

LOADS

Bolt anchor FBN II

zinc plated steel / stainless steel / hot dip galvanised steel

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	Effective anchorage depth	Installation torque	Permissible tensile load	Permissible shear load	Required edge distance (with one edge) for		Required spacing for	Min. spacing	Min. edge distance
		h _{min} [mm]	h _{ef} [mm]	T _{inst} [Nm]	N _{perm} ⁴⁾ [kN]	V _{perm} ⁴⁾ [kN]	Max. tension load c [mm]	Max. shear load c [mm]	Max. Load s [mm]	s _{min} ^{5) 6)} [mm]	c _{min} ^{5) 6)} [mm]
FBN II 6	gvz	100	30 ⁸⁾	4	2,9	3,4	100	60	90	40	40
	A4			4	2,9	3		55			
FBN II 8	gvz	100	30 ⁸⁾	15	2,9	7,1	65	115	90	40	40
	A4			10	2,9	7,1		115		50	45
	gvz	100	40	15	6,1	7,6	95	120	120	40	40
	A4			10		7,3		115			45
	hdg			15		7,6		120			40
FBN II 10	gvz	100	40	30	6,1	12,0	100	190	120	50	80
	A4			20		11,6		185			
	gvz	100	50	30	8,5	12,0	100	185	150	50	50
	A4			20		11,6		180		70	55
	hdg			30		12,0		185		50	50
FBN II 12	gvz	100	50	50	8,5	17,9	145	280	150	70	100
	A4			35		15,7		245			
	gvz	120	65	50	12,6	17,9	145	245	195	70	70
	A4			35		15,7		215			
	hdg			40		17,9		245			
FBN II 16	gvz	120	65	100	12,6	29,0	175	410	195	90	120
	A4			80							
	gvz	160	80	100	17,2	31,5	175	375	240	90	90
	A4			80		29,1		340		120	80
	hdg			70		31,5		375		90	90
FBN II 20	gvz	160	80	200	17,2	38,3	185	455	240	120	120
	A4			150		39,6		470		140	
	gvz	200	105	200	25,9	38,3	185	385	315	120	120
	A4			150		49,1		510			
	hdg			200		38,3		385			

For the design the complete assessment ETA-07/0211 has to be considered. ⁷⁾

- ¹⁾ The partial safety factors for material resistance as regulated in the ETA-07/0211 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-07/0211.
- 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⁾ For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see ETA-07/0211.
- ⁵⁾ Minimum possible axial spacings resp. edge distance while reducing the permissible load.
- ⁶⁾ Minimum possible spacing resp. edge distance while reducing the permissible load for the required minimum member thickness. The combination of minimum edge distance and minimum spacing is not possible. One of both values has to be increased acc. ETA-07/0211.
- ⁷⁾ The given loads refer to the European Technical Assessment ETA-07/0211, issue date 19/05/2016. Design of the loads according ETAG 001, Annex C, Method A (for static resp. quasi-static loads).
- ⁸⁾ Anchoring depth smaller than 40 mm are only approved for statically indeterminate systems.