

## Technical data sheet

**SIMPSON**

**Strong-Tie**

### HTT Hold Down

Ideal for existing or new construction, HTT Tension ties provide a high strength timber to concrete, or timber to masonry, tension connection

The long vertical leg makes it possible to add the required number of fasteners (CNA Nails and CSA Screws) in a vertical post and still comply to relevant standards with regards to fastener spacing requirements.

The unique design of the HTT - a multi ply seat formed from a single piece of steel - gives the tension tie extra strength at the concrete / masonry anchorage point



## Features

### Material

**Z275 Pre-galvanised mild steel.**

### Benefits

- Enables a connection to concrete structure.

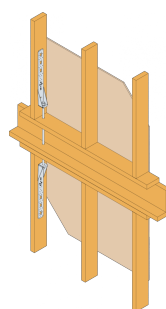
## Applications

### Connections

#### Timber Members

### When to Use

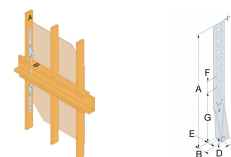
- Timber structures which exerted to high uplift forces can be connected to concrete structures with the HTT Hold Down.
- Tension force connection between timber floor joists and masonry walls



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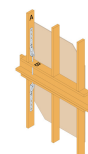
## Technical Data

### Product Dimensions



| References | DB nr.  | NOBB nr. | Product Dimensions [mm] |    |    |      |    |     | Flange A |    |     | Flange B |     |     |
|------------|---------|----------|-------------------------|----|----|------|----|-----|----------|----|-----|----------|-----|-----|
|            |         |          | A                       | B  | C  | D    | E  | t   | Ø4,7     | Ø5 | Ø21 | Ø17,5    | Ø18 | Ø25 |
| HTT4       | 1388657 | 42922721 | 314                     | 60 | 64 | 11.4 | 35 | 2.8 | 18       | -  | -   | 1        | -   | -   |
| HTT5       | 1388655 | 42922755 | 403                     | 56 | 64 | 11.4 | 35 | 2.8 | 26       | -  | -   | 1        | -   | -   |
| HTT22E     | 2049836 | -        | 558                     | 60 | 63 | 12   | 33 | 3   | -        | 31 | 3   | -        | 1   | -   |
| HTT31      | 2151752 | -        | 790                     | 60 | 90 | 12   | 33 | 3   | -        | 41 | 6   | -        | -   | 1   |

### Capacities



| References | Number of Fasteners |         |          |      | Characteristic capacities - Timber C24 to concrete [kN] |                                     |                                     |                                     |                                     |                                      |                                      |                                     |                          |   |
|------------|---------------------|---------|----------|------|---|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|-------------------------------------|--------------------------|---|
|            | Joist               |         | Flange B |      | R <sub>1,k</sub> (without US50/50/8 washer)             |                                     |                                     |                                     |                                     |                                      |                                      |                                     |                          | R |
|            | Qty                 | Type    | Qty      | Type | CNA4,0x35   | CNA4,0x40                           | CNA4,0x50                           | CNA4,0x60                           | CSA5,0x35                           | CSA5,0x40                            | CSA5,0x50                            | CSA5,0x80                           | CNA4,0x35                |   |
| HTT4       | n                   | CNA     | 1        | M16  | min [(n-3.5)*1.66; 15.4; 43/kmod]                       | min [(n-3.5)*1.83; 18.6; 43/kmod]   | min [(n-3.5)*2.22; 24.7; 43/kmod]   | min [(n-3.5)*2.36; 31; 43/kmod]     | -                                   | -                                    | -                                    | -                                   | min [(n-3.5)*1.66; 19.7] |   |
| HTT5       | n                   | CNA     | 1        | M16  | min [(n-3.5)*1.66; 15.4; 43/kmod]                       | min [(n-3.5)*1.83; 18.6; 43/kmod]   | min [(n-3.5)*2.22; 24.7; 43/kmod]   | min [(n-3.5)*2.36; 31; 43/kmod]     | -                                   | -                                    | -                                    | -                                   | min [(n-3.5)*1.66; 19.7] |   |
| HTT22E     | n<br>(1)            | CNA/CSA | 1        | M16  | min [(n-3.5)*1,66; 32,6; 57,5/kmod]                     | min [(n-3.5)*1,83; 39,6; 57,5/kmod] | min [(n-3.5)*2,22; 42,3; 57,5/kmod] | min [(n-3.5)*2,36; 53,1; 57,5/kmod] | min [(n-3.5)*1,99; 91,1; 57,5/kmod] | min [(n-3.5)*2,25; 106,7; 57,5/kmod] | min [(n-3.5)*2,63; 138,2; 57,5/kmod] | min [(n-3.5)*3,5; 232,4; 57,5/kmod] | -                        |   |
| HTT31      | n<br>(2)            | CNA/CSA | 1        | M24  | min [(n-4)*1,66; 144,1; 85,1/kmod]                      | min [(n-4)*1,83; 144,1; 85,1/kmod]  | min [(n-4)*2,22; 144,1; 85,1/kmod]  | min [(n-4)*2,36; 144,1; 85,1/kmod]  | min [(n-4)*1,99; 144,1; 85,1/kmod]  | min [(n-4)*2,25; 144,1; 85,1/kmod]   | min [(n-4)*2,63; 144,1; 85,1/kmod]   | min [(n-4)*3,5; 144,1; 85,1/kmod]   | -                        |   |

Quantity of fasteners (n) may be chosen by the user. Capacity is then calculated with this number n.

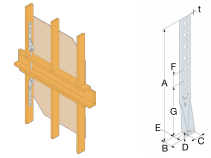
(1) n is equal to 10 a maximum.

(2) 4 CSA5.0x80 must always be installed on the bottom extremity of the oblong holes to reach the capacities of other fastener in these 4 holes, the capacity shall be calculated according to ETA.

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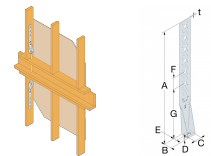


Product capacities - simplified values

| References | Product capacities - Timber to Concrete |         |          |      |   |           |           |           |           |           |           |           |                      |    |
|------------|---|---------|----------|------|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------------------|----|
|            | Number of Fasteners                     |         |          |      | Characteristic capacities - Timber C24 to concrete [kN] |           |           |           |           |           |           |           |                      |    |
|            | Flange A                                |         | Flange B |      | R <sub>1,k</sub> (without US50/50/8 washer)             |           |           |           |           |           |           |           | R <sub>1,k</sub> (V) |    |
|            | Qty                                     | Type    | Qty      | Type | CNA4.0x35   | CNA4.0x40 | CNA4.0x50 | CNA4.0x60 | CSA5.0x35 | CSA5.0x40 | CSA5.0x50 | CSA5.0x80 | CNA4.0x35            | CN |
| HTT4       | 18                                      | CNA     | 1        | M16  | 15.4  | 18.6      | 24.7      | 31        | -         | -         | -         | -         | 19.7                 |    |
| HTT5       | 18                                      | CNA     | 1        | M16  | 15.4  | 18.6      | 24.7      | 31        | -         | -         | -         | -         | 19.7                 |    |
| HTT31      | 39                                      | CNA/CSA | 1        | M24  | 58.1  | 64.1      | 77.4      | 77.4      | 69.7      | 77.4      | 77.4      | 77.4      | -                    |    |

Simplified numerical characteristic capacities values are based on load duration and service class assumption (class 2,  $k_{mod} = 1.1$ ). For other load duration, service class and fasteners, please refer to ETA-07/0285.

For HTT31, 4 CSA5.0x50 must always be installed on the bottom extremity of the oblong holes to reach the cap table. For other fasteners in these holes, the calculation shall be calculated according to ETA.



Product capacities with Zyklop, simplified

| References | Product capacities with ZYKT [kN] |      |     |      |          |      |   |
|------------|-----------------------------------|------|-----|------|----------|------|---|
|            | Fastener                          |      |     |      |          |      | Characteristic capacities - Timber C24 to concrete [kN] |
|            | Flange A                          |      |     |      | Flange B |      | R <sub>1,k</sub>  |
|            | Qty                               | Type | Qty | Type | Qty      | Type |   |
| HTT4       | -                                 | -    | -   | -    | -        | -    | -   |
| HTT5       | -                                 | -    | -   | -    | -        | -    | -   |
| HTT22E     | -                                 | -    | -   | -    | -        | -    | -   |
| HTT31      | -                                 | -    | -   | -    | -        | -    | -   |

The capacities for the ZYKT69 are determine for an embendingth length of the screws of the ZYKT of 280 mm. Details of the Zyklop are givne in ETA-07/0317.

The essential CNA / CSA have to be place in the oblong holes (lower side), and for the HTT22E also in the 2 lowermost holes Ø5 mm.

Simplified numerical characteristic capacities values are based on load duration and service class assumption (Instantaneous, Service class 2,  $k_{mod} = 1.1$ ). For other load duration, please refer to ETA-07/0285.

## HTT Hold Down

### Installation

#### Fixing

##### Fastening into Timber Stud:

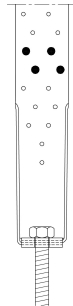
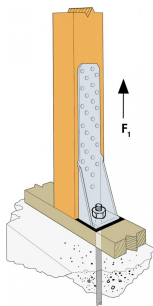
- 4mm CNA Nails
- 5mm CSA Screws

##### Fastening to the concrete:

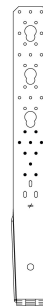
- Mechanical anchors: M16 WA Anchor or BOAX-II
- Chemical anchors: injection mortar SET-XP or AT-HP + M16 threaded rod LMAS

#### Installation

- The connector is mounted with a suitable M16 bolt to the concrete or masonry wall, and the vertical leg is fastened with 4mm CNA Nails, or 5.0mm CSA Screws, to the timber.



*For HTT5 these holes must always be filled.*



*For HTT22E these holes must always be filled*



*HTT22E Nail pattern*

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