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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

MEMBER OF EOTA



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
Geschäftsbereich Building Fasteners
In der Stockwiese 35
DE-57334 Bad Laasphe
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:

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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 S280GD to S450GD HX300LAD to HX460LAD
4	JT2-2H-Plus-5,5xL F12	S280GD to S350GD	S235 to S275 S280GD to S450GD HX300LAD to HX460LAD
5	JT2-2H-Plus-5,5xL F12	S280GD to S350GD	S235 to S275 S280GD to S450GD HX300LAD to HX460LAD
6	JT2-2H-Plus-5,5xL F12	S280GD to S350GD	S235 to S275 S280GD to S450GD HX300LAD to HX460LAD
7	JT2-2H-Plus-5,5xL F12	S280GD to S350GD	S235 to S275 S280GD to S450GD HX300LAD to HX460LAD
8	JT2-2H-Plus-5,5xL F12	S280GD to S350GD	S235 to S275 S280GD to S350GD HX300LAD to HX460LAD
9	JT2-6-5,5xL F12	S280GD to S350GD	S235 to S355 S280GD to S350GD HX300LAD to HX460LAD
10	JT2-6-5,5xL F12	S280GD to S350GD	S235 to S355 S280GD to S350GD HX300LAD to HX460LAD
11	JT2-6-5,5xL F12	S280GD to S350GD	S235 to S355 S280GD to S350GD 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 S280GD to S350GD
19	JT2-6-6,3xL F12	S280GD to S350GD	S235 to S355 S280GD to S350GD
20	JT2-6-6,3xL F12	S280GD to S350GD	S235 to S355 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 \geq 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

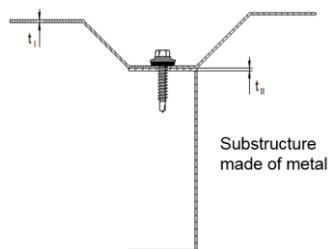
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking.

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:

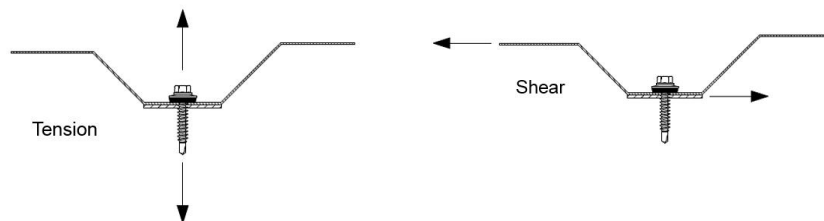
$N_{R,I,k}$	Characteristic value of pull-through resistance for component I
$N_{R,II,k}$	Characteristic value of pull-out resistance for component II
$V_{R,I,k}$	Characteristic value of hole bearing resistance for component I
$V_{R,II,k}$	Characteristic value of hole bearing resistance for component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

Fastening screws JT2

Terms and explanations

Annex 1

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
γ_M	Partial safety factor

The recommended partial safety factor γ_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%.

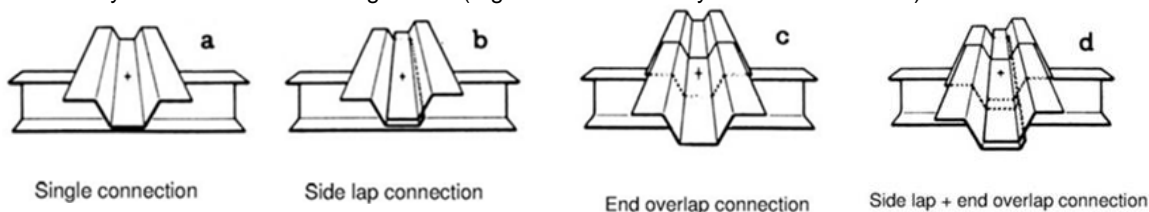
In case of combined loading by tension and shear forces the following interaction, equation has to be taken into account:

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

$N_{S,d}$	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.

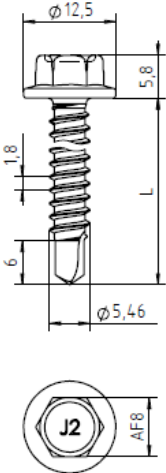
The load-bearing screw-in length of the fastening screw specified by the manufacturer has to be taken into account.

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.

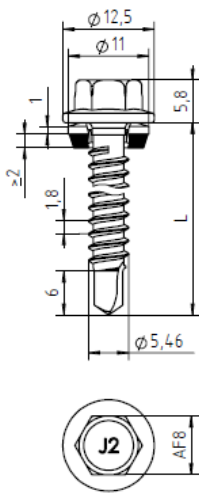
Fastening screws JT2	Annex 2
Terms and explanations	

	<p>Materials:</p> <p>Fastener: Carbon steel, case hardened and corrosion-resistant</p> <p>Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal</p> <p>Component I: S280GD to S350GD – EN 10346</p> <p>Component II: S235 to S275 – EN 10025-1 S280GD, to S450GD – EN 10346 HX300LAD to HX460LAD – EN 10346</p>
	<p>Specifications:</p> <p>Drilling capacity: $\Sigma t_i \leq 3,5$ mm</p> <p>Ø-Drill point: 3,9 mm</p> <p>$M_{t,nom}$: max. 2,5 Nm</p>

$t_{N,II}$ [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
	0,55	0,66	0,95	1,11	1,21	1,37	1,54	1,70	1,88	2,03	2,12
	0,63	0,66	0,95	1,11	1,38	1,52	1,68	1,83	1,99	2,13	2,43
	0,75	0,66	0,95	1,11	1,38	1,81	1,96	2,08	2,22	2,35	2,62
	0,88	0,66	0,95	1,11	1,38	1,81	2,34	2,45	2,57	2,68	2,91
	1,00	0,66	0,95	1,11	1,38	1,81	2,34	2,86	2,96	3,06	3,25
	1,13	0,66	0,95	1,11	1,38	1,81	2,34	2,86	3,46	3,54	3,70
	1,25	0,66	0,95	1,11	1,38	1,81	2,34	2,86	3,46	4,05	4,18
	1,50	0,66	0,95	1,11	1,38	1,81	2,34	2,86	3,46	4,05	5,36
	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
	0,55	0,30	0,41	0,47	0,56	0,73	1,06	1,40	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
	0,75	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	0,88	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,00	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,13	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,25	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,50	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	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	

- 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	Annex 3
Self-drilling screw JT2-2-Plus-5,5xL F12 with hexagon head	

	<p>Materials:</p> <p>Fastener: Carbon steel, case hardened and corrosion-resistant</p> <p>Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal</p> <p>Component I: S280GD to S350GD – EN 10346</p> <p>Component II: S235 to S275 – EN 10025-1 S280GD, to S450GD – EN 10346 HX300LAD to HX460LAD – EN 10346</p>
	<p>Specifications:</p> <p>Drilling capacity: $\Sigma t_i \leq 3,5$ mm</p> <p>Ø-Drill point: 3,9 mm</p>

$t_{N,II}$ [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
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 %.

<p>Fastening screws JT2</p> <p>Self-drilling screw JT2-2H-Plus-5,5xL F12 with hexagon head, undercut and sealing washer $\geq \text{Ø}11$ mm</p>	<p>Annex 4</p>
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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

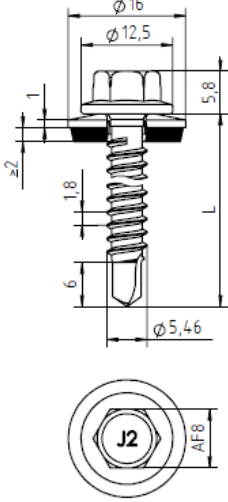
$t_{N,II}$ [mm]	0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	0,56	0,60	0,64	0,68	0,83	0,98	1,13	1,13	1,13	1,13
	0,55	0,58	0,67	0,73	0,78	0,94	1,09	1,25	1,25	1,25	1,25
	0,63	0,60	0,71	0,82	0,87	1,04	1,21	1,38	1,38	1,38	1,38
	0,75	0,62	0,74	0,86	0,97	1,15	1,33	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
	1,00	0,62	0,74	0,86	1,06	1,56	2,15	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
	1,25	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92
	1,50	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	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
	0,55	0,30	0,41	0,47	0,56	0,73	1,06	1,40	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
	0,75	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,39
	0,88	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,00	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,13	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,25	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,50	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	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 $\geq \varnothing 14$ mm

Annex 5

	<p>Materials:</p> <p>Fastener: Carbon steel, case hardened and corrosion-resistant</p> <p>Washer: Carbon steel, corrosion-resistant, stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal</p> <p>Component I: S280GD to S350GD – EN 10346</p> <p>Component II: S235 to S275 – EN 10025-1 S280GD, to S450GD – EN 10346 HX300LAD to HX460LAD – EN 10346</p> <p>Specifications:</p> <p>Drilling capacity: $\Sigma t_i \leq 3,5$ mm</p> <p>Ø-Drill point: 3,9 mm</p>
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$t_{N,II}$ [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
	0,55	0,58	0,67	0,73	0,78	0,94	1,09	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
	0,75	0,62	0,74	0,86	0,97	1,15	1,33	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
	1,00	0,62	0,74	0,86	1,06	1,56	2,15	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
	1,25	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92
	1,50	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	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
	0,55	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	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
	0,75	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	0,88	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,00	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,13	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,25	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,50	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	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	

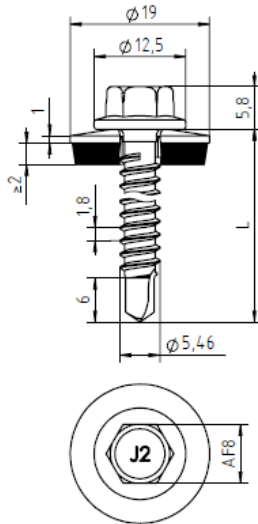
- Component I of steel S320GD or S350GD and component II of S320GD to S450GD or HX340LAD to HX460LAD: The values can be increased by 8,3 %.

Fastening screws JT2

Self-drilling screw JT2-2H-Plus-5,5xL F12

with hexagon head, undercut and sealing washer $\geq \varnothing 16$ 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: $\Sigma t_i \leq 3,5$ 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
	0,55	0,58	0,67	0,73	0,78	0,94	1,09	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
	0,75	0,62	0,74	0,86	0,97	1,15	1,33	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
	1,00	0,62	0,74	0,86	1,06	1,56	2,15	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
	1,25	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92
	1,50	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92
	1,75	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	—
	2,00	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	—
$N_{R,k}$ [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
	0,55	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,33
	0,63	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	0,75	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	0,88	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,00	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,13	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,25	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,50	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,75	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	—
	2,00	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	—
$N_{R,II,k}$ [kN]		0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59

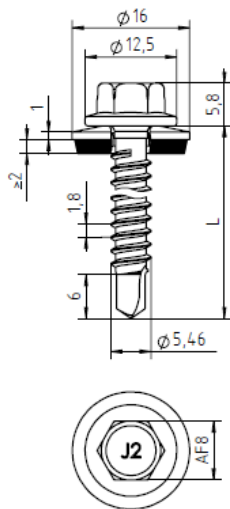
- Component I of steel S320GD or S350GD and component II of S320GD to S450GD or HX340LAD to HX460LAD: The values can be increased by 8,3 %.

Fastening screws JT2

Self-drilling screw
JT2-2H-Plus-5,5xL F12

with hexagon head, undercut and sealing washer $\geq \varnothing 19$ mm

Annex 7

**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

$t_{N,II}$ [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	—	—	—	—

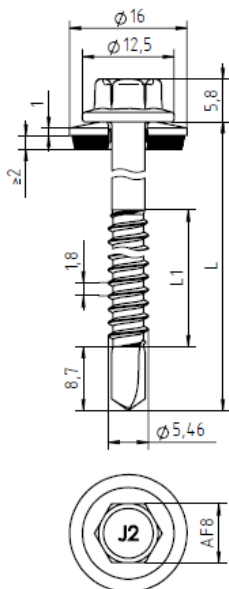
- Component I of steel S320GD or S350GD and component II of S320GD to S450GD or HX340LAD to HX460LAD: The values can be increased by 8,3 %.

Fastening screws JT2

Self-drilling screw
JT2-2H-Plus-5,5xL F12

with hexagon head, undercut and sealing washer $\geq \varnothing 16$ 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: $\Sigma t_i \leq 6,0$ mm

Ø-Drill point: 4,5 mm

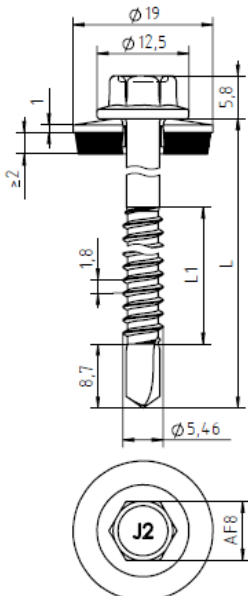
Thread length L_1 : ≥ 10 mm

$t_{N,II}$ [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
	0,55	1,25 ac	1,25 ac	1,25 ac	1,25 ac	2,12 ac
	0,63	2,40 ac	2,80 ac	2,80 ac	2,80 abcd	3,80 abcd
	0,75	2,70 —	3,50 ac	3,50 ac	3,50 ac	4,60 ac
	0,88	3,10 —	4,20 —	4,20 ac	4,20 ac	5,30 ac
	1,00	3,40 —	4,50 —	4,50 ac	4,50 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
	0,55	1,84 ac	1,84 ac	1,84 ac	1,84 abcd	1,84 abcd
	0,63	1,90 ac	2,60 ac	2,70 ac	2,70 abcd	2,70 abcd
	0,75	1,90 —	2,60 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
	1,00	1,90 —	2,60 —	4,23 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 $\geq \phi 16$ 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: $\Sigma t_i \leq 6,0$ mm

Ø-Drill point: 4,5 mm

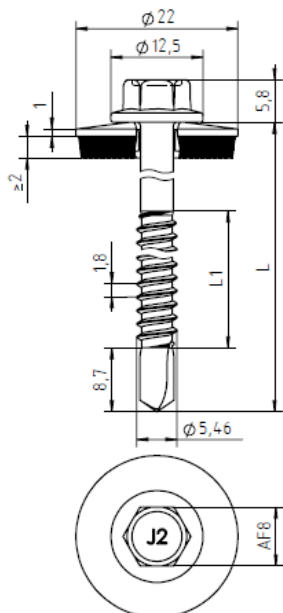
Thread length L1: ≥ 10 mm

$t_{N,II}$ [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
	0,55	1,25 ac	1,25 ac	1,25 ac	1,25 ac	2,12 ac
	0,63	2,40 ac	2,80 ac	2,80 ac	2,80 abcd	3,80 abcd
	0,75	2,70 —	3,50 ac	3,50 ac	3,50 ac	4,60 ac
	0,88	3,10 —	4,20 —	4,20 ac	4,20 ac	5,30 ac
	1,00	3,40 —	4,50 —	4,50 ac	4,50 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
	0,55	1,84 ac	1,84 ac	1,84 ac	1,84 abcd	1,84 abcd
	0,63	1,90 ac	2,60 ac	2,70 ac	2,70 abcd	2,70 abcd
	0,75	1,90 —	2,60 ac	4,23 ac	4,33 ac	4,33 ac
	0,88	1,90 —	2,60 —	4,23 ac	5,01 ac	5,13 ac
	1,00	1,90 —	2,60 —	4,23 ac	5,01 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 $\geq \phi 19$ 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: $\Sigma t_i \leq 6,0$ mm

Ø-Drill point: 4,5 mm

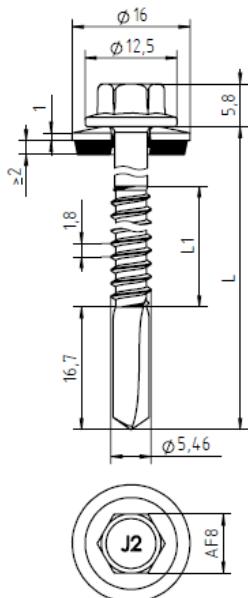
Thread length L1: ≥ 10 mm

$t_{N,II}$ [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
	0,55	1,25 ac	1,25 ac	1,25 ac	1,25 ac	2,12 ac
	0,63	2,40 ac	2,80 ac	2,80 ac	2,80 abcd	3,80 abcd
	0,75	2,70 —	3,50 ac	3,50 ac	3,50 ac	4,60 ac
	0,88	3,10 —	4,20 —	4,20 ac	4,20 ac	5,30 ac
	1,00	3,40 —	4,50 —	4,50 ac	4,50 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
	0,55	1,84 ac	1,84 ac	1,84 ac	1,84 abcd	1,84 abcd
	0,63	1,90 ac	2,60 ac	2,70 ac	2,70 abcd	2,70 abcd
	0,75	1,90 —	2,60 ac	4,23 ac	5,01 ac	5,01 ac
	0,88	1,90 —	2,60 —	4,23 ac	5,01 ac	5,94 ac
	1,00	1,90 —	2,60 —	4,23 ac	5,01 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 $\geq \phi 22$ 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: $\Sigma t_i \leq 13,0$ mm

Ø-Drill point: 5,0 mm

Thread length L1: ≥ 10 mm

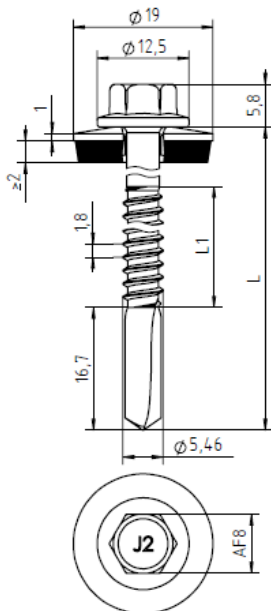
$t_{N,II}$ [mm]	4,00		5,00		6,00		8,00		10,00		12,00	
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac
	0,55	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac
	0,63	2,20 ac	2,20 ac	2,20 ac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

- 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 $\geq \varnothing 16$ 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: $\Sigma t_i \leq 13,0$ mm

Ø-Drill point: 5,0 mm

Thread length L1: ≥ 10 mm

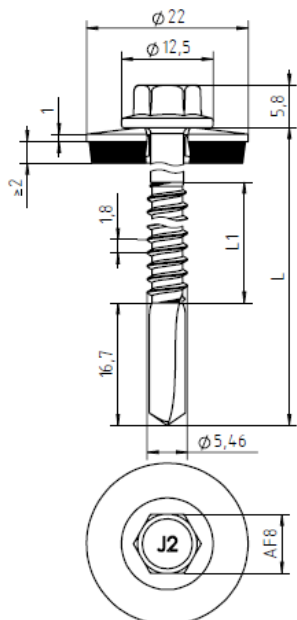
$t_{N,II}$ [mm]	4,00		5,00		6,00		8,00		10,00		12,00	
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac
	0,55	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac
	0,63	2,20 ac	2,20 ac	2,20 ac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

- 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 $\geq \varnothing 19$ 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: $\Sigma t_i \leq 13,0$ 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		

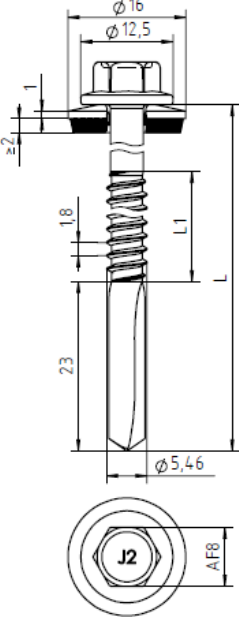
– Component I of steel S320GD or S350GD: The indicated values (*) can be increased by 7,7 %.

– 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 $\geq \phi 22$ mm

Annex 14

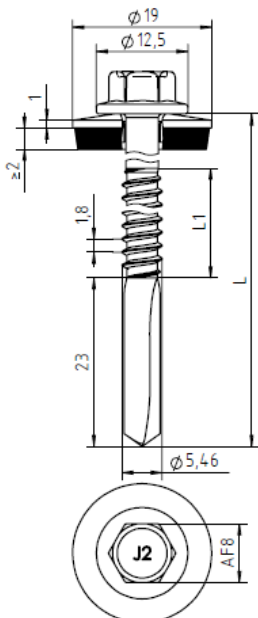
	<p>Materials:</p> <p>Fastener: Carbon steel, case hardened and corrosion-resistant</p> <p>Washer: Carbon steel, corrosion-resistant stainless steel (A2) – EN ISO 3506 with vulcanised EPDM seal</p> <p>Component I: S280GD to S350GD - EN 10346</p> <p>Component II: S235 to S355 - EN 10025-1</p>
	<p>Specifications:</p> <p>Drilling capacity: $\Sigma t_i \leq 18,0$ mm</p> <p>Ø-Drill point: 5,0 mm</p> <p>Thread length L1: ≥ 10 mm</p>

$t_{N,II}$ [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 —
	0,55	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 —
	0,75	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 —
	1,00	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 —
	1,25	4,20 —	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 —
	1,75	4,20 —	6,40 —	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 —
$N_{R,k}$ [kN] for $t_{N,I} =$	0,50	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 —
	0,63	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 —
	0,88	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 —
	1,13	4,70 —	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 —
	1,50	4,70 —	6,90 —	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 —
	2,00	4,70 —	6,90 —	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 hexagonal head and sealing washer $\geq \varnothing 16$ 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: $\Sigma t_i \leq 18,0$ mm

\emptyset -Drill point: 5,0 mm

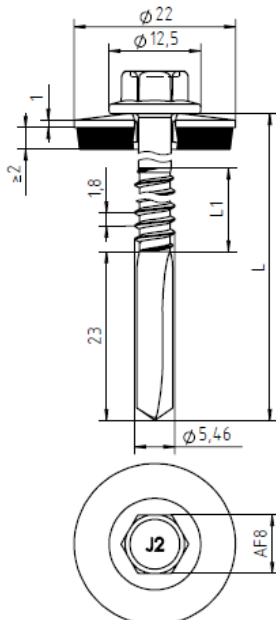
Thread length L1: ≥ 10 mm

$t_{N,II}$ [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 —
	0,55	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 —
	0,75	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 —
	1,00	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 —
	1,25	4,20 —	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 —
	1,75	4,20 —	6,40 —	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 —
$N_{R,k}$ [kN] for $t_{N,I} =$	0,50	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 —
	0,63	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 —
	0,88	4,70 —	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 —
	1,13	4,70 —	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 —
	1,50	4,70 —	6,90 —	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 —
	2,00	4,70 —	6,90 —	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 $\geq \emptyset 19$ 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: $\Sigma t_i \leq 18,0$ mm

Ø-Drill point: 5,0 mm

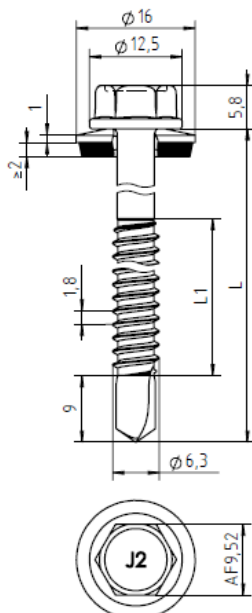
Thread length L1: ≥ 10 mm

$t_{N,II}$ [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 —
	0,55	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 —
	0,75	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 —
	1,00	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 —
	1,25	4,20 —	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 —
	1,75	4,20 —	6,40 —	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 —	
$N_{R,k}$ [kN] for $t_{N,I} =$	0,50	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 —
	0,63	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 —
	0,88	4,70 —	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 —
	1,13	4,70 —	6,90 —	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 —
	1,50	4,70 —	6,90 —	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 —
2,00	4,70 —	6,90 —	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 $\geq \text{Ø}22$ 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: $\Sigma t_i \leq 6,50$ mm

\emptyset -Drill point: 5,3 mm

Thread length L_1 : ≥ 10 mm

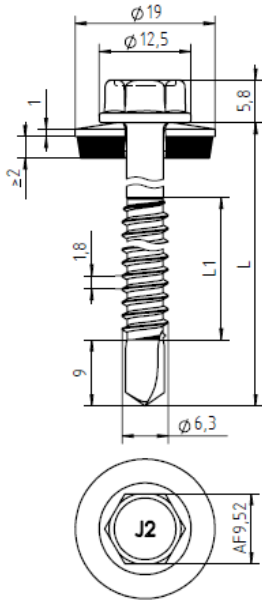
$t_{N,II}$ [mm]	2,00	2,50	3,00	4,00	5,00	
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	1,13 ac	1,13 ac	1,13 ac	1,91 ac	1,91 ac
	0,55	1,25 ac	1,25 ac	1,25 ac	2,12 ac	2,12 ac
	0,63	2,40 abcd	2,40 abcd	2,40 abcd	2,40 abcd	2,40 ac
	0,75	2,90 ac	3,10 ac	3,10 ac	3,10 ac	3,10 ac
	0,88	3,50 ac	3,80 ac	3,80 ac	3,80 ac	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 hexagonal head and sealing washer $\geq \emptyset 16$ 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: $\Sigma ti \leq 6,50$ mm

Ø-Drill point: 5,3 mm

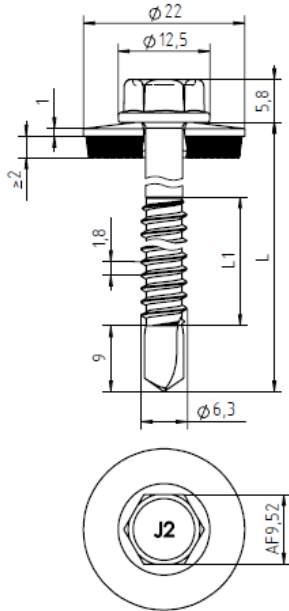
Thread length L1: ≥ 10 mm

$t_{N,II}$ [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 $\geq \text{Ø}19$ 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: $\Sigma t_i \leq 6,50$ 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 $\geq \text{Ø}22$ mm

Annex 20