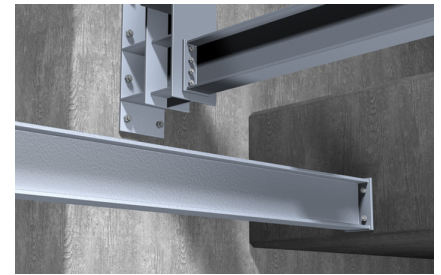
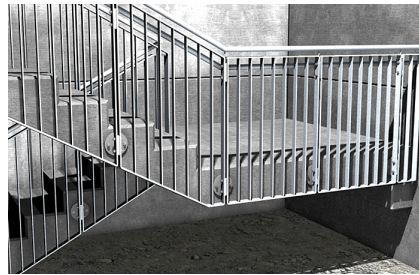


## The powerful screw solution for fast and simple installation



### VERSIONS

- zinc-plated steel
- stainless steel

### BUILDING MATERIALS

#### Approved for:

- Concrete C20/25 to C50/60, cracked
- Concrete C20/25 to C50/60, non-cracked

#### Also suitable for:

- Concrete C12/15
- Natural stone with dense structure

### APPROVALS



### ADVANTAGES

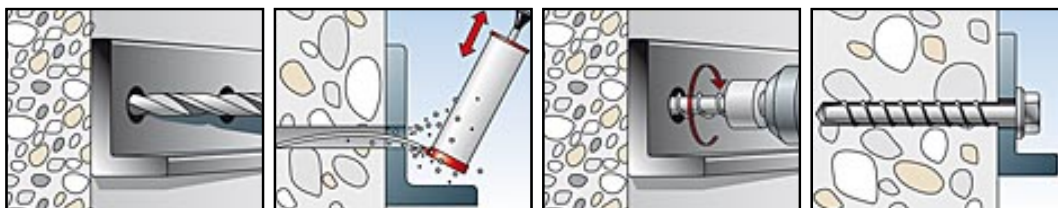
- The FBS ensures very high loads, thus resulting in fewer anchoring points.
- The FBS is installed in a single step, which saves time and money.
- The special zinc-flake coating ensures higher resistance to corrosion and provides more security.
- The newly added and enhanced A4 stainless steel version now also allows anchoring applications in outdoor areas.
- The FBS can also be used for temporary anchorings thanks to the fact that it can be fully disassembled.
- The ETA Approval Option 1 governs the use of single-point fixings in cracked and non-cracked concrete.

### APPLICATIONS

- Railings
- Consoles
- Shelving systems
- Gates
- Façade sub-structures
- Threshold / beam anchors
- Pipeline routes
- Cable trays
- Temporary anchorings

### FUNCTIONING

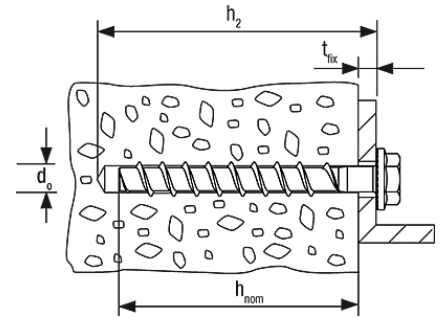
- The FBS is suitable for push-through installation.
- When the concrete screw is screwed into the drill hole, the thread flanks cut positively into the concrete.
- For installation, a tangential impact screw driver with a socket suited to impact wrenches is recommended.
- Use FBS A4 for external applications and those in a damp environment.



## TECHNICAL DATA



Concrete screw FBS 8-14



zinc flake coated steel

Article name	Art.-No.	ETA-approval	Drill hole diameter $d_0$ [mm]	Min. drill hole depth for through fixings $h_2$ [mm]	Screw length $l_s$ [mm]	Screw-in depth $h_{nom}$ [mm]	Max. fixture thickness $t_{fix}$ [mm]
FBS 8 x 80/15 US TX	066956	■	8	90	80	65	15
FBS 8 x 100/35 US TX	066957	■	8	110	100	65	35
FBS 8 x 70/5 US	517875	■	8	80	70	65	5
FBS 8 x 80/15 US	517876	■	8	90	80	65	15
FBS 8 x 90/25 US	517877	■	8	100	90	65	25
FBS 8 x 110/45 US	517878	■	8	120	110	65	45
FBS 8 x 130/65 US	517880	■	8	140	130	65	65
FBS 10 x 70/5 US	517881	■	10	80	70	65	5
FBS 10 x 90/5 US	517883	■	10	100	90	85	5
FBS 10 x 100/15 US	517884	■	10	110	100	85	15
FBS 10 x 120/35 US	517885	■	10	130	120	85	35
FBS 10 x 140/55 US	517887	■	10	150	140	85	55
FBS 10 x 160/75 US	517891	■	10	170	160	85	75
FBS 10 x 200/115 US	517893	■	10	210	200	85	115
FBS 10 x 230/145 US	520469	■	10	240	230	85	145
FBS 10 x 260/175 US	520470	■	10	270	260	85	175
FBS 12 x 90/5 US	517895	■	12	100	90	85	5
FBS 12 x 110/10 US	517898	■	12	120	110	100	10
FBS 12 x 130/30 US	517900	■	12	140	130	100	30
FBS 12 x 150/50 US	517903	■	12	160	150	100	50
FBS 14 x 110/10 US	517905	■	14	120	110	100	10
FBS 14 x 135/10 US	517908	■	14	145	135	125	10
FBS 14 x 160/35 US	517910	■	14	170	160	125	35

## A4

Article name	Art.-No.	ETA-approval	Drill hole diameter $d_0$ [mm]	Min. drill hole depth for through fixings $h_2$ [mm]	Screw length $l_s$ [mm]	Screw-in depth $h_{nom}$ [mm]	Max. fixture thickness $t_{fix}$ [mm]
FBS 8 x 70/5 US A4	523899	■	8	80	70	65	5
FBS 8 x 80/15 US A4	523900	■	8	90	80	65	15
FBS 8 x 90/25 US A4	523901	■	8	100	90	65	25
FBS 10 x 90/5 US A4	523902	■	10	100	90	85	5
FBS 10 x 100/15 US A4	523903	■	10	110	100	85	15
FBS 10 x 120/35 US A4	523904	■	10	130	120	85	35
FBS 12 x 110/10 US A4	523905	■	12	120	110	100	10
FBS 12 x 130/30 US A4	523906	■	12	140	130	100	30

## INSTALLATION OF CONCRETE SCREWS (USE A CORDLESS OR CABLED IMPACT WRENCH)

Betonschraube	Recommended nominal torque of the tangential impact wrench* <sup>1)</sup> [Nm]	Maximum tightening torque with torque wrench [Nm]
<b>FBS 8</b>	250	20
<b>FBS 10</b>	300	40
<b>FBS 12</b>	450	60
<b>FBS 14</b>	450	80

\*<sup>1)</sup> Use socket (black) which fit percussion power screwdrivers!

The conversion of nominal output into effective tightening torque varies from machine to machine - always therefore use torque control.

## LOADS

### Concrete screw FBS

**Highest permissible loads for a single anchor<sup>1)</sup>** in concrete C20/25<sup>4)</sup>

For the design the complete approval ETA - 11/0095 has to be considered.

Type	Embedment depth $h_{nom}$ [mm]	Min. member thickness $h_{min}$ [mm]	Installation torque $T_{inst, max}$ [Nm]	Cracked concrete				Non-cracked concrete			
				Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	Min. edge distance $c_{min}^{2)}$ [mm]	Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	Min. edge distance $c_{min}^{2)}$ [mm]
<b>FBS 8</b>	65	120	≤ 20	4,3	6,2	50	50	5,7	8,6	50	50
<b>FBS 10</b>	85	130	≤ 40	7,6	16,2	70	70	13,5	16,2	70	70
<b>FBS 12</b>	100	150	≤ 60	12,3	20,0	80	80	17,2	20,0	80	80
<b>FBS 14</b>	125	200	≤ 80	17,1	30,5	100	100	24,0	30,5	100	100

<sup>1)</sup> The partial safety factors for material resistance as regulated in the approval 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  $c \geq 1,5 \times h_{ef}$ .

<sup>2)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>3)</sup> For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

<sup>4)</sup> For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

## LOADS

### Concrete screw FBS A4

**Highest permissible loads for a single anchor<sup>1)</sup>** in concrete C20/25<sup>4)</sup>

For the design the complete approval ETA - 11/0095 has to be considered.

Type	Embedment depth $h_{nom}$ [mm]	Min. member thickness $h_{min}$ [mm]	Torque moment $T_{inst, max}$ [Nm]	Cracked concrete				Non-cracked concrete			
				Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	Min. edge distance $c_{min}^{2)}$ [mm]	Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	Min. edge distance $c_{min}^{2)}$ [mm]
<b>FBS 8 A4</b>	65	120	≤ 20	4,3	6,2	50	50	5,7	8,8	50	50
<b>FBS 10 A4</b>	85	130	≤ 40	7,6	19,0	70	70	13,5	19,0	70	70
<b>FBS 12 A4</b>	100	150	≤ 60	12,3	23,3	80	80	17,2	23,3	80	80

<sup>1)</sup> The partial safety factors for material resistance as regulated in the approval 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 approval.

<sup>2)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>3)</sup> For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

<sup>4)</sup> For higher concrete strength classes up to C50/60 higher permissible loads may be possible.