



PRESTATIEVERKLARING



Nr. 0085 – NL

1. Unieke identificatiecode van het producttype: **fischer Highbond-Anchor FHB**

2. Beoogd(e) gebruik(en):

Product	Beoogd gebruik
Lijm anker te gebruiken in beton	Veiligheids relevante verankeringen waarbij mechanische sterkte en stabiliteit van belang is. Deze dienen voor de bevestiging van constructieve elementen (die bijdragen aan de stabiliteit van het gebouw) of zware elementen, zie bijlage, in het bijzonder bijlagen B 1 tot en met B 4

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

4. Gemachtigde: --

5. Het systeem of de systemen voor de beoordeling en verificatie van de prestatiebestendigheid: **1**

6a. Geharmoniseerde norm: ---

Aangemelde instantie(s): ---

6b. Europees beoordelingsdocument: **ETAG 001; 2013-04**

Europese technische beoordeling: **ETA-06/0171; 2016-04-20**

Technische beoordelingsinstantie: **DIBt**

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

7. Aangegeven prestatie(s):

Mechanische weerstand en stabiliteit (BWR 1)

Essentieel kenmerk	Prestatie
Karakteristieke weerstand	Zie bijlage, in het bijzonder bijlagen C 1 tot en met C 3
Verplaatsingen ten gevolge van trek en afschuif krachten	Zie bijlage, in het bijzonder bijlage C 3

Veiligheid bij brand (BWR 2)

Essentieel kenmerk	Prestatie
Brandgedrag	Verankeringen voldoen aan de vereisten voor klasse A1
Brand weerstand	NPD

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

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

Ondertekend voor en namens de fabrikant door:

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

Tumlingen, 2016-04-29

- Deze prestatieverklaring is opgesteld in verschillende talen. Bij een geschil over de interpretatie prevaleert de engelse versie.

- De bijlage bevat vrijwillige en aanvullende informatie in de Engelse taal boven op de (taal-neutraal gespecificeerde) wettelijke voorschriften.

Specific Part

1 Technical description of the product

The fischer Highbond-anchor FHB is a torque controlled bonded anchor consisting of a mortar cartridge with FIS HB and an anchor rod with hexagon nut and washer. The anchor rod (including nut and washer) is made of galvanised steel.

The load transfer is realised by mechanical interlock of several cones in the bonding mortar and then via a combination of bonding and friction forces in the anchorage ground (concrete).

The product description is given in Annex A.

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

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

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the 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)

Essential characteristic	Performance
Characteristic resistance	See Annex C 1 to C 3
Displacements under tension and shear loads	See Annex C 3

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A1
Resistance to fire	No performance assessed

3.3 Hygiene, health and the environment (BWR 3)

Regarding dangerous substances there may be requirements (e.g. transposed European legislation and national laws, regulations and administrative provisions) applicable to the products falling within the scope of this European Technical Assessment. In order to meet the provisions of Regulation (EU) No 305/2011, these requirements need also to be complied with, when and where they apply.

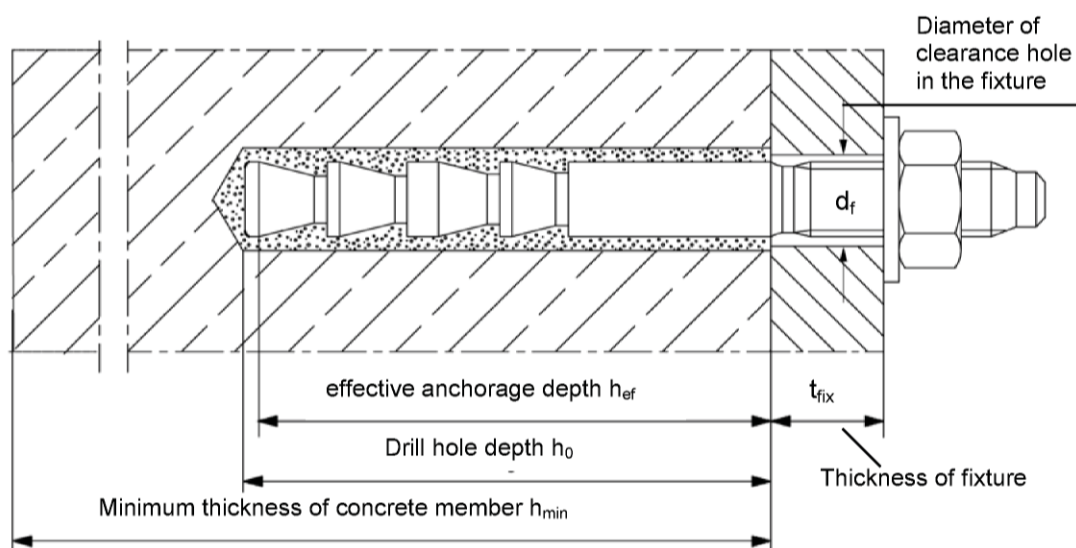
3.4 Safety in use (BWR 4)

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

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: [96/582/EC].

The system to be applied is: 1

Installation conditions

fischer Highbond-anchor FHB

Product description
Installation conditions

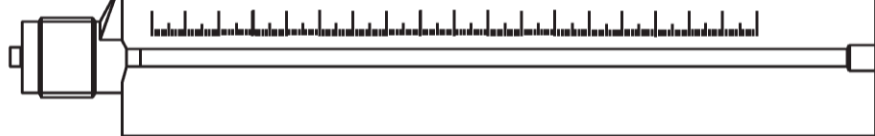
Annex A 1

Sealing cap

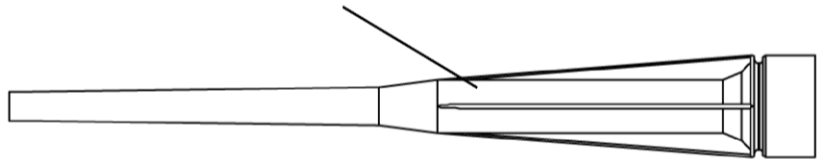


Mortar cartridge sizes FIS HB (360 ml or 150 ml)

Imprint: fischer FIS HB, processing notes, shelf-life, piston travel scale, curing times and processing times (depending on temperature), hazard code, size, volume



Static mixer FIS MR or UMR



Highbond-anchor FHB

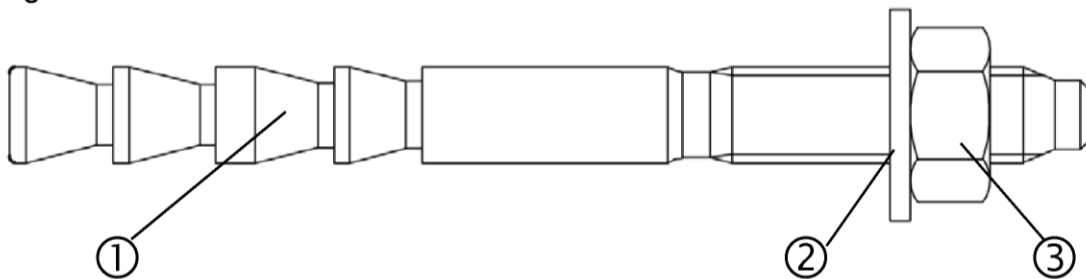


Table A1: Materials

Part	Designation	M10 to M16	M20 to M24
1	Anchor rod FHB-A	Steel $f_{uk} = 800 \text{ N/mm}^2$ $f_{yk} = 640 \text{ N/mm}^2$ (ISO 898-1: 2013) zinc plated $\geq 5\mu\text{m}$, (EN ISO 4042:1999 A2K) $f_{uk} \leq 1000 \text{ N/mm}^2$ $A_5 > 12\%$ fracture elongation coated	Steel $f_{uk} = 550 \text{ N/mm}^2$ $f_{yk} = 440 \text{ N/mm}^2$ (ISO 898-1: 2013) zinc plated $\geq 5\mu\text{m}$, (EN ISO 4042:1999 A2K) $f_{uk} \leq 1000 \text{ N/mm}^2$ $A_5 > 12\%$ fracture elongation coated
2	Washer ISO 7089:2000	zinc plated $\geq 5\mu\text{m}$, EN ISO 4042:1999 A2K	
3	Hexagon nut	Property class 8; (EN ISO 898-2:2013), zinc plated $\geq 5\mu\text{m}$, (ISO 4042:1999 A2K)	

fischer Highbond-anchor FHB

Product description

Cartridge/ static mixer/ anchor rod with hexagon nut and washer
Materials

Annex A 2

Specifications of intended use

Table B1: Overview use categories and performance categories

Anchorages subject to		FIS HB with		
		fischer Highbond-anchor FHB		
				
Hammer drilling		all sizes		
Static and quasi static load, in	uncracked concrete	all sizes	Tables:C1; C2; C3; C4	
	cracked concrete			
Use category	dry and wet concrete	all sizes		
	flooded hole	all sizes		
Installation temperature		-5°C to +40°C		
In-service temperature	Temperature range	-40°C to +80°C	(Maximum short term temperature +80°C and maximum long term temperature +50°C)	

Base materials:

- Reinforced or unreinforced normal weight concrete Strength classes C20/25 to C50/60 according to EN 206-1:2000

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions

Design:

- Anchorages have to be 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 are designed in accordance with:
 - EOTA ETAG 001, Annex C, Design method A 08/2010

Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- In case of aborted hole: The hole shall be filled with mortar
- Keeping the effective anchorage depth
- Overhead installation is allowed

fischer Highbond-anchor FHB

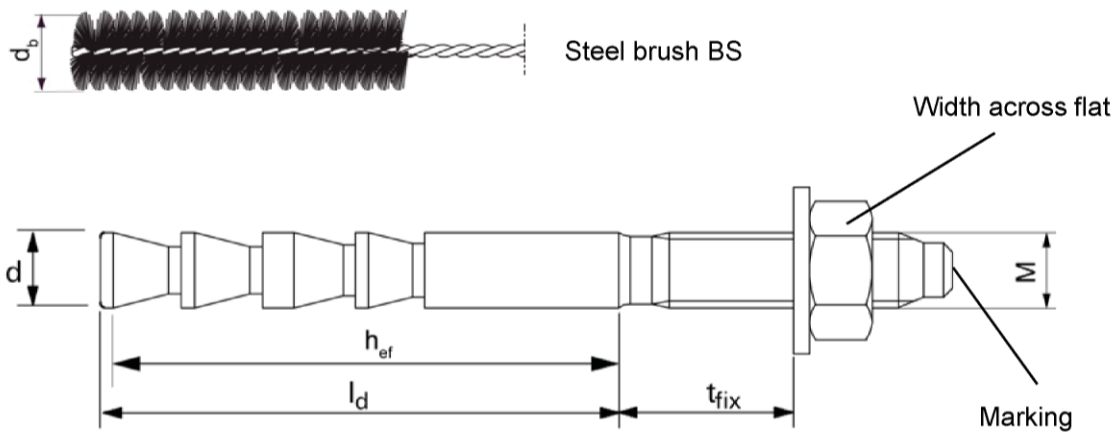
Intended Use
Specifications

Annex B 1

Table B2: Installation parameters for anchor rods FHB - A

Size		FHB – A 10x60	FHB – A 12x80	FHB – A 12x100	FHB – A 16x125	FHB – A 20x170	FHB – A 24x220
Width across flat	SW	17	19		24	30	36
Nominal drill bit diameter	d_0	12	14		18	24	28
Drill hole depth	h_0	65	85	105	130	175	225
Embedment depth of anchor	l_d	62	82	102	128	175	225
Effective anchorage depth	h_{ef}	60	80	100	125	170	220
Minimum spacing and minimum edge distance	s_{min} = c_{min}	60	80	100	100	150	180
Diameter of clearance hole in the fixture ¹⁾	d_f	12	14		18	22	26
Minimum thickness of concrete member	h_{min}	120	160	200	250	340	440
Maximum installation torque	$T_{inst,max}$	20	40		60	100	120
Corresponding steel brush	d_b	13	16		20	26	30

¹⁾ For larger clearance holes in the fixture see EOTA ETAG 001, Annex C, 08/2010



Marking: Work symbol; size, anchorage depth h_{ef} ;

e.g.:  16 x 125

fischer Highbond-anchor FHB

Intended Use

Installation parameters for anchor rods FHB - A

Annex B 2

Table B3: Maximum processing times and minimum curing times

Concrete temperature ³⁾ [°C]	Maximum processing times t_{work} ²⁾ [minutes]	Minimum curing times t_{cure} ¹⁾ [minutes]
-5 to 0	--	360
>+1 to +5	--	180
>+6 to +10	15	90
>+11 to +20	6	35
>+21 to +30	4	20
>+31 to +40	2	12

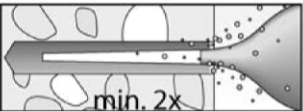
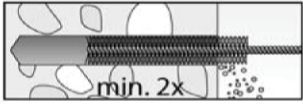
¹⁾ In wet concrete or flooded hole the curing times must be doubled.

²⁾ The temperature of the mortar may not fall below +5°C.

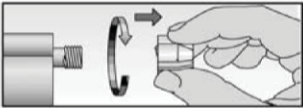
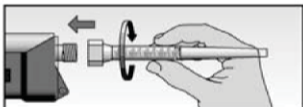
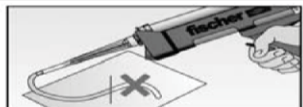
³⁾ During the curing of the mortar the temperature of the concrete may not fall below -5°C.

Installation instructions (Part 1)

Drilling and cleaning the hole

1		Drill the hole. Drill hole diameter d_0 and drill hole depth h_0 see Table B2 .
2		Blow out the drill hole twice. For anchor size $\geq$ M20 use oil free compressed air ($\geq$ 6bar). For this use a pressure nozzle $\varnothing$ 19 mm.
3		Brush the hole twice using a steel brush. Corresponding steel brushes see Table B2
4		Blow out the drill hole twice. For anchor size $\geq$ M20 use oil free compressed air ($\geq$ 6bar). For this use a pressure nozzle $\varnothing$ 19 mm.

Preparing the cartridge

5		Remove the sealing cap (do not use the sealing cap again)
6		Screw on the static mixer (the spiral in the static mixer must be clearly visible). Never use the mortar cartridge without a static mixer.
7		Place the cartridge into the dispenser
8		Extrude approximately 10 cm of material until the resin is evenly grey in colour. Do not use mortar that is not uniformly grey

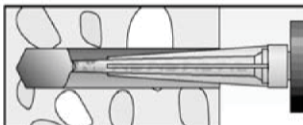
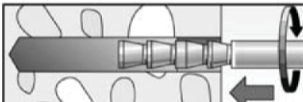
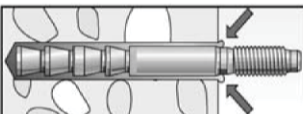
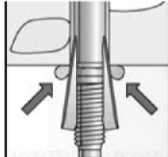
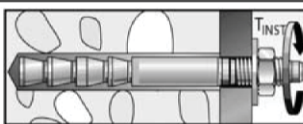
fischer Highbond-anchor FHB

Intended Use

Working times and curing times
Installation instructions (Part 1)

Annex B 3

Installation instructions (Part 2)**Installation of anchor rods FHB-A**

9		Observe the working time (t_{work}) of the mortar ¹⁾ (see Table B3). Fill approx. 2/3 of the drill hole with mortar FIS HB. Always begin from the bottom of the hole and avoid bubbles (exact quantity of the mortar see installation instruction of the manufacturer).
10		Insert the Highbond- anchor rod FHB-A to the bottom of the mortar- filled bore hole (setting depth), turning it slightly while doing so.
		After inserting the anchor element, excess mortar must emerge around the anchor element
11		For overhead installations support the anchor rod with wedges. (e.g. fischer centering wedges)
		Observe the curing time (t_{cure}) of the mortar (see Table B3). Screw on the fixture and for installation check generate the correct torque moment ($t_{inst,max}$) (see Table B2)

¹⁾ If the working time has elapsed (work stoppage), use a new static mixer and, if necessary, remove crusted material on the mouth of the cartridge.

fischer Highbond-anchor FHB

Intended Use

Installation instructions (Part 2)

Annex B 4

Table C1: Characteristic values of steel bearing capacity under tensile / shear load

Size FHB- A			10x60	12x80	12x100	16x125	20x170	24x220
Tensile load, steel failure								
Characteristic resistance	N _{Rk,s}	[kN]	26	44	44	82	131	180
Partial safety factor ¹⁾								
Partial safety factor	γ _{Ms,N}	[-]	1,50					
Shear load, steel failure								
Without lever arm								
Characteristic resistance	V _{Rk,s}	[kN]	16	30	30	55	60	85
With lever arm								
Characteristic bending moment	M ⁰ _{Rk,s}	[Nm]	60	105	105	266	357	617
Concrete edge failure								
Partial safety factor ¹⁾								
Partial safety factor	γ _{Ms,V}	[-]	1,25					

¹⁾ In absence of other national regulations

fischer Highbond-anchor FHB

Performances
Steel bearing capacity

Annex C 1

Table C2: General design factors for the bearing capacity under tensile / shear load; uncracked or cracked concrete

Size				All Sizes				
Bearing capacity under tensile load								
Factors for the compressive strength of concrete > C20/25								
Increasing factor for τ_{Rk}	C30/37	Ψ_c	[-]	1,22				
	C40/50			1,41				
	C50/60			1,55				
Splitting failure or concrete cone failure								
Edge distance	$c_{cr,sp}$ = $c_{cr,N}$	[mm]	1,5 h_{ef}					
	$s_{cr,sp}$ = $s_{cr,N}$		3,0 h_{ef}					
Bearing capacity under shear load								
Concrete pry-out failure								
Factor k acc. to ETAG 001, Annex C, Section 5.2.3.3	k	[-]	2,0					
Concrete edge failure								
The value of h_{ef} (= l_f) under shear load	[mm]	60	80	100	125	170	220	
Calculation diameters								
Size FHB- A		10x60	12x80	12x100	16x125	20x170	24x220	
	d	[mm]	10	12	12	16	20	24

fischer Highbond-anchor FHB

Performances

Characteristic values of resistance under static or quasi-static action under shear load

Annex C 2

Table C3: Characteristic values under tension load; uncracked or cracked concrete

Size FHB-A		10x60	12x80	12x100	16x125	20x170	24x220
Combined pullout and concrete cone failure							
Calculation diameter	d [mm]	10	12		16	20	24
Uncracked concrete							
Characteristic resistance in uncracked concrete C20/25							
Temperature range 50 °C / 80 °C	$N_{Rk,p}$ [N/mm ²]	20	25	35	50	60	115
Cracked concrete							
Characteristic resistance in cracked concrete C20/25							
Temperature range 50 °C / 80 °C	$N_{Rk,p}$ [N/mm ²]	1)	1)	30	1)	60	95
Installation safety factors							
All installation conditions	$\gamma_2 = \gamma_{inst}$ [-]	1,0					

¹⁾ Pullout not decisive

Table C4: Displacements

Size FHB-A		10x60	12x80	12x100	16x125	20x170	24x220
Displacements under tension load							
Uncracked concrete							
Tension load	N [kN]	9,5	11,9	16,7	23,8	28,6	54,8
Displacements	δ_{N0} [mm]	0,2	0,2		0,3	0,3	0,5
	$\delta_{N\infty}$ [mm]	0,8	0,7		0,7	0,7	1,1
Cracked concrete							
Tension load	N [kN]	7,8	12,0	14,3	23,4	28,6	45,2
Displacements	δ_{N0} [mm]	0,5	0,5		0,6	0,6	0,9
	$\delta_{N\infty}$ [mm]	0,8	0,7		0,7	0,7	1,1
Displacements under shear load							
Uncracked or cracked concrete							
Shear load	V [kN]	9,3	17,0		31,6	33,9	48,8
Displacements	δ_{V0} [mm]	1,3					
	$\delta_{V\infty}$ [mm]	2,0					

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Performances

Characteristic values under tension load
Displacements

Annex C 3