



DECLARACIÓN DE PRESTACIONES



no 0016 – ES

1. Código de identificación única del producto tipo: **Tornillo para hormigón fischer FBS 5 y FBS 6**

2. Usos previstos:

producto	Uso/s previsto/s
anclaje metálico para fijación de sistemas ligeros en hormigón	para aplicación en sistemas redundantes para la fijación y/o anclaje de elementos constructivos, tales como falsos techos ligeros, además de instalaciones en hormigón, Véase el apéndice, especialmente los anexos B 1 - B 4

3. Fabricante: **fischerwerke GmbH & Co. KG, Klaus-Fischer-Straße 1, 72178 Waldachtal, Germany**

4. Representante autorizado: --

5. Sistemas de evaluación y verificación de la constancia de las prestaciones (EVCP): **2+**

6a. Norma armonizada: ---

Organismos notificados: ---

6b. Documento de evaluación europeo: **ETAG 001; 2010-08**

Evaluación técnica europea: **ETA-11/0093; 2015-08-28**

Organismo de evaluación técnica: **DIBt**

Organismos notificados: **1343 – MPA Darmstadt**

7. Prestaciones declaradas:

**protección contra incendios (BWR 2)**

indicación esencial	Prestaciones
Reacción al fuego	el anclaje cumple con las exigencias de la clase A1.
resistencia al fuego	Ver anexo, especialmente anexo C 2

**Seguridad durante el uso (BWR 4)**

indicación esencial	Prestaciones
Resistencia característica para la tensión y las cargas de cizalladura, así como momentos de flexión en el hormigón	Ver anexo, especialmente anexo C 1 y C 2
distancias al borde y entre ejes	Ver anexo, especialmente anexo C 1

8. Documentación técnica adecuada o documentación técnica específica: ---

Las prestaciones del producto identificado anteriormente son conformes con el conjunto de prestaciones declaradas. La presente declaración de prestaciones se emite, de conformidad con el Reglamento (UE) no 305/2011, bajo la sola responsabilidad del fabricante arriba identificado.

Firmado por y en nombre del fabricante por:

Andreas Bucher, Dipl.-Ing.

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

Tumlingen, 2015-09-04

- Este DoP ha sido redactado en varios idiomas. En caso de disputa acerca de la interpretación siempre prevalecerá la versión en inglés.

- el anexo contiene información voluntaria y complementaria en inglés, que va más allá de las exigencias legales.

## Specific Part

### 1 Technical description of the product

The Fischer concrete screw FBS in size of 5 and 6 is an anchor made of zinc-plated steel respectively steel with zinc flake coating (FBS) or made of stainless steel (FBS A4, FBS C). The anchor is screwed into a predrilled cylindrical drill hole. The special thread of the anchor cuts an internal thread into the member while setting. The anchorage is characterised by mechanical interlock in the special thread.

Product and 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 anchor 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 satisfies requirements for Class A1
Resistance to fire	See Annex C 2

#### 3.3 Safety in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance for tension and shear loads as well as bending moments in concrete	See Annex C 1 and C 2
Edge distances and spacing	See Annex C 1

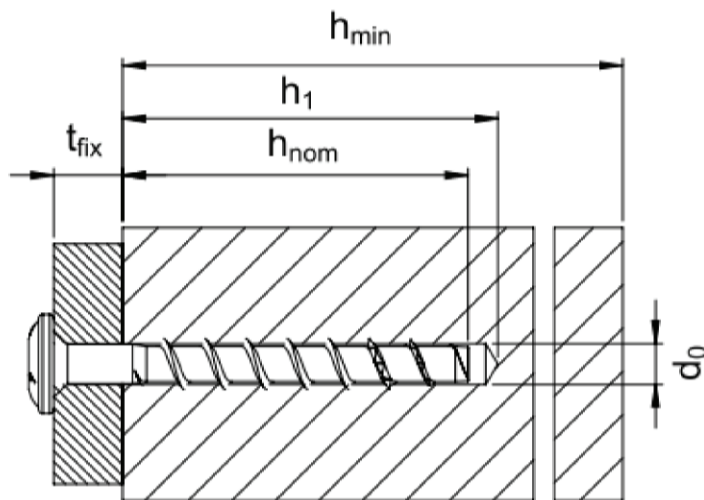
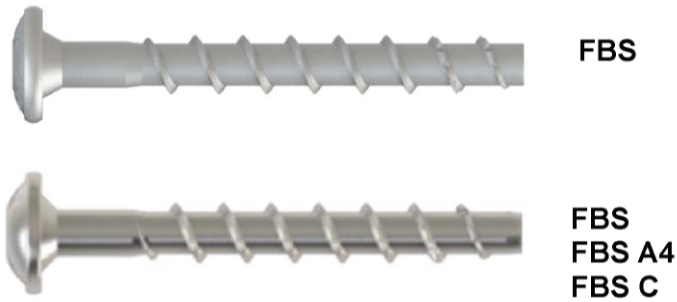
### 4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with guideline for European technical approval ETAG 001, April 2013 used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011 the applicable European legal act is: [97/161/EC].

The system to be applied is: 2+

**product and installed condition**

**fischer concrete screw FBS 5 and FBS 6**



- $d_0$  = nominal drill bit diameter
- $h_{nom}$  = nominal anchorage depth
- $h_1$  = depth of the drill hole
- $h_{min}$  = minimum thickness of member
- $t_{fix}$  = thickness of fixture

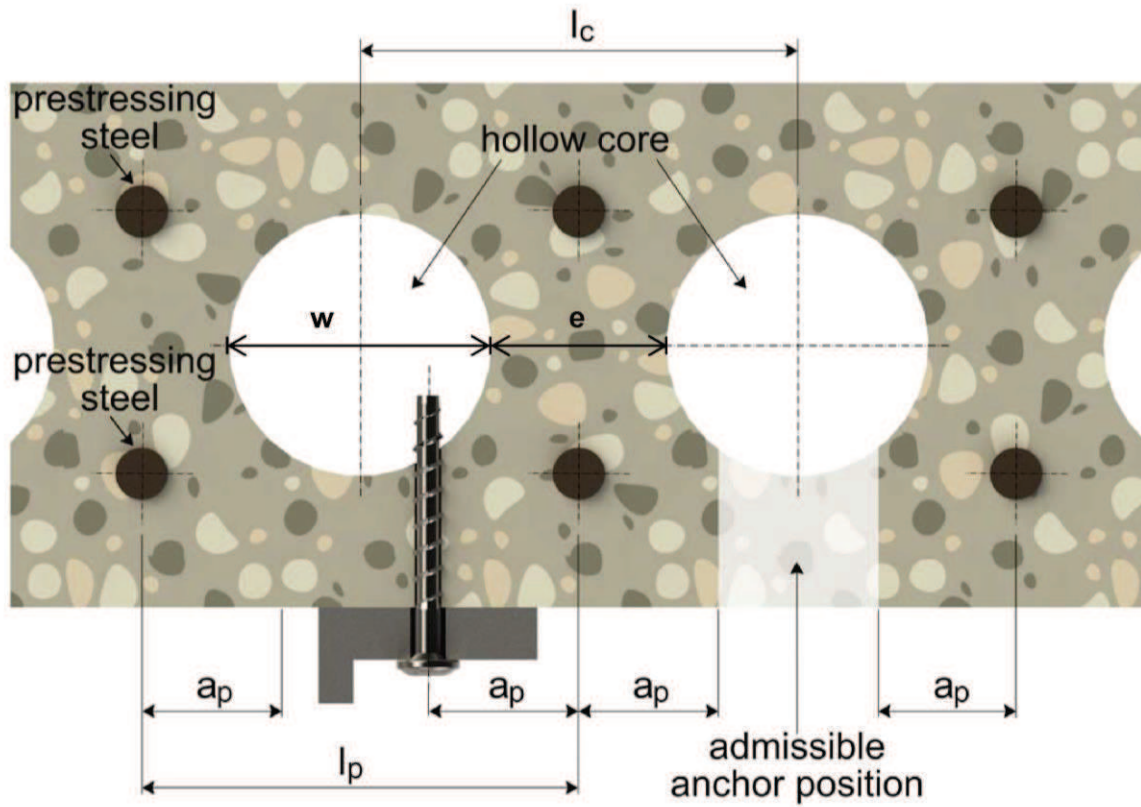
**fischer concrete screw FBS**

**Product description**

Installed condition

**Annex A 1**

**installed condition in precast prestressed hollow core slabs**



$$w / e \leq 4,2$$

**fischer concrete screw FBS**

















**Product description**

Installed condition

**Annex A 2**

**Table A 1: materials and variants**

part	name	Material		
1, 2, 3, 4, 5, 6, 7, 8	Screw anchor	FBS	Steel EN 10263-4 galvanized acc. to EN ISO 4042 or zinc flake coating acc. to EN ISO 10683 ( $\geq 5\mu\text{m}$ )	
		FBS A4	1.4401, 1.4404, 1.4571, 1.4578	
		FBS C	1.4529	
		nominal characteristic steel yield strength	$f_{yk}$ [N/mm <sup>2</sup> ]	600
		nominal characteristic steel ultimate strength	$f_{uk}$ [N/mm <sup>2</sup> ]	700

		1)	Anchor version with connection thread
		2)	Anchor version with washer, hexagon head and TORX
		3)	Anchor version with washer, hexagon head and
		4)	Anchor version with hexagon head
		5)	Anchor version with countersunk head
		6)	Anchor version with pan head
		7)	Anchor version with countersunk head and connection thread
		8)	Anchor version with hexagon head and connection thread

**fischer concrete screw FBS**

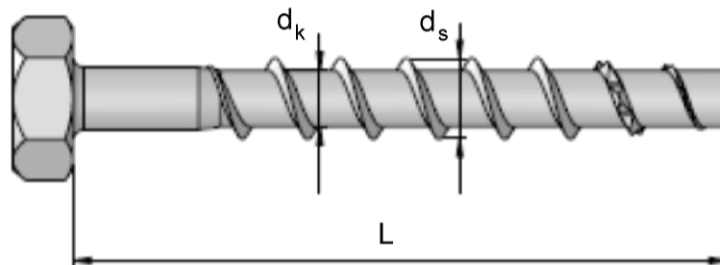
**Product description**

Material and screw types

**Annex A 3**

**Table A 2: dimensions and markings**

Anchor size			FBS 5	FBS 6
Length of the anchor	$L \leq$	[mm]	200	
Diameter of shaft	$d_k$	[mm]	4,2	5,2
Diameter of thread	$d_s$	[mm]	6,5	7,5



Marking:

Anchor type: FBS / TSM B or TSM BC  
FBS A4 / TSM BS  
FBS C / TSM BSH

Anchor size: 6  
Length of the anchor: 60



Marking "k" or "x" for anchors with connection thread and  $h_{nom} = 35$  mm

**fischer concrete screw FBS**

**Product descriptions**

Dimensions and markings

**Annex A 4**

## Intended use

### Anchorage subject to:

- static and quasi static loads
- Used only for multiple use for non-structural application according to ETAG 001, Part 6
- Used for anchorages in prestressed hollow core slabs
- Used for anchorages with requirements related to resistance of fire (not for using in prestressed hollow core slabs)

### Base materials:

- reinforced and unreinforced concrete according to EN 206-1:2000
- strength classes C20/25 to C50/60 according to EN 206-1:2000
- cracked and non-cracked concrete

### Use conditions (Environmental conditions):

- The anchor may only be used in dry internal conditions: All screw types
- Structural subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition no particular aggressive conditions exists: screw types made of stainless steel with marking A4 or BS
- Structural subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition if particular aggressive conditions exists: screw types made of stainless steel with marking C or BSH

Note: Such 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 chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used)

### Design:

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages under static or quasi-static actions are designed for design method A in accordance with:
  - ETAG 001, Annex C, Edition August 2010 or
  - CEN/TS 1992-4:2009.
- Anchorages under fire exposure are designed in accordance with:
  - EOTA Technical Report TR 020, Edition May 2004 or
  - CEN/TS 1992-4:2009, Annex D (It must be ensured that local spalling of the concrete cover does not occur).

### Installation:

- Hammer drilling only.
- Anchor installation carried out by appropriately qualified personal and under the supervision of the person responsible for technical matters of the site.
- After installation further turning of the anchor is not possible. The head of the anchor is supported on the fixture and is not damaged.

**fischer concrete screw FBS**

**Intended use**

Specifications

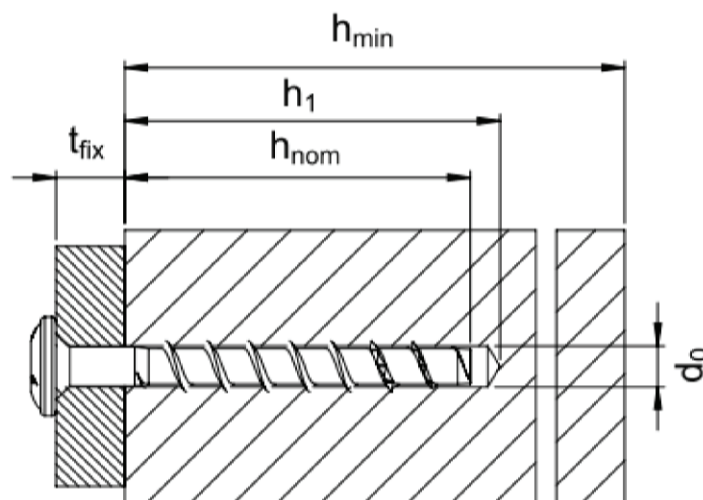
**Annex B 1**

**Table B 1: Installation parameters**

Anchorsize			FBS 5	FBS 6	
Nominal embedment depth			$h_{nom} = 35 \text{ mm}$	$h_{nom} = 35 \text{ mm}$	$h_{nom} = 55 \text{ mm}$
nominal drill bit diameter	$d_0$	[mm]	5	6	
cutting diameter of drill bit	$d_{cut} \leq$	[mm]	5,40	6,40	
depth of drill hole	$h_1 \geq$	[mm]	40	40	60
Nominal embedment depth	$h_{nom} \geq$	[mm]	35	35	55
diameter of clearing hole in the fixture	$d_f \leq$	[mm]	7	8	
Installation torque	$T_{inst}$	Nm	8	10	
Maximum nominal torque for installation with an impact screwdriver		Nm	120	150	

**Table B 2: Minimum thickness of member, minimum edge distance and minimum spacing**

Anchorsize			FBS 5	FBS 6	
Nominal embedment depth			$h_{nom} = 35 \text{ mm}$	$h_{nom} = 35 \text{ mm}$	$h_{nom} = 55 \text{ mm}$
minimum thickness of member	$h_{min}$	[mm]	80	80	100
minimum edge distance	$c_{min}$	[mm]	35	35	40
minimum spacing	$s_{min}$	[mm]	35	35	40



**fischer concrete screw FBS**

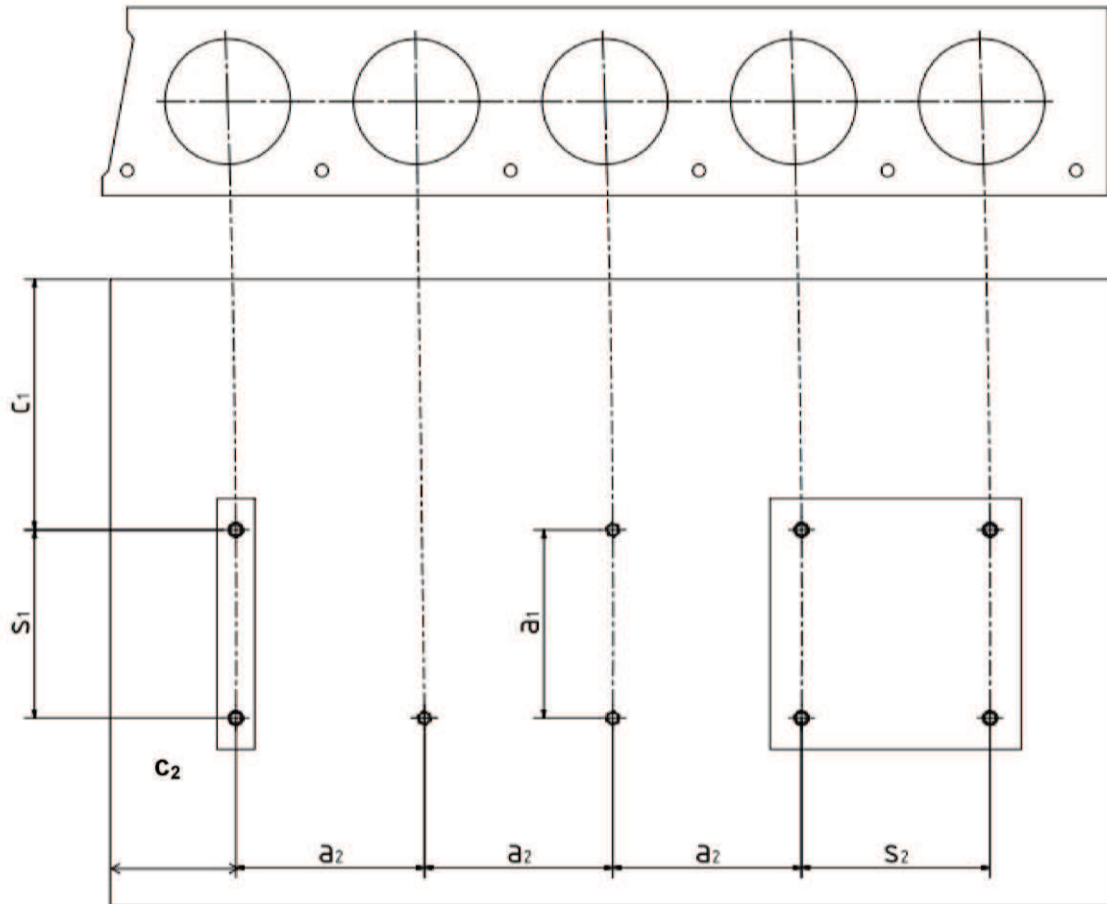
**Intended use**

Installation parameters

**Annex B 2**



### Installation parameters for anchorages in precast prestressed hollow core slabs



$c_1, c_2$  edge distance  
 $s_1, s_2$  anchor spacing  
 $a_1, a_2$  distance between anchor groups

Minimum edge distance	$c_{min}$	$\geq 100$ mm
Minimum anchor spacing	$s_{min}$	$\geq 100$ mm
Minimum distance between anchor groups	$a_{min}$	$\geq 100$ mm

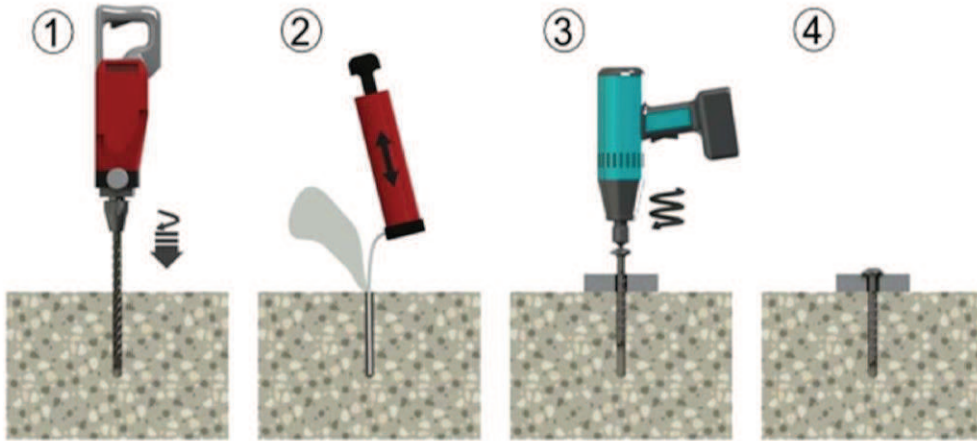
**fischer concrete screw FBS**

**Intended use**

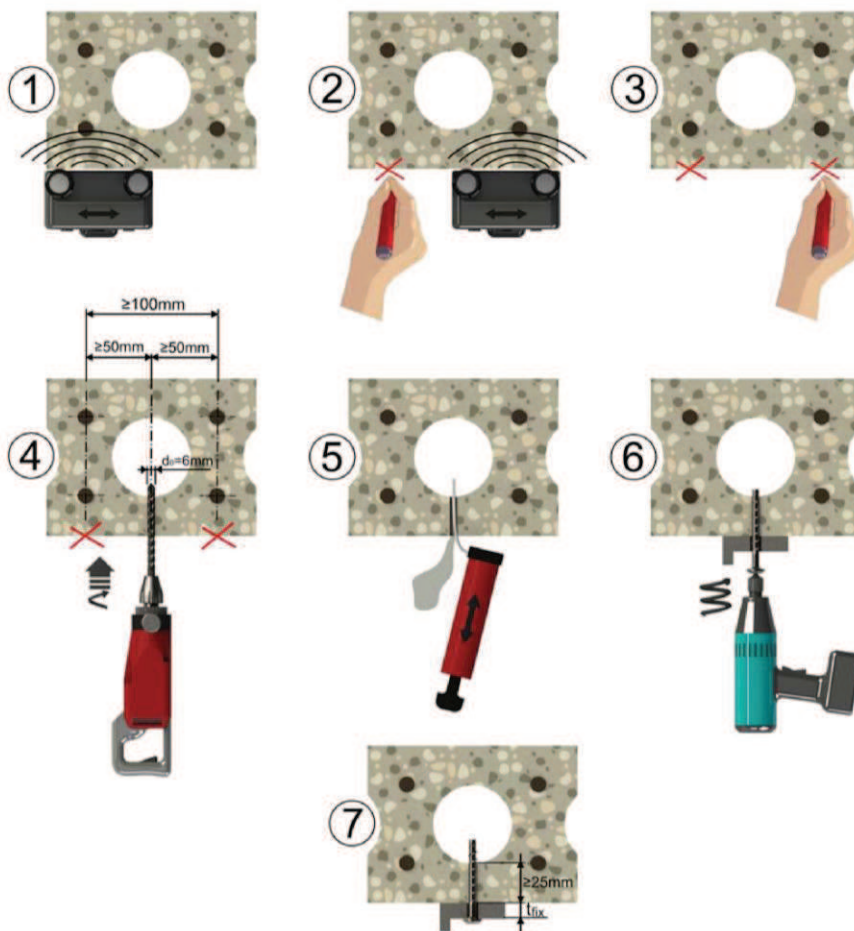
Installation parameters for anchorages in precast prestressed hollow slabs

**Annex B 3**

**Installation instructions**



**Installation instructions for anchorages in prestressed hollow slabs**



**fischer concrete screw FBS**

**Intended use**

Installation instructions

**Annex B 4**

**Table C 1: Characteristic values for design method A according to ETAG 001, Annex C  
or CEN/TS 1992-4**

Anchorsize			FBS 5	FBS 6	
Nominal embedment depth			$h_{nom} = 35 \text{ mm}$	$h_{nom} = 35 \text{ mm}$	$h_{nom} = 55 \text{ mm}$
<b>steel failure for tension- and sear load</b>					
characteristic load	$N_{RK,s}$	[kN]	8,7	13,7	
	$V_{RK,s}$	[kN]	4,4	7,0	
	$M_{RK,s}^0$	[Nm]	5,3	10,0	
<b>pull-out failure</b>					
characteristic tension load in concrete C20/25	$N_{RK,p}$	[kN]	1,5	1,5	7,5
increasing factor concrete for $N_{RK,p}$	$\Psi_C$	C30/37	1,22		
		C40/50	1,41		
		C50/60	1,55		
<b>concrete cone and splitting failure</b>					
effective anchorage depth	$h_{ef}$	[mm]	27	27	44
factor for	cracked	$k_{cr}^{1)}$	7,2		
	non cracked	$k_{ucr}^{1)}$	10,1		
concrete cone failure	spacing	$s_{cr,N}$	$3 \times h_{ef}$		
	edge distance	$c_{cr,N}$	$1,5 \times h_{ef}$		
splitting failure	spacing	$s_{cr,Sp}$	120	120	160
	edge distance	$c_{cr,Sp}$	60	60	80
installation safety factor	$\gamma_2^{1)} = \gamma_{inst}^{2)}$	[-]	1,2	1,2	1,0
<b>concrete pry out failure (pry-out)</b>					
k-Factor	$k^{1)} = k_3^{2)}$	[-]	1,0		
<b>concrete edge failure</b>					
effective length of anchor	$l_f = h_{ef}$	[mm]	27	27	44
outside diameter of anchor	$d_{nom}$	[mm]	5	6	

<sup>1)</sup> Parameter relevant only for design according to CEN/TS 1992-4:2009

<sup>2)</sup> Parameter relevant only for design according ETAG 001 Annex C

**fischer concrete screw FBS**

**Performances**

Characteristic values for design method A

**Annex C 1**

**Table C2: Characteristic values of resistance in precast prestressed hollow core slabs  
C30/37 to C50/60**

Anchorsize			FBS 6		
bottom flange thickness	$d_b$	[mm]	≥ 25	≥ 30	≥ 35
characteristic resistance	$F_{Rk}$	[kN]	1	2	3
installation safety factor	$\gamma_2^{1)} = \gamma_{inst}^{2)}$	[mm]	1,2		

<sup>1)</sup> Parameter relevant only for design according to CEN/TS 1992-4:2009

<sup>2)</sup> Parameter relevant only for design according ETAG 001 Annex C

**Table C 3: Characteristic values of resistance to fire exposure <sup>1)</sup>**

Anchorsize				FBS 6		
Nominal embedment depth				$h_{nom} = 35 \text{ mm}$	$h_{nom} = 55 \text{ mm}$	
fire resistance class						
R 30	characteristic resistance	$F_{Rk,fi30}$	[kN]	0,38	0,9	1,2
R 60	characteristic resistance	$F_{Rk,fi60}$	[kN]	0,38	0,8	1,2
R 90	characteristic resistance	$F_{Rk,fi90}$	[kN]	0,38	0,6	1,2
R 120	characteristic resistance	$F_{Rk,fi120}$	[kN]	0,30	0,4	0,8
R 30 bis R 120	spacing	$s_{cr,fi}$	[mm]	108	176	
	edge distance	$c_{cr,fi}$		54	88	

<sup>1)</sup> Not for using in prestressed hollow core slabs

**fischer concrete screw FBS**

**Performances**

Characteristic values for anchorages in precast prestressed hollow core slabs and characteristic values of resistance to fire exposure

**Annex C 2**