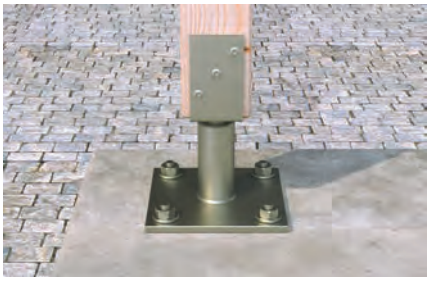
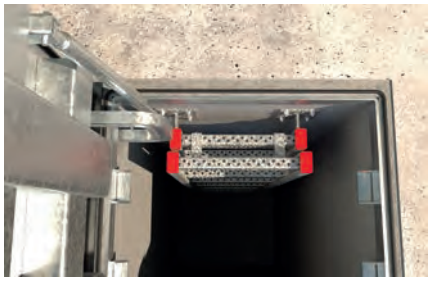
# Bolt anchor FBN II

The cost-efficient fixing for flexible use in non-cracked concrete



Column bases



Stormwater overflow tank manholes



## Applications

- Steel constructions
- Guard rails
- Consoles
- Ladders
- Cable trays
- Machines
- Staircases
- Gates
- Façades

## Advantages

- The standard anchorage depth achieves the maximum load-bearing capacities.
- The reduced anchorage depth reduces the drill hole depth. This minimises the amount of time needed for installation whilst increasing flexibility.
- Additional short version “K” with short anchoring depth.
- The long thread balances component tolerances and allows for stand-off installations, thus increasing flexibility.
- Few hammer blows and the minimal torque slippage allow for a noticeably simpler installation.
- The drive-in pin protects the thread from damage, and thus ensures a faster installation and dismantling of the attachment.
- The larger washer included with the FBN II GS creates a larger supporting surface and, as such, allows for the fixing of wood constructions.
- When using hollow drills with suction is no drill hole cleaning required.
- New ETA assessment for hot-dip galvanised version for variable working life in outdoor areas.

## Certificates

ETA-07/0211, for non-cracked concrete
ETA-18/0101, for non-cracked concrete and variable working life for outdoor areas

INOX STAINLESS STEEL

## Building materials

Approved for:
- Concrete C20/25 to C50/60, non-cracked

Also suitable for:
- Concrete C12/15
- Natural stone with dense structure

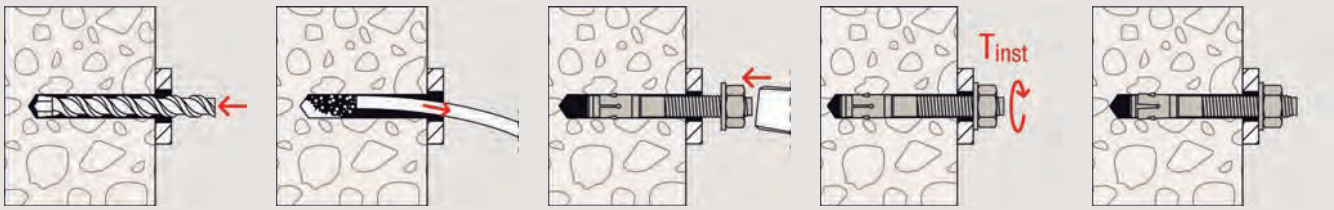
## Versions

- Zinc-plated steel
- Stainless steel R
- Hot-dip galvanised steel (with variable working life for outdoor areas)

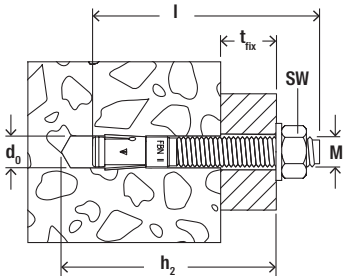
## Functioning

- The FBN II is suitable for pre-positioned and push-through installation; also suitable for stand-off installation under certain conditions.
- Prior to installation, place the hexagon nut in the optimal position (the drive-in pin projects by approx. 3 mm out of the hexagon nut).
- When applying the torque, the cone bolt is pulled into the expansion clip and expands it against the drill hole wall.
- The head embossing offers a simple control of the anchoring.
- In the case of series installation, we recommend using the FABS bolt anchor setting tool.

## Installation FBN II






## Technical data

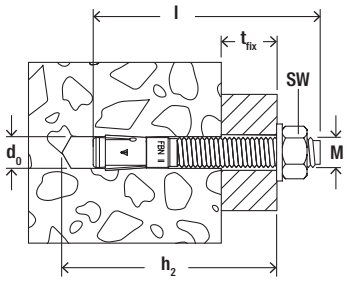
**Bolt anchor FBN II**

FBN II

| Item | Zinc-plated steel<br>Item No.<br>gvz | Stainless steel<br>Item No.<br>R | Hot-dip galvanised steel<br>Item No.<br>hdg | Approval<br>ETA | Drill hole diameter<br>$d_0$<br>[mm] | Min. drill hole depth for through fixings<br>$h_2$<br>[mm] | Anchor length<br>l<br>[mm] | Max. usable length hef,max./ hef,min.<br>$t_{fix}$<br>[mm] | Thread<br>Ø x length<br>[mm] | Width across nut<br>SW<br>[mm] | Sales unit<br>[pcs] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FBN II 6/5 | 505526 1)2) | – | – | ● | 6 | 45 | 50 | 5/- | M 6 x 12 | 10 | 100 |
| FBN II 6/10 | 505527 1)2) | 505532 1)2) | – | ● | 6 | 50 | 55 | 10/- | M 6 x 17 | 10 | 100 |
| FBN II 6/30 | 505528 1)2) | 505535 1)2) | – | ● | 6 | 70 | 75 | 30/- | M 6 x 35 | 10 | 100 |
| FBN II 8/5 | 040662 | – | – | ● | 8 | 61 | 65 | 5/15 | M 8 x 34 | 13 | 50 |
| FBN II 8/10 | 040664 | 507555 | – | ● | 8 | 66 | 70 | 10/20 | M 8 x 39 | 13 | 50 |
| FBN II 8/10 | – | – | 507575 | ● | 8 | 66 | 71 | 10/20 | M 8 x 39 | 13 | 50 |
| FBN II 8/20 | 040669 | – | – | ● | 8 | 76 | 80 | 20/30 | M 8 x 49 | 13 | 50 |
| FBN II 8/30 | 040700 | 507556 | – | ● | 8 | 86 | 90 | 30/40 | M 8 x 59 | 13 | 50 |
| FBN II 8/30 | – | – | 507576 | ● | 8 | 86 | 91 | 30/40 | M 8 x 59 | 13 | 50 |
| FBN II 8/50 | 040771 | 507557 | – | ● | 8 | 106 | 110 | 50/60 | M 8 x 79 | 13 | 50 |
| FBN II 8/50 | – | – | 507577 | ● | 8 | 106 | 111 | 50/60 | M 8 x 79 | 13 | 50 |
| FBN II 8/70 | 040777 | – | – | ● | 8 | 126 | 130 | 70/80 | M 8 x 99 | 13 | 20 |
| FBN II 8/70 | – | – | 507578 | ● | 8 | 126 | 131 | 70/80 | M 8 x 99 | 13 | 20 |
| FBN II 8/100 | 040783 | – | – | ● | 8 | 156 | 160 | 100/110 | M 8 x 129 | 13 | 20 |
| FBN II 10/10 | 040827 | 507558 | – | ● | 10 | 78 | 85 | 10/20 | M 10 x 46 | 17 | 50 |
| FBN II 10/10 | – | – | 507579 | ● | 10 | 78 | 86 | 10/20 | M 10 x 46 | 17 | 50 |
| FBN II 10/20 | 040851 | 507559 | – | ● | 10 | 88 | 95 | 20/30 | M 10 x 56 | 17 | 50 |
| FBN II 10/30 | 040854 | 507560 | – | ● | 10 | 98 | 105 | 30/40 | M 10 x 66 | 17 | 50 |
| FBN II 10/30 | – | – | 507580 | ● | 10 | 98 | 106 | 30/40 | M 10 x 66 | 17 | 50 |
| FBN II 10/50 | 040855 | 507561 | – | ● | 10 | 118 | 125 | 50/60 | M 10 x 86 | 17 | 20 |
| FBN II 10/50 | – | – | 507582 | ● | 10 | 118 | 126 | 50/60 | M 10 x 86 | 17 | 20 |
| FBN II 10/70 | 040931 | – | – | ● | 10 | 138 | 145 | 70/80 | M 10 x 106 | 17 | 20 |
| FBN II 10/100 | 040943 | 507562 | – | ● | 10 | 168 | 175 | 100/110 | M 10 x 136 | 17 | 20 |
| FBN II 10/100 | – | – | 507583 | ● | 10 | 168 | 176 | 100/110 | M 10 x 136 | 17 | 20 |
| FBN II 10/140 | 040944 | – | – | ● | 10 | 208 | 215 | 140/150 | M 10 x 176 | 17 | 20 |

1) Use restricted to anchoring of structural components which are statically indeterminate.

2) Nut and washer not pre-assembled/supplied loose.




## Technical data

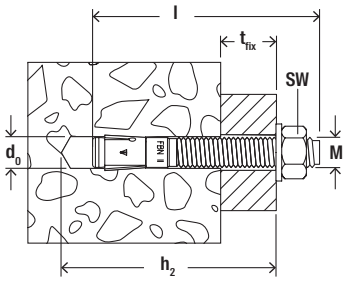
**Bolt anchor FBN II**

FBN II

| Item | Zinc-plated steel<br>Item No.<br>gvz | Stainless steel<br>Item No.<br>R | Hot-dip galvanised steel<br>Item No.<br>hdg | Approval<br>ETA | Drill hole diameter<br>$d_0$<br>[mm] | Min. drill hole depth for through fixings<br>$h_2$<br>[mm] | Anchor length<br>l<br>[mm] | Max. usable length hef,max./ hef,min.<br>$t_{fix}$<br>[mm] | Thread<br>Ø x length<br>[mm] | Width across nut<br>SW<br>[mm] | Sales unit<br>[pcs] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FBN II 10/160 | 040945 | – | – | ● | 10 | 228 | 235 | 160/170 | M 10 x 196 | 17 | 20 |
| FBN II 12/10 | 040950 | 507563 | – | ● | 12 | 95 | 104 | 10/25 | M 12 x 59 | 19 | 20 |
| FBN II 12/10 | – | – | 507589 | ● | 12 | 95 | 106 | 10/25 | M 12 x 59 | 19 | 20 |
| FBN II 12/20 | 044558 | 507564 | – | ● | 12 | 105 | 114 | 20/35 | M 12 x 69 | 19 | 20 |
| FBN II 12/30 | 045263 | 507565 | – | ● | 12 | 115 | 124 | 30/45 | M 12 x 79 | 19 | 20 |
| FBN II 12/30 | – | – | 507591 | ● | 12 | 115 | 126 | 30/45 | M 12 x 79 | 19 | 20 |
| FBN II 12/50 | 045264 | 507566 | – | ● | 12 | 135 | 144 | 50/65 | M 12 x 99 | 19 | 20 |
| FBN II 12/50 | – | – | 507592 | ● | 12 | 135 | 146 | 50/65 | M 12 x 99 | 19 | 20 |
| FBN II 12/80 | 045265 | – | – | ● | 12 | 165 | 174 | 80/95 | M 12 x 129 | 19 | 20 |
| FBN II 12/100 | 045266 | 507567 | – | ● | 12 | 185 | 194 | 100/115 | M 12 x 149 | 19 | 20 |
| FBN II 12/100 | – | – | 507596 | ● | 12 | 185 | 196 | 100/115 | M 12 x 149 | 19 | 20 |
| FBN II 12/120 | 045267 | – | – | ● | 12 | 205 | 214 | 120/135 | M 12 x 169 | 19 | 20 |
| FBN II 12/140 | 045268 | – | – | ● | 12 | 225 | 234 | 140/155 | M 12 x 189 | 19 | 20 |
| FBN II 12/160 | 045269 | – | – | ● | 12 | 245 | 254 | 160/175 | M 12 x 189 | 19 | 20 |
| FBN II 16/10 | – | 507568 | – | ● | 16 | 114 | 128 | 10/25 | M 16 x 74 | 24 | 10 |
| FBN II 16/25 | – | – | 507598 | ● | 16 | 129 | 145 | 25/40 | M 16 x 89 | 24 | 10 |
| FBN II 16/25 | 045564 | 507569 | – | ● | 16 | 129 | 143 | 25/40 | M 16 x 89 | 24 | 10 |
| FBN II 16/50 | – | – | 507553 | ● | 16 | 154 | 170 | 50/65 | M 16 x 105 | 24 | 10 |
| FBN II 16/50 | 045565 | 507570 | – | ● | 16 | 154 | 168 | 50/65 | M 16 x 105 | 24 | 10 |
| FBN II 16/80 | 045566 | – | – | ● | 16 | 184 | 198 | 80/95 | M 16 x 144 | 24 | 10 |
| FBN II 16/100 | 045567 | – | – | ● | 16 | 204 | 218 | 100/115 | M 16 x 164 | 24 | 10 |
| FBN II 16/100 | – | – | 507554 | ● | 16 | 204 | 220 | 100/115 | M 16 x 164 | 24 | 10 |
| FBN II 16/140 | 045568 | – | – | ● | 16 | 244 | 258 | 140/155 | M 16 x 184 | 24 | 10 |
| FBN II 16/160 | 045569 | – | – | ● | 16 | 264 | 278 | 160/175 | M 16 x 184 | 24 | 10 |
| FBN II 16/200 | 045570 | – | – | ● | 16 | 304 | 318 | 200/215 | M 16 x 184 | 24 | 10 |
| FBN II 20/30 | 045573 | 507571 | 508015 | ● | 20 | 165 | 187 | 30/55 | M 20 x 90 | 30 | 10 |
| FBN II 20/60 | 045574 | 507572 | – | ● | 20 | 195 | 217 | 60/85 | M 20 x 90 | 30 | 10 |
| FBN II 20/80 | 045575 | 547590 | – | ● | 20 | 215 | 237 | 80/105 | M 20 x 90 | 30 | 10 |
| FBN II 20/120 | 045576 | – | – | ● | 20 | 255 | 277 | 120/145 | M 20 x 90 | 30 | 10 |

1) Use restricted to anchoring of structural components which are statically indeterminate.

2) Nut and washer not pre-assembled/supplied loose.

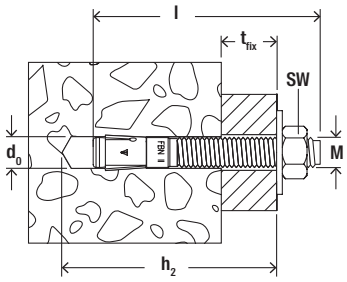



## Technical data

**Bolt anchor FBN II K**

FBN II K

| | Zinc-plated steel, short version | Stainless steel, short version | Hot-dip galvanised steel, short version | Approval | Drill hole diameter | Min. drill hole depth for through fixings | Anchor length | Max. usable length hef,max./ hef,min. | Thread | Width across nut | Sales unit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Item No. | Item No. | Item No. | | $d_0$ [mm] | $h_2$ [mm] | l [mm] | $t_{fix}$ [mm] | Ø x length [mm] | SW [mm] | [pcs] |
| Item | gvz | R | hdg | ETA | | | | | | | |
| FBN II 8/5 K | – | – | 508012 | ● | 8 | 51 | 56 | -/5 | M 8 x 24 | 13 | 50 |
| FBN II 8/5 K | 040806 | 508007 | – | ● | 8 | 51 | 55 | -/5 | M 8 x 24 | 13 | 50 |
| FBN II 8/10 K | 040807 | – | – | ● | 8 | 56 | 60 | -/10 | M 8 x 29 | 13 | 50 |
| FBN II 10/5 K | 040946 | 508010 | – | ● | 10 | 63 | 70 | -/5 | M 10 x 31 | 17 | 50 |
| FBN II 10/5 K | – | – | 508013 | ● | 10 | 63 | 71 | -/5 | M 10 x 31 | 17 | 50 |
| FBN II 10/10 K | 040947 | – | – | ● | 10 | 68 | 75 | -/10 | M 10 x 36 | 17 | 50 |
| FBN II 12/5 K | 045272 | 508011 | – | ● | 12 | 75 | 84 | -/5 | M 12 x 39 | 19 | 20 |
| FBN II 12/5 K | – | – | 508014 | ● | 12 | 75 | 86 | -/5 | M 12 x 39 | 19 | 20 |
| FBN II 12/10 K | 045273 | – | – | ● | 12 | 80 | 89 | -/10 | M 12 x 44 | 19 | 20 |
| FBN II 12/30 K | 045274 | – | – | ● | 12 | 100 | 109 | -/30 | M 12 x 64 | 19 | 20 |
| FBN II 16/15 K | 045571 | 508745 | – | ● | 16 | 104 | 118 | -/15 | M 16 x 64 | 24 | 10 |
| FBN II 16/15 K | – | – | 507597 | ● | 16 | 104 | 120 | -/15 | M 16 x 64 | 24 | 10 |
| FBN II 16/25 K | 045572 | – | – | ● | 16 | 114 | 128 | -/25 | M 16 x 74 | 24 | 10 |
| FBN II 20/10 K | 045577 | – | 543973 | ● | 20 | 120 | 142 | -/10 | M 20 x 50 | 30 | 10 |

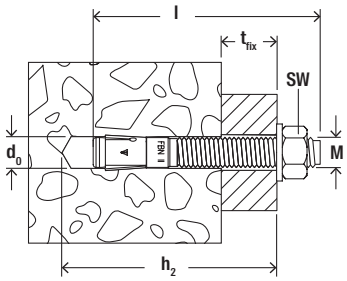



## Technical data

**Bolt anchor FBN II GS**

FBN II-GS with large washer

| Item | Steel, zinc-plated, with large washer<br>Item No.<br>gvz | Stainless steel, with large washer<br>Item No.<br>R | Approval<br>ETA | Drill hole diameter<br>$d_0$<br>[mm] | Min. drill hole depth for through fixings<br>$h_2$<br>[mm] | Anchor length<br>l<br>[mm] | Max. usable length hef,max./ hef,min.<br>$t_{fix}$<br>[mm] | Thread<br>Ø x length<br>[mm] | Width across nut<br>SW<br>[mm] | Washer (outer diameter x thickness)<br>[mm] | Sales unit<br>[pcs] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FBN II 8/10 GS | – | 513305 | ● | 8 | 66 | 70 | 10/20 | M 8 x 39 | 13 | 44 x 4 | 50 |
| FBN II 12/80 GS | 045578 | – | ● | 12 | 165 | 174 | 80/95 | M 12 x 129 | 19 | 44 x 4 | 20 |
| FBN II 12/100 GS | 045579 | – | ● | 12 | 185 | 194 | 100/115 | M 12 x 149 | 19 | 44 x 4 | 20 |
| FBN II 12/120 GS | 045580 | – | ● | 12 | 205 | 214 | 120/135 | M 12 x 169 | 19 | 44 x 4 | 20 |
| FBN II 12/140 GS | 045581 | – | ● | 12 | 225 | 234 | 140/155 | M 12 x 189 | 19 | 44 x 4 | 10 |
| FBN II 12/160 GS | 045583 | – | ● | 12 | 245 | 254 | 160/175 | M 12 x 189 | 19 | 44 x 4 | 10 |
| FBN II 12/180 GS | 045584 | – | ● | 12 | 265 | 274 | 180/195 | M 12 x 189 | 19 | 44 x 4 | 10 |
| FBN II 12/200 GS | 045585 | – | ● | 12 | 285 | 294 | 200/215 | M 12 x 189 | 19 | 44 x 4 | 10 |
| FBN II 12/250 GS | 045586 | – | ● | 12 | 335 | 344 | 250/265 | M 12 x 100 | 19 | 44 x 4 | 10 |
| FBN II 16/100 GS | 045588 | – | ● | 16 | 204 | 218 | 100/115 | M 16 x 164 | 24 | 56 x 5 | 10 |
| FBN II 16/140 GS | 045590 | – | ● | 16 | 244 | 258 | 140/155 | M 16 x 184 | 24 | 56 x 5 | 10 |
| FBN II 16/160 GS | 045591 | – | ● | 16 | 264 | 278 | 160/175 | M 16 x 184 | 24 | 56 x 5 | 10 |
| FBN II 16/200 GS | 045593 | – | ● | 16 | 304 | 318 | 200/215 | M 16 x 100 | 24 | 56 x 5 | 10 |




## Technical data

**Bolt anchor FBN II K GS**

FBN II K GS

| Item | Item No. | Approval<br>ETA | Drill hole diameter<br>$d_0$<br>[mm] | Min. drill hole depth for through fixings<br>$h_2$<br>[mm] | Anchor length<br>l<br>[mm] | Max. usable length hef,-max./hef,min.<br>$t_{fix}$<br>[mm] | Thread<br>Ø x length<br>[mm] | Width across nut<br>SW<br>[mm] | Sales unit<br>[pcs] |
|---|---|---|---|---|---|---|---|---|---|
| FBN II 8/5 K GS | 558204 | ● | 8 | 51 | 55 | -/5 | M 8 x 24 | 13 | 50 |
| FBN II 10/10 K GS | 558205 | ● | 10 | 68 | 75 | -/10 | M 10 x 36 | 17 | 50 |
| FBN II 12/10 K GS | 558206 | ● | 12 | 80 | 89 | -/10 | M 12 x 44 | 19 | 20 |

## Accessories

**Bolt anchor setting tool**

FABS

FA-ST II

FA-ST II Set

Replacement spring

| Item | Item No. | Contents | Matching anchor type | Sales unit [pcs] |
|---|---|---|---|---|
| **FABS** | **077937** | — | FAZ II, FBZ, FBN II for diameter from M6 - M12 | 1 |
| **FA-ST II Set** | **558789** | SDS adapter; socket SW17, SW19, SW24 | FAZ II M10/M12/M16, FBZ M10/M12/M16, FBN II M10/M12/M16, EXA M10/M12/M16 | 1 |
| **FA-ST II M10** | **558790** | SDS adapter; socket SW17 | FAZ II M10, FBZ M10, FBN II M10, EXA M10 | 1 |
| **FA-ST II M12** | **558791** | SDS adapter; socket SW19 | FAZ II M12, FBZ M12, FBN II M12, EXA M12 | 1 |
| **FA-ST II M16** | **558792** | SDS adapter; socket SW24 | FAZ II M16, FBZ M16, FBN II M16, EXA M16 | 1 |
| **FA-ST II spring** | **558793** | Replacement spring | FA-ST II M10/M12/M16 | 5 |

## Loads

**Bolt anchor FBN II**

Permissible loads of a single anchor[1] in normal concrete of strength class C20/25.
For the design the complete current assessment ETA-07/0211 has to be considered.

| | | | | | Non-cracked concrete | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Permissible tension ($N_{perm}$) and shear loads ($V_{perm}$); minimum spacing ($s_{min}$) and edge distances ($c_{min}$) with reduced loads | | | |
| **Type** | **Material/ surface[2]** | **Effective anchorage depth** $h_{ef}$ **[mm]** | **Minimum member thickness** $h_{min}$ **[mm]** | **Installation torque** $T_{inst}$ **[Nm]** | $N_{perm}$ [3] **[kN]** | $V_{perm}$ [3] **[kN]** | $s_{min}$ [3] **[mm]** | $c_{min}$ [3] **[mm]** |
| **FBN II 8** | gvz | 30 | 100 | 15 | 2.9 | 6.9 | 40 | 40 |
| | gvz | 40 | 100 | 15 | 5.9 | 7.6 | 40 | 40 |
| | R | 30 | 100 | 10 | 2.9 | 6.9 | 50 | 45 |
| | R | 40 | 100 | 10 | 5.9 | 7.3 | 40 | 45 |
| **FBN II 10** | gvz | 40 | 100 | 30 | 5.9 | 12.0 | 50 | 80 |
| | gvz | 50 | 100 | 30 | 8.3 | 12.0 | 50 | 50 |
| | R | 40 | 100 | 20 | 5.9 | 11.6 | 50 | 80 |
| | R | 50 | 100 | 20 | 8.3 | 11.6 | 70 | 55 |
| **FBN II 12** | gvz | 50 | 100 | 50 | 8.3 | 17.9 | 70 | 100 |
| | gvz | 65 | 120 | 50 | 12.3 | 17.9 | 70 | 70 |
| | R | 50 | 100 | 35 | 8.3 | 15.7 | 70 | 100 |
| | R | 65 | 120 | 35 | 12.3 | 15.7 | 70 | 70 |
| **FBN II 16** | gvz | 65 | 120 | 100 | 12.3 | 28.2 | 90 | 120 |
| | gvz | 80 | 160 | 100 | 16.8 | 31.5 | 90 | 90 |
| | R | 65 | 120 | 80 | 12.3 | 28.2 | 90 | 120 |
| | R | 80 | 160 | 80 | 16.8 | 29.1 | 120 | 80 |
| **FBN II 20** | gvz | 80 | 160 | 200 | 16.8 | 38.3 | 120 | 120 |
| | gvz | 105 | 200 | 200 | 25.2 | 38.3 | 120 | 120 |
| | R | 80 | 160 | 150 | 16.8 | 38.6 | 140 | 120 |
| | R | 105 | 200 | 150 | 25.2 | 49.1 | 120 | 120 |

[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] Further steel grades, versions and technical data see ETA, e.g. for dry internal conditions, galvanised steel (gvz); for damp interiors and for outdoor use, stainless steel (R).
[3] In the case of combinations of tension and shear loads, bending moments with reduced or minimum spacing and edge distances (anchor groups), the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018. We recommend using our anchor design software C-FIX.