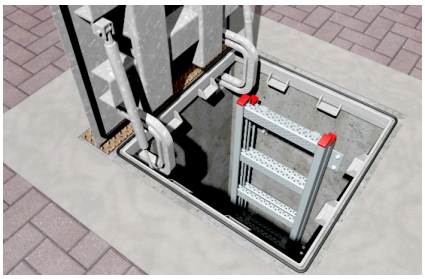
The cost-efficient fixing for flexible use in non-cracked concrete



VERSIONS

- zinc-plated steel
- stainless steel
- hot-dip galvanised steel

BUILDING MATERIALS

Approved for:

- Concrete C20/25 to C50/60, non-cracked

Also suitable for:

- Concrete C12/15
- Natural stone with dense structure

APPROVALS

ETA-07/0211
ETAG 001-2
Option 7 for non-cracked concrete

Fire resistance classification
R 120

EDELSTAHL
Rost frei
INOX
STAINLESS STEEL

ADVANTAGES

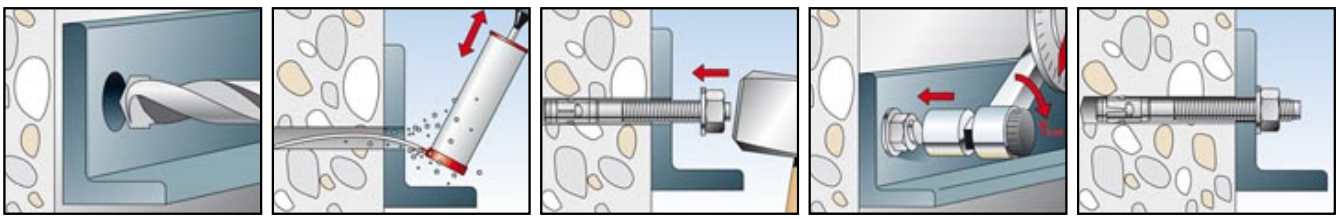
- The standard anchorage depth achieves the maximum load-bearing capacities. Thus fewer fixing points and smaller anchor plates are required.
- The reduced anchorage depth reduces the drill hole depth. This minimises the amount of time needed for installation whilst increasing flexibility.
- The long thread balances component tolerances and allows for stand-off installations, thus increasing flexibility.
- Few hammer blows and the minimal torque slippage allow for a noticeably simpler installation.
- The drive-in pin protects the thread from damage, and thus ensures a faster installation and dismantling of the attachment.

APPLICATIONS

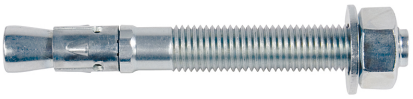
- Steel constructions
- Guard rails
- Consoles
- Ladders
- Cable trays
- Machines
- Staircases
- Gates
- Façades

FUNCTIONING

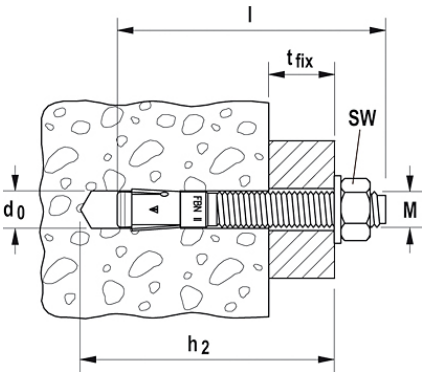
- The FBN II is suitable for pre-positioned and push-through installation; also suitable for stand-off installation under certain conditions.
- Prior to installation, place the hexagon nut in the optimal position (the drive-in pin projects by approx. 3 mm out of the hexagon nut).
- When applying the torque, the cone bolt is pulled into the expansion clip and expands it against the drill hole wall.
- The head embossing offers a simple control of the anchoring.
- In the case of series installation, we recommend using the FABS bolt anchor setting tool.



TECHNICAL DATA



Bolt anchor FBN II



galvanized

Article name	Art.-No.	ETA-approval	Drill hole diameter d_0 [mm]	Anchor length l [mm]	Max. usable length hef,stand/hef,red t_{fix} [mm]
FBN II 6/10	**505527**	■	6	55	10/-
FBN II 6/30	**505528**	■	6	75	30/-
FBN II 6/5	**505526**	■	6	50	5/-
FBN II 8/10	**040664**	■	8	71	10/20
FBN II 8/20	**040669**	■	8	81	20/30
FBN II 8/30	**040700**	■	8	91	30/40
FBN II 8/5	**040662**	■	8	66	5/15
FBN II 8/50	**040771**	■	8	111	50/60
FBN II 8/70	**040777**	■	8	131	70/80
FBN II 8/100	**040783**	■	8	161	100/110
FBN II 10/10	**040827**	■	10	86	10/20
FBN II 10/20	**040851**	■	10	96	20/30
FBN II 10/30	**040854**	■	10	106	30/40
FBN II 10/50	**040855**	■	10	126	50/60
FBN II 10/70	**040931**	■	10	146	70/80
FBN II 10/100	**040943**	■	10	176	100/110
FBN II 10/140	**040944**	■	10	216	140/150
FBN II 10/160	**040945**	■	10	236	160/170
FBN II 12/10	**040950**	■	12	106	10/25
FBN II 12/20	**044558**	■	12	116	20/35
FBN II 12/30	**045263**	■	12	126	30/45
FBN II 12/50	**045264**	■	12	146	50/65
FBN II 12/80	**045265**	■	12	176	80/95
FBN II 12/100	**045266**	■	12	196	100/115
FBN II 12/120	**045267**	■	12	216	120/135
FBN II 12/140	**045268**	■	12	236	140/155
FBN II 12/160	**045269**	■	12	256	160/175
FBN II 16/25	**045564**	■	16	145	25/40
FBN II 16/50	**045565**	■	16	170	50/65
FBN II 16/80	**045566**	■	16	200	80/95
FBN II 16/100	**045567**	■	16	220	100/115
FBN II 16/140	**045568**	■	16	260	140/155
FBN II 16/160	**045569**	■	16	280	160/175
FBN II 16/200	**045570**	■	16	320	200/215
FBN II 20/30	**045573**	■	20	187	30/55
FBN II 20/60	**045574**	■	20	217	60/85
FBN II 20/80	**045575**	■	20	237	80/105
FBN II 20/120	**045576**	■	20	277	120/145

A4

Article name	Art.-No.	ETA-approval	Drill hole diameter d_0 [mm]	Anchor length l [mm]	Max. usable length hef,stand/hef,red t_{fix} [mm]
FBN II 6/10 A4	**505532**	■	6	55	10/-
FBN II 6/30 A4	**505535**	■	6	75	30/-
FBN II 8/10 A4	**507555**	■	8	71	10/20
FBN II 8/30 A4	**507556**	■	8	91	30/40
FBN II 8/50 A4	**507557**	■	8	111	50/60
FBN II 10/10 A4	**507558**	■	10	86	10/20
FBN II 10/20 A4	**507559**	■	10	96	20/30
FBN II 10/30 A4	**507560**	■	10	106	30/40
FBN II 10/50 A4	**507561**	■	10	126	50/60
FBN II 10/100 A4	**507562**	■	10	176	100/110
FBN II 12/10 A4	**507563**	■	12	106	10/25
FBN II 12/20 A4	**507564**	■	12	116	20/35
FBN II 12/20 A4	**507565**	■	12	126	30/45
FBN II 12/20 A4	**507566**	■	12	146	50/65
FBN II 12/100 A4	**507567**	■	12	196	100/115
FBN II 16/10 A4	**507568**	■	16	130	10/25
FBN II 16/25 A4	**507569**	■	16	145	25/40
FBN II 16/50 A4	**507570**	■	16	170	50/65
FBN II 20/30 A4	**507571**	■	20	187	30/55
FBN II 20/60 A4	**507572**	■	20	217	60/85

hot dipped galvanized

Article name	Art.-No.	ETA-approval	Drill hole diameter d_0 [mm]	Anchor length l [mm]	Max. usable length hef,stand/hef,red t_{fix} [mm]
FBN II 8/10 fvz	**507575**		8	71	10/20
FBN II 8/30 fvz	**507576**		8	91	30/40
FBN II 8/50 fvz	**507577**		8	111	50/60
FBN II 8/70 fvz	**507578**		8	131	70/80
FBN II 10/10 fvz	**507579**		10	86	10/20
FBN II 10/30 fvz	**507580**		10	106	30/40
FBN II 10/50 fvz	**507582**		10	126	50/60
FBN II 10/100 fvz	**507583**		10	176	100/110
FBN II 12/10 fvz	**507589**		12	106	10/25
FBN II 12/30 fvz	**507591**		12	126	30/45
FBN II 12/50 fvz	**507592**		12	146	50/65
FBN II 12/100 fvz	**507596**		12	196	100/115
FBN II 16/25 fvz	**507598**		16	145	25/40
FBN II 16/50 fvz	**507553**		16	170	50/65
FBN II 16/100 fvz	**507554**		16	220	100/115
FBN II 20/30 fvz	**508015**		20	187	30/55

LOADS

Bolt anchor FBN II

Highest permissible loads for a single anchor[1] in concrete C20/25[4]

For the design the complete approval ETA - 07/0211 has to be considered.

					Non-cracked concrete			
Type	**Min. effective anchorage depth** $h_{ef,min}$ **[mm]**	**Max. effective anchorage depth** $h_{ef,max}$ **[mm]**	**Min. member thickness** h_{min} **[mm]**	**Installation torque** T_{inst} **[Nm]**	**Permissible tensile load** N_{perm}[3] **[kN]**	**Permissible shear load** V_{perm}[3] **[kN]**	**Min. spacing** s_{min}[2] **[mm]**	**Min. edge distance** c_{min}[2] **[mm]**
FBN II 6[5]		30	100	4,0	2,9	3,4	40	40
FBN II 8[5]	30		100	15,0	2,9	7,1	40	40
		40	100	15,0	6,1	7,6	40	40
FBN II 10	40		100	30,0	6,1	12,0	50	80
		50	100	30,0	8,5	12,0	50	50
FBN II 12	50		100	50,0	8,5	17,9	70	100
		65	120	50,0	12,6	17,9	70	70
FBN II 16	65		120	100,0	12,6	29,0	90	120
		80	160	100,0	17,2	31,5	90	90
FBN II 20	80		160	200,0	17,2	38,3	120	120
		105	200	200,0	25,9	38,3	120	120

[1] The partial safety factors for material resistance as regulated in the approval 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 $s \geq 3 \times h_{ef}$ and an edge distance $c \geq 1,5 \times h_{ef}$. Accurate data see approval.

[2] Minimum possible axial spacings resp. edge distance while reducing the permissible load.

[3] For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

[4] For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

[5] The anchorage depths smaller than 40 mm are only allowed for multiple use for non-structural applications.

LOADS

Bolt anchor FBN II A4

Highest permissible loads for a single anchor[1] in concrete C20/25[4]

For the design the complete approval ETA - 07/0211 has to be considered.

					Non-cracked concrete			
Type	**Min. effective anchorage depth** $h_{ef,min}$ **[mm]**	**Max. effective anchorage depth** $h_{ef,max}$ **[mm]**	**Min. member thickness** h_{min} **[mm]**	**Installation torque** T_{inst} **[Nm]**	**Permissible tensile load** N_{perm}[3] **[kN]**	**Permissible shear load** V_{perm}[3] **[kN]**	**Min. spacing** s_{min}[2] **[mm]**	**Min. edge distance** c_{min}[2] **[mm]**
FBN II 6 A4 [5]		30	100	4,0	2,9	3,0	40	40
FBN II 8 A4 [5]	30		100	10,0	2,9	7,1	50	45
		40	100	10,0	6,1	7,3	40	45
FBN II 10 A4	40		100	20,0	6,1	11,6	50	80
		50	100	20,0	8,5	11,6	70	55
FBN II 12 A4	50		100	35,0	8,5	15,7	70	100
		65	120	35,0	12,6	15,7	70	70
FBN II 16 A4	65		120	80,0	12,6	29,0	90	120
		80	160	80,0	17,2	29,1	120	80
FBN II 20 A4	80		160	150,0	17,2	39,6	140	120
		105	200	150,0	25,9	49,1	120	120

[1] The partial safety factors for material resistance as regulated in the approval 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 $s \geq 3 \times h_{ef}$ and an edge distance $c \geq 1,5 \times h_{ef}$. Accurate data see approval.

[2] Minimum possible axial spacings resp. edge distance while reducing the permissible load.

[3] For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

[4] For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

[5] The anchorage depths smaller than 40 mm are only allowed for multiple use for non-structural applications.