

UltraCut FBS II. High-performance concrete screw for absolute installation ease.



Concrete screw UltraCut FBS II. The assortment for a wide range of applications.



FBS II ZN-plated

FBS II 6 ZN-plated

FBS II CP

UltraCut FBS II 8, 10, 12 and 14 zinc-plated steel

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



Through the special thread geometry, the screw flanks cut deeply into the concrete and allow **higher loads. This saves costs** because less anchor points and smaller base plates are required.

UltraCut FBS II 10x100 US

The short UltraCut FBS II, with a reduced embedment depth, allows for a short drill hole depth, fast installation and less reinforcement hits which makes it an efficient choice for many applications.



UltraCut FBS II 10x60 US







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 an optimal adaption to different applications / load requirements.
- · Expansion-free anchoring (undercut) allows for lowest edgeand 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.
- The concrete screws are also approved for multiple use in temporary fixings (e.g. inclined supports) after a verification with the checking gauge FUP. Also with young concrete 10 N/ mm².
- 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 bricks. 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 is recommended for the pushthrough installation.
- · The screw is installed correctly when the screw head sits flush on the fixture and cannot be screwed in deeper (visual setting control).
- · 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.
- · 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 documents (ETA-15/0352, ETA-20/0321 and ETA-20/0134) also cover the use of hollow drills with automatic drill hole cleaning and the use of diamond drilling holes (except ETA-20/0134).
- · The UltraCut FBS II US 8-14 as concrete-concrete connector is also suitable for the strengthening of existing concrete structures through a top concrete laver.
- · 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-20/0321. for cracked concrete. Connector for strengthening of existing concrete structures through top concrete layer.



ETA-20/0134 for masonry



Temporary fixings





According VdS CES-Guidelines for sprinkler systems

Recommendations

Suitable for building materials, such as



Cracked concrete



Uncracked concrete

Masonry brick*







Perforated sand-lime brick*

* ETA approval for diameter 8 and 10



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Installation





UltraCut FBS II for multiple use of temporary fixings

The FBS II can be used to install temporary construction site installations such as guardrails, inclined supports and frameworks in young concrete of 10 N/mm². Therefore the FBS II 8, 10, 12 and 14 made of galvanised zinc-plated steel are approved for temporary indoor and outdoor use.

After dismantling, the fischer concrete screw FBS II can be reused.

Depending on the concrete quality, ten or more applications of the same FBS II are possible.

For this purpose the abrasion of the thread is examined with the corresponding checking gauge.

Applications



Railings

UltraCut FBS II 8,10,12 and 14

Metal construction









Brackets / base plates

Formwork construction / site facilities





Construction site installations in tunnels

Timber work





Step/rise anchorage

Beam anchorage

Sanitary, heating and electrical industry



Suspended mounting channels

Diamond drilling equipment



Cable trays

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UltraCut FBS II 6 zinc-plated steel

Different head designs offer a maximum of flexibility and a perfect adaptation to the application.



Advantages and functions

Your advantages at a glance

- · The special ratio between flank and shaft diameter allows for a deep and fast cutting into the concrete.
- · The ETA assessment option 1 includes the use in cracked and non-cracked concrete for highest safety requirements.
- · The UltraCut FBS II 6 is approved for multiple use of non-load bearing systems and thereby ideal for the installation of pipe routes and prestressed hollow concrete ceilings.
- The first diameter 6 mm concrete screw with an ETA assessment for the C1 seismic performance category for additional safety standards.
- 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 screw 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 screws FBS II 6-10 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 6 ZN-plated is recommended for the push-through and pre-positioned installation.
- · The screw is installed correctly when the screw head sits flush on the fixture/substrate surface 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.
- · For the installation in masonry, please follow the instruction guidelines in the packaging with the suitable torque setting (impact wrench levels).

Approvals



for cracked concrete



concrete

ETA-18/0242, for non-structural applications in



ETA-20/0134 for masonry





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

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Variable embedment depths (Multiple use of redundant systems)

Enables a flexible adaptation to the loads.



- 1. Fast installation due to minimum embedment depth e.g. FBS II 6x60/5 US
- · Minimum embedment depth is 25 mm
- $\cdot~$ Permissible tensile load at $\rm h_{\rm nom,\,min}$ = 25 mm is 0.7 kN
- \cdot Permissible shear load at h_{nom, min} = 25 mm is 1.8 kN
- 2. Maximum load due to maximum embedment depth e.g. FBS II 6x60/5 US
- · Minimum embedment depth is 55 mm

Installation and applications





UltraCut FBS II 6

Sanitary, heating and electrical industry



Mounting channels





Suspended mounting channels



Prestressed hollow concrete ceilings

e.g.UltraCut FBS II M8/19



e. g. UltraCut FBS II M8/ M10 I

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Perforated tapes



UltraCut FBS II 8, 10, 12 and 14 CP

The high-performance concrete screw for absolute installation ease with a special coating.



saves costs because less anchor points and smaller base plates are required.

ed rust.





Salt spray chamber mist test

The UltraCut FBS II was developed in different coatings subjected to the salt spray chamber mist test according to DIN EN ISO 9227. The result is that the UltraCut FBS II CP coating withstands at least 2,000 h without red rust. Climate change test (among other things based on Nord-test Method NT)

The climate change test simulates a realistic environment with changing humidity and heat. Here too, the coating of the UltraCut FBS II CP performs significantly better than the usual coatings galvanised zinc-plated (ZN-plated) and hot deep galvanised (HDG).

Tested and approved: High protection of the coating against red rust.

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Advantages and functions

Your advantages at a glance

- The innovative surface coating enables an additional corrosion protection (e.g. through external test reports for the salt spray chamber mist test over 2000 h).
- With up to 3 embedment depths, the UltraCut FBS II allows for the same screw to be used for different component thicknesses.
- The ETA approval covers the application in cracked concrete and the seismic performance categories C1 and C2.
- First concrete screw with an ETA for masonry for a variable field of applications.
- 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 CP 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 diamond drilled 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



for masonry





According VdS CES-Guidelines for sprinkler systems

Recommendations

Suitable for building materials, such as



Cracked concrete







Masonry brick *







Perforated sand-lime brick*

* ETA recommendation for diamater 8 and 10

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Installation and applications





UltraCut FBS II CP

Steel construction



Façade substructures



Connection angle



Ladder shafts



Steel girders

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UltraCut FBS II zinc-plated steel as concrete-concrete connector





UltraCut FBS II ZN-plated

Setting tool SC-ST

Your advantages at a glance

- ETA-approval for the fixing of FBS II as a top concrete or concreteconcrete connector for the strengthening of bridges or old buildings.
- Due to the optional setting tool SC-ST the distance of 40 mm to the existing concrete can be easily reached and an ETA-conform, error-free installation of the FBS II is guaranteed.
- Depending on the diameter of the FBS II three embedment depths are possible.

Functioning

 The UltraCut FBS II is is mounted with a tangential impact wrench (e.g. the fischer FSS 18V) and the setting tool SC-ST. As soon as the setting tool sits flush to the concrete surface the correct distance is reached and the installation is finally done.

Concrete-concrete connections



Bridge reinforcement



Parking garage reinforcement





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UltraCut FBS II 10 zinc-plated steel with adjusting washer FSW





UltraCut FBS II 10 ZN-plated

Adjusting washer FSW

Your advantages at a glance

- Together with the adjusting disc and the fischer UltraCut FBS II 10 concrete screw wooden beams and wooden sleepers can be adjusted easily and quickly.
- The adjustment process is simplified, so that the support of a second person is not required.
- The adjusting disc is attached to the wooden beam using commonly available screws (recommendation: e.g. fischer PowerFast FPF-PT 5x40, Art. no. 652880).
- · After the installation the space under the wood should be injected with mortar.

Functioning

- After the installation of the concrete screw with two adjusting discs FSW the FBS II can easily be loosened, to place maximum 10 mm packing below the wooden beam, and fixed again.
- For installation a tangential impact wrench (e.g. the fischer FSS 18V) with a suitable impact wrench socket or an internal torx drive is recommended.

Timber construction



Wooden sleepers adjustment



Wooden beams adjustment



Optional dismantling of the FSW



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| Concrete screw UltraCut FBS II US | | | | | | | | | | | | | |
|-----------------------------------|-----------------------|------------------------------------|-------|------|----------------|---------------------------------|---|---|---|--------------|------------|--|--|
| | | | | | | | | | | | | | |
| FBS II US | BS II US CP | | | | | | | | | | | | |
| | Galvani- sed steel | Corrosion protection coating | Appro | oval | Drill diameter | Screw dimen- sion | Screw-in depth with fixture thickness | Screw-in depth with fixture thickness | Screw-in depth with fixture thickness | Drive | Sales unit | | |
| | | | | | d _o | d _s x l _s | h _{nom1} / t _{fix} | h _{nom2} / t _{fix} | h _{nom3} / t _{fix} | | | | |
| | ltem no. | ltem no. | ETA | DIBt | [mm] | [mm] | [mm] | [mm] | [mm] | | [pcs] | | |
| Item | gvz | ср | | | | | | | | | | | |
| FBS II 8x55 5/- US TX | 536851 | 557781 | • | • | 8 | 10.0 x 55 | 50/5 | - | - | TX40 / SW 13 | 50 | | |
| FBS II 8x70 20/5 US TX | 536852 | 557782 | • | • | 8 | 10.0 x 70 | 50/20 | - | 65/5 | TX40 / SW 13 | 50 | | |
| FBS II 8x80 30/15 US TX | 536853 | - | • | • | 8 | 10.0 x 80 | 50/30 | - | 65 / 15 | TX40 / SW 13 | 50 | | |
| FBS II 8x80 30/15 US TX | - | 557783 | • | • | 8 | 10.0 x 80 | 50/30 | - | 65 / 65 | TX40 / SW 13 | 50 | | |
| FBS II 8x90 40/25 US TX | 536854 | 557784 | • | • | 8 | 10.0 x 90 | 50/40 | - | 65 / 55 | TX40 / SW 13 | 50 | | |
| FBS II 8x100 50/35 US TX | 536855 | 557785 | • | • | 8 | 10.0 x 100 | 50/50 | - | 65 / 35 | TX40 / SW 13 | 50 | | |
| FBS II 8x110 60/45 US TX | 536856 | - | • | • | 8 | 10.0 x 110 | 50/60 | - | 65 / 75 | TX40 / SW 13 | 50 | | |
| FBS II 8x130 80/65 US TX | 536857 | - | • | • | 8 | 10.0 x 130 | 50/80 | - | - | TX40 / SW 13 | 50 | | |
| FBS II 8x150 100/85 US TX | 558219 | - | • | • | 8 | 10.0 x 150 | 50 / 100 | - | 65 / 85 | TX40 / SW 13 | 50 | | |
| FBS II 8x170 120/105 US TX | 558220 | - | • | • | 8 | 10.0 x 170 | 50 / 120 | - | 65 / 105 | TX40 / SW 13 | 50 | | |
| FBS II 8x190 140/125 US TX | 558221 | - | • | • | 8 | 10.0 x 190 | 50 / 140 | - | 65 / 125 | TX40 / SW 13 | 20 | | |
| FBS II 10x60 5/-/- US | 536858 | 557786 | • | • | 10 | 12.0 x 60 | 55/5 | - | - | SW 15 | 50 | | |
| FBS II 10x70 15/5/- US | 536859 | 557787 | • | • | 10 | 12.0 x 70 | 55 / 15 | 65/5 | - | SW 15 | 50 | | |
| FBS II 10x80 25/15/- US | 536860 | 557788 | • | • | 10 | 12.0 x 80 | 55 / 25 | 65 / 65 | - | SW 15 | 50 | | |
| FBS II 10x90 35/25/5 US | 536861 | 557789 | • | • | 10 | 12.0 x 90 | 55/35 | 65 / 55 | 85/5 | SW 15 | 50 | | |
| FBS II 10x100 45/35/15 US | 536862 | 557790 | • | • | 10 | 12.0 x 100 | 55/45 | 65 / 35 | 85 / 15 | SW 15 | 50 | | |
| FBS II 10x120 65/55/35 US | 536863 | 557791 | • | • | 10 | 12.0 x 120 | 55 / 65 | 65 / 25 | 85 / 35 | SW 15 | 50 | | |
| FBS II 10x140 85/75/55 US | 536864 | 557792 | • | • | 10 | 12.0 x 140 | 55 / 85 | 65 / 45 | 85 / 55 | SW 15 | 50 | | |
| FBS II 10x160 105/95/75 US | 536865 | 557793 | • | • | 10 | 12.0 x 160 | 55 / 105 | 65 / 15 | 85 / 75 | SW 15 | 50 | | |
| FBS II 10x200 145/135/115 US | 536866 | - | • | • | 10 | 12.0 x 200 | 55 / 145 | 65 / 135 | 85 / 115 | SW 15 | 20 | | |
| FBS II 10x230 175/165/145 US | 536867 | - | • | • | 10 | 12.0 x 230 | 55 / 175 | 65 / 165 | 85 / 145 | SW 15 | 20 | | |
| FBS II 10x260 205/195/175 US | 536868 | - | • | • | 10 | 12.0 x 260 | 55/205 | 65 / 95 | 85 / 175 | SW 15 | 20 | | |
| FBS II 10x280 225/215/195 US | 558222 | - | • | • | 10 | 12.0 x 280 | 55 / 225 | 65 / 215 | 85 / 195 | SW 15 | 20 | | |
| FBS II 12x70 10/-/- US | 536869 | - | • | • | 12 | 14.0 x 70 | 60/10 | - | - | SW 17 | 20 | | |
| FBS II 12x85 25/10/- US | 536870 | 557794 | • | • | 12 | 14.0 x 85 | 60/25 | 75 / 10 | - | SW 17 | 20 | | |
| FBS II 12x110 50/35/10 US | 536871 | 557795 | • | • | 12 | 14.0 x 110 | 60/50 | 75 / 35 | 100 / 10 | SW 17 | 20 | | |
| FBS II 12x130 70/55/30 US | 536872 | - | • | • | 12 | 14.0 x 130 | 60/70 | 75 / 55 | 100/30 | SW 17 | 20 | | |
| FBS II 12x150 90/75/50 US | 536873 | - | • | • | 12 | 14.0 x 150 | 60/90 | 75 / 75 | 100 / 50 | SW 17 | 20 | | |
| FBS II 12x170 110/95/70 US | 558223 | - | • | • | 12 | 14.0 x 170 | 60 / 110 | 75 / 95 | 100/70 | SW 17 | 20 | | |
| FBS II 12x190 130/115/90 US | 558224 | - | • | • | 12 | 14.0 x 190 | 60 / 130 | 75 / 115 | 100/90 | SW 17 | 20 | | |
| FBS II 12x210 150/135/110 US | 558225 | - | • | • | 12 | 14.0 x 210 | 60 / 150 | 75 / 135 | 100 / 110 | SW 17 | 20 | | |
| FBS II 14x75 10/-/- US | 536874 | 557796 | • | • | 14 | 16.0 x 75 | 65 / 10 | - | - | SW 21 | 20 | | |
| FBS II 14x95 30/10/- US | 536875 | 557797 | • | • | 14 | 16.0 x 95 | 65/30 | 85 / 10 | - | SW 21 | 20 | | |
| FBS II 14x100 35/15/- US | 536876 | 557798 | • | • | 14 | 16.0 x 100 | 65 / 35 | 85 / 15 | - | SW 21 | 20 | | |
| FBS II 14x125 60/40/10 US | 536877 | 557799 | • | • | 14 | 16.0 x 125 | 65 / 60 | 85 / 40 | 85/5 | SW 21 | 10 | | |
| FBS II 14x150 85/65/35 US | 536878 | - | • | • | 14 | 16.0 x 150 | 65 / 85 | 85 / 65 | 115 / 35 | SW 21 | 10 | | |
| FBS II 14x180 115/85/65 US | 558226 | - | • | • | 14 | 16.0 x 180 | 65 / 115 | 85 / 95 | 115 / 65 | SW 21 | 10 | | |
| FBS II 14x210 145/125/95 US | 558227 | - | • | • | 14 | 16.0 x 210 | 65 / 145 | 85 / 125 | 115 / 95 | SW 21 | 10 | | |
| FBS II 14x240 175/155/125 US | 558228 | - | • | • | 14 | 16.0 x 240 | 65 / 175 | 85 / 155 | 115 / 125 | SW 21 | 10 | | |



| Concrete screw UltraCut FBS II SK | | | | | | | | | | | | |
|-----------------------------------|-----------------------|------------------------------------|-------|------|----------------|---------------------------------|---|---|---|-------|------------|--|
| | | | | | | | | | | | | |
| FBS II SK | FBS II SK CP | | | | | | | | | | | |
| | Galvani- sed steel | Corrosion protection coating | Appro | oval | Drill diameter | Screw dimen- sion | Screw-in depth with fixture thickness | Screw-in depth with fixture thickness | Screw-in depth with fixture thickness | Drive | Sales unit | |
| | | | | | d _o | d _s x l _s | h _{nom1} / t _{fix} | h _{nom2} / t _{fix} | h _{nom3} / t _{fix} | | | |
| | Item no. | Item no. | ETA | DIBt | [mm] | [mm] | [mm] | [mm] | [mm] | | [pcs] | |
| Item | gvz | ср | | | | | | | | | | |
| FBS II 8x60 10/- SK | 536880 | 557800 | • | • | 8 | 10.0 x 60 | 50 / 10 | - | - | TX40 | 50 | |
| FBS II 8x80 30/15 SK | 536881 | - | • | • | 8 | 10.0 x 80 | 50/30 | - | 65 / 15 | TX40 | 50 | |
| FBS II 8x80 30/15 SK | - | 557801 | • | • | 8 | 10.0 x 80 | 50/30 | 65 / 65 | 65 / 15 | TX40 | 50 | |
| FBS II 8x90 40/25 SK | 536882 | - | • | • | 8 | 10.0 x 90 | 50 / 40 | - | 65 / 25 | TX40 | 50 | |
| FBS II 8x90 40/25 SK | - | 557802 | • | • | 8 | 10.0 x 90 | 50 / 40 | 65 / 55 | 65 / 25 | TX40 | 50 | |
| FBS II 8x100 50/35 SK | 558229 | - | • | • | 8 | 10.0 x 100 | 50/50 | - | 65 / 35 | TX40 | 50 | |
| FBS II 8x110 60/45 SK | 558230 | - | • | • | 8 | 10.0 x 110 | 50/60 | - | 65 / 45 | TX40 | 50 | |
| FBS II 8x120 70/55 SK | 558231 | - | • | • | 8 | 10.0 x 120 | 50/70 | - | 65 / 55 | TX40 | 50 | |
| FBS II 8x140 90/75 SK | 558232 | - | • | • | 8 | 10.0 x 140 | 50/90 | - | 65 / 75 | TX40 | 50 | |
| FBS II 8x160 110/95 SK | 558233 | - | • | • | 8 | 10.0 x 160 | 50 / 110 | - | 65 / 95 | TX40 | 50 | |
| FBS II 8x180 130/115 SK | 558234 | - | • | • | 8 | 10.0 x 180 | 50 / 130 | - | 65 / 115 | TX40 | 20 | |
| FBS II 8x200 150/135 SK | 558235 | - | • | • | 8 | 10.0 x 200 | 50 / 150 | - | 65 / 135 | TX40 | 20 | |
| FBS II 10x65 10/-/- SK | 536884 | 557803 | • | • | 10 | 12.0 x 65 | 55 / 10 | - | - | TX50 | 50 | |
| FBS II 10x80 25/15/- SK | 536885 | 557804 | • | • | 10 | 12.0 x 80 | 55 / 25 | 65 / 15 | - | TX50 | 50 | |
| FBS II 10x95 40/30/10 SK | 536886 | - | • | • | 10 | 12.0 x 95 | 55/40 | 65/30 | 85 / 10 | TX50 | 50 | |
| FBS II 10x100 45/35/15 SK | 536887 | 557805 | • | • | 10 | 12.0 x 100 | 55 / 45 | 65/35 | 85 / 15 | TX50 | 50 | |
| FBS II 10x120 65/55/35 SK | 536888 | - | • | • | 10 | 12.0 x 120 | 55 / 65 | 65 / 55 | 85 / 35 | TX50 | 50 | |
| FBS II 10x140 85/75/55 SK | 558236 | - | • | • | 10 | 12.0 x 140 | 55 / 85 | 65 / 75 | 85 / 55 | TX50 | 50 | |
| FBS II 10x160 105/95/75 SK | 558237 | - | • | • | 10 | 12.0 x 160 | 55 / 105 | 65/95 | 85 / 75 | TX50 | 50 | |
| FBS II 10x180 125/115/95 SK | 558238 | - | • | • | 10 | 12.0 x 180 | 55 / 125 | 65 / 115 | 85 / 95 | TX50 | 20 | |

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| Concrete screw UltraCut FBS II 6 | Concrete screw | UltraCut FBS II 6 |
|----------------------------------|----------------|-------------------|
|----------------------------------|----------------|-------------------|



sunk head

| | | Appro | oval | Drill dia- meter | Min. drill hole depth for through fixings | Screw length | Head-Ø | Screw-in depth Multiple fixing ETA- 18/0242 | Screw-in depth Sin- gle point fixing ETA- 15/0352 | Usable length | Drive | Sales unit |
|--------------------------|----------|-------|------|---------------------|--|-----------------|----------------|---|---|---|-------|------------|
| | | | | d _o | h ₂ | I _s | d _K | | | t _{fix,min} - t _{fix,max} | | |
| | ltem no. | ETA | DIBt | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | | [pcs] |
| Item | | | | | | | | | | | | |
| FBS II 6 x 30/5 P | 546377 | • | • | 6 | 40 | 30 | 14.4 | 25 | - | Screw length - h _{nom} | TX30 | 100 |
| FBS II 6 x 40/5 P | 546378 | • | • | 6 | 50 | 40 | 14.4 | 25 - 35 | - | Screw length - h _{nom} | TX30 | 100 |
| FBS II 6 x 40/5 P K (2) | 567289 | • | • | 6 | 50 | 40 | 14.4 | 25 - 35 | - | Screw length - h _{nom} | TX30 | 1 |
| FBS II 6 x 40/5 LP | 546379 | • | • | 6 | 50 | 40 | 17.5 | 25 - 35 | - | Screw length - h _{nom} | TX30 | 100 |
| FBS II 6 x 60/5 P | 546380 | • | • | 6 | 70 | 60 | 14.4 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | TX30 | 100 |
| FBS II 6 x 60/5 P E | 561394 | • | • | 6 | 70 | 60 | 14.4 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | TX30 | 1 |
| FBS II 6 x 80/25 P | 546381 | • | • | 6 | 90 | 80 | 14.4 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | TX30 | 100 |
| FBS II 6 x 30/5 SK | 546382 | • | • | 6 | 40 | 30 | 13.5 | 25 | - | Screw length - h _{nom} | TX30 | 100 |
| FBS II 6 x 40/5 SK | 546383 | • | • | 6 | 50 | 40 | 13.5 | 25 - 35 | - | Screw length - h _{nom} | TX30 | 100 |
| FBS II 6 x 60/5 SK | 546384 | • | • | 6 | 70 | 60 | 13.5 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | TX30 | 100 |
| FBS II 6 x 60/5 SK K (2) | 567290 | • | • | 6 | 70 | 60 | 13.5 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | TX30 | 1 |
| FBS II 6 x 80/25 SK | 546385 | • | • | 6 | 90 | 80 | 13.5 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | TX30 | 100 |
| FBS II 6 x 100/45 SK | 546386 | • | • | 6 | 110 | 100 | 13.5 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | TX30 | 100 |
| FBS II 6 x 120/65 SK | 546387 | • | • | 6 | 130 | 120 | 13.5 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | TX30 | 100 |
| FBS II 6 x 140/85 SK | 546388 | • | • | 6 | 150 | 140 | 13.5 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | TX30 | 100 |
| FBS II 6 x 160/105 SK | 546389 | • | • | 6 | 170 | 160 | 13.5 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | TX30 | 100 |
| FBS II 6 x 40/5 US | 558601 | • | • | 6 | 50 | 40 | 17.0 | 25 - 35 | - | Screw length - h _{nom} | SW 13 | 100 |
| FBS II 6 x 40/5 US | 546390 | • | • | 6 | 50 | 40 | 17.0 | 25 - 35 | - | Screw length - h _{nom} | SW 10 | 100 |
| FBS II 6 x 60/5 US | 558602 | • | • | 6 | 70 | 60 | 17.0 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | SW 13 | 100 |
| FBS II 6 x 60/5 US | 546391 | • | • | 6 | 70 | 60 | 17.0 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | SW 10 | 100 |
| FBS II 6 x 80/25 US | 558603 | • | • | 6 | 90 | 80 | 17.0 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | SW 13 | 100 |
| FBS II 6 x 80/25 US | 546392 | • | • | 6 | 90 | 80 | 17.0 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | SW 10 | 100 |
| FBS II 6 x 100/45 US | 558604 | • | • | 6 | 110 | 100 | 17.0 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | SW 13 | 100 |
| FBS II 6 x 100/45 US | 546393 | • | • | 6 | 110 | 100 | 17.0 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | SW 10 | 100 |
| FBS II 6 x 100/45 US E | 554072 | • | • | 6 | 110 | 100 | 17.0 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | SW 10 | 1 |
| FBS II 6 x 120/65 US | 558605 | • | • | 6 | 130 | 120 | 17.0 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | SW 13 | 100 |
| FBS II 6 x 120/65 US | 546394 | • | • | 6 | 130 | 120 | 17.0 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | SW 10 | 100 |
| FBS II 6 x 60/5 US E | 554071 | • | • | 6 | - | 60 | 17.0 | 25 - 55 | 40 - 55 | Screw length - h _{nom} | SW 10 | 1 |

nal head with molded washer

Installation parameters



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 | Nomina | Nominal screw-in depth | | Drill hole depth (push- through installation) | Clearance hole diam- eter | Maximum torque for instal- lation with impact screw driver in concrete ¹⁾ | | Maximum torque for instal- lation in masonry | | Width across flat | Drive |
|--|------------------------|-------------------|------------------------|-------------------|---|---------------------------------|--|-------------------------|---|-------------------------|----------------------|----------------------|
| | d ₀ | h _{nom1} | h _{nom2} | h _{nom3} | h ₂ ≥ | d _f | T imp, max zinc-plated | T _{imp, max R} | T _{imp, max gvz} | T _{imp, max R} | SW | ТХ |
| | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [Nm] | [Nm] | [Nm] | [Nm] | | |
| FBS II 6 | 6 | 25–55 | 25–55 | 25–55 | I + 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 | I + 10 | 12,8–14 | 650 | 450 | 80 | 80 | 15 | TX 50 (SK) |
| FBS II 12 | 12 | 60 | 75 | 100 | I + 10 | 14,8–16 | 650 | 650 | - | - | 17 | - |
| FBS II 14 | 14 | 65 | 85 | 115 | I + 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.



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.

| | | | | | Cracked concrete | | | | Non-cracked o | concrete | | | |
|-----------|----------------------|-------------------|--------------------------------|-----------------------------|--|---|--------------------------------|--|--|---------------------------------|--------------------------------|--------------------------------|--|
| | Material/ surface | Screw-in depth | Minimum member thickness | Instal- lation torque | Permissible te minimum spac with reduced I | ension (N _{perm}) an cing (s _{min}) and e loads | d shear loads dge distances | (V _{perm}); (C _{min}) | Permissible tension (N $_{perm}$) and shear loads (V $_{perm}$); minimum spacing (s $_{min}$) and edge distances (c $_{min}$) with reduced loads | | | | |
| | | h _{nom} | h _{min} | T ²⁾ | N _{perm} ³⁾ | V _{perm} ³⁾ | S _{min} ³⁾ | C _{min} ³⁾ | N _{perm} ³⁾ | V _{perm} ³⁾ | S _{min} ³⁾ | C _{min} ³⁾ | |
| Туре | | [mm] | [mm] | [Nm] | [kN] | [kN] | [mm] | [mm] | [kN] | [kN] | [mm] | [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 $s \ge 3 \times h_{er}$ and an edge distance $c \ge 1.5 \times h_{er}$.

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 anchor¹⁾ in normal concrete of strength class C20/25.

For the design the complete current assessment ETA-17/0740 has to be considered.

| | | | | | Cracked con | crete | | | Non-cracked concrete | | | | |
|-----------|----------------------|-------------------|--------------------------------|-----------------------------------|--|---|--------------------------------|---|--|-----------------|--------------------------------|--------------------------------|--|
| | Material/ surface | Screw-in depth | Minimum member thickness | Maximum installation torque | Permissible minimum sp with reduced | tension (N _{perm}) acing (s _{min}) an I loads | and shear loa d edge distan | ds (V _{perm}); ces (c _{min}) | Permissible tension (N $_{\rm perm}$) and shear loads (V $_{\rm perm}$); minimum spacing (s $_{\rm min}$) and edge distances (c $_{\rm min}$) with reduced loads | | | | |
| | | h _{nom} | h _{min} | T ²⁾ | N _{perm} ³⁾ V _{perm} ³⁾ S _{min} ³⁾ C _{min} ³⁾ N _p | | | | | V ³⁾ | S _{min} ³⁾ | C _{min} ³⁾ | |
| Туре | | [mm] | [mm] | [Nm] | [kN] | [kN] | [mm] | [mm] | [kN] | [kN] | [mm] | [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 γ_L = 1.4 are considered. As a single anchor counts e.g. an anchor with a spacing s ≥ 3 x h_{er} and an edge distance c ≥ 1.5 x h_{er}. 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 loads¹⁾³⁾ for a single anchor or a fixing point⁴⁾⁵⁾⁶⁾ in solid brick masonry

| need in a single unered of a name point and brok made | ,omy. | | | |
|---|---|------|--------------------|----------------------|
| Туре | | | 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 | $f_b \ge 12$ | [kN] | 1.1 ¹⁰⁾ | 1.4 ¹⁰⁾ |
| Solid clay brick (EN771-1) \ge 240 x 113 x 115 mm | $f_{b} \ge 20$ | [kN] | 1.67)10) | 1.6 ⁷⁾¹⁰⁾ |
| Solid sand-lime brick (EN771-2) \ge 240 x 71 x 115 mm | $f_b \ge 12$ | [kN] | 1.27)10) | 1.27)10) |
| Aerated concrete (EN771-4) ≥ 499 x 249 x 120 mm | $f_{b} \ge 6$ | [kN] | 0.7 | 0.9 |
| Minimum spacing (s $_{\rm min}$) and edge distances (c $_{\rm min}$) | | | | |
| 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 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.

^a 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.

⁹ 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,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 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.

| | | | | | | | 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⁾ | | | | | | |
| | | h _{nom} | h _{min} | T ²⁾ | S _{min} | C ³⁾ | f _{c,cube} ≥ 10 N/mm² | $f_{c,cube} \ge 15 \text{ N/mm}^2$ | f _{c,cube} ≥ 20 N/mm ² | f _{c,cube} ≥ 25 N/mm² | | | |
| Туре | | [mm] | [mm] | [Nm] | [mm] | [mm] | [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 γ_L = 1.4 is considered. The screw may be used in the concrete member before the characteristic compressive strength f_{e,cube} is reached. In this case, the concrete compressive strength f_{e,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 $\geq c_{min} \times 1.5$. Detail see approval.

⁴⁾ Values valid for all load directions.

Loads

Concrete screw UltraCut FBS II 6

Permissible loads for a single anchor¹ 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 to minimum spa with reduced | ension (N _{perm}) a cing (s _{min}) and loads | nd shear loads edge distances | (V _{perm}); s (C _{min}) | Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads | | | | |
| | | h _{nom} | h _{min} | T 2) | N ³⁾ | V ³⁾ | S _{min} ³⁾ | C _{min} ³⁾ | N _{perm} ³⁾ | V ³⁾ | S _{min} ³⁾ | C _{min} ³⁾ | |
| Туре | | [mm] | [mm] | [Nm] | [kN] | [kN] | [mm] | [mm] | [kN] | [kN] | [mm] | [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. guasi-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. Further technical information for installation see ETA.

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 anchor¹⁰ 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. | | | | | | | | | | | | | | |
|---|----------------------------------|------------------|--------------|-------------|-----|-----|-----|-----|-----|--|--|--|--|--|
| Туре | | | FBS II 6 gvz | BS 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 ≥ 25 mm | | [kN] | 0.2 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | | | | | |
| $d_{b} \ge 30 \text{ mm}$ | | [kN] | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | | | | | |
| $d_{b} \ge 35 \text{ mm}$ | | [kN] | 1.7 | 1.9 | 2.1 | 2.4 | 2.6 | 2.9 | 3.1 | | | | | |
| $d_{b} \ge 40 \text{ mm}$ | | [kN] | 1.7 | 2.3 | 2.6 | 2.9 | 3.3 | 3.6 | 3.8 | | | | | |
| d _b ≥ 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, s22)} | [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 $\gamma_1 = 1.4$ are considered.

Further technical information for installation see FTA

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

 $\label{eq:permissible loads {}^{1\!2\!2} \mbox{ for a single anchor in masonry for Push-through installation.}$ For the design the complete current assessment ETA-20/0134 of 14.07.2022 has to be considered.

| | Min. compres- sive brick strength | Brick raw density | Minimum brick dimensions | Nominal ancho- rage depth | Mini- mum member thick- ness | Maximum Installa- tion torque | Permis- sible tensile load ⁴⁾ | Permissi- ble shear load ⁴⁾ parallel ⁶⁾ | Minimum spacing ⁵⁾ | Minimum edge dis- tance ⁵⁾ |
|--|--|-----------------------|-----------------------------|------------------------------------|--|--|---|--|-------------------------------------|---|
| | f _b | ρ | (L x W x H) | h _{nom} | h _{min} | T _{imp. max} 3) | N _{perm} | V _{perm} | s _{min} / s _{min} | C _{min} |
| Туре | [N/mm ²] | [kg/dm ³] | [mm] | [mm] | [mm] | [Nm] | [kN] | [kN] | [mm] | [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 |

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.
The given loads are valid for installation and use of fixations in dry masonry, use category d/d, width of the joints w₁ ≤ 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.

