

Rebar anchor FRA with injection systems FIS EM Plus, FIS SB, FIS V Plus und FIS VS Plus LOW SPEED in accordance with rebar theory

Design resistances and permissible loads¹⁾²⁾ of single, post-installed Rebar anchor in cracked or non-cracked normal concrete of the strength class C20/25³⁾.

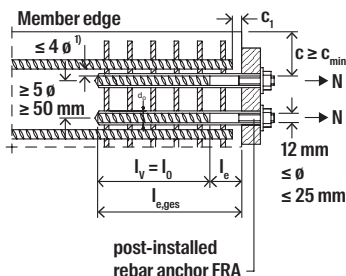
Type	Basic value for anchorage length	Maximum anchorage depth	Maximum embedment depth	Maximum installation torque	Maximum design resistance for axial tension load	Maximum permissible tension load
	$l_{b,rdg}^{4)}$ [mm]	$l_{v,max}$ [mm]	$l_{e,ges,max}$ [mm]	T_{inst} [Nm]	$N_{Rd,s}^{5)}$ [kN]	$N_{zul,s}^{5)}$ [kN]
FRA 12/900 M12	567	800	900	≤ 50	49.2	35.1
FRA 16/1100 M16	756	1000	1100	≤ 100	87.4	62.4
FRA 20/1400 M20	945	1300	1400	≤ 150	136.6	97.6

For planning and design the complete European Technical Assessments ETA-17/1056 (FIS EM Plus), ETA-13/0651 (FIS SB) or ETA-20/0728 (FIS V Plus resp. FIS VS Plus 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.

- ¹⁾ 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 $\gamma_L = 1.4$ are considered.
- ²⁾ With FIS EM Plus, FIS SB or FIS V Plus and FIS V Plus 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.
- ³⁾ The ETAs for FIS EM Plus, FIS SB, FIS V Plus and FIS V Plus 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.
- ⁴⁾ 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.
- ⁵⁾ 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 approval.
- According to approval 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 approval
- \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

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