

## Ficha técnica

SAE-SAEL

### Suporte com abas exteriores

**SIMPSON**

**Strong-Tie**

*O SAE soube impôr-se na construção há alguns anos. A sua utilização abrange um vasto leque de aplicações. As montagens são fiáveis, sem necessidade de maquinaria e contribuem para a fiabilidade da obra.*

## Características

### Matéria

- Aço galvanizado S250GD + Z275 em conformidade com a norma NF EN 10346,
- Espessura : 2 mm.

### Ventagens

- Instalação rápida e simples,
- Larguras à escolha consoante los intervalos indicados.

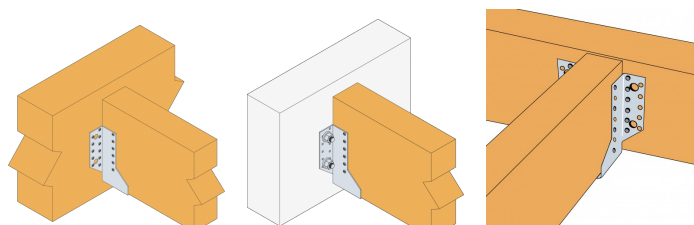
## Aplicações

### Suporte

- **Elemento de suporte** : madeira maciça, aglomerado de madeira, laminada colada, aço, betão,
- **Elemento suportado** : madeira maciça, aglomerado de madeira, laminada colada.

### Áreas de utilização

- Barrotes, madres,
- Vigas lisas e pilar de revestimento de proteção,
- Batentes de varas,
- Reforço de montagens existentes.



Clouage partiel sur bois

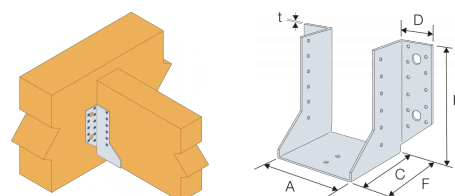
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## Dados técnicos

Desenvolvimentos e larguras



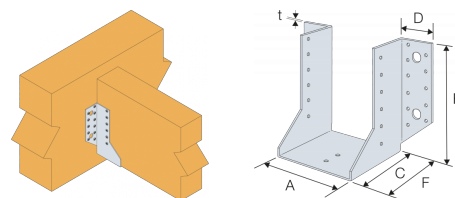
| Referência | Blank model [mm] | Larguras [mm] | Depth [mm] | Anchor on the header | Fasteners on the header<br>CNA4.0x50 or CSA5.0x40 | Fasteners on the joist<br>CNA4.0x50 or CSA5.0x40 |
|------------|------------------|---------------|------------|----------------------|---------------------------------------------------|--------------------------------------------------|
| SAE200/2X  | 200              | 24 - 80       | 84         | 2 Ø10                | 8                                                 | 5                                                |
| SAE250/2X  | 250              | 24 - 80       | 84         | 2 Ø10                | 12                                                | 7                                                |
| SAEL300/2X | 300              | 24 - 116      | 84         | 4 Ø12                | 18                                                | 10                                               |
| SAEL340/2X | 340              | 24 - 116      | 84         | 4 Ø12                | 22                                                | 12                                               |
| SAEL380/2X | 380              | 24 - 156      | 84         | 4 Ø12                | 22                                                | 12                                               |
| SAEL440/2X | 440              | 24 - 156      | 84         | 4 Ø12                | 28                                                | 15                                               |
| SAEL500/2X | 500              | 24 - 156      | 84         | 6 Ø12                | 34                                                | 15                                               |

Para mais informações sobre os valores das cargas em função da largura do suporte, contacte o departamento técnico.

SAE-SAEL

Suporte com abas exteriores

Dimensões e valores característicos



| Referência   | Portador [mm] |      |          |      | Dimensões e valores característicos [mm] |     |    |      |    |   |    | Furos portador |     |    | Furos suportado |
|--------------|---------------|------|----------|------|------------------------------------------|-----|----|------|----|---|----|----------------|-----|----|-----------------|
|              | Larguras      |      | Altura   |      | A                                        | B   | C  | D    | F  | t | Ø5 | Ø11            | Ø13 | Ø5 |                 |
|              | Larguras      | Máx. | Larguras | Máx. |                                          |     |    |      |    |   |    |                |     |    |                 |
| SAE200/32/2  | 30            | 32   | 99       | 126  | 32                                       | 84  | 84 | 41.5 | 86 | 2 | 8  | 2              | -   | 5  |                 |
| SAE250/32/2  | 30            | 32   | 119      | 164  |                                          | 109 | 84 | 41.5 | 86 | 2 | 12 | 2              | -   | 7  |                 |
| SAE300/32/2  | 30            | 32   | 149      | 201  |                                          | 134 | 84 | 41.5 | 86 | 2 | 18 | -              | 4   | 10 |                 |
| SAE200/38/2  | 36            | 38   | 96       | 122  | 38                                       | 81  | 84 | 41.5 | 86 | 2 | 8  | 2              | -   | 5  |                 |
| SAE250/38/2  | 36            | 38   | 116      | 159  |                                          | 106 | 84 | 41.5 | 86 | 2 | 12 | 2              | -   | 7  |                 |
| SAE300/38/2  | 36            | 38   | 146      | 197  |                                          | 131 | 84 | 41.5 | 86 | 2 | 18 | -              | 4   | 10 |                 |
| SAE340/38/2  | 36            | 38   | 166      | 227  |                                          | 151 | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE440/38/2  | 36            | 38   | 216      | 302  | 40                                       | 201 | 84 | 41.5 | 86 | 2 | 28 | -              | 4   | 15 |                 |
| SAE200/40/2  | 38            | 40   | 95       | 120  |                                          | 80  | 84 | 41.5 | 86 | 2 | 8  | 2              | -   | 5  |                 |
| SAE250/40/2  | 38            | 40   | 115      | 158  |                                          | 105 | 84 | 41.5 | 86 | 2 | 12 | 2              | -   | 7  |                 |
| SAE300/40/2  | 38            | 40   | 145      | 195  |                                          | 130 | 84 | 41.5 | 86 | 2 | 18 | -              | 4   | 10 |                 |
| SAE340/40/2  | 38            | 40   | 165      | 225  | 46                                       | 150 | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE200/46/2  | 44            | 46   | 92       | 116  |                                          | 77  | 84 | 41.5 | 86 | 2 | 8  | 2              | -   | 5  |                 |
| SAE250/46/2  | 44            | 46   | 112      | 153  |                                          | 102 | 84 | 41.5 | 86 | 2 | 12 | 2              | -   | 7  |                 |
| SAE340/46/2  | 44            | 46   | 162      | 221  |                                          | 147 | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE500/46/2  | 44            | 46   | 242      | 341  | 50                                       | 227 | 84 | 41.5 | 86 | 2 | 34 | -              | 6   | 18 |                 |
| SAE200/50/2  | 48            | 50   | 90       | 113  |                                          | 75  | 84 | 41.5 | 86 | 2 | 8  | 2              | -   | 5  |                 |
| SAE250/50/2  | 48            | 50   | 110      | 150  |                                          | 100 | 84 | 41.5 | 86 | 2 | 12 | 2              | -   | 7  |                 |
| SAE300/50/2  | 48            | 50   | 140      | 188  |                                          | 125 | 84 | 41.5 | 86 | 2 | 18 | -              | 4   | 10 |                 |
| SAE340/50/2  | 48            | 50   | 160      | 218  | 60                                       | 145 | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE500/50/2  | 48            | 50   | 240      | 338  |                                          | 225 | 84 | 41.5 | 86 | 2 | 34 | -              | 6   | 18 |                 |
| SAE200/60/2  | 58            | 60   | 85       | 105  |                                          | 70  | 84 | 41.5 | 86 | 2 | 8  | 2              | -   | 5  |                 |
| SAE250/60/2  | 58            | 60   | 105      | 143  |                                          | 95  | 84 | 41.5 | 86 | 2 | 12 | 2              | -   | 7  |                 |
| SAE300/60/2  | 58            | 60   | 135      | 180  | 64                                       | 120 | 84 | 41.5 | 86 | 2 | 18 | -              | 4   | 10 |                 |
| SAE340/60/2  | 58            | 60   | 155      | 210  |                                          | 140 | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE200/64/2  | 62            | 64   | 83       | 102  |                                          | 68  | 84 | 41.5 | 86 | 2 | 8  | 2              | -   | 5  |                 |
| SAE250/64/2  | 62            | 64   | 103      | 140  |                                          | 93  | 84 | 41.5 | 86 | 2 | 12 | 2              | -   | 7  |                 |
| SAE300/64/2  | 62            | 64   | 133      | 177  | 66                                       | 118 | 84 | 41.5 | 86 | 2 | 18 | -              | 4   | 10 |                 |
| SAE340/64/2  | 62            | 64   | 153      | 207  |                                          | 138 | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE380/64/2  | 62            | 64   | 173      | 237  |                                          | 158 | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE380/66/2  | 64            | 66   | 172      | 236  |                                          | 157 | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE440/66/2  | 64            | 66   | 202      | 281  | 70                                       | 187 | 84 | 41.5 | 86 | 2 | 28 | -              | 4   | 15 |                 |
| SAE200/70/2  | 68            | 70   | 80       | 98   |                                          | 65  | 84 | 41.5 | 86 | 2 | 8  | 2              | -   | 5  |                 |
| SAE250/70/2  | 68            | 70   | 100      | 135  |                                          | 90  | 84 | 41.5 | 86 | 2 | 12 | 2              | -   | 7  |                 |
| SAE300/70/2  | 68            | 70   | 130      | 173  |                                          | 115 | 84 | 41.5 | 86 | 2 | 18 | -              | 4   | 10 |                 |
| SAE340/70/2  | 68            | 70   | 150      | 203  | 72                                       | 135 | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE380/70/2  | 68            | 70   | 170      | 233  |                                          | 155 | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE440/70/2  | 68            | 70   | 200      | 278  |                                          | 185 | 84 | 41.5 | 86 | 2 | 28 | -              | 4   | 15 |                 |
| SAEL300/72/2 | 70            | 72   | 129      | 171  |                                          | 114 | 84 | 41.5 | 86 | 2 | 16 | -              | 4   | 8  |                 |
| SAEL340/72/2 | 70            | 72   | 149      | 201  | 76                                       | 134 | 84 | 41.5 | 86 | 2 | 20 | -              | 4   | 10 |                 |
| SAE380/72/2  | 70            | 72   | 169      | 231  |                                          | 154 | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE440/72/2  | 70            | 72   | 199      | 276  |                                          | 184 | 84 | 41.5 | 86 | 2 | 28 | -              | 4   | 15 |                 |
| SAE200/76/2  | 74            | 76   | 77       | 93   |                                          | 62  | 84 | 41.5 | 86 | 2 | 8  | 2              | -   | 5  |                 |

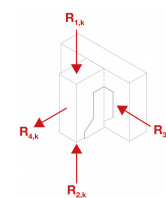
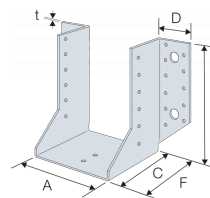
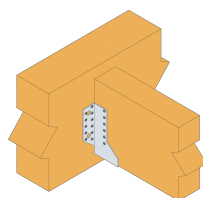
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## SAE-SAEL Suporte com abas exteriores

**SIMPSON**

**Strong-Tie**

| Referência    | Portador [mm] |      |          |      | Dimensões e valores característicos [mm] |       |    |      |    |   |    | Furos portador |     |    | Furos suportado |
|---------------|---------------|------|----------|------|------------------------------------------|-------|----|------|----|---|----|----------------|-----|----|-----------------|
|               | Larguras      |      | Altura   |      | A                                        | B     | C  | D    | F  | t | Ø5 | Ø11            | Ø13 | Ø5 |                 |
|               | Larguras      | Máx. | Larguras | Máx. |                                          |       |    |      |    |   |    |                |     |    |                 |
| SAE250/76/2   | 74            | 76   | 97       | 131  |                                          | 87    | 84 | 41.5 | 86 | 2 | 12 | 2              | -   | 7  |                 |
| SAEL300/76/2  | 74            | 76   | 127      | 168  |                                          | 112   | 84 | 41.5 | 86 | 2 | 16 | -              | 4   | 8  |                 |
| SAEL340/76/2  | 74            | 76   | 147      | 198  |                                          | 132   | 84 | 41.5 | 86 | 2 | 20 | -              | 4   | 10 |                 |
| SAE380/76/2   | 74            | 76   | 167      | 228  |                                          | 152   | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE440/76/2   | 74            | 76   | 197      | 273  |                                          | 182   | 84 | 41.5 | 86 | 2 | 28 | -              | 4   | 15 |                 |
| SAE500/76/2   | 74            | 76   | 227      | 318  |                                          | 212   | 84 | 41.5 | 86 | 2 | 34 | -              | 6   | 18 |                 |
| SAE200/80/2   | 78            | 80   | 75       | 90   | 80                                       | 60    | 84 | 41.5 | 86 | 2 | 8  | 2              | -   | 5  |                 |
| SAE250/80/2   | 78            | 80   | 95       | 128  |                                          | 85    | 84 | 41.5 | 86 | 2 | 12 | 2              | -   | 7  |                 |
| SAEL300/80/2  | 78            | 80   | 125      | 165  |                                          | 110   | 84 | 41.5 | 86 | 2 | 16 | -              | 4   | 8  |                 |
| SAEL340/80/2  | 78            | 80   | 145      | 195  |                                          | 130   | 84 | 41.5 | 86 | 2 | 20 | -              | 4   | 10 |                 |
| SAE380/80/2   | 78            | 80   | 165      | 225  |                                          | 150   | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE440/80/2   | 78            | 80   | 195      | 270  |                                          | 180   | 84 | 41.5 | 86 | 2 | 28 | -              | 4   | 15 |                 |
| SAE500/80/2   | 78            | 80   | 225      | 315  | 90                                       | 210   | 84 | 41.5 | 86 | 2 | 34 | -              | 6   | 18 |                 |
| SAE380/90/2   | 88            | 90   | 160      | 218  |                                          | 145   | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE440/90/2   | 88            | 90   | 190      | 263  |                                          | 175   | 84 | 41.5 | 86 | 2 | 28 | -              | 4   | 15 |                 |
| SAE500/90/2   | 88            | 90   | 220      | 308  | 92                                       | 205   | 84 | 41.5 | 86 | 2 | 34 | -              | 6   | 18 |                 |
| SAE380/92/2   | 90            | 92   | 159      | 216  |                                          | 144   | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE440/95/2   | 93            | 95   | 188      | 259  |                                          | 172.5 | 84 | 41.5 | 86 | 2 | 28 | -              | 4   | 15 |                 |
| SAE500/95/2   | 93            | 95   | 218      | 304  | 95                                       | 202.5 | 84 | 41.5 | 86 | 2 | 34 | -              | 6   | 18 |                 |
| SAEL300/100/2 | 98            | 100  | 115      | 150  |                                          | 100   | 84 | 41.5 | 86 | 2 | 16 | -              | 4   | 8  |                 |
| SAE380/100/2  | 98            | 100  | 155      | 210  |                                          | 140   | 84 | 41.5 | 86 | 2 | 22 | -              | 4   | 12 |                 |
| SAE440/100/2  | 98            | 100  | 185      | 255  |                                          | 170   | 84 | 41.5 | 86 | 2 | 28 | -              | 4   | 15 |                 |
| SAE500/100/2  | 98            | 100  | 215      | 300  | 100                                      | 200   | 84 | 41.5 | 86 | 2 | 34 | -              | 6   | 18 |                 |
| SAEL500/115/2 | 113           | 115  | 208      | 289  |                                          | 192.5 | 84 | 41.5 | 86 | 2 | 32 | -              | 6   | 16 |                 |
| SAEL380/120/2 | 118           | 120  | 145      | 195  |                                          | 130   | 84 | 41.5 | 86 | 2 | 20 | -              | 4   | 10 |                 |
| SAEL440/120/2 | 118           | 120  | 175      | 240  |                                          | 160   | 84 | 41.5 | 86 | 2 | 26 | -              | 4   | 13 |                 |
| SAEL500/120/2 | 118           | 120  | 205      | 285  | 120                                      | 190   | 84 | 41.5 | 86 | 2 | 32 | -              | 6   | 16 |                 |
| SAEL440/136/2 | 134           | 136  | 167      | 228  |                                          | 152   | 84 | 41.5 | 86 | 2 | 26 | -              | 4   | 13 |                 |
| SAEL500/140/2 | 138           | 140  | 195      | 270  | 140                                      | 180   | 84 | 41.5 | 86 | 2 | 32 | -              | 6   | 16 |                 |
| SAEL500/150/2 | 148           | 150  | 190      | 263  | 150                                      | 175   | 84 | 41.5 | 86 | 2 | 32 | -              | 6   | 16 |                 |

Valores característicos - Madeira/Madeira -  
pregagem total

Valores característicos - Madeira sobre madeira - pregagem total

| Referência   | A  | Fixações |           | Valores característicos - Madeira classe C24 [kN] |           |                  |           |                  |           |                  |           |
|--------------|----|----------|-----------|---------------------------------------------------|-----------|------------------|-----------|------------------|-----------|------------------|-----------|
|              |    | Portador | Suportado | R <sub>1,k</sub>                                  |           | R <sub>2,k</sub> |           | R <sub>3,k</sub> |           | R <sub>4,k</sub> |           |
|              |    | Qdad     | Qdad      | CNA4,0x35                                         | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 |
| SAE200/32/2  | 32 | 8        | 5         | 6.3                                               | -         | 3.3              | -         | 0.9              | -         | 2.5              | -         |
| SAE250/32/2  |    | 12       | 7         | 9.8                                               | -         | 6                | -         | 1.5              | -         | 3.7              | -         |
| SAE300/32/2  |    | 18       | 10        | 16.1                                              | -         | 11.3             | -         | 3.3              | -         | 5.5              | -         |
| SAE200/38/2  | 38 | 8        | 5         | 6                                                 | -         | 3.3              | -         | 0.9              | -         | 2.5              | -         |
| SAE250/38/2  |    | 12       | 7         | 9.4                                               | -         | 6                | -         | 1.5              | -         | 3.7              | -         |
| SAE300/38/2  |    | 18       | 10        | 15.6                                              | -         | 11.3             | -         | 3.3              | -         | 5.5              | -         |
| SAE340/38/2  |    | 22       | 12        | 20.2                                              | -         | 15.6             | -         | 4.3              | -         | 6.7              | -         |
| SAE440/38/2  |    | 28       | 15        | 28.5                                              | -         | 22.9             | -         | 5                | -         | 8.6              | -         |
| SAE200/40/2  | 40 | 8        | 5         | 5.9                                               | -         | 3.3              | -         | 0.9              | -         | 2.5              | -         |
| SAE250/40/2  |    | 12       | 7         | 9.3                                               | -         | 6                | -         | 1.5              | -         | 3.7              | -         |
| SAE300/40/2  |    | 18       | 10        | 15.4                                              | -         | 11.3             | -         | 3.3              | -         | 5.5              | -         |
| SAE340/40/2  |    | 22       | 12        | 20                                                | -         | 15.6             | -         | 4.4              | -         | 6.7              | -         |
| SAE200/46/2  | 46 | 8        | 5         | 5.5                                               | -         | 3.3              | -         | 0.9              | -         | 2.5              | -         |
| SAE250/46/2  |    | 12       | 7         | 8.9                                               | -         | 6                | -         | 1.5              | -         | 3.7              | -         |
| SAE340/46/2  |    | 22       | 12        | 19.5                                              | -         | 15.6             | -         | 4.4              | -         | 6.7              | -         |
| SAE500/46/2  |    | 34       | 18        | 33.5                                              | -         | 30.2             | -         | 6.2              | -         | 10.4             | -         |
| SAE200/50/2  | 50 | 8        | 5         | 5.3                                               | -         | 3.3              | -         | 0.9              | -         | 2.5              | -         |
| SAE250/50/2  |    | 12       | 7         | 8.6                                               | -         | 6                | -         | 1.5              | -         | 3.7              | -         |
| SAE300/50/2  |    | 18       | 10        | 14.5                                              | -         | 11.3             | -         | 3.3              | -         | 5.5              | -         |
| SAE340/50/2  |    | 22       | 12        | 19.1                                              | -         | 15.6             | -         | 4.4              | -         | 6.7              | -         |
| SAE500/50/2  |    | 34       | 18        | 33.5                                              | -         | 30.2             | -         | 6.6              | -         | 10.4             | -         |
| SAE200/60/2  | 60 | 8        | 5         | 4.7                                               | 7.4       | 3.3              | 5.3       | 0.9              | 1.3       | 2.5              | 3.9       |
| SAE250/60/2  |    | 12       | 7         | 7.8                                               | 12.1      | 6                | 9.4       | 1.5              | 2.1       | 3.7              | 5.9       |
| SAE300/60/2  |    | 18       | 10        | 13.6                                              | 20.8      | 11.3             | 17.6      | 3.3              | 4.4       | 5.5              | 8.8       |
| SAE340/60/2  |    | 22       | 12        | 18.1                                              | 27.4      | 15.6             | 24        | 4.4              | 5.9       | 6.7              | 10.8      |
| SAE200/64/2  | 64 | 8        | 5         | 4.5                                               | 7         | 3.3              | 5.3       | 0.9              | 1.3       | 2.5              | 3.9       |
| SAE250/64/2  |    | 12       | 7         | 7.5                                               | 11.7      | 6                | 9.4       | 1.5              | 2.1       | 3.7              | 5.9       |
| SAE300/64/2  |    | 18       | 10        | 13.2                                              | 20.3      | 11.3             | 17.6      | 3.4              | 4.4       | 5.5              | 8.8       |
| SAE340/64/2  |    | 22       | 12        | 17.7                                              | 26.9      | 15.6             | 24        | 4.5              | 5.9       | 6.7              | 10.8      |
| SAE380/64/2  |    | 22       | 12        | 21.5                                              | 31        | 15.6             | 24        | 3.8              | 5.1       | 6.7              | 10.8      |
| SAE380/66/2  | 66 | 22       | 12        | 21.3                                              | 31        | 15.6             | 24        | 3.8              | 5.1       | 6.7              | 10.8      |
| SAE440/66/2  |    | 28       | 15        | 28.5                                              | 37.7      | 22.9             | 33.2      | 5.5              | 7.2       | 8.6              | 13.7      |
| SAE200/70/2  | 70 | 8        | 5         | 4.1                                               | 6.5       | 3.3              | 5.3       | 0.9              | 1.3       | 2.5              | 3.9       |
| SAE250/70/2  |    | 12       | 7         | 7.1                                               | 11        | 6                | 9.4       | 1.5              | 2.1       | 3.7              | 5.9       |
| SAE300/70/2  |    | 18       | 10        | 12.7                                              | 19.5      | 11.3             | 17.6      | 3.4              | 4.4       | 5.5              | 8.8       |
| SAE340/70/2  |    | 22       | 12        | 17.1                                              | 26        | 15.6             | 24        | 3.8              | 5.9       | 6.7              | 10.8      |
| SAE380/70/2  |    | 22       | 12        | 21                                                | 31        | 15.6             | 24        | 3.8              | 5.1       | 6.7              | 10.8      |
| SAE440/70/2  |    | 28       | 15        | 28.5                                              | 37.7      | 22.9             | 33.2      | 5.5              | 7.2       | 8.6              | 13.7      |
| SAEL300/72/2 | 72 | 16       | 8         | 12.4                                              | 18.9      | 9.4              | 14.6      | 2.6              | 3.4       | 4.9              | 7.8       |
| SAEL340/72/2 |    | 20       | 10        | 16.7                                              | 25.3      | 13.4             | 20.7      | 3.6              | 4.8       | 6.1              | 9.8       |
| SAE380/72/2  |    | 22       | 12        | 20.8                                              | 31        | 15.6             | 24        | 3.8              | 5.1       | 6.7              | 10.8      |
| SAE440/72/2  |    | 28       | 15        | 28.5                                              | 37.7      | 22.9             | 33.2      | 5.5              | 7.3       | 8.6              | 13.7      |

# Ficha técnica

**SIMPSON**

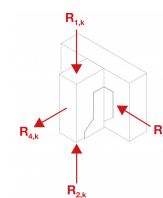
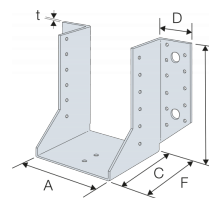
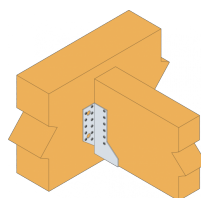
**Strong-Tie**

SAE-SAEL

**Suporte com abas exteriores**

| Referência    | Valores característicos - Madeira sobre madeira - pregagem total |          |           |                                                   |           |                  |           |                  |           |                  |           |
|---------------|------------------------------------------------------------------|----------|-----------|---------------------------------------------------|-----------|------------------|-----------|------------------|-----------|------------------|-----------|
|               | A                                                                | Fixações |           | Valores característicos - Madeira classe C24 [kN] |           |                  |           |                  |           |                  |           |
|               |                                                                  | Portador | Suportado | R <sub>1,k</sub>                                  |           | R <sub>2,k</sub> |           | R <sub>3,k</sub> |           | R <sub>4,k</sub> |           |
|               |                                                                  | Qdad     | Qdad      | CNA4,0x35                                         | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 |
| SAE200/76/2   | 76                                                               | 8        | 5         | 3.8                                               | 5.9       | 3.3              | 5.3       | 0.9              | 1.4       | 2.5              | 3.9       |
| SAE250/76/2   |                                                                  | 12       | 7         | 6.6                                               | 10.3      | 6                | 9.4       | 1.5              | 2.1       | 3.7              | 5.9       |
| SAEL300/76/2  |                                                                  | 16       | 8         | 12                                                | 18.4      | 9.4              | 14.6      | 2.6              | 3.4       | 4.9              | 7.8       |
| SAEL340/76/2  |                                                                  | 20       | 10        | 16.3                                              | 24.7      | 13.4             | 20.7      | 3.6              | 4.8       | 6.1              | 9.8       |
| SAE380/76/2   |                                                                  | 22       | 12        | 20.4                                              | 30.5      | 15.6             | 24        | 3.8              | 5.1       | 6.7              | 10.8      |
| SAE440/76/2   |                                                                  | 28       | 15        | 28.1                                              | 37.7      | 22.9             | 33.2      | 5.5              | 7.3       | 8.6              | 13.7      |
| SAE500/76/2   |                                                                  | 34       | 18        | 33.5                                              | 44.3      | 30.2             | 39.9      | 6.6              | 9.5       | 10.4             | 16.7      |
| SAE200/80/2   | 80                                                               | 8        | 5         | 3.5                                               | 5.6       | 3.3              | 5.3       | 0.9              | 1.4       | 2.5              | 3.9       |
| SAE250/80/2   |                                                                  | 12       | 7         | 6.3                                               | 9.9       | 6                | 9.4       | 1.5              | 2.1       | 3.7              | 5.9       |
| SAEL300/80/2  |                                                                  | 16       | 8         | 11.7                                              | 17.9      | 9.4              | 14.6      | 2.6              | 3.4       | 4.9              | 7.8       |
| SAEL340/80/2  |                                                                  | 20       | 10        | 15.9                                              | 24.2      | 13.4             | 20.7      | 3.6              | 4.8       | 6.1              | 9.8       |
| SAE380/80/2   |                                                                  | 22       | 12        | 20                                                | 30        | 15.6             | 24        | 3.8              | 5.1       | 6.7              | 10.8      |
| SAE440/80/2   |                                                                  | 28       | 15        | 27.7                                              | 37.7      | 22.9             | 33.2      | 5.5              | 7.3       | 8.6              | 13.7      |
| SAE500/80/2   |                                                                  | 34       | 18        | 33.5                                              | 44.3      | 30.2             | 39.9      | 6.6              | 9.5       | 10.4             | 16.7      |
| SAE380/90/2   | 90                                                               | 22       | 12        | 19.1                                              | 28.8      | 15.6             | 24        | 3.8              | 5.2       | 6.7              | 10.8      |
| SAE440/90/2   |                                                                  | 28       | 15        | 26.7                                              | 37.7      | 22.9             | 33.2      | 5.6              | 7.3       | 8.6              | 13.7      |
| SAE500/90/2   |                                                                  | 34       | 18        | 33.5                                              | 44.3      | 30.2             | 39.9      | 6.6              | 9.6       | 10.4             | 16.7      |
| SAE380/92/2   | 92                                                               | 22       | 12        | 18.9                                              | 28.5      | 15.6             | 24        | 3.8              | 5.2       | 6.7              | 10.8      |
| SAE440/95/2   | 95                                                               | 28       | 15        | 26.2                                              | 37.7      | 22.9             | 33.2      | 5.6              | 7.4       | 8.6              | 13.7      |
| SAE500/95/2   |                                                                  | 34       | 18        | 33.5                                              | 44.3      | 30.2             | 39.9      | 6.6              | 9.6       | 10.4             | 16.7      |
| SAEL300/100/2 | 100                                                              | 16       | 8         | 9.9                                               | 15.3      | 9.4              | 14.6      | 2.6              | 3.5       | 4.9              | 7.8       |
| SAE380/100/2  |                                                                  | 22       | 12        | 18.1                                              | 27.4      | 15.6             | 24        | 3.8              | 5.2       | 6.7              | 10.8      |
| SAE440/100/2  |                                                                  | 28       | 15        | 25.7                                              | 37.7      | 22.9             | 33.2      | 5.6              | 7.4       | 8.6              | 13.7      |
| SAE500/100/2  |                                                                  | 34       | 18        | 33.5                                              | 44.3      | 30.2             | 39.9      | 6.6              | 9.6       | 10.4             | 16.7      |
| SAEL500/115/2 | 115                                                              | 32       | 16        | 30.2                                              | 39.9      | 26.8             | 35.5      | 6.6              | 8.5       | 10.4             | 15.7      |
| SAEL380/120/2 | 120                                                              | 20       | 10        | 15.9                                              | 24.2      | 13.4             | 20.7      | 3.8              | 4.2       | 6.7              | 9.8       |
| SAEL440/120/2 |                                                                  | 26       | 13        | 23.1                                              | 33.2      | 20.4             | 28.8      | 4.7              | 6.3       | 8                | 12.7      |
| SAEL500/120/2 |                                                                  | 32       | 16        | 30.2                                              | 39.9      | 26.8             | 35.5      | 6.6              | 8.5       | 10.4             | 15.7      |
| SAEL440/136/2 | 136                                                              | 26       | 13        | 21.4                                              | 32.5      | 20.4             | 28.8      | 4.8              | 6.3       | 8                | 12.7      |
| SAEL500/140/2 | 140                                                              | 32       | 16        | 29                                                | 39.9      | 26.8             | 35.5      | 6.6              | 8.5       | 10.4             | 15.7      |
| SAEL500/150/2 | 150                                                              | 32       | 16        | 27.8                                              | 39.9      | 26.8             | 35.5      | 6.6              | 8.5       | 10.4             | 15.7      |

Valores característicos - Madeira/madeira -  
Pregagem parcial



| Referência  | Characteristic capacities - Timber to timber - Partial nailing - |           |                                                   |           |                  |           |                  |           |                  |           |
|-------------|------------------------------------------------------------------|-----------|---------------------------------------------------|-----------|------------------|-----------|------------------|-----------|------------------|-----------|
|             | Fixações                                                         |           | Valores característicos - Madeira classe C24 [kN] |           |                  |           |                  |           |                  |           |
|             | Portador                                                         | Suportado | R <sub>1,k</sub>                                  |           | R <sub>2,k</sub> |           | R <sub>3,k</sub> |           | R <sub>4,k</sub> |           |
|             | Qdad                                                             | Qdad      | CNA4,0x35                                         | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 |
| SAE200/32/2 | 4                                                                | 4         | 3.7                                               | -         | 1.8              | -         | 0.4              | -         | 1.2              | -         |
| SAE250/32/2 | 6                                                                | 4         | 5.8                                               | -         | 2.5              | -         | 0.8              | -         | 1.8              | -         |
| SAE300/32/2 | 10                                                               | 6         | 9.1                                               | -         | 6.5              | -         | 1.1              | -         | 3.1              | -         |
| SAE200/38/2 | 4                                                                | 4         | 3.5                                               | -         | 1.8              | -         | 0.5              | -         | 1.2              | -         |
| SAE250/38/2 | 6                                                                | 4         | 5.6                                               | -         | 2.5              | -         | 0.8              | -         | 1.8              | -         |
| SAE300/38/2 | 10                                                               | 6         | 8.8                                               | -         | 6.5              | -         | 1.1              | -         | 3.1              | -         |
| SAE340/38/2 | 12                                                               | 6         | 11.9                                              | -         | 8.7              | -         | 1.8              | -         | 3.7              | -         |
| SAE440/38/2 | 14                                                               | 8         | 16.8                                              | -         | 11               | -         | 1.9              | -         | 4.3              | -         |
| SAE200/40/2 | 4                                                                | 4         | 3.5                                               | -         | 1.8              | -         | 0.5              | -         | 1.2              | -         |
| SAE250/40/2 | 6                                                                | 4         | 5.6                                               | -         | 2.5              | -         | 0.8              | -         | 1.8              | -         |
| SAE300/40/2 | 10                                                               | 6         | 8.7                                               | -         | 6.5              | -         | 1.1              | -         | 3.1              | -         |
| SAE340/40/2 | 12                                                               | 6         | 11.8                                              | -         | 8.7              | -         | 1.9              | -         | 3.7              | -         |
| SAE200/46/2 | 4                                                                | 4         | 3.3                                               | -         | 1.8              | -         | 0.5              | -         | 1.2              | -         |
| SAE250/46/2 | 6                                                                | 4         | 5.4                                               | -         | 2.5              | -         | 0.8              | -         | 1.8              | -         |
| SAE340/46/2 | 12                                                               | 6         | 11.5                                              | -         | 8.7              | -         | 2.1              | -         | 3.7              | -         |
| SAE500/46/2 | 18                                                               | 10        | 20.1                                              | -         | 16.8             | -         | 2.3              | -         | 5.5              | -         |
| SAE200/50/2 | 4                                                                | 4         | 3.2                                               | -         | 1.8              | -         | 0.5              | -         | 1.2              | -         |
| SAE250/50/2 | 6                                                                | 4         | 5.2                                               | -         | 2.5              | -         | 0.8              | -         | 1.8              | -         |
| SAE300/50/2 | 10                                                               | 6         | 8.2                                               | -         | 6.5              | -         | 1.1              | -         | 3.1              | -         |
| SAE340/50/2 | 12                                                               | 6         | 11.3                                              | -         | 8.7              | -         | 2.2              | -         | 3.7              | -         |
| SAE500/50/2 | 18                                                               | 10        | 20.1                                              | -         | 16.8             | -         | 2.5              | -         | 5.5              | -         |
| SAE200/60/2 | 4                                                                | 4         | 2.9                                               | 4.5       | 1.8              | 2.8       | 0.5              | 0.7       | 1.2              | 2         |
| SAE250/60/2 | 6                                                                | 4         | 4.9                                               | 7.4       | 2.5              | 3.9       | 0.8              | 1.1       | 1.8              | 2.9       |
| SAE300/60/2 | 10                                                               | 6         | 7.7                                               | 11.7      | 6.5              | 10        | 1.2              | 1.5       | 3.1              | 4.9       |
| SAE340/60/2 | 12                                                               | 6         | 10.8                                              | 16.2      | 8.7              | 13.3      | 2.5              | 3.6       | 3.7              | 5.9       |
| SAE200/64/2 | 4                                                                | 4         | 2.8                                               | 4.3       | 1.8              | 2.8       | 0.5              | 0.7       | 1.2              | 2         |
| SAE250/64/2 | 6                                                                | 4         | 4.7                                               | 7.2       | 2.5              | 3.9       | 0.8              | 1.1       | 1.8              | 2.9       |
| SAE300/64/2 | 10                                                               | 6         | 7.4                                               | 11.4      | 6.5              | 10        | 1.2              | 1.5       | 3.1              | 4.9       |
| SAE340/64/2 | 12                                                               | 6         | 10.5                                              | 15.9      | 8.7              | 13.3      | 2.6              | 3.7       | 3.7              | 5.9       |
| SAE380/64/2 | 12                                                               | 6         | 12.6                                              | 17.7      | 8.7              | 13.3      | 2.4              | 3.2       | 3.7              | 5.9       |
| SAE380/66/2 | 12                                                               | 6         | 12.5                                              | 17.7      | 8.7              | 13.3      | 2.4              | 3.2       | 3.7              | 5.9       |
| SAE440/66/2 | 14                                                               | 8         | 15.9                                              | 22.2      | 11               | 16.8      | 2.8              | 3.7       | 4.3              | 6.9       |
| SAE200/70/2 | 4                                                                | 4         | 2.6                                               | 4.1       | 1.8              | 2.8       | 0.5              | 0.7       | 1.2              | 2         |
| SAE250/70/2 | 6                                                                | 4         | 4.5                                               | 6.9       | 2.5              | 3.9       | 0.8              | 1.1       | 1.8              | 2.9       |
| SAE300/70/2 | 10                                                               | 6         | 7.1                                               | 10.9      | 6.5              | 10        | 1.2              | 1.5       | 3.1              | 4.9       |
| SAE340/70/2 | 12                                                               | 6         | 10.2                                              | 15.4      | 8.7              | 13.3      | 2.7              | 3.7       | 3.7              | 5.9       |
| SAE380/70/2 | 12                                                               | 6         | 12.3                                              | 17.7      | 8.7              | 13.3      | 2.4              | 3.2       | 3.7              | 5.9       |

Os valores indicados na tabela acima são válidos para vigota sobre viga e vigota sobre pilar, desde que respeitados os planos de cravação parcial específicos para cada configuração dada em nossa ETE-06/0270 página 17.

SAE-SAEL

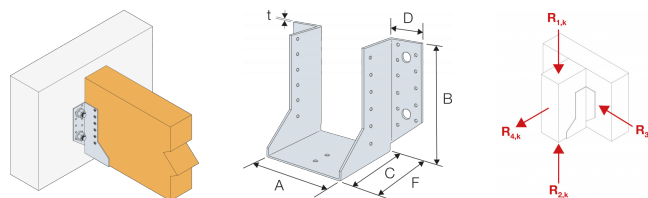
Suporte com abas exteriores

| Referência    | Characteristic capacities - Timber to timber - Partial nailing - |           |                                                   |           |                  |           |                  |           |                  |           |
|---------------|------------------------------------------------------------------|-----------|---------------------------------------------------|-----------|------------------|-----------|------------------|-----------|------------------|-----------|
|               | Fixações                                                         |           | Valores característicos - Madeira classe C24 [kN] |           |                  |           |                  |           |                  |           |
|               | Portador                                                         | Suportado | R <sub>1,k</sub>                                  |           | R <sub>2,k</sub> |           | R <sub>3,k</sub> |           | R <sub>4,k</sub> |           |
|               | Qdad                                                             | Qdad      | CNA4,0x35                                         | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 |
| SAE440/70/2   | 14                                                               | 8         | 15.7                                              | 22.2      | 11               | 16.8      | 2.8              | 3.7       | 4.3              | 6.9       |
| SAEL300/72/2  | 8                                                                | 4         | 7.5                                               | 11.2      | 4.6              | 7.1       | 1.3              | 1.8       | 2.5              | 3.9       |
| SAEL340/72/2  | 10                                                               | 6         | 9.5                                               | 14.2      | 6.4              | 10        | 1.9              | 2.5       | 3.1              | 4.9       |
| SAE380/72/2   | 12                                                               | 6         | 12.2                                              | 17.7      | 8.7              | 13.3      | 2.4              | 3.2       | 3.7              | 5.9       |
| SAE440/72/2   | 14                                                               | 8         | 15.6                                              | 22.2      | 11               | 16.8      | 2.8              | 3.7       | 4.3              | 6.9       |
| SAE200/76/2   | 4                                                                | 4         | 2.5                                               | 3.8       | 1.8              | 2.8       | 0.5              | 0.7       | 1.2              | 2         |
| SAE250/76/2   | 6                                                                | 4         | 4.2                                               | 6.5       | 2.5              | 3.9       | 0.8              | 1.1       | 1.8              | 2.9       |
| SAEL300/76/2  | 8                                                                | 4         | 7.3                                               | 10.9      | 4.6              | 7.1       | 1.3              | 1.8       | 2.5              | 3.9       |
| SAEL340/76/2  | 10                                                               | 6         | 9.3                                               | 14        | 6.4              | 10        | 1.9              | 2.5       | 3.1              | 4.9       |
| SAE380/76/2   | 12                                                               | 6         | 12                                                | 17.7      | 8.7              | 13.3      | 2.4              | 3.2       | 3.7              | 5.9       |
| SAE440/76/2   | 14                                                               | 8         | 15.4                                              | 22.2      | 11               | 16.8      | 2.8              | 3.7       | 4.3              | 6.9       |
| SAE500/76/2   | 18                                                               | 10        | 20.1                                              | 26.6      | 16.8             | 22.2      | 3.2              | 4.3       | 5.5              | 8.8       |
| SAE200/80/2   | 4                                                                | 4         | 2.3                                               | 3.6       | 1.8              | 2.8       | 0.6              | 0.7       | 1.2              | 2         |
| SAE250/80/2   | 6                                                                | 4         | 4.1                                               | 6.3       | 2.5              | 3.9       | 0.8              | 1.1       | 1.8              | 2.9       |
| SAEL300/80/2  | 8                                                                | 4         | 7.1                                               | 10.7      | 4.6              | 7.1       | 1.4              | 1.8       | 2.5              | 3.9       |
| SAEL340/80/2  | 10                                                               | 6         | 9.1                                               | 13.7      | 6.4              | 10        | 1.9              | 2.5       | 3.1              | 4.9       |
| SAE380/80/2   | 12                                                               | 6         | 11.8                                              | 17.5      | 8.7              | 13.3      | 2.4              | 3.2       | 3.7              | 5.9       |
| SAE440/80/2   | 14                                                               | 8         | 15.2                                              | 22.2      | 11               | 16.8      | 2.8              | 3.8       | 4.3              | 6.9       |
| SAE500/80/2   | 18                                                               | 10        | 20.1                                              | 26.6      | 16.8             | 22.2      | 3.3              | 4.3       | 5.5              | 8.8       |
| SAE380/90/2   | 12                                                               | 6         | 11.3                                              | 16.9      | 8.7              | 13.3      | 2.5              | 3.2       | 3.7              | 5.9       |
| SAE440/90/2   | 14                                                               | 8         | 14.8                                              | 21.7      | 11               | 16.8      | 2.9              | 3.8       | 4.3              | 6.9       |
| SAE500/90/2   | 18                                                               | 10        | 20.1                                              | 26.6      | 16.8             | 22.2      | 3.3              | 4.3       | 5.5              | 8.8       |
| SAE380/92/2   | 12                                                               | 6         | 11.2                                              | 16.7      | 8.7              | 13.3      | 2.5              | 3.3       | 3.7              | 5.9       |
| SAE440/95/2   | 14                                                               | 8         | 14.5                                              | 21.4      | 11               | 16.8      | 2.9              | 3.8       | 4.3              | 6.9       |
| SAE500/95/2   | 18                                                               | 10        | 20.1                                              | 26.6      | 16.8             | 22.2      | 3.3              | 4.4       | 5.5              | 8.8       |
| SAEL300/100/2 | 8                                                                | 4         | 6.2                                               | 9.5       | 4.6              | 7.1       | 1.4              | 1.8       | 2.5              | 3.9       |
| SAE380/100/2  | 12                                                               | 6         | 10.8                                              | 16.2      | 8.7              | 13.3      | 2.5              | 3.3       | 3.7              | 5.9       |
| SAE440/100/2  | 14                                                               | 8         | 14.2                                              | 21.1      | 11               | 16.8      | 2.9              | 3.8       | 4.3              | 6.9       |
| SAE500/100/2  | 18                                                               | 10        | 20                                                | 26.6      | 16.8             | 22.2      | 3.3              | 4.4       | 5.5              | 8.8       |
| SAEL500/115/2 | 16                                                               | 8         | 16.8                                              | 22.2      | 13.4             | 17.7      | 3.3              | 4.4       | 4.9              | 7.8       |
| SAEL380/120/2 | 10                                                               | 6         | 9.1                                               | 13.7      | 6.4              | 10        | 1.6              | 2.2       | 3.1              | 4.9       |
| SAEL440/120/2 | 12                                                               | 8         | 12.4                                              | 18.3      | 11.1             | 16.7      | 2                | 2.7       | 3.7              | 5.9       |
| SAEL500/120/2 | 16                                                               | 8         | 16.8                                              | 22.2      | 13.4             | 17.7      | 3.3              | 4.4       | 4.9              | 7.8       |
| SAEL440/136/2 | 12                                                               | 8         | 11.7                                              | 17.3      | 11.1             | 16.7      | 2.1              | 2.7       | 3.7              | 5.9       |
| SAEL500/140/2 | 16                                                               | 8         | 16.1                                              | 22.2      | 13.4             | 17.7      | 3.3              | 4.4       | 4.9              | 7.8       |
| SAEL500/150/2 | 16                                                               | 8         | 15.5                                              | 22.2      | 13.4             | 17.7      | 3.3              | 4.4       | 4.9              | 7.8       |

Os valores indicados na tabela acima são válidos para vigota sobre viga e vigota sobre pilar, desde que respeitados os planos de cravação parcial específicos para cada configuração dada em nossa ETE-06/0270 página 17.



Valores característicos Descendente (em kN)  
– Elemento rígido – Perno WA



| Referência  | Valores característicos - Madeira sobre betão ou aço |      |           |       |                                                   |           |                  |           |                  |           |                  |           |
|-------------|------------------------------------------------------|------|-----------|-------|---------------------------------------------------|-----------|------------------|-----------|------------------|-----------|------------------|-----------|
|             | Fixações                                             |      |           |       | Valores característicos - Madeira classe C24 [kN] |           |                  |           |                  |           |                  |           |
|             | Portador                                             |      | Suportado |       | R <sub>1,k</sub>                                  |           | R <sub>2,k</sub> |           | R <sub>3,k</sub> |           | R <sub>4,k</sub> |           |
|             | Qdad                                                 | Tipo | Qdad      | Tipo  | CNA4,0x35                                         | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 |
| SAE200/32/2 | 2                                                    | Ø10* | 5         | CNA** | 11.7                                              | -         | 8.4              | -         | 2.1              | -         | 5                | -         |
| SAE250/32/2 | 2                                                    | Ø10* | 7         | CNA** | 15.1                                              | -         | 11.7             | -         | 2.8              | -         | 5                | -         |
| SAE300/32/2 | 4                                                    | Ø12* | 10        | CNA** | 20.1                                              | -         | 16.8             | -         | 3.6              | -         | 10               | -         |
| SAE200/38/2 | 2                                                    | Ø10* | 5         | CNA** | 11.7                                              | -         | 8.4              | -         | 2.2              | -         | 5                | -         |
| SAE250/38/2 | 2                                                    | Ø10* | 7         | CNA** | 15.1                                              | -         | 11.7             | -         | 3                | -         | 5                | -         |
| SAE300/38/2 | 4                                                    | Ø12* | 10        | CNA** | 20.1                                              | -         | 16.8             | -         | 4                | -         | 10               | -         |
| SAE340/38/2 | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | -         | 20.1             | -         | 4.5              | -         | 10               | -         |
| SAE440/38/2 | 4                                                    | Ø12* | 15        | CNA** | 28.5                                              | -         | 25.1             | -         | 5                | -         | 10               | -         |
| SAE200/40/2 | 2                                                    | Ø10* | 5         | CNA** | 11.7                                              | -         | 8.4              | -         | 2.3              | -         | 5                | -         |
| SAE250/40/2 | 2                                                    | Ø10* | 7         | CNA** | 15.1                                              | -         | 11.7             | -         | 3.1              | -         | 5                | -         |
| SAE300/40/2 | 4                                                    | Ø12* | 10        | CNA** | 20.1                                              | -         | 16.8             | -         | 4.1              | -         | 10               | -         |
| SAE340/40/2 | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | -         | 20.1             | -         | 4.6              | -         | 10               | -         |
| SAE200/46/2 | 2                                                    | Ø10* | 5         | CNA** | 11.7                                              | -         | 8.4              | -         | 2.4              | -         | 5                | -         |
| SAE250/46/2 | 2                                                    | Ø10* | 7         | CNA** | 15.1                                              | -         | 11.7             | -         | 3.3              | -         | 5                | -         |
| SAE340/46/2 | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | -         | 20.1             | -         | 5                | -         | 10               | -         |
| SAE500/46/2 | 4                                                    | Ø12* | 18        | CNA** | 33.5                                              | -         | 30.2             | -         | 6.2              | -         | 10               | -         |
| SAE200/50/2 | 2                                                    | Ø10* | 5         | CNA** | 11.7                                              | -         | 8.4              | -         | 2.5              | -         | 5                | -         |
| SAE250/50/2 | 2                                                    | Ø10* | 7         | CNA** | 15.1                                              | -         | 11.7             | -         | 3.4              | -         | 5                | -         |
| SAE300/50/2 | 4                                                    | Ø12* | 10        | CNA** | 20.1                                              | -         | 16.8             | -         | 4.6              | -         | 10               | -         |
| SAE340/50/2 | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | -         | 20.1             | -         | 5.2              | -         | 10               | -         |
| SAE500/50/2 | 4                                                    | Ø12* | 18        | CNA** | 33.5                                              | -         | 30.2             | -         | 6.6              | -         | 10               | -         |
| SAE200/60/2 | 2                                                    | Ø10* | 5         | CNA** | 11.7                                              | 15.5      | 8.4              | 11.1      | 2.6              | 4         | 5                | 5         |
| SAE250/60/2 | 2                                                    | Ø10* | 7         | CNA** | 15.1                                              | 19        | 11.7             | 15.5      | 3.6              | 5.4       | 5                | 5         |
| SAE300/60/2 | 4                                                    | Ø12* | 10        | CNA** | 20.1                                              | 26.6      | 16.8             | 22.2      | 4.9              | 7.3       | 10               | 10        |
| SAE340/60/2 | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | 31        | 20.1             | 26.6      | 5.7              | 8.3       | 10               | 10        |
| SAE200/64/2 | 2                                                    | Ø10* | 5         | CNA** | 11.7                                              | 15.5      | 8.4              | 11.1      | 2.7              | 4.1       | 5                | 5         |
| SAE250/64/2 | 2                                                    | Ø10* | 7         | CNA** | 15.1                                              | 19        | 11.7             | 15.5      | 3.7              | 5.6       | 5                | 5         |
| SAE300/64/2 | 4                                                    | Ø12* | 10        | CNA** | 20.1                                              | 26.6      | 16.8             | 22.2      | 5                | 7.5       | 10               | 10        |
| SAE340/64/2 | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | 31        | 20.1             | 26.6      | 5.8              | 8.6       | 10               | 10        |
| SAE380/64/2 | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | 31        | 20.1             | 26.6      | 5.8              | 8.6       | 10               | 10        |
| SAE380/66/2 | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | 31        | 20.1             | 26.6      | 5.9              | 8.7       | 10               | 10        |
| SAE440/66/2 | 4                                                    | Ø12* | 15        | CNA** | 28.5                                              | 37.7      | 25.1             | 33.2      | 6.9              | 10.1      | 10               | 10        |
| SAE200/70/2 | 2                                                    | Ø10* | 5         | CNA** | 11.7                                              | 15.5      | 8.4              | 11.1      | 2.7              | 4.2       | 5                | 5         |
| SAE250/70/2 | 2                                                    | Ø10* | 7         | CNA** | 15.1                                              | 19        | 11.7             | 15.5      | 3.8              | 5.7       | 5                | 5         |
| SAE300/70/2 | 4                                                    | Ø12* | 10        | CNA** | 20.1                                              | 26.6      | 16.8             | 22.2      | 5.2              | 7.8       | 10               | 10        |

\* Refer to the Simpson Strong-Tie anchor product range for suitable anchors. Typical anchor solutions depend on the concrete type, spacing and edge distances. The values in this table are given for an installation in the middle of a concrete slab. In other installation condition (close to the edge,...), the designer must check the anchor separately (Our free software Anchor Designer is available for download on our website).

\*\* Refer to Characteristic Capacity table columns for type of fasteners that can be used in Flange A. Capacities vary depending on fastener type used.

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Suporte com abas exteriores

| Referência    | Valores característicos - Madeira sobre betão ou aço |      |           |       |                                                   |           |                  |           |                  |           |                  |           |
|---------------|------------------------------------------------------|------|-----------|-------|---------------------------------------------------|-----------|------------------|-----------|------------------|-----------|------------------|-----------|
|               | Fixações                                             |      |           |       | Valores característicos - Madeira classe C24 [kN] |           |                  |           |                  |           |                  |           |
|               | Portador                                             |      | Suportado |       | R <sub>1,k</sub>                                  |           | R <sub>2,k</sub> |           | R <sub>3,k</sub> |           | R <sub>4,k</sub> |           |
|               | Qdad                                                 | Tipo | Qdad      | Tipo  | CNA4,0x35                                         | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 | CNA4,0x35        | CNA4,0x50 |
| SAE340/70/2   | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | 31        | 20.1             | 26.6      | 6                | 8.9       | 10               | 10        |
| SAE380/70/2   | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | 31        | 20.1             | 26.6      | 6                | 8.9       | 10               | 10        |
| SAE440/70/2   | 4                                                    | Ø12* | 15        | CNA** | 28.5                                              | 37.7      | 25.1             | 33.2      | 7.1              | 10.4      | 10               | 10        |
| SAEL300/72/2  | 4                                                    | Ø12* | 8         | CNA** | 16.8                                              | 22.2      | 13.4             | 17.7      | 4.2              | 6.4       | 10               | 10        |
| SAEL340/72/2  | 4                                                    | Ø12* | 10        | CNA** | 20.1                                              | 26.6      | 16.8             | 22.2      | 5.1              | 7.7       | 10               | 10        |
| SAE380/72/2   | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | 31        | 20.1             | 26.6      | 6.1              | 9         | 10               | 10        |
| SAE440/72/2   | 4                                                    | Ø12* | 15        | CNA** | 28.5                                              | 37.7      | 25.1             | 33.2      | 7.1              | 10.5      | 10               | 10        |
| SAE200/76/2   | 2                                                    | Ø10* | 5         | CNA** | 11.7                                              | 15.5      | 8.4              | 11.1      | 2.8              | 4.3       | 5                | 5         |
| SAE250/76/2   | 2                                                    | Ø10* | 7         | CNA** | 15.1                                              | 19        | 11.7             | 15.5      | 3.8              | 5.9       | 5                | 5         |
| SAEL300/76/2  | 4                                                    | Ø12* | 8         | CNA** | 16.8                                              | 22.2      | 13.4             | 17.7      | 4.3              | 6.5       | 10               | 10        |
| SAEL340/76/2  | 4                                                    | Ø12* | 10        | CNA** | 20.1                                              | 26.6      | 16.8             | 22.2      | 5.2              | 7.8       | 10               | 10        |
| SAE380/76/2   | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | 31        | 20.1             | 26.6      | 6.2              | 9.2       | 10               | 10        |
| SAE440/76/2   | 4                                                    | Ø12* | 15        | CNA** | 28.5                                              | 37.7      | 25.1             | 33.2      | 7.3              | 10.8      | 10               | 10        |
| SAE500/76/2   | 4                                                    | Ø12* | 18        | CNA** | 33.5                                              | 38        | 30.2             | 37.6      | 8.2              | 12        | 10               | 10        |
| SAE200/80/2   | 2                                                    | Ø10* | 5         | CNA** | 11.7                                              | 15.5      | 8.4              | 11.1      | 2.8              | 4.3       | 5                | 5         |
| SAE250/80/2   | 2                                                    | Ø10* | 7         | CNA** | 15.1                                              | 19        | 11.7             | 15.5      | 3.9              | 5.9       | 5                | 5         |
| SAEL300/80/2  | 4                                                    | Ø12* | 8         | CNA** | 16.8                                              | 22.2      | 13.4             | 17.7      | 4.3              | 6.6       | 10               | 10        |
| SAEL340/80/2  | 4                                                    | Ø12* | 10        | CNA** | 20.1                                              | 26.6      | 16.8             | 22.2      | 5.3              | 8         | 10               | 10        |
| SAE380/80/2   | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | 31        | 20.1             | 26.6      | 6.2              | 9.4       | 10               | 10        |
| SAE440/80/2   | 4                                                    | Ø12* | 15        | CNA** | 28.5                                              | 37.7      | 25.1             | 33.2      | 7.4              | 11        | 10               | 10        |
| SAE500/80/2   | 4                                                    | Ø12* | 18        | CNA** | 33.5                                              | 38        | 30.2             | 37.7      | 8.4              | 12.3      | 10               | 10        |
| SAE380/90/2   | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | 31        | 20.1             | 26.6      | 6.4              | 9.8       | 10               | 10        |
| SAE440/90/2   | 4                                                    | Ø12* | 15        | CNA** | 28.5                                              | 37.7      | 25.1             | 33.2      | 7.7              | 11.6      | 10               | 10        |
| SAE500/90/2   | 4                                                    | Ø12* | 18        | CNA** | 33.5                                              | 38        | 30.2             | 37.7      | 8.8              | 13.1      | 10               | 10        |
| SAE380/92/2   | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | 31        | 20.1             | 26.6      | 6.5              | 9.8       | 10               | 10        |
| SAE440/95/2   | 4                                                    | Ø12* | 15        | CNA** | 28.5                                              | 37.7      | 25.1             | 33.2      | 7.8              | 11.8      | 10               | 10        |
| SAE500/95/2   | 4                                                    | Ø12* | 18        | CNA** | 33.5                                              | 38        | 30.2             | 37.7      | 9                | 13.4      | 10               | 10        |
| SAEL300/100/2 | 4                                                    | Ø12* | 8         | CNA** | 16.8                                              | 22.2      | 13.4             | 17.7      | 4.5              | 7         | 10               | 10        |
| SAE380/100/2  | 4                                                    | Ø12* | 12        | CNA** | 23.5                                              | 31        | 20.1             | 26.6      | 6.6              | 10.1      | 10               | 10        |
| SAE440/100/2  | 4                                                    | Ø12* | 15        | CNA** | 28.5                                              | 37.7      | 25.1             | 33.2      | 7.9              | 12        | 10               | 10        |
| SAE500/100/2  | 4                                                    | Ø12* | 18        | CNA** | 33.5                                              | 38        | 30.2             | 37.7      | 9.1              | 13.7      | 10               | 10        |
| SAEL500/115/2 | 4                                                    | Ø12* | 16        | CNA** | 30.2                                              | 38        | 26.8             | 35.5      | 8.6              | 13        | 10               | 10        |
| SAEL380/120/2 | 4                                                    | Ø12* | 10        | CNA** | 20.1                                              | 26.6      | 16.8             | 22.2      | 5.7              | 8.9       | 10               | 10        |
| SAEL440/120/2 | 4                                                    | Ø12* | 13        | CNA** | 25.1                                              | 33.2      | 21.8             | 28.8      | 7.2              | 11.1      | 10               | 10        |
| SAEL500/120/2 | 4                                                    | Ø12* | 16        | CNA** | 30.2                                              | 38        | 26.8             | 35.5      | 8.6              | 13.2      | 10               | 10        |
| SAEL440/136/2 | 4                                                    | Ø12* | 13        | CNA** | 25.1                                              | 33.2      | 21.8             | 28.8      | 7.4              | 11.4      | 10               | 10        |
| SAEL500/140/2 | 4                                                    | Ø12* | 16        | CNA** | 30.2                                              | 38        | 26.8             | 35.5      | 8.9              | 13.7      | 10               | 10        |
| SAEL500/150/2 | 4                                                    | Ø12* | 16        | CNA** | 30.2                                              | 38        | 26.8             | 35.5      | 9                | 13.9      | 10               | 10        |

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\*\* Refer to Characteristic Capacity table columns for type of fasteners that can be used in Flange A. Capacities vary depending on fastener type used.

# Ficha técnica

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Suporte com abas exteriores

**SIMPSON**

**Strong-Tie**

Valores característicos - Madeira/Madeira - com parafuso SSH para conexões

| Referência | Valores característicos - Madeira/madeira - com parafuso SSH para conexões |            |           |      |                                            |           |                  |           |                  |           |                  |           |
|------------|----------------------------------------------------------------------------|------------|-----------|------|--------------------------------------------|-----------|------------------|-----------|------------------|-----------|------------------|-----------|
|            | Fixações                                                                   |            |           |      | Valores característicos - Madeira C24 [kN] |           |                  |           |                  |           |                  |           |
|            | Portador                                                                   |            | Suportado |      | R <sub>1,k</sub>                           |           | R <sub>2,k</sub> |           | R <sub>3,k</sub> |           | R <sub>4,k</sub> |           |
|            | Qdad                                                                       | Tipo       | Qdad      | Tipo | CNA4.0x35                                  | CNA4.0x50 | CNA4.0x35        | CNA4.0x50 | CNA4.0x35        | CNA4.0x50 | CNA4.0x35        | CNA4.0x50 |
| SAE200/2X  | 2                                                                          | SSH10.0x40 | 5         | CNA* | 5.6                                        | 6.3       | 5.7              | 6.4       | 2.1              | 3.6       | 5                | 5         |
| SAE250/2X  | 2                                                                          | SSH10.0x40 | 7         | CNA* | 7                                          | 7.2       | 6.9              | 7.2       | 2                | 2.7       | 5                | 5         |
| SAE300     | 2                                                                          | SSH12.0x60 | 10        | CNA* | 11.4                                       | 11.5      | 11.4             | 11.5      | 3.4              | 4.1       | 5                | 5         |
| SAEL300/2X | 2                                                                          | SSH12.0x60 | 8         | CNA* | 10.7                                       | 11.4      | 10.8             | 11.4      | 3                | 4.1       | 5                | 5         |
| SAE340     | 4                                                                          | SSH12.0x60 | 12        | CNA* | 18.4                                       | 21        | 18.4             | 21        | 3.8              | 6.4       | 10               | 10        |
| SAEL340/2X | 4                                                                          | SSH12.0x60 | 10        | CNA* | 15.3                                       | 19.1      | 15.3             | 19.7      | 3.4              | 6.2       | 10               | 10        |
| SAE380     | 4                                                                          | SSH12.0x60 | 12        | CNA* | 18.4                                       | 21        | 18.4             | 21        | 3.8              | 5.6       | 10               | 10        |
| SAEL380/2X | 4                                                                          | SSH12.0x60 | 10        | CNA* | 15.3                                       | 19.1      | 15.3             | 19.7      | 3.4              | 5.6       | 10               | 10        |
| SAE440     | 4                                                                          | SSH12.0x60 | 15        | CNA* | 22                                         | 23        | 22               | 23        | 4.2              | 5.3       | 10               | 10        |
| SAEL440/2X | 4                                                                          | SSH12.0x60 | 13        | CNA* | 19.9                                       | 22.7      | 20               | 22.8      | 4                | 5.3       | 10               | 10        |
| SAE500     | 6                                                                          | SSH12.0x60 | 18        | CNA* | 27.7                                       | 33.4      | 27.7             | 33.4      | 4.5              | 6.5       | 15               | 15        |
| SAEL500/2X | 6                                                                          | SSH12.0x60 | 16        | CNA* | 24.6                                       | 31.7      | 24.6             | 32.2      | 4.3              | 6.5       | 15               | 15        |

A tensão transversal deve ser verificada pelo utilizador e pode reger.

A espessura mínima da viga principal para a utilização de um parafuso SSH Ø10x40 é de 38 mm e para SSH Ø12x60 é de 73 mm

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**Suporte com abas exteriores**

## Execução

### Fixações

#### **Em elemento suportado :**

- Pregos canelados CNA Ø4,0 x 50 mm,
- Pregos canelados CNA Ø4,0 x 35 mm para espessuras inferiores a 64 mm,
- Parafuso CSA Ø5,0 x 40 mm,
- Parafuso CSA Ø5,0 x 35 mm para espessuras inferiores a 60 mm.

#### **Em elemento de suporte :**

##### ***Elemento de madeira :***

- Pregos canelados CNA Ø4,0 x 50 mm,
- Pregos canelados CNA Ø4,0 x 35 mm para espessuras inferiores a 64 mm,
- Parafuso CSA Ø5,0 x 40 mm,
- Parafuso CSA Ø5,0 x 35 mm para espessuras inferiores a 60 mm.

##### ***Elemento de aço :***

- Parafusos Ø12 ou Ø10 mm conforme o desenvolvimento (o diâmetro do parafuso não pode ser inferior ao do furo em mais de 2 mm).

##### ***Elemento de betão :***

- Cavilha mecânica : perno FM 753 EVO M10x78/5 (para os SAE200 e 250) e tipo FM 753 EVO M12x104/5 (para os SAE300, 340, 380, 440 e 500),
- Ancoragem química : resina AT-HP com haste roscada LMAS M10-120/25 (para os SAE200 e 250) e LMAS M12-150/35 (para os SAE300, 340, 380, 440 e 500).

##### ***Elemento de alvenaria de blocos ociosos (verificar as capacidades de cargas das ancoragens) :***

- Ancoragem química Ø 10 resina AT-HP ou POLY-GP + haste roscada LMAS M10-120/25 + peneira SH M16-130 (para os SAE200 e 250),
- Resina AT-HP ou POLY-GP + haste roscada LMAS M12-150/35 + peneira SH M20-85 (para os SAE300, 340, 380, 440 e 500).

### Instalação

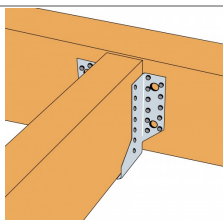
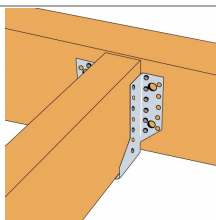
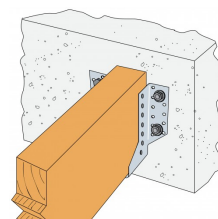
#### **Em madeira :**

1. Traçar a localização da viga suportada sobre a viga.
2. Posicionar o suporte e pré-fixar as abas de cada lado.
3. Ajustar o suporte relativamente aos traçados. O suporte deve estar ligeiramente mais aberto em cima do que em baixo para facilitar a instalação da viga suportada.
4. Finalizar a fixação de cada aba.
5. Posicionar a viga no suporte.
6. Posicionar a viga suportada no suporte.
7. Em madeira, há dois tipos de pregagem total ou parcial.

#### **Em betão :**

1. Método 1 : Traçar a localização dos furos com a ajuda do quadro de posições dos furos, disponível na ficha técnica.
2. Método 2 : Traçar a localização da viga sobre o elemento, posicionar o suporte e identificar o centro dos furos.
3. Perfurar o elemento com uma broca adaptada.
4. Posicionar o suporte e fixar o elemento com pernos de ancoragem.
5. Posicionar a viga suportada no suporte.
6. Fixar a viga sobre o suporte.

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**Suporte com abas exteriores***Clouage total sur bois**Clouage partiel sur bois*

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2024-10-18



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