DEKLARACJA WŁAŚCIWOŚCI UŻYTKOWYCH

DoP 0302

dla kotwa do stropowych płyt kanałowych FHY (Kotwy metalowe do stosowania w betonie) PL

1. Niepowtarzalny kod identyfikacyjny typu wyrobu: **DoP 0302**
2. Zamierzone zastosowanie: **Łącznik do stosowania w betonie, w tym sprężonych płytach kanałowych, do wielopunktowych systemów nienośnych, zobacz załącznik, w szczególności aneksy B1-B4.**
3. Producent: **fischerwerke GmbH & Co. KG, Klaus-Fischer-Str. 1, 72178 Waldachtal, Niemcy**
4. Upoważniony przedstawiciel: **–**
5. System(-y) oceny i weryfikacji stałości właściwości użytkowych: **2+**
6. Europejski dokument oceny: **EAD 330747-00-0601**
   Europejska ocena techniczna: **ETA-21/0857; 2022-08-30**
   Jednostka ds. oceny technicznej: **TZÚS - Technical and Test Institute for Construction Prague**
   Jednostka lub jednostki notyfikowane: **2873 TU Darmstadt**
7. Deklarowane właściwości użytkowe:

Bezpieczeństwo użytkowania (BWR 4)

Nośność charakterystyczna na wyrywanie (nośności statyczne i quasi-statyczne):

Nośność do uszkodzenia stali: NPD
Nośność na wyrywanie: NPD
Nośność do wyrwania stożka betonu: NPD
Solidność: Aneks C1
Minimalne odstępy osiowe i krawędziowe: Aneksy B2, B3
Odległość od krawędzi zapobiegająca pękaniu pod obciążeniem: NPD

Nośność charakterystyczna na ścinanie (nośności statyczne i quasi-statyczne):

Nośność do uszkodzenia stali (obciążenie ścinające): Aneks C1 $V_{Rk,s}$=NPD; k_7=NPD
Nośność do uszkodzenia wyważenia: NPD
Nośność do zniszczenieakrawędzi betonu: NPD

Nośność charakterystyczna dla wszystkich kierunków obciążenia i rodzajów uszkodzeń dla uproszczonej konstrukcji:

Nośność charakterystyczna: Aneks C1

Trwałość:

Trwałość: Aneksy A2, B1

Ochrona przeciwpożarowa (BWR 2)

Reakcja na ogień: Klasy (A1)

Odporność na działanie ognia:

Odporność ogniowa do zniszczenia stali (obciążenie rozciągające): NPD
Odporność ogniowa na wyrywanie (obciążenie rozciągające): NPD
Odporność ogniowa na zniszczenie stali (obciążenie ścinające): NPD
Odporność ogniowa dla wszystkich kierunków obciążenia i trybów awaryjnych: Aneksy C2,C3

8. Odpowiednia dokumentacja techniczna lub specjalna dokumentacja techniczna: **–**

Właściwości użytkowe określonego powyżej wyrobu są zgodne z zestawem deklarowanych właściwości użytkowych. Niniejsza deklaracja właściwości użytkowych wydana zostaje zgodnie z rozporządzeniem (UE) nr 305/2011 na wyłączną odpowiedzialność producenta określonego powyżej.

W imieniu producenta podpisał(-a):

Dr.-Ing. Oliver Geibig, Dyrektor Zarządzający ds. Jednostek Biznesowych i Inżynierii

Jürgen Grün, Dyrektor Zarządzający ds. Chemii i Jakości

Tumlingen, 2023-01-17

Niniejsza Deklaracja Właściwości Użytkowych została przygotowana w różnych językach. W razie wątpliwości w interpretacji, wersja angielska jest zawsze miarodajna.

Załącznik zawiera dobrowolne i uzupełniające informacje w języku angielskim (neutralne językowo), a wykraczające poza wymagania prawne.

1. Technical description of the product

The fischer hollow ceiling anchor FHY is a torque-controlled expansion anchor made of galvanised or stainless steel. It consists of an expansion sleeve and a cone with an internal thread and is anchored by torque-controlled expansion with a hexagon head bolt or threaded rod with nut and washer.

By tightening the screw/nut, the cone is pulled into the expansion sleeve and expanding it.

The product description is given in Annex 1.

2. Specification of the intended use in accordance with the applicable 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 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, but are to be regarded only as a means for choosing the 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 Safety in case of fire (BWR 2)

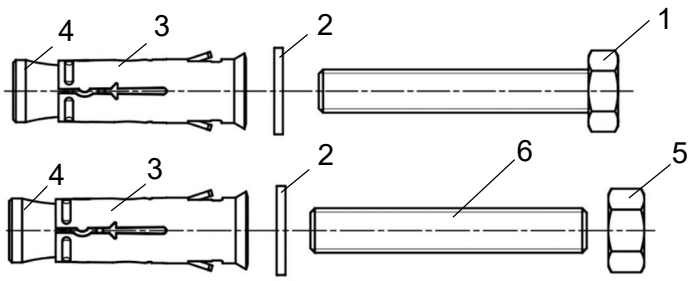
Essential characteristic	Performance
Reaction to fire	Class A1 according to EN 13501-1
Resistance to fire	See Annex C 2 and Annex C 3

3.2 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance for all load directions and modes of failure for simplified design	See Annex C 1
Durability	See Annex B 1

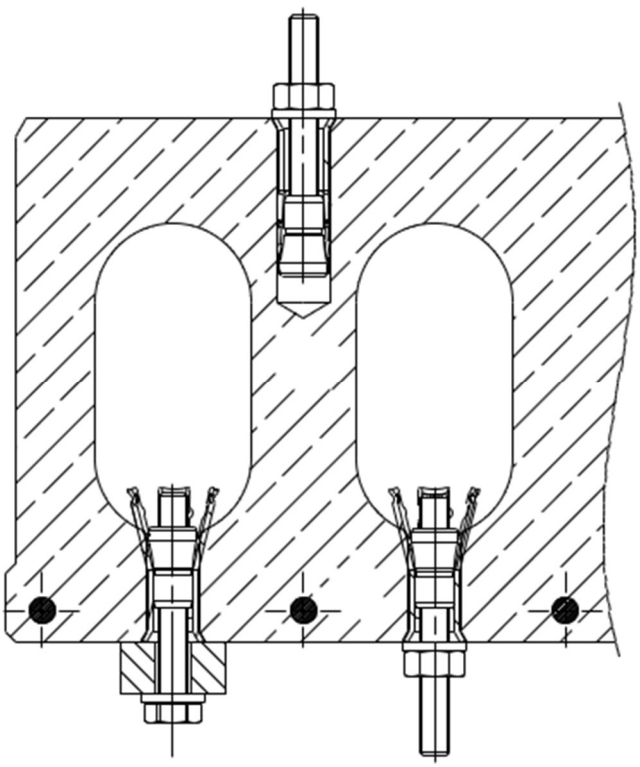
4. Assessment and verification of constancy of performance (AVCP) system applied with reference to its legal base

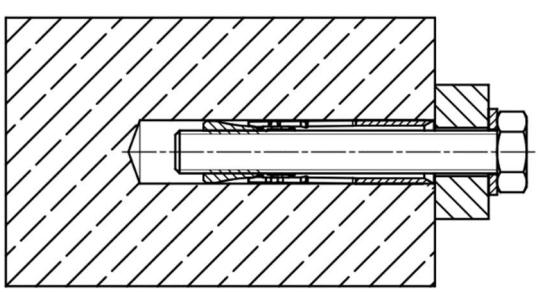
According to the Decision 97/463/EC of the European Commission[1], the system 2+ of assessment verification of constancy of performance (see Annex V to the Regulation (EU) No 305/2011) apply.



1	Hexagon screw
2	Washer
3	Expansion sleeve
4	Cone nut
5	Hexagon nut
6	Threaded rod

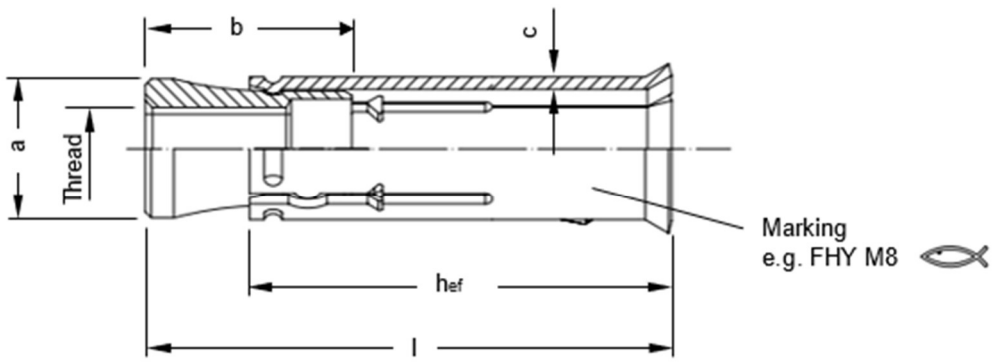
Installed Condition:





(Fig. not to scale)

Product marking and dimensions:



FHY: Carbon steel, galvanised
FHY R: Stainless steel

Table A2.1: Dimensions [mm]

Typ	h_{ef}	Thread	ø a	b	c	l
FHY M6	30	M6	9,6	16,0	1,0	37
FHY M8	35	M8	11,5	17,0	1,0	43
FHY M10	40	M10	15,0	23,5	1,5	52
FHY M12	40	M12	17,0	26,5	1,5	55

Table A2.2: Materials FHY

Part	Designation	Material	
		FHY	FHY R
	Type of steel	Steel	Stainless steel R
		Zinc plated ≥ 5 µm, ISO 4042:2018	Acc. to EN 10088:2014 Corrosion resistance class CRC III acc. to EN 1993-1-4:2015
1	Hexagon screw [1)]	Steel, DIN EN ISO 898-1:2013 property class 8.8 (M6); property class 4.6, 5.8 or 8.8 (M8, M10 and M12)	DIN EN ISO 3506-1:2020; property class ≥ 70
2	Washer [1)]	Cold strip, EN 10139:2016+A1:2020	Stainless steel EN 10088:2014
3	Expansion sleeve	Cold strip, EN 10139:2016+A1:2020	
4	Cone nut	Steel DIN EN 10277: 2018	
5	Hexagon nut [1)]	Steel DIN EN ISO 898-2:2012; property class 8 (M6) and 4 or 5 or 8 (M8 -M12)	Stainless steel DIN EN ISO 3506-2:2020; property class ≥ 70
6	Threaded rod [1)]	Steel DIN EN ISO 898-1:2013, property class 8.8 (M6) and 4.8, 5.8 or 8.8 (M8) 4.6, 5.8 or 8.8 (M10 -M12)	Stainless steel DIN EN ISO 3506-1:2020; property class ≥ 70

[1)] Commercial threaded rods, washers, hexagon nuts and hexagon screws may also be used if the requirements in Table A2.2 are fulfilled.

(Fig. not to scale)

Specifications of intended use

Fastenings subject to:

Size	FHY, FHY R			
	M6	M8	M10	M12
Hammer drilling with standard drill bit 			✓	
Hammer drilling with hollow drill bit with automatic cleaning 			✓	
Static and quasi-static loads			✓	
Cracked and uncracked concrete				
Fire exposure				

Base materials:

- Compacted reinforced and unreinforced normal weight concrete without fibres (cracked and uncracked) according to EN 206-1:2013+A1:2016
- Strength classes ≥ C20/25 according to EN 206-1:2013+A1:2016
- Prestressed hollow core slabs, where the cavity width does not exceed 4,2 times the web width ($b_H \leq 4{,}2 \times b_{St}$) with strength classes ≥ C45/55

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions (FHY, FHY R)
- For all other conditions according to EN 1993-1-4:2006 + A1:2015 corresponding to corrosion resistance class
  - CRC III: FHY R

Design:

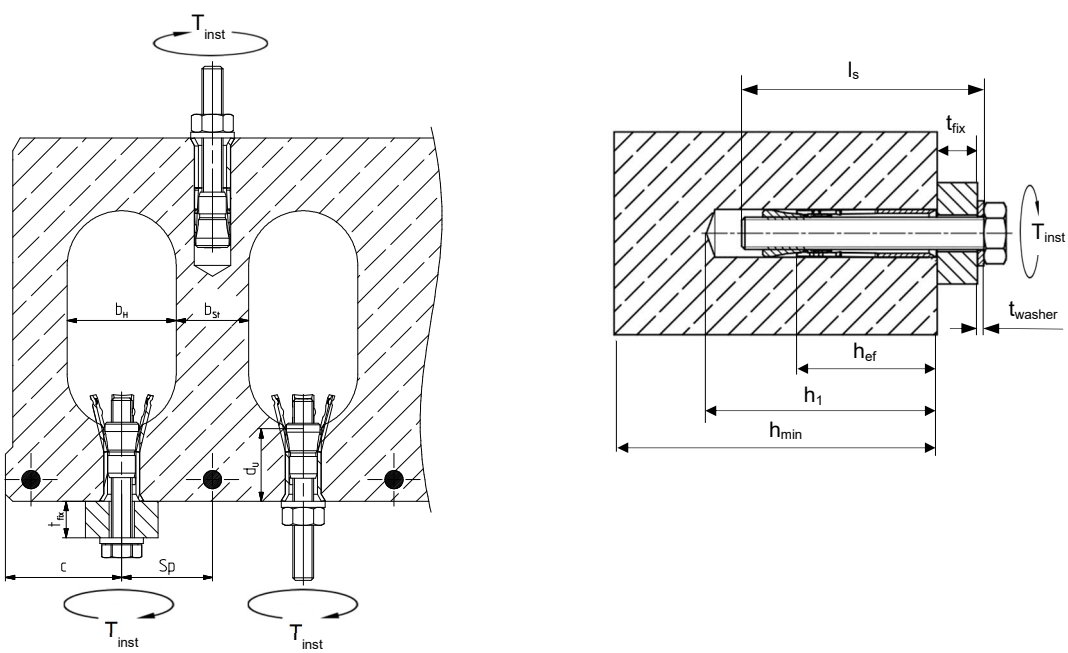
- Fastenings are to be designed under the responsibility of an engineer experienced in fastenings and concrete work
- Verifiable calculation notes and drawings are to be prepared taking account of the loads to be anchored. The position of the fastener is indicated on the design drawings (e.g. position of the fastener relative to reinforcement or to supports, etc.)
- Design under static or quasi-static actions shall be performed in accordance with EN 1992-4:2018, design method B

Table B2.1: Installation parameters

Size				FHY, FHY R			
				M6	M8	M10	M12
Nominal drill hole diameter	d_0 =			10	12	16	18
Effective embedment depth	h_{ef} ≥			30	35	40	40
Depth of drill hole to deepest point	h_1 ≥			50	60	65	70
Diameter of clearance hole in the fixture	d_f ≤		l[mm]	7	9	12	14
Length of screw [1]	l_s ≥			37 + t_{washer} + t_{fix}	43 + t_{washer} + t_{fix}	52 + t_{washer} + t_{fix}	55 + t_{washer} + t_{fix}
Length of the threaded bolt	l_b ≥			42 + t_{washer} + t_{fix}	50 + t_{washer} + t_{fix}	60 + t_{washer} + t_{fix}	65 + t_{washer} + t_{fix}
Required setting torque	FHY	T_{inst} =	[Nm]	8	10	20	30
	FHY R			15	20	40	50
Pre-stressed hollow core slab ≥ C45/55 web thickness ≥ 25mm							
Minimum spacing	s_{min} ≥		[mm]	70	70	80	80
Minimum edge distance	c_{min} ≥			100	100	100	150
Solid concrete ≥ C20/25							
Minimum spacing	s_{min} ≥			70	70	80	80
Minimum edge distance	c_{min} ≥		[mm]	100			
Minimum thickness of concrete member	h_{min} ≥			100			

[1] For screws with shaft according to EN ISO 4017:2014 the shaft length must be ≤ t_{fix}

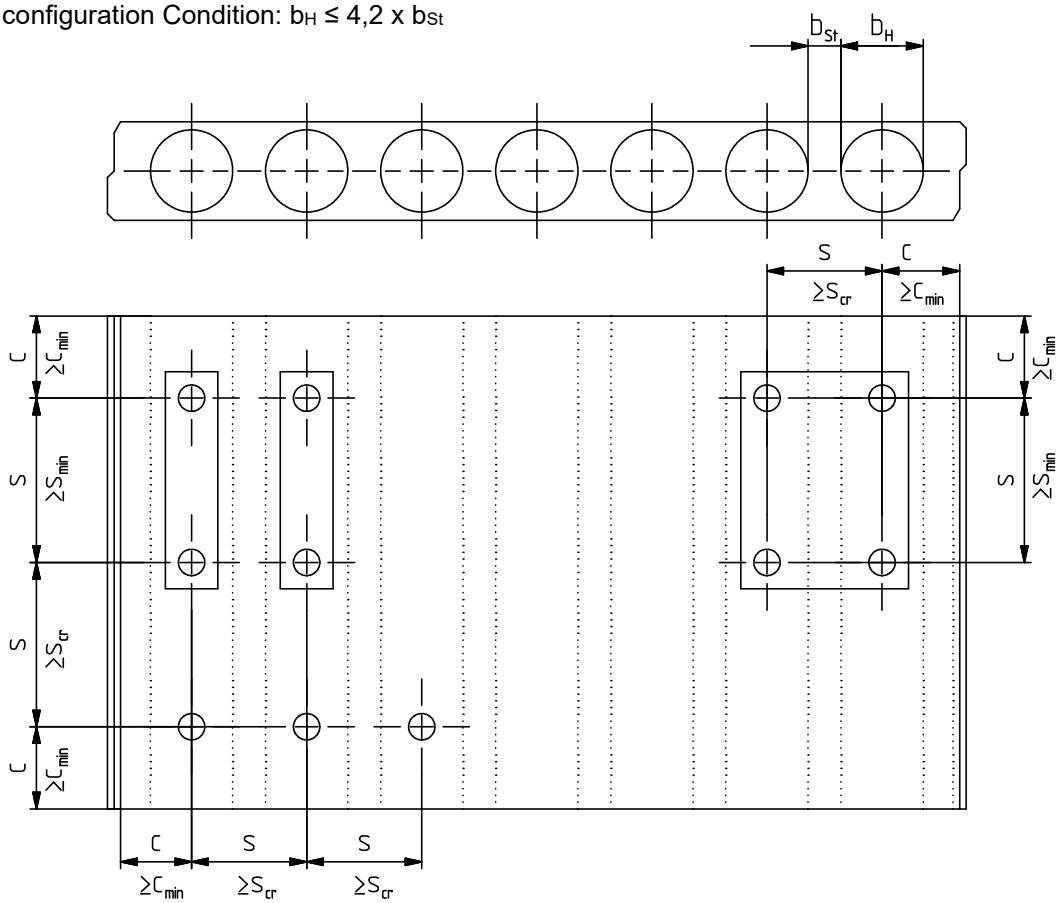
Anchoring in precast pre-stressed concrete hollow concrete slabs and in area of solid material



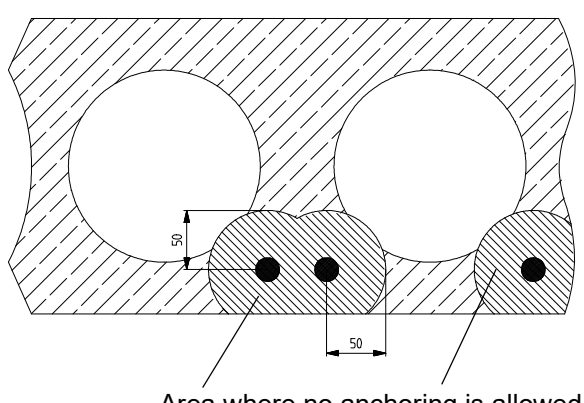
S_p = Distance to the tensioning strands
t_{fix} = Thickness of the fixture
d_u = Thickness of the slap web
c = Edge distance

(Fig. not to scale)

Anchor configuration Condition: $b_H \leq 4{,}2 \times b_{St}$



s_{min} and c_{min} see Annex B 2. s_{cr} see Annex C 1



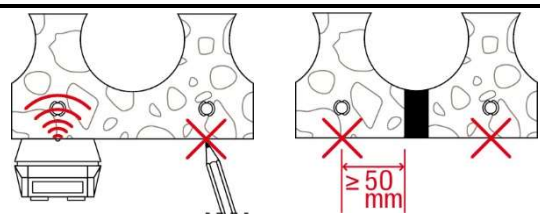
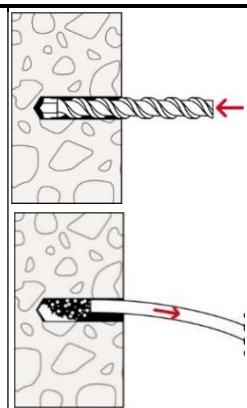
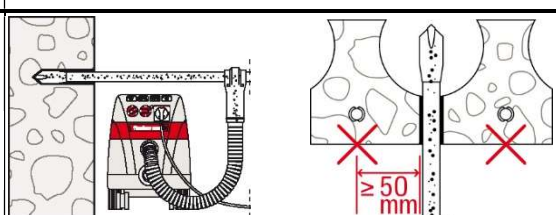
Area where no anchoring is allowed

The anchoring must have a distance from the anchor axis to the tensioning strands of at least 50 mm

(Fig. not to scale)

Installation instructions:

- Fastener installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on the site
- Hammer or hollow drilling
- Drill hole created perpendicular +/- 5° to concrete surface, positioning without damaging the reinforcement
- In case of aborted hole in solid material: new drilling at a minimum distance twice the depth of the aborted drill hole or smaller distance if the aborted drill hole is filled with high strength mortar and if under shear or oblique tension load it is not in the direction of load application
- In Precast pre-stressed hollow core slabs the anchor FHY may be installed from all directions, if the web thicknesses is ≥ 25mm and the spacing to the tensioning strands of ≥ 50mm is observed (also in the area of solid material)

1a) Hammer drill (e.g. fischer Quattric II)		 **Prestressed hollow core slabs:** Determine and mark the position of the tensioning strands, e.g. with a suitable scanner.	 **Solid material/solid areas of hollow core slabs**
1b) Hollow drill (e.g. fischer FHD)		 Drill the hole with automatic cleaning (e.g. fischer FVC)	-

Installation of the fastener (exemplary in a pre-stressed hollow core slabs)

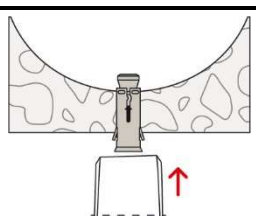
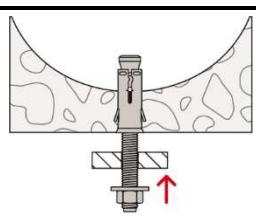
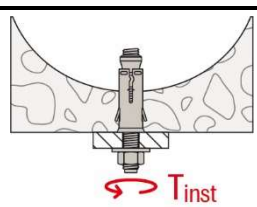
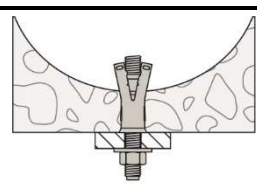
			
Set the fastener	Fixation of fixture	Apply T_{inst}	Installed fastener

Table C1.1: Characteristic resistance for all load directions

Size					FHY, FHY R			
					M6	**M8**	**M10**	**M12**
Concrete solid material								
Characteristic resistance in C20/25			F^0_{Rk}	[kN]	3,0	6,5	8,5	8,5
Partial factor			γ_{Mc}	[-]	1,5	1,5	1,5	1,5
Characteristic spacing			s_{cr}	[mm]	200	200	200	200
Charakteristic edge distance			c_{cr}	[mm]	100	105	120	120
Pre-stressed hollow core slab ≥ C45/55								
Characteristic resistance	$d_u \geq 25$ mm < 30 mm		F^0_{Rk}	[kN]	5,0	7,0	8,0	9,0
	$d_u \geq 30$ mm < 40 mm				5,0	7,0	10,0	9,0
	$d_u \geq 40$ mm				5,0	7,0	10,0	10,0
Partial factor			γ_{Mc}	[-]	1,5	1,5	1,5	1,5
Characteristic spacing	$d_u \geq 25$ mm < 30 mm		s_{cr}	[mm]	200	200	200	200
	$d_u \geq 30$ mm < 40 mm				200	200	200	200
	$d_u \geq 40$ mm				200	200	200	200
Characteristic edge distance	$d_u \geq 25$ mm < 30 mm		c_{cr}	[mm]	100	100	100	150
	$d_u \geq 30$ mm < 40 mm				100	100	100	150
	$d_u \geq 40$ mm				100	105	120	150
Characteristic bending moment								
FHY	Property class of the screw/ threaded rod	4.6 / 4.8	$M^0_{Rk,s}$	[Nm]	-[2]	15,0	29,9	52,4
		5.8			-[2]	18,7	37,4	65,5
		8.8			12,2	30,0	62,3	109,2
FHY R		≥ A4-70			10,7	26,4	52,3	91,7
FHY	Partial factor above property class	4.6	γ_{Ms}[1]	[-]	-[2]	1,67	1,67	1,67
		4.8 / 5.8			-[2]	1,25	1,25	1,25
		8.8			1,25	1,25	1,25	1,25
FHY R		≥ A4-70			1,56	1,56	1,56	1,56

[1] In absence of other national regulations
[2] No Performance assessed

Table C2.1: Characteristic resistance under **fire exposure** for concrete solid material for all load directions

Size				FHY M6	FHY M8	FHY M10	FHY M12
Characteristic resistance for all load directions **Concrete solid material**	$F_{Rk,fi}$	R30	[kN]	0,75	1,25	1,74	1,74
		R60		0,58	1,25	1,74	1,74
		R90		0,38	0,8	1,3	1,74
		R120		0,28	0,57	0,96	1,39
Characteristic resistance for shear load with lever arm **Concrete solid material**	$M^0_{Rk,fi}$	R30	[Nm]	0,6	1,8	3,4	6,0
		R60		0,4	1,3	2,5	4,5
		R90		0,3	0,8	1,7	2,9
		R120		0,2	0,6	1,2	2,2

Size				FHY R M6	FHY R M8	FHY R M10	FHY R M12
Characteristic resistance for all load directions **Concrete solid material**	$F_{Rk,fi}$	R30	[kN]	0,75	1,25	1,74	1,74
		R60		0,75	1,25	1,74	1,74
		R90		0,75	0,96	1,06	1,54
		R120		0,6	0,48	0,69	1,00
Characteristic resistance for shear load with lever arm **Concrete solid material**	$M^0_{Rk,fi}$	R30	[Nm]	1,9	2,9	3,3	5,7
		R60		1,3	2,0	2,3	4,1
		R90		0,8	1,0	1,4	2,4
		R120		0,5	0,5	0,9	1,6

Concrete pryout failure according to EN 1992-4:2018

Table C3.1: Characteristic resistance under **fire exposure** for pre-stressed hollow core slabs for all load directions

Size				FHY M6	FHY M8	FHY M10	FHY M12
Characteristic resistance for all load directions **Pre-stressed hollow core slabs**	$d_u \geq 25$ mm < 30 mm	$F_{Rk,fi}$	R30 [kN]	0,78	1,15	1,15	1,15
			R60 [kN]	0,58	1,15	1,15	1,15
			R90 [kN]	0,38	0,80	1,15	1,15
			R120 [kN]	0,28	0,57	0,92	0,92
	$d_u \geq 30$ mm < 40 mm		R30 [kN]	0,78	1,52	1,52	1,52
			R60 [kN]	0,58	1,26	1,52	1,52
			R90 [kN]	0,38	0,80	1,30	1,52
			R120 [kN]	0,28	0,57	0,96	1,21
	$d_u \geq 40$ mm		R30 [kN]	0,78	1,71	2,33	2,33
			R60 [kN]	0,58	1,26	1,98	2,33
			R90 [kN]	0,38	0,80	1,30	1,89
			R120 [kN]	0,28	0,57	0,96	1,39
Characteristic resistance for shear load with lever arm **Pre-stressed hollow core slabs $d_u \geq 25$ mm**		$M^0_{Rk,fi}$	R30 [Nm]	0,6	1,8	3,4	6,0
			R60 [Nm]	0,4	1,3	2,5	4,5
			R90 [Nm]	0,3	0,8	1,7	2,9
			R120 [Nm]	0,2	0,6	1,2	2,2

Size				FHY-R M6	FHY-R M8	FHY-R M10	FHY-R M12
Characteristic resistance for all load directions **Pre-stressed hollow core slabs**	$d_u \geq 25$ mm < 30 mm	$F_{Rk,fi}$	R30 [kN]	1,15	1,15	1,15	1,15
			R60 [kN]	1,15	1,15	1,15	1,15
			R90 [kN]	1,04	0,96	1,06	1,15
			R120 [kN]	0,68	0,48	0,69	0,92
	$d_u \geq 30$ mm < 40 mm		R30 [kN]	1,52	1,52	1,52	1,52
			R60 [kN]	1,52	1,52	1,52	1,52
			R90 [kN]	1,04	0,96	1,06	1,52
			R120 [kN]	0,68	0,48	0,69	1,00
	$d_u \geq 40$ mm		R30 [kN]	1,52	1,91	2,33	2,33
			R60 [kN]	1,52	1,91	1,80	2,33
			R90 [kN]	1,04	0,96	1,06	1,54
			R120 [kN]	0,68	0,48	0,69	1,00
Characteristic resistance for shear load with lever arm **Pre-stressed hollow core slabs $d_u \geq 25$ mm**		$M^0_{Rk,fi}$	R30 [Nm]	1,9	2,9	3,3	5,7
			R60 [Nm]	1,3	2,0	2,3	4,1
			R90 [Nm]	0,8	1,0	1,4	2,4
			R120 [Nm]	0,5	0,5	0,9	1,6

Concrete pryout failure according to EN 1992-4:2018