

# Wedge Anchor BZ3 A4

Stainless steel A4



Wedge Anchor BZ3 A4

**Range of Loading:** 3,4 kN–39,7 kN  
**Range of concrete quality:** C20/25–C50/60

## Description

Through the combination of the highest approved tensile and shear loads with variable anchorage depths, the newly developed Wedge Anchor BZ3 A4 with European Technical Assessment, sets standards in performance and flexibility of mechanical Expansion anchors.

In many cases, with the same setting depth as before, it allows higher loads, which can be further increased by deeper setting. This can save fixing points or fastenings can be realized, that have not been possible with a wedge anchor. However, setting with a reduced anchorage depth reduces drilling and setting effort and reduces the risk of reinforcement hits. The innovative calculation method in dependence of anchorage depth and concrete thickness, enables smallest spacing and edge distances for the respective application. This flexibility allows a perfect adaptation to the installation situation and allows more economical fastenings. By optimization of the material, the geometry and the manufacturing process, performance under the influence of earthquakes was significantly increased. Fewer turns until the tightening torque is reached and a colored marking of the minimum anchorage depth enable shorter processing times with higher installation safety.

## Advantages

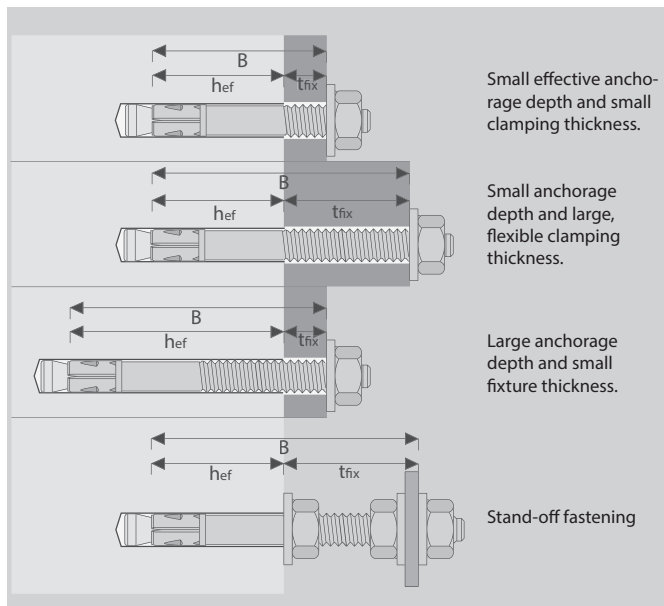
- The Wedge Anchor with the highest approved loads and variable anchoring depths
- European Technical Assessment in cracked and non-cracked concrete (option 1), under seismic action of category C1 and C2 and for use in fire (R30 - R120)
- For higher loads under seismic action, the annular gap between the Wedge Anchor BZ3 A4 and the fixture can be filled with adhesive, by using the Filling Washer VS A4
- Low minimum anchorage depths
- New calculation method in dependence of the anchorage depth and the thickness of the concrete component
- The high flexibility enables the optimal adaptation to the installation situation for maximum efficiency
- Extra short versions
- Fewer turns until the tightening torque is reached
- Coloured marking of the minimum anchorage depth
- Shock approval by „Bundesamt für Bevölkerungsschutz“ in Bern, Switzerland<sup>1)</sup>



## Applications

Anchoring of medium to heavy loads in cracked and non-cracked concrete: columns, steel beams, railings, cable routes, pipe routes, wooden constructions, consoles, facades. Fastenings in earthquake areas etc.

## Examples of Installation BZ3 A4:



**Wedge Anchor BZ3 A4**



- Stainless steel A4
- Approved for cracked and non-cracked concrete
- Variable anchorage depths

| Description           | Ref. No. | Drill hole-Ø<br>d <sub>0</sub><br>mm | Standard anchorage depth                         |   | Minimum anchorage depth                          |   | Variable anchorage depth |   |   |                                   | Seismic C1 / C2      | Anchor length<br>l<br>mm | Thread<br>mm | Pkg. content<br>pcs. | Weight per pkg.<br>kg |
|-----------------------|----------|--------------------------------------|--|---|--|---|--------------------------|---|---|-----------------------------------|----------------------|--------------------------|--------------|----------------------|-----------------------|
|                       |          |                                      | Fixture thickness<br>t <sub>fix, std</sub><br>mm | Anchorage depth<br>h <sub>ef, std</sub><br>mm | Fixture thickness<br>t <sub>fix, min</sub><br>mm | Anchorage depth<br>h <sub>ef, min</sub><br>mm | Usable length<br>B<br>mm | Fixture thickness<br>t <sub>fix</sub><br>mm | Depth of drill hole<br>h <sub>1</sub><br>mm | Setting depth<br>h <sub>nom</sub> |                      |                          |              |                      |                       |
| BZ3 M8x60/0-5 A4      | 19105001 | 8                                    | -  | -   | 5  | 35  | 40                       | B-hef                                       | hef+10                                      | hef+8                             | - / -                | 60                       | M8x18        | 100                  | 2,57                  |
| BZ3 M8x65/0-10 A4     | 19110001 | 8                                    | -  | -   | 10   | 35  | 45                       | B-hef                                       | hef+10                                      | hef+8                             | ✓ / ✓ <sup>(1)</sup> | 65                       | M8x23        | 100                  | 2,73                  |
| BZ3 M8x75/0-20 A4     | 19115001 | 8                                    | 10   | 45  | 20   | 35  | 55                       | B-hef                                       | hef+10                                      | hef+8                             | ✓ / ✓ <sup>(1)</sup> | 75                       | M8x33        | 100                  | 3,05                  |
| BZ3 M8x80/0-25 A4     | 19125001 | 8                                    | 15   | 45  | 25   | 35  | 60                       | B-hef                                       | hef+10                                      | hef+8                             | ✓ / ✓ <sup>(1)</sup> | 80                       | M8x38        | 100                  | 3,22                  |
| BZ3 M8x95/0-40 A4     | 19140001 | 8                                    | 30   | 45  | 40   | 35  | 75                       | B-hef                                       | hef+10                                      | hef+8                             | ✓ / ✓ <sup>(1)</sup> | 95                       | M8x53        | 100                  | 3,68                  |
| BZ3 M8x115/5-60 A4    | 19150001 | 8                                    | 50   | 45  | 60   | 35  | 95                       | B-hef                                       | hef+10                                      | hef+8                             | ✓ / ✓ <sup>(1)</sup> | 115                      | M8x73        | 100                  | 4,41                  |
| BZ3 M8x165/55-110 A4  | 19170001 | 8                                    | 100  | 45  | 110  | 35  | 145                      | B-hef                                       | hef+10                                      | hef+8                             | ✓ / ✓ <sup>(1)</sup> | 165                      | M8x123       | 50                   | 3,00                  |
| BZ3 M10x70/0-10 A4    | 19205001 | 10                                   | -  | -   | 10   | 40  | 50                       | B-hef                                       | hef+11                                      | hef+9                             | ✓ / ✓                | 70                       | M10x25       | 50                   | 2,64                  |
| BZ3 M10x80/0-20 A4    | 19210001 | 10                                   | -  | -   | 20   | 40  | 60                       | B-hef                                       | hef+11                                      | hef+9                             | ✓ / ✓                | 80                       | M10x35       | 50                   | 2,82                  |
| BZ3 M10x90/0-30 A4    | 19215001 | 10                                   | 10   | 60  | 30   | 40  | 70                       | B-hef                                       | hef+11                                      | hef+9                             | ✓ / ✓                | 90                       | M10x45       | 50                   | 3,13                  |
| BZ3 M10x95/0-35 A4    | 19220001 | 10                                   | 15   | 60  | 35   | 40  | 75                       | B-hef                                       | hef+11                                      | hef+9                             | ✓ / ✓                | 95                       | M10x50       | 50                   | 3,19                  |
| BZ3 M10x100/0-40 A4   | 19225001 | 10                                   | 20   | 60  | 40   | 40  | 80                       | B-hef                                       | hef+11                                      | hef+9                             | ✓ / ✓                | 100                      | M10x55       | 50                   | 3,13                  |
| BZ3 M10x110/0-50 A4   | 19230001 | 10                                   | 30   | 60  | 50   | 40  | 90                       | B-hef                                       | hef+11                                      | hef+9                             | ✓ / ✓                | 110                      | M10x65       | 50                   | 3,60                  |
| BZ3 M10x130/10-70 A4  | 19235001 | 10                                   | 50   | 60  | 70   | 40  | 110                      | B-hef                                       | hef+11                                      | hef+9                             | ✓ / ✓                | 130                      | M10x85       | 50                   | 4,09                  |
| BZ3 M10x155/35-95 A4  | 19250001 | 10                                   | 75   | 60  | 95   | 40  | 135                      | B-hef                                       | hef+11                                      | hef+9                             | ✓ / ✓                | 155                      | M10x110      | 50                   | 4,82                  |
| BZ3 M10x180/60-120 A4 | 19260001 | 10                                   | 100  | 60  | 120  | 40  | 160                      | B-hef                                       | hef+11                                      | hef+9                             | ✓ / ✓                | 180                      | M10x135      | 50                   | 5,41                  |
| BZ3 M12x85/0-10 A4    | 19305001 | 12                                   | -  | -   | 10   | 50  | 60                       | B-hef                                       | hef+13                                      | hef+10                            | ✓ / ✓                | 85                       | M12x29       | 25                   | 2,17                  |
| BZ3 M12x95/0-20 A4    | 19310001 | 12                                   | -  | -   | 20   | 50  | 70                       | B-hef                                       | hef+13                                      | hef+10                            | ✓ / ✓                | 95                       | M12x39       | 25                   | 2,36                  |
| BZ3 M12x105/0-30 A4   | 19313001 | 12                                   | 10   | 70  | 30   | 50  | 80                       | B-hef                                       | hef+13                                      | hef+10                            | ✓ / ✓                | 105                      | M12x49       | 25                   | 2,55                  |
| BZ3 M12x110/0-35 A4   | 19315001 | 12                                   | 15   | 70  | 35   | 50  | 85                       | B-hef                                       | hef+13                                      | hef+10                            | ✓ / ✓                | 110                      | M12x54       | 25                   | 2,65                  |
| BZ3 M12x115/0-40 A4   | 19320001 | 12                                   | 20   | 70  | 40   | 50  | 90                       | B-hef                                       | hef+13                                      | hef+10                            | ✓ / ✓                | 115                      | M12x59       | 25                   | 2,71                  |
| BZ3 M12x125/0-50 A4   | 19325001 | 12                                   | 30   | 70  | 50   | 50  | 100                      | B-hef                                       | hef+13                                      | hef+10                            | ✓ / ✓                | 125                      | M12x69       | 25                   | 2,91                  |
| BZ3 M12x145/0-70 A4   | 19330001 | 12                                   | 50   | 70  | 70   | 50  | 120                      | B-hef                                       | hef+13                                      | hef+10                            | ✓ / ✓                | 145                      | M12x89       | 25                   | 3,28                  |
| BZ3 M12x160/10-85 A4  | 19335001 | 12                                   | 65   | 70  | 85   | 50  | 135                      | B-hef                                       | hef+13                                      | hef+10                            | ✓ / ✓                | 160                      | M12x104      | 25                   | 3,55                  |
| BZ3 M12x180/30-105 A4 | 19340001 | 12                                   | 85   | 70  | 105  | 50  | 155                      | B-hef                                       | hef+13                                      | hef+10                            | ✓ / ✓                | 180                      | M12x124      | 25                   | 3,91                  |
| BZ3 M12x200/50-125 A4 | 19345001 | 12                                   | 105  | 70  | 125  | 50  | 175                      | B-hef                                       | hef+13                                      | hef+10                            | ✓ / ✓                | 200                      | M12x134      | 25                   | 4,27                  |
| BZ3 M16x115/0-15 A4   | 19510001 | 16                                   | -  | -   | 15   | 65  | 80                       | B-hef                                       | hef+17                                      | hef+14                            | ✓ / ✓                | 115                      | M16x39       | 20                   | 3,91                  |
| BZ3 M16x125/0-25 A4   | 19515001 | 16                                   | 5  | 85  | 25   | 65  | 90                       | B-hef                                       | hef+17                                      | hef+14                            | ✓ / ✓                | 125                      | M16x49       | 20                   | 4,18                  |
| BZ3 M16x135/0-35 A4   | 19520001 | 16                                   | 15   | 85  | 35   | 65  | 100                      | B-hef                                       | hef+17                                      | hef+14                            | ✓ / ✓                | 135                      | M16x59       | 20                   | 4,44                  |
| BZ3 M16x145/0-45 A4   | 19525001 | 16                                   | 25   | 85  | 45   | 65  | 110                      | B-hef                                       | hef+17                                      | hef+14                            | ✓ / ✓                | 145                      | M16x69       | 20                   | 4,71                  |
| BZ3 M16x170/0-70 A4   | 19530001 | 16                                   | 50   | 85  | 70   | 65  | 135                      | B-hef                                       | hef+17                                      | hef+14                            | ✓ / ✓                | 170                      | M16x94       | 20                   | 5,43                  |
| BZ3 M16x200/5-100 A4  | 19535001 | 16                                   | 80   | 85  | 100  | 65  | 165                      | B-hef                                       | hef+17                                      | hef+14                            | ✓ / ✓                | 200                      | M16x124      | 10                   | 3,11                  |

<sup>1)</sup>Seismic C1 and C2 for anchorage depth h<sub>ef</sub> ≥ 40mm

BZ3 HCR on demand

**Hutmutter HM A4**



- Stainless steel A4, extra high design
- For visually demanding requirements
- Protection against injuries

| Description         | Ref. No. | Thread | Cap nut height<br>mm | Width across nut<br>SW | Suitable for | Package content<br>pcs | Weight per pkg.<br>kg |
|---------------------|----------|--------|----------------------|------------------------|--------------|------------------------|-----------------------|
| Hutmutter HM M10 A4 | 56102501 | M10    | 22,5                 | 17                     | BZ3 M10 A4   | 20                     | 0,52                  |
| Hutmutter HM M12 A4 | 56122501 | M12    | 26,5                 | 19                     | BZ3 M12 A4   | 20                     | 0,73                  |

## Wedge Anchor BZ3 A4



- Stainless steel A4
- With large washer DIN EN ISO 7093-1 (DIN 9021)
- Approved for cracked and non-cracked concrete
- Variable anchorage depths

NEW

| Description            | Ref. No. | Drill hole-Ø do mm | Standard anchorage depth                  |  | Minimum anchorage depth                   |  | Usable length B mm | Variable anchorage depth              |                                       |                                | Seismic C1 / C2     | Anchor length l mm | Washer <sup>2)</sup> | Thread | Pkg. content pcs. | Weight per pkg. kg |
|------------------------|----------|--------------------|---|--|---|--|--------------------|---------------------------------------|---------------------------------------|--------------------------------|---------------------|--------------------|----------------------|--------|-------------------|--------------------|
|                        |          |                    | Fixture thickness t <sub>fix,std</sub> mm | Anchorage depth h <sub>ef,std</sub> mm | Fixture thickness t <sub>fix,min</sub> mm | Anchorage depth h <sub>ef,min</sub> mm |                    | Fixture thickness t <sub>fix</sub> mm | Depth of drill hole h <sub>1</sub> mm | Setting depth h <sub>nom</sub> |                     |                    |                      |        |                   |                    |
| BZ3-U M8x75/0-20 A4    | 19115301 | 8                  | 10  | 45                                     | 20  | 35                                     | 55                 | B-hef                                 | hef + 10                              | hef + 8                        | ✓ / ✓ <sup>1)</sup> | 75                 | 24x2                 | M8x33  | 100               | 3,49               |
| BZ3-U M8x80/0-25 A4    | 19125301 | 8                  | 15  | 45                                     | 25  | 35                                     | 60                 | B-hef                                 | hef + 10                              | hef + 8                        | ✓ / ✓ <sup>1)</sup> | 80                 | 24x2                 | M8x38  | 100               | 3,66               |
| BZ3-U M8x95/0-40 A4    | 19140301 | 8                  | 30  | 45                                     | 40  | 35                                     | 75                 | B-hef                                 | hef + 10                              | hef + 8                        | ✓ / ✓ <sup>1)</sup> | 95                 | 24x2                 | M8x53  | 100               | 4,12               |
| BZ3-U M10x90/0-30 A4   | 19215301 | 10                 | 10  | 60                                     | 30  | 40                                     | 70                 | B-hef                                 | hef + 11                              | hef + 9                        | ✓ / ✓               | 90                 | 30x2,5               | M10x45 | 50                | 3,56               |
| BZ3-U M10x95/0-35 A4   | 19220301 | 10                 | 15  | 60                                     | 35  | 40                                     | 75                 | B-hef                                 | hef + 11                              | hef + 9                        | ✓ / ✓               | 95                 | 30x2,5               | M10x50 | 50                | 3,62               |
| BZ3-U M10x110/0-50 A4  | 19230301 | 10                 | 30  | 60                                     | 50  | 40                                     | 90                 | B-hef                                 | hef + 11                              | hef + 9                        | ✓ / ✓               | 110                | 30x2,5               | M10x65 | 50                | 4,03               |
| BZ3-U M10x130/10-70 A4 | 19235301 | 10                 | 50  | 60                                     | 70  | 40                                     | 110                | B-hef                                 | hef + 11                              | hef + 9                        | ✓ / ✓               | 130                | 30x2,5               | M10x85 | 50                | 4,52               |
| BZ3-U M12x110/0-35 A4  | 19315301 | 12                 | 15  | 70                                     | 35  | 50                                     | 85                 | B-hef                                 | hef + 13                              | hef + 10                       | ✓ / ✓               | 110                | 37x3                 | M12x54 | 25                | 3,05               |
| BZ3-U M12x125/0-50 A4  | 19325301 | 12                 | 30  | 70                                     | 50  | 50                                     | 100                | B-hef                                 | hef + 13                              | hef + 10                       | ✓ / ✓               | 125                | 37x3                 | M12x69 | 25                | 3,31               |
| BZ3-U M16x145/0-45 A4  | 19525301 | 16                 | 25  | 85                                     | 45  | 65                                     | 110                | B-hef                                 | hef + 17                              | hef + 14                       | ✓ / ✓               | 145                | 50x3                 | M16x69 | 20                | 5,23               |

<sup>1)</sup>Seismic C1 and C2 for anchorage depth h<sub>ef</sub> ≥ 40mm

<sup>2)</sup>Outer diameter x height

BZ3-U HCR on demand.

## Wedge Anchor-Setting Tool BSW



- Setting Tool for Wedge Anchor M6 – M16
- With SDS plus connection

| Description | Ref. No. | Suitable for Wedge Anchor | Length mm | Package content pcs | Weight per pkg. kg |
|-------------|----------|---------------------------|-----------|---------------------|--------------------|
| BSW M6-M16  | 43990101 | BZ3/BZ plus/B M6 – M16    | 140       | 1                   | 0,13               |



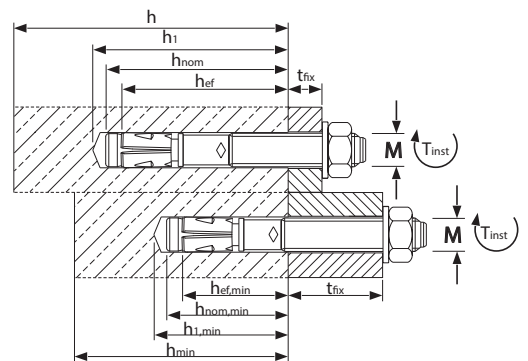
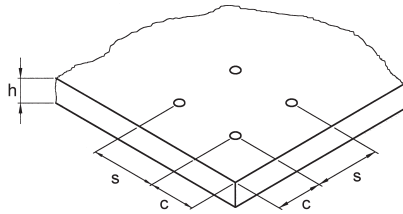
**Extract from Permissible Service Conditions of European Technical Assessment ETA-19/0619 for use in cracked and uncracked concrete (Option 1)**

Approved loads according to EN 1992-4 for single anchors without the influence of spacing and edge distances. The total safety factor ( $\gamma_M$  und  $\gamma_p$ ). Load capacities under fire exposure see page 196.

| Loads and performance data                    |                   | Wedge Anchor BZ3 A4 | M8     |        |        | M10    |        |        | M12    |        |        | M16   |       |       |      |
|---|-------------------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|------|
| Minimum anchorage depth <sup>1)</sup>         | $h_{ef,min}$ [mm] |                     | 35     |        |        | 40     |        |        | 50     |        |        | 65    |       |       |      |
| Standard anchorage depth                      | $h_{ef,std}$ [mm] |                     | 45     |        |        | 60     |        |        | 70     |        |        | 85    |       |       |      |
| Maximum anchorage depth                       | $h_{ef,max}$ [mm] |                     | 90     |        |        | 100    |        |        | 125    |        |        | 160   |       |       |      |
| cracked concrete                              |                   |                     |        |        |        |        |        |        |        |        |        |       |       |       |      |
| Approved loads, tension                       | C20/25            | appr. N             | [kN]   | 3,4    | 4,5    | 4,5    | 4,1    | 7,6    | 8,1    | 5,8    | 9,6    | 10,5  | 8,6   | 12,9  | 16,7 |
|   | C25/30            | appr. N             | [kN]   | 3,8    | 5,0    | 5,0    | 4,6    | 8,5    | 9,1    | 6,5    | 10,7   | 11,5  | 9,6   | 14,4  | 18,0 |
|   | C30/37            | appr. N             | [kN]   | 4,2    | 5,5    | 5,5    | 5,1    | 9,3    | 9,9    | 7,1    | 11,8   | 12,5  | 10,5  | 15,7  | 19,2 |
|   | C40/50            | appr. N             | [kN]   | 4,8    | 6,3    | 6,3    | 5,9    | 10,8   | 11,4   | 8,2    | 13,6   | 14,2  | 12,2  | 18,2  | 21,2 |
| Approved loads, tension <sup>1</sup>          | C20/25            | appr. N             | [kN]   | 4,9    | 7,1    | 9,4    | 5,9    | 10,9   | 11,9   | 8,3    | 13,7   | 20,0  | 12,3  | 18,4  | 23,8 |
|   | C25/30            | appr. N             | [kN]   | 5,4    | 7,9    | 9,4    | 6,6    | 12,2   | 12,9   | 9,3    | 15,3   | 21,0  | 13,7  | 20,5  | 24,9 |
|   | C30/37            | appr. N             | [kN]   | 5,9    | 8,7    | 9,4    | 7,3    | 13,3   | 13,8   | 10,1   | 16,8   | 21,4  | 15,0  | 22,5  | 25,8 |
|   | C40/50            | appr. N             | [kN]   | 6,9    | 9,4    | 9,4    | 8,4    | 14,5   | 14,5   | 11,7   | 19,4   | 21,4  | 17,4  | 26,0  | 27,3 |
| Approved loads, shear                         | C20/25            | appr. V             | [kN]   | 9,2    | 9,6    | 9,6    | 11,6   | 15,9   | 15,9   | 19,1   | 22,7   | 22,7  | 29,2  | 39,7  | 39,7 |
|   | $\geq$ C25/30     | appr. V             | [kN]   | 9,6    | 9,6    | 9,6    | 13,0   | 15,9   | 15,9   | 21,4   | 22,7   | 22,7  | 32,7  | 39,7  | 39,7 |
| non-cracked concrete                          |                   |                     |        |        |        |        |        |        |        |        |        |       |       |       |      |
| Approved loads, shear                         | C20/25            | appr. V             | [kN]   | 9,6    | 9,6    | 9,6    | 15,9   | 15,9   | 15,9   | 22,7   | 22,7   | 22,7  | 39,7  | 39,7  | 39,7 |
|   | $\geq$ C25/30     | appr. V             | [kN]   | 9,6    | 9,6    | 9,6    | 15,9   | 15,9   | 15,9   | 22,7   | 22,7   | 22,7  | 39,7  | 39,7  | 39,7 |
| Approved bending moments                      | appr. M           | [Nm]                | 15,4   | 15,4   | 15,4   | 31,4   | 31,4   | 31,4   | 56,6   | 56,6   | 56,6   | 127,4 | 127,4 | 127,4 |      |
| <b>Spacing and edge distance<sup>2)</sup></b> |                   |                     |        |        |        |        |        |        |        |        |        |       |       |       |      |
| Effective anchorage depth                     | $h_{ef}$ [mm]     |                     | 35     | 45     | 90     | 40     | 60     | 100    | 50     | 70     | 125    | 65    | 85    | 160   |      |
| Minimum thickness of concrete slab            | $h_{min}$ [mm]    |                     | 80     | 80     | 135    | 80     | 90     | 150    | 100    | 105    | 187,5  | 120   | 127,5 | 240   |      |
| Minimum spacing                               | $s_{min}$ [mm]    |                     | 35     | 35     | 35     | 40     | 40     | 40     | 50     | 50     | 50     | 65    | 65    | 65    |      |
| Minimum edge distance                         | $c_{min}$ [mm]    |                     | 40     | 40     | 40     | 45     | 45     | 45     | 55     | 55     | 55     | 65    | 65    | 65    |      |
| <b>Installation parameters</b>                |                   |                     |        |        |        |        |        |        |        |        |        |       |       |       |      |
| Drill hole diameter                           | $d_o$ [mm]        |                     | 8      | 8      | 8      | 10     | 10     | 10     | 12     | 12     | 12     | 16    | 16    | 16    |      |
| Diameter of clearance hole in the fixture     | $d_{r \leq}$ [mm] |                     | 9      | 9      | 9      | 12     | 12     | 12     | 14     | 14     | 14     | 18    | 18    | 18    |      |
| Drill hole depth                              | $h_1$ [mm]        |                     | 45     | 55     | 100    | 51     | 71     | 111    | 63     | 83     | 138    | 82    | 102   | 177   |      |
| Installation torque                           | $T_{inst}$ [Nm]   |                     | 15     | 15     | 15     | 40     | 40     | 40     | 55     | 55     | 55     | 100   | 100   | 100   |      |
| Width across nut                              | SW [mm]           |                     | 13     | 13     | 13     | 17     | 17     | 17     | 19     | 19     | 19     | 24    | 24    | 24    |      |
| Height of hexagon nut                         | [mm]              |                     | 6,5    | 6,5    | 6,5    | 8      | 8      | 8      | 10     | 10     | 10     | 13    | 13    | 13    |      |
| High of the Cap nut HM A4                     | [mm]              |                     | -      | -      | -      | 22     | 22     | 22     | 26,5   | 26,5   | 26,5   | -     | -     | -     |      |
| Outer diameter x Washer height BZ3 A4         | [mm]              |                     | 16x1,6 | 16x1,6 | 16x1,6 | 20x2   | 20x2   | 20x2   | 24x2,5 | 24x2,5 | 24x2,5 | 30x3  | 30x3  | 30x3  |      |
| Outer diameter x Washer height BZ3-U A4       | [mm]              |                     | 24x2   | 24x2   | 24x2   | 30x2,5 | 30x2,5 | 30x2,5 | 37x3   | 37x3   | 37x3   | 50x3  | 50x3  | 50x3  |      |

<sup>1)</sup>Fastenings with anchorage depths  $h_{ef} < 40$ mm are constricted to use of statically indeterminate components under indoor conditions.

<sup>2)</sup>For anchor groups and near-edge anchorages, the minimum values of thickness, spacing and edge distance cannot be applied simultaneously but have to be determined according to ETA-19/0619, Table B2.



**Installation**

