

Highbond anchor dynamic FHB dyn

zinc-plated steel / high corrosion-resistant steel C

Design values for cyclic fatigue loading ¹⁾ of a single anchor in cracked or non-cracked normal concrete of strength class C20/25 ³⁾										Minimum spacings while reducing the load	
Type	Material fixing element	Effective anchorage depth h_{ef} [mm]	Minimum member thickness h_{min} ⁵⁾ [mm]	Installation torque T_{inst} [Nm]	Design value of tensile load $\Delta N_{Ed,max}$ ²⁾ [kN]	Design value of shear load $\Delta V_{Ed,max}$ ²⁾⁹⁾ [kN]	Required edge distance (with one edge) for		Required spacing for Max. Load s_{cr} ⁶⁾ [mm]	Min. spacing s_{min} ⁵⁾ [mm]	Min. edge distance c_{min} ⁵⁾ [mm]
							Max. tension load ΔN_{Ed} c ⁶⁾⁸⁾ [mm]	Max. shear load ΔV_{Ed} c ⁶⁾ [mm]			
FHB dyn 12 x 100	gvz	100	130	40	14,1	6,7	200	200	300	100	200 ⁴⁾⁷⁾
			200				120	100			100 ⁴⁾
	C / 1.4529		130		11,3	4,4	200	200			200 ⁴⁾⁷⁾
			200				100	100			100 ⁴⁾⁷⁾
FHB dyn 12 x 100 V	gvz	105	130	40	14,1	9,6	200	200	315	100	200 ⁴⁾⁷⁾
			200				105	130			100
FHB dyn 16 x 125	gvz	125	160	60	23,0	11,9	200	200	375	100	200 ⁴⁾⁷⁾
			250				185	145			100
	C / 1.4529		160		15,6	11,9	200	200			200 ⁴⁾⁷⁾
			250				100	145			100 ⁷⁾
FHB dyn 16 x 125 V	gvz	130	160	60	23,0	17,0	200	260	375	100	200 ⁷⁾
			250				170	200			100
FHB dyn 20 x 170	gvz	170	220	100	28,4	17,0	175	190	510	80	80
FHB dyn 24 x 220	gvz	220	440	120	28,9	22,2	180	200	660	180	180 ⁷⁾

For the design the complete approval Z-21.3-1748 has to be considered.

¹⁾ The design values of the cyclic fatigue loading apply for $\geq 5 \times 10^6$ load cycles in accordance with design method I - for unknown static lower load. If the static lower load is known and / or for lower number of load cycles higher load values are possible. The partial safety factors as regulated in the approval are considered. As a single anchor counts e.g. an anchor with a spacing $s \geq 3 \times h_{ef}$. The given load values apply for anchorages in dry and wet concrete and temperatures in the base material up to +50 °C (resp. short-term up to +80 °C) and drill hole cleaning in accordance with the approval.

²⁾ For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) a detailed anchor design is required.

³⁾ For higher concrete strength classes up to C50/60 higher permissible loads may be possible. - see approval. The concrete is assumed to be standard-reinforced.

⁴⁾ Without reduction of the shear load.

⁵⁾ Intermediate values for h_{min} may be applied in accordance with table 5 resp. 7 of the approval Z-21.3-1748 considering the influence on s_{min} and c_{min} .

⁶⁾ A splitting reinforcement, which limits the crack width to $\sim 0,3$ mm considering the splitting forces, is assumed to be available. For an actual edge distance, which is smaller than the characteristic edge distance $c_{cr,N}$ a longitudinal reinforcement of at least diameter 6 mm in the area of the anchorage depth of the anchor must be available.

⁷⁾ Without reduction of the shear load.

⁸⁾ Values apply for predominantly non-static (dynamic) actions. For predominantly static actions differing values can be decisive.

⁹⁾ Valid for pulsating loads. For alternating loads see approval.