

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

Permissible loads¹⁾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 complete current European Technical Assessment ETA-21/0267 of 14.11.2024 has to be considered.

Type	Compressive brick strength	Brick raw density	Minimum brick dimensions ³⁾	Effective anchor-age depth	Minimum member thickness	Maximum installation torque	Permissible tensile load ⁴⁾	Permissible shear load ⁴⁾	Minimum-spacing ⁵⁾	Minimum resp. char. edge distance ⁵⁾
	f_b [N/mm ²]	ρ [kg/dm ³]	(L x W x H) [mm]	h_{ef} [mm]	h_{min} [mm]	$T_{inst,max}$ [Nm]	N_{perm} [kN]	V_{perm} [kN]	$s_{min} \parallel / s_{min} \perp$ [mm]	c_{min} / c_{cr} [mm]
Solid brick Mz, acc. to EN 771-1										
M8	≥ 36	≥ 2.0	230 x 108 x 55	50	108	10	0.43	0.71	100 / 100	100
M10	≥ 36	≥ 2.0	230 x 108 x 55	80	110	10	0.57	1.29	100 / 100	100
M12	≥ 48	≥ 2.0	230 x 108 x 55	80	110	10	0.71	1.43	100 / 100	100
M16	≥ 36	≥ 2.0	230 x 108 x 55	80	110	10	1.00	1.29	100 / 100	100
M16	≥ 48	≥ 2.0	230 x 108 x 55	80	110	10	1.14	1.43	100 / 100	100
Solid sand-lime brick KS, acc. to EN 771-2										
M8	≥ 12	≥ 2.0	240 x 115 x 71	80	115	8	0.43	1.00	100 / 100	100
M10	≥ 12	≥ 2.0	240 x 115 x 71	80	115	10	0.86	1.29	100 / 100	100
M12	≥ 12	≥ 2.0	240 x 115 x 71	80	115	10	0.86	1.14	100 / 100	100
M16	≥ 12	≥ 2.0	240 x 115 x 71	80	115	10	0.43	1.14	100 / 100	100
Vertically perforated brick Hlz, acc. to EN 771-3³⁾										
M8 with FIS H 12 x 85 K	≥ 16	≥ 1.6	230 x 108 x 55	85	115	5	0.43	1.43	100 / 60	100
M8 / M10 with FIS H 16 x 130 K	≥ 16	≥ 1.6	230 x 108 x 55	130	160	5	0.71	1.43	100 / 60	100
M12 / M16 with FIS H 20 x 130 K	≥ 16	≥ 1.6	230 x 108 x 55	130	160	5	0.71	1.43	100 / 60	100
Perforated sand-lime brick KSL, acc. to EN 771-2³⁾										
M8 with FIS H 12 x 85 K	≥ 16	≥ 1.6	240 x 175 x 113	85	175	8	0.34	1.00	100 / 100	100
M8 / M10 with FIS H 16 x 130 K	≥ 16	≥ 1.6	240 x 175 x 113	130	175	8 / 10	1.00	1.14	100 / 100	100
M12 / M16 with FIS H 20 x 85 K	≥ 16	≥ 1.6	240 x 175 x 113	85	175	10	0.43	1.86	100 / 100	100
Lightweight concrete hollow block Hbl, acc. EN 771-3³⁾										
M8 / M10 with FIS H 16 x 85 K	≥ 2	≥ 1.0	500 x 200 x 200	85	200	2	0.09	0.43	100 / 100	100
M12 / M16 with FIS H 20 x 130 K	≥ 4	≥ 1.0	500 x 200 x 200	130	200	2	0.17	0.57	100 / 100	100
Aerated concrete AAC, acc. EN 771-4³⁾										
M8	≥ 2.5	≥ 0.35	-	100	130	2	0.32	0.43 / 0.89 ⁶⁾	100 / 100	100 / 250
M10	≥ 2.5	≥ 0.35	-	100	130	2	0.32	0.43 / 0.89 ⁶⁾	100 / 100	100 / 250
M12	≥ 2.5	≥ 0.35	-	100	130	2	0.43	0.43 / 0.89 ⁶⁾	100 / 100	100 / 250
M16	≥ 2.5	≥ 0.35	-	100	130	2	0.54	0.43 / 0.89 ⁶⁾	100 / 100	100 / 250

¹⁾ The required partial safety factors for material resistance as well as a partial safety factor for load actions of $\gamma_l = 1.4$ 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 ETA. The given brick types in combination with the permissible loads are an extract of the ETA.

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 ETA.

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

⁶⁾ With Characteristic edge distance $C_{cr} = 250$ mm.