

HO13+

Timber Joint

HO13+ allows you to calculate typical truss joints (tension joints too) in timber structures.

In such a joint, up to five outgoing bars are connected in one centre point. If the bars are all single-piece, they are connected by means of steel plates that are either mounted to the surface or driven into slots to establish a steel-to-wood connection. Alternatively, a multi-piece diagonal strut or multi-piece chord can be connected in a wood-to-wood connection.

Standards

You can perform the design either in accordance with

- DIN EN 1995
- ÖNORM EN 1995
- BS EN 1995
- NTC EN 1995
- DIN 1052

Fasteners

- dowel pins
- fit bolts/bolts
- nails (smooth/profiled)

Selectable in addition:

- Special dowels for all wood-to-wood connections and steel-wood connections with sheet position outside.

In wood-to-wood connections, combined arrangements of dowel pins and fit bolts are definable.

Loads

- posts: normal forces
- diagonals: normal- and transversal forces
- chord wood/wood: design value of the moment in the chord from external load and eccentricity of the fasteners.

Calculation

The structural safety analysis of the fasteners are based on the more accurate calculation method in accordance with Johansen's theory (EN 1995 8.3) and suspension effects can be taken into account, if applicable.

The application calculates the required number of fasteners on the basis of the bearing capacity. It verifies the prescribed minimum spacing and performs the required component analyses in the connecting.

The screenshot displays the HO13+ software interface for a timber joint design. The main window shows a 3D model of a timber joint with a steel plate. The left sidebar contains a 'Properties' panel with a tree view for 'Basic parameters' (System, Material, Chord, Post, Diagonal left) and 'Load', 'Design', and 'Output'. Below this is a 'Typical variant' table with columns for 'Variants' and 'Selection'. The 'Joint type' is set to 'Steel-timber'. The 'Chord' is 'continuous' and 'Chord location' is 'bottom'. The 'Design' section is set to 'BS EN 1995:2012 Design C24 Steel-timber Slotted plate'. The 'Calculation' section shows 'Chord continuous' and 'Chord location bottom'. The 'Utilization' table at the bottom right shows: Stress Diagonal left (18%), Joint Post (73%), Metal sheet Post (10%), and Balance (OK).

Utilization	Value
Stress Diagonal left	18%
Joint Post	73%
Metal sheet Post	10%
Balance	OK