Loads

Bolt anchor FBN II

Permissible loads of a single anchor[1] in normal concrete of strength class C20/25.
For the design the complete assessment ETA-07/0211 of 13.07.202 has to be considered.

					Non-cracked concrete			
	Material/ surface[2]	Effective anchorage depth	Minimum member thickness	Installation torque	Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads			
Type		h_{ef} [mm]	h_{min} [mm]	T_{inst} [Nm]	N_{perm}[3] [kN]	V_{perm}[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]
FBN II 6	gvz	30	100	4	2.9	3.4	40	40
	R	30	100	4	2.9	3.0	40	40
FBN II 8	gvz	30	100	15	2.9	6.9	40	40
	gvz	40	100	15	5.9	7.6	40	40
	R	30	100	10	2.9	6.9	50	45
	R	40	100	10	5.9	7.3	40	45
FBN II 10	gvz	40	100	30	5.9	12.0	50	80
	gvz	50	100	30	8.3	12.0	50	50
	R	40	100	20	5.9	11.6	50	80
	R	50	100	20	8.3	11.6	70	55
FBN II 12	gvz	50	100	50	8.3	17.9	70	100
	gvz	65	120	50	12.3	17.9	70	70
	R	50	100	35	8.3	15.7	70	100
	R	65	120	35	12.3	15.7	70	70
FBN II 16	gvz	65	120	100	12.3	28.2	90	120
	gvz	80	160	100	16.8	31.5	90	90
	R	65	120	80	12.3	28.2	90	120
	R	80	160	80	16.8	29.1	120	80
FBN II 20	gvz	80	160	200	16.8	38.3	120	120
	gvz	105	200	200	25.2	38.3	120	120
	R	80	160	150	16.8	38.6	140	120
	R	105	200	150	25.2	49.1	120	120

[1] Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of $\gamma_L = 1.4$ are considered. As a 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 ETA. For anchorage depths below 40 mm, the use of a single anchor is only permitted as part of multiple fastening of non-structural redundant system.

[2] Further steel grades, versions and technical data see ETA, e.g. for dry internal conditions, galvanised steel (gvz); for damp interiors and for outdoor use, stainless steel (R).

[3] In the case of combinations of tension and shear loads, bending moments with reduced or minimum spacing and edge distances (anchor groups), the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018. We recommend using our anchor design software C-FIX.