

DECLARATION OF PERFORMANCE

DoP 0302

for fischer hollow ceiling anchor FH Y (Mechanical fastener for use in concrete)

EN

1. Unique identification code of the product-type: DoP 0302
2. Intended use/es: Post-installed fastener for use in concrete, including prestressed hollow core slabs, for redundant non-structural systems, see appendix, especially annexes B1-B4.
3. Manufacturer: fischerwerke GmbH & Co. KG, Klaus-Fischer-Str. 1, 72178 Waldachtal, Germany
4. Authorised representative: -
5. System/s of AVCP: 2+
6. European Assessment Document: EAD 330747-00-0601
 European Technical Assessment: ETA-21/0857; 2022-08-30
 Technical Assessment Body: TZÜS - Technical and Test Institute for Construction Prague
 Notified body/ies: 2873 TU Darmstadt
7. Declared performance/s:
Safety and accessibility in use (BWR 4)
Characteristic resistance to tension load (static and quasi-static loading):
 Resistance to steel failure: NPD
 Resistance to pull-out failure: NPD
 Resistance to concrete cone failure: NPD
 Robustness: Annex C1
 Minimum edge distance and spacing: Annexes B2, B3
 Edge distance to prevent splitting under load: NPD

Characteristic resistance to shear load (static and quasi-static loading):
 Resistance to steel failure (shear load): Annex C1 $V_{Rk,s}=NPD$; $k_f=NPD$
 Resistance to pry-out failure: NPD
 Resistance to concrete edge failure: NPD

Characteristic resistance for all load directions and modes of failure for simplified design:
 Characteristic resistance: Annex C1

Durability:
 Durability: Annexes A2, B1

Safety in case of fire (BWR 2)
 Reaction to fire: Class (A1)
Resistance to fire:
 Fire resistance to steel failure (tension load): NPD
 Fire resistance to pull-out failure (tension load): NPD
 Fire resistance to steel failure (shear load): NPD
 Fire resistance for all load directions and modes of failure: Annexes C2, C3
8. Appropriate Technical Documentation and/or Specific Technical Documentation: -

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:



Dr.-Ing. Oliver Geibig, Managing Director Business Units & Engineering
 Tümlingen, 2023-01-17



Jürgen Grün, Managing Director Chemistry & Quality

This DoP has been prepared in different languages. In case there is a dispute on the interpretation the English version shall always prevail.

The Appendix includes voluntary and complementary information in English language exceeding the (language-neutrally specified) legal requirements.

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)

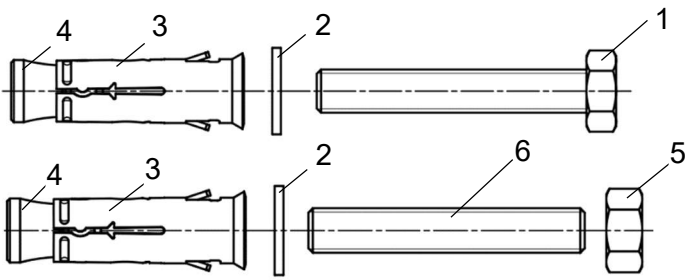
Essential characteristic	Performance
Reaction to fire	Class A1 according to EN 13501-1
Resistance to fire	See Annex C 2 and Annex C 3

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

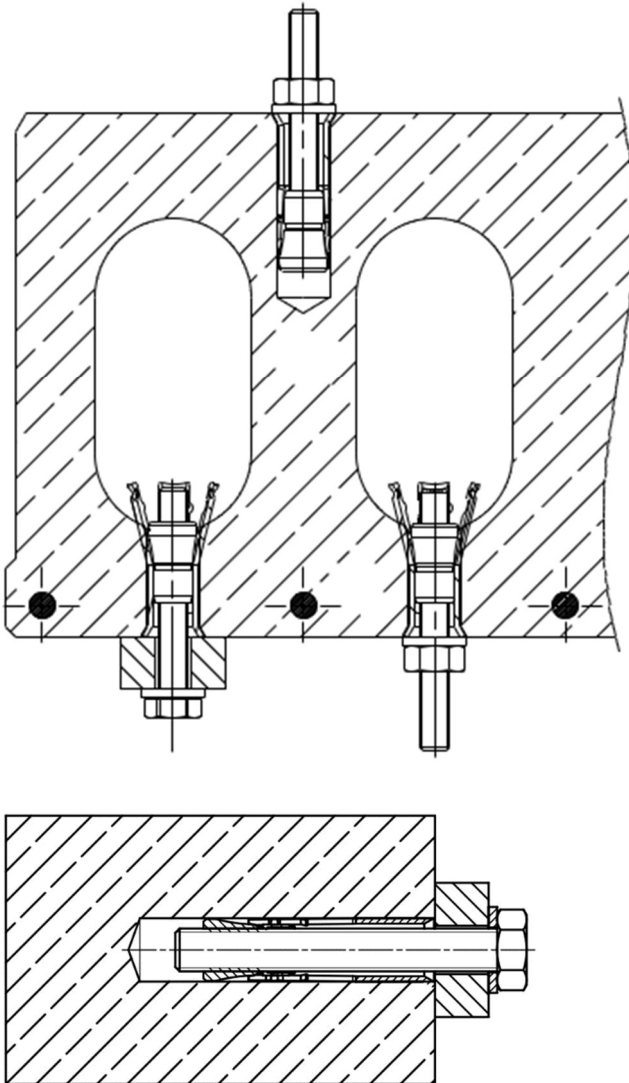
4. Assessment and verification of constancy of performance (AVCP) system applied with reference to its legal base

According to the Decision 97/463/EC of the European Commission¹, 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)

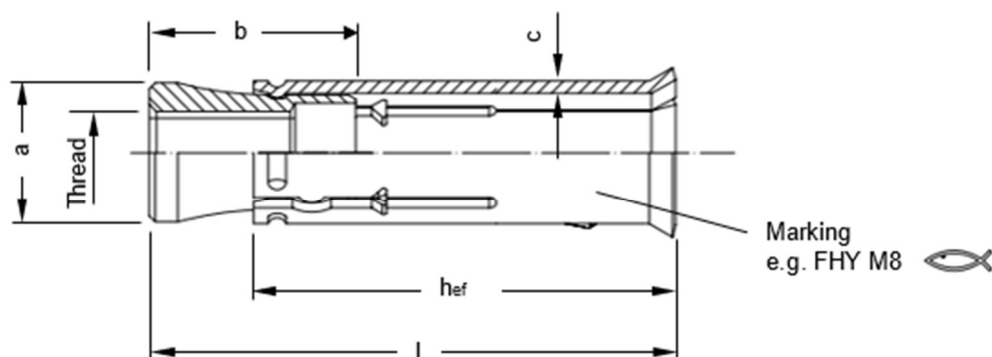
fischer hollow ceiling anchor FH

Product description
Installed conditions

Annex A 1

Appendix 2 / 10

Product marking and dimensions:



FHY: Carbon steel, galvanised

FHY R: Stainless steel

Table A2.1: Dimensions [mm]

Typ	hef	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 Zinc plated $\geq 5 \mu\text{m}$, ISO 4042:2018	Stainless steel R 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)

fischer hollow ceiling anchor FHY

Product description
Product label and dimensions

Annex A 2

Appendix 3 / 10

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 $\geq$ 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 $\geq$ 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

fischer hollow ceiling anchor FHY

Intended use
Specifications

Annex B 1

Appendix 4 / 10

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	$h_{ef} \geq$	30	35	40	40
Depth of drill hole to deepest point	$h_1 \geq$	50	60	65	70
Diameter of clearance hole in the fixture	$d_f \leq$	7	9	12	14
Length of screw ¹⁾	$l_s \geq$	$37 + t_{washer} + t_{fix}$	$43 + t_{washer} + t_{fix}$	$52 + t_{washer} + t_{fix}$	$55 + t_{washer} + t_{fix}$
Length of the threaded bolt	$l_b \geq$	$42 + t_{washer} + t_{fix}$	$50 + t_{washer} + t_{fix}$	$60 + t_{washer} + t_{fix}$	$65 + t_{washer} + t_{fix}$
Required setting torque	FHY	8	10	20	30
	FHY R	15	20	40	50
		$T_{inst} =$ [Nm]			

¹⁾ For screws with shaft according to EN ISO 4017:2014 the shaft length must be $\leq t_{fix}$

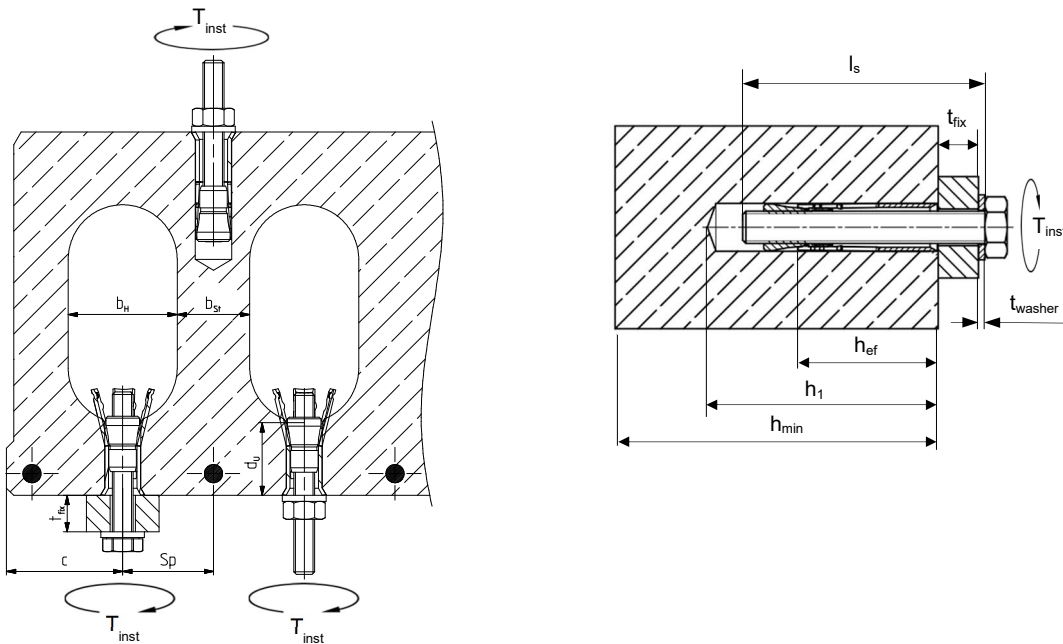
Pre-stressed hollow core slab $\geq$ C45/55 web thickness $\geq$ 25mm

Minimum spacing	$s_{min} \geq$	70	70	80	80
Minimum edge distance	$c_{min} \geq$	100	100	100	150

Solid concrete $\geq$ C20/25

Minimum spacing	$s_{min} \geq$	70	70	80	80
Minimum edge distance	$c_{min} \geq$	100			
Minimum thickness of concrete member	$h_{min} \geq$	100			

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 slab web
- c = Edge distance

(Fig. not to scale)

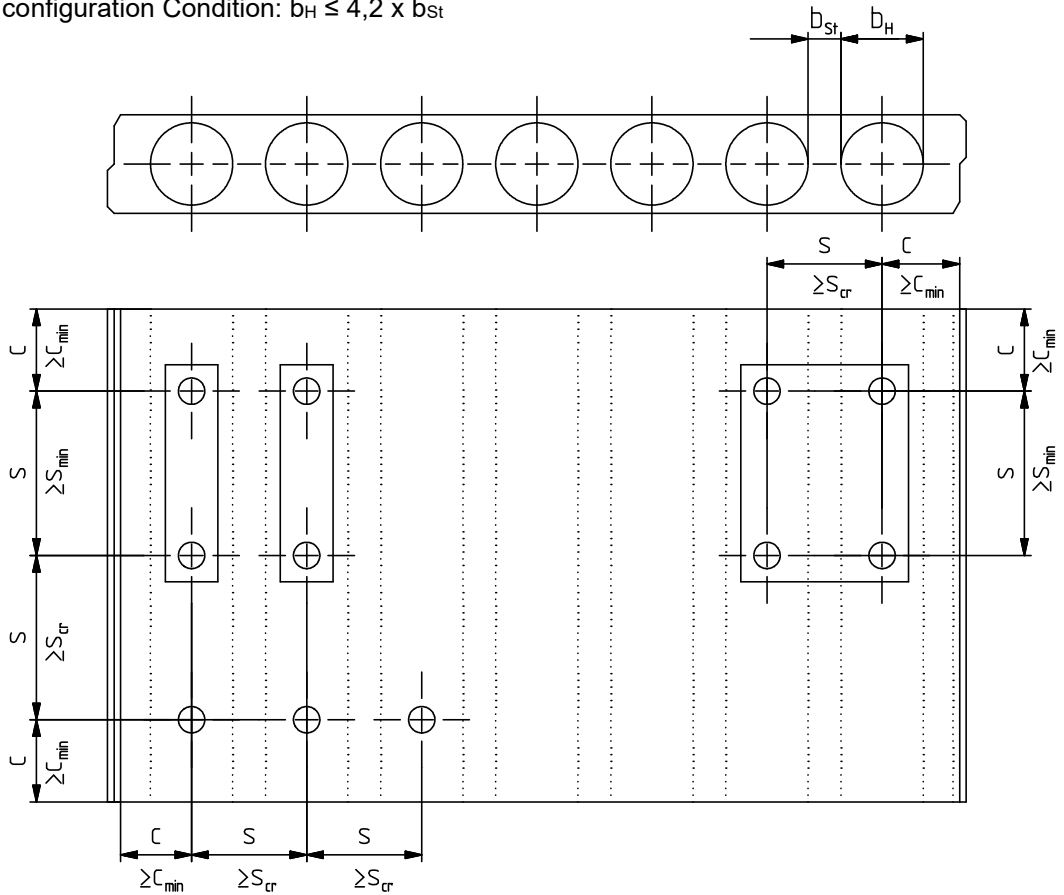
fischer hollow ceiling anchor FHY

Intended use
Installation parameters

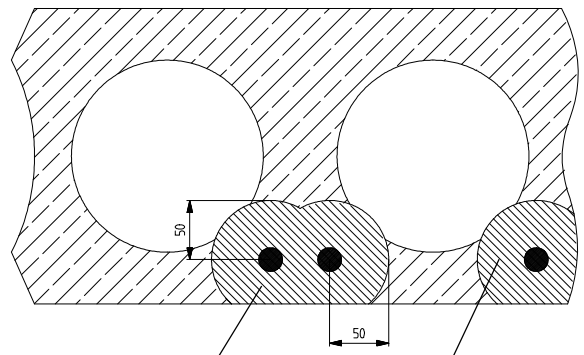
Annex B 2

Appendix 5 / 10

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



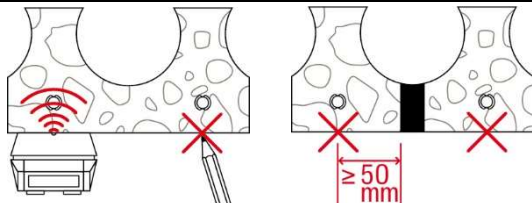
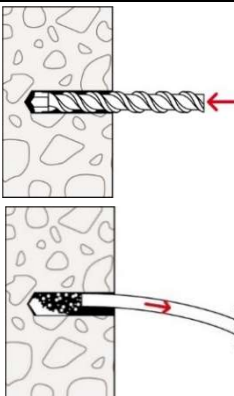
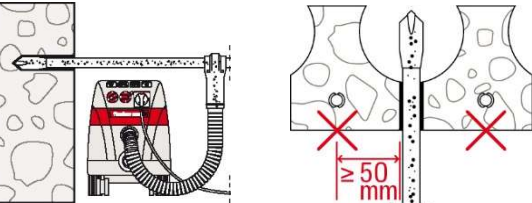
Area where no anchoring is allowed

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

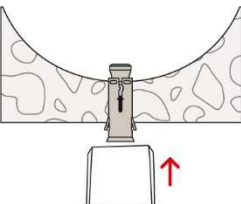
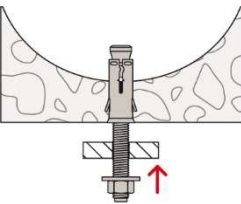
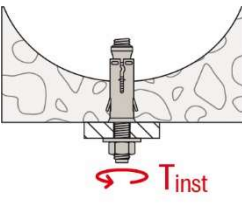
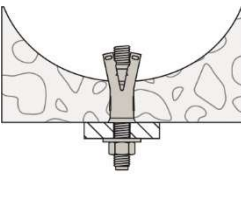
(Fig. not to scale)

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 $\pm 5^\circ$ 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 FH Y may be installed from all directions, if the web thicknesses is $\geq 25\text{mm}$ and the spacing to the tensioning strands of $\geq 50\text{mm}$ 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

fischer hollow ceiling anchor FH Y

Intended use
Installation instructions

Annex B 4

Appendix 7 / 10

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_{Rk}^0 [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}	200	200	200	200
Charakteristic edge distance				c_{cr} [mm]	100	105	120	120
Pre-stressed hollow core slab $\geq$ C45/55								
Characteristic resistance		$d_u \geq 25 \text{ mm} < 30 \text{ mm}$	F_{Rk}^0 [kN]	5,0	7,0	8,0	9,0	
		$d_u \geq 30 \text{ mm} < 40 \text{ mm}$		5,0	7,0	10,0	9,0	
		$d_u \geq 40 \text{ mm}$		5,0	7,0	10,0	10,0	
Partial factor				γ_{Mc} [-]	1,5	1,5	1,5	1,5
Characteristic spacing		$d_u \geq 25 \text{ mm} < 30 \text{ mm}$	s_{cr} [mm]	200	200	200	200	
		$d_u \geq 30 \text{ mm} < 40 \text{ mm}$		200	200	200	200	
		$d_u \geq 40 \text{ mm}$		200	200	200	200	
Characteristic edge distance		$d_u \geq 25 \text{ mm} < 30 \text{ mm}$	c_{cr} [mm]	100	100	100	150	
		$d_u \geq 30 \text{ mm} < 40 \text{ mm}$		100	100	100	150	
		$d_u \geq 40 \text{ mm}$		100	105	120	150	
Characteristic bending moment								
FHY	Property class of the screw/ threaded rod	4.6 / 4.8	$M_{Rk,s}^0$ [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		$\geq$ A4-70		10,7	26,4	52,3	91,7	
FHY	Partial factor above property class	4.6	$\gamma_{Ms}^{1)}$ [-]	-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		$\geq$ A4-70		1,56	1,56	1,56	1,56	
1) In absence of other national regulations 2) No Performance assessed								
fischer hollow ceiling anchor FHY						Annex C 1		
Performances Characteristic resistance for all load directions								
						Appendix 8 / 10		

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

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

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

Concrete pryout failure according to EN 1992-4:2018

fischer hollow ceiling anchor FHY

Performances

Characteristic values of resistance under fire exposure for concrete solid material

Annex C 2

Appendix 9 / 10

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

Size			FHY			
			M6	M8	M10	M12
Characteristic resistance for all load directions Pre-stressed hollow core slabs	$d_u \geq 25 \text{ mm} < 30 \text{ mm}$	R30	0,78	1,15	1,15	1,15
		R60	0,58	1,15	1,15	1,15
		R90	0,38	0,80	1,15	1,15
		R120	0,28	0,57	0,92	0,92
	$d_u \geq 30 \text{ mm} < 40 \text{ mm}$	R30	0,78	1,52	1,52	1,52
		R60	0,58	1,26	1,52	1,52
		R90	0,38	0,80	1,30	1,52
		R120	0,28	0,57	0,96	1,21
	$d_u \geq 40 \text{ mm}$	R30	0,78	1,71	2,33	2,33
		R60	0,58	1,26	1,98	2,33
		R90	0,38	0,80	1,30	1,89
		R120	0,28	0,57	0,96	1,39
Characteristic resistance for shear load with lever arm Pre-stressed hollow core slabs $d_u \geq 25 \text{ mm}$	$M^0_{Rk,fi}$	R30	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	M8	M10	M12	
Characteristic resistance for all load directions Pre-stressed hollow core slabs	$d_u \geq 25 \text{ mm} < 30 \text{ mm}$	[kN]	R30	1,15	1,15	1,15	1,15
			R60	1,15	1,15	1,15	1,15
			R90	1,04	0,96	1,06	1,15
			R120	0,68	0,48	0,69	0,92
	$d_u \geq 30 \text{ mm} < 40 \text{ mm}$	[kN]	R30	1,52	1,52	1,52	1,52
			R60	1,52	1,52	1,52	1,52
			R90	1,04	0,96	1,06	1,52
			R120	0,68	0,48	0,69	1,00
	$d_u \geq 40 \text{ mm}$	[kN]	R30	1,52	1,91	2,33	2,33
			R60	1,52	1,91	1,80	2,33
			R90	1,04	0,96	1,06	1,54
			R120	0,68	0,48	0,69	1,00
Characteristic resistance for shear load with lever arm Pre-stressed hollow core slabs $d_u \geq 25 \text{ mm}$	[Nm]	R30	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

fischer hollow ceiling anchor FHY

Performances

Characteristic values of resistance under fire exposure for pre-stressed hollow core slabs

Annex C 3

Appendix 10 / 10