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CERTIFIX CFTB II
Through Bolt

Low minimum anchorage depths.
Plus higher approved loads.

PRODUCT DESCRIPTION

The **Certifix CFTB II Through Bolt Anchor** combines variable anchorage depths with the highest approved tensile and shear loads to set new standards in performance and flexibility for mechanical expansion anchors.

Ideal for anchoring medium to heavy loads in facades, cracked and non-cracked concrete, steel beams, cable and pipe routes and wooden constructions, the **Certifix CFTB II** allows higher loads in the same depth settings as before, which can be further increased by a deeper setting. This can also mean savings on fixing points or fastenings and reduced drilling and setting.

PRODUCT FEATURES

- The **Certifix CFTB II Through Bolt Anchor** offers low minimum anchorage depths
- Increased flexibility of depth allows adaptation to a variety of installation situations
- Setting with a reduced anchorage depth reduces drilling and the risk of reinforcement hits
- Enables the smallest centre and edge distances for the respective application
- Fewer turns until the tightening torque is reached for shorter processing times
- Coloured marking of the minimum anchorage depth for higher installation safety

DESCRIPTION

Through the combination of the highest approved tensile and shear loads with variable anchorage depths, the newly developed **Certifix CFTB II Through Bolt Anchor** with European Technical Assessment, sets standards in performance and flexibility of mechanical Expansion anchors.

In many cases, with the same setting depth as before, the **CFTB II** allows higher loads, which can be further increased by deeper setting. This can save fixing points or fastenings can be realised, that have not been possible with a through bolt anchor. However, setting with a reduced anchorage depth reduces drilling and setting effort and reduces the risk of reinforcement hits. The innovative calculation method in dependence of anchorage depth and concrete thickness, enables smallest center and edge distances for the respective application. This flexibility allows a perfect adaptation to the installation situation and allows more economical fastenings. By optimization of the material, the geometry and the manufacturing process, performance under the influence of earthquakes was significantly increased.

This performance and flexibility allows an optimal adaptation to the installation situation and for example enables railing fastenings with less mounting points, smaller anchor plates and larger post spacing, as has been possible with wedge anchors so far. Fewer turns until the tightening torque is reached and a coloured marking of the minimum anchorage depth enable shorter processing times with higher installation safety.

Range of Loading	3,5 kN - 39,7 kN
Range of concrete quality	C20/25 - C50/60

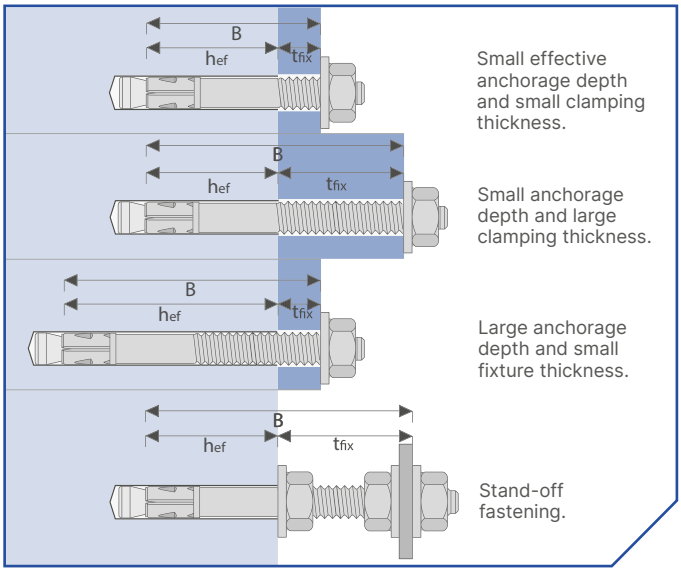
SEISMIC C1 + C2 | R30 - R120 F180 | EDELSTAHL Rost frei

ADVANTAGES

- The Through Bolt Anchor with the highest approved loads and variable anchoring depths
- European Technical Assessment in cracked and non-crackend concrete (option 1), under seismic action of category C1 and C2 and for use in fire (R30 - R120)
- Fire test report for F180
- For higher loads under seismic action, the annular gap between the **CFTB II** and the fixture can be filled with adhesive, by using the Filling Washer VS A4
- Low minimum anchorage depths
- New calculation method in dependence of the anchorage depth and the thickness of the concrete component
- The high flexibility enables the optimal adaptation to the installation situation for maximum efficiency
- Extra short versions
- Fewer turns until the tightening torque is reached
- Coloured marking of the minimum anchorage depth

APPLICATIONS

Anchoring of medium to heavy loads in cracked and non-cracked concrete: columns, steel beams, railings, cable routes, pipe routes, wooden constructions, consoles, facades. Fastenings in earthquake areas etc.



Examples of Installation CFTB II

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CERTIFIX CFTB II THROUGH BOLT ANCHOR FOR CRACKED & NON-CRACKED CONCRETE

- Stainless steel A4
- Approved for cracked and non-cracked concrete
- Variable anchorage depths

		Standard anchorage depth		Minimum anchorage depth		Variable anchorage depth								
Description	Drill hole-Ø d0 mm	Fixture thickness $t_{fix,std}$ mm	Anchorage depth $h_{ef,std}$ mm	Fixture thickness $t_{fix,min}$ mm	Anchorage depth $h_{ef,min}$ mm	Usable length B mm	Fixture thickness t_{fix} mm	Depth of drill hole h1 mm	Setting depth hnom	Seismic C1 / C2	Anchor length l mm	Thread mm	Pkg. content pcs.	Weight per pkg. kg
CFTBII4-8*60/-	8	-	-	5	35	40	B -hef	hef+ 10	hef+ 8	- / -	60	M8x18	100	2,57
CFTBII4-8*65/-	8	-	-	10	35	45	B -hef	hef+ 10	hef+ 8	✓ / ✓[1)]	65	M8x23	100	2,73
CFTBII4-8*75/10	8	10	45	20	35	55	B -hef	hef+ 10	hef+ 8	✓ / ✓[1)]	75	M8x33	100	3,05
CFTBII4-8*80/15	8	15	45	25	35	60	B -hef	hef+ 10	hef+ 8	✓ / ✓[1)]	80	M8x38	100	3,22
CFTBII4-8*95/30	8	30	45	40	35	75	B -hef	hef+ 10	hef+ 8	✓ / ✓[1)]	95	M8x53	100	3,68
CFTBII4-8*115/50	8	50	45	60	35	95	B -hef	hef+ 10	hef+ 8	✓ / ✓[1)]	115	M8x73	100	4,41
CFTBII4-8*165/100	8	100	45	110	35	145	B -hef	hef+ 10	hef+ 8	✓ / ✓[1)]	165	M8x123	50	3,00
CFTBII4-10*70/-	10	-	-	10	40	50	B -hef	hef+ 11	hef+ 9	✓ / ✓	70	M10x25	50	2,64
CFTBII4-10*80/-	10	-	-	20	40	60	B -hef	hef+ 11	hef+ 9	✓ / ✓	80	M10x35	50	2,82
CFTBII4-10*90/10	10	10	60	30	40	70	B -hef	hef+ 11	hef+ 9	✓ / ✓	90	M10x45	50	3,13
CFTBII4-10*95/15	10	15	60	35	40	75	B -hef	hef+ 11	hef+ 9	✓ / ✓	95	M10x50	50	3,19
CFTBII4-10*100/20	10	20	60	40	40	80	B -hef	hef+ 11	hef+ 9	✓ / ✓	100	M10x55	50	3,13
CFTBII4-10*110/30	10	30	60	50	40	90	B -hef	hef+ 11	hef+ 9	✓ / ✓	110	M10x65	50	3,60
CFTBII4-10*130/50	10	50	60	70	40	110	B -hef	hef+ 11	hef+ 9	✓ / ✓	130	M10x85	50	4,09
CFTBII4-10*155/75	10	75	60	95	40	135	B -hef	hef+ 11	hef+ 9	✓ / ✓	155	M10x110	50	4,82
CFTBII4-10*180/100	10	100	60	120	40	160	B -hef	hef+ 11	hef+ 9	✓ / ✓	180	M10x135	50	5,41
CFTBII4-12*85/-	12	-	-	10	50	60	B -hef	hef+ 13	hef+10	✓ / ✓	85	M12x30	25	2,17
CFTBII4-12*95/-	12	-	-	20	50	70	B -hef	hef+ 13	hef+10	✓ / ✓	95	M12x40	25	2,36
CFTBII4-12*105/10	12	10	70	30	50	80	B -hef	hef+ 13	hef+10	✓ / ✓	105	M12x50	25	2,55
CFTBII4-12*110/15	12	15	70	35	50	85	B -hef	hef+ 13	hef+10	✓ / ✓	110	M12x55	25	2,65
CFTBII4-12*115/20	12	20	70	40	50	90	B -hef	hef+ 13	hef+10	✓ / ✓	115	M12x60	25	2,71
CFTBII4-12*125/30	12	30	70	50	50	100	B -hef	hef+ 13	hef+10	✓ / ✓	125	M12x70	25	2,91
CFTBII4-12*145/50	12	50	70	70	50	120	B -hef	hef+ 13	hef+10	✓ / ✓	145	M12x90	25	3,28
CFTBII4-12*160/65	12	65	70	85	50	135	B -hef	hef+ 13	hef+10	✓ / ✓	160	M12x105	25	3,55
CFTBII4-12*180/85	12	85	70	105	50	155	B -hef	hef+ 13	hef+10	✓ / ✓	180	M12x125	25	3,91
CFTBII4-12*200/105	12	105	70	125	50	175	B -hef	hef+ 13	hef+10	✓ / ✓	200	M12x135	25	4,27
CFTBII4-16*115/-	16	-	-	15	65	80	B -hef	hef+ 17	hef+14	✓ / ✓	115	M16x38	20	3,91
CFTBII4-16*125/5	16	5	85	25	65	90	B -hef	hef+ 17	hef+14	✓ / ✓	125	M16x48	20	4,18
CFTBII4-16*135/15	16	15	85	35	65	100	B -hef	hef+ 17	hef+14	✓ / ✓	135	M16x58	20	4,44
CFTBII4-16*145/25	16	25	85	45	65	110	B -hef	hef+ 17	hef+14	✓ / ✓	145	M16x68	20	4,71
CFTBII4-16*170/50	16	50	85	70	65	135	B -hef	hef+ 17	hef+14	✓ / ✓	170	M16x93	20	5,43
CFTBII4-16*200/80	16	80	85	100	65	165	B -hef	hef+ 17	hef+14	✓ / ✓	200	M16x123	10	3,11

[1)] Seismic C1 and C2 for anchorage depth $h_{ef} \geq 40$mm

THROUGH BOLT ANCHOR-SETTING TOOL BSW

- Setting Tool for Certifix Through Bolt Anchor M6 – M16; Steel, zinc plated
- With SDS plus connection

DESCRIPTION	REF. NO.	SUITABLE FOR THROUGH BOLT ANCHOR	LENGTH MM	PACKAGE CONTENT PCS	WEIGHT PER PKG. KG
BSW M6-M16	43990101	CFTB II M6 – M16	140	1	0,13

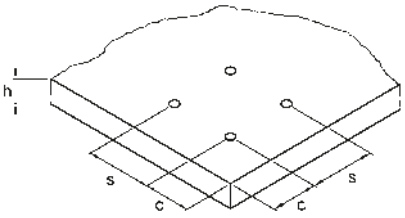
PERMISSIBLE SERVICE CONDITIONS OF EUROPEAN TECHNICAL ASSESSMENT ETA

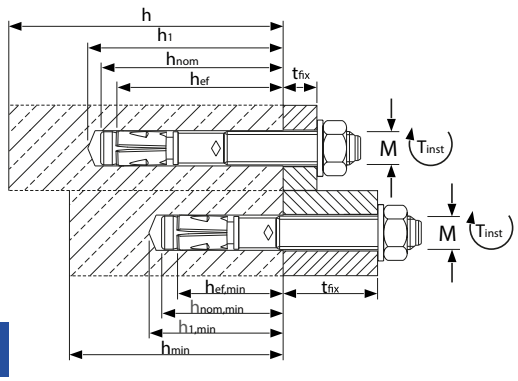
Approved loads for single anchor without influence of spacing and edge distance.
Total safety factor as per ETAG 001 included (γ_M und γ_F). Load capacities under fire exposure are available via the ETA.

LOADS AND PERFORMANCE DATA	THROUGH BOLT ANCHOR CF-BZ3 A4			M8			M10			M12			M16		
Minimum anchorage depth[1] $h_{ef,min}$			[mm]	35			40			50			65		
Standard anchorage depth $h_{ef,std}$			[mm]		45			60			70			85	
Maximum anchorage depth $h_{ef,max}$			[mm]			90			100			125			160
								cracked concrete							
Approved loads, tension	C20/25	appr. N	[kN]	3,5	4,5	4,5	4,3	8,0	8,1	6,1	10,0	10,5	9,0	13,4	16,7
	C25/30	appr. N	[kN]	3,9	5,0	5,0	4,8	8,7	9,1	6,6	11,0	11,5	9,8	14,7	18,0
	C30/37	appr. N	[kN]	4,3	5,5	5,5	5,3	9,7	9,9	7,4	12,2	12,5	10,9	16,3	19,2
	C40/50	appr. N	[kN]	5,0	6,3	6,3	6,1	11,3	11,4	8,6	14,2	14,2	12,7	19,0	21,2
	C50/60	appr. N	[kN]	5,5	7,1	7,1	6,7	12,3	12,8	9,4	15,6	15,6	13,9	20,8	23,0
								non-cracked concrete							
Approved loads, tension[1]	C20/25	appr. N	[kN]	5,0	7,3	9,4	6,1	11,2	11,9	8,5	14,1	20,0	12,6	18,8	23,8
	C25/30	appr. N	[kN]	5,5	8,0	9,4	6,7	12,2	12,9	9,3	15,4	21,0	13,8	20,6	24,9
	C30/37	appr. N	[kN]	6,1	8,8	9,4	7,4	13,6	13,8	10,3	17,1	21,4	15,3	22,9	25,8
	C40/50	appr. N	[kN]	7,0	9,4	9,4	8,6	14,5	14,5	12,0	19,9	21,4	17,8	26,7	27,3
	C50/60	appr. N	[kN]	7,7	9,4	9,4	9,4	14,5	14,5	13,2	21,4	21,4	19,5	28,5	28,5
								cracked concrete							
Approved loads, shear	C20/25	appr. V	[kN]	9,6	9,6	9,6	12,1	15,9	15,9	20,0	22,7	22,7	30,5	39,7	39,7
	≥ C25/30	appr. V	[kN]	9,6	9,6	9,6	13,3	15,9	15,9	21,9	22,7	22,7	33,5	39,7	39,7
								non-cracked concrete							
Approved loads, shear	C20/25	appr. V	[kN]	9,6	9,6	9,6	15,9	15,9	15,9	22,7	22,7	22,7	39,7	39,7	39,7
	≥ C25/30	appr. V	[kN]	9,6	9,6	9,6	15,9	15,9	15,9	22,7	22,7	22,7	39,7	39,7	39,7
Approved bending moments		appr. M	[Nm]	15,4	15,4	15,4	31,4	31,4	31,4	56,6	56,6	56,6	127,4	127,4	127,4
SPACING AND EDGE DISTANCE[2]															
Effective anchorage depth		h_{ef}	[mm]	35	45	90	40	60	100	50	70	125	65	85	160
Minimum thickness of concrete slab		hmin	[mm]	80	80	135	80	90	150	100	105	187,5	120	127,5	240
Minimum spacing		smin	[mm]	35	35	35	40	40	40	50	50	50	65	65	65
Minimum edge distance		cmin	[mm]	40	40	40	45	45	45	55	55	55	65	65	65
INSTALLATION PARAMETERS															
Drill hole diameter		do	[mm]	8	8	8	10	10	10	12	12	12	16	16	16
Diameter of clearance hole in the fixture		df ≤	[mm]	9	9	9	12	12	12	14	14	14	18	18	18
Drill hole depth with anchorage depth h_{ef}		h1 1 with h_{ef}	[mm] [mm]	45	55 h_{ef}+ 10	100	51	71 h_{ef}+ 11	111	63	83 h_{ef}+ 13	138	82	102 h_{ef}+ 17	177
Installation torque		Tinst	[Nm]	15	15	15	40	40	40	55	55	55	100	100	100
Width across nut		SW	[mm]	13	13	13	17	17	17	19	19	19	24	24	24
Height of hexagon nut			[mm]	6,5	6,5	6,5	8	8	8	10	10	10	13	13	13
Height x outer diameter of washer			[mm]	1,6 x 16	1,6 x 16	1,6 x 16	2 x 20	2 x 20	2 x 20	2,5 x 24	2,5 x 24	2,5 x 24	3 x 30	3 x 30	3 x 30
Height x outer diameter of filling washer			[mm]	5 x 23	5 x 23	5 x 23	5 x 26	5 x 26	5 x 26	5 x 28	5 x 28	5 x 28	5 x 34	5 x 34	5 x 34

[1] Fastenings with anchorage depths h_{ef} < 40mm are constricted to use of statically indeterminate components under indoor conditions.

[2] For anchor groups and near-edge anchorages, the minimum values of thickness, spacing and edge distance cannot be applied simultaneously but have to be determined according to Table B2 (see following page).





INSTALLATION

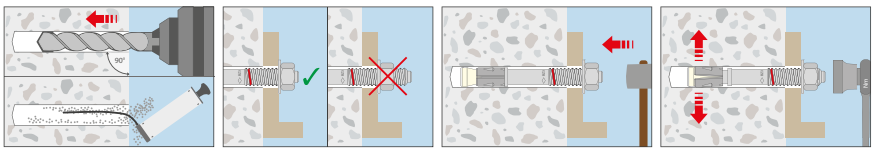


Table B2: Minimum thickness of concrete member, minimum spacings, edge distances

Anchor size			CFTB II / CFTB II A4 / CFTB II HCR			
			M8	M10	M12	M16
Minimum member thickness depending on h_{ef}	$h_{min} \geq$	[mm]	max (1,5·h_{ef} ; 80)		max (1,5·h_{ef} ;100)	max (1,5·h_{ef} ;120)
Minimum edge distances and spacings						
Minimum edge distance	c_{min}	[mm]	40	45	55	65
	for s ≥	[mm]	see Table B4			
Minimum spacings	s_{min}	[mm]	35	40	50	65
	for c ≥	[mm]	see Table B4			
The following equation must be fulfilled for the calculation of the minimum spacing and edge distance during installation in combination with variable anchorage depth and member thickness:						
$A_{sp,req} \leq A_{sp,ef}$ Required splitting area $A_{sp,req}$ and idealized splitting area $A_{sp,ef}$ according to Table B4.						

Table B3: Applicable concrete thickness h_{sp} and area A_{sp} to determine characteristic edge distance $c_{cr,sp}$

Anchor size				M8	M10	M12	M16
Applicable concrete thickness	CFTB II CFTB II A4 CFTB II HCR	h_{sp}	[mm]	$\min(h\,;\ h_{ef} + 1{,}5 \cdot c \cdot \sqrt{2})$			
Area to determine $c_{cr,sp}$[1)]	CFTB II 3	A_{sp}	[mm²]	$\frac{N^0_{Rk,sp} - 2{,}573}{0{,}000436}$	$\frac{N^0_{Rk,sp} + 2{,}040}{0{,}000693}$	$\frac{N^0_{Rk,sp} + 3{,}685}{0{,}000692}$	$\frac{N^0_{Rk,sp} + 3{,}738}{0{,}000875}$
	CFTB II A4 CFTB II HCR	A_{sp}	[mm²]	$\frac{N^0_{Rk,sp} + 4{,}177}{0{,}000862}$	$\frac{N^0_{Rk,sp} + 7{,}235}{0{,}000967}$	$\frac{N^0_{Rk,sp} + 7{,}847}{0{,}000951}$	$\frac{N^0_{Rk,sp} + 11{,}415}{0{,}000742}$

[1)] with $N^0_{Rk,sp}$ in kN

Table B4: Areas to determine spacings and edge distances for installation

Anchor size				CFTB II / CFTB II A4 / CFTB II HCR			
				M8	M10	M12	M16
The following equation must be fulfilled for the calculation of the minimum spacing and edge distance during installation in combination with variable anchorage depth and member thickness: $A_{sp,req} \leq A_{sp,ef}$							
Idealized splitting area $A_{sp,ef}$ The edge distances and spacings shall be selected or rounded in steps of 5 mm.							
Member thickness: $h > h_{ef} + 1{,}5 \cdot c$							
Single anchor or anchor group with **$s \geq 3 \cdot c$**							
Effective anchorage depth **$h_{ef} < 1{,}5 \cdot c$**				$A_{sp,ef} = (6 \cdot c) \cdot (1{,}5 \cdot c + h_{ef})$			[mm²]
Effective anchorage depth **$h_{ef} \geq 1{,}5 \cdot c$**				$A_{sp,ef} = (6 \cdot c) \cdot (3 \cdot c)$			[mm²]
Anchor group ($s < 3 \cdot c$)							
Effective anchorage depth **$h_{ef} < 1{,}5 \cdot c$**				$A_{sp,ef} = (3 \cdot c + s) \cdot (1{,}5 \cdot c + h_{ef})$			[mm²]
Effective anchorage depth **$h_{ef} \geq 1{,}5 \cdot c$**				$A_{sp,ef} = (3 \cdot c + s) \cdot (3 \cdot c)$			[mm²]
Member thickness: $h \leq h_{ef} + 1{,}5 \cdot c$							
Single anchor or anchor group with **$s \geq 3 \cdot c$**							
Effective anchorage depth **$h_{ef} < 1{,}5 \cdot c$**				$A_{sp,ef} = (6 \cdot c) \cdot h$			[mm²]
Effective anchorage depth **$h_{ef} \geq 1{,}5 \cdot c$**				$A_{sp,ef} = (6 \cdot c) \cdot (h - h_{ef} + 1{,}5 \cdot c)$			[mm²]
Anchor group ($s < 3 \cdot c$)							
Effective anchorage depth **$h_{ef} < 1{,}5 \cdot c$**				$A_{sp,ef} = (3 \cdot c + s) \cdot h$			[mm²]
Effective anchorage depth **$h_{ef} \geq 1{,}5 \cdot c$**				$A_{sp,ef} = (3 \cdot c + s) \cdot (h - h_{ef} + 1{,}5 \cdot c)$			[mm²]
Required splitting area $A_{sp,req}$							
CFTB II	cracked concrete	$A_{sp,req}$	[mm²]	13 900	23 700	31 500	42 300
	uncracked concrete	$A_{sp,req}$	[mm²]	22 500	34 700	41 300	50 200
CFTB II A4 CFTB II HCR	cracked concrete	$A_{sp,req}$	[mm²]	16 900	25 900	29 800	44 300
	uncracked concrete	$A_{sp,req}$	[mm²]	19 700	35 700	35 300	54 800