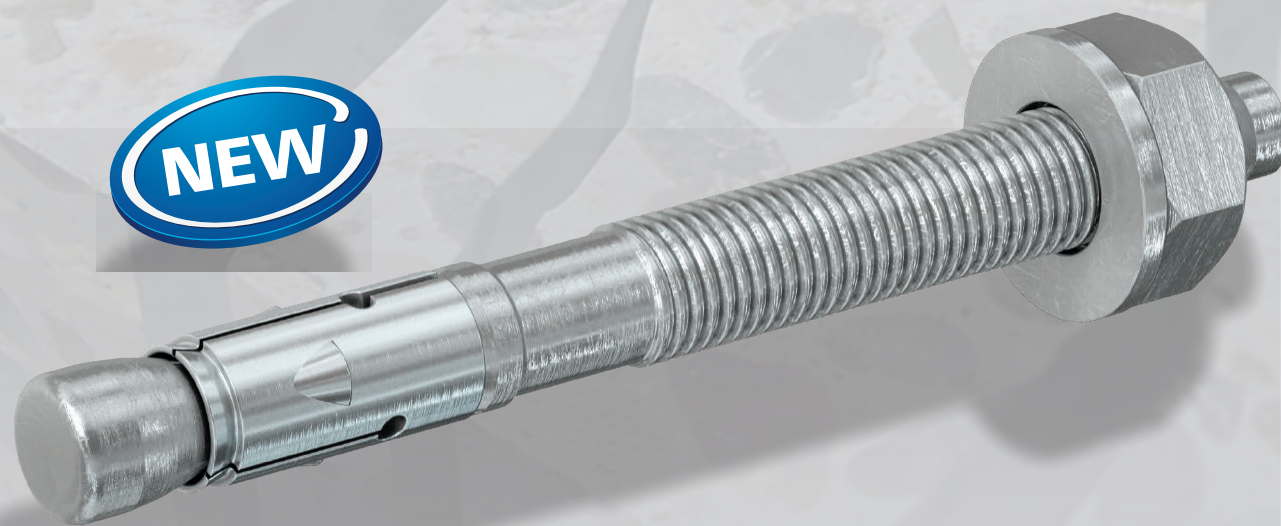
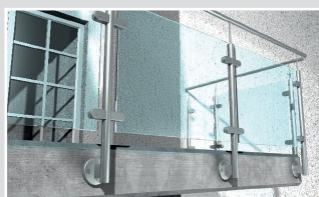


fischer bolt anchor FBZ

The cost-efficient fixing solution
for cracked and non-cracked concrete



- Safe function and easy installation
- For high load capacity and minimum edge distance and axial spacing
- Two anchorage depths for more flexibility and applications
- The assessment document (ETA) covers the use of hollow drills and diamond drills
- Assortment: M8 – M16 available in zinc-plated steel and stainless steel A4



Recommendation

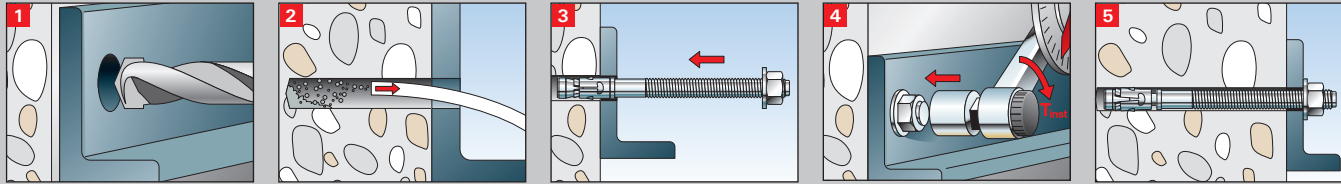


- Suitable for the following building materials:
cracked and non-cracked concrete

Approvals



Push-through installation



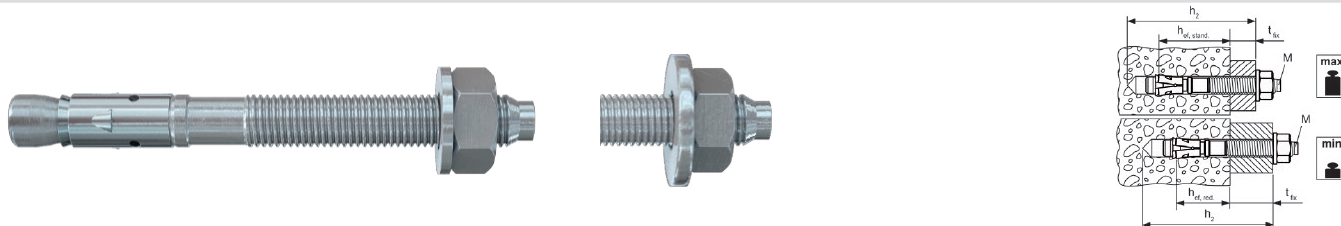
Create drill hole.

Clean drill hole.

Drive in anchor.

Apply installation torque.

Finished!



Assortment bolt anchor FBZ and FBZ GS (with large washer)

Item	Art.-No.		Approval	Drill diameter	Min. drill hole depth for push-through installation	Anchor length	Standard embedment depth with respective usable length		Reduced embedment depth with respective usable length		Washer (outer diameter x thickness)	Thread	Sales unit		
	Steel, zinc-plated	stainless steel					$h_{ef, std.}$	t_{fix}	$h_{ef, red.}$	t_{fix}			\varnothing x length	gvz	A4
gvz	A4	ETA	d_0 [mm]	h_2 [mm]	l [mm]	$h_{ef, std.}$ [mm]	t_{fix} [mm]	$h_{ef, red.}$ [mm]	t_{fix} [mm]	[mm]	[mm]	[pcs]	[pcs]		
FBZ 8/10	543400	543409	■	8	70	75	45	10	35 1)	20	16 x 1.6	M 8 x 38	50	50	
FBZ 10/10	543401	543410	■	10	87	95	60	10	40	30	20 x 2.0	M 10 x 53	50	50	
FBZ 10/20	543402	543411	■	10	97	105	60	20	40	40	20 x 2.0	M 10 x 63	25	50	
FBZ 10/30	543961	543963	■	10	107	115	60	30	40	50	20 x 2.0	M 10 x 73	25	50	
FBZ 12/10	543403	543412	■	12	99	110	70	10	50	10	24 x 2.5	M 12 x 61	20	20	
FBZ 12/20	543404	543413	■	12	109	120	70	20	50	20	24 x 2.5	M 12 x 71	20	20	
FBZ 12/30	543962	543964	■	12	119	130	70	30	50	50	24 x 2.5	M 12 x 81	20	20	
FBZ 16/25	543405	543414	■	16	133	148	85	25	65	45	30 x 3.0	M 16 x 84	10	20	
FBZ 8/10 GS	543406	543415	■	8	70	75	45	10	35 1)	20	22 x 2.5	M 8 x 38	50	50	
FBZ 10/10 GS	543407	543416	■	10	87	95	60	10	40	30	25 x 3.0	M 10 x 53	50	50	
FBZ 10/20 GS	-	543417	■	10	97	105	60	20	40	40	25 x 3.0	M 10 x 63	-	50	
FBZ 12/10 GS	543408	-	■	12	99	110	70	10	50	30	30 x 3.0	M 12 x 61	20	-	

1) With reduced embedment depth only for statically indeterminate systems.



Selection aid – bolt anchor FBZ in comparison to bolt anchor FAZ II

	Bolt anchor FBZ	Bolt anchor FAZ II
Permissible tension load	★★	★★★
Permissible shear load	★★	★★★
Size M6	-	✓
Size M8 – M16	✓	✓
Size M20 – M24	-	✓
Zinc-plated steel	✓	✓
Stainless steel A4	✓	✓
Highly corrosion resistant steel (1.4529)	-	✓
Earthquake (Seismic C1 and C2)	-	✓
ICC approval (for America)	-	✓
Design and information software FIXPERIENCE (C-FIX)	✓	✓
Embedment depths per anchor diameter (M8 – M16)	two	variable
Effective length / clamp thickness	up to 30 mm	up to 300 mm
Drilling of boreholes with hollow drills	✓	✓
Drilling of boreholes with diamond core bits	✓	✓
Application under fire exposure	✓	✓
Cap nut version	-	✓

★★ high | ★★★ very high | ✓ included in assessment

Permissible loads of a single anchor in cracked normal concrete (concrete tension zone) of strength class C20/25 (~B25) 1) 2) 3) 7)										Minimum spacings while reducing the load			
Type	Material fixing element	Min. member thickness h _{min} [mm]	Effective an- chorage depth h _{ef} [mm]	Installation torque T _{inst} [Nm]	Permissible tension load N _{perm} 5) [kN]	Permissible shear load V _{perm} 5) [kN]	Required edge distance (with one edge) for Max. tension load c [mm]		Required spacing for Max. load s _{cr} [mm]	Min. spacing s _{min} [mm]	Min. edge distance c _{min} [mm]		
FBZ 8	gvz.	80	35 4)	20	1.9	6.8	45	175	105	40	45		
	A4		8.8		235								
	gvz.	80	45		2.8	6.8	40	170	135	35	40		
	A4					9.2		235					
	gvz.	100						6.8				150	
A4			9.2	210									
FBZ 10	gvz. / A4	80	40	45	3.3	11.2	45	290	120	40	45		
	gvz.	100	60		4.7	12.2	60	270	180	40	60		
	A4					15.1	340						
	gvz.	120				12.2	45	245			45	310	45
	A4					15.1							
FBZ 12	gvz.	100	50	60	4.7	17.4	55	400	150	50	55		
	A4		18.7		430	210	50	60					
	gvz.	120	17.4		350								
	A4		21.3		75				435				
	gvz.	140	17.4		320				400	55			
A4		21.3											
FBZ 16	gvz. / A4	140	65	110	7.1	28.7	75	545	195	65	65		
	gvz.	140	85		12.3	31.4	115	585	255	80	65		
	A4					32.6		610					
	gvz.	170				31.4		525					
	A4					32.6		545					

Permissible loads of a single anchor in non-cracked normal concrete (concrete compression zone) of strength class C20/25 (~B25) 1) 2) 3)										Minimum spacings while reducing the load			
Type	Material fixing element	Min. member thickness h _{min} [mm]	Effective an- chorage depth h _{ef} [mm]	Installation torque T _{inst} [Nm]	Permissible tension load N _{zul} 5) [kN]	Permissible shear load V _{zul} 5) [kN]	Required edge distance (with one edge) for Max. tension load c [mm]		Required spacing for Max. load s _{cr} [mm]	Min. spacing s _{min} [mm]	Min. edge distance c _{min} [mm]		
FBZ 8	gvz.	80	35 4)	20	1.9	6.8	45	175	105	40	45		
	A4		8.8		235								
	gvz.	80	45		2.8	6.8	40	170	135	35	40		
	A4					9.2		235					
	gvz.	100			6.8	150							
	A4		9.2	210									
FBZ 10	gvz. / A4	80	40	45	3.3	11.2	45	290	120	40	45		
	gvz.	100	60		4.7	12.2	60	270	180	40	60		
	A4					15.1	340						
	gvz.	120				12.2	45	245			45	310	45
	A4					15.1	400						
FBZ 12	gvz.	100	50	60	4.7	17.4	55	400	150	50	55		
	A4		18.7		430	75	210	50	60	55			
	gvz.	120	7.6		17.4						350		
	A4		21.3		435								
	gvz.	140	17.4		320								
	A4		21.3	400									
FBZ 16	gvz. / A4	140	65	110	7.1	28.7	75	545	195	65	65		
	gvz.	140	85		12.3	31.4	115	585	255	65	65		
	A4					32.6		610					
	gvz.	170				31.4		525					
	A4					32.6		545					

For the design the complete assessment ETA-17/0624 has to be considered. 6)

- 1) The partial safety factors for material resistance as regulated in the ETA-17/0624 as well as a partial safety factor for load actions of $\gamma_L = 1.4$ are considered. As an single anchor counts e.g. an anchor with a spacing $s \geq 3 \cdot h_{ef}$ and an edge distance $c \geq 1.5 \cdot h_{ef}$. Accurate data see ETA-17/0624.
- 2) For higher concrete strength classes up to C50/60 higher permissible loads may be possible.
- 3) Drill method Hammer drilling resp. hollow drilling.
- 4) The anchorage depths smaller than 40 mm are only allowed for single anchors as part of a multiple fixing of non-structural systems.

- 5) For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see ETA-17/0624.
- 6) The given loads refer to the European Technical Assessment ETA-17/0624, issue date 08/09/2017. Design of the loads according TR055/ETAG 001, Annex C, Method A (for static resp. quasi-static loads).
- 7) A reinforcement in the concrete to prevent splitting is required. The width of the cracks has to be limited under consideration of the splitting forces at $w_k \sim 0.3$ mm.

fischer FIXPERIENCE. The design and information software suite.



- The modular design program includes engineering software and application modules.
- The software is based on international design standards (ETAG 001 and EC2, such as EC1, EC3 and EC5), including the national application documents. All common force and measurement units are available.
- Incorrect input will be recognized and the software gives tips to get a correct result. This ensures a safe and reliable design every time.
- The graphical display can easily be rotated through 360°, panned, tilted or zoomed as required.
- The 3D display gives a detailed and realistic image.
- The "live update" feature helps to keep the program up to date ensuring you are always working with the latest version.
- Free download and updates at www.fischer.de/fixperience-en

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