

# Wedge Anchor BZ3

Steel, zinc plated



Wedge Anchor BZ3

**Range of Loading:** 3,4 kN–34,3 kN  
**Range of concrete quality:** C20/25–C50/60

## Description

Through the combination of the highest approved tensile and shear loads with variable anchorage depths, the newly developed Wedge Anchor BZ3 with European Technical Assessment, sets standards in performance and flexibility of mechanical Expansion anchors.

In many cases, with the same setting depth as before, it allows higher loads, which can be further increased by deeper setting. This can save fixing points or fastenings can be realized, that have not been possible with a wedge 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 spacing 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. Fewer turns until the tightening torque is reached and a colored marking of the minimum anchorage depth enable shorter processing times with higher installation safety.

The BZ3 Wedge Anchor also allows the optional use of the HM cap nut. The HM cap nut prevents, due to the closed form, injuries and allows new design possibilities for architecturally demanding applications.

## Advantages

- The Wedge Anchor with the highest approved loads and variable anchoring depths
- European Technical Assessment in cracked and non-cracked concrete (Option 1), under seismic action of category C1 and C2 and for use in fire (R30 - R120)
- For higher loads under seismic action, the annular gap between the Wedge Anchor BZ3 and the fixture can be filled with MKT adhesive, by using the Filling Washer VS
- 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

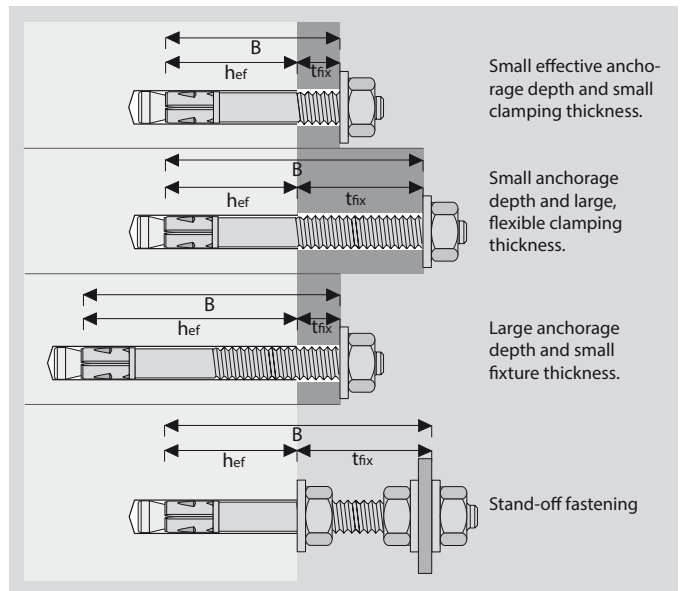


- Coloured marking of the minimum anchorage depth
- Shock approval by the Swiss Federal Office for Civil Protection<sup>1)</sup>

## Applications

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

## Examples of Installation BZ3:



<sup>1)</sup>From standard anchorage depth

**Wedge Anchor BZ3**



- Steel, zinc plated
- Approved for cracked and uncracked concrete
- Variable anchorage depths

Description	Ref. No.	Drill hole-Ø d <sub>0</sub> 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 t <sub>fix,std</sub> mm	Anchorage depth h <sub>ef,std</sub> mm	Fixture thickness t <sub>fix,min</sub> mm	Anchorage depth h <sub>ef,min</sub> mm	Usable length B mm	Fixture thickness t <sub>fix</sub> mm	Depth of drill hole h <sub>1</sub> mm						Setting depth h <sub>nom</sub>
BZ3 M8x60/0-5	20105001	8	-	-	5	35	40	B-hef	hef+10	hef+8	- / -	60	M8x18	100	2,55
BZ3 M8x65/0-10	20110001	8	-	-	10	35	45	B-hef	hef+10	hef+8	✓ / ✓ <sup>1)</sup>	65	M8x23	100	2,71
BZ3 M8x75/0-20	20115001	8	10	45	20	35	55	B-hef	hef+10	hef+8	✓ / ✓ <sup>1)</sup>	75	M8x33	100	3,01
BZ3 M8x80/0-25	20125001	8	15	45	25	35	60	B-hef	hef+10	hef+8	✓ / ✓ <sup>1)</sup>	80	M8x38	100	3,17
BZ3 M8x95/0-40	20140001	8	30	45	40	35	75	B-hef	hef+10	hef+8	✓ / ✓ <sup>1)</sup>	95	M8x53	100	3,64
BZ3 M8x115/5-60	20150001	8	50	45	60	35	95	B-hef	hef+10	hef+8	✓ / ✓ <sup>1)</sup>	115	M8x73	100	4,36
BZ3 M8x165/55-110	20170001	8	100	45	110	35	145	B-hef	hef+10	hef+8	✓ / ✓ <sup>1)</sup>	165	M8x123	50	2,96
BZ3 M10x70/0-10	20205001	10	-	-	10	40	50	B-hef	hef+11	hef+9	✓ / ✓	70	M10x25	50	2,58
BZ3 M10x80/0-20	20210001	10	-	-	20	40	60	B-hef	hef+11	hef+9	✓ / ✓	80	M10x35	50	2,80
BZ3 M10x90/0-30	20215001	10	10	60	30	40	70	B-hef	hef+11	hef+9	✓ / ✓	90	M10x45	50	3,05
BZ3 M10x95/0-35	20220001	10	15	60	35	40	75	B-hef	hef+11	hef+9	✓ / ✓	95	M10x50	50	3,16
BZ3 M10x100/0-40	20225001	10	20	60	40	40	80	B-hef	hef+11	hef+9	✓ / ✓	100	M10x55	50	3,31
BZ3 M10x110/0-50	20230001	10	30	60	50	40	90	B-hef	hef+11	hef+9	✓ / ✓	110	M10x65	50	3,55
BZ3 M10x130/10-70	20235001	10	50	60	70	40	110	B-hef	hef+11	hef+9	✓ / ✓	130	M10x85	50	4,07
BZ3 M10x155/35-95	20250001	10	75	60	95	40	135	B-hef	hef+11	hef+9	✓ / ✓	155	M10x110	50	4,73
BZ3 M10x180/60-120	20260001	10	100	60	120	40	160	B-hef	hef+11	hef+9	✓ / ✓	180	M10x135	50	5,34
BZ3 M12x85/0-10	20305001	12	-	-	10	50	60	B-hef	hef+13	hef+10	✓ / ✓	85	M12x29	25	2,16
BZ3 M12x95/0-20	20310001	12	-	-	20	50	70	B-hef	hef+13	hef+10	✓ / ✓	95	M12x39	25	2,34
BZ3 M12x105/0-30	20313001	12	10	70	30	50	80	B-hef	hef+13	hef+10	✓ / ✓	105	M12x49	25	2,53
BZ3 M12x110/0-35	20315001	12	15	70	35	50	85	B-hef	hef+13	hef+10	✓ / ✓	110	M12x54	25	2,61
BZ3 M12x115/0-40	20320001	12	20	70	40	50	90	B-hef	hef+13	hef+10	✓ / ✓	115	M12x59	25	2,69
BZ3 M12x125/0-50	20325001	12	30	70	50	50	100	B-hef	hef+13	hef+10	✓ / ✓	125	M12x69	25	2,89
BZ3 M12x145/0-70	20330001	12	50	70	70	50	120	B-hef	hef+13	hef+10	✓ / ✓	145	M12x89	25	3,24
BZ3 M12x160/10-85	20335001	12	65	70	85	50	135	B-hef	hef+13	hef+10	✓ / ✓	160	M12x104	25	3,50
BZ3 M12x180/30-105	20340001	12	85	70	105	50	155	B-hef	hef+13	hef+10	✓ / ✓	180	M12x124	25	3,86
BZ3 M12x200/50-125	20345001	12	105	70	125	50	175	B-hef	hef+13	hef+10	✓ / ✓	200	M12x134	25	4,22
BZ3 M16x105/0-5	20505001	16	-	-	5	65	70	B-hef	hef+17	hef+14	✓ / ✓	105	M16x29	20	3,62
BZ3 M16x115/0-15	20510001	16	-	-	15	65	80	B-hef	hef+17	hef+14	✓ / ✓	115	M16x39	20	3,88
BZ3 M16x125/0-25	20515001	16	5	85	25	65	90	B-hef	hef+17	hef+14	✓ / ✓	125	M16x49	20	4,14
BZ3 M16x135/0-35	20520001	16	15	85	35	65	100	B-hef	hef+17	hef+14	✓ / ✓	135	M16x59	20	4,41
BZ3 M16x145/0-45	20525001	16	25	85	45	65	110	B-hef	hef+17	hef+14	✓ / ✓	145	M16x69	20	4,65
BZ3 M16x170/0-70	20530001	16	50	85	70	65	135	B-hef	hef+17	hef+14	✓ / ✓	170	M16x94	20	5,38
BZ3 M16x200/5-100	20535001	16	80	85	100	65	165	B-hef	hef+17	hef+14	✓ / ✓	200	M16x124	10	3,08

<sup>1)</sup>Seismic C1 and C2 for anchorage depth h<sub>ef</sub> ≥ 40mm

**Cap nut HM**



- Steel zinc plated, extra high design
- For visually demanding requirements
- Protection against injuries

Description	Ref. No.	Thread	Cap nut height mm	Width across nut SW	Suitable for	Package content pcs.	Weight per pkg. kg
Cap nut HM M10	56102101	M10	22,0	17	BZ3 M10	20	0,48
Cap nut HM M12	56122101	M12	26,5	19	BZ3 M12	20	0,69

### Wedge Anchor BZ3-U



- Steel, zinc plated
- With large washer DIN EN ISO 7093-1 (DIN 9021)
- Approved for cracked and uncracked concrete
- Variable anchorage depths

Description	Ref. No.	Drill hole-Ø <sub>do</sub> mm	Standard anchorage depth		Minimum anchorage depth		Variable anchorage depth			Seismic C1 / C2	Anchor length l mm	Washer <sup>2)</sup>	Thread	Pkg. content pcs.	Weight per pkg. kg	
			Fixture thickness t <sub>fix,std</sub> mm	Anchorage depth h <sub>ef,std</sub> mm	Fixture thickness t <sub>fix,min</sub> mm	Anchorage depth h <sub>ef,min</sub> mm	Usable length B mm	Fixture thickness t <sub>fix</sub> mm	Depth of drill hole h <sub>i</sub> mm							Setting depth h <sub>nom</sub>
BZ3-U M8x65/0-10	20110301	8	-	-	10	35	45	B-hef	hef+10	hef+8	✓/✓ <sup>1)</sup>	65	24x2	M8x23	100	2,71
BZ3-U M8x75/0-20	20115301	8	10	45	20	35	55	B-hef	hef+10	hef+8	✓/✓ <sup>1)</sup>	75	24x2	M8x33	100	3,01
BZ3-U M8x80/0-25	20125301	8	15	45	25	35	60	B-hef	hef+10	hef+8	✓/✓ <sup>1)</sup>	80	24x2	M8x38	100	3,17
BZ3-U M10x70/0-10	20205301	10	-	-	10	40	50	B-hef	hef+11	hef+9	✓/✓	70	30x2,5	M10x25	50	2,58
BZ3-U M10x80/0-20	20210301	10	-	-	20	40	60	B-hef	hef+11	hef+9	✓/✓	80	30x2,5	M10x35	50	2,80
BZ3-U M10x90/0-30	20215301	10	10	60	30	40	70	B-hef	hef+11	hef+9	✓/✓	90	30x2,5	M10x45	50	3,05
BZ3-U M10x95/0-35	20220301	10	15	60	35	40	75	B-hef	hef+11	hef+9	✓/✓	95	30x2,5	M10x50	50	3,10
BZ3-U M10x100/0-40	20225301	10	20	60	40	40	80	B-hef	hef+11	hef+9	✓/✓	100	30x2,5	M10x55	50	3,31
BZ3-U M10x110/0-50	20230301	10	30	60	50	40	90	B-hef	hef+11	hef+9	✓/✓	110	30x2,5	M10x65	50	3,55
BZ3-U M10x130/10-70	20235301	10	50	60	70	40	110	B-hef	hef+11	hef+9	✓/✓	130	30x2,5	M10x85	50	4,07
BZ3-U M12x85/0-10	20305301	12	-	-	10	50	60	B-hef	hef+13	hef+10	✓/✓	85	37x3	M12x29	25	2,16
BZ3-U M12x95/0-20	20310301	12	-	-	20	50	70	B-hef	hef+13	hef+10	✓/✓	95	37x3	M12x39	25	2,34
BZ3-U M12x105/0-30	20313301	12	10	70	30	50	80	B-hef	hef+13	hef+10	✓/✓	105	37x3	M12x49	25	2,53
BZ3-U M12x115/0-40	20320301	12	20	70	40	50	90	B-hef	hef+13	hef+10	✓/✓	115	37x3	M12x59	25	2,69
BZ3-U M12x125/0-50	20325301	12	30	70	50	50	100	B-hef	hef+13	hef+10	✓/✓	125	37x3	M12x69	25	2,89
BZ3-U M16x145/0-45	20525301	16	25	85	45	65	110	B-hef	hef+17	hef+14	✓/✓	145	50x3	M16x69	20	4,65
BZ3-U M16x170/0-70	20530301	16	50	85	70	65	135	B-hef	hef+17	hef+14	✓/✓	170	50x3	M16x94	20	5,38

<sup>1)</sup>Seismic C1 and C2 for anchorage depth h<sub>ef</sub> ≥ 40mm

<sup>2)</sup>Outer diameter x thickness

### Wedge Anchor-Setting Tool BSW



- Setting Tool for Wedge Anchor M6 – M16
- With SDS plus connection

Description	Ref. No.	Suitable for Wedge Anchor	Length mm	Package content pcs	Weight per pkg. kg
BSW M6-M16	43990101	BZ3/BZ plus/B M6 – M16	140	1	0,13



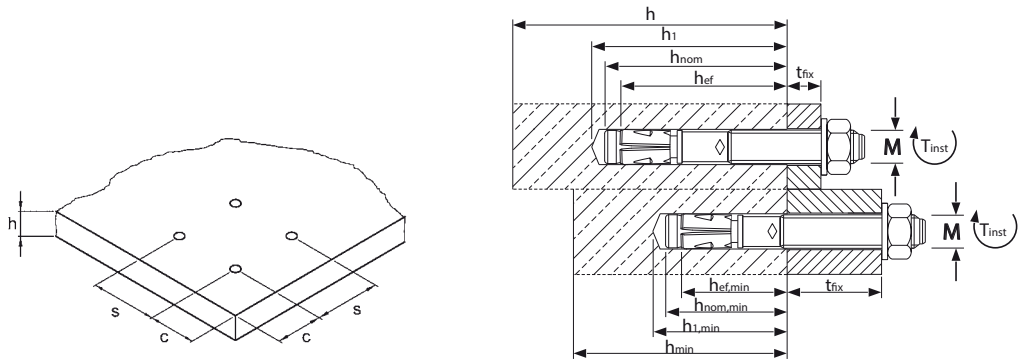
**Extract from Permissible Service Conditions of European Technical Assessment ETA-19/0619 for use in cracked and uncracked concrete (Option 1)**

Approved loads according to EN 1992-4 for single anchors without the influence of spacing and edge distances. The total safety factor ( $\gamma_M$  und  $\gamma_p$ ) is included. Load capacities under fire exposure see page 196.

Loads and performance data		Wedge Anchor BZ3			M8			M10			M12			M16		
Minimum anchorage depth <sup>1)</sup> $h_{ef,min}$		[mm]	35			40				50			65			160
Standard anchorage depth $h_{ef,std}$		[mm]		45			60			70			85			
Maximum anchorage depth $h_{ef,max}$		[mm]			90			100			125					
cracked concrete																
Mean ultimate loads, tension	C20/25	$N_{R,u,m}$	[kN]	10,0	12,2	-	16,4	21,6	-	18,0	27,0	-	29,4	43,9	-	
Mean ultimate loads, shear	C20/25	$V_{R,u,m}$	[kN]	17,4	17,4	-	28,4	28,4	-	40,7	40,7	-	67,2	67,2	-	
Approved loads, tension	C20/25	appr. N	[kN]	3,4	4,5	4,5	4,1	7,1	7,1	5,8	9,6	10,5	8,6	12,9	14,3	
	C25/30	appr. N	[kN]	3,8	5,0	5,0	4,6	7,6	7,6	6,5	10,7	11,7	9,6	14,4	15,4	
	C30/37	appr. N	[kN]	4,2	5,4	5,4	5,1	8,0	8,0	7,1	11,8	12,8	10,5	15,7	16,4	
	C40/50	appr. N	[kN]	4,8	6,1	6,1	5,9	8,6	8,6	8,2	13,6	14,8	12,2	18,1	18,1	
	C50/60	appr. N	[kN]	5,4	6,8	6,8	6,6	9,1	9,1	9,2	15,2	16,6	13,6	19,5	19,5	
uncracked concrete																
Approved loads, tension <sup>1)</sup>	C20/25	appr. N	[kN]	4,9	6,7	6,7	5,9	10,9	11,4	8,3	13,7	14,3	12,3	18,4	23,8	
	C25/30	appr. N	[kN]	5,4	7,4	7,4	6,6	12,2	12,6	9,3	15,3	16,0	13,7	20,5	24,9	
	C30/37	appr. N	[kN]	5,9	8,1	8,1	7,3	13,3	13,7	10,1	16,8	17,5	15,0	22,5	25,9	
	C40/50	appr. N	[kN]	6,9	9,4	9,4	8,4	14,5	14,5	11,7	19,4	20,2	17,4	26,0	27,4	
	C50/60	appr. N	[kN]	7,7	9,4	9,4	9,4	14,5	14,5	13,1	21,4	21,4	19,4	28,7	28,7	
Approved loads, shear	C20/25	appr. V	[kN]	9,0	9,0	9,0	12,9	15,3	15,3	17,4	21,9	21,9	30,9	34,3	34,3	
	$\geq C25/30$	appr. V	[kN]	9,0	9,0	9,0	14,4	15,3	15,3	19,4	21,9	21,9	34,3	34,3	34,3	
uncracked concrete																
Approved loads, shear	C20/25	appr. V	[kN]	9,0	9,0	9,0	15,3	15,3	15,3	21,9	21,9	21,9	34,3	34,3	34,3	
$\geq C25/30$	appr. V	[kN]	9,0	9,0	9,0	15,3	15,3	15,3	21,9	21,9	21,9	34,3	34,3	34,3		
Approved bending moments		appr. M	[Nm]	17,1	17,1	17,1	34,3	34,3	34,3	60,0	60,0	60,0	137,1	137,1	137,1	
<b>Spacing and edge distance<sup>2)</sup></b>																
Effective anchorage depth		$h_{ef}$	[mm]	35	45	90	40	60	100	50	70	125	65	85	160	
Minimum thickness of concrete slab		$h_{min}$	[mm]	80	80	135	80	90	150	100	105	187,5	120	127,5	240	
Minimum spacing		$s_{min}$	[mm]	35	35	35	40	40	40	50	50	50	65	65	65	
Minimum edge distance		$c_{min}$	[mm]	40	40	40	45	45	45	55	55	55	65	65	65	
<b>Installation parameters</b>																
Drill hole diameter		$d_o$	[mm]	8	8	8	10	10	10	12	12	12	16	16	16	
Diameter of clearance hole in the fixture		$d_f \leq$	[mm]	9	9	9	12	12	12	14	14	14	18	18	18	
Drill hole depth		$h_1$	[mm]	45	55	100	51	71	111	63	83	138	82	102	177	
Installation torque		$T_{inst}$	[Nm]	15	15	15	40	40	40	60	60	60	110	110	110	
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		
High of the Cap nut		[mm]	-	-	-	22	22	22	26,5	26,5	26,5	-	-	-		
Outer diameter x washer thickness BZ3		[mm]	16x1,6	16x1,6	16x1,6	20x2	20x2	20x2	24x2,5	24x2,5	24x2,5	30x3	30x3	30x3		
Outer diameter x washer thickness BZ3-U		[mm]	24x2	24x2	24x2	30x2,5	30x2,5	30x2,5	37x3	37x3	37x3	50x3	50x3	50x3		

<sup>1)</sup>Fastenings with anchorage depths  $h_{ef} < 40$ mm are constricted to use of statically indeterminate components under indoor conditions

<sup>2)</sup>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 ETA-19/0619, Table B2.



**Installation**

