# UV-C CONCRETE

VIDEO ETA

## CONCEALED HOOK TIMBER-TO-CONCRETE CONNECTOR

### TIMBER AND CONCRETE
Calculated and certified joint for fastening secondary beams to concrete supports (beams or columns); also certified for steel supports.

### DISASSEMBLED
The hanging system is quick to install and can be easily removed; ideal for the construction of temporary structures.

### LOCKING SYSTEM
The additional locking screws included in the package guarantee strength for bottom-to-up forces.

## CHARACTERISTICS

| | |
|---|---|
| **FOCUS** | joints that can be disassembled |
| **TIMBER SECTIONS** | from 80 x 180 mm to 240 x 440 mm |
| **STRENGTH** | $R_{v,k}$ up to 63 kN |
| **FASTENERS** | LBS, VGS, SKS-E |

### VIDEO
Scan the QR Code and watch the video on our YouTube channel

## MATERIAL

Aluminium alloy three dimensional perforated plate.

## FIELDS OF USE

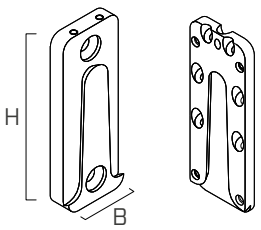
Timber-to-concrete shear joints and applications requiring strength in all directions
- solid timber and glulam
- CLT, LVL

## CODES AND DIMENSIONS

### UV-C

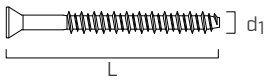
| CODE | B [mm] | H [mm] | s [mm] | $Ø_{concrete}$ [mm] | $Ø_{90°}$ [mm] | $Ø_{45°}$ [mm] | pcs |
|---|---|---|---|---|---|---|---|
| **UVC60115** | 60 | 115 | 24 | 12 | 5 | 6 | 10 |
| **UVC60160** | 60 | 160 | 24 | 12 | 5 | 6 | 10 |
| **UVC60215** | 60 | 215 | 24 | 12 | 5 | 6 | 10 |

Fasteners not included in the package.



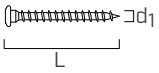

### SKS-E: screw anchor with countersunk head

| CODE | $d_1$ [mm] | L [mm] | $d_0$ [mm] | $T_{inst}$ [Nm] | TX | pcs |
|---|---|---|---|---|---|---|
| **SKS10100CE** | 10 | 100 | 8 | 50 | TX40 | 50 |



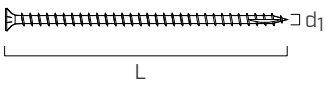

### LBS: 90° screw

| CODE | $d_1$ [mm] | L [mm] | b [mm] | TX | pcs |
|---|---|---|---|---|---|
| **LBS550** | 5 | 50 | 46 | TX20 | 200 |
| **LBS560** | 5 | 60 | 56 | TX20 | 200 |
| **LBS570** | 5 | 70 | 66 | TX20 | 200 |




### VGS: 45° screw

| CODE | $d_1$ [mm] | L [mm] | b [mm] | TX | pcs |
|---|---|---|---|---|---|
| **VGS6100** | 6 | 100 | 88 | TX30 | 100 |
| **VGS6160** | 6 | 160 | 148 | TX30 | 100 |



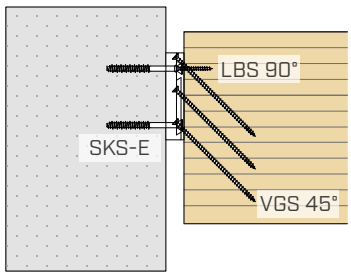

### MATERIAL AND DURABILITY

UV: aluminium alloy
To be used in service classes 1 and 2 (EN 1995-1-1).

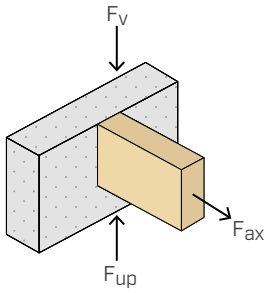
### FIELD OF USE

- Timber to concrete joints

### FASTENERS




### EXTERNAL LOADS

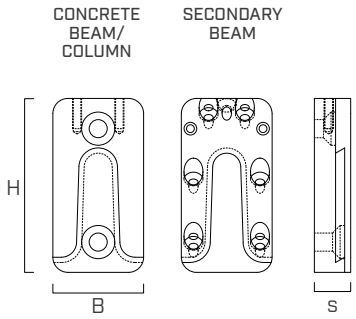



### FAST FASTENING

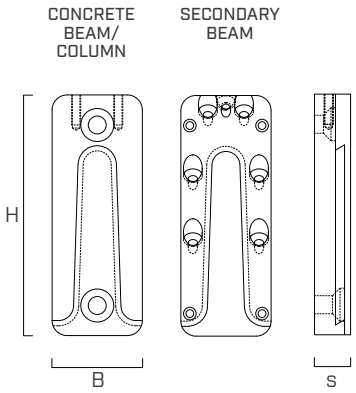
Installation on concrete is facilitated by the use of SKS-E screw anchors to be installed dry quickly and easily. Values for application on concrete are calculated and available.

## STATIC VALUES | TIMBER-TO-CONCRETE JOINT

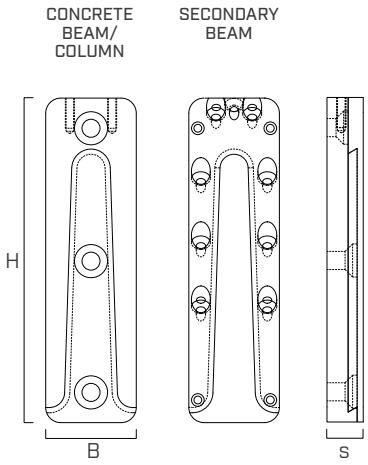
UVC60115




UVC60160




UVC60215

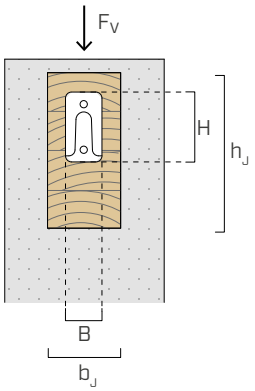


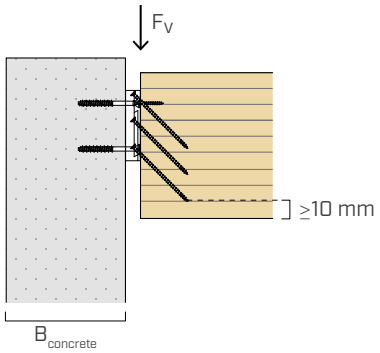

FASTENERS

| | UV-C CONNECTOR | | CONCRETE BEAM/COLUMN | SECONDARY BEAM TIMBER | |
|---|---|---|---|---|---|
| | **B x H x s** [mm] | **nailing / dowelling** | **$n_{H,90°}$** [pcs - Ø] | **$n_{J,90°}$** [pcs - Ø] | **$n_{J,45°}$** [pcs - Ø] |
| **UVC60115** | 60 x 115 x 24 | nailing | 2 - SKS-E Ø10 | 2 - LBS Ø5 | 6 - VGS Ø6 |
| **UVC60160** | 60 x 160 x 24 | | 2 - SKS-E Ø10 | 4 - LBS Ø5 | 6 - VGS Ø6 |
| **UVC60215** | 60 x 215 x 24 | | 3 - SKS-E Ø10 | 4 - LBS Ø5 | 8 - VGS Ø6 |

If it is necessary to prevent the connector from being pulled upwards (e.g. $F_{up}$ stress), two additional M6 x 20 screws are provided. The screws and washers are included in the package.

## TIMBER-TO-CONCRETE JOINT



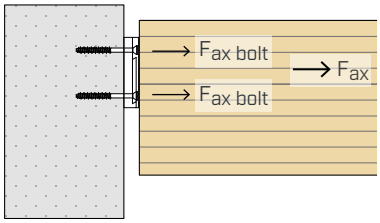




| | SECONDARY BEAM TIMBER[2] | | $R_{V,k}$ TIMBER | | | $R_{V,d}$ UNCRACKED CONCRETE | |
|---|---|---|---|---|---|---|---|
| **type** | **$b_{J,min}$** [mm] | **$h_{J,min}$** [mm] | **holes fastening Ø5[1]** Ø x L [mm] | **holes fastening Ø6[1]** Ø x L [mm] | **$R_{V,k\ timber}$** [kN] | **holes fastening Ø12** Ø x L [mm] | **$R_{V,d\ concrete}$** [kN] |
| **UVC60115** | 80 | 180 | LBS Ø5 x 50 | VGS Ø6 x 100 | **28,00** | SKS-E Ø10 x 100 | **12,70** |
| **UVC60160** | 100 | 180 | LBS Ø5 x 50 | VGS Ø6 x 100 | **28,00** | SKS-E Ø10 x 100 | **17,20** |
| **UVC60215** | 100 | 220 | LBS Ø5 x 50 | VGS Ø6 x 100 | **37,34** | SKS-E Ø10 x 100 | **21,30** |

## DIMENSIONING OF ALTERNATIVE ANCHORS

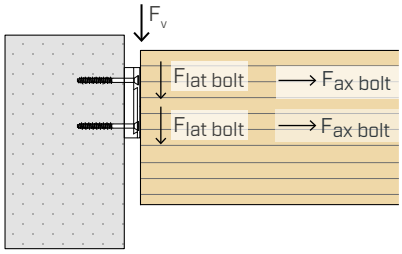
Fastening to the concrete through anchors not listed in the table, shall be verified according to the $F_{bolt}$ forces stressing the anchors, which can be determined by means of the $k_t$ coefficients.

### TENSILE STRESS $F_{ax}$




$$F_{ax\ bolt,d} = \frac{F_{ax,d}}{n_{bolt}}$$

### VERTICAL SHEAR STRESS $F_v$




$$F_{lat\ bolt,d} = k_{t\perp} \cdot F_{v,d}$$
$$F_{ax\ bolt,d} = k_{t//} \cdot F_{v,d}$$

| | $n_{bolt}$ | $k_{t\perp}$ | $k_{t//}$ |
|---|---|---|---|
| **UVC60115** | 2 | 0,50 | 0,299 |
| **UVC60160** | 2 | 0,50 | 0,192 |
| **UVC60215** | 3 | 0,33 | 0,106 |

The anchor check is satisfied if the design strength, calculated considering the group effects and the UV-C connector geometry, is greater than the design stress:

$$R_{bolt,d} \geq F_{bolt,d}$$

**NOTES:**

(1) The use of LBS and VGS screws of longer lengths than listed in the table is permitted without affecting the overall strength of the connection (failure on concrete side). In this case the installation parameters must be reassessed (secondary wooden beam).

(2) The minimum dimensions of the wooden elements vary when the stress direction varies and must be checked from time to time. The table shows the minimum dimensions in order to guide the designer in the choice of the connector. Dimensioning and verification of the timber elements must be carried out separately.

**GENERAL PRINCIPLES:**

- Characteristic values are consistent with EN 1995-1-1 and in accordance with the product ETA. The design values of the anchors for concrete are calculated in accordance with the respective European Technical Assessments.
- The design values are obtained from the characteristic values as follows:

$$R_d = min \begin{cases} \dfrac{R_{v,k\ timber} \cdot k_{mod}}{\gamma_M} \\ R_{v,d\ concrete} \end{cases}$$

  The coefficients $\gamma_M$ and $k_{mod}$ should be taken according to the current regulations used for the calculation.
- For the calculation process a timber density $\rho_k$ = 350 kg/m$^3$ and a strength class of C25/30 concrete with thin reinforcement, minimum $B_{concrete}$ thickness of 120 mm without distance from the edge.
- Dimensioning and verification of timber and concrete elements must be carried out separately.
- The strength values are valid under the calculation hypotheses listed in the table; for different boundary conditions (e.g. minimum edge distances) must be verified by the designer in charge.