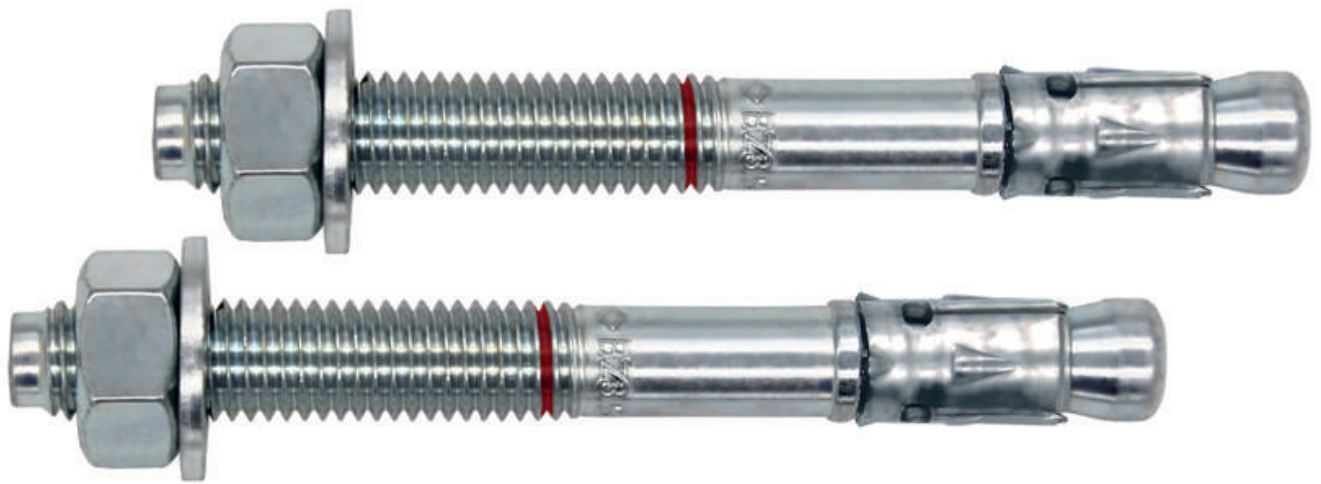




certifix
YOUR FIXING SPECIALIST

CERTIFIX CFBZ3

through bolt anchor



**Low minimum anchorage depths.
Plus higher approved loads.**

PRODUCT DESCRIPTION

The **Certifix CFBZ3 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 CFBZ3** 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 CFBZ3 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



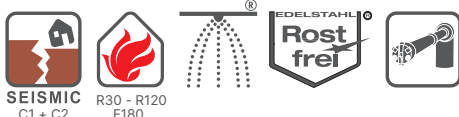
DESCRIPTION

Through the combination of the highest approved tensile and shear loads with variable anchorage depths, the newly developed **Certifix CFBZ3 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 **CFBZ3** 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

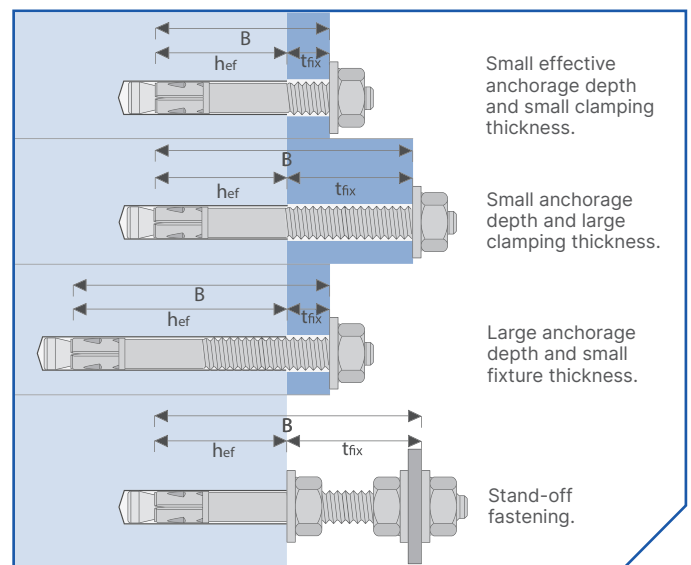


ADVANTAGES

- 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 **CFBZ3** 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 CFBZ3



CERTIFIX CFBZ3 THROUGH BOLT ANCHOR FOR CRACKED & NON-CRACKED CONCRETE



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

Description	Drill hole- \varnothing d0 mm	Standard anchorage depth		Minimum anchorage depth		Variable anchorage depth				Seismic C1 / C2	Anchor length l mm	Thread mm	Pkg. content pcs.	Weight per pkg. kg
		Fixture thickness tfix,std mm	Anchorage depth hef,std mm	Fixture thickness tfix,min mm	Anchorage depth hef,min mm	Usable length B mm	Fixture thickness tfix mm	Depth of drill hole h1 mm	Setting depth hnom					
CFBZ3-4-8x60/-	8	-	-	5	35	40	B-hef	hef+ 10	hef+ 8	- / -	60	M8x18	100	2,57
CFBZ3-4-8x65/-	8	-	-	10	35	45	B-hef	hef+ 10	hef+ 8	✓ / ✓ ¹⁾	65	M8x23	100	2,73
CFBZ3-4-8x75/10	8	10	45	20	35	55	B-hef	hef+ 10	hef+ 8	✓ / ✓ ¹⁾	75	M8x33	100	3,05
CFBZ3-4-8x80/15	8	15	45	25	35	60	B-hef	hef+ 10	hef+ 8	✓ / ✓ ¹⁾	80	M8x38	100	3,22
CFBZ3-4-8x95/30	8	30	45	40	35	75	B-hef	hef+ 10	hef+ 8	✓ / ✓ ¹⁾	95	M8x53	100	3,68
CFBZ3-4-8x115/50	8	50	45	60	35	95	B-hef	hef+ 10	hef+ 8	✓ / ✓ ¹⁾	115	M8x73	100	4,41
CFBZ3-4-8x165/100	8	100	45	110	35	145	B-hef	hef+ 10	hef+ 8	✓ / ✓ ¹⁾	165	M8x123	50	3,00
CFBZ3-4-10x70/-	10	-	-	10	40	50	B-hef	hef+ 11	hef+ 9	✓ / ✓	70	M10x25	50	2,64
CFBZ3-4-10x80/-	10	-	-	20	40	60	B-hef	hef+ 11	hef+ 9	✓ / ✓	80	M10x35	50	2,82
CFBZ3-4-10x90/10	10	10	60	30	40	70	B-hef	hef+ 11	hef+ 9	✓ / ✓	90	M10x45	50	3,13
CFBZ3-4-10x95/15	10	15	60	35	40	75	B-hef	hef+ 11	hef+ 9	✓ / ✓	95	M10x50	50	3,19
CFBZ3-4-10x100/20	10	20	60	40	40	80	B-hef	hef+ 11	hef+ 9	✓ / ✓	100	M10x55	50	3,13
CFBZ3-4-10x110/30	10	30	60	50	40	90	B-hef	hef+ 11	hef+ 9	✓ / ✓	110	M10x65	50	3,60
CFBZ3-4-10x130/50	10	50	60	70	40	110	B-hef	hef+ 11	hef+ 9	✓ / ✓	130	M10x85	50	4,09
CFBZ3-4-10x155/75	10	75	60	95	40	135	B-hef	hef+ 11	hef+ 9	✓ / ✓	155	M10x110	50	4,82
CFBZ3-4-10x180/100	10	100	60	120	40	160	B-hef	hef+ 11	hef+ 9	✓ / ✓	180	M10x135	50	5,41
CFBZ3-4-12x85/-	12	-	-	10	50	60	B-hef	hef+ 13	hef+10	✓ / ✓	85	M12x30	25	2,17
CFBZ3-4-12x95/-	12	-	-	20	50	70	B-hef	hef+ 13	hef+10	✓ / ✓	95	M12x40	25	2,36
CFBZ3-4-12x105/10	12	10	70	30	50	80	B-hef	hef+ 13	hef+10	✓ / ✓	105	M12x50	25	2,55
CFBZ3-4-12x110/15	12	15	70	35	50	85	B-hef	hef+ 13	hef+10	✓ / ✓	110	M12x55	25	2,65
CFBZ3-4-12x115/20	12	20	70	40	50	90	B-hef	hef+ 13	hef+10	✓ / ✓	115	M12x60	25	2,71
CFBZ3-4-12x125/30	12	30	70	50	50	100	B-hef	hef+ 13	hef+10	✓ / ✓	125	M12x70	25	2,91
CFBZ3-4-12x145/50	12	50	70	70	50	120	B-hef	hef+ 13	hef+10	✓ / ✓	145	M12x90	25	3,28
CFBZ3-4-12x160/65	12	65	70	85	50	135	B-hef	hef+ 13	hef+10	✓ / ✓	160	M12x105	25	3,55
CFBZ3-4-12x180/85	12	85	70	105	50	155	B-hef	hef+ 13	hef+10	✓ / ✓	180	M12x125	25	3,91
CFBZ3-4-12x200/105	12	105	70	125	50	175	B-hef	hef+ 13	hef+10	✓ / ✓	200	M12x135	25	4,27
CFBZ3-4-16x115/-	16	-	-	15	65	80	B-hef	hef+ 17	hef+14	✓ / ✓	115	M16x38	20	3,91
CFBZ3-4-16x125/5	16	5	85	25	65	90	B-hef	hef+ 17	hef+14	✓ / ✓	125	M16x48	20	4,18
CFBZ3-4-16x135/15	16	15	85	35	65	100	B-hef	hef+ 17	hef+14	✓ / ✓	135	M16x58	20	4,44
CFBZ3-4-16x145/25	16	25	85	45	65	110	B-hef	hef+ 17	hef+14	✓ / ✓	145	M16x68	20	4,71
CFBZ3-4-16x170/50	16	50	85	70	65	135	B-hef	hef+ 17	hef+14	✓ / ✓	170	M16x93	20	5,43
CFBZ3-4-16x200/80	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 hef \geq 40mm

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	CFBZ3-4 M6 – M16	140	1	0,13



PERMISSIBLE SERVICE CONDITIONS OF EUROPEAN TECHNICAL ASSESSMENT ETA

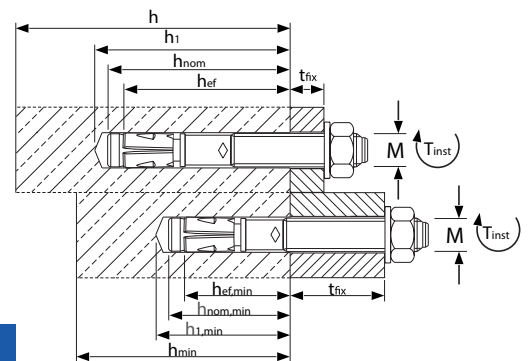
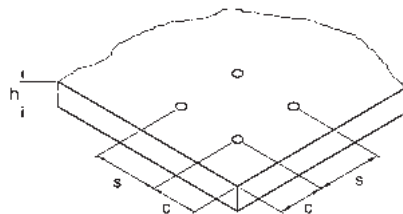
Approved loads for single anchor without influence of spacing and edge distance.

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 CFBZ3 A4	M8			M10			M12			M16			
Minimum anchorage depth ¹⁾ hef,min		[mm]	35			40			50			65			
Standard anchorage depth hef,std		[mm]	45			60			70			85			
Maximum anchorage depth hef,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	hef	[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 hef	h1	[mm]	45	55	100	51	71	111	63	83	138	82	102	177	
	1 with hef	[mm]	hef+ 10			hef+ 11			hef+ 13			hef+ 17			
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 hef < 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

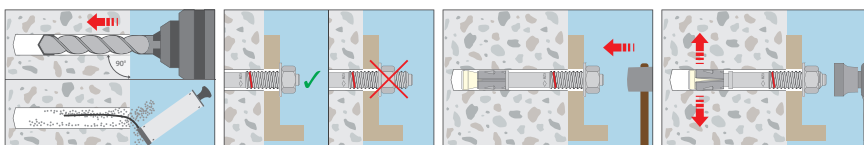


Table B2: Minimum thickness of concrete member, minimum spacings, edge distances

Anchor size		CFBZ3 / CFBZ3 A4 / CFBZ3 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 $s \geq$ [mm]	see Table B4			
Minimum spacings	s_{min} [mm]	35	40	50	65
	for $c \geq$ [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	CFBZ3 CFBZ3 A4 CFBZ3 HCR	h_{sp} [mm]	$\min(h ; h_{ef} + 1,5 \cdot c \cdot \sqrt{2})$			
Area to determine $c_{cr,sp}^1$	CFBZ3	A_{sp} [mm ²]	$\frac{N_{Rk,sp}^0 - 2,573}{0,000436}$	$\frac{N_{Rk,sp}^0 + 2,040}{0,000693}$	$\frac{N_{Rk,sp}^0 + 3,685}{0,000692}$	$\frac{N_{Rk,sp}^0 + 3,738}{0,000875}$
	CFBZ3 A4 CFBZ3 HCR	A_{sp} [mm ²]	$\frac{N_{Rk,sp}^0 + 4,177}{0,000862}$	$\frac{N_{Rk,sp}^0 + 7,235}{0,000967}$	$\frac{N_{Rk,sp}^0 + 7,847}{0,000951}$	$\frac{N_{Rk,sp}^0 + 11,415}{0,000742}$

¹⁾with $N_{Rk,sp}^0$ in kN



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

Anchor size	CFBZ3 / CFBZ3 A4 / CFBZ3 HCR						
	M8	M10	M12	M16			
<p>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:</p> $A_{sp,req} \leq A_{sp,ef}$							
<p>Idealized splitting area $A_{sp,ef}$ The edge distances and spacings shall be selected or rounded in steps of 5 mm.</p>							
<p>Member thickness: $h > h_{ef} + 1,5 \cdot c$</p>							
<p>Single anchor or anchor group with $s \geq 3 \cdot c$</p>							
Effective anchorage depth	$h_{ef} < 1,5 \cdot c$	$A_{sp,ef} = (6 \cdot c) \cdot (1,5 \cdot c + h_{ef})$		[mm ²]			
Effective anchorage depth	$h_{ef} \geq 1,5 \cdot c$	$A_{sp,ef} = (6 \cdot c) \cdot (3 \cdot c)$		[mm ²]			
<p>Anchor group ($s < 3 \cdot c$)</p>							
Effective anchorage depth	$h_{ef} < 1,5 \cdot c$	$A_{sp,ef} = (3 \cdot c + s) \cdot (1,5 \cdot c + h_{ef})$		[mm ²]			
Effective anchorage depth	$h_{ef} \geq 1,5 \cdot c$	$A_{sp,ef} = (3 \cdot c + s) \cdot (3 \cdot c)$		[mm ²]			
<p>Member thickness: $h \leq h_{ef} + 1,5 \cdot c$</p>							
<p>Single anchor or anchor group with $s \geq 3 \cdot c$</p>							
Effective anchorage depth	$h_{ef} < 1,5 \cdot c$	$A_{sp,ef} = (6 \cdot c) \cdot h$		[mm ²]			
Effective anchorage depth	$h_{ef} \geq 1,5 \cdot c$	$A_{sp,ef} = (6 \cdot c) \cdot (h - h_{ef} + 1,5 \cdot c)$		[mm ²]			
<p>Anchor group ($s < 3 \cdot c$)</p>							
Effective anchorage depth	$h_{ef} < 1,5 \cdot c$	$A_{sp,ef} = (3 \cdot c + s) \cdot h$		[mm ²]			
Effective anchorage depth	$h_{ef} \geq 1,5 \cdot c$	$A_{sp,ef} = (3 \cdot c + s) \cdot (h - h_{ef} + 1,5 \cdot c)$		[mm ²]			
<p>Required splitting area $A_{sp,req}$</p>							
CFBZ3	cracked concrete	$A_{sp,req}$	[mm ²]	13 900	23 700	31 500	42 300
	uncracked concrete	$A_{sp,req}$	[mm ²]	22 500	34 700	41 300	50 200
CFBZ3 A4	cracked concrete	$A_{sp,req}$	[mm ²]	16 900	25 900	29 800	44 300
CFBZ3 HCR	uncracked concrete	$A_{sp,req}$	[mm ²]	19 700	35 700	35 300	54 800

