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Authorised and notified according to Article 29 of the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011



# European Technical Assessment ETA-21/0420 of 2021/05/28

I General Part

**Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011:** ETA-Danmark A/S

| | |
|---|---|
| **Trade name of the construction product:** | Fastening Screws JT2 |
| **Product family to which the above construction product belongs:** | Fastening screws for metal members and sheeting |
| **Manufacturer:** | EJOT Baubefestigungen GmbH<br>Geschäftsbereich Building Fasteners<br>In der Stockwiese 35<br>DE-57334 Bad Laasphe<br>Internet www.ejot.de/bau |
| **Manufacturing plant:** | Manufacturing plants 7,8, 9, 13, 18, 19, 21, 25 and 44 |
| **This European Technical Assessment contains:** | 26 pages including 20 annexes which form an integral part of the document |
| **This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:** | EAD 330046-01-0602, Fastening Screws for Metal Members and Sheeting |
| **This version replaces:** | |

# II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

## 1 Technical description of the product

Fastening screws for metal members and sheeting (self-drilling screws) made of steel. The fastening screws are completed with a metallic washer and an EPDM sealing washer. The fastening screws for metal members and sheeting are made of galvanised/painted carbon steel. The fastening screws can be completed with sealing washers consisting of metal washer and EPDM seal.

**Table 1 – Fastening screws of the corresponding ETA and their field of application**

| Annex | Fastening screw | Component I | Component II |
|---|---|---|---|
| 3 | JT2-2-Plus-5,5xL F12 | S280GD to S350GD | S235 to S275<br>S280GD to S450GD<br>HX300LAD to HX460LAD |
| 4 | JT2-2H-Plus-5,5xL F12 | S280GD to S350GD | S235 to S275<br>S280GD to S450GD<br>HX300LAD to HX460LAD |
| 5 | JT2-2H-Plus-5,5xL F12 | S280GD to S350GD | S235 to S275<br>S280GD to S450GD<br>HX300LAD to HX460LAD |
| 6 | JT2-2H-Plus-5,5xL F12 | S280GD to S350GD | S235 to S275<br>S280GD to S450GD<br>HX300LAD to HX460LAD |
| 7 | JT2-2H-Plus-5,5xL F12 | S280GD to S350GD | S235 to S275<br>S280GD to S450GD<br>HX300LAD to HX460LAD |
| 8 | JT2-2H-Plus-5,5xL F12 | S280GD to S350GD | S235 to S275<br>S280GD to S350GD<br>HX300LAD to HX460LAD |
| 9 | JT2-6-5,5xL F12 | S280GD to S350GD | S235 to S355<br>S280GD to S350GD<br>HX300LAD to HX460LAD |
| 10 | JT2-6-5,5xL F12 | S280GD to S350GD | S235 to S355<br>S280GD to S350GD<br>HX300LAD to HX460LAD |
| 11 | JT2-6-5,5xL F12 | S280GD to S350GD | S235 to S355<br>S280GD to S350GD<br>HX300LAD to HX460LAD |
| 12 | JT2-12-5,5xL F12 | S280GD to S350GD | S235 to S355 |
| 13 | JT2-12-5,5xL F12 | S280GD to S350GD | S235 to S355 |
| 14 | JT2-12-5,5xL F12 | S280GD to S350GD | S235 to S355 |
| 15 | JT2-18-5,5xL F12 | S280GD to S350GD | S235 to S355 |
| 16 | JT2-18-5,5xL F12 | S280GD to S350GD | S235 to S355 |
| 17 | JT2-18-5,5xL F12 | S280GD to S350GD | S235 to S355 |
| 18 | JT2-6-6,3xL F12 | S280GD to S350GD | S235 to S355<br>S280GD to S350GD |
| 19 | JT2-6-6,3xL F12 | S280GD to S350GD | S235 to S355<br>S280GD to S350GD |
| 20 | JT2-6-6,3xL F12 | S280GD to S350GD | S235 to S355<br>S280GD to S350GD |

## 2 Specification of the intended use in accordance with the applicable EAD 330046-01-0602

The fastening screws are intended to be used for fastening metal sheeting made of steel according to EN 10346 to substructures made of steel according to EN 10025 or EN 10346. The sheeting can either be used as wall or roof cladding or as load bearing wall and roof element. The fastening screws can also be used for the fastening of any other thin gauge metal members. The intended use comprises fastening screws and connections for indoor and outdoor applications.

Fastening screws which are intended to be used in external environments with ≥ C2 corrosion according to the standard EN ISO 12944-2 are made of stainless steel. Furthermore, the intended use comprises connections with predominantly static loads (e.g. wind loads, dead loads). The fastening screws are not intended for re-use.

The performances given in Section 3 are only valid if the fastening screws are used in compliance with the specifications and conditions given in Annex 1 to 20.

The provisions made in this European Technical Assessment are based on an assumed intended working life of the screws of 25 years.

The indications given on the intended working life cannot be interpreted as a guarantee given by the producer or the Technical Assessment Body, but are to be regarded only as a means for selecting the appropriate products in relation to the expected economically reasonable working life of the works.

The real working life might be, in normal use conditions, considerably longer without major degradation affecting the Basic requirements for construction works.

# 3 Performance of the product and references to the methods used for its assessment

Performances of the fasteners, related to the basic requirements for construction works (hereinafter BWR), were determined according to EAD 330046-01-0602.

These performances, given in the following paragraphs, are valid as long as the components are the ones described in § 1 and Annexes 1 to 20 of this ETA.

| Characteristic | | Assessment of characteristic |
|---|---|---|
| **3.1** | **Mechanical resistance and stability (BWR 1)** | |
| | Shear Resistance of the Connection | See Annexes to this ETA |
| | Tension Resistance of the Connection | See Annexes to this ETA |
| | Design Resistance in case of combined Tension and Shear Forces (interaction) | See Annex 2 to this ETA |
| | Check of Deformation Capacity in case of constraining forces due to temperature | See Annex 2 to this ETA |
| | Durability | See Annex 4 to 20, material of the fasteners |
| **3.2** | **Safety in case of fire (BWR2)** | |
| | Reaction to fire | The screws are made from steel classified as Euroclass A1 in accordance with EN 13501-1 and Commission Delegated Regulation 2016/364 |

# 4 Attestation and verification of constancy of performance (AVCP)

## 4.1 AVCP system

According to the decision 1998/214/EC of the European Commission 1, as amended by 2001/596/EC, the system of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) is:

**2+**

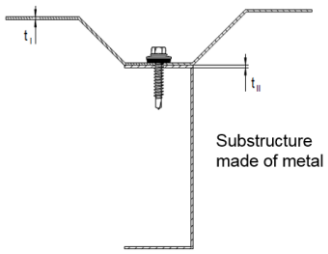
# 5 Technical details necessary for the implementation of the AVCP system, as foreseen in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking.

Issued in Copenhagen on 2021-05-28 by

Thomas Bruun
Managing Director, ETA-Danmark

## Examples of execution and connection




## Materials and dimensions

Design relevant Materials and dimensions are indicated in the Annexes of the fastening screws:

| | |
|---|---|
| Fastener | Materials of the fastening screw |
| Washer | Materials of the sealing washer |
| Component I | Materials of the metal member and sheeting |
| Component II | Materials of the substructure |

| | |
|---|---|
| $t_{N,I}$ | Thickness of component I |
| $t_{N,II}$ | Thickness of component II made of metal |
| $M_{t,nom}$ | Tightening torque of screw |

The thickness $t_{N,II}$ corresponds to the load-bearing screw-in length of the fastening screw in component II, if the load-bearing screw-in length does not cover the entire component thickness.

## Performance characteristics

The design relevant performance characteristics of a connection are indicated in the Annexes of the fastening screws.

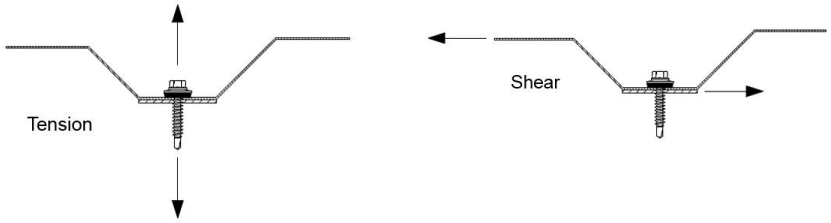
| | |
|---|---|
| $N_{R,k}$ | Characteristic value of tension resistance |
| $V_{R,k}$ | Characteristic value of shear resistance |

In some cases component-specific performance characteristics are indicated for an individual calculation in the design relevant performance characteristics of a connection:

| | |
|---|---|
| $N_{R,I,k}$ | Characteristic value of pull-through resistance for component I |
| $N_{R,II,k}$ | Characteristic value of pull-out resistance for component II |
| $V_{R,I,k}$ | Characteristic value of hole bearing resistance for component I |
| $V_{R,II,k}$ | Characteristic value of hole bearing resistance for component II |

| | |
|---|---|
| **Fastening screws JT2** | **Annex 1** |
| **Terms and explanations** | |

## Occurred loadings of a connection




## Design values

The design values of tension and shear resistance of a connection have to be determined as following:

$N_{R,d}$ Design value of tension resistance
$V_{R,d}$ Design value of shear resistance
$\gamma_M$ Partial safety factor

The recommended partial safety factor $\gamma_M$ is 1,33, provided no partial safety factor is given in national regulations or national Annexes to Eurocode 3.

## Special conditions

If the component thickness $t_{N,I}$ or $t_{N,II}$ lies in between two indicated component thicknesses, the characteristic value may be calculated by linear interpolation.

For asymmetric components II made of metal (e.g. Z- or C-shaped profiles) with component thickness $t_{N,II} < 5$ mm, the characteristic value $N_{R,k}$ has to be reduced to 70%.

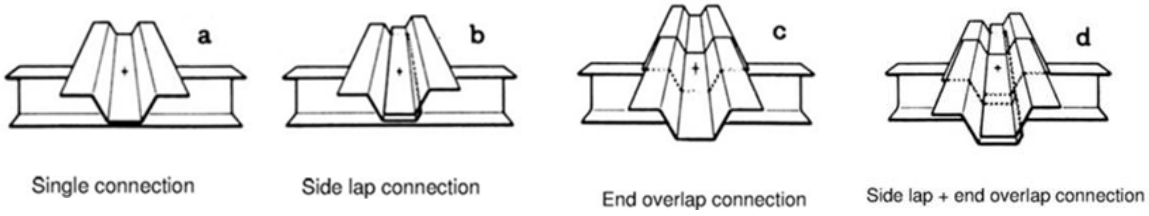
In case of combined loading by tension and shear forces the following interaction, equation has to be taken into account:

$$\frac{N_{S,d}}{N_{R,d}} + \frac{V_{S,d}}{V_{R,d}} \leq 1{,}0$$

$N_{S,d}$ Design value of the applied tension forces
$V_{S,d}$ Design value of the applied shear forces

## Types of connection

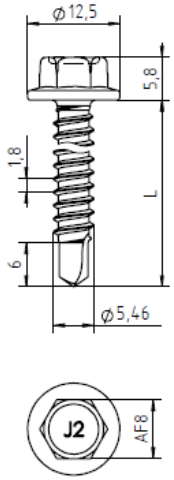
For the types of connection (a,b,c,d) given in the Annexes of the fastening screws, it is not necessary to take into account the effect of constraints due to temperature. For other types of connection, the effect of constraints have to be taken into account, unless they do not occur are not significant (e.g. sufficient flexibility of the substructure).




## Installation conditions

The installation is carried out according to manufacturer`s instruction.
The load-bearing screw-in length of the fastening screw specified by the manufacturer has to be taken into account.
The fastening screws have to be processed with suitable drill driver (e.g. cordless drill driver with depth control). The use of impact wrench is not allowed.
The fastening screws have to be fixed rectangular to the surface of the component.
Component I and component II have to be in direct contact to each other. The use of compression resistant thermal insulation strips up to a thickness of 3 mm is allowed.

| | |
|---|---|
| **Fastening screws JT2** | **Annex 2** |
| **Terms and explanations** | |




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S235 to S275 – EN 10025-1
S280GD, to S450GD – EN 10346
HX300LAD to HX460LAD – EN 10346

**Specifications:**

Drilling capacity: $\Sigma t_i \leq 3{,}5$ mm

Ø-Drill point: 3,9 mm

$M_{t,nom}$: max. 2,5 Nm

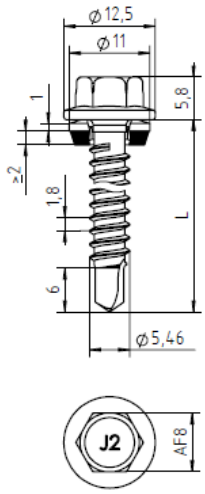
| $t_{N,II}$ [mm] | | 0,40 | 0,50 | 0,55 | 0,63 | 0,75 | 0,88 | 1,00 | 1,13 | 1,25 | 1,50 | 2,00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 0,66 | 0,95 | 1,02 | 1,13 | 1,30 | 1,48 | 1,65 | 1,83 | 1,91 | 1,91 | 1,91 |
| | **0,55** | 0,66 | 0,95 | 1,11 | 1,21 | 1,37 | 1,54 | 1,70 | 1,88 | 2,03 | 2,12 | 2,12 |
| | **0,63** | 0,66 | 0,95 | 1,11 | 1,38 | 1,52 | 1,68 | 1,83 | 1,99 | 2,13 | 2,43 | 2,45 |
| | **0,75** | 0,66 | 0,95 | 1,11 | 1,38 | 1,81 | 1,96 | 2,08 | 2,22 | 2,35 | 2,62 | 2,88 |
| | **0,88** | 0,66 | 0,95 | 1,11 | 1,38 | 1,81 | 2,34 | 2,45 | 2,57 | 2,68 | 2,91 | 3,14 |
| | **1,00** | 0,66 | 0,95 | 1,11 | 1,38 | 1,81 | 2,34 | 2,86 | 2,96 | 3,06 | 3,25 | 3,45 |
| | **1,13** | 0,66 | 0,95 | 1,11 | 1,38 | 1,81 | 2,34 | 2,86 | 3,46 | 3,54 | 3,70 | 3,87 |
| | **1,25** | 0,66 | 0,95 | 1,11 | 1,38 | 1,81 | 2,34 | 2,86 | 3,46 | 4,05 | 4,18 | 4,32 |
| | **1,50** | 0,66 | 0,95 | 1,11 | 1,38 | 1,81 | 2,34 | 2,86 | 3,46 | 4,05 | 5,36 | 5,44 |
| | **1,75** | 0,66 | 0,95 | 1,11 | 1,38 | 1,81 | 2,34 | 2,86 | 3,46 | 4,05 | 5,36 | — |
| | **2,00** | 0,66 | 0,95 | 1,11 | 1,38 | 1,81 | 2,34 | 2,86 | 3,46 | 4,05 | 5,36 | — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,04 | 1,04 | 1,04 | 1,04 | 1,04 | 1,04 |
| | **0,55** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,59 | 1,59 | 1,59 | 1,59 |
| | **0,63** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,16 | 2,16 |
| | **0,75** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **0,88** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,00** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,13** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,25** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,50** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,75** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | — |
| | **2,00** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | — |
| **$N_{R,II,k}$ [kN]** | | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |

- Component I of steel S320GD or S350GD and component II of S320GD to S450GD or HX340LAD to HX460LAD: The values can be increased by 8,3 %.

**Fastening screws JT2**

Self-drilling screw
**JT2-2-Plus-5,5xL F12**
with hexagon head

**Annex 3**




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

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Component I: S280GD to S350GD – EN 10346

Component II: S235 to S275 – EN 10025-1
S280GD, to S450GD – EN 10346
HX300LAD to HX460LAD – EN 10346

**Specifications:**

Drilling capacity: Σti ≤ 3,5 mm

Ø-Drill point: 3,9 mm

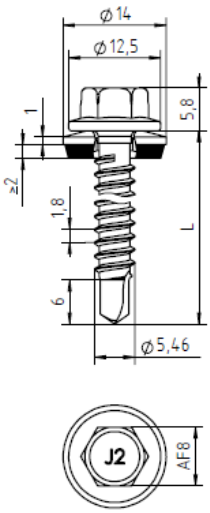
| $t_{N,II}$ [mm] | | 0,40 | 0,50 | 0,55 | 0,63 | 0,75 | 0,88 | 1,00 | 1,13 | 1,25 | 1,50 | 2,00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 0,56 | 0,60 | 0,64 | 0,68 | 0,83 | 0,98 | 1,13 | 1,13 | 1,13 | 1,13 | 1,13 |
| | **0,55** | 0,58 | 0,67 | 0,73 | 0,78 | 0,94 | 1,09 | 1,25 | 1,25 | 1,25 | 1,25 | 1,25 |
| | **0,63** | 0,60 | 0,71 | 0,82 | 0,87 | 1,04 | 1,21 | 1,38 | 1,38 | 1,38 | 1,38 | 1,38 |
| | **0,75** | 0,62 | 0,74 | 0,86 | 0,97 | 1,15 | 1,33 | 1,51 | 1,51 | 1,51 | 1,51 | 1,51 |
| | **0,88** | 0,62 | 0,74 | 0,86 | 1,02 | 1,42 | 2,04 | 2,67 | 2,67 | 2,67 | 2,67 | 2,67 |
| | **1,00** | 0,62 | 0,74 | 0,86 | 1,06 | 1,56 | 2,15 | 2,77 | 2,77 | 2,77 | 2,77 | 2,77 |
| | **1,13** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | 3,92 |
| | **1,25** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | 3,92 |
| | **1,50** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | 3,92 |
| | **1,75** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | — |
| | **2,00** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,21 | 1,21 | 1,21 | 1,21 | 1,21 |
| | **0,55** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,35 | 1,35 | 1,35 | 1,35 | 1,35 |
| | **0,63** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,56 | 1,56 | 1,56 | 1,56 |
| | **0,75** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,87 | 1,87 | 1,87 |
| | **0,88** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,22 | 2,22 |
| | **1,00** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,53 | 2,53 |
| | **1,13** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,25** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,50** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,75** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | — |
| | **2,00** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | — |
| **$N_{R,II,k}$ [kN]** | | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |

- Component I of steel S320GD or S350GD and component II of S320GD to S450GD or HX340LAD to HX460LAD: The values can be increased by 8,3 %.

**Fastening screws JT2**

Self-drilling screw
**JT2-2H-Plus-5,5xL F12**
with hexagon head, undercut and sealing washer ≥ Ø11 mm

**Annex 4**




**Materials:**

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Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S235 to S275 – EN 10025-1
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HX300LAD to HX460LAD – EN 10346

**Specifications:**

Drilling capacity: Σti ≤ 3,5 mm

Ø-Drill point: 3,9 mm

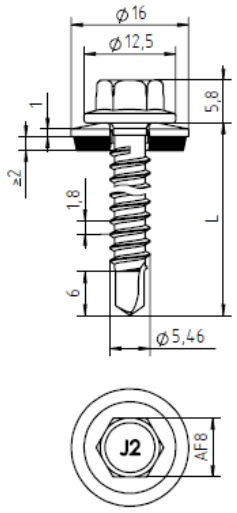
| $t_{N,II}$ [mm] | | 0,40 | 0,50 | 0,55 | 0,63 | 0,75 | 0,88 | 1,00 | 1,13 | 1,25 | 1,50 | 2,00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 0,56 | 0,60 | 0,64 | 0,68 | 0,83 | 0,98 | 1,13 | 1,13 | 1,13 | 1,13 | 1,13 |
| | **0,55** | 0,58 | 0,67 | 0,73 | 0,78 | 0,94 | 1,09 | 1,25 | 1,25 | 1,25 | 1,25 | 1,25 |
| | **0,63** | 0,60 | 0,71 | 0,82 | 0,87 | 1,04 | 1,21 | 1,38 | 1,38 | 1,38 | 1,38 | 1,38 |
| | **0,75** | 0,62 | 0,74 | 0,86 | 0,97 | 1,15 | 1,33 | 1,51 | 1,51 | 1,51 | 1,51 | 1,51 |
| | **0,88** | 0,62 | 0,74 | 0,86 | 1,02 | 1,42 | 2,04 | 2,67 | 2,67 | 2,67 | 2,67 | 2,67 |
| | **1,00** | 0,62 | 0,74 | 0,86 | 1,06 | 1,56 | 2,15 | 2,77 | 2,77 | 2,77 | 2,77 | 2,77 |
| | **1,13** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | 3,92 |
| | **1,25** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | 3,92 |
| | **1,50** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | 3,92 |
| | **1,75** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | — |
| | **2,00** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,55 | 1,55 | 1,55 | 1,55 |
| | **0,55** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,71 | 1,71 | 1,71 |
| | **0,63** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,98 | 1,98 | 1,98 |
| | **0,75** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,39 | 2,39 |
| | **0,88** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,00** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,13** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,25** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,50** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,75** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | — |
| | **2,00** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | — |
| **$N_{R,II,k}$ [kN]** | | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |

– Component I of steel S320GD or S350GD and component II of S320GD to S450GD or HX340LAD to HX460LAD: The values can be increased by 8,3 %.

**Fastening screws JT2**

Self-drilling screw
**JT2-2H-Plus-5,5xL F12**
with hexagon head, undercut and sealing washer ≥ Ø14 mm

**Annex 5**




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S235 to S275 – EN 10025-1
S280GD, to S450GD – EN 10346
HX300LAD to HX460LAD – EN 10346

**Specifications:**

Drilling capacity: Σti ≤ 3,5 mm

Ø-Drill point: 3,9 mm

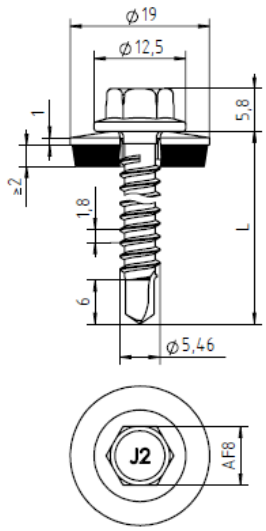
| $t_{N,II}$ [mm] | | 0,40 | 0,50 | 0,55 | 0,63 | 0,75 | 0,88 | 1,00 | 1,13 | 1,25 | 1,50 | 2,00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 0,56 | 0,60 | 0,64 | 0,68 | 0,83 | 0,98 | 1,13 | 1,13 | 1,13 | 1,13 | 1,13 |
| | **0,55** | 0,58 | 0,67 | 0,73 | 0,78 | 0,94 | 1,09 | 1,25 | 1,25 | 1,25 | 1,25 | 1,25 |
| | **0,63** | 0,60 | 0,71 | 0,82 | 0,87 | 1,04 | 1,21 | 1,38 | 1,38 | 1,38 | 1,38 | 1,38 |
| | **0,75** | 0,62 | 0,74 | 0,86 | 0,97 | 1,15 | 1,33 | 1,51 | 1,51 | 1,51 | 1,51 | 1,51 |
| | **0,88** | 0,62 | 0,74 | 0,86 | 1,02 | 1,42 | 2,04 | 2,67 | 2,67 | 2,67 | 2,67 | 2,67 |
| | **1,00** | 0,62 | 0,74 | 0,86 | 1,06 | 1,56 | 2,15 | 2,77 | 2,77 | 2,77 | 2,77 | 2,77 |
| | **1,13** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | 3,92 |
| | **1,25** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | 3,92 |
| | **1,50** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | 3,92 |
| | **1,75** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | — |
| | **2,00** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,65 | 1,65 | 1,65 | 1,65 |
| | **0,55** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,83 | 1,83 | 1,83 |
| | **0,63** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,23 | 2,23 |
| | **0,75** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **0,88** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,00** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,13** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,25** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,50** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,75** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | — |
| | **2,00** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | — |
| $N_{R,II,k}$ [kN] | | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |

– Component I of steel S320GD or S350GD and component II of S320GD to S450GD or HX340LAD to HX460LAD: The values can be increased by 8,3 %.

**Fastening screws JT2**

Self-drilling screw
**JT2-2H-Plus-5,5xL F12**
with hexagon head, undercut and sealing washer ≥ Ø16 mm

**Annex 6**




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S235 to S275 – EN 10025-1
S280GD, to S450GD – EN 10346
HX300LAD to HX460LAD – EN 10346

**Specifications:**

Drilling capacity: Σti ≤ 3,5 mm

Ø-Drill point: 3,9 mm

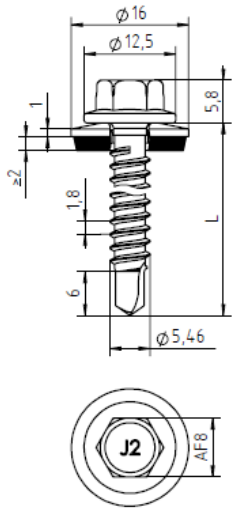
| $t_{N,II}$ [mm] | | 0,40 | 0,50 | 0,55 | 0,63 | 0,75 | 0,88 | 1,00 | 1,13 | 1,25 | 1,50 | 2,00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 0,56 | 0,60 | 0,64 | 0,68 | 0,83 | 0,98 | 1,13 | 1,13 | 1,13 | 1,13 | 1,13 |
| | **0,55** | 0,58 | 0,67 | 0,73 | 0,78 | 0,94 | 1,09 | 1,25 | 1,25 | 1,25 | 1,25 | 1,25 |
| | **0,63** | 0,60 | 0,71 | 0,82 | 0,87 | 1,04 | 1,21 | 1,38 | 1,38 | 1,38 | 1,38 | 1,38 |
| | **0,75** | 0,62 | 0,74 | 0,86 | 0,97 | 1,15 | 1,33 | 1,51 | 1,51 | 1,51 | 1,51 | 1,51 |
| | **0,88** | 0,62 | 0,74 | 0,86 | 1,02 | 1,42 | 2,04 | 2,67 | 2,67 | 2,67 | 2,67 | 2,67 |
| | **1,00** | 0,62 | 0,74 | 0,86 | 1,06 | 1,56 | 2,15 | 2,77 | 2,77 | 2,77 | 2,77 | 2,77 |
| | **1,13** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | 3,92 |
| | **1,25** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | 3,92 |
| | **1,50** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | 3,92 |
| | **1,75** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | — |
| | **2,00** | 0,62 | 0,74 | 0,86 | 1,11 | 1,70 | 2,28 | 2,87 | 3,22 | 3,57 | 3,92 | — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,10 | 2,10 |
| | **0,55** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,33 | 2,33 |
| | **0,63** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **0,75** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **0,88** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,00** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,13** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,25** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,50** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |
| | **1,75** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | — |
| | **2,00** | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | — |
| **$N_{R,II,k}$ [kN]** | | 0,30 | 0,41 | 0,47 | 0,56 | 0,73 | 1,06 | 1,40 | 1,71 | 1,99 | 2,59 | 2,59 |

– Component I of steel S320GD or S350GD and component II of S320GD to S450GD or HX340LAD to HX460LAD: The values can be increased by 8,3 %.

**Fastening screws JT2**

Self-drilling screw
**JT2-2H-Plus-5,5xL F12**
with hexagon head, undercut and sealing washer ≥ Ø19 mm

**Annex 7**




**Materials:**

| | |
|---|---|
| Fastener: | Carbon steel,<br>case hardened and corrosion-resistant |
| Washer: | Carbon steel, corrosion-resistant,<br>stainless steel (A2) – EN ISO 3506<br>with vulcanised EPDM seal |
| Component I: | S280GD to S350GD – EN 10346 |
| Component II: | S235 to S275 – EN 10025-1<br>S280GD, to S450GD – EN 10346<br>HX300LAD to HX460LAD – EN 10346 |

**Specifications:**

| | |
|---|---|
| Drilling capacity: | Σti ≤ 3,5 mm |
| Ø-Drill point: | 3,9 mm |

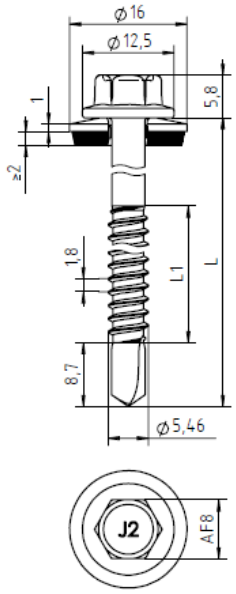
| $t_{N,II}$ [mm] | | 2 x 0,63 | 2 x 0,75 | 2 x 0,88 | 2 x 1,00 | 2 x 1,13 | 2 x 1,25 |
|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,40** | — | — | — | — | — | — |
| | **0,50** | — | — | — | — | — | — |
| | **0,55** | — | — | — | — | — | — |
| | **0,63** | 1,65 | 1,78 | 1,91 | 2,04 | 2,04 | 2,04 |
| | **0,75** | 1,65 | 2,60 | 2,76 | 2,92 | 2,92 | 2,92 |
| | **0,88** | 1,65 | 2,60 | 3,39 | 3,55 | 3,55 | 3,55 |
| | **1,00** | 1,65 | 2,60 | 3,39 | 4,17 | 4,17 | 4,17 |
| | **1,13** | 1,65 | 2,60 | 3,39 | 4,17 | 4,17 | — |
| | **1,25** | 1,65 | 2,60 | 3,39 | 4,17 | — | — |
| | **1,50** | 1,65 | 2,60 | 3,39 | 4,17 | — | — |
| | **1,75** | 1,65 | 2,60 | — | — | — | — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,40** | 1,01 | 1,48 | 1,48 | 1,48 | 1,48 | 1,48 |
| | **0,50** | 1,01 | 1,65 | 1,65 | 1,65 | 1,65 | 1,65 |
| | **0,55** | 1,01 | 1,78 | 1,83 | 1,83 | 1,83 | 1,83 |
| | **0,63** | 1,01 | 1,78 | 2,23 | 2,23 | 2,23 | 2,23 |
| | **0,75** | 1,01 | 1,78 | 2,31 | 2,84 | 2,84 | 2,84 |
| | **0,88** | 1,01 | 1,78 | 2,31 | 2,84 | 2,84 | 2,84 |
| | **1,00** | 1,01 | 1,78 | 2,31 | 2,84 | 2,84 | 2,84 |
| | **1,13** | 1,01 | 1,78 | 2,31 | 2,84 | 2,84 | — |
| | **1,25** | 1,01 | 1,78 | 2,31 | 2,84 | — | — |
| | **1,50** | 1,01 | 1,78 | 2,31 | 2,84 | — | — |
| | **1,75** | 1,01 | 1,78 | — | — | — | — |

- Component I of steel S320GD or S350GD and component II of S320GD to S450GD or HX340LAD to HX460LAD: The values can be increased by 8,3 %.

**Fastening screws JT2**

Self-drilling screw
**JT2-2H-Plus-5,5xL F12**
with hexagon head, undercut and sealing washer ≥ Ø16 mm

**Annex 8**




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S235 to S355 – EN 10025-1
S280GD to S450GD – EN 10346
HX300LAD to HX460LAD – EN 10346

**Specifications:**

Drilling capacity: Σti ≤ 6,0 mm

Ø-Drill point: 4,5 mm

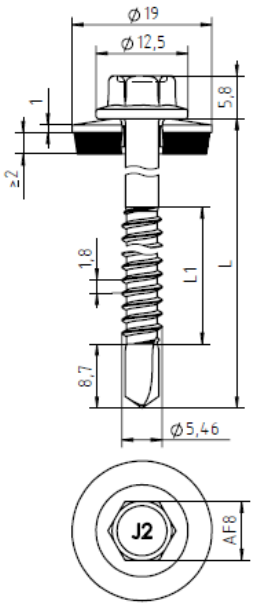
Thread length L1: ≥ 10 mm

| $t_{N,II}$ [mm] | | 1,50 | | 2,00 | | 2,50 | | 3,00 | | 4,00 | | 5,00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,13 | ac | 1,13 | ac | 1,13 | ac | 1,13 | ac | 1,91 | ac | 1,91 | ac |
| | **0,55** | 1,25 | ac | 1,25 | ac | 1,25 | ac | 1,25 | ac | 2,12 | ac | 2,12 | ac |
| | **0,63** | 2,40 | ac | 2,80 | ac | 2,80 | ac | 2,80 | abcd | 3,80 | abcd | 3,80 | abcd |
| | **0,75** | 2,70 | — | 3,50 | ac | 3,50 | ac | 3,50 | ac | 4,60 | ac | 4,60 | ac |
| | **0,88** | 3,10 | — | 4,20 | — | 4,20 | ac | 4,20 | ac | 5,30 | ac | 5,30 | ac |
| | **1,00** | 3,40 | — | 4,50 | — | 4,50 | ac | 4,50 | ac | 6,00 | ac | 6,00 | ac |
| | **1,13** | 3,80 | — | 4,90 | — | 4,90 | — | 4,90 | ac | 6,70 | ac | — | — |
| | **1,25** | 4,10 | — | 5,30 | — | 5,30 | — | 5,30 | ac | 7,30 | ac | — | — |
| | **1,50** | 5,00 | — | 6,00 | — | 6,00 | — | 6,00 | — | 8,10 | — | — | — |
| | **1,75** | 5,00 | — | 6,00 | — | 6,00 | — | 6,00 | — | 8,10 | — | — | — |
| | **2,00** | 5,00 | — | 6,00 | — | 6,00 | — | 6,00 | — | 8,10 | — | — | — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,46 | ac | 1,46 | ac | 1,46 | ac | 1,46 | abcd | 1,46 | abcd | 1,46 | abcd |
| | **0,55** | 1,84 | ac | 1,84 | ac | 1,84 | ac | 1,84 | abcd | 1,84 | abcd | 1,84 | abcd |
| | **0,63** | 1,90 | ac | 2,60 | ac | 2,70 | ac | 2,70 | abcd | 2,70 | abcd | 2,70 | abcd |
| | **0,75** | 1,90 | — | 2,60 | ac | 3,64 | ac | 3,64 | ac | 3,64 | ac | 3,64 | ac |
| | **0,88** | 1,90 | — | 2,60 | — | 4,23 | ac | 4,32 | ac | 4,32 | ac | 4,32 | ac |
| | **1,00** | 1,90 | — | 2,60 | — | 4,23 | ac | 4,97 | ac | 4,97 | ac | 4,97 | ac |
| | **1,13** | 1,90 | — | 2,60 | — | 4,23 | — | 5,01 | — | 5,63 | ac | — | — |
| | **1,25** | 1,90 | — | 2,60 | — | 4,23 | — | 5,01 | — | 6,20 | ac | — | — |
| | **1,50** | 1,90 | — | 2,60 | — | 4,23 | — | 5,01 | — | 7,04 | — | — | — |
| | **1,75** | 1,90 | — | 2,60 | — | 4,23 | — | 5,01 | — | 7,04 | — | — | — |
| | **2,00** | 1,90 | — | 2,60 | — | 4,23 | — | 5,01 | — | 7,04 | — | — | — |
| $N_{R,II,k}$ [kN] | | 1,90 | | 2,60 | | 4,23 | | 5,01 | | 7,04 | | 8,28 | |

**Fastening screws JT2**

Self-drilling screw
**JT2-6-5,5xL F12**
with hexagon head and sealing washer ≥ Ø16 mm

**Annex 9**




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S235 to S355 – EN 10025-1
S280GD to S450GD – EN 10346
HX300LAD to HX460LAD – EN 10346

**Specifications:**

Drilling capacity: Σti ≤ 6,0 mm

Ø-Drill point: 4,5 mm

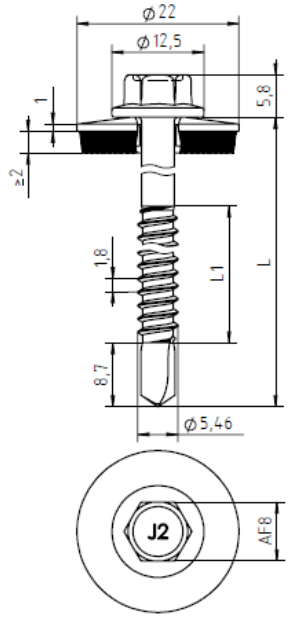
Thread length L1: ≥ 10 mm

| $t_{N,II}$ [mm] | | 1,50 | | 2,00 | | 2,50 | | 3,00 | | 4,00 | | 5,00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,13 | ac | 1,13 | ac | 1,13 | ac | 1,13 | ac | 1,91 | ac | 1,91 | ac |
| | **0,55** | 1,25 | ac | 1,25 | ac | 1,25 | ac | 1,25 | ac | 2,12 | ac | 2,12 | ac |
| | **0,63** | 2,40 | ac | 2,80 | ac | 2,80 | ac | 2,80 | abcd | 3,80 | abcd | 3,80 | abcd |
| | **0,75** | 2,70 | — | 3,50 | ac | 3,50 | ac | 3,50 | ac | 4,60 | ac | 4,60 | ac |
| | **0,88** | 3,10 | — | 4,20 | — | 4,20 | ac | 4,20 | ac | 5,30 | ac | 5,30 | ac |
| | **1,00** | 3,40 | — | 4,50 | — | 4,50 | ac | 4,50 | ac | 6,00 | ac | 6,00 | ac |
| | **1,13** | 3,80 | — | 4,90 | — | 4,90 | — | 4,90 | ac | 6,70 | ac | — | — |
| | **1,25** | 4,10 | — | 5,30 | — | 5,30 | — | 5,30 | ac | 7,30 | ac | — | — |
| | **1,50** | 5,00 | — | 6,00 | — | 6,00 | — | 6,00 | — | 8,10 | — | — | — |
| | **1,75** | 5,00 | — | 6,00 | — | 6,00 | — | 6,00 | — | 8,10 | — | — | — |
| | **2,00** | 5,00 | — | 6,00 | — | 6,00 | — | 6,00 | — | 8,10 | — | — | — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,46 | ac | 1,46 | ac | 1,46 | ac | 1,46 | abcd | 1,46 | abcd | 1,46 | abcd |
| | **0,55** | 1,84 | ac | 1,84 | ac | 1,84 | ac | 1,84 | abcd | 1,84 | abcd | 1,84 | abcd |
| | **0,63** | 1,90 | ac | 2,60 | ac | 2,70 | ac | 2,70 | abcd | 2,70 | abcd | 2,70 | abcd |
| | **0,75** | 1,90 | — | 2,60 | ac | 4,23 | ac | 4,33 | ac | 4,33 | ac | 4,33 | ac |
| | **0,88** | 1,90 | — | 2,60 | — | 4,23 | ac | 5,01 | ac | 5,13 | ac | 5,13 | ac |
| | **1,00** | 1,90 | — | 2,60 | — | 4,23 | ac | 5,01 | ac | 5,91 | ac | 5,91 | ac |
| | **1,13** | 1,90 | — | 2,60 | — | 4,23 | — | 5,01 | — | 6,68 | ac | — | — |
| | **1,25** | 1,90 | — | 2,60 | — | 4,23 | — | 5,01 | — | 7,04 | ac | — | — |
| | **1,50** | 1,90 | — | 2,60 | — | 4,23 | — | 5,01 | — | 7,04 | — | — | — |
| | **1,75** | 1,90 | — | 2,60 | — | 4,23 | — | 5,01 | — | 7,04 | — | — | — |
| | **2,00** | 1,90 | — | 2,60 | — | 4,23 | — | 5,01 | — | 7,04 | — | — | — |
| $N_{R,II,k}$ [kN] | | 1,90 | | 2,60 | | 4,23 | | 5,01 | | 7,04 | | 8,28 | |

**Fastening screws JT2**

Self-drilling screw
**JT2-6-5,5xL F12**
with hexagon head and sealing washer ≥ Ø19 mm

**Annex 10**




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S235 to S355 – EN 10025-1
S280GD to S450GD – EN 10346
HX300LAD to HX460LAD – EN 10346

**Specifications:**

Drilling capacity: Σti ≤ 6,0 mm

Ø-Drill point: 4,5 mm

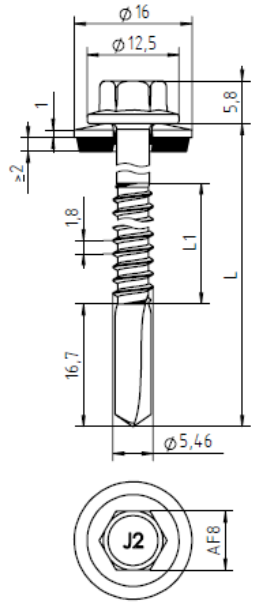
Thread length L1: ≥ 10 mm

| $t_{N,II}$ [mm] | | 1,50 | | 2,00 | | 2,50 | | 3,00 | | 4,00 | | 5,00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,13 | ac | 1,13 | ac | 1,13 | ac | 1,13 | ac | 1,91 | ac | 1,91 | ac |
| | **0,55** | 1,25 | ac | 1,25 | ac | 1,25 | ac | 1,25 | ac | 2,12 | ac | 2,12 | ac |
| | **0,63** | 2,40 | ac | 2,80 | ac | 2,80 | ac | 2,80 | abcd | 3,80 | abcd | 3,80 | abcd |
| | **0,75** | 2,70 | — | 3,50 | ac | 3,50 | ac | 3,50 | ac | 4,60 | ac | 4,60 | ac |
| | **0,88** | 3,10 | — | 4,20 | — | 4,20 | ac | 4,20 | ac | 5,30 | ac | 5,30 | ac |
| | **1,00** | 3,40 | — | 4,50 | — | 4,50 | ac | 4,50 | ac | 6,00 | ac | 6,00 | ac |
| | **1,13** | 3,80 | — | 4,90 | — | 4,90 | — | 4,90 | ac | 6,70 | ac | — | — |
| | **1,25** | 4,10 | — | 5,30 | — | 5,30 | — | 5,30 | ac | 7,30 | ac | — | — |
| | **1,50** | 5,00 | — | 6,00 | — | 6,00 | — | 6,00 | — | 8,10 | — | — | — |
| | **1,75** | 5,00 | — | 6,00 | — | 6,00 | — | 6,00 | — | 8,10 | — | — | — |
| | **2,00** | 5,00 | — | 6,00 | — | 6,00 | — | 6,00 | — | 8,10 | — | — | — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,46 | ac | 1,46 | ac | 1,46 | ac | 1,46 | abcd | 1,46 | abcd | 1,46 | abcd |
| | **0,55** | 1,84 | ac | 1,84 | ac | 1,84 | ac | 1,84 | abcd | 1,84 | abcd | 1,84 | abcd |
| | **0,63** | 1,90 | ac | 2,60 | ac | 2,70 | ac | 2,70 | abcd | 2,70 | abcd | 2,70 | abcd |
| | **0,75** | 1,90 | — | 2,60 | ac | 4,23 | ac | 5,01 | ac | 5,01 | ac | 5,01 | ac |
| | **0,88** | 1,90 | — | 2,60 | — | 4,23 | ac | 5,01 | ac | 5,94 | ac | 5,94 | ac |
| | **1,00** | 1,90 | — | 2,60 | — | 4,23 | ac | 5,01 | ac | 6,84 | ac | 6,84 | ac |
| | **1,13** | 1,90 | — | 2,60 | — | 4,23 | — | 5,01 | — | 7,04 | ac | — | — |
| | **1,25** | 1,90 | — | 2,60 | — | 4,23 | — | 5,01 | — | 7,04 | ac | — | — |
| | **1,50** | 1,90 | — | 2,60 | — | 4,23 | — | 5,01 | — | 7,04 | — | — | — |
| | **1,75** | 1,90 | — | 2,60 | — | 4,23 | — | 5,01 | — | 7,04 | — | — | — |
| | **2,00** | 1,90 | — | 2,60 | — | 4,23 | — | 5,01 | — | 7,04 | — | — | — |
| $N_{R,II,k}$ [kN] | | 1,90 | | 2,60 | | 4,23 | | 5,01 | | 7,04 | | 8,28 | |

**Fastening screws JT2**

Self-drilling screw
**JT2-6-5,5xL F12**
with hexagon head and sealing washer ≥ Ø22 mm

**Annex 11**




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S235 to S355 - EN 10025-1

**Specifications:**

Drilling capacity: Σti ≤ 13,0 mm

Ø-Drill point: 5,0 mm

Thread length L1: ≥ 10 mm

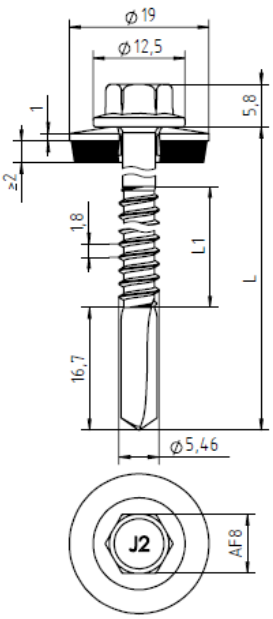
| $t_{N,II}$ [mm] | | 4,00 | | 5,00 | | 6,00 | | 8,00 | | 10,00 | | 12,00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,91 | ac | 1,91 | ac | 1,91 | ac | 1,91 | ac | 1,91 | ac | 1,91 | ac |
| | **0,55** | 2,12 | ac | 2,12 | ac | 2,12 | ac | 2,12 | ac | 2,12 | ac | 2,12 | ac |
| | **0,63** | 2,20 | ac | 2,20 | ac | 2,20 | ac | 2,20 | ac | 2,20 | ac | 2,20 | ac |
| | **0,75** | 2,80 | ac | 2,80 | ac | 2,80 | ac | 2,80 | ac | 2,80 | ac | 2,80 | ac |
| | **0,88** | 3,50 | ac | 3,50 | ac | 3,50 | ac | 3,50 | ac | 3,50 | ac | 3,50 | a |
| | **1,00** | 4,20 | — | 4,20 | ac | 4,20 | ac | 4,20 | ac | 4,20 | ac | 4,20 | a |
| | **1,13** | 4,20 | — | 4,90 | — | 4,90 | — | 4,90 | — | 4,90 | — | — | — |
| | **1,25** | 4,20 | — | 5,60 | — | 5,60 | — | 5,60 | — | 5,60 | — | — | — |
| | **1,50** | 4,20 | — | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | — | — |
| | **1,75** | 4,20 | — | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | — | — |
| | **2,00** | 4,20 | — | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | — | — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,30* | ac | 1,30* | ac | 1,30* | ac | 1,30* | ac | 1,30* | ac | 1,30* | ac |
| | **0,55** | 1,64* | ac | 1,64* | ac | 1,64* | ac | 1,64* | ac | 1,64* | ac | 1,64* | ac |
| | **0,63** | 2,40* | ac | 2,40* | ac | 2,40* | ac | 2,40* | ac | 2,40* | ac | 2,40* | ac |
| | **0,75** | 3,64** | ac | 3,64** | ac | 3,64** | ac | 3,64** | ac | 3,64** | ac | 3,64** | ac |
| | **0,88** | 4,32** | ac | 4,32** | ac | 4,32** | ac | 4,32** | ac | 4,32** | ac | 4,32** | a |
| | **1,00** | 4,70 | — | 4,97** | — | 4,97** | — | 4,97** | — | 4,97** | — | — | a |
| | **1,13** | 4,70 | — | 5,63** | — | 5,63** | — | 5,63** | — | 5,63** | — | — | — |
| | **1,25** | 4,70 | — | 6,20** | — | 6,20** | — | 6,20** | — | 6,20** | — | — | — |
| | **1,50** | 4,70 | — | 6,90 | — | 7,56 | — | 7,56 | — | 7,56 | — | — | — |
| | **1,75** | 4,70 | — | 6,90 | — | 7,56 | — | 7,56 | — | 7,56 | — | — | — |
| | **2,00** | 4,70 | — | 6,90 | — | 7,56 | — | 7,56 | — | 7,56 | — | — | — |
| $N_{R,II,k}$ [kN] | | 4,70 | | 6,90 | | 8,13 | | 8,13 | | 8,13 | | 8,13 | |

- Component I of steel S320GD or S350GD: The indicated values (*) can be increased by 7,7 %.
- Component I of steel S320GD or S350GD: The indicated values (**) can be increased by 8,3 %.

**Fastening screws JT2**

Self-drilling screw
**JT2-12-5,5xL F12**
with hexagon head and sealing washer ≥ Ø16 mm

**Annex 12**




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S235 to S355 - EN 10025-1

**Specifications:**

Drilling capacity: Σti ≤ 13,0 mm

Ø-Drill point: 5,0 mm

Thread length L1: ≥ 10 mm

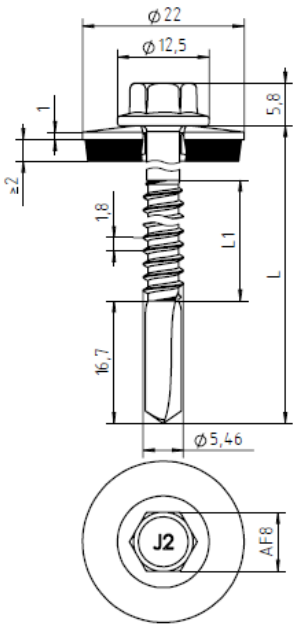
| $t_{N,II}$ [mm] | | 4,00 | | 5,00 | | 6,00 | | 8,00 | | 10,00 | | 12,00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,91 | ac | 1,91 | ac | 1,91 | ac | 1,91 | ac | 1,91 | ac | 1,91 | ac |
| | **0,55** | 2,12 | ac | 2,12 | ac | 2,12 | ac | 2,12 | ac | 2,12 | ac | 2,12 | ac |
| | **0,63** | 2,20 | ac | 2,20 | ac | 2,20 | ac | 2,20 | ac | 2,20 | ac | 2,20 | ac |
| | **0,75** | 2,80 | ac | 2,80 | ac | 2,80 | ac | 2,80 | ac | 2,80 | ac | 2,80 | ac |
| | **0,88** | 3,50 | ac | 3,50 | ac | 3,50 | ac | 3,50 | ac | 3,50 | ac | 3,50 | a |
| | **1,00** | 4,20 | — | 4,20 | ac | 4,20 | ac | 4,20 | ac | 4,20 | ac | 4,20 | a |
| | **1,13** | 4,20 | — | 4,90 | — | 4,90 | — | 4,90 | — | 4,90 | — | — | — |
| | **1,25** | 4,20 | — | 5,60 | — | 5,60 | — | 5,60 | — | 5,60 | — | — | — |
| | **1,50** | 4,20 | — | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | — | — |
| | **1,75** | 4,20 | — | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | — | — |
| | **2,00** | 4,20 | — | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | — | — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,30* | ac | 1,30* | ac | 1,30* | ac | 1,30* | ac | 1,30* | ac | 1,30* | ac |
| | **0,55** | 1,64* | ac | 1,64* | ac | 1,64* | ac | 1,64* | ac | 1,64* | ac | 1,64* | ac |
| | **0,63** | 2,40* | ac | 2,40* | ac | 2,40* | ac | 2,40* | ac | 2,40* | ac | 2,40* | ac |
| | **0,75** | 4,33** | ac | 4,33** | ac | 4,33** | ac | 4,33** | ac | 4,33** | ac | 4,33** | ac |
| | **0,88** | 4,70 | ac | 5,13** | ac | 5,13** | ac | 5,13** | ac | 5,13** | ac | 5,13** | a |
| | **1,00** | 4,70 | — | 5,91** | — | 5,91** | — | 5,91** | — | 5,91** | — | 5,91** | a |
| | **1,13** | 4,70 | — | 6,68 | — | 6,68** | — | 6,68** | — | 6,68** | — | — | — |
| | **1,25** | 4,70 | — | 6,90 | — | 7,36** | — | 7,36** | — | 7,36** | — | — | — |
| | **1,50** | 4,70 | — | 6,90 | — | 8,13 | — | 8,13 | — | 8,13 | — | — | — |
| | **1,75** | 4,70 | — | 6,90 | — | 8,13 | — | 8,13 | — | 8,13 | — | — | — |
| | **2,00** | 4,70 | — | 6,90 | — | 8,13 | — | 8,13 | — | 8,13 | — | — | — |
| $N_{R,II,k}$ [kN] | | 4,70 | | 6,90 | | 8,13 | | 8,13 | | 8,13 | | 8,13 | |

- Component I of steel S320GD or S350GD: The indicated values (*) can be increased by 7,7 %.
- Component I of steel S320GD or S350GD: The indicated values (**) can be increased by 8,3 %.

**Fastening screws JT2**

Self-drilling screw
**JT2-12-5,5xL F12**
with hexagon head and sealing washer ≥ Ø19 mm

**Annex 13**




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S235 to S355 - EN 10025-1

**Specifications:**

Drilling capacity: Σti ≤ 13,0 mm

Ø-Drill point: 5,0 mm

Thread length L1: ≥ 10 mm

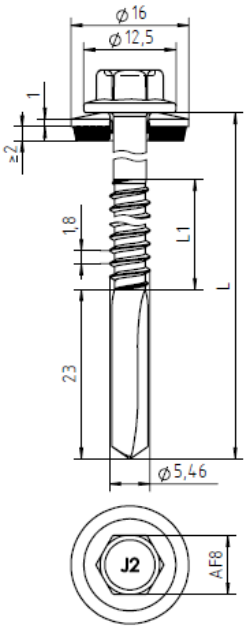
| $t_{N,II}$ [mm] | | 4,00 | | 5,00 | | 6,00 | | 8,00 | | 10,00 | | 12,00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,91 | ac | 1,91 | ac | 1,91 | ac | 1,91 | ac | 1,91 | ac | 1,91 | ac |
| | **0,55** | 2,12 | ac | 2,12 | ac | 2,12 | ac | 2,12 | ac | 2,12 | ac | 2,12 | ac |
| | **0,63** | 2,20 | ac | 2,20 | ac | 2,20 | ac | 2,20 | ac | 2,20 | ac | 2,20 | ac |
| | **0,75** | 2,80 | ac | 2,80 | ac | 2,80 | ac | 2,80 | ac | 2,80 | ac | 2,80 | ac |
| | **0,88** | 3,50 | ac | 3,50 | ac | 3,50 | ac | 3,50 | ac | 3,50 | ac | 3,50 | a |
| | **1,00** | 4,20 | — | 4,20 | ac | 4,20 | ac | 4,20 | ac | 4,20 | ac | 4,20 | a |
| | **1,13** | 4,20 | — | 4,90 | — | 4,90 | — | 4,90 | — | 4,90 | — | — | — |
| | **1,25** | 4,20 | — | 5,60 | — | 5,60 | — | 5,60 | — | 5,60 | — | — | — |
| | **1,50** | 4,20 | — | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | — | — |
| | **1,75** | 4,20 | — | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | — | — |
| | **2,00** | 4,20 | — | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | — | — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,30* | ac | 1,30* | ac | 1,30* | ac | 1,30* | ac | 1,30* | ac | 1,30* | ac |
| | **0,55** | 1,64* | ac | 1,64* | ac | 1,64* | ac | 1,64* | ac | 1,64* | ac | 1,64* | ac |
| | **0,63** | 2,40* | ac | 2,40* | ac | 2,40* | ac | 2,40* | ac | 2,40* | ac | 2,40* | ac |
| | **0,75** | 4,70 | ac | 5,01** | ac | 5,01** | ac | 5,01** | ac | 5,01** | ac | 5,01** | ac |
| | **0,88** | 4,70 | ac | 5,94** | ac | 5,94** | ac | 5,94** | ac | 5,94** | ac | 5,94** | a |
| | **1,00** | 4,70 | — | 6,84 | — | 6,84** | — | 6,84** | — | 6,84** | — | 6,84** | a |
| | **1,13** | 4,70 | — | 6,90 | — | 7,74 | — | 7,74 | — | 7,74 | — | — | — |
| | **1,25** | 4,70 | — | 6,90 | — | 8,13 | — | 8,13 | — | 8,13 | — | — | — |
| | **1,50** | 4,70 | — | 6,90 | — | 8,13 | — | 8,13 | — | 8,13 | — | — | — |
| | **1,75** | 4,70 | — | 6,90 | — | 8,13 | — | 8,13 | — | 8,13 | — | — | — |
| | **2,00** | 4,70 | — | 6,90 | — | 8,13 | — | 8,13 | — | 8,13 | — | — | — |
| **$N_{R,II,k}$ [kN]** | | 4,70 | | 6,90 | | 8,13 | | 8,13 | | 8,13 | | 8,13 | |

- Component I of steel S320GD or S350GD: The indicated values (*) can be increased by 7,7 %.
- Component I of steel S320GD or S350GD: The indicated values (**) can be increased by 8,3 %.

**Fastening screws JT2**

Self-drilling screw
**JT2-12-5,5xL F12**
with hexagon head and sealing washer ≥ Ø22 mm

**Annex 14**




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

Washer: Carbon steel, corrosion-resistant stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD - EN 10346

Component II: S235 to S355 - EN 10025-1

**Specifications:**

Drilling capacity: Σti ≤ 18,0 mm

Ø-Drill point: 5,0 mm

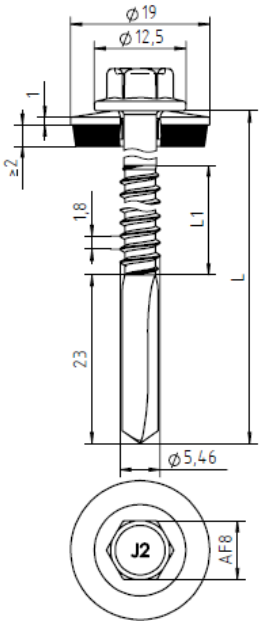
Thread length L1: ≥ 10 mm

| $t_{N,II}$ [mm] | | 4,00 | 5,00 | 6,00 | 8,00 | 10,00 | 12,00 | 14,00 | 16,00 |
|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,91 — | 1,91 — | 1,91 — | 1,91 — | 1,91 — | 1,91 — | 1,91 — | 1,91 — |
| | **0,55** | 2,12 — | 2,12 — | 2,12 — | 2,12 — | 2,12 — | 2,12 — | 2,12 — | 2,12 — |
| | **0,63** | 2,20 — | 2,20 — | 2,20 — | 2,20 — | 2,20 — | 2,20 — | 2,20 — | 2,20 — |
| | **0,75** | 2,80 — | 2,80 — | 2,80 — | 2,80 — | 2,80 — | 2,80 — | 2,80 — | 2,80 — |
| | **0,88** | 3,50 — | 3,50 — | 3,50 — | 3,50 — | 3,50 — | 3,50 — | 3,50 — | 3,50 — |
| | **1,00** | 4,20 — | 4,20 — | 4,20 — | 4,20 — | 4,20 — | 4,20 — | 4,20 — | 4,20 — |
| | **1,13** | 4,20 — | 4,90 — | 4,90 — | 4,90 — | 4,90 — | 4,90 — | 4,90 — | 4,90 — |
| | **1,25** | 4,20 — | 5,60 — | 5,60 — | 5,60 — | 5,60 — | 5,60 — | 5,60 — | 5,60 — |
| | **1,50** | 4,20 — | 6,40 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — |
| | **1,75** | 4,20 — | 6,40 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — |
| | **2,00** | 4,20 — | 6,40 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,77 — | 1,77 — | 1,77 — | 1,77 — | 1,77 — | 1,77 — | 1,77 — | 1,77 — |
| | **0,55** | 1,96 — | 1,96 — | 1,96 — | 1,96 — | 1,96 — | 1,96 — | 1,96 — | 1,96 — |
| | **0,63** | 2,27 — | 2,27 — | 2,27 — | 2,27 — | 2,27 — | 2,27 — | 2,27 — | 2,27 — |
| | **0,75** | 3,64 — | 3,64 — | 3,64 — | 3,64 — | 3,64 — | 3,64 — | 3,64 — | 3,64 — |
| | **0,88** | 4,32 — | 4,32 — | 4,32 — | 4,32 — | 4,32 — | 4,32 — | 4,32 — | 4,32 — |
| | **1,00** | 4,70 — | 4,97 — | 4,97 — | 4,97 — | 4,97 — | 4,97 — | 4,97 — | 4,97 — |
| | **1,13** | 4,70 — | 5,63 — | 5,63 — | 5,63 — | 5,63 — | 5,63 — | 5,63 — | 5,63 — |
| | **1,25** | 4,70 — | 6,20 — | 6,20 — | 6,20 — | 6,20 — | 6,20 — | 6,20 — | 6,20 — |
| | **1,50** | 4,70 — | 6,90 — | 7,56 — | 7,56 — | 7,56 — | 7,56 — | 7,56 — | 7,56 — |
| | **1,75** | 4,70 — | 6,90 — | 7,56 — | 7,56 — | 7,56 — | 7,56 — | 7,56 — | 7,56 — |
| | **2,00** | 4,70 — | 6,90 — | 7,56 — | 7,56 — | 7,56 — | 7,56 — | 7,56 — | 7,56 — |
| $N_{R,II,k}$ [kN] | | 4,70 | 6,90 | 8,13 | 8,13 | 8,13 | 8,13 | 8,13 | 8,13 |

**Fastening screws JT2**

Self-drilling screw
**JT2-18-5,5xL F12**
with hexagon head and sealing washer ≥ Ø16 mm

**Annex 15**




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

Washer: Carbon steel, corrosion-resistant stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD - EN 10346

Component II: S235 to S355 - EN 10025-1

**Specifications:**

Drilling capacity: Σti ≤ 18,0 mm

Ø-Drill point: 5,0 mm

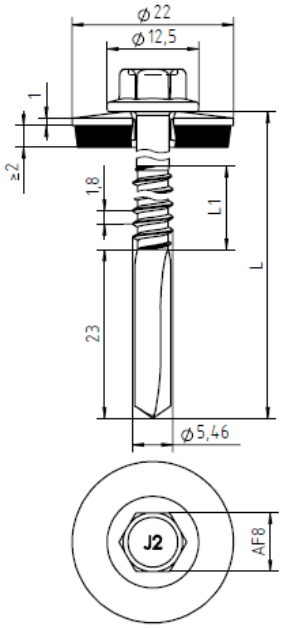
Thread length L1: ≥ 10 mm

| $t_{N,II}$ [mm] | | 4,00 | 5,00 | 6,00 | 8,00 | 10,00 | 12,00 | 14,00 | 16,00 |
|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | 0,50 | 1,91 — | 1,91 — | 1,91 — | 1,91 — | 1,91 — | 1,91 — | 1,91 — | 1,91 — |
| | 0,55 | 2,12 — | 2,12 — | 2,12 — | 2,12 — | 2,12 — | 2,12 — | 2,12 — | 2,12 — |
| | 0,63 | 2,20 — | 2,20 — | 2,20 — | 2,20 — | 2,20 — | 2,20 — | 2,20 — | 2,20 — |
| | 0,75 | 2,80 — | 2,80 — | 2,80 — | 2,80 — | 2,80 — | 2,80 — | 2,80 — | 2,80 — |
| | 0,88 | 3,50 — | 3,50 — | 3,50 — | 3,50 — | 3,50 — | 3,50 — | 3,50 — | 3,50 — |
| | 1,00 | 4,20 — | 4,20 — | 4,20 — | 4,20 — | 4,20 — | 4,20 — | 4,20 — | 4,20 — |
| | 1,13 | 4,20 — | 4,90 — | 4,90 — | 4,90 — | 4,90 — | 4,90 — | 4,90 — | 4,90 — |
| | 1,25 | 4,20 — | 5,60 — | 5,60 — | 5,60 — | 5,60 — | 5,60 — | 5,60 — | 5,60 — |
| | 1,50 | 4,20 — | 6,40 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — |
| | 1,75 | 4,20 — | 6,40 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — |
| | 2,00 | 4,20 — | 6,40 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | 0,50 | 2,10 — | 2,10 — | 2,10 — | 2,10 — | 2,10 — | 2,10 — | 2,10 — | 2,10 — |
| | 0,55 | 2,33 — | 2,33 — | 2,33 — | 2,33 — | 2,33 — | 2,33 — | 2,33 — | 2,33 — |
| | 0,63 | 2,69 — | 2,69 — | 2,69 — | 2,69 — | 2,69 — | 2,69 — | 2,69 — | 2,69 — |
| | 0,75 | 4,33 — | 4,33 — | 4,33 — | 4,33 — | 4,33 — | 4,33 — | 4,33 — | 4,33 — |
| | 0,88 | 4,70 — | 5,13 — | 5,13 — | 5,13 — | 5,13 — | 5,13 — | 5,13 — | 5,13 — |
| | 1,00 | 4,70 — | 5,91 — | 5,91 — | 5,91 — | 5,91 — | 5,91 — | 5,91 — | 5,91 — |
| | 1,13 | 4,70 — | 6,68 — | 6,68 — | 6,68 — | 6,68 — | 6,68 — | 6,68 — | 6,68 — |
| | 1,25 | 4,70 — | 6,90 — | 7,36 — | 7,36 — | 7,36 — | 7,36 — | 7,36 — | 7,36 — |
| | 1,50 | 4,70 — | 6,90 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — |
| | 1,75 | 4,70 — | 6,90 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — |
| | 2,00 | 4,70 — | 6,90 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — |
| $N_{R,II,k}$ [kN] | | 4,70 | 6,90 | 8,13 | 8,13 | 8,13 | 8,13 | 8,13 | 8,13 |

**Fastening screws JT2**

Self-drilling screw
**JT2-18-5,5xL F12**
with hexagon head and sealing washer ≥ Ø19 mm

**Annex 16**




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

Washer: Carbon steel, corrosion-resistant stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD - EN 10346

Component II: S235 to S355 - EN 10025-1

**Specifications:**

Drilling capacity: Σti ≤ 18,0 mm

Ø-Drill point: 5,0 mm

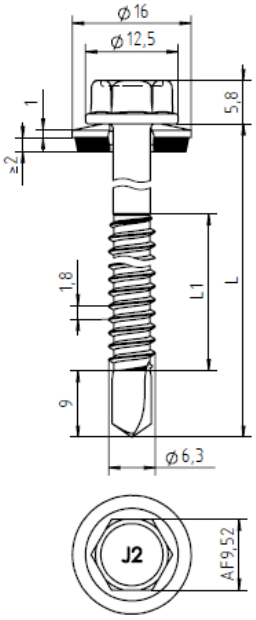
Thread length L1: ≥ 10 mm

| $t_{N,II}$ [mm] | | 4,00 | 5,00 | 6,00 | 8,00 | 10,00 | 12,00 | 14,00 | 16,00 |
|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,91 — | 1,91 — | 1,91 — | 1,91 — | 1,91 — | 1,91 — | 1,91 — | 1,91 — |
| | **0,55** | 2,12 — | 2,12 — | 2,12 — | 2,12 — | 2,12 — | 2,12 — | 2,12 — | 2,12 — |
| | **0,63** | 2,20 — | 2,20 — | 2,20 — | 2,20 — | 2,20 — | 2,20 — | 2,20 — | 2,20 — |
| | **0,75** | 2,80 — | 2,80 — | 2,80 — | 2,80 — | 2,80 — | 2,80 — | 2,80 — | 2,80 — |
| | **0,88** | 3,50 — | 3,50 — | 3,50 — | 3,50 — | 3,50 — | 3,50 — | 3,50 — | 3,50 — |
| | **1,00** | 4,20 — | 4,20 — | 4,20 — | 4,20 — | 4,20 — | 4,20 — | 4,20 — | 4,20 — |
| | **1,13** | 4,20 — | 4,90 — | 4,90 — | 4,90 — | 4,90 — | 4,90 — | 4,90 — | 4,90 — |
| | **1,25** | 4,20 — | 5,60 — | 5,60 — | 5,60 — | 5,60 — | 5,60 — | 5,60 — | 5,60 — |
| | **1,50** | 4,20 — | 6,40 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — |
| | **1,75** | 4,20 — | 6,40 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — |
| | **2,00** | 4,20 — | 6,40 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — | 7,20 — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 2,43 — | 2,43 — | 2,43 — | 2,43 — | 2,43 — | 2,43 — | 2,43 — | 2,43 — |
| | **0,55** | 2,69 — | 2,69 — | 2,69 — | 2,69 — | 2,69 — | 2,69 — | 2,69 — | 2,69 — |
| | **0,63** | 3,12 — | 3,12 — | 3,12 — | 3,12 — | 3,12 — | 3,12 — | 3,12 — | 3,12 — |
| | **0,75** | 4,70 — | 5,01 — | 5,01 — | 5,01 — | 5,01 — | 5,01 — | 5,01 — | 5,01 — |
| | **0,88** | 4,70 — | 5,94 — | 5,94 — | 5,94 — | 5,94 — | 5,94 — | 5,94 — | 5,94 — |
| | **1,00** | 4,70 — | 6,84 — | 6,84 — | 6,84 — | 6,84 — | 6,84 — | 6,84 — | 6,84 — |
| | **1,13** | 4,70 — | 6,90 — | 7,74 — | 7,74 — | 7,74 — | 7,74 — | 7,74 — | 7,74 — |
| | **1,25** | 4,70 — | 6,90 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — |
| | **1,50** | 4,70 — | 6,90 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — |
| | **1,75** | 4,70 — | 6,90 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — |
| | **2,00** | 4,70 — | 6,90 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — | 8,13 — |
| $N_{R,II,k}$ [kN] | | 4,70 | 6,90 | 8,13 | 8,13 | 8,13 | 8,13 | 8,13 | 8,13 |

**Fastening screws JT2**

Self-drilling screw
**JT2-18-5,5xL F12**
with hexagon head and sealing washer ≥ Ø22 mm

**Annex 17**




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD - EN 10346

Component II: S235 to S355 - EN 10025-1
S280GD to S350GD - EN 10346

**Specifications:**

Drilling capacity: Σti ≤ 6,50 mm

Ø-Drill point: 5,3 mm

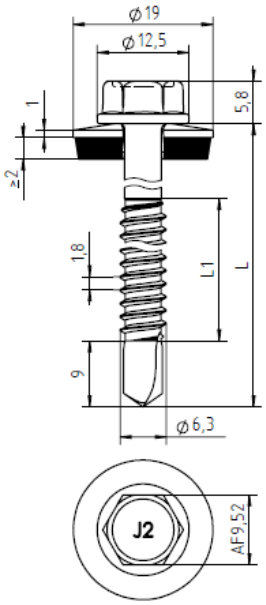
Thread length L1: ≥ 10 mm

| $t_{N,II}$ [mm] | | 2,00 | | 2,50 | | 3,00 | | 4,00 | | 5,00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,13 | ac | 1,13 | ac | 1,13 | ac | 1,91 | ac | 1,91 | ac |
| | **0,55** | 1,25 | ac | 1,25 | ac | 1,25 | ac | 2,12 | ac | 2,12 | ac |
| | **0,63** | 2,40 | abcd | 2,40 | abcd | 2,40 | abcd | 2,40 | abcd | 2,40 | ac |
| | **0,75** | 2,90 | ac | 3,10 | ac | 3,10 | ac | 3,10 | ac | 3,10 | ac |
| | **0,88** | 3,50 | ac | 3,80 | ac | 3,80 | ac | 3,80 | ac | 3,80 | a |
| | **1,00** | 4,00 | ac | 4,60 | ac | 4,60 | ac | 4,60 | ac | 4,60 | a |
| | **1,13** | 4,60 | ac | 5,20 | ac | 5,20 | ac | 5,20 | ac | 5,20 | a |
| | **1,25** | 5,20 | — | 5,80 | ac | 5,80 | ac | 5,80 | ac | 5,80 | a |
| | **1,50** | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | 7,20 | — |
| | **1,75** | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | — | — |
| | **2,00** | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | — | — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,13 | — | 1,13 | — | 1,13 | — | 1,13 | — | 1,13 | — |
| | **0,55** | 1,43 | — | 1,43 | — | 1,43 | — | 1,43 | — | 1,43 | — |
| | **0,63** | 2,10 | abcd | 2,10 | abcd | 2,10 | abcd | 2,10 | abcd | 2,10 | ac |
| | **0,75** | 3,40 | ac | 3,64 | ac | 3,64 | ac | 3,64 | ac | 3,64 | ac |
| | **0,88** | 3,40 | ac | 4,32 | ac | 4,32 | ac | 4,32 | ac | 4,32 | a |
| | **1,00** | 3,40 | ac | 4,70 | ac | 4,97 | ac | 4,97 | ac | 4,97 | a |
| | **1,13** | 3,40 | ac | 4,70 | ac | 5,63 | ac | 5,63 | ac | 5,63 | a |
| | **1,25** | 3,40 | — | 4,70 | ac | 6,20 | ac | 6,20 | ac | 6,20 | a |
| | **1,50** | 3,40 | — | 4,70 | — | 6,20 | — | 7,56 | — | 7,56 | — |
| | **1,75** | 3,40 | — | 4,70 | — | 6,20 | — | 8,70 | — | — | — |
| | **2,00** | 3,40 | — | 4,70 | — | 6,20 | — | 8,70 | — | — | — |
| $N_{R,II,k}$ [kN] | | 3,40 | | 4,70 | | 6,20 | | 8,70 | | 8,70 | |

**Fastening screws JT2**

Self-drilling screw
**JT2-6-6,3xL F12**
with hexagon head and sealing washer ≥ Ø16 mm

**Annex 18**




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD - EN 10346

Component II: S235 to S355 - EN 10025-1
S280GD to S350GD - EN 10346

**Specifications:**

Drilling capacity: Σti ≤ 6,50 mm

Ø-Drill point: 5,3 mm

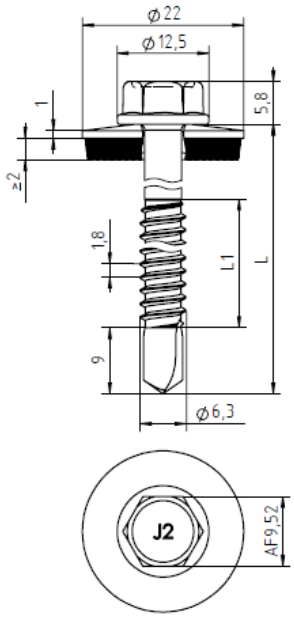
Thread length L1: ≥ 10 mm

| $t_{N,II}$ [mm] | | 2,00 | | 2,50 | | 3,00 | | 4,00 | | 5,00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,13 | ac | 1,13 | ac | 1,13 | ac | 1,91 | ac | 1,91 | ac |
| | **0,55** | 1,25 | ac | 1,25 | ac | 1,25 | ac | 2,12 | ac | 2,12 | ac |
| | **0,63** | 2,40 | abcd | 2,40 | abcd | 2,40 | abcd | 2,40 | abcd | 2,40 | ac |
| | **0,75** | 2,90 | ac | 3,10 | ac | 3,10 | ac | 3,10 | ac | 3,10 | ac |
| | **0,88** | 3,50 | ac | 3,80 | ac | 3,80 | ac | 3,80 | ac | 3,80 | a |
| | **1,00** | 4,00 | ac | 4,60 | ac | 4,60 | ac | 4,60 | ac | 4,60 | a |
| | **1,13** | 4,60 | ac | 5,20 | ac | 5,20 | ac | 5,20 | ac | 5,20 | a |
| | **1,25** | 5,20 | — | 5,80 | ac | 5,80 | ac | 5,80 | ac | 5,80 | a |
| | **1,50** | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | 7,20 | — |
| | **1,75** | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | — | — |
| | **2,00** | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | — | — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,13 | abcd | 1,13 | abcd | 1,13 | abcd | 1,13 | abcd | 1,13 | ac |
| | **0,55** | 1,43 | abcd | 1,43 | abcd | 1,43 | abcd | 1,43 | abcd | 1,43 | ac |
| | **0,63** | 2,10 | abcd | 2,10 | abcd | 2,10 | abcd | 2,10 | abcd | 2,10 | ac |
| | **0,75** | 2,80 | ac | 2,80 | ac | 2,80 | ac | 2,80 | ac | 2,80 | ac |
| | **0,88** | 3,40 | ac | 3,60 | ac | 3,60 | ac | 3,60 | ac | 3,60 | a |
| | **1,00** | 3,40 | ac | 4,30 | ac | 4,30 | ac | 4,30 | ac | 4,30 | a |
| | **1,13** | 3,40 | ac | 4,70 | ac | 5,50 | ac | 5,50 | ac | 5,50 | a |
| | **1,25** | 3,40 | — | 4,70 | ac | 6,20 | ac | 6,60 | ac | 6,60 | a |
| | **1,50** | 3,40 | — | 4,70 | — | 6,20 | — | 8,70 | — | 8,70 | — |
| | **1,75** | 3,40 | — | 4,70 | — | 6,20 | — | 8,70 | — | — | — |
| | **2,00** | 3,40 | — | 4,70 | — | 6,20 | — | 8,70 | — | — | — |
| $N_{R,II,k}$ [kN] | | 3,40 | | 4,70 | | 6,20 | | 8,70 | | 8,70 | |

**Fastening screws JT2**

Self-drilling screw
**JT2-6-6,3xL F12**
with hexagon head and sealing washer ≥ Ø19 mm

**Annex 19**




**Materials:**

Fastener: Carbon steel, case hardened and corrosion-resistant

Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal

Component I: S280GD to S350GD - EN 10346

Component II: S235 to S355 - EN 10025-1
S280GD to S350GD - EN 10346

**Specifications:**

Drilling capacity: Σti ≤ 6,50 mm

Ø-Drill point: 5,3 mm

Thread length L1: ≥ 10 mm

| $t_{N,II}$ [mm] | | 2,00 | | 2,50 | | 3,00 | | 4,00 | | 5,00 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $V_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,13 | ac | 1,13 | ac | 1,13 | ac | 1,91 | ac | 1,91 | ac |
| | **0,55** | 1,25 | ac | 1,25 | ac | 1,25 | ac | 2,12 | ac | 2,12 | ac |
| | **0,63** | 2,40 | abcd | 2,40 | abcd | 2,40 | abcd | 2,40 | abcd | 2,40 | ac |
| | **0,75** | 2,90 | ac | 3,10 | ac | 3,10 | ac | 3,10 | ac | 3,10 | ac |
| | **0,88** | 3,50 | ac | 3,80 | ac | 3,80 | ac | 3,80 | ac | 3,80 | a |
| | **1,00** | 4,00 | ac | 4,60 | ac | 4,60 | ac | 4,60 | ac | 4,60 | a |
| | **1,13** | 4,60 | ac | 5,20 | ac | 5,20 | ac | 5,20 | ac | 5,20 | a |
| | **1,25** | 5,20 | — | 5,80 | ac | 5,80 | ac | 5,80 | ac | 5,80 | a |
| | **1,50** | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | 7,20 | — |
| | **1,75** | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | — | — |
| | **2,00** | 6,40 | — | 7,20 | — | 7,20 | — | 7,20 | — | — | — |
| $N_{R,k}$ [kN] for $t_{N,I}$ = | **0,50** | 1,13 | abcd | 1,13 | abcd | 1,13 | abcd | 1,13 | abcd | 1,13 | ac |
| | **0,55** | 1,43 | abcd | 1,43 | abcd | 1,43 | abcd | 1,43 | abcd | 1,43 | ac |
| | **0,63** | 2,10 | abcd | 2,10 | abcd | 2,10 | abcd | 2,10 | abcd | 2,10 | ac |
| | **0,75** | 2,80 | ac | 2,80 | ac | 2,80 | ac | 2,80 | ac | 2,80 | ac |
| | **0,88** | 3,40 | ac | 3,60 | ac | 3,60 | ac | 3,60 | ac | 3,60 | a |
| | **1,00** | 3,40 | ac | 4,30 | ac | 4,30 | ac | 4,30 | ac | 4,30 | a |
| | **1,13** | 3,40 | ac | 4,70 | ac | 5,50 | ac | 5,50 | ac | 5,50 | a |
| | **1,25** | 3,40 | — | 4,70 | ac | 6,20 | ac | 6,60 | ac | 6,60 | a |
| | **1,50** | 3,40 | — | 4,70 | — | 6,20 | — | 8,70 | — | 8,70 | — |
| | **1,75** | 3,40 | — | 4,70 | — | 6,20 | — | 8,70 | — | — | — |
| | **2,00** | 3,40 | — | 4,70 | — | 6,20 | — | 8,70 | — | — | — |
| $N_{R,II,k}$ [kN] | | 3,40 | | 4,70 | | 6,20 | | 8,70 | | 8,70 | |

**Fastening screws JT2**

Self-drilling screw
**JT2-6-6,3xL F12**
with hexagon head and sealing washer ≥ Ø22 mm

**Annex 20**