

## DECLARAȚIA DE PERFORMANȚĂ

### DoP 0371

pentru Șurub de beton fischer ULTRACUT FBS II R (Ancore din metal pentru utilizare în beton)

RO

- |                                                                                                                               |                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. <u>Cod unic de identificare al produsului-tip:</u>                                                                         | <b>DoP 0371</b>                                                                                                                                             |
| 2. <u>Utilizare (utilizări) preconizată (preconizate):</u>                                                                    | <b>Element de fixare post-instalat pentru utilizare în beton pentru sisteme nestructurale redundante, consultați suplimentul, în special anexele B1-B4.</b> |
| 3. <u>Fabricant:</u>                                                                                                          | <b>fischerwerke GmbH &amp; Co. KG, Klaus-Fischer-Str. 1, 72178 Waldachtal, Germany</b>                                                                      |
| 4. <u>Reprezentant autorizat:</u>                                                                                             | <b>–</b>                                                                                                                                                    |
| 5. <u>Sistemul (sistemele) de evaluare și de verificare a constanței performanței:</u>                                        | <b>2+</b>                                                                                                                                                   |
| 6. <u>Documentul de evaluare european:</u>                                                                                    | <b>EAD 330747-00-0601</b>                                                                                                                                   |
| Evaluarea tehnică europeană:                                                                                                  | <b>ETA-24/0973; 2025-01-08</b>                                                                                                                              |
| Organismul de evaluare tehnică:                                                                                               | <b>DIBt- Deutsches Institut für Bautechnik</b>                                                                                                              |
| Organism (organisme) notificat(e):                                                                                            | <b>2873 TU Darmstadt</b>                                                                                                                                    |
| 7. <u>Performanța (performanțe) declarată (declare):</u>                                                                      |                                                                                                                                                             |
| <b><u>Siguranță în utilizare (BWR 4)</u></b>                                                                                  |                                                                                                                                                             |
| <b>Rezistența caracteristică la întindere (pentru încărcări statice și cvasistatice):</b>                                     |                                                                                                                                                             |
| Rezistența la cedarea oțelului: consultați suplimentul, în special anexa C1                                                   | $E_s = 210\,000\text{ MPa}$                                                                                                                                 |
| Rezistența la smulgere: consultați suplimentul, în special anexa C1                                                           |                                                                                                                                                             |
| Rezistența la cedarea conului de beton: consultați suplimentul, în special anexa C1                                           |                                                                                                                                                             |
| Robustețe: consultați suplimentul, în special anexa C1                                                                        |                                                                                                                                                             |
| Distanța minimă față de margine și între ancore: consultați suplimentul, în special anexa C2                                  |                                                                                                                                                             |
| Distanța față de margine pentru a preveni fisuri sub încărcare: consultați suplimentul, în special anexa C1                   |                                                                                                                                                             |
| <b>Rezistența caracteristică la forfecare (pentru încărcări statice și cvasistatice):</b>                                     |                                                                                                                                                             |
| Rezistența la cedarea oțelului (rezistența la forfecare): consultați suplimentul, în special anexa C1                         |                                                                                                                                                             |
| Rezistența la cedarea cu braț de levier: consultați suplimentul, în special anexa C1                                          |                                                                                                                                                             |
| Rezistența la cedarea muchiei betonului: consultați suplimentul, în special anexa C1                                          |                                                                                                                                                             |
| <b>Rezistență caracteristică pentru toate direcțiile de încărcare și modurile de cedare pentru o proiectare simplificată:</b> |                                                                                                                                                             |
| Rezistență caracteristică: NPD                                                                                                |                                                                                                                                                             |
| <b>Durabilitate:</b>                                                                                                          |                                                                                                                                                             |
| Durabilitate: consultați suplimentul, în special anexele A2, B1                                                               |                                                                                                                                                             |
| <b><u>Siguranța în caz de incendiu (BWR 2)</u></b>                                                                            |                                                                                                                                                             |
| Reacție la foc: Clasa (A1)                                                                                                    |                                                                                                                                                             |
| <b>Rezistența la incendiu:</b>                                                                                                |                                                                                                                                                             |
| Rezistența la foc în ipoteza cedării oțelului (rezistența la întindere): consultați suplimentul, în special anexa C2          |                                                                                                                                                             |
| Rezistența la foc în ipoteza cedării prin smulgere (rezistența la întindere): consultați suplimentul, în special anexa C2     |                                                                                                                                                             |
| Rezistența la foc în ipoteza cedării oțelului (rezistența la forfecare): consultați suplimentul, în special anexa C2          |                                                                                                                                                             |
| 8. <u>Documentație tehnică adecvată și/sau documentație tehnică specifică:</u>                                                | <b>–</b>                                                                                                                                                    |

Performanța produsului identificat mai sus este în conformitate cu setul de performanțe declarate. Această declarație de performanță este eliberată în conformitate cu Regulamentul (UE) nr. 305/2011, pe răspunderea exclusivă a fabricantului identificat mai sus.

Semnata pentru și în numele fabricantului de către:



Dr. Ronald Mihala, Șef al departamentului de dezvoltare și management al producției  
Tumlingen, 2025-01-22



Dieter Pfaff, Șeful Federației Internaționale de Producție și Managementul Calității

Această declarație de performanță a fost întocmită în mai multe limbi. În cazul unei divergențe de interpretare, versiunea în limba engleză prevalează întotdeauna.

Suplimentul include informații voluntare și complementare în limba engleză, în afara cerințelor legale (specificate neutru din punct de vedere al limbii).

Translation guidance Essential Characteristics and Performance Parameters for Annexes

Ghid de traducere a caracteristicilor esențiale și a parametrilor de performanță pentru anexe

|                                                                                                                                                                                                                         |                                                                                                                                      |                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Safety in case of fire (BWR 2)                                                                                                                                                                                          |                                                                                                                                      |                                                             |
| Siguranța în caz de incendiu (BWR 2)                                                                                                                                                                                    |                                                                                                                                      |                                                             |
| 1                                                                                                                                                                                                                       | Reaction to fire:<br>Reacție la foc:                                                                                                 | Class<br>Clasa (A1)                                         |
| Resistance to fire:<br>Rezistența la incendiu:                                                                                                                                                                          |                                                                                                                                      |                                                             |
| 2                                                                                                                                                                                                                       | Fire resistance to steel failure (tension load):<br>Rezistența la foc în ipoteza cedării oțelului (rezistența la întindere):         | $N_{Rk,s,fi}$ [kN]                                          |
| 3                                                                                                                                                                                                                       | Fire resistance to pull-out failure (tension load):<br>Rezistența la foc în ipoteza cedării prin smulgere (rezistența la întindere): | $N_{Rk,p,fi}$ [kN]                                          |
| 4                                                                                                                                                                                                                       | Fire resistance to steel failure (shear load):<br>Rezistența la foc în ipoteza cedării oțelului (rezistența la forfecare):           | $V_{Rk,s,fi}$ [kN], $M^0_{Rk,s,fi}$ [Nm]                    |
| Safety and accessibility in use (BWR 4)                                                                                                                                                                                 |                                                                                                                                      |                                                             |
| Siguranță în utilizare (BWR 4)                                                                                                                                                                                          |                                                                                                                                      |                                                             |
| Characteristic resistance to tension load (static and quasi-static loading):<br>Rezistența caracteristică la întindere (pentru încărcări statice și cvasistatice):                                                      |                                                                                                                                      |                                                             |
| 6                                                                                                                                                                                                                       | Resistance to steel failure:<br>Rezistența la cedarea oțelului:                                                                      | $N_{Rk,s}$ [kN], $E_s$ [N/mm <sup>2</sup> ]                 |
| 7                                                                                                                                                                                                                       | Resistance to pull- out failure:<br>Rezistența la smulgere:                                                                          | $N_{Rk,p}$ [kN], $\psi_c$ , $T_{Rk,p}$ [N/mm <sup>2</sup> ] |
| 8                                                                                                                                                                                                                       | Resistance to concrete cone failure:<br>Rezistența la cedarea conului de beton:                                                      | $k_{cr,N}$ , $k_{ucr,N}$ [-], $h_{ef}$ , $c_{cr,N}$ [mm]    |
| 9                                                                                                                                                                                                                       | Robustness:<br>Robustețe:                                                                                                            | $\gamma_{inst}$ [-]                                         |
| 10                                                                                                                                                                                                                      | Minimum edge distance and spacing:<br>Distanța minimă față de margine și între ancore:                                               | $c_{min}$ , $s_{min}$ , $h_{min}$ [mm]                      |
| 11                                                                                                                                                                                                                      | Edge distance to prevent splitting under load:<br>Distanța față de margine pentru a preveni fisuri sub încărcare:                    | $N^0_{Rk,sp}$ [kN], $c_{cr,sp}$ [mm]                        |
| Characteristic resistance to shear load (static and quasi-static loading):<br>Rezistența caracteristică la forfecare (pentru încărcări statice și cvasistatice):                                                        |                                                                                                                                      |                                                             |
| 12                                                                                                                                                                                                                      | Resistance to steel failure (shear load):<br>Rezistența la cedarea oțelului (rezistența la forfecare):                               | $V_{Rk,s}$ [kN], $M^0_{Rk,s}$ [Nm], $k_7$ [-]               |
| 13                                                                                                                                                                                                                      | Resistance to pry-out failure:<br>Rezistența la cedarea cu braț de levier:                                                           | $k_8$ [-]                                                   |
| 14                                                                                                                                                                                                                      | Resistance to concrete edge failure:<br>Rezistența la cedarea muchiei betonului:                                                     | $d_{nom}$ , $l_f$ [mm]                                      |
| Characteristic resistance for all load directions and modes of failure for simplified design:<br>Rezistență caracteristică pentru toate direcțiile de încărcare și modurile de cedare pentru o proiectare simplificată: |                                                                                                                                      |                                                             |
| 15                                                                                                                                                                                                                      | Characteristic resistance:<br>Rezistență caracteristică:                                                                             | $F^0_{Rk}$ [kN], $s_{cr}$ , $c_{cr}$ [mm]                   |
| Durability:                                                                                                                                                                                                             |                                                                                                                                      |                                                             |
| Durabilitate:                                                                                                                                                                                                           |                                                                                                                                      |                                                             |
| 16                                                                                                                                                                                                                      | Durability:<br>Durabilitate:                                                                                                         | Description                                                 |

## **II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT**

### **1 Technical description of product and intended use**

#### **Technical description of the product**

fischer concrete screw UltraCut FBS II R is a concrete screw made of stainless steel. The anchor is installed in a drilled hole and anchored by mechanical interlock.

An illustration of the product is given in Annex A.

The characteristic material values, dimensions and tolerances of the anchors not indicated in Annexes shall correspond to the respective values laid down in the technical documentation of this European Technical Assessment.

The anchors are intended to be used with embedment depth given in Annex B, Table B2.1. The intended use specifications of the product are detailed in the Annex B1.

### **2 Specification of the intended use in accordance with the applicable European Assessment Document (hereinafter EAD)**

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 provisions made in this European Technical Assessment are based on an assumed intended working life of the anchor of 50 years.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body, 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 Characteristics of product**

##### **Safety in case of fire (BWR 2):**

The essential characteristics are detailed in the Annex C2.

##### **Hygiene, health and the environment (BWR3)**

No performance assessed

##### **Safety and accessibility in use (BWR4)**

The essential characteristics are detailed in the Annex C1 and C2.

##### **Durability:**

See annex B1.

#### **3.2 Methods of assessment**

The assessment of fitness of the anchor for the intended use in relation to the requirements for mechanical resistance and stability and safety in use in the sense of the Basic Works Requirement 2, 3 and 4 has been made in accordance with EAD 330747-00-0601 - Fasteners for use in concrete in redundant for non-structural systems.

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

### **4.1 AVCP system**

According to the decision 97/161/EC of the European Commission, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No. 305/2011) is 2+.

Product in the installed condition

Installed condition in normal weight concrete

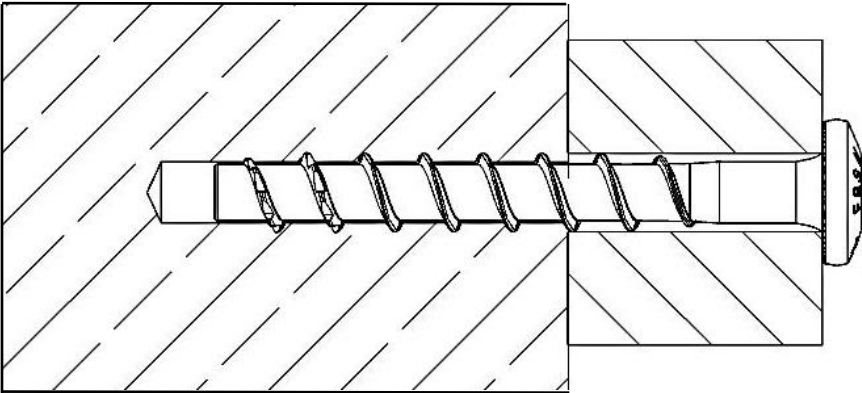
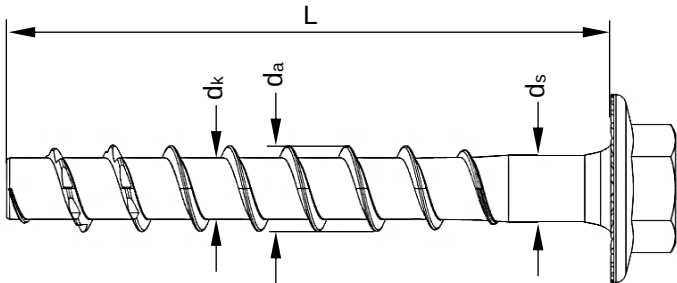
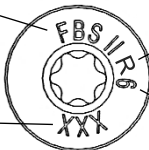


Table A1.1: Screw types FBS II 6 R

| FBS II 6 R                                                                                              |  |                                                 |
|---------------------------------------------------------------------------------------------------------|--|-------------------------------------------------|
| Hexagon head<br>with formed washer<br>(US)                                                              |  |                                                 |
| Countersunk head<br>(SK)                                                                                |  |                                                 |
| Pan head<br>(P)                                                                                         |  |                                                 |
| <div>(Figure not to scale)</div>                                                                        |  |                                                 |
| fischer concrete screw UltraCut FBS II 6 R                                                              |  | <div>Annex A 1</div> <div>Appendix 4 / 11</div> |
| <div>Product description</div> <div>Product in the installed condition and screw types FBS II 6 R</div> |  |                                                 |

**Table A2.1:**     Geometry and material

| FBS II 6 R                                                                                                                                                                                                                                                                                                                                                                                    |                | All head shapes                                                         |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------|-----|
| Thread outer diameter                                                                                                                                                                                                                                                                                                                                                                         | d <sub>a</sub> | [mm]                                                                    | 7,8 |
| Core diameter                                                                                                                                                                                                                                                                                                                                                                                 | d <sub>k</sub> |                                                                         | 5,6 |
| Shaft diameter                                                                                                                                                                                                                                                                                                                                                                                | d <sub>s</sub> |                                                                         | 6,0 |
| Material                                                                                                                                                                                                                                                                                                                                                                                      | [-]            | Tip: hardened steel;<br>Shaft and head: stainless steel EN 10088-1:2023 |     |
| Coating                                                                                                                                                                                                                                                                                                                                                                                       |                | Tip: red colour                                                         |     |
| <div><div></div><div><h3>Head marking (example) at US, SK, P</h3><div><div>FBS II: Product short name</div><div>XXX: Screw length L</div><div></div><div>R: Material type</div><div>6: Screw size</div></div></div></div> |                |                                                                         |     |
| (Figure not to scale)                                                                                                                                                                                                                                                                                                                                                                         |                |                                                                         |     |
| fischer concrete screw UltraCut FBS II 6 R                                                                                                                                                                                                                                                                                                                                                    |                | <div>Annex A 2</div> <div>Appendix 5 / 11</div>                         |     |
| Product description<br>Geometry and material                                                                                                                                                                                                                                                                                                                                                  |                |                                                                         |     |

## Specification of intended use:

| Size                                                                                              | FBS II 6 R |
|---------------------------------------------------------------------------------------------------|------------|
| Hammer drilling  | ✓          |
| Static and quasi-static loads                                                                     |            |
| Cracked and uncracked concrete                                                                    |            |
| Fire exposure                                                                                     |            |

### Base materials:

- Compacted reinforced and unreinforced normal weight concrete without fibres (cracked or uncracked) according to EN 206:2013+A2:2021
- Strength classes C20/25 to C50/60 according to EN 206:2013+A2:2021

### Use conditions (Environmental conditions):

- Structures subjected to dry internal conditions (FBS II 6 R)
- For all other conditions according to EN 1993-1-4:2006 +A1:2015 corresponding to corrosion resistance class
  - CRC III: for FBS II 6 R

### Design:

- The structural design according to EN 1992-4:2018 are conducted under responsibility of a designer experienced in the field of anchorages and concrete works.
- Verifiable calculation notes and drawings are to be prepared taking account of the loads to be anchored. The position of the fastener is indicated on the design drawings (e.g. position of the fastener relative to reinforcement or to supports, etc.)
- Design of fastenings according to EN 1992-4: 2018 and EOTA Technical Report TR 055:2018

fischer concrete screw UltraCut FBS II 6 R

**Intended use**  
Specification of intended use

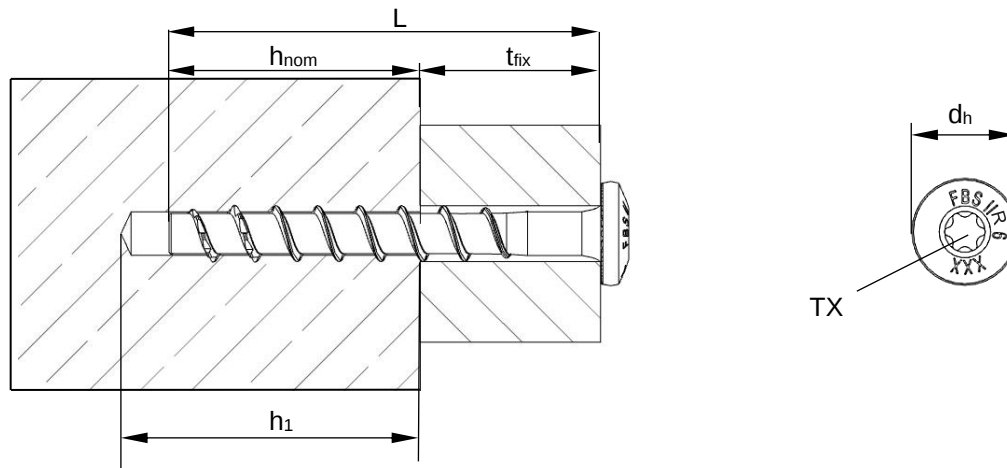
**Annex B 1**

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| Table B2.1: Installation parameters – drilling bore hole and setting tools |                |      |                 |    |
|----------------------------------------------------------------------------|----------------|------|-----------------|----|
| FBS II 6 R                                                                 |                |      | All head shapes |    |
| Nominal embedment depth                                                    | $h_{nom}$      | [mm] | 45              | 60 |
| Nominal drill hole diameter                                                | $d_o =$        |      | 6               |    |
| Cutting diameter of drill bits                                             | $d_{cut} \leq$ |      | 6,4             |    |
| Diameter of clearance hole in the fixture                                  | $d_f \leq$     |      | 8               |    |
| Drill hole depth                                                           | $h_1 \geq$     |      | 55              | 70 |
| Drill hole depth<br>(with adjustable setting)                              |                | 65   | 80              |    |
| Torque impact screw driver                                                 | $T_{imp,max}$  | [Nm] | 240             |    |

**Table B2.2:** Installation parameters – drive and fixture

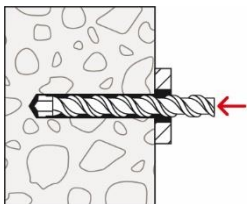
| <b>FBS II 6 R</b>    |                |      | <b>US</b>     | <b>SK</b> | <b>P</b> |
|----------------------|----------------|------|---------------|-----------|----------|
| Wrench size          | SW             | [mm] | 10 / 13       | -         |          |
| TX size              | TX             | [-]  | -             | 30        |          |
| Head diameter        | $d_h$          | [mm] | 15 / 17       | 13,3      | 14,4     |
| Thickness of fixture | $t_{fix} \leq$ |      | $L - h_{nom}$ |           |          |
| Length of screw      | $L_{min} =$    |      | 50            |           |          |
|                      | $L_{max} =$    |      | 400           |           |          |



(Figure not to scale)

|                                                |                                         |
|------------------------------------------------|-----------------------------------------|
| fischer concrete screw UltraCut FBS II 6 R     | <b>Annex B 2</b><br><br>Appendix 7 / 11 |
| <b>Intended use</b><br>Installation parameters |                                         |

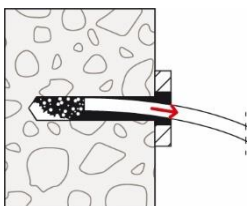
## Installation instruction part 1



### Step 1: Drilling of the drill hole:

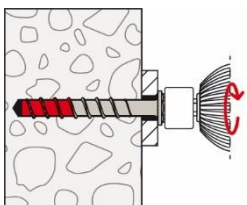
Drill the hole using hammer drill

Drill hole diameter  $d_0$  and  
drill hole depth  $h_1$  according to table B2.1



### Step 2: Cleaning of the drill hole:

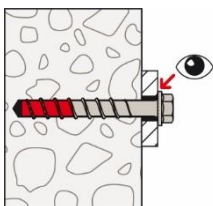
Clean the drill hole.



### Step 3: Installation:

Turn in until the head is in contact with the fixture.

Installation with any torque impact screw driver up to  
the maximum mentioned torque moment ( $T_{imp,max}$   
according to table B2.1).



### Step 4: Checking of the correct installation:

After installation a further turning of the screw must not  
be possible. The head of the screw must be in contact  
with the fixture and is not damaged

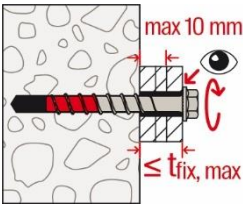
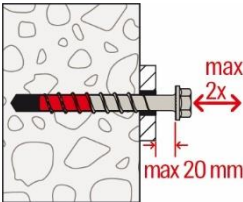
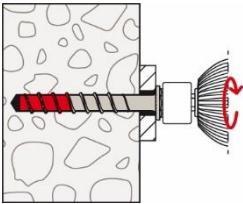
fischer concrete screw UltraCut FBS II 6 R

**Intended use**  
Installation instruction

**Annex B 3**

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# Installation instruction part 2



## Adjustment

Optional:  
It is permissible to adjust the screw twice.  
Therefore, the screw may be untightened to a maximum of  $L_{adj} = 20\text{ mm}$  off the surface of the initial fixture. The total permissible thickness of shims added during the adjustment process is  $t_{adj} = 10\text{ mm}$ .  
The required nominal anchoring depth  $h_{nom}$  must be kept after the adjustment process. (see also annex B 3)

fischer concrete screw UltraCut FBS II 6 R

**Intended use**  
Installation instruction

**Annex B 4**

Appendix 9 / 11

| Table C1.1: Characteristic values for static and quasi-static action                                                              |           |                      |      |                                  |                                   |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------|------|----------------------------------|-----------------------------------|
| FBS II 6 R                                                                                                                        |           |                      |      |                                  |                                   |
| Nominal embedment depth                                                                                                           |           | $h_{nom}$            | [mm] | 45                               | 60                                |
| Steel failure for tension load and shear load                                                                                     |           |                      |      |                                  |                                   |
| Characteristic resistance                                                                                                         |           | $N_{Rk,s}$           | [kN] | 19,3                             |                                   |
| Partial factor                                                                                                                    |           | $\gamma_{Ms,N}^{2)}$ | [-]  | 1,5                              |                                   |
| Characteristic resistance                                                                                                         |           | $V^0_{Rk,s}$         | [kN] | 5,2                              | 12,6                              |
| Partial factor                                                                                                                    |           | $\gamma_{Ms,V}^{2)}$ | [-]  | 1,5                              |                                   |
| Factor for ductility                                                                                                              |           | $k_7$                |      | 0,75                             |                                   |
| Characteristic bending resistance                                                                                                 |           | $M^0_{Rk,s}$         | [Nm] | 16,1                             |                                   |
| Pullout failure                                                                                                                   |           |                      |      |                                  |                                   |
| Characteristic resistance in concrete C20/25                                                                                      | uncracked | $N_{Rk,p}$           | [kN] | 5,0                              | 10,0                              |
|                                                                                                                                   | cracked   |                      |      | 2,5                              | 6,0                               |
| Increasing factors concrete                                                                                                       | C25/30    | $\psi_c$             | [-]  | 1,07                             |                                   |
|                                                                                                                                   | C30/37    |                      |      | 1,13                             |                                   |
|                                                                                                                                   | C35/45    |                      |      | 1,18                             |                                   |
|                                                                                                                                   | C40/50    |                      |      | 1,23                             |                                   |
|                                                                                                                                   | C45/55    |                      |      | 1,28                             |                                   |
|                                                                                                                                   | C50/60    |                      |      | 1,32                             |                                   |
| Installation sensitivity factor                                                                                                   |           | $\gamma_{inst}$      |      | 1,4                              |                                   |
| Concrete cone failure and splitting failure; concrete pryout failure                                                              |           |                      |      |                                  |                                   |
| Effective embedment depth                                                                                                         |           | $h_{ef}$             | [mm] | 24                               | 37                                |
| Factor for uncracked concrete                                                                                                     |           | $k_{ucr,N}$          | [-]  | 11,0                             |                                   |
| Factor for cracked concrete                                                                                                       |           | $k_{cr,N}$           |      | 7,7                              |                                   |
| Characteristic edge distance                                                                                                      |           | $C_{cr,N}$           | [mm] | $1,5 \cdot h_{ef}$               |                                   |
| Characteristic spacing                                                                                                            |           | $S_{cr,N}$           |      | $3 \cdot h_{ef}$                 |                                   |
| Characteristic resistance for splitting                                                                                           |           | $N^0_{Rk,sp}$        | [kN] | $\min(N^0_{Rk,c}{}^1); N_{Rk,p}$ |                                   |
| Characteristic edge distance for splitting                                                                                        |           | $C_{cr,sp}$          | [mm] | 66                               | 42                                |
| Characteristic spacing for splitting                                                                                              |           | $S_{cr,sp}$          |      | $2 \cdot C_{cr,sp}$              | $2 \cdot C_{cr,sp}$               |
| Factor for pryout failure                                                                                                         |           | $k_8$                | [-]  | 2,1                              | 2,6                               |
| Installation factor                                                                                                               |           | $\gamma_{inst}$      |      | 1,4 <sup>3)</sup>                |                                   |
| Concrete edge failure                                                                                                             |           |                      |      |                                  |                                   |
| Effective length in concrete                                                                                                      |           | $l_f$                | [mm] | 31                               | 46                                |
| Nominal diameter of screw                                                                                                         |           | $d_{nom}$            |      | 6                                |                                   |
| Adjustment                                                                                                                        |           |                      |      |                                  |                                   |
| Maximum thickness of shims                                                                                                        |           | $t_{adj}$            | [mm] | 10                               |                                   |
| Max. number of adjustments                                                                                                        |           | $n_a$                | [-]  | 2                                |                                   |
| <sup>1)</sup> $N^0_{Rk,c}$ according EN 1992-4:2018                                                                               |           |                      |      |                                  |                                   |
| <sup>2)</sup> In absence of other national regulations                                                                            |           |                      |      |                                  |                                   |
| <sup>3)</sup> Only for concrete cone failure and splitting failure; concrete pryout failure according to EN 1992-4:2018,Table 4.1 |           |                      |      |                                  |                                   |
| fischer concrete screw UltraCut FBS II 6 R                                                                                        |           |                      |      |                                  | Annex C 1<br><br>Appendix 10 / 11 |
| Performances<br>Characteristic values for static and quasi-static action                                                          |           |                      |      |                                  |                                   |

| Table C2.1: Minimum thickness of concrete members, minimum spacing and edge distance                                                      |                |                 |                     |      |                  |     |
|-------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|---------------------|------|------------------|-----|
| FBS II 6 R                                                                                                                                |                |                 |                     |      |                  |     |
| Minimum thickness of concrete member                                                                                                      | $h_{min}$      | [mm]            | 100                 |      |                  |     |
| Minimum spacing                                                                                                                           | $s_{min}$      |                 | 35                  |      |                  |     |
| Minimum edge distance                                                                                                                     | $c_{min}$      |                 |                     |      |                  |     |
| 1) Drill hole depth according to table B2.1                                                                                               |                |                 |                     |      |                  |     |
| Table C2.2: Characteristic values for resistance to fire                                                                                  |                |                 |                     |      |                  |     |
| FBS II 6 R                                                                                                                                |                |                 |                     |      |                  |     |
| Nominal embedment depth                                                                                                                   | $h_{nom}$      | [mm]            | 45                  | 60   |                  |     |
| Steel failure for tension load and shear load                                                                                             |                |                 |                     |      |                  |     |
| Characteristic resistance for the head shapes                                                                                             | US $\geq$ SW13 | $F_{Rk,s,fi}$   | R30                 | [kN] | -1)              | 2,1 |
|                                                                                                                                           |                |                 | R60                 |      | -1)              | 1,7 |
|                                                                                                                                           |                |                 | R90                 |      | -1)              | 1,2 |
|                                                                                                                                           |                |                 | R120                |      | -1)              | 1,0 |
|                                                                                                                                           | SK/P US SW10   | $F_{Rk,s,fi}$   | R30                 | [kN] | -1)              | 1,8 |
|                                                                                                                                           |                |                 | R60                 |      | -1)              | 1,4 |
|                                                                                                                                           |                |                 | R90                 |      | -1)              | 1,1 |
|                                                                                                                                           |                |                 | R120                |      | -1)              | 0,9 |
| Characteristic bending resistance for the head shapes                                                                                     | US $\geq$ SW13 | $M^0_{Rk,s,fi}$ | R30                 | [Nm] | -1)              | 1,7 |
|                                                                                                                                           |                |                 | R60                 |      | -1)              | 1,4 |
|                                                                                                                                           |                |                 | R90                 |      | -1)              | 1,0 |
|                                                                                                                                           |                |                 | R120                |      | -1)              | 0,8 |
|                                                                                                                                           | SK/P US SW10   | $M^0_{Rk,s,fi}$ | R30                 | [Nm] | -1)              | 1,5 |
|                                                                                                                                           |                |                 | R60                 |      | -1)              | 1,2 |
|                                                                                                                                           |                |                 | R90                 |      | -1)              | 0,9 |
|                                                                                                                                           |                |                 | R120                |      | -1)              | 0,7 |
| Pullout failure                                                                                                                           |                |                 |                     |      |                  |     |
| Characteristic resistance                                                                                                                 | $N_{Rk,p,fi}$  | R30             | [kN]                | -1)  | 1,0              |     |
|                                                                                                                                           |                | R60             |                     |      |                  |     |
|                                                                                                                                           |                | R90             |                     |      |                  |     |
|                                                                                                                                           |                | R120            |                     | -1)  | 0,8              |     |
| Concrete cone failure failure                                                                                                             |                |                 |                     |      |                  |     |
| Characteristic resistance                                                                                                                 | $N_{Rk,c,fi}$  | R30             | [kN]                | -1)  | 1,4              |     |
|                                                                                                                                           |                | R60             |                     |      |                  |     |
|                                                                                                                                           |                | R90             |                     |      |                  |     |
|                                                                                                                                           |                | R120            |                     | -1)  | 1,1              |     |
| Edge distance                                                                                                                             |                |                 |                     |      |                  |     |
| R30 to R120                                                                                                                               | $C_{cr,fi}$    | [mm]            | $2 \cdot h_{ef}$    |      |                  |     |
| In case of fire attack from more than one side, the minimum edge distance shall be $\geq 300$ mm                                          |                |                 |                     |      |                  |     |
| Spacing                                                                                                                                   |                |                 |                     |      |                  |     |
| R30 to R120                                                                                                                               | $S_{cr,fi}$    | [mm]            | $2 \cdot C_{cr,fi}$ |      |                  |     |
| 1) No performance assessed                                                                                                                |                |                 |                     |      |                  |     |
| fischer concrete screw UltraCut FBS II 6 R                                                                                                |                |                 |                     |      | Annex C 2        |     |
| Performances<br>Minimum thickness of concrete members, minimum spacing and edge distance;<br>Characteristic values for resistance to fire |                |                 |                     |      |                  |     |
|                                                                                                                                           |                |                 |                     |      | Appendix 11 / 11 |     |