

# VGU PLATE T TIMBER

## PLATE FOR TENSILE LOADS

### TENSILE CONNECTION

Thanks to the use of VGS screws arranged at 45°, the high tensile forces can be transferred in a small space. Strength over 90 kN.

### EASY INSTALLATION

The plate is equipped with slots for housing the VGU washers that allow the VGS screws to be inserted at 45°.

### AUXILIARY HOLES

The 5 mm holes allow the insertion of temporary positioning screws to hold the plate in place during the insertion of the inclined screws.



USA, Canada and more design values available online.



### SERVICE CLASS

SC1

SC2

### MATERIAL

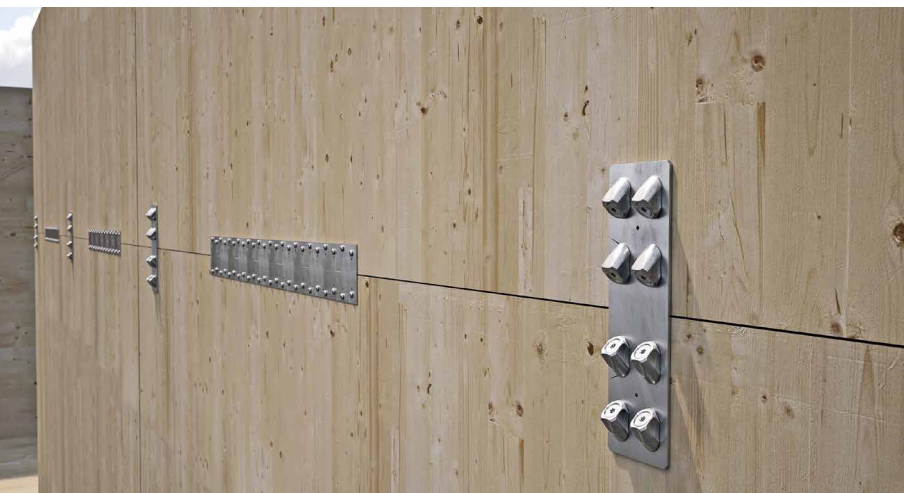
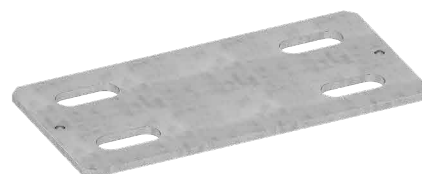
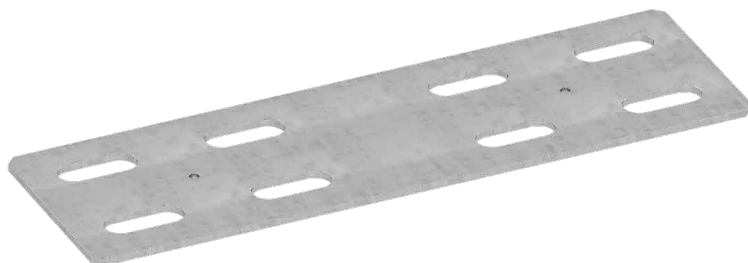
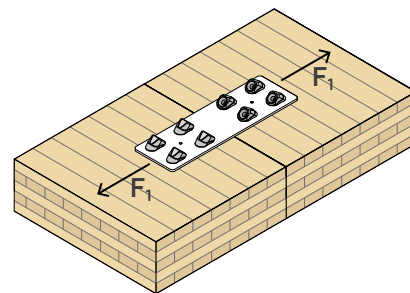
**S350**  
Z275

**VGUPLATET185:** S350GD+Z275

**S235**  
Fe/Zn12c

**VGUPLATET350:** S235 + Fe/Zn12c carbon steel

### EXTERNAL LOADS



### FIELDS OF USE

High-stiffness tensile joints.  
Timber-to-timber configuration.

Can be applied to:

- solid timber and glulam
- CLT and LVL panels



## STIFFNESS

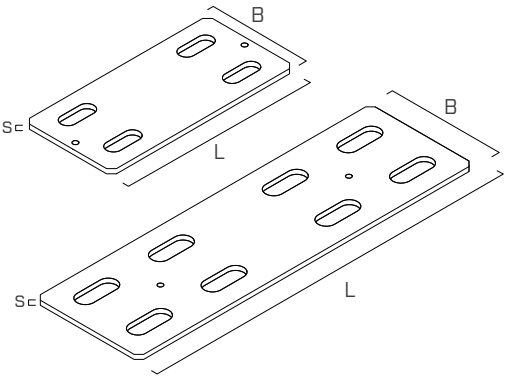
It allows the creation of rigid tensile connections in panel floors with diaphragm behaviour.

## MOMENT RESISTING JOINT

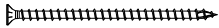
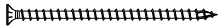
Small moment joints can be made by breaking it down into a tensile action absorbed by the VGU PLATE T plate and a compressive action absorbed by the timber, as in this case, by the DISC FLAT concealed connector.

## CODES AND DIMENSIONS

| CODE                | B<br>[mm]<br>[in] | L<br>[mm]<br>[in] | s<br>[mm]<br>[in] |  | pcs |
|---------------------|-------------------|-------------------|-------------------|-----------------------------------------------------------------------------------|-----|
| <b>VGUPLATET185</b> | 88<br>3 7/16      | 185<br>7 1/4      | 3<br>0.12         | ●                                                                                 | 1   |
| <b>VGUPLATET350</b> | 108<br>4 1/4      | 350<br>13 3/4     | 4<br>0.16         | ●                                                                                 | 1   |

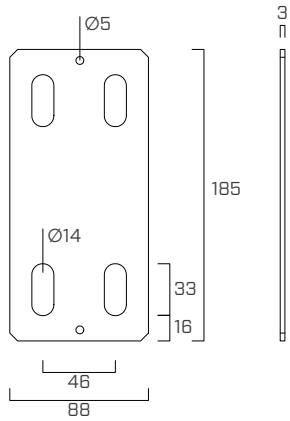


## FASTENERS

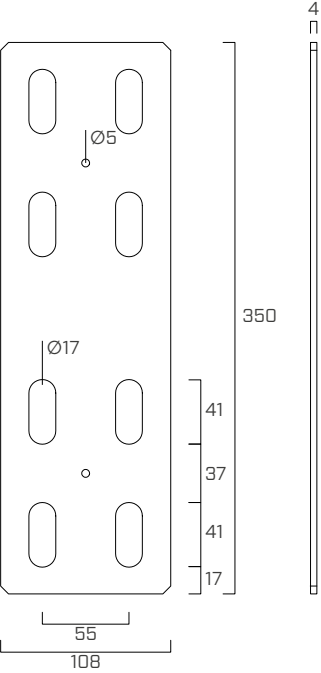
| type       | description                      |  | d<br>[mm] | support<br> | page |
|------------|----------------------------------|------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------|------|
| <b>VGS</b> | fully threaded countersunk screw |  | 9-11      |             | 575  |
| <b>VGU</b> | 45° washer                       |   | 9-11      |             | 569  |

## GEOMETRY

VGUPLATET185



VGUPLATET350

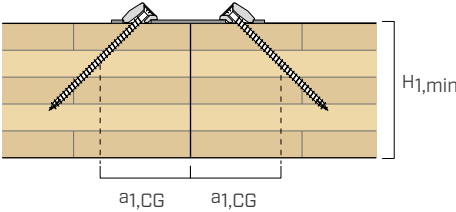
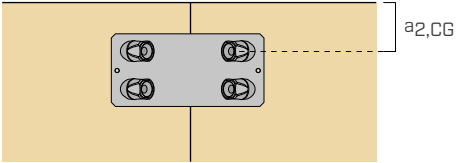


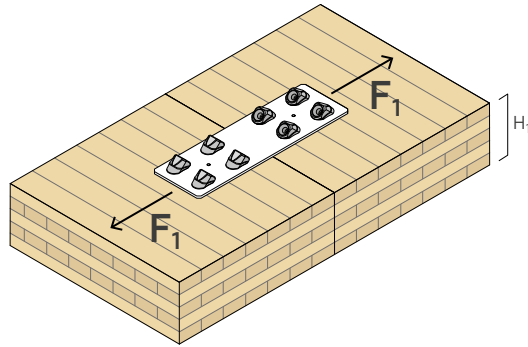
## INSTALLATION

### MINIMUM DISTANCES

|                     | Ø <sub>screw</sub><br>[mm] | L <sub>screw,min</sub> <sup>(1)</sup><br>[mm] | a <sub>1,CG</sub><br>[mm] | a <sub>2,CG</sub><br>[mm] | H <sub>1,min</sub> <sup>(1)</sup><br>[mm] |
|---------------------|----------------------------|-----------------------------------------------|---------------------------|---------------------------|-------------------------------------------|
| <b>VGUPLATET185</b> | 9                          | 120                                           | 90                        | 36                        | 90                                        |
| <b>VGUPLATET350</b> | 11                         | 175                                           | 110                       | 44                        | 125                                       |

<sup>(1)</sup> Valid limit value considering the centerline of the plate centred at the interface of the wooden elements, using all connectors.





| CODE         | H <sub>1</sub><br>[mm] | R <sub>1,k</sub> screw |                                  |                         |                             |                               | R <sub>1,k</sub> steel plate   |
|--------------|------------------------|------------------------|----------------------------------|-------------------------|-----------------------------|-------------------------------|--------------------------------|
|              |                        | VGU                    | fasteners<br>VGS - Ø x L<br>[mm] | n <sub>V</sub><br>[pcs] | R <sub>1,k</sub> ax<br>[kN] | R <sub>1,k</sub> tens<br>[kN] | R <sub>1,k</sub> plate<br>[kN] |
| VGUPLATET185 | 90                     | VGU945                 | 9 x 120                          | 2+2                     | 14,1                        | 35,9                          | 39,3                           |
|              | 100                    |                        | 9 x 140                          | 2+2                     | 17,1                        |                               |                                |
|              | 115                    |                        | 9 x 160                          | 2+2                     | 20,1                        |                               |                                |
|              | 130                    |                        | 9 x 180                          | 2+2                     | 23,1                        |                               |                                |
|              | 145                    |                        | 9 x 200                          | 2+2                     | 26,1                        |                               |                                |
|              | 160                    |                        | 9 x 220                          | 2+2                     | 29,0                        |                               |                                |
|              | 170                    |                        | 9 x 240                          | 2+2                     | 32,0                        |                               |                                |
| VGUPLATET350 | 125                    | VGU1145                | 11 x 175                         | 4+4                     | 49,2                        | 100,3                         | 95,9                           |
|              | 140                    |                        | 11 x 200                         | 4+4                     | 57,7                        |                               |                                |
|              | 160                    |                        | 11 x 225                         | 4+4                     | 66,2                        |                               |                                |
|              | 175                    |                        | 11 x 250                         | 4+4                     | 74,7                        |                               |                                |
|              | 195                    |                        | 11 x 275                         | 4+4                     | 83,2                        |                               |                                |
|              | 210                    |                        | 11 x 300                         | 4+4                     | 91,7                        |                               |                                |

#### GENERAL PRINCIPLES

- Characteristic values comply with the EN 1995:2014 standard in accordance with ETA-11/0030.
- Design values can be obtained from characteristic values as follows:

$$R_d = \min \left\{ \begin{array}{l} \frac{R_{1,k \text{ ax}} \cdot k_{\text{mod}}}{\gamma_M} \\ \frac{R_{1,k \text{ tens}}}{\gamma_{M2}} \\ \frac{R_{1,k \text{ steel}}}{\gamma_{M2}} \end{array} \right.$$

The coefficients  $k_{\text{mod}}$ ,  $\gamma_M$  and  $\gamma_{M2}$  should be taken according to the current regulations used for the calculation.

- A timber density of  $\rho_k = 350 \text{ kg/m}^3$  was considered for the calculation process.
- Dimensioning and verification of the timber elements must be carried out separately.
- The strength values of the connection system are valid under the calculation hypothesis listed in the table; for different boundary conditions shall be verified.

#### INTELLECTUAL PROPERTY

- VGU PLATE T plates are protected by the following Registered Community Designs:
  - RCD 008254353-0017;
  - RCD 008254353-0018.