

Injection system FIS EB with anchor rod FIS A resp. RG M

Permissible loads of a single anchor¹⁾²⁾ in normal concrete of strength class C20/25.
For the design the complete current assessment ETA-15/0440 has to be considered.

Type	Material / surface ³⁾	Effective anchorage depth h_{ef} [mm]	Minimum member thickness h_{min} [mm]	Maximum installation torque $T_{inst,max}$ [Nm]	Cracked concrete				Non-cracked concrete			
					Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads				Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads			
					$N_{perm}^{4)}$ [kN]	$V_{perm}^{4)}$ [kN]	$s_{min}^{4)}$ [mm]	$c_{min}^{4)}$ [mm]	$N_{perm}^{4)}$ [kN]	$V_{perm}^{4)}$ [kN]	$s_{min}^{4)}$ [mm]	$c_{min}^{4)}$ [mm]
FIS A M 8	5.8	60	100	10	3.6	5.1	40	40	7.9	5.1	40	40
	5.8	80	110	10	4.8	5.1	40	40	9.0	5.1	40	40
	5.8	160	190	10	9.0	5.1	40	40	9.0	5.1	40	40
	R-70	60	100	10	3.6	6.0	40	40	7.9	6.0	40	40
	R-70	80	110	10	4.8	6.0	40	40	9.9	6.0	40	40
	R-70	160	190	10	9.6	6.0	40	40	9.9	6.0	40	40
FIS A M 10	5.8	60	100	20	4.5	8.6	45	45	9.0	8.6	45	45
	5.8	90	120	20	6.7	8.6	45	45	13.5	8.6	45	45
	5.8	200	230	20	13.8	8.6	45	45	13.8	8.6	45	45
	R-70	60	100	20	4.5	9.0	45	45	9.0	9.2	45	45
	R-70	90	120	20	6.7	9.2	45	45	13.5	9.2	45	45
	R-70	200	230	20	15.0	9.2	45	45	15.7	9.2	45	45
FIS A M 12	5.8	70	100	40	6.3	12.0	55	55	12.6	12.0	55	55
	5.8	110	140	40	9.9	12.0	55	55	19.7	12.0	55	55
	5.8	240	270	40	20.5	12.0	55	55	20.5	12.0	55	55
	R-70	70	100	40	6.3	12.6	55	55	12.6	13.7	55	55
	R-70	110	140	40	9.9	13.7	55	55	19.7	13.7	55	55
	R-70	240	270	40	21.5	13.7	55	55	22.5	13.7	55	55
FIS A M 16	5.8	80	120	60	7.7	15.3	65	65	16.8	22.3	65	65
	5.8	125	170	60	12.0	22.3	65	65	27.0	22.3	65	65
	5.8	320	360	60	30.6	22.3	65	65	37.6	22.3	65	65
	R-70	80	120	60	7.7	15.3	65	65	16.8	25.2	65	65
	R-70	125	170	60	12.0	23.9	65	65	26.9	25.2	65	65
	R-70	320	360	60	30.6	25.2	65	65	42.0	25.2	65	65
FIS A M 20	5.8	90	140	120	10.8	21.5	85	85	20.0	34.9	85	85
	5.8	170	220	120	20.3	34.9	85	85	40.7	34.9	85	85
	5.8	400	450	120	47.9	34.9	85	85	58.6	34.9	85	85
	R-70	90	140	120	10.8	21.5	85	85	20.0	39.4	85	85
	R-70	170	220	120	20.3	39.4	85	85	40.7	39.4	85	85
	R-70	400	450	120	47.9	39.4	85	85	65.7	39.4	85	85
FIS A M 24	5.8	96	160	150	12.9	30.8	105	105	18.4	44.1	105	105
	5.8	210	270	150	31.4	50.9	105	105	50.3	50.9	105	105
	5.8	480	540	150	71.8	50.9	105	105	84.3	50.9	105	105
	R-70	96	160	150	12.9	30.8	105	105	18.4	44.1	105	105
	R-70	210	270	150	31.4	56.8	105	105	50.3	56.8	105	105
	R-70	480	540	150	71.8	56.8	105	105	94.3	56.8	105	105
FIS A M 30	5.8	120	190	300	18.0	43.1	140	140	25.7	61.6	140	140
	5.8	280	350	300	52.4	80.6	140	140	78.5	80.6	140	140
	5.8	600	670	300	112.2	80.6	140	140	133.8	80.6	140	140
	R-70	120	190	300	18.0	43.1	140	140	25.7	61.6	140	140
	R-70	280	350	300	52.4	90.2	140	140	78.5	90.2	140	140
	R-70	600	670	300	112.2	90.2	140	140	150.1	90.2	140	140

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 $s \geq 3 \times h_{gr}$ and an edge distance $c \geq 1.5 \times h_{gr}$. Accurate data see ETA.

²⁾ The specified loads are valid for anchorages in dry and damp concrete. For temperatures in the anchoring substrate up to 50 °C (resp. short term up to 80 °C). Drill hole cleaning as per specification in the ETA. The factor Ψ_{sus} for sustained load was taken into account with 1.0.

³⁾ 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).

⁴⁾ 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.