FBS II R

SC-ST

FSW

UltraCut FBS II
8, 10 and 12 non-corrosive steel R.

**The high-performance concrete screw
for absolute installation ease in the exterior area.**

Unique saw-tooth geometry **cuts quickly into the concrete – also in reinforced concrete.**

The UltraCut FBS II R is available in different head designs. **Countersunk (SK) and hexagonal head (US).**

UltraCut FBS II 10x100 US R

The specially hardened red tip provides **faster and more secure installation**.

The short UltraCut FBS II R, with a reduced embedment depth, allows for a **short drill hole depth, fast installation and less reinforcement hits.**

UltraCut FBS II 10x60 US R

The countersunk head is suitable for **visually appealing installations.**

The ribs under the head prevent accidental loosening of the anchor making the system **more secure.**

Advantages and functions

Your advantages at a glance

- With up to 3 embedment depths, the UltraCut FBS II allows for the same screw to be used for different component thicknesses.
- Expansion-free anchoring (undercut) allows for lowest edge- and axial spacings.
- The assessment (ETA Option 1) covers the use of single-point anchors in cracked and non-cracked concrete.
- The performance categories seismic C1 and C2 ensure that the strictest of safety standards and earthquake specifications can be fulfilled.
- 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 plate head or to align the attached part, and then to tighten the screw again.
- Drill holes do not need to be cleaned during vertical installation (ceiling and floor).
- The fischer concrete screw FBS II 8-10 offer the possibility for the ETA compliant application in masonry brick. This grants high security not only in concrete but also in many other applications in other substrates (valid for the base materials solid clay bricks (EN771-1), sand-lime bricks KSL (EN711-2) and solid sand-lime bricks KSV (EN771-2) according to the specification of the ETA-20/0134.

Functioning

- The UltraCut FBS II R is recommended for the push-through installation.
- The screw is installed correctly when the screw head sits flush on the fixture and cannot be screwed in deeper (visual setting control).
- We recommend using a tangential impact wrench with a suitable impact wrench socket (e.g. fischer FSS 18V) or an internal torx drive.
- The assessment document also covers the use of hollow drill with automatic drill hole cleaning and the use of diamond drilling holes.
- For the installation in masonry, please follow the instruction guidelines in the packaging with the suitable torque setting (impact wrench levels).

Approvals

ETA-15/0352,
for cracked concrete

ETA-20/0134
for masonry

R 120

Seismic C2

According VdS
CES-Guidelines for
sprinkler systems

Recommendations

Suitable for building materials, such as

Cracked concrete

Uncracked concrete

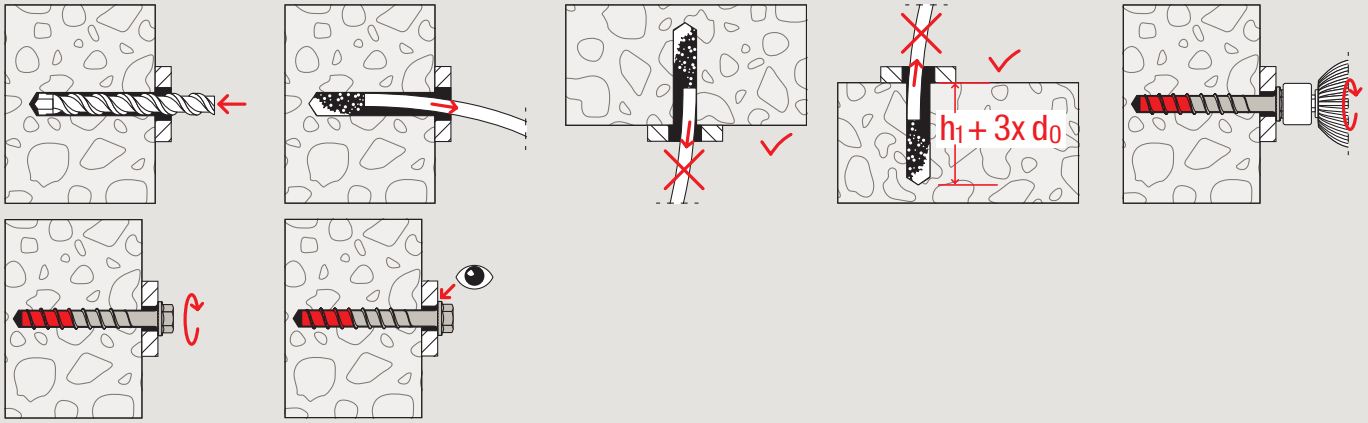
Masonry brick *

Solid sand-lime brick*

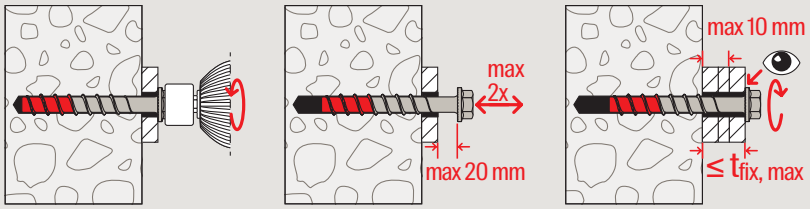
Perforated sand-lime brick*

* ETA recommendation for diamater 8 and 10

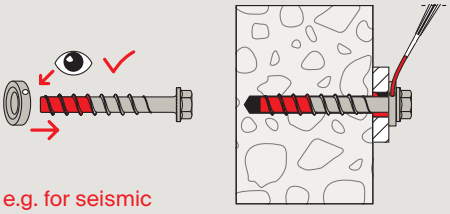
Installation and applications



Fixture adjustment



Annular gap filling,



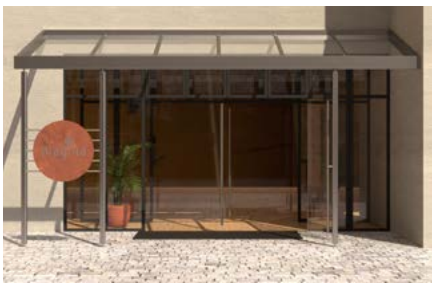
e.g. for seismic

UltraCut FBS II 8, 10 and 12 non-corrosive steel R

Metal construction and outdoor applications

Railings

Brackets / base plates



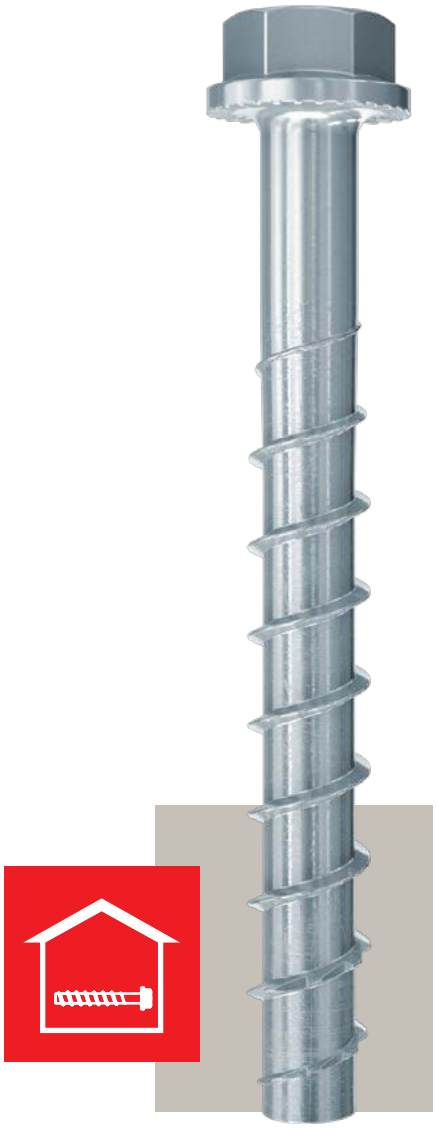
Canopies

Stadium seating anchoring

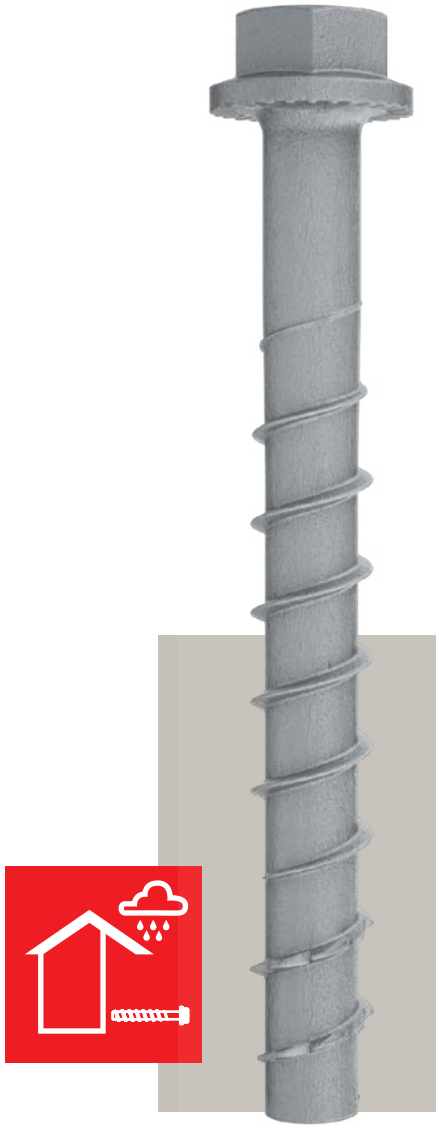
Balcony railings

Column footing

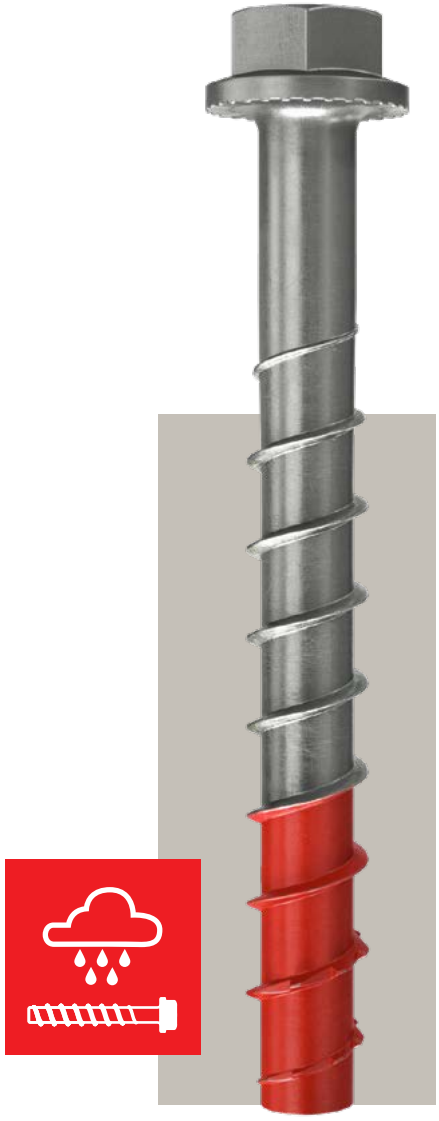
Coatings and its base materials



Economic solution: FBS II ZN-plated
Lasting and safe corrosion protection in the dry indoor area. ETA-15/0352 (guarantees a lifetime of 50 years in indoor areas).



The long-lasting one: FBS II CP
Long-lasting coating in comparison with the FBS II ZN-plated (among other things with an external test report for the salt spray chamber mist test of 2.000h).



The extremely durable: FBS II R
Extremely long-lasting and weather-resistant material. The durable solution for the exterior area (ETA 17/0740 guarantees 50 years in the exterior area). Suitable for use in corrosive environments (C3) according to internal technical data from fischer.

UltraCut FBS II 6-10 zinc-plated steel, CP and R in masonry

UltraCut FBS II 6-10 ZN-plated

UltraCut FBS II 8-10 R

UltraCut FBS II 8-10 CP

Approval

ETA-20/0134
for masonry

Your advantages at a glance

- Due to the large ratio between flank and shank diameter, the concrete screw cuts deep into the substrate and ensures low displacement under load.
- The fischer concrete screws FBS II 6-10 offer the innovative possibility for the ETA compliant application in masonry. This grants high security not only in concrete but also in many other applications in other substrates.
- The concrete screw FBS II 6-10 in zinc-plated steel, special coated CP and stainless steel R has an ETA for masonry brick (EN771-1), solid sand-lime bricks (EN771-2) and perforated sand-lime bricks KSL (EN771-2) according to the specification of the ETA-20/0134.
- The installation of the concrete screw FBS II 6-10 in zinc-plated steel and stainless steel R in masonry brick can be made in the joints not bigger than 3 mm or in plastered substrates also in group.

Applications

TV installation

Radiator

Recommendations

Suitable for building materials, such as

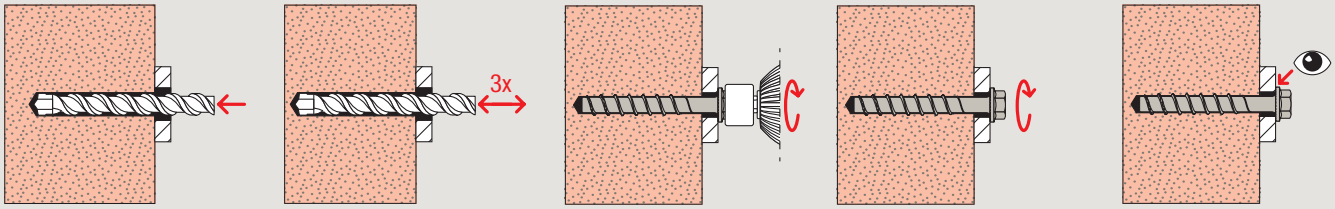
Masonry brick

Solid sand-lime brick

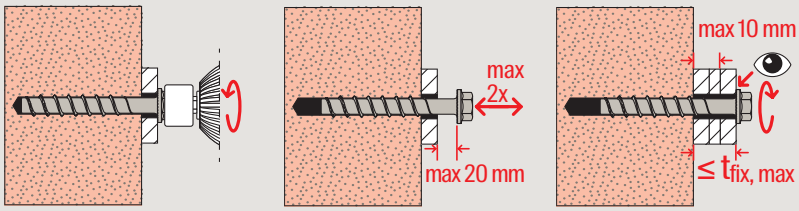
Perforated sand-lime brick

Installation in masonry

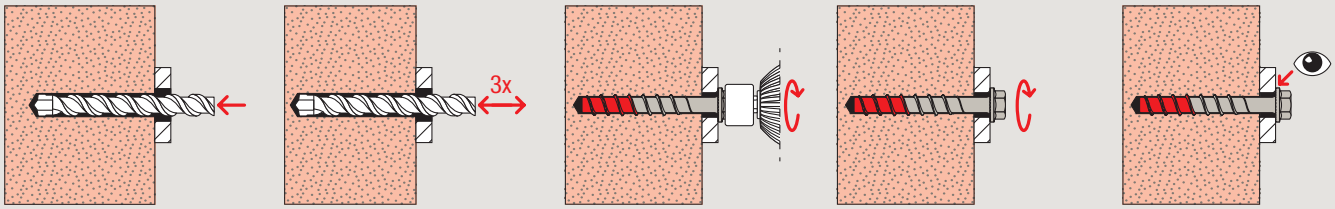
UltraCut FBS II 6-10 gvz



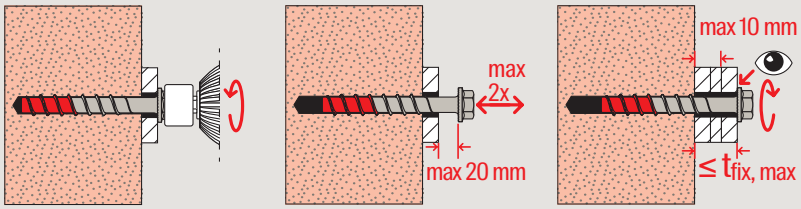
Fixture adjustment

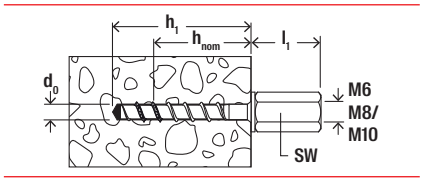


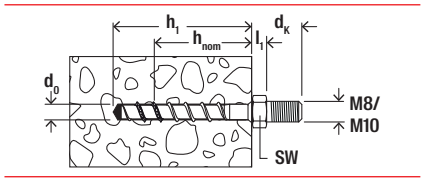
UltraCut FBS II 8-10 R



Fixture adjustment





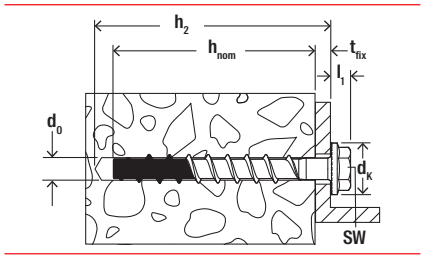


Concrete screw UltraCut FBS II 6 M8/M10

UltraCut FBS II M8/M10
outside thread

UltraCut FBS II M6, M8/M10 I
internal thread

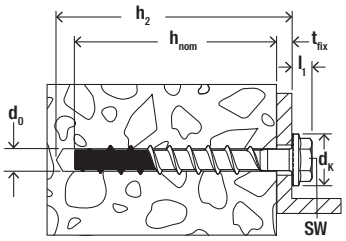
Item	Item no.	Approval ETA	Approval DIBt	Drill diameter d_0 [mm]	Min. drill hole depth for pre-positioned installation h_1 [mm]	Screw length l_s [mm]	Screw-in depth Multiple fixing ETA-18/0242 [mm]	Screw-in depth Single point fixing ETA-15/0352 [mm]	Drive	Sales unit [pcs]
FBS II 6 x 25 M8/19	546395	●	●	6	35	25	25	–	SW 10	100
FBS II 6 x 35 M8/19	546396	●	●	6	45	35	35	–	SW 10	100
FBS II 6 x 55 M8/19	546397	●	●	6	65	55	55	55	SW 10	100
FBS II 6 x 35 M10/21	546398	●	●	6	45	35	35	–	SW 13	100
FBS II 6 x 55 M10/21	546399	●	●	6	65	55	55	55	SW 13	100
FBS II 6x35 M6 I	554065	●	●	6	45	35	–	–	SW 13	100
FBS II 6x55 M6 I	554066	●	●	6	65	55	–	55	SW 13	100
FBS II 6 x 35 M8/M10 I	546400	●	●	6	45	35	–	–	SW 13	100
FBS II 6 x 55 M8/M10 I	546401	●	●	6	65	55	–	55	SW 13	100



Concrete screw UltraCut FBS II US R

FBS II US R

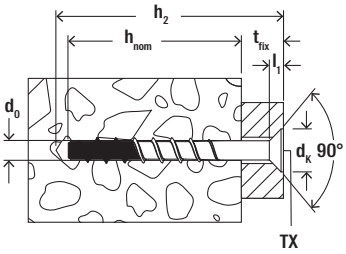
Item	Item no.	Approval ETA	Drill diameter d_0 [mm]	Min. drill hole depth for through fixings h_2 [mm]	Screw dimension d_s x l_s [mm]	Screw-in depth with fixture thickness h_{nom1} / t_{fix} [mm]	Screw-in depth with fixture thickness h_{nom2} / t_{fix} [mm]	Screw-in depth with fixture thickness h_{nom3} / t_{fix} [mm]	Drive	Sales unit [pcs]
FBS II 8x60 10/- US	543565	●	8	70	10.0 x 60	50 / 10	–	–	SW 13	50
FBS II 8x70 20/5 US	543566	●	8	80	10.0 x 70	50 / 20	–	65 / 5	SW 13	50
FBS II 8x80 30/15 US	543567	●	8	90	10.0 x 80	50 / 30	–	65 / 15	SW 13	50
FBS II 8x90 40/25 US	543568	●	8	100	10.0 x 90	50 / 40	–	65 / 25	SW 13	50
FBS II 8x100 50/35 US	558239	●	8	110	10.0 x 100	50 / 50	–	65 / 35	SW 13	50
FBS II 8x120 70/55 US	558240	●	8	130	10.0 x 120	50 / 70	–	65 / 55	SW 13	50
FBS II 8x140 90/75 US	558241	●	8	150	10.0 x 140	50 / 90	–	65 / 75	SW 13	50
FBS II 8x160110/95 US	558242	●	8	170	10.0 x 160	50 / 110	–	65 / 95	SW 13	50
FBS II 10x60 5/-/- US	543569	●	10	70	12.0 x 60	55 / 5	–	–	SW 15	50
FBS II 10x70 15/5/- US	543570	●	10	80	12.0 x 70	55 / 15	65 / 5	–	SW 15	50
FBS II 10x80 25/15/- US	543571	●	10	90	12.0 x 80	55 / 25	65 / 15	–	SW 15	50
FBS II 10x90 35/25/5 US	543572	●	10	100	12.0 x 90	55 / 35	65 / 25	85 / 5	SW 15	50
FBS II 10x100 45/35/15 US	543573	●	10	110	12.0 x 100	55 / 45	65 / 35	85 / 15	SW 15	50
FBS II 10x120 65/55/35 US	543574	●	10	130	12.0 x 120	55 / 65	65 / 55	85 / 35	SW 15	50



Concrete screw UltraCut FBS II US R

FBS II US R

Item	Item no.	Approval ETA	Drill diameter d_0 [mm]	Min. drill hole depth for through fixings h_2 [mm]	Screw dimension $d_s \times l_s$ [mm]	Screw-in depth with fixture thickness h_{nom1} / t_{fix} [mm]	Screw-in depth with fixture thickness h_{nom2} / t_{fix} [mm]	Screw-in depth with fixture thickness h_{nom3} / t_{fix} [mm]	Drive	Sales unit [pcs]
FBS II 8x60 10/- US	543565	●	8	70	10.0 x 60	50 / 10	–	–	SW 13	50
FBS II 8x70 20/5 US	543566	●	8	80	10.0 x 70	50 / 20	–	65 / 5	SW 13	50
FBS II 8x80 30/15 US	543567	●	8	90	10.0 x 80	50 / 30	–	65 / 15	SW 13	50
FBS II 8x90 40/25 US	543568	●	8	100	10.0 x 90	50 / 40	–	65 / 25	SW 13	50
FBS II 8x100 50/35 US	558239	●	8	110	10.0 x 100	50 / 50	–	65 / 35	SW 13	50
FBS II 8x120 70/55 US	558240	●	8	130	10.0 x 120	50 / 70	–	65 / 55	SW 13	50
FBS II 8x140 90/75 US	558241	●	8	150	10.0 x 140	50 / 90	–	65 / 75	SW 13	50
FBS II 8x160110/95 US	558242	●	8	170	10.0 x 160	50 / 110	–	65 / 95	SW 13	50
FBS II 10x60 5/-/- US	543569	●	10	70	12.0 x 60	55 / 5	–	–	SW 15	50
FBS II 10x70 15/5/- US	543570	●	10	80	12.0 x 70	55 / 15	65 / 5	–	SW 15	50
FBS II 10x80 25/15/- US	543571	●	10	90	12.0 x 80	55 / 25	65 / 15	–	SW 15	50
FBS II 10x90 35/25/5 US	543572	●	10	100	12.0 x 90	55 / 35	65 / 25	85 / 5	SW 15	50
FBS II 10x100 45/35/15 US	543573	●	10	110	12.0 x 100	55 / 45	65 / 35	85 / 15	SW 15	50
FBS II 10x120 65/55/35 US	543574	●	10	130	12.0 x 120	55 / 65	65 / 55	85 / 35	SW 15	50



Concrete screw UltraCut FBS II SK R

FBS II SK R

Item	Item no.	Approval ETA	Drill diameter d_0 [mm]	Min. drill hole depth for through fixings h_2 [mm]	Screw dimension $d_s \times l_s$ [mm]	Screw-in depth with fixture thickness h_{nom1} / t_{fix} [mm]	Screw-in depth with fixture thickness h_{nom2} / t_{fix} [mm]	Screw-in depth with fixture thickness h_{nom3} / t_{fix} [mm]	Drive	Sales unit [pcs]
FBS II 8x60 10/- SK	543579	●	8	70	10.0 x 60	50 / 10	–	–	TX40	50
FBS II 8x80 30/15 SK	543580	●	8	90	10.0 x 80	50 / 30	–	65 / 15	TX40	50
FBS II 8x90 40/25 SK	543581	●	8	100	10.0 x 90	50 / 40	–	65 / 25	TX40	50
FBS II 8x100 50/35 SK	558246	●	8	110	10.0 x 100	50 / 50	–	65 / 35	TX40	50
FBS II 10x65 10/-/- SK	543582	●	10	75	12.0 x 65	50 / 10	–	–	TX50	50
FBS II 10x80 25/15/- SK	543583	●	10	90	12.0 x 80	55 / 25	65 / 15	65 / 65	TX50	50
FBS II 10x95 40/30/10 SK	543584	●	10	105	12.0 x 95	55 / 40	65 / 30	85 / 10	TX50	50
FBS II 10x100 45/35/15 SK	543585	●	10	110	12.0 x 100	55 / 45	65 / 35	85 / 15	TX50	50
FBS II 10x120 65/55/35 SK	543586	●	10	130	12.0 x 120	55 / 65	65 / 55	85 / 35	TX50	50

Additional assortment

Complement for UltraCut FBS II


Checking gauge FUP


Nut SW


Nut TX


FMB TX 40 Maxx Bit


FBP ProfiBit TX 50 5/16"


Filling washer FFD

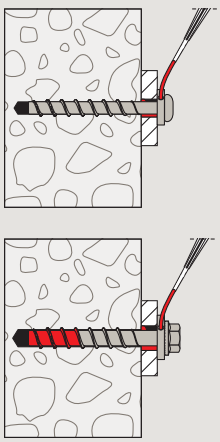

Washer FSW 10


Setting tool SC-ST


Wash-er U

Item	Art.-No.	Internal-Ø [mm]	External-Ø [mm]	Drive	Suitable for UltraCut FBS II [SW/TX]	Sales unit [Stück]
Checking gauge FUP 8	**537200**	9,9	–	–	FBS II 8	1
Checking gauge FUP 10	**537201**	12,0	–	–	FBS II 10	1
Checking gauge FUP 12	**537202**	13,9	–	–	FBS II 12	1
Checking gauge FUP 14	**537203**	15,6	–	–	FBS II 14	1
Nut SW 10	**538577**	–	–	1/2"/SW 10	FBS II 6	1
Nut SW 13	**538578**	–	–	1/2"/SW 13	FBS II 6/FBS II 8	1
Nut SW 15	**538579**	–	–	1/2"/SW 15	FBS II 10	1
Nut SW 17	**538580**	–	–	1/2"/SW 17	FBS II 12	1
Nut SW 21	**538581**	–	–	1/2"/SW 21	FBS II 14	1
Nut 1/2" – 1/4"[1]	**553928**	–	–	1/2"–1/4"	FBS II 8/FBS II 8 SK + FBS II 6	1
Nut 1/2" – TX50	**553929**	–	–	1/2"–5/16"	FBS II 10/FBS II 10 SK	1
FMB TX 30 Maxx Bit W5	**564314**	–	–	TX 30	FBS II 6	5
FMB TX 40 Maxx Bit W 5	**564315**	–	–	TX 40	FBS II 8/FBS II 8 SK	5
FPB TX50 5/16" ProfiBit	**557844**	–	–	TX 50	FBS II 10 SK	1
FFD 22x9x6	**547515**	9	22	–	FBS II 6	4
FFD 26x12x6	**538458**	12	26	–	FBS II 8	4
FFD 26x12x6 R	**541986**	12	26	–	FBS II 8 R	4
FFD 30x14x6	**538459**	14	30	–	FBS II 10/FBS II 12	4
FFD 30x14x6 R	**541987**	14	30	–	FBS II 10 R/FBS II 12 R	4
FFD 38x19x7	**538460**	19	38	–	FBS II 14	4
Adjusting washer FSW 10[2]	**557276**	–	–	–	FBS II 10	40
Setting tool SC-ST 8	**557872**	–	–	–	FBS II 8 US	1
Setting tool SC-ST 10	**557874**	–	–	–	FBS II 10 US	1
Washer for FBS II 10	**520471**	13,5	44	–	FBS II 10	50

[1] Suitable for FMB TX 40 Maxx Bit and FMB TX 30 Maxx Bit
[2] Mountable with Power-Fast FPF-PT 5x40 (652880)

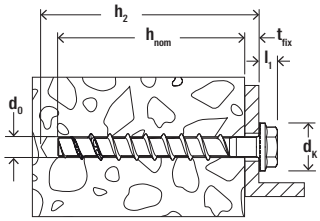


Filling disc for UltraCut FBS II / FBS II CP / FBS II R

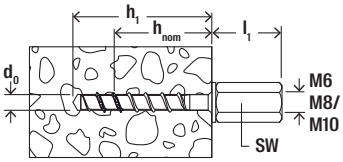
By using the backfilling disc, a backlash, e.g. in the case of shear forces, can be ruled out. For this purpose, the filling disc is placed on the concrete screw before installation (recess to the component).
In the next step, the FBS II is screwed in until the filling disc rests against the anchor plate. Now the filling with one of the injection mortars FIS HB, FIS V, FIS SB or FIS EM Plus can be carried out through the lateral bore using the filling aid. The filling quantity depends on the thickness of the anchor plate and the size of the annular gap.
Typical fields of application are brackets, earthquake-approved anchorings

Installation parameters

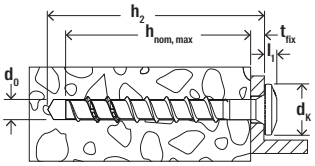
Typ US



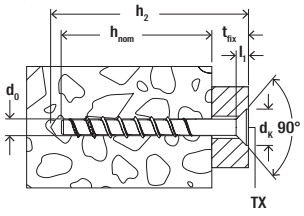
Typ I



Typ P

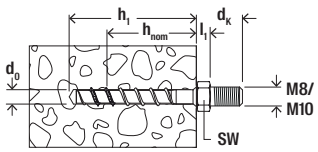


Typ SK

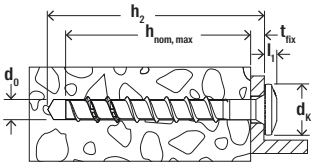


	l_1 [mm]	d_K [mm]
UltraCut FBS II 8 SK	6,0	20,0
UltraCut FBS II 10 SK	7,0	23,0
UltraCut FBS II 6 SK	6,0	13,5
UltraCut FBS II 6 P	3,9	14,4
UltraCut FBS II 6 LP	3,6	17,5
UltraCut FBS II 6 US	6,4	17,0
UltraCut FBS II M8/M10	3,6/5	15/16
UltraCut FBS II 6 I M8/M10; M6	37,0/32	-

Typ M8/M10



Typ LP



Concrete screw UltraCut FBS II 6-14 zinc-plated steel. / R

Installation parameters concrete

Concrete screw UltraCut FBS II 6–14 zinc-plated steel / R	Drill hole diameter	Nominal screw-in depth			Drill hole depth (push-through installation)	Clearance hole diameter	Maximum torque for installation with impact screw driver in concrete [1]		Maximum torque for installation in masonry		Width across flat	Drive
	d_0	h_{nom1}	h_{nom2}	h_{nom3}	$h_2 \geq$	d_f	$T_{imp, max\ zinc\text{-}plated\ steel}$	$T_{imp, max\ R}$	$T_{imp, max\ gvz}$	$T_{imp, max\ R}$	SW	TX
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[Nm]	[Nm]	[Nm]	[Nm]		
FBS II 6	**6**	25–55	25–55	25–55	l + 10	≥ 8	450 [1]	–	–	–	10 [2]	TX 30
FBS II 8	**8**	50	–	65	l + 10	10,6–12	600	450	80	80	13	TX 40 (SK and US)
FBS II 10	**10**	55	65	85	l + 10	12,8–14	650	450	80	80	15	TX 50 (SK)
FBS II 12	**12**	60	75	100	l + 10	14,8–16	650	650	–	–	17	–
FBS II 14	**14**	65	85	115	l + 15	16,9–18	650	–	–	–	21	–

[1] Screw-in depth <35 mm 80 Nm.
[2] SW 13 at 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 mac hine - always therefore use torque control.

Loads

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

Permissible loads of a single anchor[1] 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: Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads				Non-cracked concrete: 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 tensile 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.

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

Permissible loads of a single anchor[1] 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: Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads				Non-cracked concrete: 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 tensile 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 srew 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) in the respective base material [2)3)]				
Solid clay brick (EN771-1) ≥ 240 x 113 x 115 mm	**$f_b \geq 12$**	**[kN]**	1.1[10)]	1.4[10)]
Solid clay brick (EN771-1) ≥ 240 x 113 x 115 mm	$f_b \geq 20$	**[kN]**	1.6[7)10)]	1.6[7)10)]
Solid sand-lime brick (EN771-2) ≥ 240 x 71 x 115 mm	$f_b \geq 12$	**[kN]**	1.2[7)10)]	1.2[7)10)]
Aerated concrete (EN771-4) ≥ 499 x 249 x 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 for temporary fastening

Permissible loads of a single anchor[1)] 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.

							Cracked and non-cracked concrete			
	Material/ surface	**Screw-in depth**	**Minimum member thickness**	**Maximum installation torque**	**Minimum spacing (s_{min}) and edge distances (c_{min})**		**Permissible load F_{perm} [4)]**			
Type		h_{nom} **[mm]**	h_{min} **[mm]**	$T_{imp,\ max}$ [2)] **[Nm]**	s_{min} **[mm]**	c_{min} [3)] **[mm]**	$f_{c,cube} \geq 10$ N/mm² **[kN]**	$f_{c,cube} \geq 15$ N/mm² **[kN]**	$f_{c,cube} \geq 20$ N/mm² **[kN]**	$f_{c,cube} \geq 25$ N/mm² **[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/mm². 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 ≥ c_{min} x 1.5. Detail see approval.
4) Values valid for all load directions.

Loads

Concrete screw UltraCut FBS II 6

Permissible loads for a single anchor[1] for multiple use of redundant non-structural applications* in normal concrete C20/25.

For the design the complete current assessment ETA - 18/0242 has to be considered.

					Cracked concrete				Non-cracked concrete			
	Material/ surface	Screw-in depth	Minimum member thickness	Maximum installation torque	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			
Type		h_{nom} [mm]	h_{min} [mm]	$T_{inst,max}$ [2] [Nm]	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	25	80	≤ 5	0.7	1.8	35	35	1.4	2.3	35	35
	gvz	30	80	≤ 5	1.2	2.3	35	35	2.4	2.3	35	35
	gvz	35	80	≤ 5	1.7	4.3	35	35	3.1	4.3	35	35
	gvz	40	80	≤ 10	2.4	4.3	35	35	3.8	4.3	35	35
	gvz	45	90	≤ 10	2.9	4.3	35	35	4.8	4.3	35	35
	gvz	50	90	≤ 10	3.6	4.3	35	35	5.7	4.3	35	35
	gvz	55	100	≤ 10	4.0	6.3	35	35	6.4	6.3	35	35

* In addition to the load table above, the following must be considered for multiple fastening of non-structural redundant systems:
A multiple fixing (redundant system) according to EN 1992-4 and CEN/TR 17079 is defined by
- at least 3 fixing points (per attached element) with at least one anchor at each fixing point and a permissible load per fixing point of 1.4 kN
- or by at least 4 fixing points with at least one anchor each fixing point and a permissible load per fixing point of 2.1 kN
- Additionally, it has to be proven that the stiffness of the attached element shall be large enough to ensure that in case of excessive slip or failure of a fastener the load on this fastener or fixing point can be transferred to neighbouring fixing points without significantly violating the requirements on the attached element in the serviceability and ultimate limit state.

For further details see EN 1992-4 section 7.3 and CEN/TR 17079.

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.
2) Further technical information for installation see ETA.
3) In the case of combinations of tensile and shear loads, bending moments with reduced or minimal edge and axial spacings (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.

Concrete screw UltraCut FBS II 6

Permissible loads for a single anchor[1] for multiple use of redundant non-structural applications* in pre-stressed hollow-core concrete slabs of concrete strength C30/37.

For the design the complete current assessment ETA - 18/0242 has to be considered.

Type			FBS II 6 gvz						
Screw-in depth		h_{nom}	25	30	35	40	45	50	55
Permissible load F_{perm} [3] in the respective bottom flange thickness									
$d_b \geq 25$ mm		[kN]	0.2	0.5	0.5	0.5	0.5	0.5	0.5
$d_b \geq 30$ mm		[kN]	1.7	1.7	1.7	1.7	1.7	1.7	1.7
$d_b \geq 35$ mm		[kN]	1.7	1.9	2.1	2.4	2.6	2.9	3.1
$d_b \geq 40$ mm		[kN]	1.7	2.3	2.6	2.9	3.3	3.6	3.8
$d_b \geq 50$ mm		[kN]	1.7	2.3	3.3	3.8	4.3	4.3	5.7
Installation torque	$T_{inst,max}$	[Nm]	5.0	5.0	10	10	10	10	10
Minimum spacing	$s_{1, s2}$ [2]	[mm]	100	100	100	100	100	100	100
Minimum edge distance	$c_{1, c2}$ [2]	[mm]	100	100	100	100	100	100	100

* In addition to the load table above, the following must be considered for multiple fastening of non-structural redundant systems:
A multiple fixing (redundant system) according to EN 1992-4 and CEN/TR 17079 is defined by
- at least 3 fixing points (per attached element) with at least one anchor at each fixing point and a permissible load per fixing point of 1.4 kN
- or by at least 4 fixing points with at least one anchor each fixing point and a permissible load per fixing point of 2.1 kN
- Additionally, it has to be proven that the stiffness of the attached element shall be large enough to ensure that in case of excessive slip or failure of a fastener the load on this fastener or fixing point can be transferred to neighbouring fixing points without significantly violating the requirements on the attached element in the serviceability and ultimate limit state.

For further details see EN 1992-4 section 7.3 and CEN/TR 17079.

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.
2) Further technical information for installation see ETA.
3) Valid for tensile load, shear load and oblique load under any angle. In the case of combinations of tensile, shear loads and bending moments, the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018.

Loads

Concrete screw UltraCut FBS II US/SK

Permissible loads[1)2)] for a single anchor in masonry for Push-through installation.
For the design the complete current assessment ETA-20/0134 of 14.07.2022 has to be considered.

Type	Min. compressive brick strength f_b [N/mm²]	Brick raw density ρ [kg/dm³]	Minimum brick dimensions (L x W x H) [mm]	Nominal anchorage depth h_{nom} [mm]	Minimum member thickness h_{min} [mm]	Maximum Installation torque $T_{imp.\,max}$ [3)] [Nm]	Permissible tensile load [4)] N_{perm} [kN]	Permissible shear load [4)] parallel [6)] $V_{perm\,\|}$ [kN]	Minimum spacing [5)] $s_{min\,\|}$ / $s_{min\,\|}$ [mm]	Minimum edge distance [5)] c_{min} [mm]
Solid brick Mz, acc. to EN 771-1										
FBS II 6	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.54	0.34	80	50
FBS II 6	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.60	0.40	80	50
FBS II 6	≥ 17.5	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.66	0.40	80	50
FBS II 8	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.46	1.37	80	60
FBS II 8	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.54	1.60	80	60
FBS II 8	≥ 17.5	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.57	1.66	80	60
FBS II 10	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.40	1.26	80	70
FBS II 10	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.46	1.46	80	70
FBS II 10	≥ 17.5	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.49	1.51	80	70
Solid brick Mz, nordic, acc. to EN 771-1										
FBS II 6	≥ 16.0	≥ 1.8	228 x 108 x 54	≥ 40	≥ 108	80	0.34	0.31	80	50
FBS II 6	≥ 20.0	≥ 1.8	228 x 108 x 54	≥ 40	≥ 108	80	0.40	0.37	80	50
FBS II 8	≥ 16.0	≥ 1.8	228 x 108 x 54	≥ 50	≥ 108	80	0.46	1.34	80	60
FBS II 8	≥ 20.0	≥ 1.8	228 x 108 x 54	≥ 50	≥ 108	80	0.51	1.49	80	60
FBS II 10	≥ 16.0	≥ 1.8	228 x 108 x 54	≥ 55	≥ 108	80	0.37	1.23	80	70
FBS II 10	≥ 20.0	≥ 1.8	228 x 108 x 54	≥ 55	≥ 108	80	0.43	1.37	80	70
Solid sand-lime brick KS, acc. to EN 771-2										
FBS II 6	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.43	0.51	80	50
FBS II 6	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.49	0.60	80	50
FBS II 6	≥ 20.0	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.54	0.66	80	50
FBS II 8	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.54	0.66	80	60
FBS II 8	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.60	0.74	80	60
FBS II 8	≥ 20.0	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.69	0.83	80	60
FBS II 10	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.54	0.89	80	70
FBS II 10	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.63	1.00	80	70
FBS II 10	≥ 20.0	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.69	1.11	80	70
Perforated sand-lime brick KSL, acc. to EN 771-2										
FBS II 6	≥ 10.0	≥ 1.4	240 x 175 x 113	≥ 40	≥ 175	65	0.09	0.80	80	50
FBS II 6	≥ 12.0	≥ 1.4	240 x 175 x 113	≥ 40	≥ 175	65	0.11	0.94	80	50
FBS II 6	≥ 16.0	≥ 1.4	240 x 175 x 113	≥ 40	≥ 175	65	0.14	1.17	80	50
FBS II 6	≥ 17.5	≥ 1.4	240 x 175 x 113	≥ 40	≥ 175	65	0.17	1.26	80	50
FBS II 8	≥ 10.0	≥ 1.4	240 x 175 x 113	≥ 50	≥ 175	65	0.26	0.66	80	60
FBS II 8	≥ 12.0	≥ 1.4	240 x 175 x 113	≥ 50	≥ 175	65	0.29	1.03	80	60
FBS II 8	≥ 16.0	≥ 1.4	240 x 175 x 113	≥ 50	≥ 175	65	0.37	1.40	80	60
FBS II 8	≥ 17.5	≥ 1.4	240 x 175 x 113	≥ 50	≥ 175	65	0.40	1.49	80	60
FBS II 10	≥ 10.0	≥ 1.4	240 x 175 x 113	≥ 55	≥ 175	65	0.23	0.77	80	70
FBS II 10	≥ 12.0	≥ 1.4	240 x 175 x 113	≥ 55	≥ 175	65	0.26	1.23	80	70
FBS II 10	≥ 16.0	≥ 1.4	240 x 175 x 113	≥ 55	≥ 175	65	0.34	1.66	80	70
FBS II 10	≥ 17.5	≥ 1.4	240 x 175 x 113	≥ 55	≥ 175	65	0.37	1.77	80	70

1) The partial safety factors for material resistance as regulated in assessment 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 all sizes and head shapes, for stainless steel R for the sizes 8 and 10. Exakt values see ETA.
2) The given loads are valid for installation and use of fixations in dry masonry, use category d/d, width of the joints $w_j \leq 3$ mm and general purpose mortar with strength class M2.5 -M9. Further information and details on drill hole preparation, etc., see ETA.
3) Maximum allowable device torque for installation with any tangential impact screw driver. Further technical data 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) Minimum feasible spacing resp. edge distance. Details as well as to the distances to joints see assessment.
6) Shear load parallel to the vertical joint. Load reduction for shear load perpendicular to the vertical joint see ETA.