

Concrete screw UltraCut FBS II 8-14

The high-performance concrete screw for absolute installation ease

4



Banisters



Inclined supports

Applications

- Guard rails
- Consoles/base plates
- Metal profiles
- Steel constructions
- Façades
- Protection barriers
- Results/beam anchors
- Shuttering props (only FBS II zinc-plated steel)
- Temporary anchoring, e.g. of building site equipment (only FBS II zinc-plated steel)
- Concrete-concrete connections (e.g. strengthening of bridges, parking garages or renovation of buildings)

Advantages

- With up to 3 embedment depths, the UltraCut FBS II allows for the same screw to be used for different component thicknesses.
- Unique saw-tooth geometry cuts quickly into the concrete – also in multiple use and reinforced concrete.
- The performance categories seismic C1 and C2 ensure that the strictest of safety standards and earthquake specifications can be fulfilled.
- In comparison to the usually available systems (with mortar) for the reinforcement

of existing concrete structures, the ETA-certified FBS II system with the optional setting tool SC-ST saves time and costs.

- The high coating quality of the FBS II CP is proved through the salt spray chamber test over 2,000h.
- For the zinc-plated steel version the checking gauge allows for reuse covered by the approval.
- The specially hardened red tip of the stainless steel R version provides faster and more secure installation.

Certificates



ETA-15/0352, for cracked concrete
ETA-17/0740, for cracked concrete
ETA-20/0321, for strengthening of existing concrete structures by concrete overlay



Fire resistance classification R120



INOX STAINLESS STEEL

Building materials

- Approved for:
- Concrete C20/25 to C50/60, cracked and non-cracked
 - Strengthening of existing concrete structures with top layer concrete
- Also suitable for:
- Concrete C12/15
 - Solid building materials
 - Masonry with dense structure

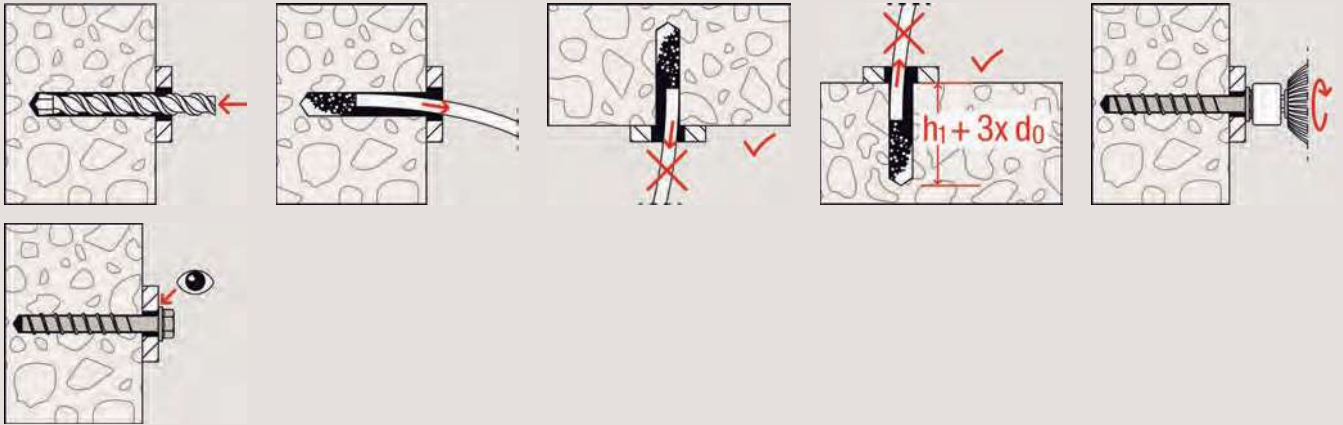
Versions

- Zinc-plated steel
- Stainless steel R
- Corrosion protection coating (CP)

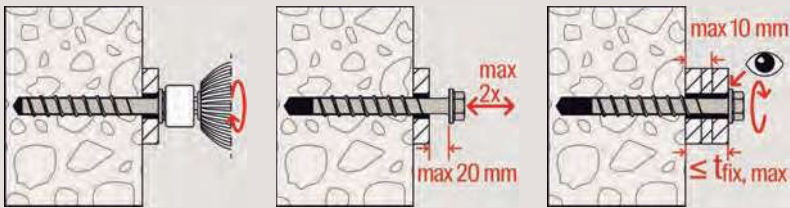
Functioning

- The UltraCut FBS II is recommended for the push-through installation.
- Drill holes do not need to be cleaned during vertical installation (ceiling and floor). For floor fixings the hole must be drilled 3x drill hole diameter deeper.
- The approved adjustment for the concrete screws allows the screw to be unscrewed twice for a total length of 20 mm, to place maximum 10 mm packing below the base plates or to align the attached part.
- We recommend using the fischer impact wrench FSS 18V with a suitable impact screwdriver socket or an internal torx drive.
- The screw is installed correctly when the screw head sits flush on the fixture (visual setting control).
- For the installation of restructuring of existing concrete structures by concrete overlay, the setting tool SC-ST can be used for a faster installation.

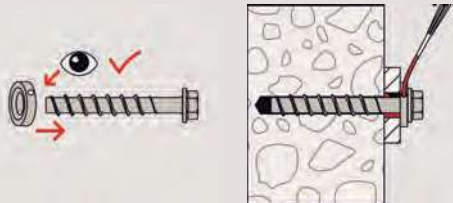
Installation UltraCut FBS II



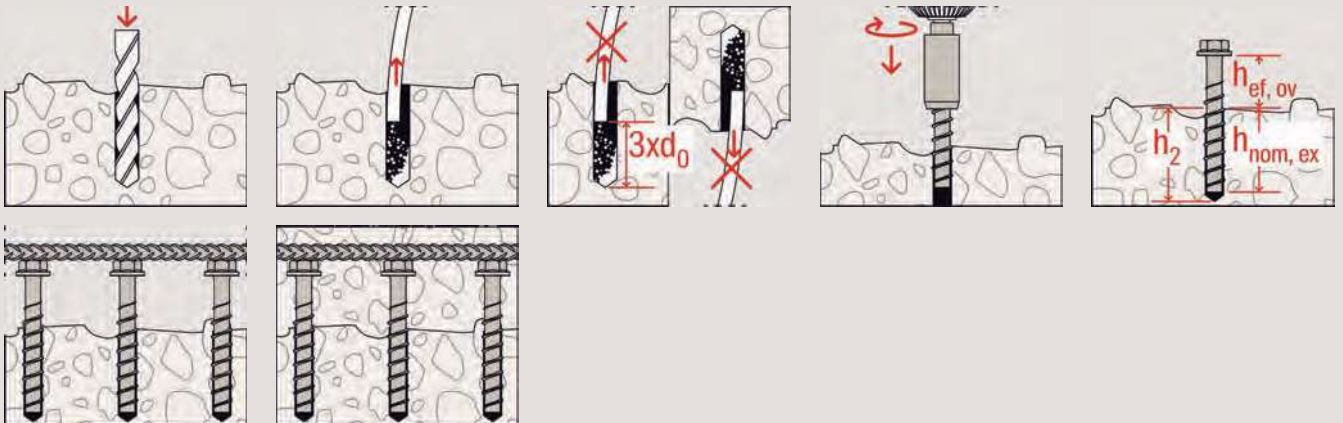
Fixture adjustment

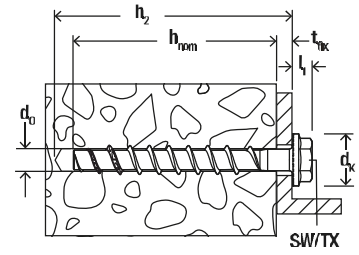


Additional for seismic applications



Installation UltraCut FBS II (concrete-concrete connection)





Technical data

Concrete screw UltraCut FBS II US

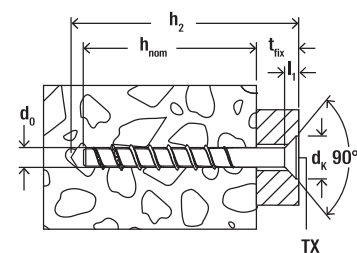


UltraCut FBS II US

UltraCut FBS II CP US

4

Item	Zinc-plated steel	Corrosion protection coating	Approval	Drill hole diameter	Min. drill hole depth for through fixings	Screw	Screw-in depth with fixture thickness	Screw-in depth with fixture thickness	Screw-in depth with fixture thickness	Drive	Sales unit
	Item No.	Item No.	ETA	d_0 [mm]	h_2 [mm]	$d_a \times l_s$ [mm]	h_{nom1} / t_{fix} [mm]	h_{nom2} / t_{fix} [mm]	h_{nom3} / t_{fix} [mm]		[pcs]
FBS II 8x55 5/- US TX	536851	557781	●	8	65	10 x 55	50 / 5	- / -	- / -	TX40/SW13	50
FBS II 8x70 20/5 US TX	536852	557782	●	8	80	10 x 70	50 / 20	- / -	65 / 5	TX40/SW13	50
FBS II 8x80 30/15 US TX	536853	557783	●	8	90	10 x 80	50 / 30	- / -	65 / 15	TX40/SW13	50
FBS II 8x90 40/25 US TX	536854	557784	●	8	100	10 x 90	50 / 40	- / -	65 / 25	TX40/SW13	50
FBS II 8x100 50/35 US TX	536855	557785	●	8	110	10 x 100	50 / 50	- / -	65 / 35	TX40/SW13	50
FBS II 8x110 60/45 US TX	536856	—	●	8	120	10 x 110	50 / 60	- / -	65 / 45	TX40/SW13	50
FBS II 8x130 80/65 US TX	536857	—	●	8	140	10 x 130	50 / 80	- / -	65 / 65	TX40/SW13	50
FBS II 8x150 100/85 US TX	558219	—	●	8	160	10 x 150	50 / 100	- / -	65 / 85	TX40/SW13	50
FBS II 8x170 120/105 US TX	558220	—	●	8	180	12 x 60	50 / 120	- / -	65 / 105	TX40/SW13	50
FBS II 8x190 140/125 US TX	558221	—	●	8	200	10 x 190	50 / 140	- / -	65 / 125	TX40/SW13	50
FBS II 10x60 5/-/- US	536858	557786	●	10	70	12 x 60	55 / 5	- / -	- / -	SW 15	50
FBS II 10x70 15/5/- US	536859	557787	●	10	80	12 x 70	55 / 15	65 / 5	- / -	SW 15	50
FBS II 10x80 25/15/- US	536860	557788	●	10	90	12 x 80	55 / 25	65 / 15	- / -	SW 15	50
FBS II 10x90 35/25/5 US	536861	557789	●	10	100	12 x 90	55 / 35	65 / 25	85 / 5	SW 15	50
FBS II 10x100 45/35/15 US	536862	557790	●	10	110	12 x 100	55 / 45	65 / 35	85 / 15	SW 15	50
FBS II 10x120 65/55/35 US	536863	557791	●	10	130	12 x 120	55 / 65	65 / 55	85 / 35	SW 15	50
FBS II 10x140 85/75/55 US	536864	557792	●	10	150	12 x 140	55 / 85	65 / 75	85 / 55	SW 15	50
FBS II 10x160 105/95/75 US	536865	557793	●	10	170	12 x 160	55 / 105	65 / 95	85 / 75	SW 15	50
FBS II 10x200 145/135/115 US	536866	—	●	10	210	12 x 200	55 / 145	65 / 135	85 / 115	SW 15	20
FBS II 10x230 175/165/145 US	536867	—	●	10	240	12 x 230	55 / 175	65 / 165	85 / 145	SW 15	20
FBS II 10x260 205/195/175 US	536868	—	●	10	270	12 x 260	55 / 205	65 / 195	85 / 175	SW 15	20
FBS II 10x280 225/215/195 US	558222	—	●	10	290	12 x 280	55 / 225	65 / 215	85 / 195	SW 15	20
FBS II 12x70 10/-/- US	536869	—	●	12	80	14 x 70	60 / 10	- / -	- / -	SW 17	20
FBS II 12x85 25/10/- US	536870	557794	●	12	95	14 x 85	60 / 25	75 / 10	- / -	SW 17	20
FBS II 12x110 50/35/10 US	536871	557795	●	12	120	14 x 110	60 / 50	75 / 35	100 / 10	SW 17	20
FBS II 12x130 70/55/30 US	536872	—	●	12	140	14 x 130	60 / 70	75 / 55	100 / 30	SW 17	20
FBS II 12x150 90/75/50 US	536873	—	●	12	160	14 x 150	60 / 90	75 / 75	100 / 50	SW 17	20
FBS II 12x170 110/95/70 US	558223	—	●	12	180	14 x 170	60 / 110	75 / 95	100 / 70	SW 17	20
FBS II 12x190 130/115/90 US	558224	—	●	12	200	14 x 190	60 / 130	75 / 115	100 / 90	SW 17	20
FBS II 12x210 150/135/110 US	558225	—	●	12	220	14 x 210	60 / 150	75 / 135	100 / 110	SW 17	20
FBS II 14x75 10/-/- US	536874	557796	●	14	90	16 x 75	65 / 10	- / -	- / -	SW 21	20
FBS II 14x95 30/10/- US	536875	557797	●	14	110	16 x 95	65 / 30	85 / 10	- / -	SW 21	20
FBS II 14x100 35/15/- US	536876	557798	●	14	115	16 x 100	65 / 35	85 / 15	- / -	SW 21	20
FBS II 14x125 60/40/10 US	536877	557799	●	14	140	16 x 125	65 / 60	85 / 40	115 / 10	SW 21	10
FBS II 14x150 85/65/35 US	536878	—	●	14	165	16 x 150	65 / 85	85 / 65	115 / 35	SW 21	10
FBS II 14x180 115/85/65 US	558226	—	●	14	192	16 x 180	65 / 115	85 / 95	115 / 65	SW 21	10
FBS II 14x210 145/125/95 US	558227	—	●	14	225	16 x 210	65 / 145	85 / 125	115 / 95	SW 21	10
FBS II 14x240 175/155/125 US	558228	—	●	14	255	16 x 240	65 / 175	85 / 155	115 / 125	SW 21	10



Technical data

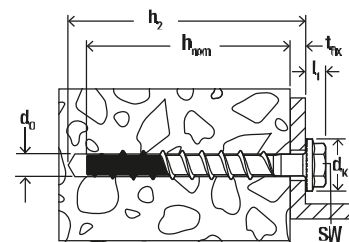
Concrete screw UltraCut FBS II SK



UltraCut FBS II SK

UltraCut FBS II CP SK

Item	Zinc-plated steel	Corrosion protection coating	ETA	Drill hole diameter	Min. drill hole depth for through fixings	Screw	Screw-in depth with fixture thickness	Screw-in depth with fixture thickness	Screw-in depth with fixture thickness	Drive	Sales unit
	Item No.	Item No.		Approval	d_0 [mm]	h_2 [mm]	$d_a \times l_s$ [mm]	h_{nom1} / t_{fix} [mm]	h_{nom2} / t_{fix} [mm]		
FBS II 8x60 10/- SK	536880	557800	●	8	70	10 x 60	50 / 10	- / -	- / -	TX40	50
FBS II 8x80 30/15 SK	536881	557801	●	8	90	10 x 80	50 / 30	- / -	65 / 15	TX40	50
FBS II 8x90 40/25 SK	536882	557802	●	8	100	10 x 90	50 / 40	- / -	65 / 25	TX40	50
FBS II 8x100 50/35 SK	558229	—	●	8	110	10 x 100	50 / 50	- / -	65 / 35	TX40	50
FBS II 8x110 60/45 SK	558230	—	●	8	120	10 x 110	50 / 60	- / -	65 / 45	TX40	50
FBS II 8x120 70/55 SK	558231	—	●	8	130	10 x 120	50 / 70	- / -	65 / 55	TX40	50
FBS II 8x140 90/75 SK	558232	—	●	8	150	10 x 130	50 / 90	- / -	65 / 75	TX40	50
FBS II 8x160 110/95 SK	558233	—	●	8	170	10 x 150	50 / 110	- / -	65 / 95	TX40	50
FBS II 8x180 130/115 SK	558234	—	●	8	190	10 x 170	50 / 130	- / -	65 / 115	TX40	50
FBS II 8x200 150/135 SK	558235	—	●	8	210	10 x 190	50 / 150	- / -	65 / 135	TX40	50
FBS II 10x65 10/-/- SK	536884	557803	●	10	75	12 x 65	55 / 10	- / -	- / -	TX50	50
FBS II 10x80 25/15/- SK	536885	557804	●	10	90	12 x 80	55 / 25	65 / 15	- / -	TX50	50
FBS II 10x95 40/30/10 SK	536886	—	●	10	105	12 x 95	55 / 40	65 / 30	85 / 10	TX50	50
FBS II 10x100 45/35/15 SK	536887	557805	●	10	110	12 x 100	55 / 45	65 / 35	85 / 15	TX50	50
FBS II 10x120 65/55/35 SK	536888	—	●	10	130	12 x 120	55 / 65	65 / 55	85 / 35	TX50	50
FBS II 10x140 85/75/55 SK	558236	—	●	10	150	12 x 140	55 / 85	65 / 75	85 / 55	TX50	50
FBS II 10x160 105/95/75 SK	558237	—	●	10	170	12 x 160	55 / 105	65 / 95	85 / 75	TX50	50
FBS II 10x180 125/115/95 SK	558238	—	●	10	180	12 x 180	55 / 125	65 / 115	65 / 95	TX50	20



Technical data

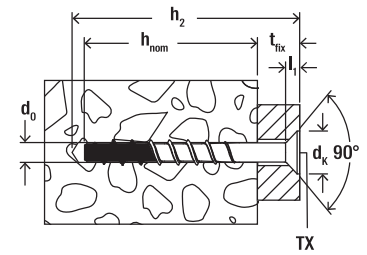
Concrete screw UltraCut FBS II US R



UltraCut FBS II US R hexagon head with molded washer, stainless steel R

4

Item	Stainless steel	Approval	Drill hole diameter	Min. drill hole depth for through fixings	Screw length	Screw-in depth with fixture thickness	Screw-in depth with fixture thickness	Screw-in depth with fixture thickness	Drive	Sales unit
	Item No.		d_0 [mm]	h_2 [mm]	l_s [mm]	h_{nom1} / t_{fix} [mm]	h_{nom2} / t_{fix} [mm]	h_{nom3} / t_{fix} [mm]		
FBS II 8x60 10/- US R	543565	●	8	70	60	50 / 10	- / -	- / -	SW 13	50
FBS II 8x70 20/5 US R	543566	●	8	80	70	50 / 20	- / -	65 / 5	SW 13	50
FBS II 8x80 30/15 US R	543567	●	8	90	80	50 / 30	- / -	65 / 15	SW 13	50
FBS II 8x90 40/25 US R	543568	●	8	100	90	50 / 40	- / -	65 / 25	SW 13	50
FBS II 8x100 50/35 US R	558239	●	8	110	100	50 / 50	- / -	65 / 35	SW 13	50
FBS II 8x120 70/55 US R	558240	●	8	130	120	50 / 70	- / -	65 / 55	SW 13	50
FBS II 8x140 90/75 US R	558241	●	8	150	140	50 / 90	- / -	65 / 75	SW 13	50
FBS II 8x160 110/95 US R	558242	●	8	170	160	50 / 110	- / -	65 / 95	SW 13	50
FBS II 10x60 5/-/- US R	543569	●	10	70	60	55 / 5	- / -	- / -	SW 15	50
FBS II 10x70 15/5/- US R	543570	●	10	80	70	55 / 15	65 / 5	- / -	SW 15	50
FBS II 10x80 25/15/- US R	543571	●	10	90	80	55 / 25	65 / 15	- / -	SW 15	50
FBS II 10x90 35/25/5 US R	543572	●	10	100	90	55 / 35	65 / 25	85 / 5	SW 15	50
FBS II 10x100 45/35/15 US R	543573	●	10	110	100	55 / 45	65 / 35	85 / 15	SW 15	50
FBS II 10x120 65/55/35 US R	543574	●	10	130	120	55 / 65	65 / 55	85 / 35	SW 15	50
FBS II 10x140 85/75/55 US R	558243	●	10	150	140	55 / 85	65 / 75	85 / 55	SW 15	50
FBS II 10x160 105/95/75 US R	558244	●	10	170	160	55 / 105	65 / 95	85 / 75	SW 15	50
FBS II 12x70 10/-/- US R	543575	●	12	80	70	60 / 10	- / -	- / -	SW 17	20
FBS II 12x85 25/10/- US R	543576	●	12	95	85	60 / 25	75 / 10	- / -	SW 17	20
FBS II 12x110 50/35/10 US R	543577	●	12	120	110	60 / 50	75 / 35	100 / 10	SW 17	20
FBS II 12x130 70/55/30 US R	543578	●	12	140	130	60 / 70	75 / 55	100 / 30	SW 17	20
FBS II 12x160 100/85/60 US R	558245	●	12	170	160	60 / 100	75 / 95	100 / 60	SW 17	20



Technical data

Concrete screw UltraCut FBS II SK R



UltraCut FBS II SK R counter-sunk head, stainless steel R

Item	Stainless steel	Approval	Drill hole diameter	Min. drill hole depth for through fixings	Screw length	Screw-in depth with fixture thickness	Screw-in depth with fixture thickness	Screw-in depth with fixture thickness	Drive	Sales unit
	Item No.		d_0 [mm]	h_2 [mm]	l_s [mm]	h_{nom1} / t_{fix} [mm]	h_{nom2} / t_{fix} [mm]	h_{nom3} / t_{fix} [mm]		[pcs]
		ETA								
FBS II 8x60 10/- SK R	543579	●	8	70	60	50 / 10	- / -	- / -	TX40	50
FBS II 8x80 30/15 SK R	543580	●	8	90	80	50 / 30	- / -	65 / 15	TX40	50
FBS II 8x90 40/25 SK R	543581	●	8	100	90	50 / 40	- / -	65 / 25	TX40	50
FBS II 8x100 50/35 SK R	558246	●	8	110	100	50 / 50	- / -	65 / 35	TX40	50
FBS II 10x65 10/- SK R	543582	●	10	75	65	55 / 10	- / -	- / -	TX50	50
FBS II 10x80 25/15 SK R	543583	●	10	90	80	55 / 25	65 / 15	- / -	TX50	50
FBS II 10x95 40/30/10 SK R	543584	●	10	105	95	55 / 40	65 / 30	85 / 10	TX50	50
FBS II 10x100 45/35/15 SK R	543585	●	10	110	100	55 / 45	65 / 35	85 / 15	TX50	50
FBS II 10x120 65/55/35 SK R	543586	●	10	130	120	55 / 65	65 / 55	85 / 35	TX50	50

Technical data

Accessories UltraCut FBS II



FUP



Nut SW



Nut TX 1/2" - 1/4"



FMB TX



FPB ProfiBit TX 50 5/16"



Setting tool SC-ST

Item	Item No.	Internal diameter D [mm]	Drive	Match	Sales unit [pcs]
FUP 8	537200	9,9	—	FBS II 8	1
FUP 10	537201	12,0	—	FBS II 10	1
FUP 12	537202	13,0	—	FBS II 12	1
FUP 14	537203	15,0	—	FBS II 14	1
Nut SW 10	538577	—	1/2" / SW10	FBS II 6	1
Nut SW 13	538578	—	1/2" / SW13	FBS II 8	1
Nut SW 15	538579	—	1/2" / SW15	FBS II 10	1
Nut SW 17	538580	—	1/2" / SW17	FBS II 12	1
Nut SW 21	538581	—	1/2" / SW21	FBS II 14	1
Nut 1/2" - 1/4"	553928	—	1/2" / 1/4"	FBS II 6 / FBS II 8 / FBS II 8 SK	1
Nut 1/2" - TX 50	553929	—	1/2" / TX50	FBS II 10 / FBS II 10 SK	1
FMB TX30 MaxxBit W 5	533158	—	TX30	FBS II 6	1
FMB TX40 MaxxBit W 5	533159	—	TX40	FBS II 6 / FBS II 8 / FBS II 8 SK	1
FPB TX 50 5/16" ProfiBit	557844	—	TX50	FBS II 10 SK	1
Setting tool SC-ST 8	557872	—	—	FBS II 8	1
Setting tool SC-ST 10	557874	—	—	FBS II 10	1

Technical data

Accessories UltraCut FBS II



FFD



FSW 10

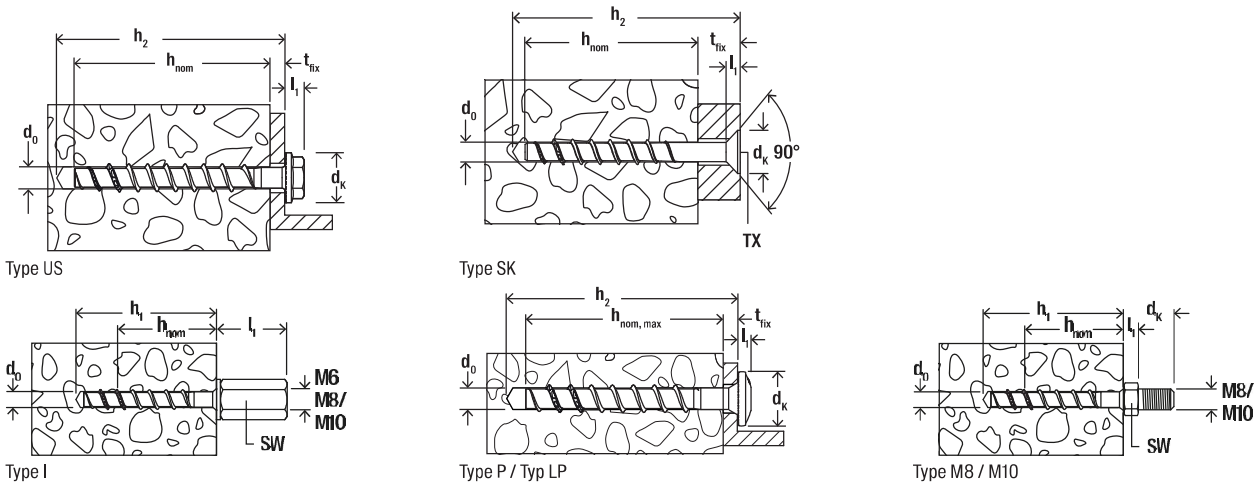


Washer U

Item	Item No.	Internal diameter	External-Ø	Match	Sales unit
		D [mm]	d [mm]		[pcs]
Filling disc FFD 22 x 9 x 6	547515	9,0	22	FBS II 6	4
Filling disc FFD 26 x 12 x 6	538458	12,0	26	FBS II 8	4
Filling disc FFD 26 x 12 x 6 R	541986	12,0	26	FBS II 8 R / FBS II 10 R	4
Filling disc FFD 30 x 14 x 6	538459	14,0	30	FBS II 10 / FBS II 12	4
Filling disc FFD 30 x 14 x 6 R	541987	14,0	30	FBS II 10 R / FBS II 12 R	4
Filling disc FFD 38 x 19 x 7	538460	19	38	FBS II 14	4
Adjusting washer FSW 10	557276	17,5	44	FBS II 10 US	40
Washer for FBS 10	520471	13,5	44	FBS II 10 US	50

4

Installation data - concrete C20/25 - C50/60



UltraCut	FBS II 8		FBS II 10		FBS II 6			FBS II M8/M10	FBS II 6 I, M8/M10, M6
	SK	SK R	SK	SK R	SK	P	LP		
l_1 [mm]	6,0	7,0	7,0	7,0	6,0	3,9	3,6	6,2	15/16
d_k [mm]	20,0	23,0	23,0	25,0	13,5	14,4	17,5	17,0	-
Concrete screw UltraCut FBS II 6-14 gvz / R									
Drill hole diameter	d_0 [mm]		6		8	10	12	14	
Nominal screw-in depth	$h_{nom 1}$ [mm]		25 - 55		50	55	60	65	
	$h_{nom 2}$ [mm]		25 - 55		-	65	75	85	
	$h_{nom 3}$ [mm]		25 - 55		65	85	100	115	
Drill hole depth (push-trough installation)	$h_2 \geq$ [mm]		I + 10		I + 10	I + 10	I + 10	I + 15	
Clearance hole diameter	d_f [mm]		≤ 8		10,6 - 12	12,8 - 14	14,8 - 16	16,9 - 18	
Maximum torque for installation with impact screw driver in concrete ³⁾	$t_{imp, max gvz}$ [Nm]		450 ¹⁾		600	650	650	650	
	$t_{imp, max R}$ [Nm]		-		450	450	650	-	
Width across flat	SW		10 ²⁾		13	15	17	21	
Drive	TX		T30		T40 (SK u. US)	T50 (SK)	-	-	

1) Screw-in depth < 35 mm 80 Nm

2) SW 13 for FBS II ... M10 and FBS II ... M8/M10 I

3) The values apply to concrete strength of approx. 40 N/mm², for other concrete strength classes the values may differ. The conversion of nominal output into effective tightening torque varies from machine to machine - always therefore use torque control.

Installation data masonry

Concrete screw ULTRACUT FBS II 8-14					
Building material	Compressive strength class	Size	[mm]	8	10
	[N/mm ²]	h_{nom}	[mm]	65	85
Solid clay brick (EN771-1)	≥ 12	T_{inst}	I + 10	10	10
Solid sand-lime brick (EN771-2)	≥ 12	T_{instt}	≤ 8	15	15
Aerated concrete (EN771-4)	≥ 6	T_{ins}	T30	5	5

Loads

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

4

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.

Loads

4

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

Permissible loads of a single anchor¹⁾ in normal concrete of strength class C20/25.
For the design the complete current assessment ETA-17/0740 has to be considered.

Type	Material/ surface	Screw-in depth h_{nom} [mm]	Minimum member thickness h_{min} [mm]	Maximum installation 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 8	R	50	100	450	1,9	4,1	35	35	3,3	5,9	35	35
FBS II 8	R	65	120	450	4,3	6,1	35	35	6,7	8,8	35	35
FBS II 10	R	55	100	450	2,1	4,6	40	40	4,0	6,6	40	40
FBS II 10	R	65	120	450	2,9	6,0	40	40	6,7	8,5	40	40
FBS II 10	R	85	140	450	7,6	18,4	40	40	13,1	20,9	40	40
FBS II 12	R	60	110	650	2,1	5,3	50	50	4,8	7,5	50	50
FBS II 12	R	75	130	650	5,2	15,2	50	50	5,7	21,8	50	50
FBS II 12	R	100	150	650	12,0	23,9	50	50	17,1	26,2	50	50

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.

Loads

Concrete screw UltraCut FBS II

Recommended loads^{1) 3)} for a single anchor or a fixing point^{4) 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.

Loads

Concrete screw UltraCut FBS II for temporary fastening

Permissible loads of a single anchor¹⁾ in normal concrete of strength class C20/25 to C50/60.
For the design the complete current assessment Z-21.8-2049 has to be considered.

Type	Material/ surface	Screw-in depth h_{nom} [mm]	Minimum member thickness h_{min} [mm]	Maximum installation torque $T_{imp, max}$ ²⁾ [Nm]	Minimum spacing (s_{min}) and edge distances (c_{min})		Cracked and non-cracked concrete			
					s_{min} [mm]	c_{min} ³⁾ [mm]	Permissible load F_{perm} ⁴⁾			
							$f_{c, cube} \geq 10 \text{ N/mm}^2$	$f_{c, cube} \geq 15 \text{ N/mm}^2$	$f_{c, cube} \geq 20 \text{ N/mm}^2$	$f_{c, cube} \geq 25 \text{ N/mm}^2$
							[kN]	[kN]	[kN]	[kN]
FBS II 8	gvz	50	100	400	200	65	1,9	2,3	2,6	2,9
	gvz	65	150	400	300	100	3,6	4,4	5,1	5,6
FBS II 10	gvz	55	105	400	210	70	2,2	2,7	3,1	3,5
	gvz	65	130	400	260	85	2,9	3,5	4,1	4,5
	gvz	85	205	650	410	135	5,8	7,1	8,1	9,1
FBS II 12	gvz	60	120	400	240	80	2,8	3,4	3,9	4,4
	gvz	75	150	400	300	100	4,0	4,9	5,6	6,1
	gvz	100	240	650	480	160	7,6	9,3	10,8	12,0
FBS II 14	gvz	65	115	400	230	75	2,3	2,8	3,2	3,6
	gvz	85	150	400	300	100	3,6	4,4	5,0	5,6
	gvz	115	255	650	510	170	8,9	10,9	12,6	14,0

¹⁾ Material safety factor as well as a partial safety factor for load actions of $\gamma_L = 1,4$ is considered. The screw may be used in the concrete member before the characteristic compressive strength $f_{ck, cube}$ is reached. In this case, the concrete compressive strength $f_{c, cube}$ must have reached a value of at least 10 N/mm^2 . Only intended for temporary use and one-time screwing into the same drill hole. Conditions for reuse of the screw see, approval.

²⁾ Values for impulse wrenches with tangential impact and automatic stop device.

³⁾ In case of combined action of shear load and installation close to the edge, the edge distance must be $\geq c_{min} \times 1,5$. Detail see approval.

⁴⁾ Values valid for all load directions.