

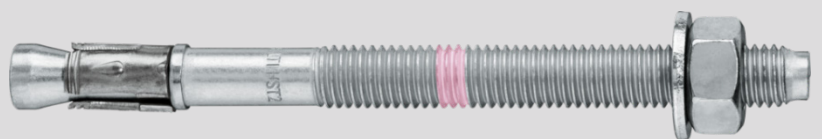


PRODUCT TECHNICAL DATASHEET

# HST2 V3

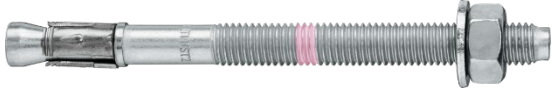
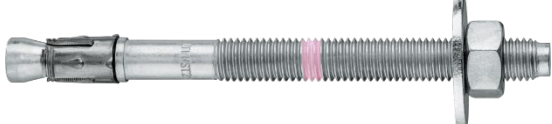
## Expansion anchor

Steel-to-concrete  
Update: Dec-25



# HST2 V3 Expansion anchor

## High-performance expansion anchor

| Anchor version                                                                      | Benefits                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | HST2 V3 (M8-M16) <ul style="list-style-type: none"> <li>- Suitable for uncracked and cracked concrete C20/25 to C50/60</li> </ul>                                                                                                                                                                |
|    | HST2 V3 BW (M8-M16) <ul style="list-style-type: none"> <li>- Suitable for seismic design with ETA C1/C2 assessment</li> <li>- Deeper embedment depth option to achieve higher resistance, closer distance to the edge or smaller spacing</li> </ul>                                              |
|    | HST2-F V3 (M8-M16) <ul style="list-style-type: none"> <li>- Shallow embedment depths approved</li> <li>- Full design flexibility with variable embedment depth and edge &amp; spacing</li> </ul>                                                                                                 |
|    | HST2-R V3 (M8-M16) <ul style="list-style-type: none"> <li>- Faster and reliable installation thanks to approved non-cleaning and AT tool</li> <li>- Product and length identification mark facilitates quality control and inspection</li> </ul>                                                 |
|   | HST2-HCR V3 (M8-M16) <ul style="list-style-type: none"> <li>- HST2-F V3 suitable for outdoor use with variable working life (e.g. C3 for 25 years)</li> <li>- HST2-HCR V3 made from high corrosion resistance material (1.4529, EN 10088) to resist corrosion in extreme environments</li> </ul> |
|  | HST2 V3 Timber (M12-M16)<br>Oversized washer <ul style="list-style-type: none"> <li>- HST2 V3 with preassembled oversized washer for fastening Timber to concrete applications according to DIN1052</li> </ul>                                                                                   |



## Base material



Concrete  
(uncracked)



Concrete  
(cracked)

## Load conditions



Static/  
quasi-static



Seismic  
C1/C2



Fire  
resistance

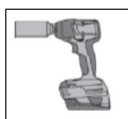
## Drilling, cleaning, setting



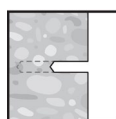
Hammer  
drilled holes  
(with no cleaning)



Diamond  
drilled holes



Impact  
wrench with  
adaptative torque  
module



Variable  
Embedment  
depth



**PROFIS**  
**Engineering**  
**software**



**Steel to**  
**concrete**  
**Handbook**

## Other information

## Linked Approvals/Certificates and Instructions for use

### Approvals/certificates

| Approval no                        | Application / loading condition                                    | Authority / Laboratory | Date of issue | Date of expiry |
|------------------------------------|--------------------------------------------------------------------|------------------------|---------------|----------------|
| <a href="#"><u>ETA-21/0480</u></a> | Static and quasi-static /<br>Seismic / Fire<br>HST2(-F,-R,-HCR) V3 | DIBt Berlin            | 20-10-2025    | -              |
| <a href="#"><u>USE-ER-918</u></a>  | Static and quasi-static                                            | IAPMO UES, USA         | 01-07-2025    | 31-02-2026     |

The instructions for use can be viewed using the link in the instructions for use table or the QR code/link in the Hilti webpage table.

### Instructions for use (IFU)

| Anchor size              | M8                                  | M10                                  | M12                                           | M16                                           |
|--------------------------|-------------------------------------|--------------------------------------|-----------------------------------------------|-----------------------------------------------|
| HST2 V3                  | <a href="#"><u>HST2 V3 M8</u></a>   | <a href="#"><u>HST2 V3 M10</u></a>   | <a href="#"><u>HST2 V3 M12</u></a>            | <a href="#"><u>HST2 V3 M16</u></a>            |
| HST2-F V3                | <a href="#"><u>HST2-F V3 M8</u></a> | <a href="#"><u>HST2-F V3 M10</u></a> | <a href="#"><u>HST2-F V3 M12</u></a>          | <a href="#"><u>HST2-F V3 M16</u></a>          |
| HST2-R V3<br>HST2-HCR V3 | <a href="#"><u>HST2-R V3 M8</u></a> | <a href="#"><u>HST2-R V3 M10</u></a> | <a href="#"><u>HST2-R V3 M12</u></a>          | <a href="#"><u>HST2-R V3 M16</u></a>          |
| HST2 V3<br>Timber        | -                                   | -                                    | <a href="#"><u>HST2 V3 Timber<br/>M12</u></a> | <a href="#"><u>HST2 V3 Timber<br/>M16</u></a> |
| Filling set              | <a href="#"><u>Filling Set</u></a>  |                                      |                                               |                                               |

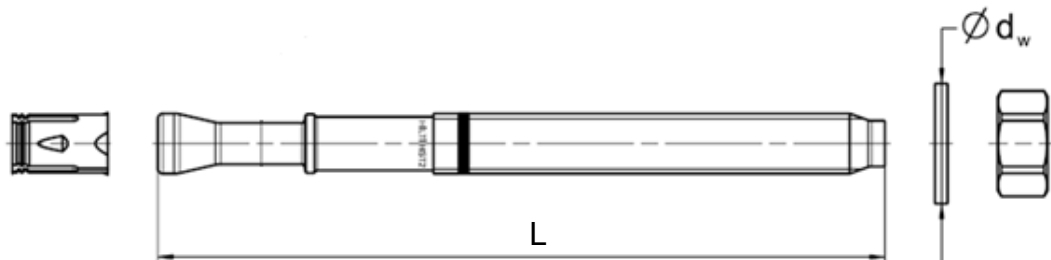
### Link to Hilti Webpage

| <a href="#"><u>HST2 V3</u></a> | <a href="#"><u>HST2-F V3</u></a> | <a href="#"><u>HST2-R V3</u></a> | <a href="#"><u>HST2-HCR V3</u></a> | <a href="#"><u>HST2- V3 Timber</u></a> | <a href="#"><u>HST2 V3 BW</u></a> |
|--------------------------------|----------------------------------|----------------------------------|------------------------------------|----------------------------------------|-----------------------------------|
|                                |                                  |                                  |                                    |                                        |                                   |

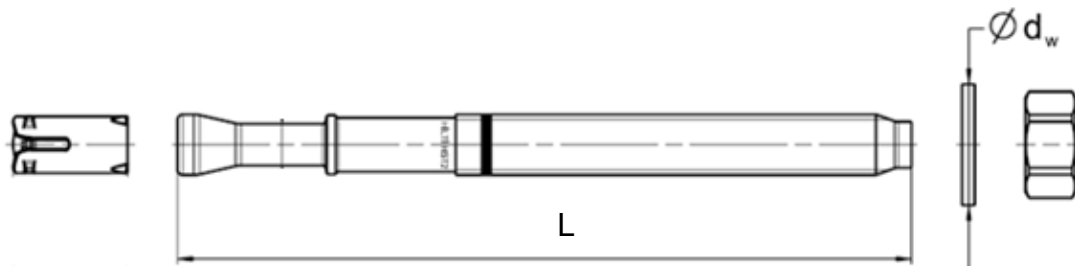
### Fastener special dimensions

| Anchor size                                       |            |      | M8  | M10 | M12 | M16 |
|---------------------------------------------------|------------|------|-----|-----|-----|-----|
| Maximum length of anchor (HST2 (-F) V3)           | L          | [mm] | 130 | 170 | 225 | 230 |
| Maximum length of anchor (HST2 V3 Timber)         | L          | [mm] | -   | -   | 305 | 485 |
| Maximum length of anchor (HST2-R V3, HST2-HCR V3) | L          | [mm] | 110 | 150 | 175 | 185 |
| Outer diameter of washer                          | $d_w \geq$ | [mm] | 16  | 20  | 24  | 30  |
| Outer diameter of big washer version (BW)         | $d_w \geq$ | [mm] | 24  | 30  | 37  | 50  |
| Outer diameter oversized washer (Timber)          | $d_w \geq$ | [mm] | -   | -   | 58  | 68  |

#### HST2 (-F) V3, HST2 V3 Timber



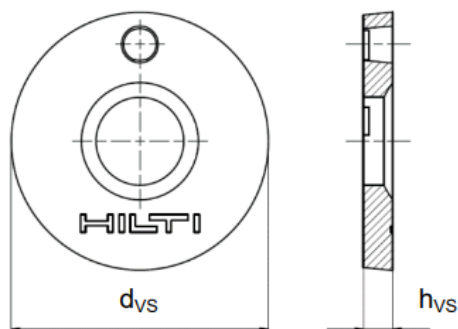
#### HST2-R V3, HST2-HCR V3



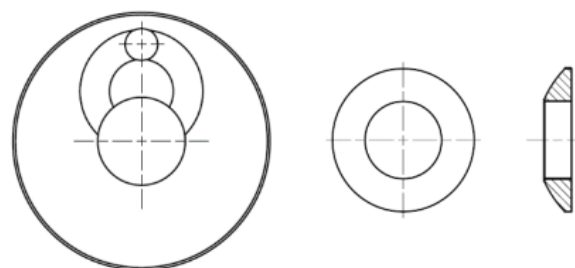
#### Hilti filling set with Injection mortar Hilti HIT-HY...

| Anchor size                                |          |      | M8 | M10 | M12 | M16 |
|--------------------------------------------|----------|------|----|-----|-----|-----|
| Diameter                                   | $d_{vs}$ | [mm] | 38 | 42  | 44  | 52  |
| Height filling washer                      | $h_{vs}$ | [mm] | 5  | 5   | 5   | 6   |
| Height filling washer and spherical washer | $h_{fs}$ | [mm] | 8  | 9   | 10  | 11  |

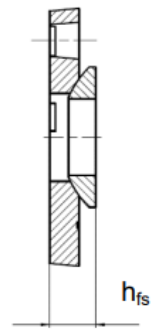
Sealing washer



Spherical washer



Filling Set



**All data in this section applies to:**

- Correct setting (See setting instruction)
- For a single anchor
- Concrete C20/25
- No edge distance and spacing influence (see table with characteristic distances)
- Characteristic spacing and edge distance for splitting failure apply only for uncracked concrete
- For cracked concrete only the characteristic spacing and edge distance for concrete cone failure are decisive
- Minimum base material thickness (see table)
- Embedment depth, as specified in the table of this section
- Anchor material, as specified in the tables of this section
- HST2-F V3 is suitable for variable working life design up to 50 years. For uncracked concrete refer to ETA-21/0480 for further details. For cracked concrete only Hilti Technical Data is available for Corrosivity category C3 working life 25 years
- HST2-F V3 Corrosivity category according to EN ISO 9223:2012-02, please refer ETA-21/0480 for more information
- Recommended loads: With overall partial safety factor for action  $\gamma = 1,4$ .

**Note:** Embedment depths  $h_{ef} < 40$  mm are applicable only for fastening of redundant non-structural systems as addressed in EN 1992-4, Clause 7.3 and CEN/TR 17079. For other types of fastenings please increase the embedment depth.

For specific design cases refer to [PROFIS Engineering](#)

**Design resistance( Hammer drilled holes)**

| Anchor size               |                          |               | M8               |      |      | M10  |      |      | M12  |      |      | M16  |      |      |
|---------------------------|--------------------------|---------------|------------------|------|------|------|------|------|------|------|------|------|------|------|
| Effective anchorage depth |                          | $h_{ef}$ [mm] | 30 <sup>1)</sup> | 45   | 70   | 40   | 60   | 80   | 50   | 70   | 100  | 65   | 85   | 120  |
| Uncracked concrete        |                          |               |                  |      |      |      |      |      |      |      |      |      |      |      |
| Tension                   | HST2 V3<br>HST2-F V3     | $N_{Rd}$ [kN] | 5,4              | 8,7  | 10,7 | 8,3  | 12,0 | 16,0 | 11,6 | 17,5 | 22,7 | 17,2 | 23,5 | 29,3 |
|                           | HST2-R V3<br>HST2-HCR V3 |               | 5,4              | 8,7  | 10,7 | 8,3  | 12,2 | 16,7 | 11,6 | 18,1 | 23,3 | 17,2 | 24,4 | 30,7 |
| Shear                     | HST2 V3<br>HST2-F V3     | $V_{Rd}$ [kN] | 8,5              | 8,5  | 8,5  | 15,1 | 15,1 | 15,1 | 23,6 | 23,6 | 23,6 | 40,8 | 40,8 | 40,8 |
|                           | HST2-R V3<br>HST2-HCR V3 |               | 12,6             | 12,6 | 12,6 | 20,2 | 20,2 | 20,2 | 29,4 | 29,4 | 29,4 | 48,5 | 50,9 | 50,9 |
| Cracked concrete          |                          |               |                  |      |      |      |      |      |      |      |      |      |      |      |
| Tension                   | HST2 V3<br>HST2-F V3     | $N_{Rd}$ [kN] | 3,3              | 4,7  | 4,7  | 5,8  | 7,3  | 7,3  | 8,1  | 9,3  | 9,3  | 12,0 | 16,7 | 16,7 |
|                           | HST2-R V3<br>HST2-HCR V3 |               | 3,3              | 3,3  | 3,3  | 5,8  | 6,0  | 6,0  | 8,0  | 8,0  | 8,0  | 12,0 | 16,7 | 16,7 |
| Shear                     | HST2 V3<br>HST2-F V3     | $V_{Rd}$ [kN] | 8,5              | 8,5  | 8,5  | 14,8 | 15,1 | 15,1 | 20,9 | 23,6 | 23,6 | 33,9 | 40,8 | 40,8 |
|                           | HST2-R V3<br>HST2-HCR V3 |               | 8,8              | 12,6 | 12,6 | 14,8 | 20,2 | 20,2 | 20,9 | 29,4 | 29,4 | 33,9 | 50,7 | 50,9 |

### Recommended loads (Hammer drilled holes)

| Anchor size               |                                                  |           | M8               |     |     | M10  |      |      | M12  |      |      | M16  |      |      |      |
|---------------------------|--------------------------------------------------|-----------|------------------|-----|-----|------|------|------|------|------|------|------|------|------|------|
| Effective anchorage depth | $h_{ef}$                                         | [mm]      | 30 <sup>1)</sup> | 45  | 70  | 40   | 60   | 80   | 50   | 70   | 100  | 65   | 85   | 120  |      |
| Uncracked concrete        |                                                  |           |                  |     |     |      |      |      |      |      |      |      |      |      |      |
| Tension                   | HST2 V3<br>HST2-F V3<br>HST2-R V3<br>HST2-HCR V3 | $N_{rec}$ | [kN]             | 1)  | 6,2 | 7,6  | 5,9  | 8,6  | 11,4 | 8,3  | 12,5 | 16,2 | 12,3 | 16,8 | 21,0 |
|                           | 1)                                               |           |                  | 6,2 | 7,6 | 5,9  | 8,7  | 11,9 | 8,3  | 12,9 | 16,7 | 12,3 | 17,4 | 21,9 |      |
| Shear                     | HST2 V3<br>HST2-F V3<br>HST2-R V3<br>HST2-HCR V3 | $V_{rec}$ | [kN]             | 1)  | 6,1 | 6,1  | 10,8 | 10,8 | 10,8 | 16,9 | 16,9 | 16,9 | 29,1 | 29,1 | 29,1 |
|                           | 1)                                               |           |                  | 9,0 | 9,0 | 14,5 | 14,5 | 14,5 | 21,0 | 21,0 | 21,0 | 34,6 | 36,3 | 36,3 |      |

| Cracked concrete |                          |                  |      |    |     |     |      |      |      |      |      |      |      |      |      |
|------------------|--------------------------|------------------|------|----|-----|-----|------|------|------|------|------|------|------|------|------|
| Tension          | HST2 V3<br>HST2-F V3     | N <sub>rec</sub> | [kN] | 1) | 3,3 | 3,3 | 4,1  | 5,2  | 5,2  | 5,8  | 6,7  | 6,7  | 8,6  | 11,9 | 11,9 |
|                  | HST2-R V3<br>HST2-HCR V3 |                  |      | 1) | 2,4 | 2,4 | 4,1  | 4,3  | 4,3  | 5,7  | 5,7  | 5,7  | 8,6  | 11,9 | 11,9 |
| Shear            | HST2 V3<br>HST2-F V3     | V <sub>rec</sub> | [kN] | 1) | 6,1 | 6,1 | 10,6 | 10,8 | 10,8 | 14,9 | 16,9 | 16,9 | 24,2 | 29,1 | 29,1 |
|                  | HST2-R V3<br>HST2-HCR V3 |                  |      | 1) | 9,0 | 9,0 | 10,6 | 14,5 | 14,5 | 14,9 | 21,0 | 21,0 | 24,2 | 36,2 | 36,3 |

<sup>1)</sup> Please refer "Requirements for redundant fastening" section.

### Design resistance (Diamond cored holes)

| Anchor size               |                          |          |      | M8               |      |      | M10  |      |      | M12  |      |      | M16  |      |      |
|---------------------------|--------------------------|----------|------|------------------|------|------|------|------|------|------|------|------|------|------|------|
| Effective anchorage depth |                          | $h_{ef}$ | [mm] | 30 <sup>1)</sup> | 45   | 70   | 40   | 60   | 80   | 50   | 70   | 100  | 65   | 85   | 120  |
| Uncracked concrete        |                          |          |      |                  |      |      |      |      |      |      |      |      |      |      |      |
| Tension                   | HST2 V3<br>HST2-F V3     | $N_{Rd}$ | [kN] | 4,0              | 7,0  | 8,7  | 6,7  | 10,2 | 13,3 | 11,6 | 17,5 | 22,7 | 17,2 | 23,5 | 29,3 |
|                           | HST2-R V3<br>HST2-HCR V3 |          |      | 4,0              | 6,9  | 8,0  | 6,7  | 9,8  | 13,3 | 9,3  | 14,1 | 18,7 | 13,3 | 19,3 | 24,0 |
| Shear                     | HST2 V3<br>HST2-F V3     | $V_{Rd}$ | [kN] | 8,5              | 8,5  | 8,5  | 15,1 | 15,1 | 15,1 | 23,6 | 23,6 | 23,6 | 40,8 | 40,8 | 40,8 |
|                           | HST2-R V3<br>HST2-HCR V3 |          |      | 12,6             | 12,6 | 12,6 | 20,2 | 20,2 | 20,2 | 29,4 | 29,4 | 29,4 | 48,5 | 50,9 | 50,9 |
| Cracked concrete          |                          |          |      |                  |      |      |      |      |      |      |      |      |      |      |      |
| Tension                   | HST2 V3<br>HST2-F V3     | $N_{Rd}$ | [kN] | 3,3              | 4,7  | 4,7  | 4,7  | 6,0  | 6,0  | 6,7  | 8,0  | 8,0  | 9,3  | 13,3 | 13,3 |
|                           | HST2-R V3<br>HST2-HCR V3 |          |      | 3,3              | 3,3  | 3,3  | 5,8  | 6,0  | 6,0  | 8,0  | 8,0  | 8,0  | 12,0 | 16,7 | 16,7 |
| Shear                     | HST2 V3<br>HST2-F V3     | $V_{Rd}$ | [kN] | 8,5              | 8,5  | 8,5  | 14,8 | 15,1 | 15,1 | 20,9 | 23,6 | 23,6 | 33,9 | 40,8 | 40,8 |
|                           | HST2-R V3<br>HST2-HCR V3 |          |      | 8,8              | 12,6 | 12,6 | 14,8 | 20,2 | 20,2 | 20,9 | 29,4 | 29,4 | 33,9 | 50,7 | 50,9 |

### Recommended loads (Diamond cored holes)

| Anchor size               |                          |           |      | M8               |     |     | M10  |      |      | M12  |      |      | M16  |      |      |
|---------------------------|--------------------------|-----------|------|------------------|-----|-----|------|------|------|------|------|------|------|------|------|
| Effective anchorage depth |                          | $h_{ef}$  | [mm] | 30 <sup>1)</sup> | 45  | 70  | 40   | 60   | 80   | 50   | 70   | 100  | 65   | 85   | 120  |
| Uncracked concrete        |                          |           |      |                  |     |     |      |      |      |      |      |      |      |      |      |
| Tension                   | HST2 V3<br>HST2-F V3     | $N_{rec}$ | [kN] | <sup>1)</sup>    | 5,0 | 6,2 | 4,8  | 7,3  | 9,5  | 8,3  | 12,5 | 16,2 | 12,3 | 16,8 | 21,0 |
|                           | HST2-R V3<br>HST2-HCR V3 |           |      | <sup>1)</sup>    | 4,9 | 5,7 | 4,8  | 7,0  | 9,5  | 6,7  | 10,1 | 13,3 | 9,5  | 13,8 | 17,1 |
| Shear                     | HST2 V3<br>HST2-F V3     | $V_{rec}$ | [kN] | <sup>1)</sup>    | 6,1 | 6,1 | 10,8 | 10,8 | 10,8 | 16,9 | 16,9 | 16,9 | 29,1 | 29,1 | 29,1 |
|                           | HST2-R V3<br>HST2-HCR V3 |           |      | <sup>1)</sup>    | 9,0 | 9,0 | 14,5 | 14,5 | 14,5 | 21,0 | 21,0 | 21,0 | 34,6 | 36,3 | 36,3 |
| Cracked concrete          |                          |           |      |                  |     |     |      |      |      |      |      |      |      |      |      |
| Tension                   | HST2 V3<br>HST2-F V3     | $N_{rec}$ | [kN] | <sup>1)</sup>    | 3,3 | 3,3 | 3,3  | 4,3  | 4,3  | 4,8  | 5,7  | 5,7  | 6,7  | 9,5  | 9,5  |
|                           | HST2-R V3<br>HST2-HCR V3 |           |      | <sup>1)</sup>    | 2,4 | 2,4 | 4,1  | 4,3  | 4,3  | 5,7  | 5,7  | 5,7  | 8,6  | 11,9 | 11,9 |
| Shear                     | HST2 V3<br>HST2-F V3     | $V_{rec}$ | [kN] | <sup>1)</sup>    | 6,1 | 6,1 | 10,6 | 10,8 | 10,8 | 14,9 | 16,9 | 16,9 | 24,2 | 29,1 | 29,1 |
|                           | HST2-R V3<br>HST2-HCR V3 |           |      | <sup>1)</sup>    | 9,0 | 9,0 | 10,6 | 14,5 | 14,5 | 14,9 | 21,0 | 21,0 | 24,2 | 36,2 | 36,3 |

<sup>1)</sup> Please refer "Requirements for redundant fastening" section

### Requirements for redundant fastening

The definition of redundant fastening according to Member States is given in EN 1992-4 and CEN/TR 17079. In Absence of a definition by a Member State the following default values may be taken.

| Minimum number of fixing points | Minimum number of anchors per fixing point | Maximum design load of action $F_{sd}$ per fixing point |
|---------------------------------|--------------------------------------------|---------------------------------------------------------|
| 3                               | 1                                          | 2 kN                                                    |
| 4                               | 1                                          | 3 kN                                                    |

The value for maximum design load of actions per fastening point  $F_{sd}$  is valid in general that means all fastening points are considered in the design of the redundant structural system.  $F_{sd}$  can be a tension, shear or inclined load.

## Seismic loading based on ETA-21/0480. Design according to EN 1992-4

### All data in this section applies to:

- Correct setting (See setting instruction)
- For a single anchor
- Concrete C20/25
- Hammer drilled holes
- No edge distance and spacing influence (see table with characteristic distances)
- Characteristic spacing and edge distance for splitting failure apply only for uncracked concrete.
- For cracked concrete only the characteristic spacing and edge distance for concrete cone failure are decisive
- Minimum base material thickness (see table)
- Embedment depth, as specified in the table of this section
- Anchor material, as specified in the tables of this section
- $\alpha_{\text{gap}} = 1,0$  (using Hilti filling set) and  $\alpha_{\text{gap}} = 0,5$  (without using Hilti filling set) accordingly

For specific design cases refer to [PROFIS Engineering](#).

### Design resistance in case of seismic performance C2

| Anchor size                                       |                          |                    | M10  | M12 | M16  |      |
|---------------------------------------------------|--------------------------|--------------------|------|-----|------|------|
| Effective anchorage depth                         | $h_{\text{ef}}$          | [mm]               | 60   | 70  | 85   |      |
| with and without Hilti filling set                |                          |                    |      |     |      |      |
| Tension                                           | HST2 V3<br>HST2-F V3     | $N_{\text{Rd,C2}}$ | [kN] | 3,7 | 9,3  | 12,0 |
|                                                   | HST2-R V3<br>HST2-HCR V3 |                    |      | 2,2 | 6,7  | 8,5  |
| with filling set ( $\alpha_{\text{gap}}=1,0$ )    |                          |                    |      |     |      |      |
| Shear                                             | HST2 V3<br>HST2-F V3     | $V_{\text{Rd,C2}}$ | [kN] | 5,9 | 8,9  | 20,0 |
|                                                   | HST2-R V3<br>HST2-HCR V3 |                    |      | 9,6 | 14,4 | 30,0 |
| without filling set ( $\alpha_{\text{gap}}=0,5$ ) |                          |                    |      |     |      |      |
| Shear                                             | HST2 V3<br>HST2-F V3     | $V_{\text{Rd,C2}}$ | [kN] | 3,0 | 4,4  | 10,0 |
|                                                   | HST2-R V3<br>HST2-HCR V3 |                    |      | 4,8 | 7,2  | 15,0 |

### Design resistance in case of seismic performance C1

| Anchor size                                       |                          |                    | M10  | M12  | M16  |      |
|---------------------------------------------------|--------------------------|--------------------|------|------|------|------|
| Effective anchorage depth                         |                          | $h_{\text{ef}}$    | [mm] | 60   | 70   | 85   |
| with and without Hilti filling set                |                          |                    |      |      |      |      |
| Tension                                           | HST2 V3<br>HST2-F V3     | $N_{\text{Rd,C1}}$ | [kN] | 7,3  | 9,3  | 15,1 |
|                                                   | HST2-R V3<br>HST2-HCR V3 |                    |      | 5,3  | 7,1  | 12,0 |
| with filling set ( $\alpha_{\text{gap}}=1,0$ )    |                          |                    |      |      |      |      |
| Shear                                             | HST2 V3<br>HST2-F V3     | $V_{\text{Rd,C1}}$ | [kN] | 9,5  | 17,1 | 31,8 |
|                                                   | HST2-R V3<br>HST2-HCR V3 |                    |      | 10,9 | 18,5 | 30,0 |
| without filling set ( $\alpha_{\text{gap}}=0,5$ ) |                          |                    |      |      |      |      |
| Shear                                             | HST2 V3<br>HST2-F V3     | $V_{\text{Rd,C1}}$ | [kN] | 4,8  | 8,6  | 15,9 |
|                                                   | HST2-R V3<br>HST2-HCR V3 |                    |      | 5,4  | 9,2  | 15,0 |

## Fire resistance based on ETA-21/0480 Design according to EN 1992-4

### All data in this section applies to:

- Correct setting (See setting instruction)
- For a single anchor
- Concrete C20/25
- No edge distance and spacing influence (see table with characteristic distances)
- Characteristic spacing and edge distance for splitting failure apply only for uncracked concrete.
- For cracked concrete only the characteristic spacing and edge distance for concrete cone failure are decisive
- Minimum base material thickness (see table)
- Embedment depth, as specified in the table of this section
- Anchor material, as specified in the tables of this section
- Partial safety factor for resistance under fire exposure  $\gamma_{M,fi} = 1,0$

**Note:** Embedment depths  $h_{ef} < 40$  mm are applicable only for fastening of redundant non-structural systems as addressed in EN 1992-4, Clause 7.3 and CEN/TR 17079. For other types of fastenings please increase the embedment depth.

For specific design cases refer to [PROFIS Engineering](#).

### Design resistance in case of fire (Hammer drilled holes)

| Anchor size               |                          |                  | M8               |     |     | M10 |     |     | M12 |     |     | M16 |     |     |     |
|---------------------------|--------------------------|------------------|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Effective anchorage depth | $h_{ef}$                 | [mm]             | 30 <sup>1)</sup> | 45  | 70  | 40  | 60  | 80  | 50  | 70  | 100 | 65  | 85  | 120 |     |
| Fire Exposure R30         |                          |                  |                  |     |     |     |     |     |     |     |     |     |     |     |     |
| Tension                   | HST2 V3<br>HST2-F V3     | $N_{Rd,fi(30)}$  | [kN]             | 0,4 | 1,2 | 1,2 | 0,9 | 2,6 | 2,6 | 1,7 | 3,5 | 3,5 | 3,1 | 6,3 | 6,3 |
|                           | HST2-R V3<br>HST2-HCR V3 |                  |                  | 0,4 | 0,9 | 0,9 | 0,9 | 2,3 | 2,3 | 1,7 | 3,0 | 3,0 | 3,1 | 6,3 | 6,3 |
| Shear                     | HST2 V3<br>HST2-F V3     | $V_{Rd,fi(30)}$  | [kN]             | 0,4 | 1,2 | 1,2 | 0,9 | 2,6 | 2,6 | 1,7 | 4,8 | 4,8 | 3,1 | 9,0 | 9,0 |
|                           | HST2-R V3<br>HST2-HCR V3 |                  |                  | 0,4 | 0,9 | 0,9 | 0,9 | 2,5 | 2,5 | 1,7 | 5,0 | 5,0 | 3,1 | 9,0 | 9,0 |
| Fire Exposure R60         |                          |                  |                  |     |     |     |     |     |     |     |     |     |     |     |     |
| Tension                   | HST2 V3<br>HST2-F V3     | $N_{Rd,fi(60)}$  | [kN]             | 0,3 | 1,0 | 1,0 | 0,8 | 2,1 | 2,1 | 1,3 | 3,5 | 3,5 | 2,4 | 6,3 | 6,3 |
|                           | HST2-R V3<br>HST2-HCR V3 |                  |                  | 0,3 | 0,7 | 0,7 | 0,8 | 1,5 | 1,5 | 1,3 | 3,0 | 3,0 | 2,4 | 6,0 | 6,0 |
| Shear                     | HST2 V3<br>HST2-F V3     | $V_{Rd,fi(60)}$  | [kN]             | 0,3 | 1,0 | 1,0 | 0,8 | 2,1 | 2,1 | 1,3 | 3,8 | 3,8 | 2,4 | 7,0 | 7,0 |
|                           | HST2-R V3<br>HST2-HCR V3 |                  |                  | 0,3 | 0,7 | 0,7 | 0,8 | 1,5 | 1,5 | 1,3 | 3,5 | 3,5 | 2,4 | 6,0 | 6,0 |
| Fire Exposure R90         |                          |                  |                  |     |     |     |     |     |     |     |     |     |     |     |     |
| Tension                   | HST2 V3<br>HST2-F V3     | $N_{Rk,fi(90)}$  | [kN]             | 0,3 | 0,8 | 0,8 | 0,6 | 1,5 | 1,5 | 1,1 | 2,7 | 2,7 | 2,0 | 5,0 | 5,0 |
|                           | HST2-R V3<br>HST2-HCR V3 |                  |                  | 0,3 | 0,6 | 0,6 | 0,6 | 1,0 | 1,0 | 1,1 | 2,0 | 2,0 | 2,0 | 3,5 | 3,5 |
| Shear                     | HST2 V3<br>HST2-F V3     | $V_{Rk,fi(90)}$  | [kN]             | 0,3 | 0,8 | 0,8 | 0,6 | 1,5 | 1,5 | 1,1 | 2,7 | 2,7 | 2,0 | 5,0 | 5,0 |
|                           | HST2-R V3<br>HST2-HCR V3 |                  |                  | 0,3 | 0,6 | 0,6 | 0,6 | 1,0 | 1,0 | 1,1 | 2,0 | 2,0 | 2,0 | 3,5 | 3,5 |
| Fire Exposure R120        |                          |                  |                  |     |     |     |     |     |     |     |     |     |     |     |     |
| Tension                   | HST2 V3<br>HST2-F V3     | $N_{Rd,fi(120)}$ | [kN]             | 0,2 | 0,6 | 0,6 | 0,5 | 1,2 | 1,2 | 0,8 | 2,1 | 2,1 | 1,6 | 4,0 | 4,0 |
|                           | HST2-R V3                |                  |                  | 0,2 | 0,5 | 0,5 | 0,5 | 0,7 | 0,7 | 0,8 | 1,0 | 1,0 | 1,6 | 2,0 | 2,0 |
| Shear                     | HST2 V3<br>HST2-F V3     | $V_{Rd,fi(120)}$ | [kN]             | 0,2 | 0,6 | 0,6 | 0,5 | 1,2 | 1,2 | 0,8 | 2,1 | 2,1 | 1,5 | 4,0 | 4,0 |
|                           | HST2-R V3<br>HST2-HCR V3 |                  |                  | 0,2 | 0,5 | 0,5 | 0,5 | 0,7 | 0,7 | 0,8 | 1,0 | 1,0 | 1,6 | 2,0 | 2,0 |

<sup>1)</sup> Please refer "Requirements for redundant fastening" section

**Design resistance in case of fire (Diamond cored holes)**

| Anchor size               |                          |                  | M8               |     |     | M10 |     |     | M12 |     |     | M16 |     |     |     |
|---------------------------|--------------------------|------------------|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Effective anchorage depth | $h_{ef}$                 | [mm]             | 30 <sup>1)</sup> | 45  | 70  | 40  | 60  | 80  | 50  | 70  | 100 | 65  | 85  | 120 |     |
| Fire Exposure R30         |                          |                  |                  |     |     |     |     |     |     |     |     |     |     |     |     |
| Tension                   | HST2 V3<br>HST2-F V3     | $N_{Rd,fi(30)}$  | [kN]             | 0,4 | 1,2 | 1,2 | 0,9 | 2,3 | 2,3 | 1,7 | 3,0 | 3,0 | 3,1 | 5,0 | 5,0 |
|                           | HST2-R V3<br>HST2-HCR V3 |                  |                  | 0,4 | 0,9 | 0,9 | 0,9 | 2,3 | 2,3 | 1,7 | 3,0 | 3,0 | 3,1 | 6,3 | 6,3 |
| Shear                     | HST2 V3<br>HST2-F V3     | $V_{Rd,fi(30)}$  | [kN]             | 0,4 | 1,2 | 1,2 | 0,9 | 2,6 | 2,6 | 1,7 | 4,8 | 4,8 | 3,1 | 9,0 | 9,0 |
|                           | HST2-R V3<br>HST2-HCR V3 |                  |                  | 0,4 | 0,9 | 0,9 | 0,9 | 2,5 | 2,5 | 1,7 | 5,0 | 5,0 | 3,1 | 9,0 | 9,0 |
| Fire Exposure R60         |                          |                  |                  |     |     |     |     |     |     |     |     |     |     |     |     |
| Tension                   | HST2 V3<br>HST2-F V3     | $N_{Rd,fi(60)}$  | [kN]             | 0,3 | 1,0 | 1,0 | 0,8 | 2,1 | 2,1 | 1,3 | 3,0 | 3,0 | 2,4 | 5,0 | 5,0 |
|                           | HST2-R V3<br>HST2-HCR V3 |                  |                  | 0,3 | 0,7 | 0,7 | 0,8 | 1,5 | 1,5 | 1,3 | 3,0 | 3,0 | 2,4 | 6,0 | 6,0 |
| Shear                     | HST2 V3<br>HST2-F V3     | $V_{Rd,fi(60)}$  | [kN]             | 0,3 | 1,0 | 1,0 | 0,8 | 2,1 | 2,1 | 1,3 | 3,8 | 3,8 | 2,4 | 7,0 | 7,0 |
|                           | HST2-R V3<br>HST2-HCR V3 |                  |                  | 0,3 | 0,7 | 0,7 | 0,8 | 1,5 | 1,5 | 1,3 | 3,5 | 3,5 | 2,4 | 6,0 | 6,0 |
| Fire Exposure R90         |                          |                  |                  |     |     |     |     |     |     |     |     |     |     |     |     |
| Tension                   | HST2 V3<br>HST2-F V3     | $N_{Rk,fi(90)}$  | [kN]             | 0,3 | 0,8 | 0,8 | 0,6 | 1,5 | 1,5 | 1,1 | 2,7 | 2,7 | 2,0 | 5,0 | 5,0 |
|                           | HST2-R V3<br>HST2-HCR V3 |                  |                  | 0,3 | 0,6 | 0,6 | 0,6 | 1,0 | 1,0 | 1,1 | 2,0 | 2,0 | 2,0 | 3,5 | 3,5 |
| Shear                     | HST2 V3<br>HST2-F V3     | $V_{Rk,fi(90)}$  | [kN]             | 0,3 | 0,8 | 0,8 | 0,6 | 1,5 | 1,5 | 1,1 | 2,7 | 2,7 | 2,0 | 5,0 | 5,0 |
|                           | HST2-R V3<br>HST2-HCR V3 |                  |                  | 0,3 | 0,6 | 0,6 | 0,6 | 1,0 | 1,0 | 1,1 | 2,0 | 2,0 | 2,0 | 3,5 | 3,5 |
| Fire Exposure R120        |                          |                  |                  |     |     |     |     |     |     |     |     |     |     |     |     |
| Tension                   | HST2 V3<br>HST2-F V3     | $N_{Rd,fi(120)}$ | [kN]             | 0,2 | 0,6 | 0,6 | 0,5 | 1,2 | 1,2 | 0,8 | 2,1 | 2,1 | 1,6 | 4,0 | 4,0 |
|                           | HST2-R V3<br>HST2-HCR V3 |                  |                  | 0,2 | 0,5 | 0,5 | 0,5 | 0,7 | 0,7 | 0,8 | 1,0 | 1,0 | 1,6 | 2,0 | 2,0 |
| Shear                     | HST2 V3<br>HST2-F V3     | $V_{Rd,fi(120)}$ | [kN]             | 0,2 | 0,6 | 0,6 | 0,5 | 1,2 | 1,2 | 0,8 | 2,1 | 2,1 | 1,6 | 4,0 | 4,0 |
|                           | HST2-R V3<br>HST2-HCR V3 |                  |                  | 0,2 | 0,5 | 0,5 | 0,5 | 0,7 | 0,7 | 0,8 | 1,0 | 1,0 | 1,6 | 2,0 | 2,0 |

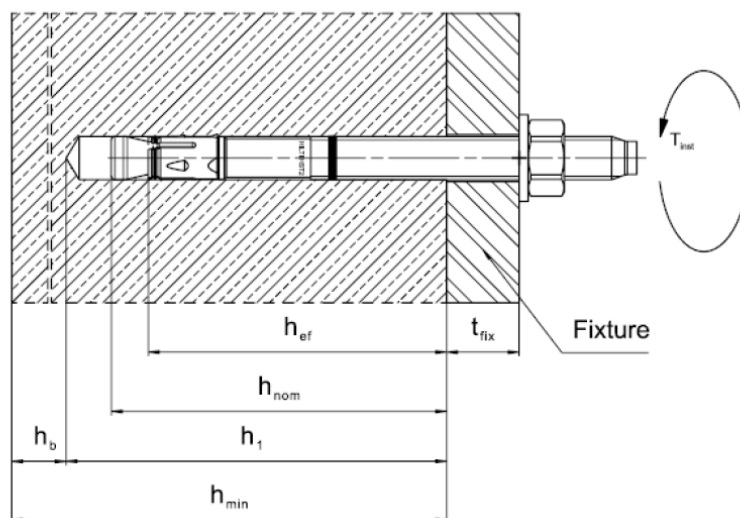
<sup>1)</sup> Please refer "Requirements for redundant fastening" section

## Setting information

### Setting details HST2(-F) V3

| Anchor size                                                                 |                     |                   | M8                                                              |                       |     | M10                                                             |     |     | M12                                                             |     |     | M16                                                              |     |     |     |
|-----------------------------------------------------------------------------|---------------------|-------------------|-----------------------------------------------------------------|-----------------------|-----|-----------------------------------------------------------------|-----|-----|-----------------------------------------------------------------|-----|-----|------------------------------------------------------------------|-----|-----|-----|
| Nominal diameter of drill bit                                               | d <sub>o</sub>      | [mm]              | 8                                                               |                       |     | 10                                                              |     |     | 12                                                              |     |     | 16                                                               |     |     |     |
| Maximum diameter of clearance hole in the fixture                           | d <sub>f</sub>      | [mm]              | 9                                                               |                       |     | 12                                                              |     |     | 14                                                              |     |     | 18                                                               |     |     |     |
| Torque moment (HST2 V3)                                                     | T <sub>inst</sub>   | [Nm]              | 15                                                              |                       |     | 25                                                              |     |     | 40                                                              |     |     | 80                                                               |     |     |     |
| Torque moment (HST2-F V3)                                                   | T <sub>inst</sub>   | [Nm]              | 25                                                              |                       |     | 40                                                              |     |     | 50                                                              |     |     | 110                                                              |     |     |     |
| Effective anchorage depth                                                   | h <sub>ef</sub>     | [mm]              | 30                                                              | 45                    | 70  | 40                                                              | 60  | 80  | 50                                                              | 70  | 100 | 65                                                               | 85  | 120 |     |
| Nominal embedment depth                                                     | h <sub>nom</sub>    | [mm]              | 40                                                              | 55                    | 80  | 50                                                              | 70  | 90  | 63                                                              | 83  | 113 | 78                                                               | 98  | 133 |     |
|                                                                             |                     |                   | h <sub>ef</sub> + 10                                            |                       |     | h <sub>ef</sub> + 10                                            |     |     | h <sub>ef</sub> + 13                                            |     |     | h <sub>ef</sub> + 13                                             |     |     |     |
| Drill hole depth                                                            |                     |                   |                                                                 |                       |     |                                                                 |     |     |                                                                 |     |     |                                                                  |     |     |     |
| Hammer drill                                                                | not cleaned         | h <sub>1min</sub> | [mm]                                                            | 60                    | 75  | 100                                                             | 70  | 90  | 110                                                             | 83  | 103 | 133                                                              | 98  | 118 | 153 |
|                                                                             |                     |                   |                                                                 | h <sub>nom</sub> + 20 |     |                                                                 |     |     |                                                                 |     |     |                                                                  |     |     |     |
|                                                                             | cleaned             | h <sub>1min</sub> | [mm]                                                            | 45                    | 60  | 85                                                              | 55  | 75  | 95                                                              | 71  | 91  | 121                                                              | 86  | 106 | 141 |
|                                                                             |                     |                   |                                                                 | h <sub>nom</sub> + 5  |     |                                                                 |     |     | h <sub>nom</sub> + 8                                            |     |     |                                                                  |     |     |     |
| Diamond coring                                                              | h <sub>1min</sub>   | [mm]              | 50                                                              | 65                    | 90  | 60                                                              | 80  | 100 | 73                                                              | 93  | 123 | 88                                                               | 108 | 143 |     |
|                                                                             |                     |                   | h <sub>nom</sub> + 10                                           |                       |     |                                                                 |     |     |                                                                 |     |     |                                                                  |     |     |     |
| Concrete thickness belowbore hole                                           | h <sub>bmin</sub>   | [mm]              | 21                                                              |                       |     | 27                                                              |     |     | 32                                                              |     |     | 34                                                               |     |     |     |
| Minimum concrete thickness                                                  | h <sub>min</sub>    | [mm]              | max(100; 1,5 h <sub>ef</sub> ; h <sub>1</sub> +h <sub>b</sub> ) |                       |     | max(120; 1,5 h <sub>ef</sub> ; h <sub>1</sub> +h <sub>b</sub> ) |     |     | max(140; 1,5 h <sub>ef</sub> ; h <sub>1</sub> +h <sub>b</sub> ) |     |     | max (160; 1,5 h <sub>ef</sub> ; h <sub>1</sub> +h <sub>b</sub> ) |     |     |     |
| Fixture thicknesses                                                         |                     |                   |                                                                 |                       |     |                                                                 |     |     |                                                                 |     |     |                                                                  |     |     |     |
| Thickness of Hilti filling set                                              | h <sub>fs</sub>     | [mm]              | 8                                                               |                       |     | 9                                                               |     |     | 10                                                              |     |     | 11                                                               |     |     |     |
| Effective fixture thickness with Hilti filling set                          | t <sub>fix,ef</sub> | [mm]              | t <sub>fix</sub> - h <sub>fs</sub>                              |                       |     |                                                                 |     |     |                                                                 |     |     |                                                                  |     |     |     |
| Characteristic distances HST2(-F) V3                                        |                     |                   |                                                                 |                       |     |                                                                 |     |     |                                                                 |     |     |                                                                  |     |     |     |
| Spacing for splitting failure and concrete cone failure <sup>a)</sup>       | S <sub>cr,sp</sub>  | [mm]              | 152                                                             | 191                   | 210 | 194                                                             | 291 | 386 | 181                                                             | 284 | 340 | 210                                                              | 337 | 409 |     |
|                                                                             | S <sub>cr,N</sub>   | [mm]              | 90                                                              | 135                   | 210 | 120                                                             | 180 | 240 | 150                                                             | 210 | 300 | 195                                                              | 255 | 360 |     |
| Edge distance for splitting failure and concrete cone failure <sup>a)</sup> | C <sub>cr,sp</sub>  | [mm]              | 76                                                              | 96                    | 105 | 97                                                              | 146 | 193 | 91                                                              | 142 | 170 | 105                                                              | 168 | 204 |     |
|                                                                             | C <sub>cr,N</sub>   | [mm]              | 45                                                              | 68                    | 105 | 60                                                              | 90  | 120 | 75                                                              | 105 | 150 | 98                                                               | 128 | 180 |     |

<sup>a)</sup> Values calculated under the hypothesis of uncracked concrete C20/25, cleaned, hammer drilled borehole.

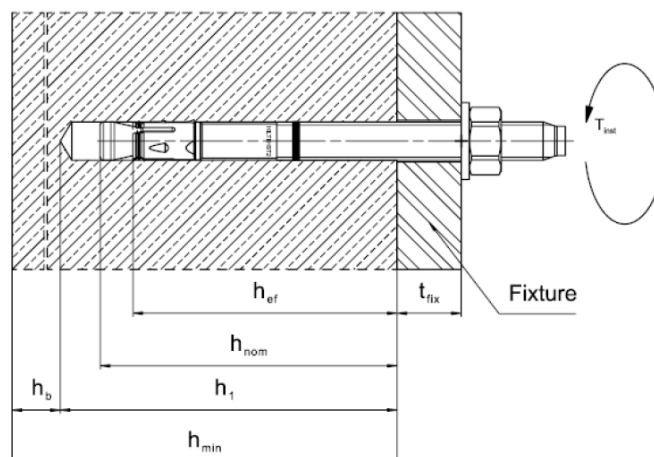


## Setting information

### Setting details HST2-R V3, HST2-HCR V3

| Anchor size                                                                 |                     |                   | M8                                                              |                       |     | M10                                                             |     |     | M12                                                             |                      |     | M16                                                             |     |     |     |
|-----------------------------------------------------------------------------|---------------------|-------------------|-----------------------------------------------------------------|-----------------------|-----|-----------------------------------------------------------------|-----|-----|-----------------------------------------------------------------|----------------------|-----|-----------------------------------------------------------------|-----|-----|-----|
| Nominal diameter of drill bit                                               | d <sub>o</sub>      | [mm]              | 8                                                               |                       |     | 10                                                              |     |     | 12                                                              |                      |     | 16                                                              |     |     |     |
| Maximum diameter of clearance hole in the fixture                           | d <sub>f</sub>      | [mm]              | 9                                                               |                       |     | 12                                                              |     |     | 14                                                              |                      |     | 18                                                              |     |     |     |
| Torque moment                                                               | T <sub>inst</sub>   | [Nm]              | 20                                                              |                       |     | 45                                                              |     |     | 60                                                              |                      |     | 110                                                             |     |     |     |
| Effective anchorage depth                                                   | h <sub>ef</sub>     | [mm]              | 30                                                              | 45                    | 70  | 40                                                              | 60  | 80  | 50                                                              | 70                   | 100 | 65                                                              | 85  | 120 |     |
| Nominal embedment depth                                                     | h <sub>nom</sub>    | [mm]              | 38                                                              | 53                    | 78  | 49                                                              | 69  | 89  | 60                                                              | 80                   | 110 | 78                                                              | 98  | 133 |     |
|                                                                             |                     |                   | h <sub>ef</sub> + 8                                             |                       |     | h <sub>ef</sub> + 9                                             |     |     | h <sub>ef</sub> + 10                                            |                      |     | h <sub>ef</sub> + 13                                            |     |     |     |
| Drill hole depth                                                            |                     |                   |                                                                 |                       |     |                                                                 |     |     |                                                                 |                      |     |                                                                 |     |     |     |
| Hammer drill                                                                | not cleaned         | h <sub>1min</sub> | [mm]                                                            | 58                    | 73  | 98                                                              | 69  | 89  | 109                                                             | 80                   | 100 | 130                                                             | 98  | 118 | 153 |
|                                                                             |                     |                   |                                                                 | h <sub>nom</sub> + 20 |     |                                                                 |     |     |                                                                 |                      |     |                                                                 |     |     |     |
|                                                                             | cleaned             | h <sub>1min</sub> | [mm]                                                            | 43                    | 58  | 83                                                              | 54  | 74  | 94                                                              | 68                   | 88  | 118                                                             | 86  | 106 | 141 |
|                                                                             |                     |                   |                                                                 | h <sub>nom</sub> + 5  |     |                                                                 |     |     |                                                                 | h <sub>nom</sub> + 8 |     |                                                                 |     |     |     |
| Diamond coring                                                              | h <sub>1min</sub>   | [mm]              | 48                                                              | 63                    | 88  | 59                                                              | 79  | 99  | 70                                                              | 90                   | 120 | 88                                                              | 102 | 143 |     |
|                                                                             |                     |                   | h <sub>nom</sub> + 10                                           |                       |     |                                                                 |     |     |                                                                 |                      |     |                                                                 |     |     |     |
| Minimum Concrete thickness belowbore hole                                   | h <sub>bmin</sub>   | [mm]              | 21                                                              |                       |     | 27                                                              |     |     | 32                                                              |                      |     | 34                                                              |     |     |     |
| Minimum concrete thickness                                                  | h <sub>min</sub>    | [mm]              | max(100; 1,5 h <sub>ef</sub> ; h <sub>1</sub> +h <sub>b</sub> ) |                       |     | max(120; 1,5 h <sub>ef</sub> ; h <sub>1</sub> +h <sub>b</sub> ) |     |     | max(140; 1,5 h <sub>ef</sub> ; h <sub>1</sub> +h <sub>b</sub> ) |                      |     | max(160; 1,5 h <sub>ef</sub> ; h <sub>1</sub> +h <sub>b</sub> ) |     |     |     |
| Fixture thicknesses                                                         |                     |                   |                                                                 |                       |     |                                                                 |     |     |                                                                 |                      |     |                                                                 |     |     |     |
| Thickness of Hilti filling set                                              | h <sub>fs</sub>     | [mm]              | 8                                                               |                       |     | 9                                                               |     |     | 10                                                              |                      |     | 11                                                              |     |     |     |
| Effective fixture thickness with Hilti filling set                          | t <sub>fix,ef</sub> | [mm]              | t <sub>fix</sub> - h <sub>fs</sub>                              |                       |     |                                                                 |     |     |                                                                 |                      |     |                                                                 |     |     |     |
| Characteristic distances HST2-R V3, HST2-HCR V3                             |                     |                   |                                                                 |                       |     |                                                                 |     |     |                                                                 |                      |     |                                                                 |     |     |     |
| Spacing for splitting failure and concrete cone failure <sup>a)</sup>       | S <sub>cr,sp</sub>  | [mm]              | 142                                                             | 248                   | 299 | 161                                                             | 241 | 319 | 204                                                             | 292                  | 343 | 327                                                             | 432 | 475 |     |
|                                                                             | S <sub>cr,N</sub>   | [mm]              | 90                                                              | 135                   | 210 | 120                                                             | 180 | 240 | 150                                                             | 210                  | 300 | 195                                                             | 255 | 360 |     |
| Edge distance for splitting failure and concrete cone failure <sup>a)</sup> | C <sub>cr,sp</sub>  | [mm]              | 71                                                              | 124                   | 150 | 80                                                              | 120 | 159 | 102                                                             | 146                  | 171 | 163                                                             | 216 | 238 |     |
|                                                                             | C <sub>cr,N</sub>   | [mm]              | 45                                                              | 68                    | 105 | 60                                                              | 90  | 120 | 75                                                              | 105                  | 150 | 98                                                              | 128 | 180 |     |

<sup>a)</sup> Values calculated under the hypothesis of uncracked concrete C20/25, cleaned, hammer drilled borehole.

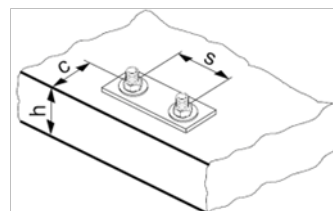
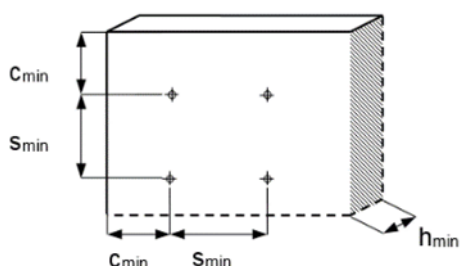


## HST2 (-F) V3

### Minimum spacing $s_{min}$ , edge distance $c_{min}$ and required splitting area $A_{sp,req}$

We recommend checking your designs in Hilti's PROFIS Engineering software to verify the edge & spacing values. ETA-21/0480 provides formulae for the calculation of flexible edge & spacing for each anchor layout configuration depending on base material thickness.

Minimum spacing and edge distance values on the tables below are recommendations for specific anchor layout and base material dimensions.



| Anchor size HST2(-F) V3      |               |      | M8  |     |     |     |     |     |
|------------------------------|---------------|------|-----|-----|-----|-----|-----|-----|
| Effective anchorage depth    | $h_{ef}$      | [mm] | 30  |     | 45  |     | 70  |     |
| Drill hole cleaned           |               |      | yes | no  | yes | no  | yes | no  |
| Min. base material thickness | $h_{min}$     | [mm] | 100 | 100 | 100 | 100 | 110 | 125 |
| <b>Uncracked concrete</b>    |               |      |     |     |     |     |     |     |
| Minimum spacing              | $s_{min}$     | [mm] | 40  | 40  | 40  | 40  | 40  | 40  |
|                              | for $c_{min}$ | [mm] | 55  | 55  | 55  | 55  | 50  | 45  |
| Minimum edge distance        | $c_{min}$     | [mm] | 45  | 45  | 45  | 45  | 45  | 45  |
|                              | for $s_{min}$ | [mm] | 65  | 65  | 60  | 60  | 50  | 40  |
| <b>Cracked concrete</b>      |               |      |     |     |     |     |     |     |
| Minimum spacing              | $s_{min}$     | [mm] | 40  | 40  | 40  | 40  | 40  | 40  |
|                              | for $c_{min}$ | [mm] | 50  | 50  | 45  | 45  | 45  | 45  |
| Minimum edge distance        | $c_{min}$     | [mm] | 45  | 45  | 45  | 45  | 45  | 45  |
|                              | for $s_{min}$ | [mm] | 40  | 40  | 40  | 40  | 40  | 40  |

| Anchor size HST2(-F) V3      |               |      | M10 |     |     |     |     |     |
|------------------------------|---------------|------|-----|-----|-----|-----|-----|-----|
| Effective anchorage depth    | $h_{ef}$      | [mm] | 40  |     | 60  |     | 80  |     |
| Drill hole cleaned           |               |      | yes | no  | yes | no  | yes | no  |
| Min. base material thickness | $h_{min}$     | [mm] | 120 | 120 | 120 | 120 | 125 | 140 |
| <b>Uncracked concrete</b>    |               |      |     |     |     |     |     |     |
| Minimum spacing              | $s_{min}$     | [mm] | 55  | 55  | 55  | 55  | 55  | 55  |
|                              | for $c_{min}$ | [mm] | 75  | 75  | 75  | 75  | 70  | 60  |
| Minimum edge distance        | $c_{min}$     | [mm] | 55  | 55  | 55  | 55  | 55  | 55  |
|                              | for $s_{min}$ | [mm] | 105 | 105 | 105 | 105 | 95  | 65  |
| <b>Cracked concrete</b>      |               |      |     |     |     |     |     |     |
| Minimum spacing              | $s_{min}$     | [mm] | 55  | 55  | 55  | 55  | 55  | 55  |
|                              | for $c_{min}$ | [mm] | 55  | 55  | 55  | 55  | 55  | 55  |
| Minimum edge distance        | $c_{min}$     | [mm] | 55  | 55  | 55  | 55  | 55  | 55  |
|                              | for $s_{min}$ | [mm] | 55  | 55  | 55  | 55  | 55  | 55  |

| Anchor size HST2(-F) V3      |               |      | M12 |     |     |     |     |     |
|------------------------------|---------------|------|-----|-----|-----|-----|-----|-----|
| Effective anchorage depth    | $h_{ef}$      | [mm] | 50  |     | 70  |     | 100 |     |
| Drill hole cleaned           |               |      | yes | no  | yes | no  | yes | no  |
| Min. base material thickness | $h_{min}$     | [mm] | 140 | 140 | 140 | 140 | 155 | 165 |
| <b>Uncracked concrete</b>    |               |      |     |     |     |     |     |     |
| Minimum spacing              | $s_{min}$     | [mm] | 60  | 60  | 60  | 60  | 60  | 60  |
|                              | for $c_{min}$ | [mm] | 75  | 75  | 75  | 75  | 65  | 65  |
| Minimum edge distance        | $c_{min}$     | [mm] | 55  | 55  | 55  | 55  | 55  | 55  |
|                              | for $s_{min}$ | [mm] | 125 | 125 | 110 | 110 | 115 | 95  |
| <b>Cracked concrete</b>      |               |      |     |     |     |     |     |     |
| Minimum spacing              | $s_{min}$     | [mm] | 60  | 60  | 60  | 60  | 60  | 60  |
|                              | for $c_{min}$ | [mm] | 60  | 60  | 55  | 55  | 60  | 55  |
| Minimum edge distance        | $c_{min}$     | [mm] | 55  | 55  | 55  | 55  | 55  | 55  |
|                              | for $s_{min}$ | [mm] | 70  | 70  | 60  | 60  | 60  | 60  |

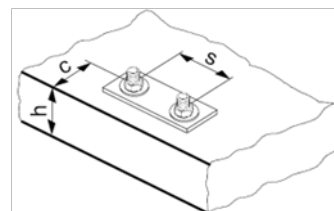
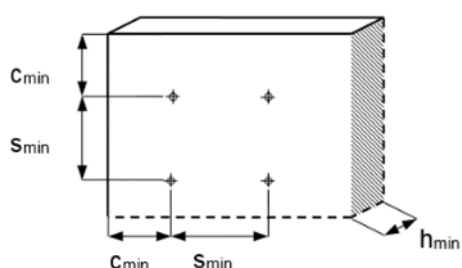
| Anchor size HST2(-F) V3      |               |      | M16 |     |     |     |     |     |
|------------------------------|---------------|------|-----|-----|-----|-----|-----|-----|
| Effective anchorage depth    | $h_{ef}$      | [mm] | 65  |     | 85  |     | 120 |     |
| Drill hole cleaned           |               |      | yes | no  | yes | no  | yes | no  |
| Min. base material thickness | $h_{min}$     | [mm] | 160 | 160 | 160 | 160 | 180 | 190 |
| <b>Uncracked concrete</b>    |               |      |     |     |     |     |     |     |
| Minimum spacing              | $s_{min}$     | [mm] | 70  | 70  | 70  | 70  | 70  | 70  |
|                              | for $c_{min}$ | [mm] | 85  | 85  | 85  | 85  | 75  | 75  |
| Minimum edge distance        | $c_{min}$     | [mm] | 70  | 70  | 70  | 70  | 70  | 70  |
|                              | for $s_{min}$ | [mm] | 105 | 105 | 105 | 105 | 95  | 80  |
| <b>Cracked concrete</b>      |               |      |     |     |     |     |     |     |
| Minimum spacing              | $s_{min}$     | [mm] | 70  | 70  | 70  | 70  | 70  | 70  |
|                              | for $c_{min}$ | [mm] | 70  | 70  | 70  | 70  | 70  | 70  |
| Minimum edge distance        | $c_{min}$     | [mm] | 70  | 70  | 70  | 70  | 70  | 70  |
|                              | for $s_{min}$ | [mm] | 70  | 70  | 70  | 70  | 70  | 70  |

## HST2-R V3, HST2-HCR V3

### Minimum spacing $s_{min}$ , edge distance $c_{min}$ and required splitting area $A_{sp,req}$

We recommend checking your designs in Hilti's PROFIS Engineering software to verify the edge & spacing values. ETA-21/0480 provides formulae for the calculation of flexible edge & spacing for each anchor layout configuration depending on base material thickness.

Minimum spacing and edge distance values on the tables below are recommendations for specific anchor layout and base material dimensions.



| Anchor size HST2-R V3, HST2-HCR V3 |               |      | M8  |     |     |     |     |     |
|------------------------------------|---------------|------|-----|-----|-----|-----|-----|-----|
| Effective anchorage depth          | $h_{ef}$      | [mm] | 30  |     | 45  |     | 70  |     |
| Drill hole cleaned                 |               |      | yes | no  | yes | no  | yes | no  |
| Min. base material thickness       | $h_{min}$     | [mm] | 100 | 100 | 100 | 100 | 105 | 120 |
| <b>Uncracked concrete</b>          |               |      |     |     |     |     |     |     |
| Minimum spacing                    | $s_{min}$     | [mm] | 40  | 40  | 40  | 40  | 40  | 40  |
|                                    | for $c_{min}$ | [mm] | 60  | 60  | 60  | 60  | 60  | 50  |
| Minimum edge distance              | $c_{min}$     | [mm] | 45  | 45  | 45  | 45  | 45  | 45  |
|                                    | for $s_{min}$ | [mm] | 90  | 90  | 85  | 85  | 80  | 50  |
| <b>Cracked concrete</b>            |               |      |     |     |     |     |     |     |
| Minimum spacing                    | $s_{min}$     | [mm] | 40  | 40  | 40  | 40  | 40  | 40  |
|                                    | for $c_{min}$ | [mm] | 50  | 50  | 50  | 50  | 50  | 45  |
| Minimum edge distance              | $c_{min}$     | [mm] | 45  | 45  | 45  | 45  | 45  | 45  |
|                                    | for $s_{min}$ | [mm] | 50  | 50  | 45  | 45  | 45  | 40  |

| Anchor size HST2-R V3, HST2-HCR V3 |               |      | M10 |     |     |     |     |     |
|------------------------------------|---------------|------|-----|-----|-----|-----|-----|-----|
| Effective anchorage depth          | $h_{ef}$      | [mm] | 40  |     | 60  |     | 80  |     |
| Drill hole cleaned                 |               |      | yes | no  | yes | no  | yes | no  |
| Min. base material thickness       | $h_{min}$     | [mm] | 120 | 120 | 120 | 120 | 125 | 140 |
| <b>Uncracked concrete</b>          |               |      |     |     |     |     |     |     |
| Minimum spacing                    | $s_{min}$     | [mm] | 55  | 55  | 55  | 55  | 55  | 55  |
|                                    | for $c_{min}$ | [mm] | 70  | 70  | 70  | 70  | 70  | 60  |
| Minimum edge distance              | $c_{min}$     | [mm] | 50  | 50  | 50  | 50  | 50  | 50  |
|                                    | for $s_{min}$ | [mm] | 130 | 130 | 115 | 115 | 115 | 90  |
| <b>Cracked concrete</b>            |               |      |     |     |     |     |     |     |
| Minimum spacing                    | $s_{min}$     | [mm] | 55  | 55  | 55  | 55  | 55  | 55  |
|                                    | for $c_{min}$ | [mm] | 65  | 65  | 65  | 65  | 60  | 55  |
| Minimum edge distance              | $c_{min}$     | [mm] | 50  | 50  | 50  | 50  | 50  | 50  |
|                                    | for $s_{min}$ | [mm] | 100 | 100 | 90  | 90  | 90  | 65  |

| Anchor size HST2-R V3, HST2-HCR V3 |               |      | M12 |     |     |     |     |     |
|------------------------------------|---------------|------|-----|-----|-----|-----|-----|-----|
| Effective anchorage depth          | $h_{ef}$      | [mm] | 50  |     | 70  |     | 100 |     |
| Drill hole cleaned                 |               |      | yes | no  | yes | no  | yes | no  |
| Min. base material thickness       | $h_{min}$     | [mm] | 140 | 140 | 140 | 140 | 150 | 165 |
| <b>Uncracked concrete</b>          |               |      |     |     |     |     |     |     |
| Minimum spacing                    | $s_{min}$     | [mm] | 60  | 60  | 60  | 60  | 60  | 60  |
|                                    | for $c_{min}$ | [mm] | 80  | 80  | 80  | 80  | 75  | 70  |
| Minimum edge distance              | $c_{min}$     | [mm] | 55  | 55  | 55  | 55  | 55  | 55  |
|                                    | for $s_{min}$ | [mm] | 155 | 155 | 135 | 135 | 155 | 120 |
| <b>Cracked concrete</b>            |               |      |     |     |     |     |     |     |
| Minimum spacing                    | $s_{min}$     | [mm] | 60  | 60  | 60  | 60  | 60  | 60  |
|                                    | for $c_{min}$ | [mm] | 70  | 70  | 70  | 70  | 65  | 60  |
| Minimum edge distance              | $c_{min}$     | [mm] | 55  | 55  | 55  | 55  | 55  | 55  |
|                                    | for $s_{min}$ | [mm] | 110 | 110 | 95  | 95  | 110 | 85  |

| Anchor size HST2-R V3, HST2-HCR V3 |               |      | M16 |     |     |     |     |     |
|------------------------------------|---------------|------|-----|-----|-----|-----|-----|-----|
| Effective anchorage depth          | $h_{ef}$      | [mm] | 65  |     | 85  |     | 120 |     |
| Drill hole cleaned                 |               |      | yes | no  | yes | no  | yes | no  |
| Min. base material thickness       | $h_{min}$     | [mm] | 160 | 160 | 160 | 160 | 180 | 190 |
| <b>Uncracked concrete</b>          |               |      |     |     |     |     |     |     |
| Minimum spacing                    | $s_{min}$     | [mm] | 70  | 70  | 70  | 70  | 70  | 70  |
|                                    | for $c_{min}$ | [mm] | 100 | 100 | 100 | 100 | 85  | 80  |
| Minimum edge distance              | $c_{min}$     | [mm] | 60  | 60  | 60  | 60  | 60  | 60  |
|                                    | for $s_{min}$ | [mm] | 200 | 200 | 185 | 185 | 210 | 185 |
| <b>Cracked concrete</b>            |               |      |     |     |     |     |     |     |
| Minimum spacing                    | $s_{min}$     | [mm] | 70  | 70  | 70  | 70  | 70  | 70  |
|                                    | for $c_{min}$ | [mm] | 80  | 80  | 80  | 80  | 75  | 70  |
| Minimum edge distance              | $c_{min}$     | [mm] | 60  | 60  | 60  | 60  | 60  | 60  |
|                                    | for $s_{min}$ | [mm] | 135 | 135 | 125 | 125 | 145 | 125 |

## Drilling and Installation equipment

For detailed setting information on installation see instructions for use (IFU) given with the product.

|                                         |                                                                                     |                                                                                           |
|-----------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Rotary Hammers<br>(Corded and Cordless) |    | TE 2 - TE 70                                                                              |
| Diamond Coring Machines                 |    | DD EC-1, DD 30-W, DD 150-U                                                                |
| Other tools                             |    | Torque Impact wrench with AT module<br>- SIW 6AT-22 & SI-AT-22<br>- SIW 4AT-22 & SI-AT-22 |
|                                         |   | Hammer drill bit TE-CX, TE-YX, TE-C, TE-Y                                                 |
|                                         |  | Diamond core bit TS, TL, SPX-T, SPX-L                                                     |
|                                         |  | Setting Tool HS-SC                                                                        |
|                                         |  | Blow out pump                                                                             |