



L'étrier TUS à âme intérieure permet un assemblage invisible. L'encoche en tête facilite la pose sur le chantier. Le TUS, plié sur demande, convient aux applications avec un angle allant de 30 à 85°.



[ETA-07/0245](#), [FR-DoP-e07/0245](#)

## CARACTÉRISTIQUES



### Matière

- Acier S250GD + Z275 suivant NF EN 10346,
- Epaisseur 3 mm.

### Avantages

- Assemblage invisible,
- Mise en oeuvre optimisée conforme aux Eurocodes,
- Utilisable en angle (préciser l'angle à la commande),
- Tenue au feu 1/2h ou 1h en suivant certaines préconisations. N'hésitez pas à consulter notre documentation Résistance au Feu - Fiabilité et Connecteurs.

## APPLICATIONS

### SUPPORT

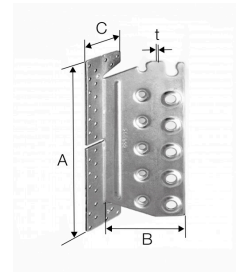
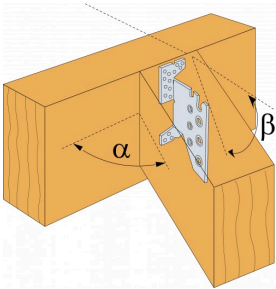
- **Porteur** : bois massif, lamellé-collé, bois composite
- **Porté** : bois massif, lamellé-collé, bois composite

### DOMAINES D'UTILISATION

- Solives,
- Pannes,
- Poutres porteuses...

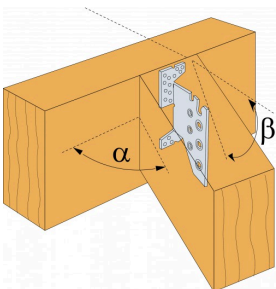
## DONNÉES TECHNIQUES

### Dimensions



| Références | Dimensions poutre [mm] |     |      |               |                    |      |      | Dimension bois porteur [mm] | Dimensions [mm] |    |   |    |    | Perçages sur porteur |      |                 | Perçages sur porté |                    |  |
|------------|------------------------|-----|------|---------------|--------------------|------|------|-----------------------------|-----------------|----|---|----|----|----------------------|------|-----------------|--------------------|--------------------|--|
|            | Largeur                |     |      | Hauteur       |                    |      |      |                             | Largeur poteau  | A  | B | C  | t  | $\alpha$ [°]         |      | $\varnothing 5$ | $\varnothing 8,5$  | $\varnothing 12,5$ |  |
|            | Min.                   | Min | Max. | Min $\beta=0$ | Min $\beta \neq 0$ | Max. | Min. |                             |                 |    |   |    |    | Min.                 | Max. |                 |                    |                    |  |
| TUS12      | 40                     | 60  | 120  | 120           | 160                | 200  | 68   | 96                          | 97.5            | 40 | 3 | 30 | 85 | 6                    | 4    | -               |                    |                    |  |
| TUS16      | 60                     | 60  | 160  | 160           | 190                | 240  | 88   | 134                         | 104.5           | 60 | 3 | 30 | 85 | 18                   | -    | 3               |                    |                    |  |
| TUS20      | 60                     | 60  | 160  | 200           | 225                | 280  | 88   | 174                         | 104.5           | 60 | 3 | 30 | 85 | 22                   | -    | 4               |                    |                    |  |
| TUS24      | 60                     | 60  | 160  | 240           | 260                | 300  | 88   | 214                         | 104.5           | 60 | 3 | 30 | 85 | 26                   | -    | 5               |                    |                    |  |
| TUS28      | 60                     | 60  | 160  | 280           | 295                | 340  | 88   | 254                         | 104.5           | 60 | 3 | 30 | 85 | 30                   | -    | 6               |                    |                    |  |

### Valeurs caractéristiques - Solive sur poutre - Clouage total - avec pente et angle $\alpha=30^\circ$

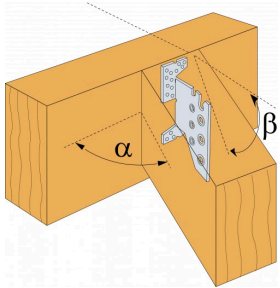


| Références | Valeurs caractéristiques - Solive sur poutre - Clouage total - avec pente et angle $\alpha=30^\circ$ |       |       |       |  |      |      |      |      |      |                                    |      |      |      |      |      |                                    |      |      |      |      |      |                                    |      |      |      |      |      |
|------------|--|-------|-------|-------|--|------|------|------|------|------|------------------------------------|------|------|------|------|------|------------------------------------|------|------|------|------|------|------------------------------------|------|------|------|------|------|
|            | Fixations  |       |       |       | Valeurs caractéristiques - Bois C24 [kN] |      |      |      |      |      |                                    |      |      |      |      |      |                                    |      |      |      |      |      |                                    |      |      |      |      |      |
|            | Porteur  |       | Porté |       | $R_{1,k}$ - Pente $\beta=0^\circ$        |      |      |      |      |      | $R_{1,k}$ - Pente $\beta=15^\circ$ |      |      |      |      |      | $R_{1,k}$ - Pente $\beta=30^\circ$ |      |      |      |      |      | $R_{1,k}$ - Pente $\beta=45^\circ$ |      |      |      |      |      |
|            | Qté  | Type  | Qté   | Type  | Longueur de broches [mm]                 |      |      |      |      |      | Longueur de broches [mm]           |      |      |      |      |      | Longueur de broches [mm]           |      |      |      |      |      | Longueur de broches [mm]           |      |      |      |      |      |
| TUS12      | 6  | NA4,0 | 4     | STD8  | 7.4                                      | 8.1  | 9    | 9.5  | 9.5  | 9.5  | 7.1                                | 7.8  | 8.6  | 9.3  | 9.3  | 9.3  | 6.8                                | 7.4  | 8.2  | 8.9  | 9    | 9    | 6.6                                | 7.1  | 7.8  | 8.5  | 8.7  | 8.7  |
| TUS16      | 18   | NA4,0 | 50    | STD12 | 16.4                                     | 16.9 | 17.8 | 18.8 | 20   | 21.3 | 15.9                               | 16.3 | 17   | 18   | 19   | 20.2 | 15.5                               | 15.8 | 16.4 | 17.2 | 18.1 | 19.1 | 15.1                               | 15.5 | 16   | 16.7 | 17.5 | 18.4 |
| TUS20      | 22   | NA4,0 | 4     | STD13 | 24.9                                     | 25.6 | 26.9 | 28.6 | 30.3 | 32.2 | 24.2                               | 24.7 | 25.8 | 27.2 | 28.8 | 30.5 | 23.6                               | 24   | 24.9 | 26.1 | 27.5 | 28.9 | 22.9                               | 23.6 | 24.3 | 25.4 | 26.6 | 27.9 |
| TUS24      | 26   | NA4,0 | 56    | STD12 | 34.2                                     | 35.1 | 36.9 | 39.1 | 41.5 | 43.9 | 33.2                               | 33.9 | 35.3 | 37.2 | 39.4 | 41.6 | 32.3                               | 32.9 | 34.1 | 35.8 | 37.6 | 39.6 | 31.6                               | 32.5 | 33.5 | 35   | 36.6 | 38.4 |
| TUS28      | 30   | NA4,0 | 6     | STD13 | 43.9                                     | 45.1 | 47.3 | 50.1 | 53   | 56   | 42.7                               | 43.5 | 45.4 | 47.7 | 50.4 | 53.2 | 41.5                               | 42.4 | 44   | 46   | 48.3 | 50.8 | 40.8                               | 42   | 43.3 | 45.2 | 47.2 | 49.5 |

$R_{2,k}$  capacities can be calculated as  $R_{2,k} = R_{1,k} \times (\text{nb of dowels} - 1) / (\text{nb of dowels})$ .

The top dowel is not considered for the uplift capacities as it is placed in an open hole.

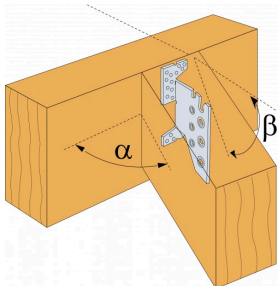
## Valeurs caractéristiques - Solive sur poutre - Clouage total - avec pente et angle $\alpha=45^\circ$



| Valeurs caractéristiques - Solive sur poutre - Clouage total - avec pente et angle $\alpha=45^\circ$ |    |           |    |  |  |  |      |      |      |      |   |      |      |      |      |   |      |      |      |      |   |      |      |      |      |      |      |      |      |
|--|----|-----------|----|--|--|--|------|------|------|------|---|------|------|------|------|---|------|------|------|------|---|------|------|------|------|------|------|------|------|
| Références   |    | Fixations |    | Valeurs caractéristiques - Bois C24 [kN] |  |  |      |      |      |      |   |      |      |      |      |   |      |      |      |      |   |      |      |      |      |      |      |      |      |
|  |    | Porteur   |    | Porté                                    |  | R <sub>1,k</sub> - Pente $\beta=0^\circ$ |      |      |      |      | R <sub>1,k</sub> - Pente $\beta=15^\circ$ |      |      |      |      | R <sub>1,k</sub> - Pente $\beta=30^\circ$ |      |      |      |      | R <sub>1,k</sub> - Pente $\beta=45^\circ$ |      |      |      |      |      |      |      |      |
|  |    | Qté       |    | Type                                     |  | Longueur de broches [mm]                 |      |      |      |      | Longueur de broches [mm]                  |      |      |      |      | Longueur de broches [mm]                  |      |      |      |      | Longueur de broches [mm]                  |      |      |      |      |      |      |      |      |
|  |    |           |    |  |  | 60                                       | 80   | 100  | 120  | 140  | 160                                       | 60   | 80   | 100  | 120  | 140                                       | 160  | 60   | 80   | 100  | 120                                       | 140  | 160  | 60   | 80   | 100  | 120  | 140  | 160  |
| TUS1   | 6  | NA4,0     | 4  | STD8                                     |  | 7.4                                      | 8.2  | 8.9  | 9.5  | 9.5  | 9.5                                       | 7.1  | 7.8  | 8.6  | 9.3  | 9.3                                       | 9.3  | 6.8  | 7.4  | 8.2  | 9   | 9    | 9    | 6.6  | 7.1  | 7.8  | 8.5  | 8.7  | 8.7  |
| TUS16  | 18 | NA4,0     | 50 | STD12                                    |  | 16.3                                     | 16.9 | 17.9 | 18.9 | 20.2 | 21.4                                      | 15.9 | 16.3 | 17   | 18   | 19.1                                      | 20.2 | 15.4 | 15.7 | 16.3 | 17.2                                      | 18.1 | 19.1 | 15   | 15.4 | 15.9 | 16.6 | 17.5 | 18.4 |
| TUS2   | 22 | NA4,0     | 4  | STD1                                     |  | 24.9                                     | 25.6 | 27.2 | 28.7 | 30.5 | 32.3                                      | 24.1 | 24.7 | 25.8 | 27.3 | 28.9                                      | 30.6 | 23.5 | 23.9 | 24.9 | 26.1                                      | 27.5 | 29   | 22.9 | 23.5 | 24.3 | 25.4 | 26.7 | 28   |
| TUS24  | 26 | NA4,0     | 56 | STD12                                    |  | 34.2                                     | 35.2 | 37.2 | 39.2 | 41.7 | 44.1                                      | 33.2 | 33.9 | 35.4 | 37.4 | 39.5                                      | 41.8 | 32.3 | 32.9 | 34.2 | 35.9                                      | 37.8 | 39.8 | 31.5 | 32.5 | 33.6 | 35   | 36.8 | 38.6 |
| TUS2   | 30 | NA4,0     | 6  | STD1                                     |  | 44                                       | 45.2 | 47.8 | 50.3 | 53.2 | 56.1                                      | 42.7 | 43.6 | 45.5 | 47.9 | 50.6                                      | 53.4 | 41.5 | 42.5 | 44.1 | 46.2                                      | 48.5 | 51   | 40.8 | 42   | 43.4 | 45.3 | 47.4 | 49.7 |

R<sub>2,k</sub> capacities can be calculated as  $R_{2,k} = R_{1,k} \times (\text{nb of dowels} - 1) / (\text{nb of dowels})$ .  
The top dowel is not considered for the uplift capacities as it is placed in an open hole.

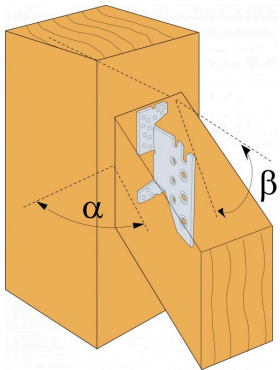
## Valeurs caractéristiques - Solive sur poutre - Clouage total - avec pente et angle $\alpha=60^\circ$



| Valeurs caractéristiques - Solive sur poutre - Clouage total - avec pente et angle $\alpha=60^\circ$ |    |           |    |  |  |  |      |      |      |      |   |      |      |      |      |   |      |      |      |      |   |      |      |      |      |      |      |      |      |
|--|----|-----------|----|--|--|--|------|------|------|------|---|------|------|------|------|---|------|------|------|------|---|------|------|------|------|------|------|------|------|
| Références   |    | Fixations |    | Valeurs caractéristiques - Bois C24 [kN] |  |  |      |      |      |      |   |      |      |      |      |   |      |      |      |      |   |      |      |      |      |      |      |      |      |
|  |    | Porteur   |    | Porté                                    |  | R <sub>1,k</sub> - Pente $\beta=0^\circ$ |      |      |      |      | R <sub>1,k</sub> - Pente $\beta=15^\circ$ |      |      |      |      | R <sub>1,k</sub> - Pente $\beta=30^\circ$ |      |      |      |      | R <sub>1,k</sub> - Pente $\beta=45^\circ$ |      |      |      |      |      |      |      |      |
|  |    | Qté       |    | Type                                     |  | Longueur de broches [mm]                 |      |      |      |      | Longueur de broches [mm]                  |      |      |      |      | Longueur de broches [mm]                  |      |      |      |      | Longueur de broches [mm]                  |      |      |      |      |      |      |      |      |
|  |    |           |    |  |  | 60                                       | 80   | 100  | 120  | 140  | 160                                       | 60   | 80   | 100  | 120  | 140                                       | 160  | 60   | 80   | 100  | 120                                       | 140  | 160  | 60   | 80   | 100  | 120  | 140  | 160  |
| TUS1   | 6  | NA4,0     | 4  | STD8                                     |  | 7.4                                      | 8.2  | 9.1  | 9.6  | 9.6  | 9.6                                       | 7.2  | 7.9  | 8.7  | 9.3  | 9.3                                       | 9.3  | 6.9  | 7.5  | 8.2  | 9   | 9    | 9    | 6.6  | 7.1  | 7.8  | 8.5  | 8.8  | 8.8  |
| TUS16  | 18 | NA4,0     | 40 | STD12                                    |  | 16.4                                     | 16.9 | 17.8 | 19   | 20.2 | 21.5                                      | 15.9 | 16.3 | 17.1 | 18.1 | 19.2                                      | 20.4 | 15.4 | 15.7 | 16.4 | 17.2                                      | 18.2 | 19.3 | 15   | 15.4 | 15.9 | 16.7 | 17.5 | 18.5 |
| TUS2   | 22 | NA4,0     | 4  | STD1                                     |  | 25                                       | 25.8 | 27.2 | 28.9 | 30.7 | 32.6                                      | 24.2 | 24.8 | 25.9 | 27.4 | 29.1                                      | 30.9 | 23.6 | 24   | 25   | 26.2                                      | 27.7 | 29.3 | 22.9 | 23.5 | 24.4 | 25.5 | 26.8 | 28.2 |
| TUS24  | 26 | NA4,0     | 46 | STD12                                    |  | 34.4                                     | 35.4 | 37.3 | 39.5 | 42   | 44.4                                      | 33.3 | 34.1 | 35.6 | 37.6 | 39.8                                      | 42.1 | 32.4 | 33.1 | 34.4 | 36.1                                      | 38   | 40.1 | 31.6 | 32.6 | 33.7 | 35.2 | 37   | 38.9 |
| TUS2   | 30 | NA4,0     | 6  | STD1                                     |  | 44.3                                     | 45.5 | 47.8 | 50.6 | 53.6 | 56.4                                      | 43   | 43.8 | 45.8 | 48.2 | 51  | 53.7 | 41.7 | 42.7 | 44.3 | 46.5                                      | 48.9 | 51.4 | 40.9 | 42.2 | 43.7 | 45.6 | 47.8 | 50.1 |

R<sub>2,k</sub> capacities can be calculated as  $R_{2,k} = R_{1,k} \times (\text{nb of dowels} - 1) / (\text{nb of dowels})$ .  
The top dowel is not considered for the uplift capacities as it is placed in an open hole.

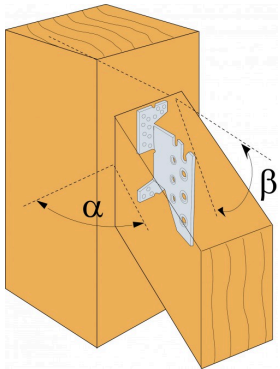
## Valeurs caractéristiques - Solive sur poteau - Clouage total - avec pente et angle $\alpha=30^\circ$



| Référence |    | Valeurs caractéristiques - Solive sur poteau - Clouage total - avec pente et angle $\alpha=30^\circ$ |      |       |      |  |      |      |      |      |      |   |      |      |      |      |      |   |      |      |      |      |      |   |      |      |      |      |  |
|-----------|----|--|------|-------|------|--|------|------|------|------|------|---|------|------|------|------|------|---|------|------|------|------|------|---|------|------|------|------|--|
|           |    | Fixations  |      |       |      | Valeurs caractéristiques - Bois C24 [kN] |      |      |      |      |      |   |      |      |      |      |      |   |      |      |      |      |      |   |      |      |      |      |  |
|           |    | Porteur  |      | Porté |      | R <sub>1,k</sub> - Pente $\beta=0^\circ$ |      |      |      |      |      | R <sub>1,k</sub> - Pente $\beta=15^\circ$ |      |      |      |      |      | R <sub>1,k</sub> - Pente $\beta=30^\circ$ |      |      |      |      |      | R <sub>1,k</sub> - Pente $\beta=45^\circ$ |      |      |      |      |  |
|           |    | Qté  | Type | Qté   | Type | Longueur de broches [mm]                 |      |      |      |      |      | Longueur de broches [mm]                  |      |      |      |      |      | Longueur de broches [mm]                  |      |      |      |      |      | Longueur de broches [mm]                  |      |      |      |      |  |
| TUS1      | 5  | NA4,0  | 4    | STD8  | 7.4  | 8.1                                      | 9    | 9.5  | 9.5  | 9.5  | 7.1  | 7.8                                       | 8.6  | 9.3  | 9.3  | 9.3  | 6.8  | 7.4                                       | 8.2  | 8.9  | 9    | 9    | 6.6  | 7.1                                       | 7.8  | 8.5  | 8.7  | 8.7  |  |
| TUS16     | 13 | NA4,0  | 50   | STD12 | 15   | 15.5                                     | 16.3 | 17.3 | 18.5 | 19.6 | 14.5 | 14.9                                      | 15.6 | 16.5 | 17.6 | 18.6 | 14.1 | 14.4                                      | 15   | 15.8 | 16.7 | 17.6 | 13.8 | 14.1                                      | 14.6 | 15.2 | 16   | 16.9 |  |
| TUS2      | 10 | NA4,0  | 4    | STD12 | 21.2 | 21.9                                     | 23   | 24.4 | 25.8 | 26.1 | 20.6 | 21.1                                      | 22.1 | 23.3 | 24.6 | 26   | 20.1 | 20.4                                      | 21.3 | 22.3 | 23.5 | 24.7 | 19.5 | 20  | 20.7 | 21.6 | 22.7 | 23.8 |  |
| TUS24     | 17 | NA4,0  | 50   | STD12 | 29.4 | 30.3                                     | 31.9 | 33.6 | 34.4 | 34.4 | 28.6 | 29.2                                      | 30.6 | 32.2 | 33.9 | 34.4 | 27.8 | 28.3                                      | 29.4 | 30.8 | 32.4 | 34   | 27   | 27.8                                      | 28.7 | 30   | 31.4 | 32.9 |  |
| TUS2      | 18 | NA4,0  | 6    | STD12 | 35.2 | 36.1                                     | 36.1 | 36.1 | 36.1 | 36.1 | 34.3 | 35  | 36.1 | 36.1 | 36.1 | 36.1 | 33.5 | 34  | 35.2 | 36.1 | 36.1 | 36.1 | 32.7 | 33.4                                      | 34.4 | 35.7 | 36.1 | 36.1 |  |

R<sub>2,k</sub> capacities can be calculated as  $R_{2,k} = R_{1,k} \times (\text{nb of dowels} - 1) / (\text{nb of dowels})$ .  
 The top dowel is not considered for the uplift capacities as it is placed in an open hole.

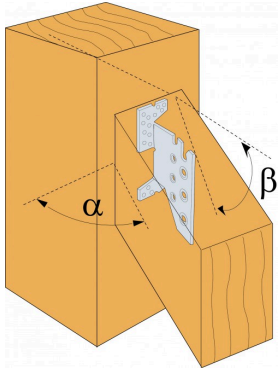
## Valeurs caractéristiques - Solive sur poteau - Clouage total - avec pente et angle $\alpha=45^\circ$



| Référence |    | Valeurs caractéristiques - Solive sur poteau - Clouage total - avec pente et angle $\alpha=45^\circ$ |      |       |      |  |      |      |      |      |      |   |      |      |      |      |      |   |      |      |      |      |      |   |      |      |      |      |  |
|-----------|----|--|------|-------|------|--|------|------|------|------|------|---|------|------|------|------|------|---|------|------|------|------|------|---|------|------|------|------|--|
|           |    | Fixations  |      |       |      | Valeurs caractéristiques - Bois C24 [kN] |      |      |      |      |      |   |      |      |      |      |      |   |      |      |      |      |      |   |      |      |      |      |  |
|           |    | Porteur  |      | Porté |      | R <sub>1,k</sub> - Pente $\beta=0^\circ$ |      |      |      |      |      | R <sub>1,k</sub> - Pente $\beta=15^\circ$ |      |      |      |      |      | R <sub>1,k</sub> - Pente $\beta=30^\circ$ |      |      |      |      |      | R <sub>1,k</sub> - Pente $\beta=45^\circ$ |      |      |      |      |  |
|           |    | Qté  | Type | Qté   | Type | Longueur de broches [mm]                 |      |      |      |      |      | Longueur de broches [mm]                  |      |      |      |      |      | Longueur de broches [mm]                  |      |      |      |      |      | Longueur de broches [mm]                  |      |      |      |      |  |
| TUS1      | 5  | NA4,0  | 4    | STD8  | 7.4  | 8.2                                      | 9    | 9.5  | 9.5  | 9.5  | 7.1  | 7.8                                       | 8.6  | 9.3  | 9.3  | 9.3  | 6.8  | 7.4                                       | 8.2  | 9    | 9    | 9    | 6.6  | 7.1                                       | 7.8  | 8.5  | 8.7  | 8.7  |  |
| TUS16     | 13 | NA4,0  | 50   | STD12 | 15   | 15.5                                     | 16.3 | 17.4 | 18.5 | 19.7 | 14.5 | 14.9                                      | 15.6 | 16.6 | 17.6 | 18.7 | 14.1 | 14.4                                      | 15   | 15.8 | 16.7 | 17.7 | 13.7 | 14  | 14.5 | 15.2 | 16   | 16.9 |  |
| TUS2      | 10 | NA4,0  | 4    | STD12 | 21.3 | 22                                       | 23.1 | 24.5 | 25.8 | 26.1 | 20.6 | 21.2                                      | 22.2 | 23.4 | 24.7 | 26   | 20.1 | 20.4                                      | 21.3 | 22.4 | 23.6 | 24.8 | 19.5 | 20  | 20.7 | 21.7 | 22.7 | 23.9 |  |
| TUS24     | 17 | NA4,0  | 50   | STD12 | 29.5 | 30.4                                     | 32   | 33.7 | 34.4 | 34.4 | 28.7 | 29.3                                      | 30.7 | 32.3 | 34   | 34.4 | 27.9 | 28.4                                      | 29.5 | 31   | 32.5 | 34.1 | 27.1 | 27.8                                      | 28.8 | 30.1 | 31.5 | 33   |  |
| TUS2      | 18 | NA4,0  | 6    | STD12 | 35.3 | 36.1                                     | 36.1 | 36.1 | 36.1 | 36.1 | 34.4 | 35.1                                      | 36.1 | 36.1 | 36.1 | 36.1 | 33.6 | 34.1                                      | 35.2 | 36.1 | 36.1 | 36.1 | 32.8 | 33.5                                      | 34.5 | 35.8 | 36.1 | 36.1 |  |

$R_{2,k}$  capacities can be calculated as  $R_{2,k} = R_{1,k} \times (\text{nb of dowels} - 1) / (\text{nb of dowels})$ .  
The top dowel is not considered for the uplift capacities as it is placed in an open hole.

## Valeurs caractéristiques - Solive sur poteau - Clouage total - avec pente et angle $\alpha=60^\circ$



| Références | Valeurs caractéristiques - Solive sur poteau - Clouage total - avec pente et angle $\alpha=60^\circ$ |           |       |       |  |      |      |      |      |      |                                    |      |      |      |      |      |                                    |      |      |      |      |      |                                    |      |      |      |      |      |
|------------|--|-----------|-------|-------|--|------|------|------|------|------|------------------------------------|------|------|------|------|------|------------------------------------|------|------|------|------|------|------------------------------------|------|------|------|------|------|
|            | Fixations  |           |       |       | Valeurs caractéristiques - Bois C24 [kN] |      |      |      |      |      |                                    |      |      |      |      |      |                                    |      |      |      |      |      |                                    |      |      |      |      |      |
|            | Porteur  |           | Porté |       | $R_{1,k}$ - Pente $\beta=0^\circ$        |      |      |      |      |      | $R_{1,k}$ - Pente $\beta=15^\circ$ |      |      |      |      |      | $R_{1,k}$ - Pente $\beta=30^\circ$ |      |      |      |      |      | $R_{1,k}$ - Pente $\beta=45^\circ$ |      |      |      |      |      |
|            | Qté  | Type      | Qté   | Type  | Longueur de broches [mm]                 |      |      |      |      |      | Longueur de broches [mm]           |      |      |      |      |      | Longueur de broches [mm]           |      |      |      |      |      | Longueur de broches [mm]           |      |      |      |      |      |
| TUS16      | 6  | CSA4,0x40 | 4     | STD8  | 7.4                                      | 8.2  | 9.1  | 9.6  | 9.6  | 9.6  | 7.2                                | 7.9  | 8.7  | 9.3  | 9.3  | 9.3  | 6.9                                | 7.5  | 8.2  | 9    | 9    | 9    | 6.6                                | 7.1  | 7.8  | 8.5  | 8.8  | 8.8  |
| TUS16      | 18   | CSA4,0x50 | 3     | STD12 | 15                                       | 15.5 | 16.4 | 17.5 | 18.7 | 19.9 | 14.5                               | 14.9 | 15.7 | 16.7 | 17.7 | 18.9 | 14.1                               | 14.4 | 15   | 15.8 | 16.8 | 17.8 | 13.7                               | 14   | 14.5 | 15.3 | 16.1 | 17   |
| TUS20      | 10   | CSA4,0x50 | 4     | STD12 | 21.4                                     | 22.1 | 23.3 | 24.6 | 25.8 | 26.1 | 20.7                               | 21.3 | 22.3 | 23.5 | 24.8 | 26   | 20.1                               | 20.5 | 21.4 | 22.5 | 23.7 | 24.9 | 19.5                               | 20   | 20.8 | 21.8 | 22.9 | 24   |
| TUS24      | 17   | CSA4,0x56 | 5     | STD12 | 29.7                                     | 30.6 | 32.2 | 33.8 | 34.4 | 34.4 | 28.8                               | 29.5 | 30.9 | 32.5 | 34   | 34.4 | 28.1                               | 28.6 | 29.7 | 31.2 | 32.7 | 34.1 | 27.2                               | 28   | 29   | 30.3 | 31.7 | 33.1 |
| TUS28      | 18   | CSA4,0x60 | 6     | STD12 | 35.4                                     | 36.1 | 36.1 | 36.1 | 36.1 | 36.1 | 34.6                               | 35.2 | 36.1 | 36.1 | 36.1 | 36.1 | 33.8                               | 34.3 | 35.4 | 36.1 | 36.1 | 36.1 | 32.9                               | 33.7 | 34.7 | 35.8 | 36.1 | 36.1 |

$R_{2,k}$  capacities can be calculated as  $R_{2,k} = R_{1,k} \times (\text{nb of dowels} - 1) / (\text{nb of dowels})$ .  
The top dowel is not considered for the uplift capacities as it is placed in an open hole.

## Product characteristic capacities - Safe working loads - skewed connection

| Références | Valeurs admissibles - Connection en angle |           |       |       |  |      |      |      |   |      |      |      |
|------------|---|-----------|-------|-------|--|------|------|------|---|------|------|------|
|            | Fixations                                 |           |       |       | Installation: angle = $0^\circ$ à $60^\circ$ , pente = $0^\circ$ |      |      |      | Installation: angle = $0^\circ$ à $60^\circ$ , pente = $45^\circ$ |      |      |      |
|            | Porteur                                   |           | Porté |       | $R_{1,SWL}$ [kN]   |      |      |      | $R_{1,SWL}$ [kN]  |      |      |      |
|            | Qté                                       | Type      | Qté   | Type  | Longueur de broches [mm]   |      |      |      | Longueur de broches [mm]  |      |      |      |
| TUS12      | 6   | CSA5,0x40 | 4     | STD8  | 2.5  | 2.5  | 2.5  | -    | 2.3   | 2.5  | 2.5  | -    |
| TUS16      | 18  | CSA5,0x40 | 3     | STD12 | 3.4  | 4.8  | 6.1  | 6.1  | 3   | 4.1  | 5.3  | 5.3  |
| TUS20      | 22  | CSA5,0x40 | 4     | STD12 | 5.5  | 7.7  | 9.8  | 9.8  | 4.8   | 6.7  | 8.5  | 8.5  |
| TUS24      | 26  | CSA5,0x40 | 5     | STD12 | 8  | 11.1 | 13.3 | 13.3 | 6.9   | 9.6  | 12.3 | 12.3 |
| TUS28      | 30  | CSA5,0x40 | 6     | STD12 | 10.7   | 14.9 | 16.3 | 16.3 | 9.3   | 12.9 | 16.3 | 16.3 |

The skew may be precise when ordering the products

## MISE EN OEUVRE

## Fixations

**Sur porteur bois :**

- Pointes annelées CNA Ø4.0x50 mm ou vis CSA Ø5.0x40 mm

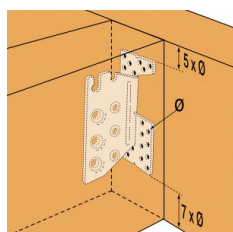
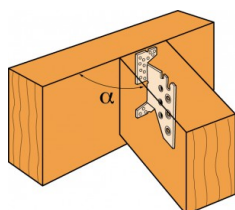
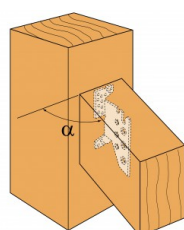
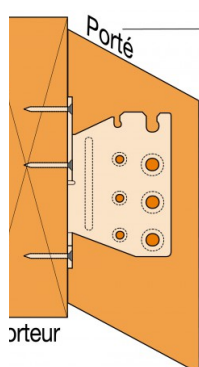
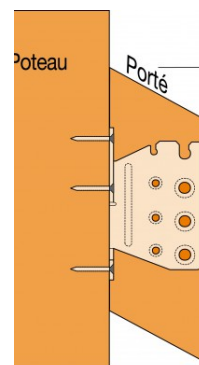
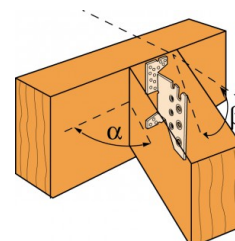
**Sur porté :**

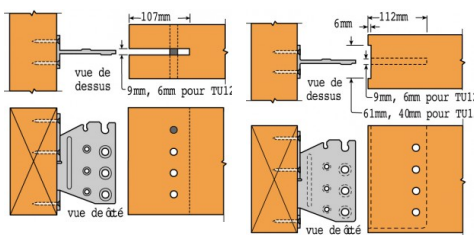
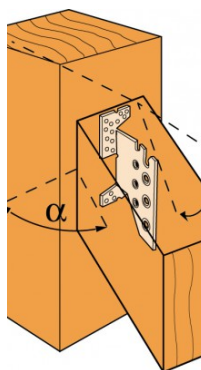
- Broches en acier S235JR type STD12
- TUS12 : Ø 8 mm type STD8
- TUS16 à 28 : Ø 12 mm type STD12.

La longueur des broches doit être inférieure ou égale à la largeur de la solive portée.

## Installation

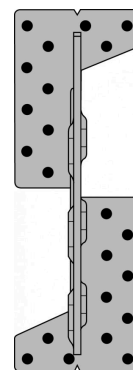
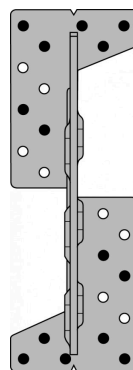
1. Réaliser une entaille verticale dans la poutre portée (largeur 6 mm pour le TUS12 et largeur 9 mm pour les TUS16 à TUS28),
2. Identifier la position des broches sur la poutre avant de percer transversalement,
3. Insérer uniquement la première broche dans la poutre sur la partie supérieure (diamètre de perçage fonction du diamètre de la broche),
4. Réaliser un lamage d'une profondeur de 6 mm dans le support. Ce lamage n'est pas obligatoire, il permet d'améliorer l'esthétique de l'assemblage,
5. Fixer l'étrier sur le support à l'aide de pointes ou de vis,
6. Présenter la poutre portée de manière à placer la broche déjà en place dans l'encoche de l'étrier,
7. Mettre en place les broches restantes.

Assemblage  
droit sur poutreAssemblage  
avec angle sur  
poutreAssemblage  
avec angle sur  
poteauAssemblage  
avec pente sur  
poutreAssemblage  
avec pente sur  
poteauAssemblage  
avec pente et  
angle sur poutre



Montage entaille débouchante

Montage invisible -  
Dimensions



Clouage sur poteau

Clouage sur poutre

Assemblage avec pente et angle sur poteau