br>by rotary drilling | 6/0,9   | -  | -      | -  | -      | -   | -  | 0,5     | -  | -  |
|  | 4/0,9   | 0,3<br>0,4 <sup>2)</sup>                           | -      | -  | -      | 0,9<br>1,2 <sup>4)</sup><br>1,5 <sup>6)</sup> | -  | 0,3     | -  | -  |
| Partial safety factor  | $\gamma_{Mm}$ <sup>1)</sup>   | 2,5  |        |    |        |   |    |         |    |    |

1) In absence of other national regulations.

2) Only valid for temperature range 30/50° C.

4) Only valid for edge distance  $c \geq 200$  mm; intermediate values by linear interpolation.

6) Only valid for edge distance  $c \geq 200$  mm for temperature range 30/50° C; intermediate values by linear interpolation.

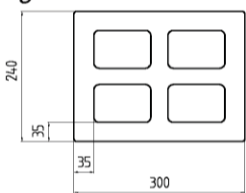
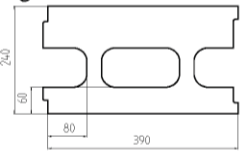
fischer frame fixing SXR / SXRL

**Performances**

Characteristic resistance for use in hollow or perforated masonry

**Annex C 18**

**Table C19.1: Characteristic resistance  $F_{Rk}$  in [kN] in hollow or perforated masonry (use category "c")**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method  | Min. compressive strength $f_b$<br>[N/mm <sup>2</sup> ] /<br>bulk density<br>$\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{Rk}$ [kN]<br>50/80°C |        |    |        |         |    |         |    |    |
|---|---|--|--------|----|--------|---------|----|---------|----|----|
|   |   | SXR 8  | SXRL 8 |    | SXR 10 | SXRL 10 |    | SXRL 14 |    |    |
|   |   | $h_{nom}$ [mm]                                     |        |    |        |         |    |         |    |    |
|   |   | 50   | 50     | 70 | 90     | 50      | 50 | 70      | 70 | 90 |
| <b>Hollow brick normal concrete Hbn</b><br>acc. to EN 771-3,<br>e.g. <i>Adolf Blatt</i><br><br>(300x240x240)<br>by hammer drilling | 6/1,6   | -  | -      | -  | -      | 2,5     | -  | 2,0     | -  | -  |
|   | 4/1,6   | -  | -      | -  | -      | 1,5     | -  | 1,2     | -  | -  |
|   | 2/1,6   | -  | -      | -  | -      | 0,75    | -  | 0,6     | -  | -  |
| <b>Heat insulation brick WDB</b><br>e.g. <i>Gisoton</i><br><br>(390x240x240)<br>by hammer drilling                               | 2/0,7   | --   | -      | -  | -      | 1,5     | -  | -       | -  | -  |
| Partial safety factor   | $\gamma_{Mm}$ <sup>1)</sup>   | 2,5  |        |    |        |         |    |         |    |    |

1) In absence of other national regulations.

2) Only valid for temperature range 30/50° C.

4) Only valid for edge distance  $c \geq 200$  mm; intermediate values by linear interpolation.

6) Only valid for edge distance  $c \geq 200$  mm for temperature range 30/50° C; intermediate values by linear interpolation.

fischer frame fixing SXR / SXRL

**Performances**

Characteristic resistance for use in hollow or perforated masonry

**Annex C 19**

**Table C20.1: Characteristic resistance  $F_{Rk}$  in [kN] in autoclaved aerated concrete (AAC), use category "d"**

| Base material<br>[Supplier Title]<br>Geometry, DF<br>or nom. size (L x W x H)<br>[mm]<br>and drilling method                       | Min. com-<br>pressive<br>strength $f_b$<br>[N/mm <sup>2</sup> ] /<br>bulk density<br>$\rho$ [kg/dm <sup>3</sup> ] | Characteristic resistance $F_{Rk}$ [kN]<br>50/80°C |        |                          |                          |  |   |   |      |      |  |
|--|---|--|--------|--------------------------|--------------------------|--|---|---|------|------|--|
|  |   | SXR 8  | SXRL 8 |                          | SXR 10                   | SXRL 10                                  |   | SXRL 14                                       |      |      |  |
|  |   | $h_{nom}$ [mm]                                     |        |                          |                          |  |   |   |      |      |  |
|  |   | ≥ 50   | ≥ 50   | ≥ 70                     | ≥ 90                     | ≥ 50                                     | ≥ 70  | ≥ 90  | ≥ 70 | ≥ 90 |  |
| Autoclaved aerated<br>concrete, AAC<br>acc. to EN 771-4:2011<br><br>e.g. (500x120x300)<br>e.g. (500x250x300)<br>by hammer drilling | ≥ 6   | -  | -      | 1,5<br>3,0 <sup>5)</sup> | 2,0<br>3,0 <sup>5)</sup> | 0,75<br>0,9 <sup>2)</sup>                | 2,0<br>2,5 <sup>6)</sup><br>3,0 <sup>4)</sup> | 2,5<br>3,0 <sup>6)</sup><br>4,0 <sup>4)</sup> | 4,0  | 5,0  |  |
|  | ≥ 4   | -  | -      | 0,9<br>1,5 <sup>5)</sup> | 1,2<br>1,5 <sup>5)</sup> | 0,75<br>0,9 <sup>2)</sup>                | 1,2<br>1,5 <sup>6)</sup><br>2,0 <sup>4)</sup> | 1,5<br>2,5 <sup>4)</sup>                      | 2,5  | 3,0  |  |
|  | ≥ 3   | -  | -      | 0,6<br>0,9 <sup>5)</sup> | 0,9<br>1,2 <sup>5)</sup> | 0,4 <sup>3)</sup><br>0,5 <sup>2)3)</sup> | 0,9<br>1,2 <sup>4)</sup>                      | 0,9<br>1,2 <sup>6)</sup><br>1,5 <sup>4)</sup> | 1,5  | 2,0  |  |
|  | ≥ 2   | -  | -      | 0,4                      | 0,6                      | 0,4 <sup>3)</sup><br>0,5 <sup>2)3)</sup> | 0,5<br>0,75 <sup>4)</sup>                     | 0,6<br>0,9 <sup>4)</sup>                      | 0,9  | 1,2  |  |
| Partial safety factor $\gamma_{MAAC}$ <sup>1)</sup>  |   | 2,0  |        |                          |                          |  |   |   |      |      |  |

1) In absence of other national regulations.

2) Only valid for temperature range 30/50° C.

3) For the fixing in autoclaved aerated concrete with a nominal compressive strength  $f_{ck} < 4$  N/mm<sup>2</sup> the hole is made by using the accompanying AAC hole punch according Table C20.2.

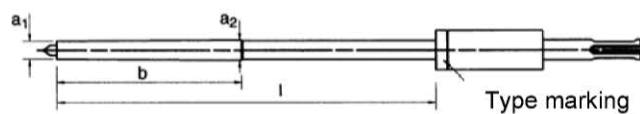
4) Values valid for member thickness  $h_{min} \geq 175$  mm.

5) Only valid for edge distance  $c \geq 120$  mm.

6) Only valid for edge distance  $c \geq 180$  mm.

**Table C20.2: Assignment AAC hole punch type – anchor type (length) only for AAC  $f_b < 4$ N/mm<sup>2</sup> SXR 10**

| Hole punch only for SXR 10 $h_{nom} = 50$ mm in AAC $f_b < 4$ N/mm <sup>2</sup> |       |       |     |              | Anchor type<br>(length)                   |
|---|-------|-------|-----|--------------|---|
| Type  | $a_1$ | $a_2$ | b   | l            |   |
| GBS 10 x 80   | 9     | 10    | 80  | 85           | SXR 10 x 52<br>SXR 10 x 60<br>SXR 10 x 80 |
| GBS 10 x 100  |       |       |     | 105          | SXR 10 x 100                              |
| GBS 10 x 135  |       |       | 140 | SXR 10 x 120 |   |
| GBS 10 x 160  |       |       | 90  | 165          | SXR 10 x 140<br>SXR 10 x 160              |
| GBS 10 x 185  |       |       |     | 190          | SXR 10 x 180                              |
| GBS 10 x 230  |       |       |     | 235          | SXR 10 x 200<br>SXR 10 x 230              |



fischer frame fixing SXR / SXRL

Performances

Characteristic resistance for use in autoclaved aerated concrete

Annex C 20