

# RADIAL

## REMOVABLE CONNECTOR FOR BEAMS AND PANELS

### PREFABRICATION AND DISASSEMBLY

By pre-installing the connectors at the factory, fastening on site is reduced to a few simple steel bolts for maximum installation reliability. Disassembling the connection is quick and easy.

### TOLERANCE

By using RADIALKIT components, it is possible to have a tensile connection with exceptional installation tolerance. The connection remains concealed in the wall thickness.

### BEAMS, WALLS AND COLUMNS

Ideal for making connections for either walls, beams and columns (gerber saddles, hinge joints, etc.). Ideal for hybrid timber-to-steel structures.

### MODULAR BUILDINGS

The concealed connection is ideal for prefabricated buildings with volumetric modules.



VIDEO



CALCULATION  
TOOL



DESIGN  
REGISTERED



ETA-24/0062

### SERVICE CLASS

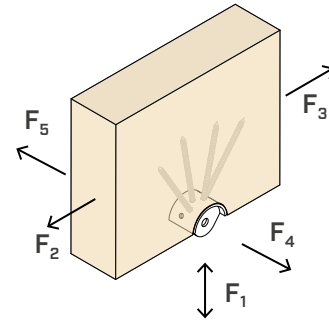
SC1 SC2

### MATERIAL

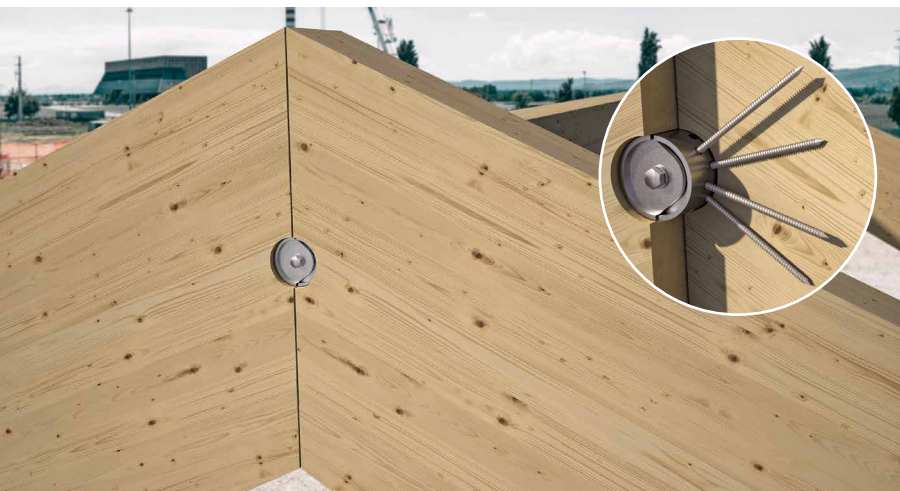
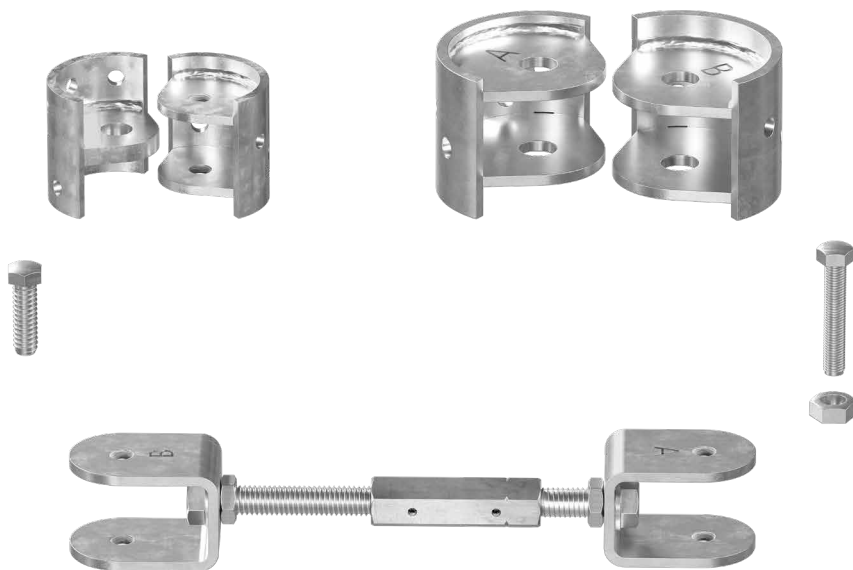
S355  
Fe/Zn12c

S355 + Fe/Zn12c carbon steel

### EXTERNAL LOADS



USA, Canada and more design values available online.

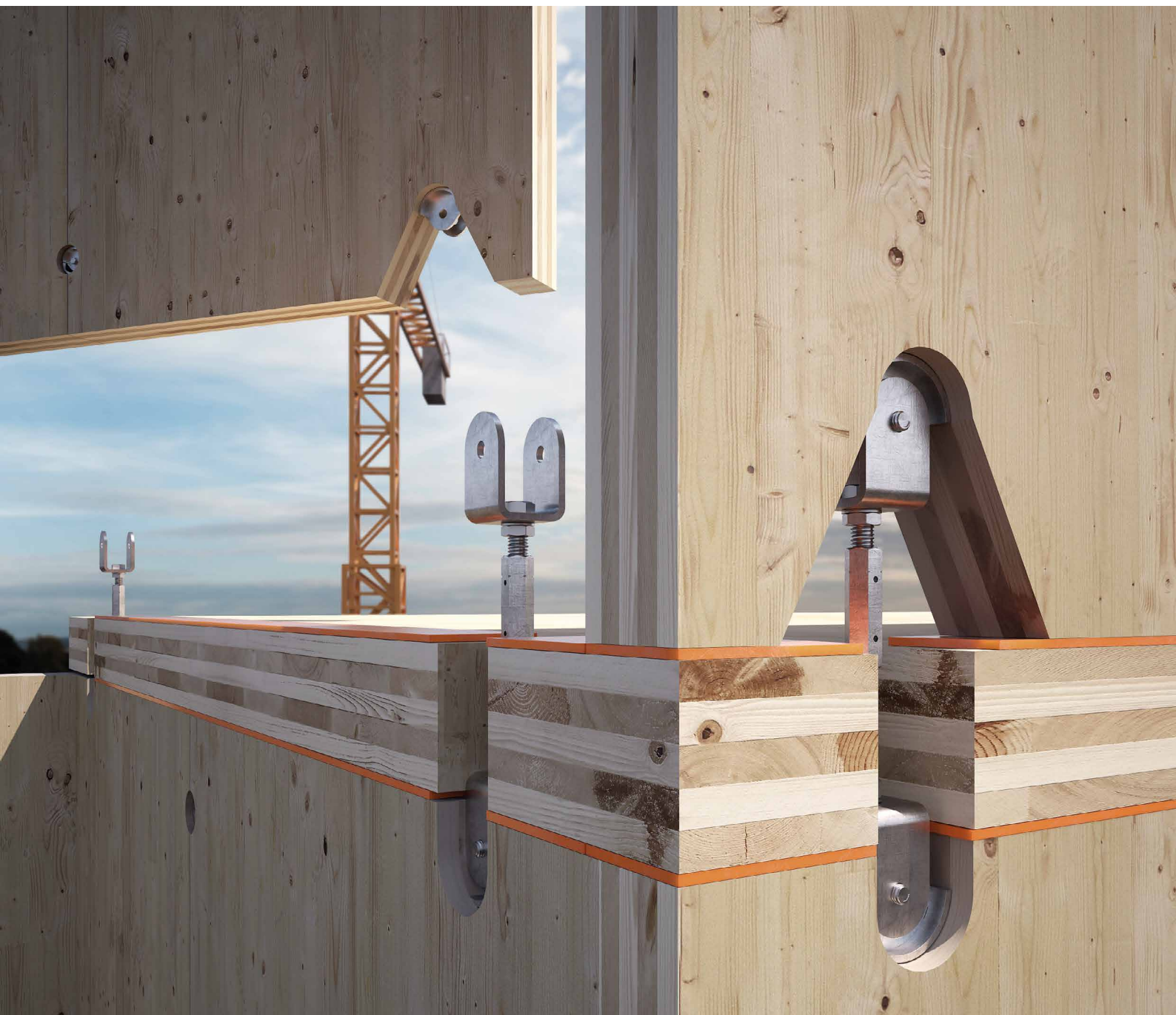


### FIELDS OF USE

Connections between CLT or LVL panels resistant in all directions.  
Hinge connections between glulam beams.  
Highly prefabricated and demountable construction systems.

Can be applied to:

- CLT or LVL walls and floors
- solid timber, glulam or LVL beams or columns



## RADIALKIT

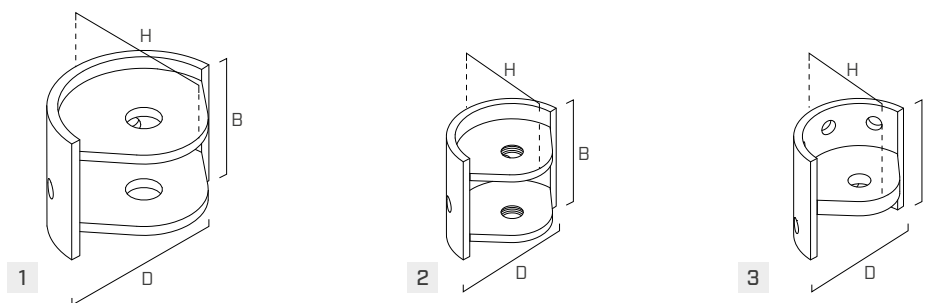
It makes it possible to create tensile connections for walls, without the need to fix screws on site. The connection is completed by inserting the bolts from inside the building without the need for external scaffolding.

## BRACINGS

The RADIAL60S connector is ideal for fastening steel bracing to timber beams or columns.

## CODES AND DIMENSIONS

### RADIAL

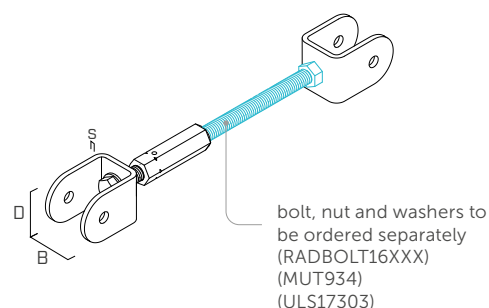


| CODE        | D<br>[mm] | B<br>[mm] | H<br>[mm] | D<br>[in] | B<br>[in] | H<br>[in] | pcs |
|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
| 1 RADIAL90  | 90        | 65        | 74        | 3 1/2     | 2 9/16    | 2 15/16   | 10  |
| 2 RADIAL60D | 60        | 55        | 49        | 2 3/8     | 2 3/16    | 1 15/16   | 10  |
| 3 RADIAL60S | 60        | 55        | 49        | 2 3/8     | 2 3/16    | 1 15/16   | 10  |

### RADIALKIT FOR SPACED FASTENING

| CODE        | D<br>[mm] | B<br>[mm] | s<br>[mm] | D<br>[in] | B<br>[in] | s<br>[in] | pcs |
|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
| RADIALKIT90 | 60        | 60        | 6         | 2 3/8     | 2 3/8     | 1/4       | 5   |
| RADIALKIT60 | 40        | 51        | 5         | 1 9/16    | 2         | 3/16      | 5   |

The standard bolt connecting the two forks must be ordered separately.

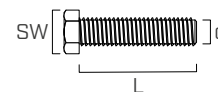


## FASTENERS

### Full thread BOLT - hexagonal head steel 8.8 EN 15048

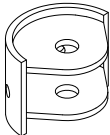
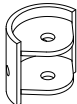
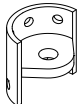
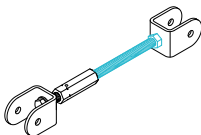
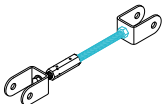
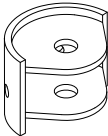
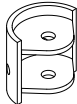
| CODE            | d<br>[mm] | L<br>[mm] | SW<br>[mm] | d<br>[in] | L<br>[in] | SW<br>[in] | pcs |
|-----------------|-----------|-----------|------------|-----------|-----------|------------|-----|
| RADBOLT1245 (*) | M12       | 45        | 19         | 1/2       | 1 3/4     | 3/4        | 100 |
| RADBOLT1260     | M12       | 60        | 24         | 1/2       | 2 3/8     | 15/16      | 50  |
| RADBOLT1670     | M16       | 70        | 24         | 5/8       | 2 3/4     | 15/16      | 25  |
| RADBOLT16140    | M16       | 140       | 24         | 5/8       | 5 1/2     | 15/16      | 25  |
| RADBOLT16160    | M16       | 160       | 24         | 5/8       | 6 1/4     | 15/16      | 25  |
| RADBOLT16180    | M16       | 180       | 24         | 5/8       | 7 1/8     | 15/16      | 25  |
| RADBOLT16200    | M16       | 200       | 24         | 5/8       | 8         | 15/16      | 25  |
| RADBOLT16220    | M16       | 220       | 24         | 5/8       | 8 5/8     | 15/16      | 25  |
| RADBOLT16240    | M16       | 240       | 24         | 5/8       | 9 1/2     | 15/16      | 25  |
| RADBOLT16300    | M16       | 300       | 24         | 5/8       | 11 3/4    | 15/16      | 25  |

(\*) Steel 10.9 EN ISO 4017.



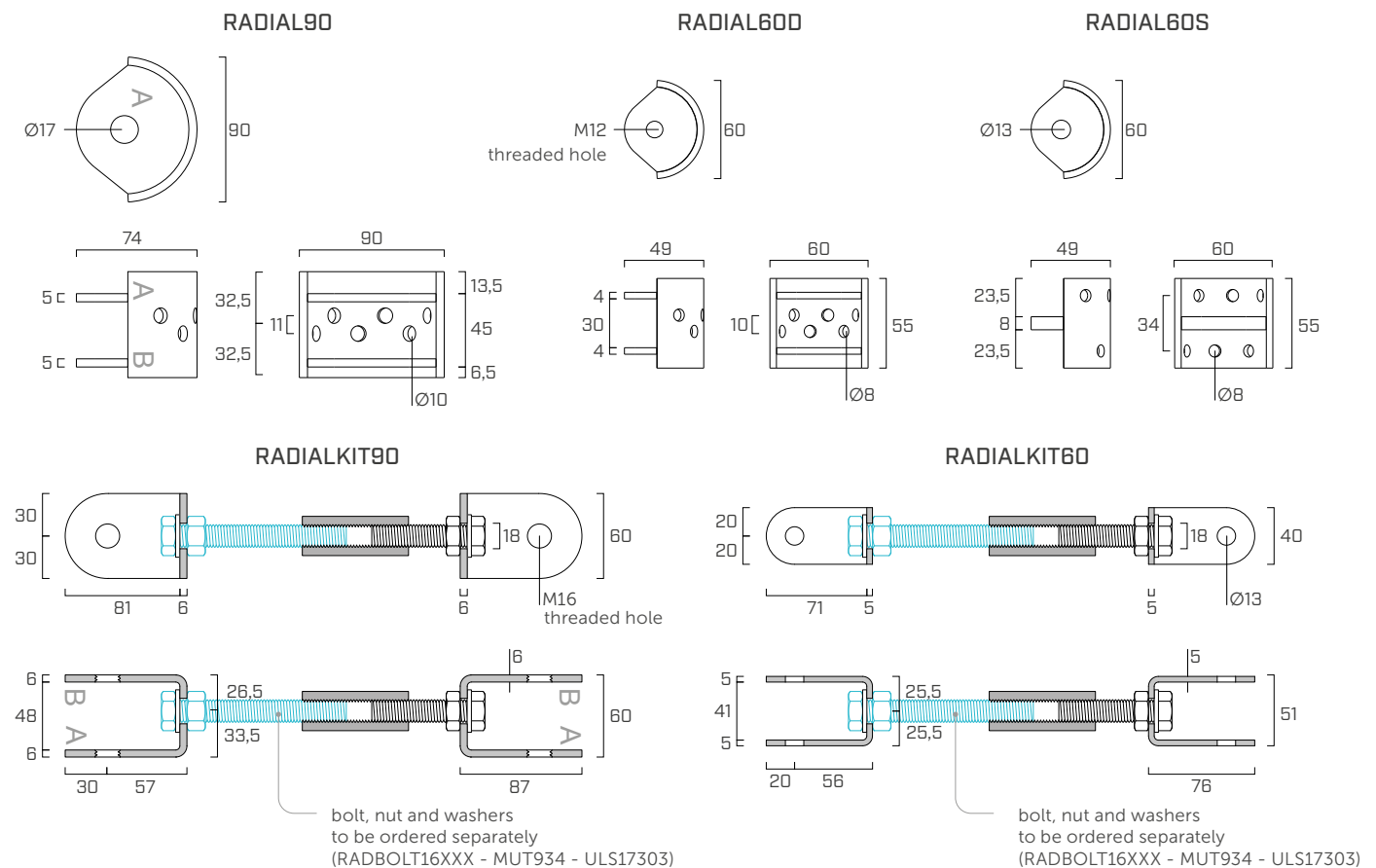
| type             | description                          |  | d<br>[mm] | support | page |
|------------------|--------------------------------------|--|-----------|---------|------|
| LBS HARDWOOD EVO | C4 EVO round head screw on hardwoods |  | 7         |         | 572  |
| VGS              | fully threaded countersunk screw     |  | 9         |         | 575  |
| ULS125           | washer                               |  | M12-M16   | -       | 176  |
| MUT 934          | hexagonal nut                        |  | M12-M16   | -       | 178  |

## COMPONENT COUPLINGS TABLE

|                                                                                   |  |  |  |  |  |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                                                   | <b>RADIAL90</b>                                                                   | <b>RADIAL60D</b>                                                                  | <b>RADIAL60S</b>                                                                  | <b>RADIALKIT90<sup>[*]</sup></b>                                                   | <b>RADIALKIT60<sup>[*]</sup></b>                                                    |
|  | <b>RADIAL90</b><br>1x<br>RADBOLT1670<br>(10.9)                                    | -                                                                                 | -                                                                                 | 2x<br>RADBOLT1670<br>(8.8)<br>1x<br>RADBOLT16XXX                                   | -                                                                                   |
|  | -                                                                                 | -                                                                                 | 1x<br>RADBOLT1245<br>(10.9)                                                       | -                                                                                  | 2x<br>RADBOLT1260<br>(8.8)<br>1x<br>RADBOLT16XXX                                    |
|  | -                                                                                 | 1x<br>RADBOLT1245<br>(10.9)                                                       | 1x<br>RADBOLT1245<br>(10.9)                                                       | -                                                                                  | -                                                                                   |

(\*)XXX represents the thickness of the interposed layer (e.g. floor thickness).

## GEOMETRY



The connecting bolt must be ordered separately.

The length corresponds to the layer of timber interposed, for example:

- in the case of a 160 mm thick CLT floor, the RADBOLT bolt length will be 160 mm (panel thickness);
- in the case of an CLT floor and XYLOFON profiles 160+6+6 mm thick, the length of the RADBOLT bolt will be 160 mm (panel thickness) by reducing the part of the thread inserted in the central tensioner;
- maximum adjustable range +12/-8 mm with bolt length in standard configuration. The correct pull-through of the bolts through the inspection holes on the tensioner must always be verified.

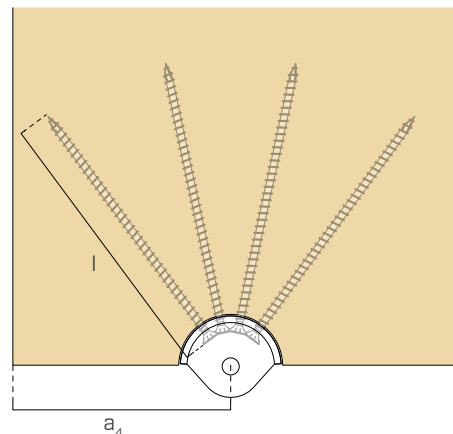
## ■ INSTALLATION

### FASTENERS

| type      | screws     | number of screws |
|-----------|------------|------------------|
|           |            | [pcs]            |
| RADIAL90  | VGS Ø9     | 4-6              |
| RADIAL60D | LBSHEVO Ø7 | 4-6              |
| RADIAL60S | LBSHEVO Ø7 | 4-6              |

### MINIMUM DISTANCE FROM THE END <sup>(1)</sup>

| type                   | screws     | l<br>[mm] | a <sub>4,min</sub> [mm] |          |
|------------------------|------------|-----------|-------------------------|----------|
|                        |            |           | 4 screws                | 6 screws |
| RADIAL90               | VGS Ø9     | 200       | 155                     | 215      |
|                        |            | 220       | 160                     | 230      |
|                        |            | 240       | 175                     | 245      |
|                        |            | 260       | 185                     | 265      |
|                        |            | 280       | 195                     | 285      |
|                        |            | 300       | 205                     | 300      |
|                        |            | 320       | 220                     | 320      |
|                        |            | 340       | 230                     | 335      |
|                        |            | 380       | 255                     | 370      |
| RADIAL60D<br>RADIAL60S | LBSHEVO Ø7 | 120       | 110                     | 135      |
|                        |            | 160       | 120                     | 170      |
|                        |            | 200       | 145                     | 205      |

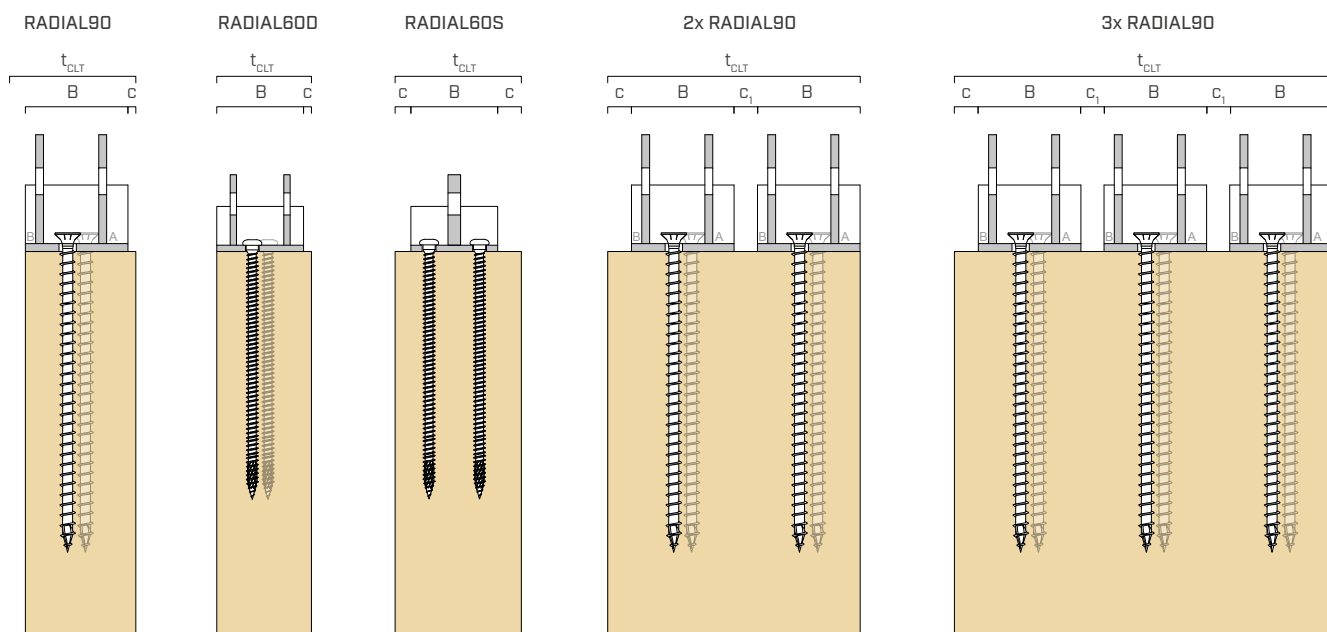


### MINIMUM DISTANCE FROM THE EDGE <sup>(1)</sup> - SINGLE CONNECTORS

| type      | screws     | B<br>[mm] | t <sub>CLT,min</sub><br>[mm] | c <sub>min</sub><br>[mm] |
|-----------|------------|-----------|------------------------------|--------------------------|
| RADIAL90  | VGS Ø9     | 65        | 80                           | 0                        |
| RADIAL60D | LBSHEVO Ø7 | 55        | 60                           | 0                        |
| RADIAL60S | LBSHEVO Ø7 | 55        | 80                           | 10                       |

### MINIMUM DISTANCE FROM THE EDGE <sup>(1)</sup> - COUPLED CONNECTORS

| type        | screws | B<br>[mm] | t <sub>CLT,min</sub><br>[mm] | c <sub>1</sub><br>[mm] | c <sub>min</sub><br>[mm] |
|-------------|--------|-----------|------------------------------|------------------------|--------------------------|
| 2x RADIAL90 | VGS Ø9 | 65        | 160                          | 15                     | 0                        |
| 3x RADIAL90 | VGS Ø9 | 65        | 240                          | 15                     | 0                        |

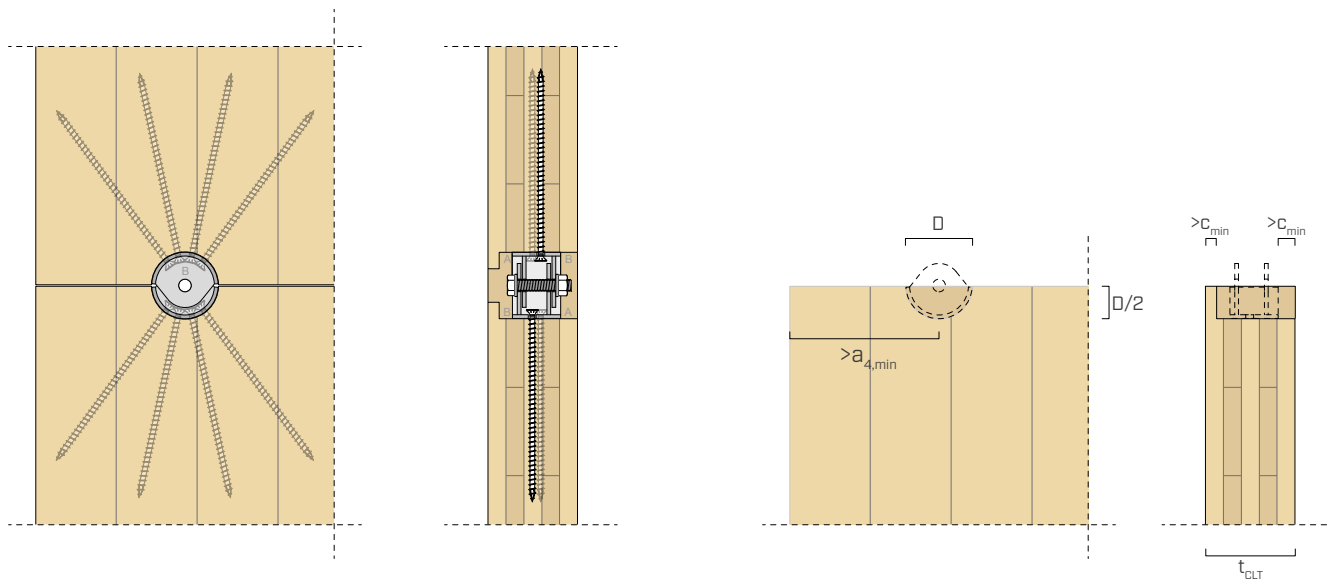


### NOTES

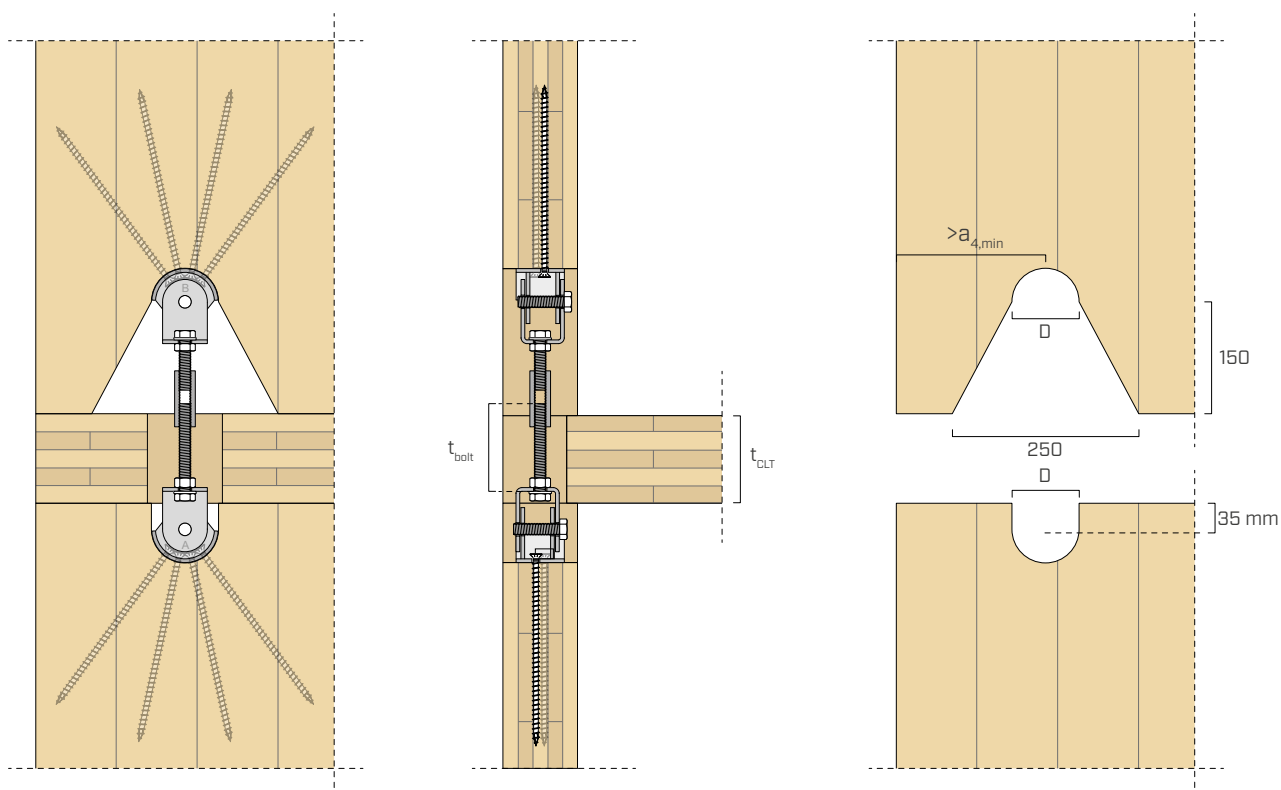
<sup>(1)</sup> Minimum dimensions refer to application on CLT panels. The distances of the fasteners to the ends and edges must be observed for application on glulam beams. The actions of transverse forces orthogonal to the grain that may introduce splitting phenomena must also be checked.

## ROUTING IN TIMBER ELEMENTS<sup>(1)</sup>

### DIRECT FASTENING



### SPACED FASTENING



#### NOTES

<sup>(1)</sup> The processing geometries shown in the images represent possible geometries for the most common applications. In the case of inter-storey spacing fastening, the geometry allows the tensioner to be adjusted from inside the building. Depending on the specific requirements, the processing can be modified while respecting the minimum distances indicated in the relevant section.

By adopting this geometry, the length of the RADBOLT16XXX bolt corresponds to the thickness of the interposed CLT floor, the same rule also applies in the case of resilient profiles positioned between the floor and walls (with a maximum thickness of 6mm per single interposed profile). If different geometries are used, the assumptions and choice of bolt length must be checked and adjusted.

## ELEMENTS COUPLING

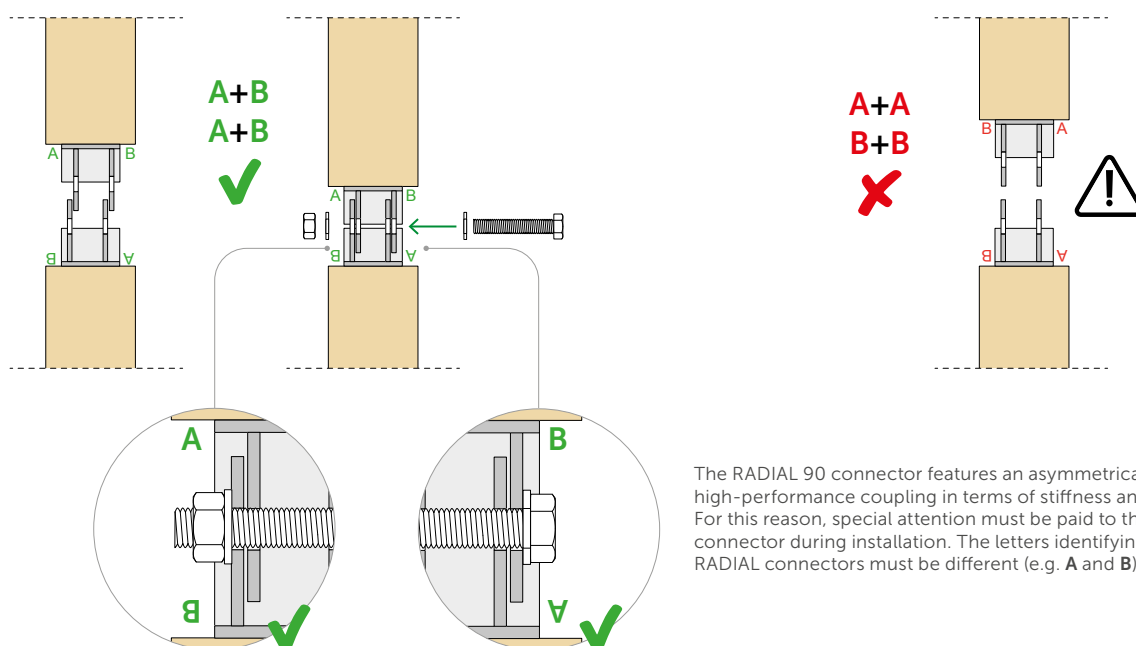
The connectors of the RADIAL family can be coupled according to two main schemes: **direct** or **spaced**.

The first involves the direct fastening of two connectors (RADIAL90+RADIAL90 or RADIAL60S+RADIAL60D) by means of a bolt. Depending on the model, the holes in the flanges can be either threaded or smooth so as to allow coupling with the necessary tolerances.

The spaced fastening, which can be used, for example, in the case of assembly with the interposition of a floor, requires the use of a KIT that includes not only the metal forks but also the adjustment system. This does not include the completion bolt, which can be ordered separately depending on the thickness of the interposed layer.

### RADIAL90

#### direct fastening

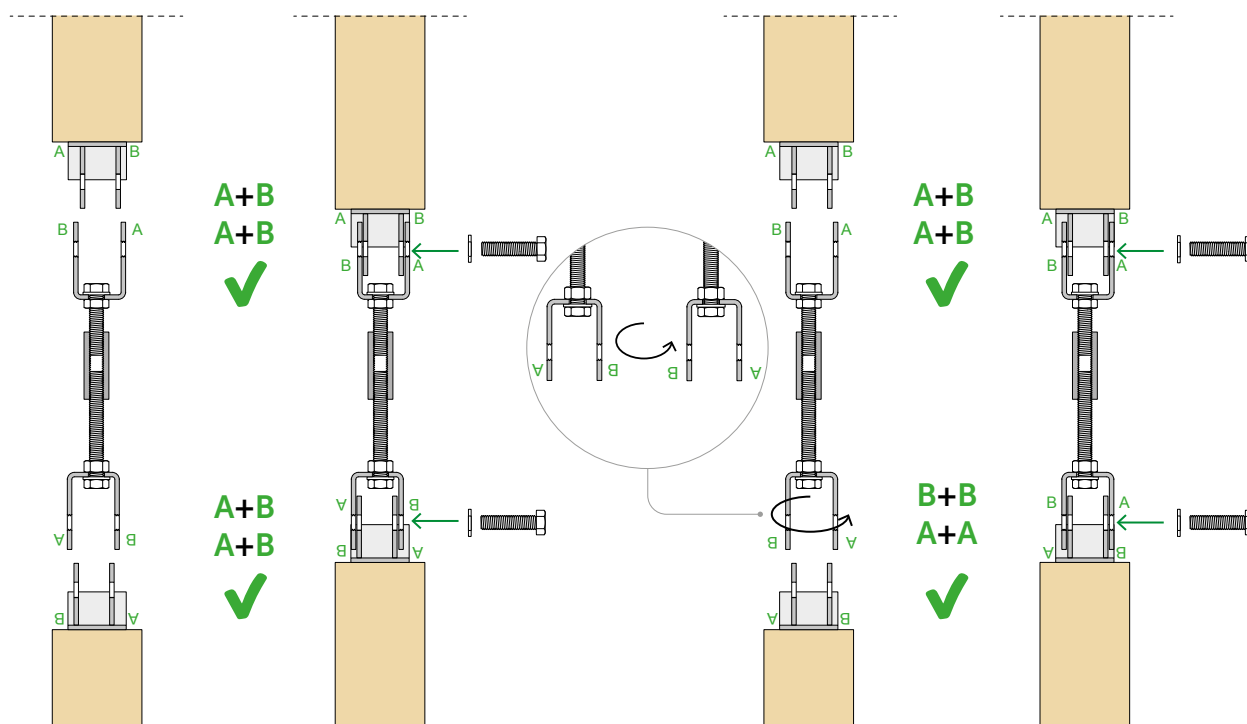


The RADIAL 90 connector features an asymmetrical geometry to ensure a high-performance coupling in terms of stiffness and strength. For this reason, special attention must be paid to the orientation of the connector during installation. The letters identifying the outer faces of the RADIAL connectors must be different (e.g. A and B).

### RADIAL90+ RADIALKIT90

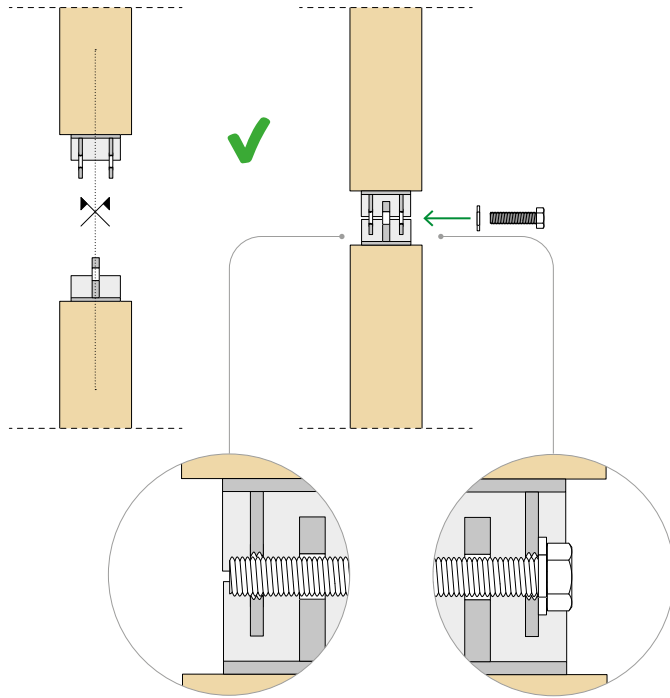
In the case of spaced fastening, rotating the fork plate ensures correct positioning even if the connector was positioned in the opposite direction.

#### spaced fastening



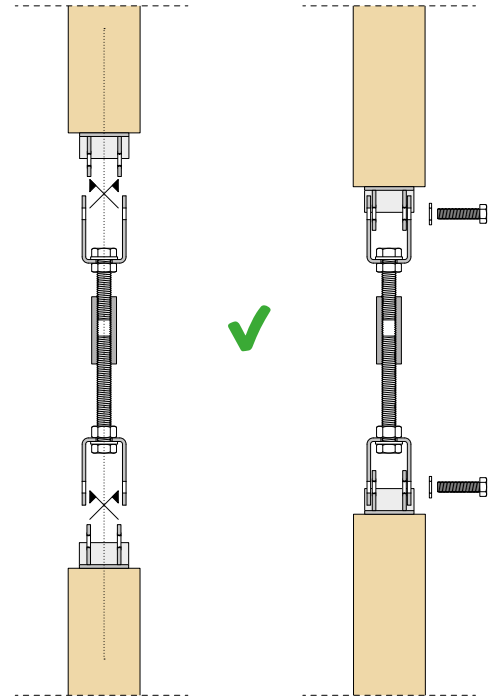
## RADIAL60D + RADIAL60S

### direct fastening



## RADIAL60D+ RADIALKIT60

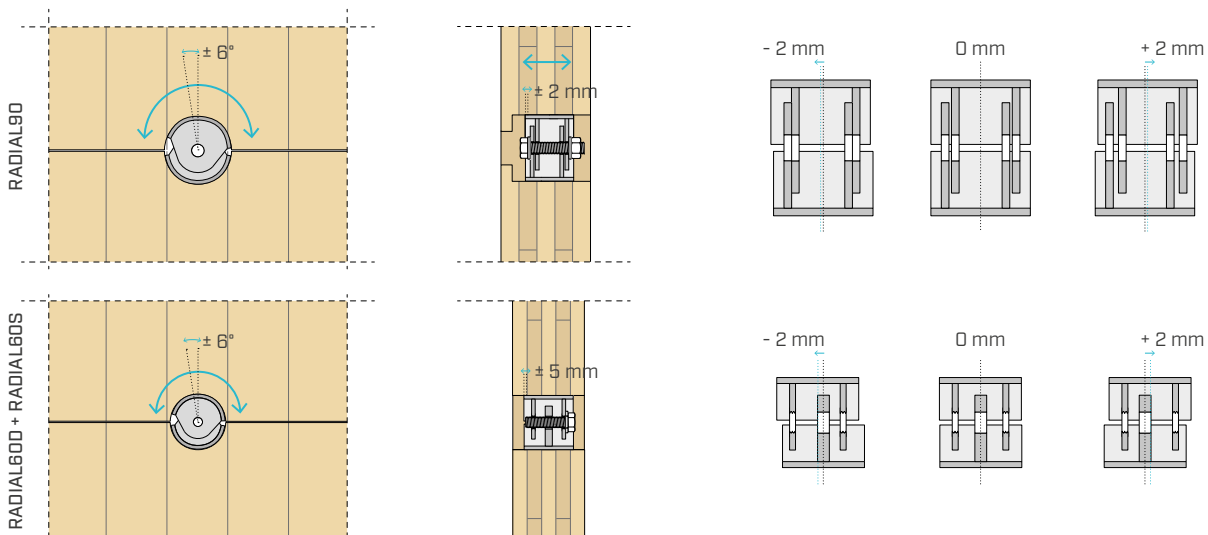
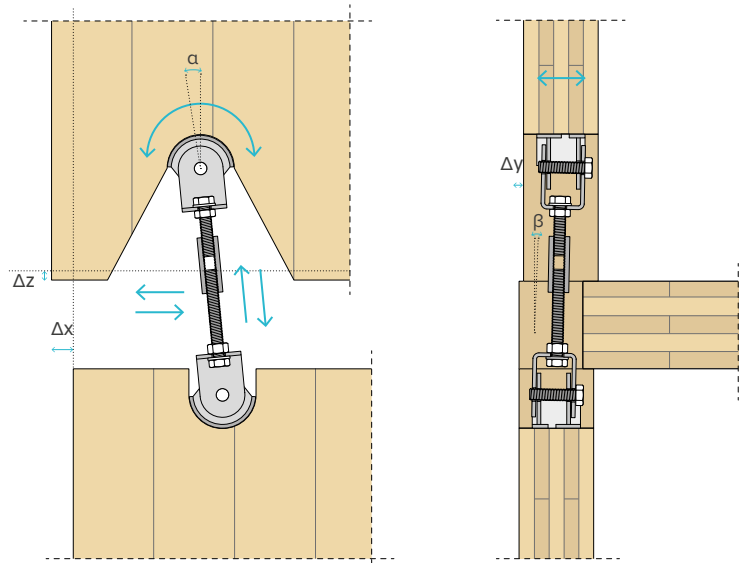
### spaced fastening

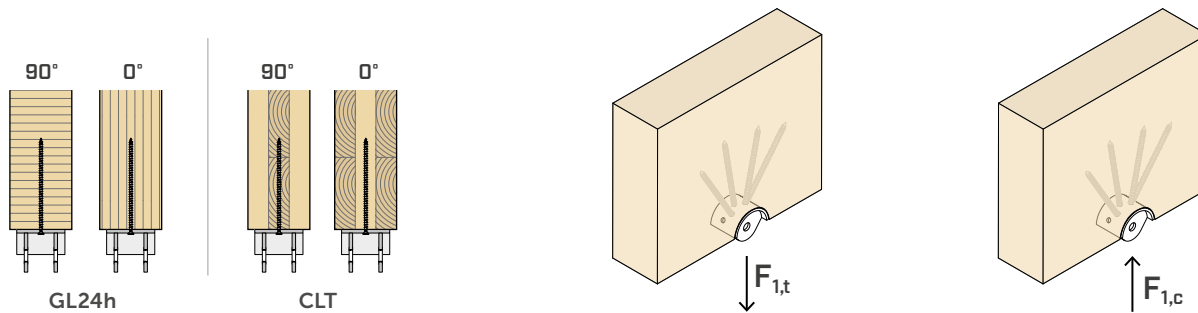


## TOLERANCES

RADIAL connectors are designed to suit both prefabrication off-site and placement on site. Tolerances along the transverse direction and rotation around the centre of the connector are guaranteed.

In the case of the spaced connection, the construction tolerance is further increased by the presence of a distance adjustment system that allows a considerable inclination of the rod.





#### TENSILE JOINT - RADIAL

|           |                              | TIMBER <sup>(1)</sup>              |       |                                  |       | STEEL                              |                    |
|-----------|------------------------------|------------------------------------|-------|----------------------------------|-------|------------------------------------|--------------------|
| type      | fastening<br><br>[pcs Ø x L] | R <sub>1,t</sub> k timber<br>GL24h |       | R <sub>1,t</sub> k timber<br>CLT |       | R <sub>1,k</sub> steel<br><br>[kN] | Y <sub>steel</sub> |
|           |                              | 0°                                 | 90°   | 0°                               | 90°   |                                    |                    |
|           |                              | [kN]                               | [kN]  | [kN]                             | [kN]  |                                    |                    |
| RADIAL90  | 4 - VGS Ø9x260               | 65,3                               | 85,8  | 60,5                             | 85,8  | 113,5                              | Y <sub>M2</sub>    |
|           | 6 - VGS Ø9x320               | 95,9                               | 109,9 | 93,4                             | 109,9 |                                    |                    |
| RADIAL60D | 4 - LBSHEVO Ø7x200           | 38,3                               | 58,4  | 35,5                             | 54,2  | 60,0                               |                    |
|           | 6 - LBSHEVO Ø7x200           | 54,7                               | 71,0  | 50,7                             | 65,8  |                                    |                    |
| RADIAL60S | 4 - LBSHEVO Ø7x200           | 38,3                               | 58,4  | 35,5                             | 54,2  | 51,0                               |                    |
|           | 6 - LBSHEVO Ø7x200           | 54,7                               | 71,0  | 50,7                             | 65,8  |                                    |                    |

#### TENSILE JOINT - RADIALKIT

When using RADIAL with RADIALKIT the coupling must be verified according to the following table.

| type        | STEEL                          |                    |
|-------------|--------------------------------|--------------------|
|             | R <sub>1,k</sub> steel<br>[kN] | Y <sub>steel</sub> |
| RADIALKIT90 | 85,6                           | Y <sub>M0</sub>    |
| RADIALKIT60 | 54,8                           |                    |

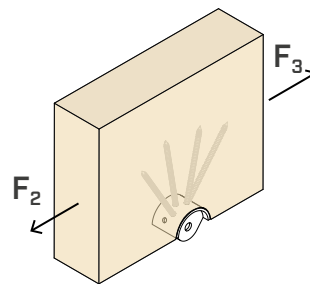
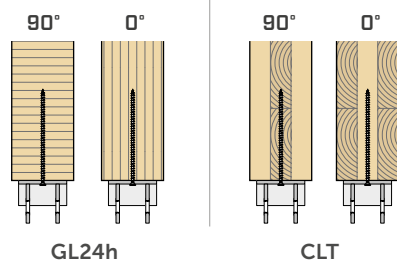
#### COMPRESSION JOINT - RADIAL

| type      | TIMBER <sup>(1)</sup>            |             |                                | STEEL                  |                    |
|-----------|----------------------------------|-------------|--------------------------------|------------------------|--------------------|
|           | R <sub>1,c</sub> timber<br>GL24h |             | R <sub>1,c</sub> timber<br>CLT | R <sub>1,k</sub> steel | Y <sub>steel</sub> |
|           | 0°<br>[kN]                       | 90°<br>[kN] | [kN]                           | [kN]                   |                    |
| RADIAL90  | 112,6                            | 56,3        | 81,9                           | 113,5                  | Y <sub>M2</sub>    |
| RADIAL60D | 63,8                             | 31,9        | 46,4                           | 60,0                   |                    |
| RADIAL60S | 63,8                             | 31,9        | 46,4                           | 51,0                   |                    |

#### NOTES

<sup>(1)</sup> For CLT panels the strength is calculated for a characteristic density  $\rho_k = 350 \text{ kg/m}^3$ , in the case of glulam (GL) they refer to a density of  $\rho_k = 385 \text{ kg/m}^3$ .

## STRUCTURAL VALUES | $F_{2/3}^{[2]}$

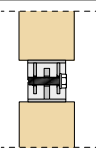
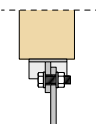
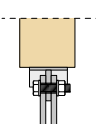


### SHEAR JOINT - RADIAL

| type      | fastening<br>[pcs Ø x L] | TIMBER <sup>[1] [2]</sup>          |             |                                  |             |
|-----------|--------------------------|------------------------------------|-------------|----------------------------------|-------------|
|           |                          | R <sub>2/3,k</sub> timber<br>GL24h |             | R <sub>2/3,k</sub> timber<br>CLT |             |
|           |                          | 0°<br>[kN]                         | 90°<br>[kN] | 0°<br>[kN]                       | 90°<br>[kN] |
| RADIAL90  | 4 - VGS Ø9x260           | 51,2                               | 56,7        | 53,4                             | 60,3        |
|           | 6 - VGS Ø9x320           | 71,4                               | 74,0        | 76,3                             | 79,8        |
| RADIAL60D | 4 - LBSHEVO Ø7x200       | 29,7                               | 32,2        | 30,9                             | 35,6        |
|           | 6 - LBSHEVO Ø7x200       | 39,5                               | 44,7        | 43,5                             | 43,2        |
| RADIAL60S | 4 - LBSHEVO Ø7x200       | 29,7                               | 32,2        | 30,9                             | 35,6        |
|           | 6 - LBSHEVO Ø7x200       | 39,5                               | 44,7        | 43,5                             | 43,2        |

## STRUCTURAL VALUES | BOLTS

In the configurations shown in the table, the class 10.9 bolt shear verification must be carried out.

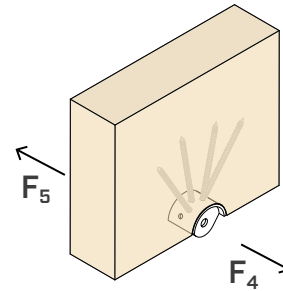
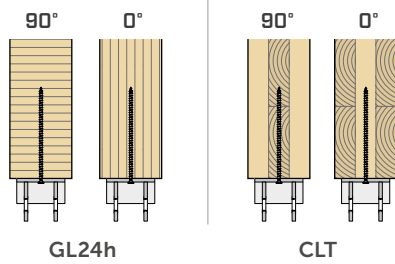
| coupling                                                                                                                    | fastening   | STEEL                        |                    |
|-----------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------|--------------------|
|                                                                                                                             |             | R <sub>k</sub> steel<br>[kN] | Y <sub>steel</sub> |
|  RADIAL60D + RADIAL60S                   | RADBOLT1245 | 38                           | YM2                |
|  RADIAL60S + single plate <sup>(3)</sup> | RADBOLT1245 | 42,5                         |                    |
|  RADIAL60S + double plate <sup>(3)</sup> | RADBOLT1245 | 85,0                         |                    |

### NOTES

<sup>(1)</sup> For CLT panels the strength is calculated for a characteristic density  $\rho_k=350\text{kg/m}^3$ , in the case of glulam (GL) they refer to a density of  $\rho_k=385\text{kg/m}^3$ .

<sup>(2)</sup> The steel-side failure mechanisms are over-resistance compared to the timber-side strength, so they are not shown in the table.

<sup>(3)</sup> Steel-side resistance refers to the case of connection with over-resistance plates. The geometry and strength of the connecting plates must be checked separately.



## SHEAR JOINT - RADIAL

| type      | fastening<br>[pcs Ø x L] | TIMBER <sup>[1]</sup>              |             |                                  |             |
|-----------|--------------------------|------------------------------------|-------------|----------------------------------|-------------|
|           |                          | R <sub>4/5,k</sub> timber<br>GL24h |             | R <sub>4/5,k</sub> timber<br>CLT |             |
|           |                          | 0°<br>[kN]                         | 90°<br>[kN] | 0°<br>[kN]                       | 90°<br>[kN] |
| RADIAL90  | 4 - VGS Ø9x260           | 15,4                               | 8,5         | 11,7                             | 12,0        |
|           | 6 - VGS Ø9x320           | 16,5                               | 8,6         | 12,2                             | 12,3        |
| RADIAL60D | 4 - LBSHEVO Ø7x200       | 12,4                               | 7,0         | 9,5                              | 9,8         |
|           | 6 - LBSHEVO Ø7x200       | 13,5                               | 7,2         | 10,0                             | 10,2        |
| RADIAL60S | 4 - LBSHEVO Ø7x200       | 16,1                               | 10,2        | 12,9                             | 13,6        |
|           | 6 - LBSHEVO Ø7x200       | 18,6                               | 10,5        | 14,3                             | 14,7        |

## NOTES

<sup>[1]</sup> For CLT panels the strength is calculated for a characteristic density  $\rho_k=350\text{kg/m}^3$ , in the case of glulam (GL) they refer to a density of  $\rho_k=385\text{kg/m}^3$ .

<sup>[2]</sup> The steel-side failure mechanisms are over-resistance compared to the timber-side strength, so they are not shown in the table.

## GENERAL PRINCIPLES

- The design values are derived from the characteristic values determined in accordance with ETA-24/0062, ETA-11/0030 and EN 1995:2014 as follows.
- The design values are obtained as follows:

$$R_d = \min \left\{ \frac{R_{k \text{ timber}} \text{ or } R_{k \text{ CLT}} \cdot k_{mod}}{\gamma_M}, \frac{R_{k \text{ steel}}}{\gamma_{M2}} \right\}$$

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

- The characteristic values of the load-bearing capacity  $R_{k \text{ timber}}$  are determined by considering the strength formulations of the screws inserted in a layer with homogeneous timber grain direction. All screws connecting the RADIAL connector must be inserted in layers (even different ones) but with equal grain orientation.
- The strengths for lengths other than those indicated must be evaluated in accordance with ETA-24/0062, considering the effective pull-through depth of the threaded part, as:

$$l_{eff} = l - 15 \text{ mm}$$

- The minimum connector lengths are, 100 mm for 7 mm diameter screws and 180 for 9 mm diameter screws. The maximum density that can be used in verifications for timber or timber-based products is  $\rho_k=480\text{kg/m}^3$ .
- The calculation process used a timber characteristic density of  $\rho_k=385\text{kg/m}^3$  for glulam and  $\rho_k=350\text{kg/m}^3$  for CLT panels.

- For higher  $\rho_k$  values, the strength on timber side can be converted by the  $k_{dens}$  value:

$$k_{dens} = \left( \frac{\rho_k}{350} \right)^{0,8}$$

- The formulations for verifying connections with LVL are reported in ETA-24/0062.
- In the case of loads perpendicular to the plane of the panel, it is recommended to check there are no brittle failures before reaching the connection strength.
- $K_{ser}$  values refer to the individual connector. In the case of series coupling, the stiffness must be halved.

## INTELLECTUAL PROPERTY

- RADIAL is protected by the following Registered Community Designs: RCD 015032190-0011 | RCD 015032190-0012 | RCD 015032190-0013.

## STRUCTURAL VALUES | STIFFNESS<sup>(1)</sup>

### TENSILE JOINT | $K_{1,t \text{ ser}}$

| type      | fastening<br><br>[pcs Ø x L] | $K_{1,t \text{ ser}}$<br>GL24h |               | $K_{1,t \text{ ser}}$<br>CLT |               |
|-----------|------------------------------|--------------------------------|---------------|------------------------------|---------------|
|           |                              | 0°<br>[N/mm]                   | 90°<br>[N/mm] | 0°<br>[N/mm]                 | 90°<br>[N/mm] |
| RADIAL90  | 4 - VGS Ø9x260               | 24100                          | 31700         | 22400                        | 31700         |
|           | 6 - VGS Ø9x320               | 35500                          | 40700         | 34500                        | 40700         |
| RADIAL60D | 4 - LBSHEVO Ø7x200           | 19100                          | 29200         | 17700                        | 27100         |
|           | 6 - LBSHEVO Ø7x200           | 27300                          | 30200         | 25300                        | 30200         |
| RADIAL60S | 4 - LBSHEVO Ø7x200           | 19100                          | 27500         | 17700                        | 27100         |
|           | 6 - LBSHEVO Ø7x200           | 27300                          | 27500         | 25300                        | 27500         |

### COMPRESSION JOINT | $K_{1,c \text{ ser}}$

| type      | $K_{1,c \text{ ser}}$<br>GL24h |               | CLT<br>-<br>[N/mm] |
|-----------|--------------------------------|---------------|--------------------|
|           | 0°<br>[N/mm]                   | 90°<br>[N/mm] |                    |
| RADIAL90  | 187600                         | 93800         | 136500             |
| RADIAL60D | 100000                         | 53100         | 77300              |
| RADIAL60S | 91600                          | 53100         | 77300              |

### SHEAR JOINTS | $K_{2/3 \text{ ser}}$

| type      | fastening<br><br>[pcs Ø x L] | $K_{2/3 \text{ ser}}$<br>GL24h |               | $K_{2/3 \text{ ser}}$<br>CLT |               |
|-----------|------------------------------|--------------------------------|---------------|------------------------------|---------------|
|           |                              | 0°<br>[N/mm]                   | 90°<br>[N/mm] | 0°<br>[N/mm]                 | 90°<br>[N/mm] |
| RADIAL90  | 4 - VGS Ø9x260               | 18200                          | 20200         | 19000                        | 21500         |
|           | 6 - VGS Ø9x320               | 25500                          | 26400         | 27200                        | 28500         |
| RADIAL60D | 4 - LBSHEVO Ø7x200           | 17800                          | 16500         | 17100                        | 19700         |
|           | 6 - LBSHEVO Ø7x200           | 24800                          | 21900         | 24100                        | 24000         |
| RADIAL60S | 4 - LBSHEVO Ø7x200           | 17800                          | 16500         | 17100                        | 19700         |
|           | 6 - LBSHEVO Ø7x200           | 24800                          | 21900         | 24100                        | 24000         |

#### NOTES

<sup>(1)</sup> For CLT panels the strength is calculated for a characteristic density  $\rho_k=350\text{kg/m}^3$ , in the case of glulam (GL) they refer to a density of  $\rho_k=385\text{kg/m}^3$ .