Loads

Injection system FIS VB with threaded rod FIS A in solid and perforated masonry

Permissible loads[1) 2)] for a single anchor in masonry for pre-positioned installation. In solid bricks and aerated concrete push-trough installation is also possible.
For the design the current European Technical Assessment ETA-26/0280 of 02.09.2026 has to be considered.

Type	Compressive brick strength f_b [N/mm²]	Brick raw density ρ [kg/dm³]	Minimum brick dimensions[3)] (L x B x H) [mm]	Minimum effective anchorage depth h_{ef} [mm]	Minimum member thickness h_{min} [mm]	Maximum Installation torque $T_{inst.max}$ [Nm]	Permissible tensile load[4)] N_{zul} [kN]	Permissible shear load[4)] V_{zul} [kN]	Minimum spacing[5)] $s_{min\parallel}$ / $s_{min\perp}$ [mm]	Minimum resp. char. edge distance[5)] c_{min} / c_{cr} [mm]
Solid brick Mz, acc. to EN 771-1										
M8	≥ 34	≥ 1.7	≥ 250 x 115 x 60	85	115	8	0.86	1.29	255 / 255	130
M10	≥ 34	≥ 1.7	≥ 250 x 115 x 60	85	115	8	1.00	1.29	255 / 255	130
M12	≥ 34	≥ 1.7	≥ 250 x 115 x 60	85	115	8	1.00	1.71	255 / 255	130
Solid sand-lime brick KS, acc. to EN 771-2										
M8	≥ 20	≥ 1.8	≥ 240 x 115 x 113	85	115	5	1.57	2.29	255 / 255	130
M10	≥ 20	≥ 1.8	≥ 240 x 115 x 113	85	115	5	1.29	3.14	255 / 255	130
M12	≥ 20	≥ 1.8	≥ 240 x 115 x 113	85	115	10	1.29	3.43	255 / 255	130
Vertically perforated brick HLz, acc. to EN 771-1[3)]										
M8 with FIS H 12 x 85 K	≥ 20	≥ 0.9	120 x 250 x 120	85	250	2	0.43	0.57	250 / 120	130
M10 with FIS H 16 x 85 K	≥ 20	≥ 0.9	120 x 250 x 120	85	250	4	0.43	0.86	250 / 120	130
M12 with FIS H 20 x 85 K	≥ 20	≥ 0.9	120 x 250 x 120	85	250	4	0.57	1.00	250 / 120	130
Horizontally perforated brick LLz, acc. to EN 771-1[3)]										
M8 with FIS H 12 x 85 K	≥ 6	≥ 0.6	250 x 250 x 120	85	250	1	0.11	0.21	250 / 250	130
M10 with FIS H 16 x 85 K	≥ 6	≥ 0.6	250 x 250 x 120	85	250	3	0.11	0.26	250 / 250	130
M12 with FIS H 20 x 85 K	≥ 6	≥ 0.6	250 x 250 x 120	85	250	3	0.11	0.26	250 / 250	130
Perforated sand-lime brick KSL, acc. to EN 771-2[3)]										
M8 with FIS H 12 x 85 K	≥ 12	≥ 1.2	240 x 115 x 113	85	115	3	0.43	1.29	240 / 115	130
M10 with FIS H 16 x 85 K	≥ 12	≥ 1.2	240 x 115 x 113	85	115	3	0.71	2.57	240 / 115	130
M12 with FIS H 20 x 85 K	≥ 12	≥ 1.2	240 x 115 x 113	85	115	10	0.71	3.14	240 / 115	130
Lightweight concrete hollow block Hbl, acc. to EN 771-3[3)]										
M8 with FIS H 12 x 85 K	≥ 6	≥ 1.0	500 x 200 x 200	85	200	1	0.17	0.86	500 / 200	130
M10 with FIS H 16 x 130 K	≥ 6	≥ 1.0	500 x 200 x 200	130	200	3	0.43	0.86	500 / 200	130
M12 with FIS H 20 x 85 K	≥ 6	≥ 1.0	500 x 200 x 200	85	200	3	0.21	0.43	500 / 200	130
Aerated concrete AAC, acc. EN 771-4[3)]										
M8	≥ 2	≥ 0.35	≥ 630 x 300 x 250	100	300	2	0.27	0.43	300 / 300	150
	≥ 4	≥ 0.50	≥ 500 x 240 x 250	100	240	2	0.54	1.07	300 / 300	150
	≥ 6	≥ 0.65	≥ 500 x 240 x 250	200	240	4	0.71	1.79	600 / 600	300
M10	≥ 2	≥ 0.35	≥ 630 x 300 x 250	100	300	2	0.27	0.54	300 / 300	150
	≥ 4	≥ 0.50	≥ 500 x 240 x 250	100	240	2	0.43	1.43	300 / 300	150
	≥ 6	≥ 0.65	≥ 500 x 240 x 250	200	240	4	0.71	2.14	600 / 600	300
M12	≥ 2	≥ 0.35	≥ 630 x 300 x 250	100	300	2	0.43	0.71	300 / 300	150
	≥ 4	≥ 0.50	≥ 500 x 240 x 250	100	240	2	1.07	2.14	300 / 300	150
	≥ 6	≥ 0.65	≥ 500 x 240 x 250	200	240	4	1.79	3.57	600 / 600	300

1) The required partial safety factors for material resistance as well as a partial safety factor for load actions of γ_L = 1.4 are considered. Load values are valid for zinc-plated steel gvz, stainless steel R and highly corrosion-resistant steel HCR. In perforated bricks and hollow blocks threaded rod FIS A in combination with anchor sleeve FIS H K.

2) The given loads are valid for installation and use of fixations in dry masonry - use category d/d - for temperatures in the substrate up to 50 °C (resp. short term up to 80 °C) and drill hole cleaning according to assessment. The given brick types in combination with the permissible loads are an extract of the assessment.

3) More information about, e.g. hole patterns, assortment of anchor sleeves FIS H K see ETA.

4) In the case of combinations of tensile and shear loads, bending moments and reduced edge and axial spacings (anchor groups), the design must be carried out in accordance with the provisions of the complete assessment.

5) Feasible spacing resp. edge distance. Details as well as to the distances to joints see assessment.