

Concrete screw UltraCut FBS II

Recommended loads¹⁾³⁾ for a single anchor or a fixing point⁴⁾⁵⁾⁶⁾ in solid brick masonry.

Type			FBS II 8	FBS II 10
Anchorage depth	h_{nom}	[mm]	65	85
Recommended loads (F_{rec}) in the respective base material ²⁾³⁾				
Solid clay brick (EN771-1) $\geq 240 \times 113 \times 115$ mm	$f_b \geq 12$	[kN]	1.1 ¹⁰⁾	1.4 ¹⁰⁾
Solid clay brick (EN771-1) $\geq 240 \times 113 \times 115$ mm	$f_b \geq 20$	[kN]	1.6 ⁷⁾¹⁰⁾	1.6 ⁷⁾¹⁰⁾
Solid sand-lime brick (EN771-2) $\geq 240 \times 71 \times 115$ mm	$f_b \geq 12$	[kN]	1.2 ⁷⁾¹⁰⁾	1.2 ⁷⁾¹⁰⁾
Aerated concrete (EN771-4) $\geq 499 \times 249 \times 120$ mm	$f_b \geq 6$	[kN]	0.7	0.9
Minimum spacing (s_{min}) and edge distances (c_{min})				
Minimum spacing within anchor groups of 2 or 4 anchors	s_{min}	[mm]	80	80
Minimum spacing between single anchors or anchor groups	s_{min}	[mm]	80	80
Minimum distance to the horizontal joint	$c_{min,v}$ ⁸⁾	[mm]	20	20
Minimum distance to the vertical joint	$c_{min,h}$ ⁸⁾	[mm]	40	40
Minimum distance to the free edge	$c_{min, free edge}$ ⁸⁾	[mm]	200	200
Tightening torque ⁹⁾ ($T_{tighten}$) in respective base material				
Solid clay brick ¹⁰⁾	$T_{tighten}$	[Nm]	10	10
Solid sandlime brick ¹⁰⁾	$T_{tighten}$	[Nm]	15	15
Aerated concrete	$T_{tighten}$	[Nm]	5	5

¹⁾ An appropriate safety factor is considered.

²⁾ The given loads apply to the given brick measures for masonry with superimposed load. Larger brick formats are at least equivalent in case of the loads. Base material f_b in [N/mm²].

³⁾ The loads only apply to multiple fixings of non-load-bearing systems and are valid for tensile load, shear load and oblique load under any angle.

⁴⁾ To confirm the given technical data, it is recommended to carry out tests on the construction site. In case of not visible joints a 100% testing of the anchors is recommended as the concrete screws only work in the brick but not in mortar joints.

⁵⁾ A fixing point can be a single anchor, 2 anchors or 4 anchors with a minimum spacing s_{min} . Anchor groups of 4 anchors are arranged in rectangular disposition.

⁶⁾ The fixing points have to be arranged in this way that there will be always maximum one fixing point arranged in one brick.

⁷⁾ Brick pull-out is decisive.

⁸⁾ The values $c_{min,v}$ and $c_{min,h}$ are only valid if the mortar joints are filled proper. Otherwise the joints has to be considered as free edges and $c_{min, free edge}$ is decisive. Minimum mortar strenght is M 2.5.

⁹⁾ The screw is screwed in with a cordless screwdriver, an impact screwdriver or by hand. The screwing process must be finished immediately when the screw head is in contact with the assembled object. The specified tightening torque must then be applied with a torque wrench.

¹⁰⁾ The values are valid for unperforated solid bricks.

Concrete screw Ultracut FBS II US hexagon head with integral washer and FBS II SK countersunk head

Permissible loads of a single anchor¹⁾ in normal concrete of strength class C20/25.

For the design the complete current assessment ETA-15/0352 has to be considered.

Type	Material/ surface	Screw-in depth h_{nom} [mm]	Minimum member thickness h_{min} [mm]	Instal- lation torque $T_{imp, max}^{2)}$ [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			
					$N_{perm}^{3)}$ [kN]	$V_{perm}^{3)}$ [kN]	$s_{min}^{3)}$ [mm]	$c_{min}^{3)}$ [mm]	$N_{perm}^{3)}$ [kN]	$V_{perm}^{3)}$ [kN]	$s_{min}^{3)}$ [mm]	$c_{min}^{3)}$ [mm]
FBS II 6	gvz	40	80	450	1.2	4.3	35	35	3.8	4.3	35	35
	gvz	45	90	450	1.7	4.3	35	35	4.8	4.3	35	35
	gvz	50	90	450	1.9	4.3	35	35	5.7	4.3	35	35
	gvz	55	100	450	2.4	6.3	35	35	6.4	6.3	35	35
FBS II 8	gvz / CP	50	100	600	2.9	4.1	35	35	5.9	5.9	35	35
	gvz / CP	65	120	600	5.7	9.0	35	35	8.8	9.0	35	35
FBS II 10	gvz / CP	55	100	650	4.3	4.6	40	40	6.6	6.6	40	40
	gvz / CP	65	120	650	5.7	11.9	40	40	8.5	14.0	40	40
	gvz / CP	85	140	650	9.2	16.6	40	40	13.1	16.6	40	40
FBS II 12	gvz / CP	60	110	650	5.3	10.6	50	50	7.5	15.1	50	50
	gvz / CP	75	130	650	7.6	15.2	50	50	10.9	15.2	50	50
	gvz / CP	100	150	650	12.0	20.3	50	50	17.1	20.3	50	50
FBS II 14	gvz / CP	65	120	650	5.8	11.6	60	60	8.3	16.6	60	60
	gvz / CP	85	140	650	9.0	18.0	60	60	12.8	22.1	60	60
	gvz / CP	115	180	650	14.7	29.4	60	60	21.0	29.4	60	60

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

²⁾ Maximum allowable torque for installation with any tangential impact screw driver. Further technical data see ETA.

³⁾ 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.