

Bolt FBN II

Proven million times and flexible - in price and performance.

OVERVIEW



Bolt FBN II
- zinc-plated steel



Bolt FBN II K
- zinc-plated steel



Bolt anchor FBN II A4
- stainless steel of the corrosion resistance class III, e.g. A4



Bolt anchor FBN II fvz*
- hot-dip galvanised



Bolt FBN II-GS
with large washer,
- zinc-plated steel

Approved for:

- Non-cracked concrete C20/25 to C50/60



European Technical Approval - Option 7 for non-cracked concrete

Also suitable for:

- Concrete C12/15
- Natural stone with dense structure



For fixing of:

- Steel constructions
- Railings
- Consoles
- Ladders
- Cable trays
- Machines
- Staircases
- Gates
- Facades
- Window elements
- Wood constructions

* not part of the approval

DESCRIPTION

- Anchor bolt for push-through and pre-positioned installation.
- When the hexagon nut is tightened, the tapered bolt is pulled into the expansion clip and expands it against the drill hole wall.
- Stainless steel version of the corrosion resistance class III, e.g. A4, for outdoor use and in damp conditions.
- GS version with large washer for timber construction.

Advantages/benefits

- FBN II offers maximum load-bearing capacity in non-cracked concrete – anchoring base can not bear higher loads - is totally utilised.
- Reduced anchorage depth reduces drill time – this saves time and reduces reinforcement hits during drilling.
- Long thread allows stand-off installations and variable usable lengths.
- Diameter 8 to 20 mm also for reduced anchorage depths, e.g. for small loads or if reinforcement is hit.
- Embossed letter on the head for subsequent control of the installation as it indicates the setting depth.



FBN II - ADVANTAGES AT A GLANCE

Twice as good.

Each anchor size can be installed with **standard anchorage depth** or with a second **reduced anchorage depth****.

The washer

The FBN II is available with large and small washer.

The unity of the expansion clip and the cone provides maximum tensile load capacity at very small spacing and edge distances and imparts a good setting feeling.

The long thread is ideal for stand-off fixings and provides best adjusting possibility.

The drive-in pin: It avoids the damage of the thread and possesses a head-marking for the control of the anchorage depth.

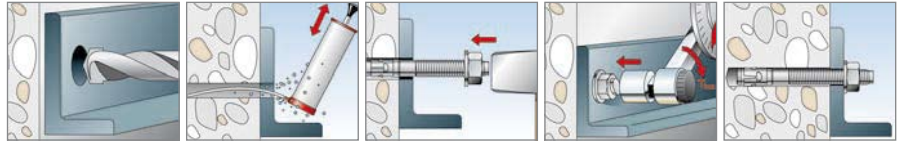
** The short version FBN II K is offered with short anchorage depth only.

- For highest tensile load bearing capacity and shear load bearing capacity (concrete cone failure - anchoring base can not bear higher loads) documented by the European Technical Approval (Option 7) for non-cracked concrete therefore useable for security-relevant fixings.
- Fire resistance class F 120
- Additional to the standard range (to set with standard or reduced anchorage depth) an assortment of short versions (marked with the letter K) is offered only with short anchorage depth. Available in 3 materials: zinc-plated steel, hot-dip galvanised and stainless steel of the corrosion resistance class III, e.g. A4.
- Smallest spacing and edge distances for anchorages near the edge and small anchor plates.
- With head-marking for the control of the anchorage depth.
- High installation comfort: The anchor can be set with a few hammer blows. Just a few rotations of the nut and the anchor is tightened!

INSTALLATION

Type of installation

- Push-trough and pre-positioned installation



Installation tips

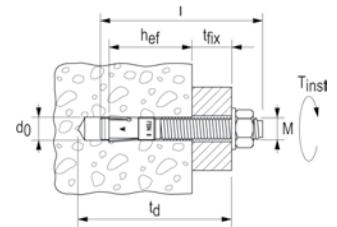
- For series installation we recommend the Anchor bolt setting tool FABS (see page 123) to reduce installation time.
- Before driving in, the hexagon nut should be brought into the optimal installation position (the bolt projects by 2 to 3 mm).

TEch Nic AL DATA



Bolt FBN II,
- zinc-plated steel

Type	Art.No.	Approval	Imprint on head	Drill	Max. usable length		Anchoring depth		Min. drill-hole depth for through fixings	Anchor length	Thread	Washer (outer diameter x thickness)	Qty. per box
					$h_{ef,stand}/h_{ef,red}$	t_{fix}	$h_{ef,stand}/h_{ef,red}$	h_{ef}					
■ ETA													
				d_0 [mm]					t_d [mm]	l [mm]			pcs.
FBN II 6/5	1) 505526	■	A	6	5/-	30 / -	45	50	M 6 x 12	12 x 1,6	100		
FBN II 6/10	1) 505527	■	B	6	10 / -	30 / -	50	55	M 6 x 17	12 x 1,6	100		
FBN II 6/30	1) 505528	■	F	6	30/-	30 / -	70	75	M 6 x 35	12 x 1,6	100		
FBN II 8/5	040662	■	A	8	5/15	40 / 30	61	66	M 8 x 34	16 x 1,6	50		
FBN II 8/10	040664	■	B	8	10/20	40 / 30	66	71	M 8 x 39	16 x 1,6	50		
FBN II 8/20	040669	■	D	8	20/30	40 / 30	76	81	M 8 x 49	16 x 1,6	50		
FBN II 8/30	040700	■	F	8	30/40	40 / 30	86	91	M 8 x 59	16 x 1,6	50		
FBN II 8/50	040771	■	K	8	50/60	40 / 30	106	111	M 8 x 79	16 x 1,6	50		
FBN II 8/70	040777	■	M	8	70/80	40 / 30	126	131	M 8 x 99	16 x 1,6	20		
FBN II 8/100	040783	■	P	8	100/110	40 / 30	156	161	M 8 x 129	16 x 1,6	20		
FBN II 10/10	040827	■	B	10	10/20	50 / 40	78	86	M 10 x 46	20 x 2	50		
FBN II 10/20	040851	■	D	10	20/30	50 / 40	88	96	M 10 x 56	20 x 2	50		
FBN II 10/30	040854	■	F	10	30/40	50 / 40	98	106	M 10 x 66	20 x 2	50		
FBN II 10/50	040855	■	K	10	50/60	50 / 40	118	126	M 10 x 86	20 x 2	20		
FBN II 10/70	040931	■	M	10	70/80	50 / 40	138	146	M 10 x 106	20 x 2	20		
FBN II 10/100	040943	■	P	10	100/110	50 / 40	168	176	M 10 x 136	20 x 2	20		
FBN II 10/140	040944	■	S	10	140/150	50 / 40	208	216	M 10 x 176	20 x 2	20		
FBN II 10/160	040945	■	T	10	160/170	50 / 40	228	236	M 10 x 196	20 x 2	20		
FBN II 12/10	040950	■	B	12	10/25	65 / 50	95	106	M 12 x 59	24 x 2,5	20		
FBN II 12/20	044558	■	D	12	20/35	65 / 50	105	116	M 12 x 69	24 x 2,5	20		
FBN II 12/30	045263	■	F	12	30/45	65 / 50	115	126	M 12 x 79	24 x 2,5	20		
FBN II 12/50	045264	■	K	12	50/65	65 / 50	135	146	M 12 x 99	24 x 2,5	20		
FBN II 12/80	045265	■	N	12	80/95	65 / 50	165	176	M 12 x 129	24 x 2,5	20		
FBN II 12/100	045266	■	P	12	100/115	65 / 50	185	196	M 12 x 149	24 x 2,5	20		
FBN II 12/120	045267	■	R	12	120/135	65 / 50	205	216	M 12 x 169	24 x 2,5	20		
FBN II 12/140	045268	■	S	12	140/155	65 / 50	225	236	M 12 x 189	24 x 2,5	20		
FBN II 12/160	045269	■	T	12	160/175	65 / 50	245	256	M 12 x 189	24 x 2,5	20		
FBN II 16/25	045564	■	E	16	25/40	80 / 65	129	145	M 16 x 89	30 x 3	10		
FBN II 16/50	045565	■	K	16	50/65	80 / 65	154	170	M 16 x 114	30 x 3	10		
FBN II 16/80	045566	■	N	16	80/95	80 / 65	184	200	M 16 x 144	30 x 3	10		
FBN II 16/100	045567	■	P	16	100/115	80 / 65	204	220	M 16 x 164	30 x 3	10		
FBN II 16/140	045568	■	S	16	140/155	80 / 65	244	260	M 16 x 190	30 x 3	10		
FBN II 16/160	045569	■	T	16	160/175	80 / 65	264	280	M 16 x 190	30 x 3	10		
FBN II 16/200	045570	■	V	16	200/215	80 / 65	304	320	M 16 x 100	30 x 3	10		
FBN II 20/30	045573	■	F	20	30/55	105 / 80	165	184	M 20 x 90	37 x 3	10		
FBN II 20/60	045574	■	L	20	60/85	105 / 80	195	214	M 20 x 90	37 x 3	10		
FBN II 20/80	045575	■	M	20	80/105	105 / 80	215	234	M 20 x 90	37 x 3	10		
FBN II 20/120	045576	■	R	20	120/145	105 / 80	255	274	M 20 x 90	37 x 3	10		



1) Use restricted to anchoring of structural components which are statically indeterminate. Nut and washer not assembled.

Bolt FBN II

TECHNICAL DATA

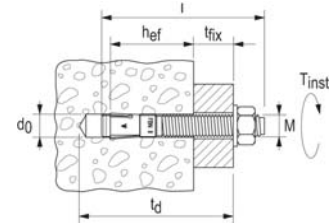


Bolt **FBN II**,
- zinc-plated steel



Bolt **FBN II-GS** with large washer,
- zinc-plated steel

Type	Art.-No.	Approval	Imprint on head	Drill	Max. usable length $h_{ef,stand}/h_{ef,red}$	Anchoring depth $h_{ef,stand}/h_{ef,red}$	Min. drill-hole depth for through fixings	Anchor length	Thread	Washer (outer diameter x thickness)	Qty. per box
		ETA		d_0 [mm]	t_{fix} [mm]	h_{ef} [mm]	t_d [mm]	l [mm]	$[\emptyset \times \text{length}]$	[mm]	pcs.
FBN II 8/5 K	040806	■	-A-	8	5/-	30 / -	51	56	M 8 x 24	16 x 1,6	50
FBN II 8/10 K	040807	■	-B-	8	10/-	30 / -	56	61	M 8 x 29	16 x 1,6	50
FBN II 10/5 K	040946	■	-A-	10	5/-	40 / -	63	71	M 10 x 31	20 x 2	50
FBN II 10/10 K	040947	■	-B-	10	10/-	40 / -	68	76	M 10 x 36	20 x 2	50
FBN II 12/5 K	045272	■	-A-	12	5/-	50 / -	75	86	M 12 x 39	24 x 2,5	20
FBN II 12/10 K	045273	■	-B-	12	10/-	50 / -	80	91	M 12 x 44	24 x 2,5	20
FBN II 12/30 K	045274	■	-F-	12	30/-	50 / -	100	111	M 12 x 64	24 x 2,5	20
FBN II 16/15 K	045571	■	-C-	16	15/-	65 / -	104	120	M 16 x 64	30 x 3	10
FBN II 16/25 K	045572	■	-E-	16	25/-	65 / -	114	130	M 16 x 74	30 x 3	10
FBN II 20/10 K	045577	■	-B-	20	10/-	80 / -	120	139	M 20 x 50	37 x 3	10
FBN II 12/80 GS	045578	■	N	12	80/95	65 / 50	165	176	M 12 x 129	44 x 2,5	20
FBN II 12/100 GS	045579	■	P	12	100/115	65 / 50	185	196	M 12 x 149	44 x 2,5	20
FBN II 12/120 GS	045580	■	R	12	120/135	65 / 50	205	216	M 12 x 169	44 x 2,5	20
FBN II 12/140 GS	045581	■	S	12	140/155	65 / 50	225	236	M 12 x 189	44 x 2,5	10
FBN II 12/160 GS	045583	■	T	12	160/175	65 / 50	245	256	M 12 x 189	44 x 2,5	10
FBN II 12/180 GS	045584	■	U	12	180/195	65 / 50	265	276	M 12 x 100	44 x 2,5	10
FBN II 12/200 GS	045585	■	V	12	200/215	65 / 50	285	296	M 12 x 100	44 x 2,5	10
FBN II 12/250 GS	045586	■	W	12	250/265	65 / 50	335	346	M 12 x 100	44 x 2,5	10
FBN II 16/100 GS	045588	■	P	16	100/115	80 / 65	204	220	M 16 x 164	56 x 3	10
FBN II 16/140 GS	045590	■	S	16	140/155	80 / 65	244	260	M 16 x 190	56 x 3	10
FBN II 16/160 GS	045591	■	T	16	160/175	80 / 65	264	280	M 16 x 160	56 x 3	10
FBN II 16/200 GS	045593	■	V	16	200/215	80 / 65	304	320	M 16 x 190	56 x 3	10
FBN II 16/250 GS	052192	■	W	16	250/265	80 / 65	354	370	M 16 x 100	56 x 3	10
FBN II 16/300 GS	052204	■	X	16	300/315	80 / 65	404	420	M 16 x 100	56 x 3	10



Bolt anchor **FBN II A4**,
- stainless steel of the corrosion
resistance class III, e.g. A4

Type	Art.-No.	Approval	Imprint on head	Drill	Max. usable length $h_{ef,stand}/h_{ef,red}$	Anchoring depth $h_{ef,stand}/h_{ef,red}$	Min. drill-hole depth for through fixings	Anchor length	Thread	Washer (outer diameter x thickness)	Qty. per box
		ETA		d_0 [mm]	t_{fix} [mm]	h_{ef} [mm]	t_d [mm]	l [mm]	$[\emptyset \times \text{length}]$	[mm]	pcs.
FBN II 6/10 A4	1) 505532	■	B	6	10/-	30 / -	50	55	M 6 x 17	12 x 1,6	100
FBN II 6/30 A4	1) 505535	■	F	6	30/-	30 / -	70	75	M 6 x 35	12 x 1,6	100
FBN II 8/10 A4	507555	■	B	8	10/20	40 / 30	66	71	M 8 x 39	16 x 1,6	50
FBN II 8/30 A4	507556	■	F	8	30/40	40 / 30	86	91	M 8 x 59	16 x 1,6	50
FBN II 8/50 A4	507557	■	K	8	50/60	40 / 30	106	111	M 8 x 79	16 x 1,6	50
FBN II 10/10 A4	507558	■	B	10	10/20	50 / 40	78	86	M 10 x 46	20 x 2	50
FBN II 10/20 A4	507559	■	D	10	20/30	50 / 40	88	96	M 10 x 56	20 x 2	50
FBN II 10/30 A4	507560	■	F	10	30/40	50 / 40	98	106	M 10 x 66	20 x 2	50
FBN II 10/50 A4	507561	■	K	10	50/60	50 / 40	118	126	M 10 x 86	20 x 2	20
FBN II 10/100 A4	507562	■	P	10	100/110	50 / 40	168	176	M 10 x 136	20 x 2	20
FBN II 12/10 A4	507563	■	B	12	10/25	65 / 50	95	106	M 12 x 59	24 x 2,5	20
FBN II 12/20 A4	507564	■	D	12	20/35	65 / 50	105	116	M 12 x 69	24 x 2,5	20
FBN II 12/30 A4	507565	■	F	12	30/45	65 / 50	115	126	M 12 x 79	24 x 2,5	20
FBN II 12/50 A4	507566	■	K	12	50/65	65 / 50	135	146	M 12 x 99	24 x 2,5	20
FBN II 12/100 A4	507567	■	P	12	100/115	65 / 50	185	196	M 12 x 149	24 x 2,5	20
FBN II 16/10 A4	507568	■	B	16	10/25	80 / 65	114	130	M 16 x 74	30 x 3	10
FBN II 16/25 A4	507569	■	E	16	25/40	80 / 65	129	145	M 16 x 89	30 x 3	10
FBN II 16/50 A4	507570	■	K	16	50/65	80 / 65	154	170	M 16 x 105	30 x 3	10
FBN II 20/30 A4	507571	■	F	20	30/55	105 / 80	165	184	M 20 x 90	37 x 3	10
FBN II 20/60 A4	507572	■	L	20	60/85	105 / 80	195	214	M 20 x 90	37 x 3	10

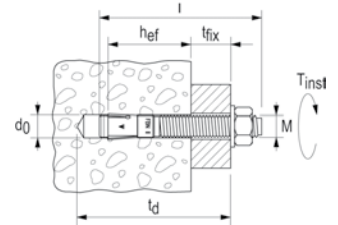
1) Use restricted to anchoring of structural components which are statically indeterminate. Nut and washer not assembled.

TEch NlC AL DATA



Bolt anchor **FBN II A4**,
- stainless steel of the corrosion
resistance class III, e.g. A4

Type	Art.No.	Approval Imprint on head	Drill	Max. usable length $h_{ef,stand}/h_{ef,red}$	Anchoring depth $h_{ef,stand}/h_{ef,red}$	Min. drill-hole depth for through fixings	Anchor length	Thread	Washer (outer diameter x thickness)	Qty. per box
		ETA	d_0 [mm]	t_{fix} [mm]	h_{ef} [mm]	t_d [mm]	l [mm]	$[\emptyset \times \text{length}]$	[mm]	pcs.
FBN II 8/5 K A4	508007	-A-	8	5/-	30 / -	51	56	M 8 x 24	16 x 1,6	50
FBN II 10/5 K A4	508010	-A-	10	5/-	40 / -	63	71	M 10 x 31	20 x 2	50
FBN II 12/5 K A4	508011	-A-	12	5/-	50 / -	75	86	M 12 x 39	24 x 2,5	20
FBN II 16/15 K A4	508745	-C-	16	15/-	65 / -	104	120	M 16 x 64	30 x 3	10



nd washer not assembled.

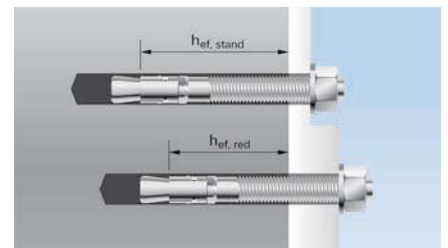


Bolt anchor **FBN II fvz**,
- hot-dip galvanised

Type	Art.No.	Imprint on head	Drill	Max. usable length $h_{ef,stand}/h_{ef,red}$	Anchoring depth $h_{ef,stand}/h_{ef,red}$	Min. drill-hole depth for through fixings	Anchor length	Thread	Washer (outer diameter x thickness)	Qty. per box
			d_0 [mm]	t_{fix} [mm]	h_{ef} [mm]	t_d [mm]	l [mm]	$[\emptyset \times \text{length}]$	[mm]	pcs.
FBN II 8/10 fvz	507575	B	8	10/20	40 / 30	66	71	M 8 x 39	16 x 1,6	50
FBN II 8/30 fvz	507576	F	8	30/40	40 / 30	86	91	M 8 x 59	16 x 1,6	50
FBN II 8/50 fvz	507577	K	8	50/60	40 / 30	106	111	M 8 x 79	16 x 1,6	20
FBN II 8/70 fvz	507578	M	8	70/80	40 / 30	126	131	M 8 x 99	16 x 1,6	50
FBN II 10/10 fvz	507579	B	10	10/20	50 / 40	78	86	M 10 x 46	20 x 2	50
FBN II 10/30 fvz	507580	F	10	30/40	50 / 40	98	106	M 10 x 66	20 x 2	20
FBN II 10/50 fvz	507582	K	10	50/60	50 / 40	118	126	M 10 x 86	20 x 2	20
FBN II 10/100 fvz	507583	P	10	100/110	50 / 40	168	176	M 10 x 136	20 x 2	20
FBN II 12/10 fvz	507589	B	12	10/25	65 / 50	95	106	M 12 x 59	24 x 2,5	20
FBN II 12/30 fvz	507591	F	12	30/45	65 / 50	115	126	M 12 x 79	24 x 2,5	20
FBN II 12/50 fvz	507592	K	12	50/65	65 / 50	135	146	M 12 x 99	24 x 2,5	20
FBN II 12/100 fvz	507596	P	12	100/115	65 / 50	185	196	M 12 x 149	24 x 2,5	10
FBN II 16/25 fvz	507598	E	16	25/40	80 / 65	129	145	M 16 x 89	30 x 3	10
FBN II 16/50 fvz	507553	K	16	50/60	80 / 65	154	170	M 16 x 105	30 x 3	10
FBN II 16/100 fvz	507554	P	16	100/115	80 / 65	204	220	M 16 x 164	30 x 3	10
FBN II 20/30 fvz	508015	F	20	30/55	105 / 80	165	184	M 20 x 90	37 x 3	10
FBN II 8/5 K fvz	508012	-A-	8	5/-	30 / -	51	56	M 8 x 24	16 x 1,6	50
FBN II 10/5 K fvz	508013	-A-	10	5/-	40 / -	63	71	M 10 x 31	20 x 2	50
FBN II 12/5 K fvz	508014	-A-	12	5/-	50 / -	75	86	M 12 x 39	24 x 2,5	20
FBN II 16/15 K fvz	507597	-C-	16	15/-	65 / -	104	120	M 12 x 64	30 x 3	10

Ex AmpLE FBN II 12/30

- Highest Load: standard anchorage depth $h_{ef, stand} = 65$ mm.
Possible useable length up to 30 mm at a permissible tensile load of 12,6 kN.
- Optimum flexibility: reduced anchorage depth $h_{ef, red} = 50$ mm.
Possible useable length up to 45 mm at a reduced tensile load of 8,5 kN.



TEch NlC AL DATA



Setting tool **FABS**

Type	Art.No.	Fits anchor	Qty. per box
FABS	077937	FAZ II, FBN II, EXA from M6 - M12	1

Bolt FBN II

LOADS

permissible loads¹⁾ of single anchors in normal-weight concrete c 20/25²⁾.

For the design the complete approval ETA-07/O2 1 1 (FBN II gvz) resp. ETA-02/0037 (FBN A4) is to be observed.

Anchor type		FBN II M6 ³⁾				FBN II M8				FBN II M10			
		gvz		A4		gvz		A4		gvz		A4	
Effective anchorage depth	h_{ef} [mm]	30		30		30 ³⁾		40		30 ³⁾		40	
Permissible tensile load N_{perm} of one single anchor without edge influence, i.e. edge distance $c \geq 1.5 \times h_{ef}$ and axial spacing $s \geq 3 \times h_{ef}$													
in non-cracked concrete C20/25 ²⁾	N_{perm} [kN]	2,9		2,9		2,9 ³⁾		6,1		2,9 ³⁾		6,1	
Permissible shear load V_{perm} of one single anchor without edge influence, i.e. edge distance $c \geq 10 \times h_{ef}$ and axial spacing $s \geq 3 \times h_{ef}$													
in non-cracked concrete C20/25 ²⁾	V_{perm} [kN]	2,7		3,0		4,0 ³⁾		6,1		4,0 ³⁾		6,1	
Permissible bending moment	M_{perm} [Nm]	4,0		4,6		10,9 ³⁾		13,1		12,0		14,9	
Anchor characteristics													
Characteristic axial spacing	$s_{cr,N}$ [mm]	90		90 ³⁾		120		90 ³⁾		120		120	
Characteristic edge distance	$c_{cr,N}$ [mm]	45		45 ³⁾		60		45 ³⁾		60		75	
Minimum axial spacing	s_{min} [mm]	50		40 ³⁾		40		50 ³⁾		40		50	
Minimum edge distance	c_{min} [mm]	100		40 ³⁾		40		45 ³⁾		45		80	
Minimum structural component thickness	h_{min} [mm]	100				100				100			
Nominal drill diameter	d_0 [mm]	6				8				10			
Drill hole depth	$h_1 \geq$ [mm]	40		46 ³⁾		56		46 ³⁾		56		68	
Clearance-hole in fixture to be attached	$d_f \leq$ [mm]	7				9				12			
Installation torque	T_{inst} [Nm]	4				15		10		30		20	

Anchor type		FBN II M12				FBN II M16				FBN II M20			
		gvz		A4		gvz		A4		gvz		A4	
Effective anchorage depth	[mm]	50		65		50		65		65		80	
Permissible tensile load N_{perm} of one single anchor without edge influence, i.e. edge distance $c \geq 1.5 \times h_{ef}$ and axial spacing $s \geq 3 \times h_{ef}$													
in non-cracked concrete C20/25 ²⁾	N_{zul} [kN]	8,5		12,6		8,5		12,6		12,6		17,2	
Permissible shear load V_{perm} of one single anchor without edge influence, i.e. edge distance $c \geq 10 \times h_{ef}$ and axial spacing $s \geq 3 \times h_{ef}$													
in non-cracked concrete C20/25 ²⁾	V_{zul} [kN]	8,5		12,0		8,5		15,7		22,9		22,9	
Permissible bending moment	M_{zul} [Nm]	45,1		48,6		114,3				123,4			
Anchor characteristics													
Characteristic axial spacing	[mm]	150		195		150		195		195		240	
Characteristic edge distance	[mm]	75		97,5		75		97,5		97,5		120	
Minimum axial spacing	[mm]	70		70		70		70		90		90	
Minimum edge distance	[mm]	100		70		100		70		120		90	
Minimum structural component thickness	[mm]	100		120		100		120		160		120	
Nominal drill diameter	[mm]	12				16				20			
Drill hole depth	[mm]	70		85		70		85		89		104	
Clearance-hole in fixture to be attached	[mm]	14				18				22			
Installation torque	[Nm]	50		35		100				80			

Note: With the fischer Design Software COMPUFIX you can use the full performance of the fischer Bolt FBN and you are able to do designs under individual application conditions.

¹⁾ The partial safety factors for resistance and the partial safety factor for load with $\gamma_F = 1,4$ are considered.

Please observe the design method A (ETAG, annex C) if combined tensile and shear loads, edge influences and influences of spacings of anchor groups are to be considered.

²⁾ The concrete is considered to be normally reinforced or non-reinforced; For higher concrete strength classes an increase in performance of up to 55 % is possible.

³⁾ Use restricted to anchoring of structural components which are statically indeterminate.