

Rebar anchor FRA with injection systems FIS EM Plus, FIS V Plus, FIS VS Plus Low Speed and FIS RC II Low Speed in accordance with rebar theory

Design resistances and permissible loads<sup>1)2)</sup> of single, post-installed Rebar anchors in cracked or non-cracked normal concrete of the strength class C20/25<sup>3)</sup>.

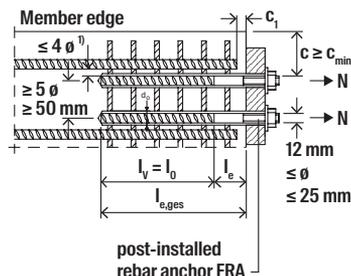
Type	Basic value for anchorage length $l_{b,reqd}$ <sup>4)</sup> [mm]	Maximum anchorage depth $l_{v,max}$ [mm]	Maximum embedment depth $l_{e,ges,max}$ [mm]	Maximum Installation torque $T_{inst}$ [Nm]	Maximum design resistance for axial tension load $N_{Rd,s}$ <sup>5)</sup> [kN]	Maximum permissible tension load $N_{perm,s}$ <sup>5)</sup> [kN]
FRA 12/900 M12	567	800	900	≤ 50	44.3	31.6
FRA 16/1100 M16	756	1000	1100	≤ 100	79.3	56.6
FRA 20/1400 M20	945	1300	1400	≤ 150	123.6	88.3

For planning and design the complete European Technical Assessments ETA-17/1056 (FIS EM Plus), ETA-20/0728 (FIS V Plus resp. FIS VS Plus Low Speed) or ETA-22/0502 (FIS RC II Low Speed) have to be considered. For determination of the installation parameters (minimum concrete cover, distances, etc.) as well as required transverse reinforcement see EN 1992-1-1 and general installation rules of the assessments.

- <sup>1)</sup> The partial safety factors for resistance taken from the European standard EN 1992-1-1 as well as a partial safety factor for action of  $\gamma_F = 1.4$  are considered.
- <sup>2)</sup> With FIS EM Plus, FIS V Plus, FIS VS Plus Low Speed and FIS RC II Low Speed post-installed Rebar anchors are approved in dry or wet concrete with temperatures up to +50 °C (resp. short term up to +80 °C) and drill hole cleaning in accordance with ETA.
- <sup>3)</sup> The ETAs for FIS EM Plus, FIS V Plus, FIS VS Plus Low Speed and FIS RC II Low Speed permit post-installed rebar connections in concrete C12/15 up to C50/60. The above mentioned basic value for anchorage length changes depending on the relevant concrete strength class.
- <sup>4)</sup> Basic value of the anchorage length in accordance with EN 1992-1-1, section 8.4.3 for concrete strength class C20/25 and good bond conditions.
- <sup>5)</sup> For utilisation of the full steel capacity.

General rules of construction

- The Rebar anchor FRA is permitted to transfer tension loads in direction of the axis of the rebar only.
- $l_v$  and  $l_0$  is according to ETA.
- According to ETA it has to be proved that sufficient transverse reinforcement is available.



- $c$  Concrete cover of the post-installed rebar anchor
- $c_1$  Concrete cover of the front side of the existing rebar
- $l_e$  Concrete cover above the welding
- $c_{min}$  Minimum concrete cover acc. to ETA
- $\emptyset$  Diameter of the post-installed rebar anchor
- $l_0$  Lap length
- $l_v$  Effective anchorage depth of the rebar anchor
- $l_{e,ges}$  Embedment depth of the rebar anchor
- $d_0$  Nominal drill diameter

<sup>1)</sup> If the clear distance of the lapped bars is larger than  $4 \times \emptyset$ , EC2 must be applied.