Injection system FIS EM Plus dynamic with threaded rod FIS A resp. RG M

Design values for cyclic fatigue loading[1] of a single anchor in cracked or non-cracked normal concrete of strength class C20/25[2]
For the design the complete current assessment ETA-23/0842 of 11.06.2024 has to be considered.

					Cracked concrete				Non-cracked concrete			
	Material / surface	Effective anchorage depth	Minimum member thickness	Installation torque	Design values of tension ($\Delta N_{Ed,max}$) and shear loads ($\Delta V_{Ed,max}$); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads				Design values of tension ($\Delta N_{Ed,max}$) and shear loads ($\Delta V_{Ed,max}$); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads			
Type		h_{ef} [mm]	h_{min} [mm]	T_{inst} [Nm]	$\Delta N_{Ed,max}$ [3] [kN]	$\Delta V_{Ed,max}$ [3] [kN]	s_{min} [3] [mm]	c_{min} [3] [mm]	$\Delta N_{Ed,max}$ [3] [kN]	$\Delta V_{Ed,max}$ [3] [kN]	s_{min} [3] [mm]	c_{min} [3] [mm]
FIS A M 12	8.8	70	100	40	3.8	2.0	55	55	4.5	2.0	55	55
	8.8	110	140	40	4.5	2.0	55	55	4.5	2.0	55	55
	8.8	240	270	40	4.5	2.0	55	55	4.5	2.0	55	55
	R-70	70	100	40	3.8	2.6	55	55	4.9	2.6	55	55
	R-70	110	140	40	4.9	2.6	55	55	4.9	2.6	55	55
	R-70	240	270	40	4.9	2.6	55	55	4.9	2.6	55	55
FIS A M 16	8.8	80	120	60	5.7	3.7	65	65	8.4	3.7	65	65
	8.8	125	170	60	8.4	3.7	65	65	8.4	3.7	65	65
	8.8	320	360	60	8.4	3.7	65	65	8.4	3.7	65	65
	R-70	80	120	60	5.7	4.9	65	65	9.2	4.9	65	65
	R-70	125	170	60	9.2	4.9	65	65	9.2	4.9	65	65
	R-70	320	360	60	9.2	4.9	65	65	9.2	4.9	65	65
FIS A M 20	R-70	90	140	120	8.1	7.6	85	85	14.0	7.6	85	85
	R-70	170	220	120	14.3	7.6	85	85	14.3	7.6	85	85
	R-70	400	450	120	14.3	7.6	85	85	14.3	7.6	85	85
FIS A M 24	R-70	96	160	150	9.9	11.0	105	105	15.4	11.0	105	105
	R-70	210	270	150	20.6	11.0	105	105	20.6	11.0	105	105
	R-70	480	540	150	20.6	11.0	105	105	20.6	11.0	105	105

[1] The design values of the cyclic fatigue loading apply for load cycles > 10^8 in accordance with design method I acc. to TR061 – 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 design standard 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 72 °C). Higher loads are possible at lower temperatures. Drilling method and borehole cleaning according to ETA specifications.

[2] For higher concrete strength classes up to C50/60 higher permissible loads may be possible, see assessment. The concrete is assumed to be standard-reinforced.

[3] In the case of combinations of tensile loads, 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. We recommend using our anchor design software C-FIX.