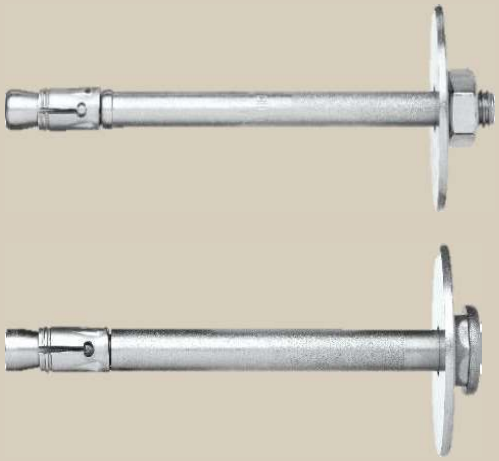
HFB
NAIL ANCHOR

Technical Datasheet

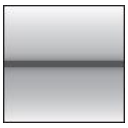
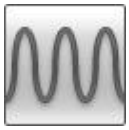
Update: Jun-19

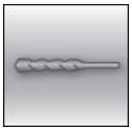


HFB Nail anchor

Premium Fastener for Fire Protection Panels

Anchor version		Benefits
	HFB (M6)	- Verified for ISO 834 (celluloid) curve, HCM curve, ZTV-ING part 5 curve and RWS fire curve. - System tests with several market leading Boards - Keeps its place under static, dynamic and seismic (C1) conditions thereby minimizing economical impact. - Comes with a cordless electric power tool for drilling, setting and removal allowing the fastest (re-) installation time, ensuring that the service interruption is minimized. - The anchor can easily be removed, even the “nail head” geometry” - Pre-assembled washer - Mesh clip for a quick and easy installation support when used with sprayed fire protection mortar
	HFB-R (M6)	
	HFB-A-R (M6)	
	HFB-HCR (M6)	
	HFB-A-HCR (M6)	

Base material	Load conditions			
				
Concrete (cracked)	Static/ quasi-static	Seismic C1	Fire resistance	Fatigue/Dynamic

Installation conditions	Other information	
		
Hammer drilled holes	European Technical Assessment	CE conformity

Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
European technical assessment a)	ZAG. Ljubljana	ETA-17/0168, 2019-04-10
Fire test report a)	ZAG. Ljubljana	ETA-17/0168, 2019-04-10
Fire test report (RWS/HCinc)	EFECTIS France	EFR-18-J-002325
Seismic report	Fastening-technology	TA-1703, 2018-05-25
Fatigue	Hilti technical data	TA

a) All data given in this section according to ETA-17/0168, issue 2019-04-10.

Static and quasi-static loading (for a single anchor)

All data in this section applies to:

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- *Steel* failure
- Minimum base material thickness
- Concrete C 20/25, $f_{ck,cube}$ = 25 N/mm²

Effective anchorage depth for static

Anchor size			M6		
Eff. Anchorage depth	h_{ef}	[mm]	25	30	35

Characteristic resistance

Anchor size			M6		
Cracked concrete					
Load in all directions F^0_{Rk}	HFB-R, HFB-HCR, HFB-A-HCR	[kN]	3,0	5,0	6,0
	HFB, HFB-A-R		3,0	4,5	6,0

Design resistance

Anchor size			M6		
Cracked concrete					
Load in all directions F^0_{Rd}	HFB-R, HFB-HCR, HFB-A-HCR	[kN]	2,0	3,3	4,0
	HFB, HFB-A-R		2,0	3,0	4,0

Recommended resistance

Anchor size			M6		
Cracked concrete					
Load in all directions F^0_{Rec}	HFB-R, HFB-HCR, HFB-A-HCR	[kN]	1,4	2,4	2,8
	HFB, HFB-A-R		1,4	2,1	2,8

a) With overall partial safety factor for action γ = 1,4, The partial safety factors for action depend on the type of loading and shall be taken from national regulations,

Seismic loading (for a single anchor)

All data in this section applies to:
- Correct setting (See setting instruction)
- No edge distance and spacing influence
- *Steel* failure
- Minimum base material thickness
- Concrete C 20/25, $f_{ck,cube}$ = 25 N/mm²
- All data given in this section is according to TA-1703, issue 2018-05-25

Effective anchorage depth for seismic C1

Anchor size			M6		
Effective Anchorage depth	h_{ef}	[mm]	25	30	35

Characteristic resistance in case of seismic performance C1

Anchor size			M6		
Cracked concrete					
Tension N_{Rk}	HFB-R	[kN]	3,0	4,0	4,0
	HFB-A-R		3,0	4,0	4,0
Shear V_{Rk}	HFB-R	[kN]	-	3,5	3,5
	HFB-A-R		-	-	-

Design resistance in case of seismic performance C1

Anchor size			M6		
Cracked concrete					
Tension N_{Rd}	HFB-R	[kN]	2,0	2,6	2,6
	HFB-A-R		2,0	2,6	2,6
Shear V_{Rd}	HFB-R	[kN]	-	2,3	2,3
	HFB-A-R		-	-	-

Recomended resistance in case of seismic performance C1

Anchor size			M6		
Cracked concrete					
Tension N_{Rec}	HFB-R	[kN]	1,4	1,9	1,9
	HFB-A-R		1,4	1,9	1,9
Shear V_{Rec}	HFB-R	[kN]	-	1,6	1,6
	HFB-A-R		-	-	-

a) With overall partial safety factor for action γ = 1,4, The partial safety factors for action depend on the type of loading and shall be taken from national regulations,

Fire resistance

All data in this section applies to:

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- *Steel* failure
- Minimum base material thickness
- Concrete C 20/25 to C50/60
- Partial safety factor for resistance under fire exposure $\gamma_{M,fi}$ = 1,0 (in absence of other national regulations)

Effective anchorage depth

Anchor size		M6		
Eff, Anchorage depth	h_{ef} [mm]	25	30	35

Characteristic resistance

Anchor size			M6		
Fire exposure R30					
Load in all directions F^0_{Rk}	HFB	[kN]	0,5	0,9	-
	HFB-R, HFB-HCR		0,5	0,9	1,2
	HFB-A-R, HFB-A-HCR		0,5	0,9	1,0
Fire exposure R60					
Load in all directions F^0_{Rk}	HFB	[kN]	0,5	0,6	-
	HFB-R, HFB-HCR		0,5	0,9	1,2
	HFB-A-R, HFB-A-HCR		0,5	0,6	0,6
Fire exposure R90					
Load in all directions F^0_{Rk}	HFB	[kN]	0,4	0,4	-
	HFB-R, HFB-HCR		0,5	0,9	1,2
	HFB-A-R, HFB-A-HCR		0,3	0,3	0,3
Fire exposure R120					
Load in all directions F^0_{Rk}	HFB	[kN]	0,3	0,3	-
	HFB-R, HFB-HCR		0,2	0,7	1,0
	HFB-A-R, HFB-A-HCR		0,1	0,1	0,1

Design resistance

Anchor size			M6		
Fire exposure R30					
Load in all directions F^0_{Rd}	HFB	[kN]	0,5	0,9	-
	HFB-R, HFB-HCR		0,5	0,9	1,2
	HFB-A-R, HFB-A-HCR		0,5	0,9	1,0
Fire exposure R60					
Load in all directions F^0_{Rd}	HFB	[kN]	0,5	0,6	-
	HFB-R, HFB-HCR		0,5	0,9	1,2
	HFB-A-R, HFB-A-HCR		0,5	0,6	0,6
Fire exposure R90					
Load in all directions F^0_{Rd}	HFB	[kN]	0,4	0,4	-
	HFB-R, HFB-HCR		0,5	0,9	1,2
	HFB-A-R, HFB-A-HCR		0,3	0,3	0,3
Fire exposure R120					
Load in all directions F^0_{Rd}	HFB	[kN]	0,3	0,3	-
	HFB-R, HFB-HCR		0,2	0,7	1,0
	HFB-A-R, HFB-A-HCR		0,1	0,1	0,1

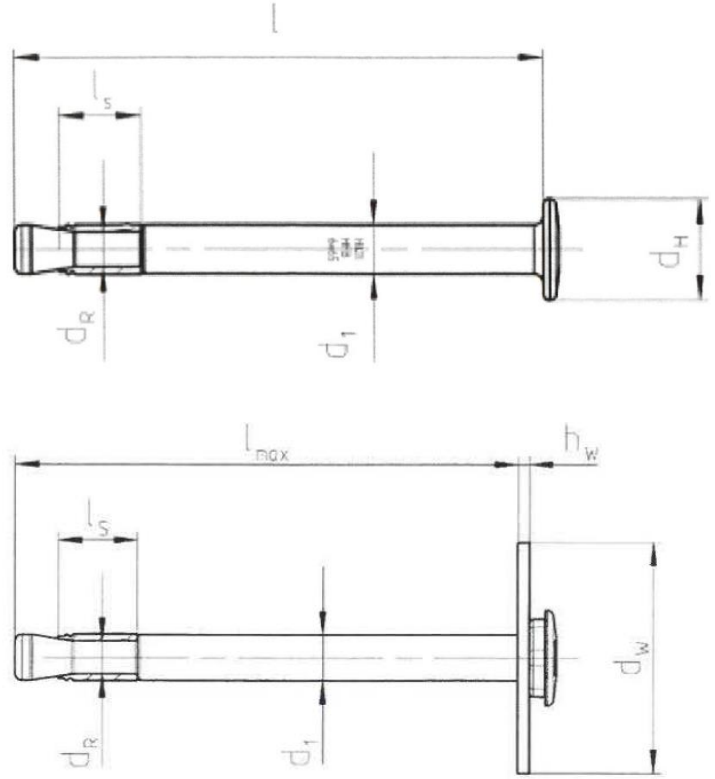
Materials

Material quality

Part		Material
Metal parts made of carbon steel		
Anchor Bolt	HFB	Carbon steel, galvanized, coated, rupture elongation (lo = 5d) > 8%
Expansion Sleeve	HFB	Stainless steel A4
Metal parts made of stainless steel		
Anchor Bolt	HFB-R, HFB-A-R	Stainless steel A4, coated, rupture elongation (lo = 5d) > 8%
Expansion Sleeve	HFB-R, HFB-A-R	Stainless steel A4
Washer	HFB-R, HFB-A-R	Stainless steel A4
Hexagon/Special nut	HFB-R, HFB-A-R	Stainless steel A4
Metal parts made of high corrosion resistant steel		
Anchor Bolt	HFB-HCR HFB-A-HCR	High corrosion resistance steel, coated, rupture elongation (lo = 5d) > 8%
Expansion Sleeve	HFB-HCR HFB-A-HCR	High corrosion resistance steel
Washer	HFB-HCR HFB-A-HCR	High corrosion resistance steel
Hexagon/Special nut	HFB-HCR HFB-A-HCR	High corrosion resistance steel

Anchor dimensions

Anchor			HFB	HFB-R and HFB-HCR	HFB-A-R and HFB-A-HCR
Maximum length of anchor	$\ell_{max} \leq$	[mm]	150		
Anchor diameter	d_1	[mm]	5,9		5,2
Shaft diameter at the cone	d_R	[mm]	4,2		
Diameter of head	$d_H \leq$	[mm]	12,2		-
Length of expansion sleeve	ℓ_s	[mm]	10,1		
Diameter of washer	$d_w \leq$	[mm]	-	30	
Thickness of washer	$h_w \leq$	[mm]	-	1,5	

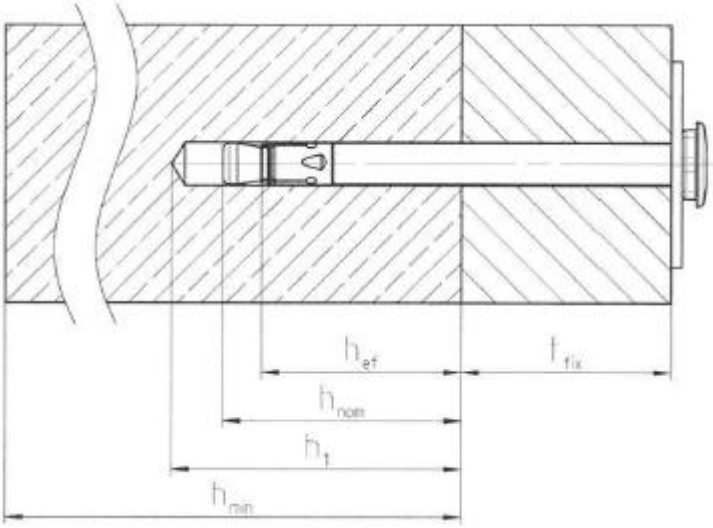


Setting information

Setting details

Anchor			HFB, HFB-R, HFB-A-R, HFB-HCR and HFB-A-HCR		
Nominal diameter of drill bit	d_o	[mm]	6		
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	6,40		
Maximum diameter of clearance hole in the fixture	d_f	[mm]	7		
Nominal embedment depth	h_{nom}	[mm]	30	35	40[1)]
Effective embedment depth	h_{ef}	[mm]	25	30	35[1)]
Drill hole depth	$h_1 \geq$	[mm]	34	39	44[1)]

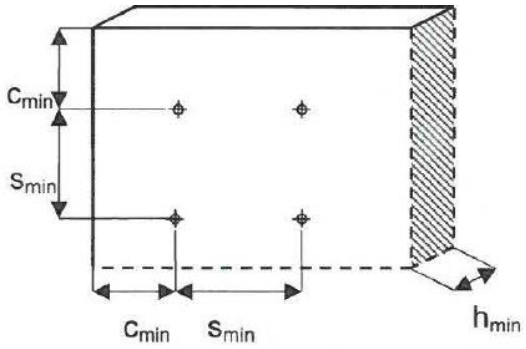
1) Not for HFB.



Setting parameters

Anchor Size			HFB, HFB-R, HFB-A-R, HFB-HCR and HFB-A-HCR		
Effective anchorage depth	h_{ef}	[mm]	25	30	35[1)]
Minimum base material thickness	h_{min}	[mm]	80	80	80[1)]
Minimum spacing	s_{min}	[mm]	50	50	50[1)]
	for c ≥	[mm]	50	50	50[1)]
Minimum edge distance	c_{min}	[mm]	40	40	40[1)]
	for s ≥	[mm]	75	80	80[1)]

1) Not for HFB.



Installation equipment

Anchor size	HFB	HFB-R	HFB-A-R	HFB-HCR	HFB-A-HCR
Rotary hammer	TE-4 (-A) – TE-6 (-A)				
Setting tool	TE-C-HFB-ST				
Setting tool pneumatic	P-HFB-ST				
Setting tube	D-HFB-ST				
Socket wrench	-	-	SI-HFB-RS	-	SI-HFB-RS
Mesh clip	-	HFB-CM 20	HFB-CM 20	-	-

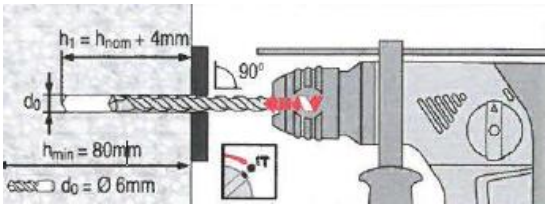
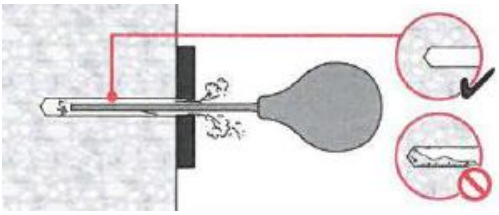
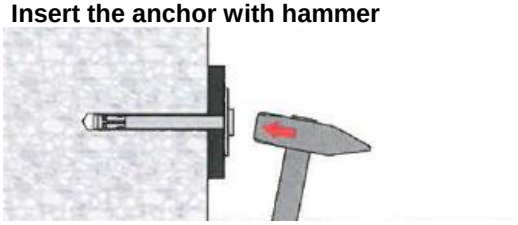
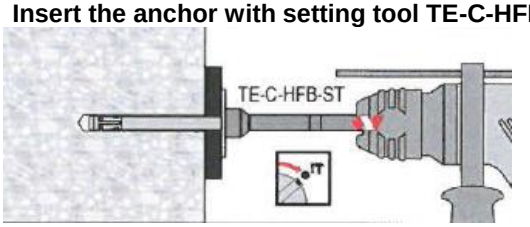
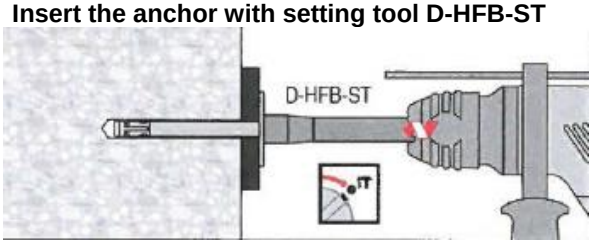
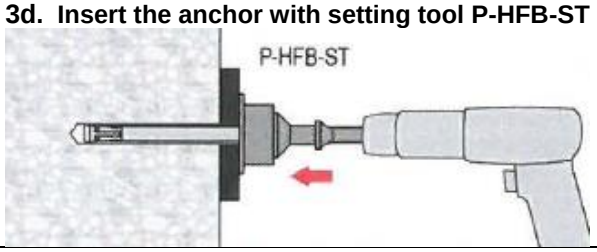
Applications

Fastening of pre-fabricated fire protection boards

Fastening of light wire mesh reinforcement for fire protection mortar

Setting instructions

***For detailed information on installation see instruction for use given with the package of the product**

Setting instruction for HFB-R, HFB-A-R, HFB-HCR and HFB-A-HCR	
Hammer drilling	
1. Drill the hole 	**2. Clean the hole** 
3a. Insert the anchor with hammer 	**3b. Insert the anchor with setting tool TE-C-HFB-ST** 
3c. Insert the anchor with setting tool D-HFB-ST 	**3d. Insert the anchor with setting tool P-HFB-ST** 
4. Check the anchor