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Authorised and notified according to Article 10 of the Council Directive of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products (89/106/EEC)

Deutsches Institut für Bautechnik

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European Technical Approval ETA-10/0200

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Handelsbezeichnung *Trade name*	Befestigungsschrauben JA, JB, JT, JZ und JF *Fastening screws JA, JB, JT, JZ and JF*
Zulassungsinhaber *Holder of approval*	EJOT Baubefestigungen GmbH In der Stockwiese 35 57334 Bad Laasphe DEUTSCHLAND
Zulassungsgegenstand und Verwendungszweck *Generic type and use of construction product*	Befestigungsschrauben für Bauteile und Bleche aus Metall *Fastening screws for metal members and sheeting*
Geltungsdauer: *Validity:* vom *from* / bis *to*	27 June 2013 27 June 2018
Herstellwerk *Manufacturing plant*	EJOT Baubefestigungen GmbH In der Stockwiese 35 57334 Bad Laasphe DEUTSCHLAND

Diese Zulassung umfasst *This Approval contains*	117 Seiten einschließlich 104 Anhänge *117 pages including 104 annexes*
Diese Zulassung ersetzt *This Approval replaces*	ETA-10/0200 mit Geltungsdauer vom 03.04.2012 bis 17.08.2015 *ETA-10/0200 with validity from 03.04.2012 to 17.08.2015*

I LEGAL BASES AND GENERAL CONDITIONS

1 This European technical approval is issued by Deutsches Institut für Bautechnik in accordance with:

- Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products[1], modified by Council Directive 93/68/EEC[2] and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council[3];
- *Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998[4], as amended by Article 2 of the law of 8 November 2011[5];*
- Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC[6].

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6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

1 Official Journal of the European Communities L 40, 11 February 1989, p. 12
2 Official Journal of the European Communities L 220, 30 August 1993, p. 1
3 Official Journal of the European Union L 284, 31 October 2003, p. 25
4 *Bundesgesetzblatt Teil I 1998*, p. 812
5 *Bundesgesetzblatt Teil I 2011*, p. 2178
6 Official Journal of the European Communities L 17, 20 January 1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product/ products and intended use

1.1 Definition of the construction product

The EJOT fastening screws are self drilling and self tapping screws listed in Table 1. The fastening screws are made of case hardened carbon steel or stainless steel. They are partly completed with metallic washers and EPDM sealing rings. For details see the appropriate Annexes.

Screws or washers for which the stainless steel grade A2 according to EN ISO 3506-1 is given in the respective Annexes (e. g. 1.4301 or 1.4567) may be made of stainless steel grade A4 (e. g. 1.4401 or 1.4578) as well.

Examples of fastening screws and the corresponding connections are shown in Annex 1.

The fastening screws and the corresponding connections are subject to tension and shear forces.

Table 1 Different types of fastening screws

Annex	Fastening screw	Comp. I	Comp. I	Description
Annex 6	JT2-2-4,2 x L JT2-3-4,8 x L	steel	steel	with hexagon head or round head with Phillips®, Pozidriv® or Torx® drive system
Annex 7	JT2-2H/3-4,8 x L	steel	steel	with undercut, hexagon head and sealing washer ≥ Ø14 mm
Annex 8	JT2-2H-4,8 x L	steel	steel	with undercut and hexagon head
Annex 9	JT2-T-2H-4,8 x L	steel	steel	with undercut and round head with Torx® drive system
Annex 10	JT2-2H-5,5 x L	steel	steel	with undercut, hexagon head and sealing washer ≥ Ø16 mm
Annex 11	JT2-3H-5,5 x L	steel	steel	with undercut, hexagon head and sealing washer ≥ Ø16 mm
Annex 12	JT2-3H-5,5 x L	steel	steel	with undercut, hexagon head and sealing washer ≥ Ø16 mm
Annex 13	JT2-3-5,5 x L	steel	steel	with hexagon head
Annex 14	JT2-3-5,5 x L	steel	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 15	JT2-6-5,5 x L	steel	steel	with hexagon head
Annex 16	JT2-6-5,5 x L	steel	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 17	JT2-8-5,5 x L	steel	steel	with hexagon head
Annex 18	JT2-8-5,5 x L	steel	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 19	JT2-6-6,3 x L	steel	steel	with hexagon head
Annex 20	JT2-6-6,3 x L	steel	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 21	JT2-12-5,5 x L	steel	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 22	JT2-12-5,5 x L	steel	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 23	JT3-2H-4,8 x L JT6-2H-4,8 x L	steel	steel	with undercut and hexagon head and sealing washer ≥ Ø14 mm

Annex	Fastening screw	Comp. I	Comp. I	Description
Annex 24	JT3-3H-4,8 x L JT6-3H-4,8 x L	steel	steel	with undercut, hexagon head and sealing washer ≥ Ø14 mm
Annex 25	JT3-FR-2H-4,8 x L JT6-FR-2H-4,8 x L	steel	steel	with undercut, round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 26*)	JT3- (FR-)2-4,9xL JT4- (FR-)2-4,9xL JT9- (FR-)2-4,9xL	alu 165 1)	timber	hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 27*)	JT3- (FR-)2-4,9xL JT4- (FR-)2-4,9xL JT9- (FR-)2-4,9xL	Alu 215 2)	timber	hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 28	JT3-2H-5,5 x L JT6-2H-5,5 x L	steel	steel	with undercut, hexagon head and sealing washer ≥ Ø16 mm
Annex 29	JT3-2-6,0 x L JT3-FR-2-6,0 x L JT6-2-6,0 x L JT6-FR-2-6,0 x L	alu 165	alu 165	with hexagon or round head and sealing washer ≥ Ø14 mm
Annex 30	JT3-2-6,0 x L JT3-FR-2-6,0 x L JT6-2-6,0 x L JT6-FR-2-6,0 x L	alu 215	alu 215	with hexagon or round head and sealing washer ≥ Ø14 mm
Annex 31	JT3-2-6,0 x L JT3-FR-2-6,0 x L JT6-2-6,0 x L JT6-FR-2-6,0 x L	alu 165	steel	with hexagon or round head and sealing washer ≥ Ø14 mm
Annex 32	JT3-2-6,0 x L JT3-FR-2-6,0 x L JT6-2-6,0 x L JT6-FR-2-6,0 x L	alu 215	steel	with hexagon or round head and sealing washer ≥ Ø14 mm
Annex 33*)	JT3-2-6,0 x L JT3-FR-2-6,0 x L JT6-2-6,0 x L JT6-FR-2-6,0 x L	alu 165	timber	with hexagon or round head and sealing washer ≥ Ø14 mm
Annex 34*)	JT3-2-6,0 x L JT3-FR-2-6,0 x L JT6-2-6,0 x L JT6-FR-2-6,0 x L	alu 215	timber	with hexagon or round head and sealing washer ≥ Ø14 mm
Annex 35	JT3-2H Plus - 5,5 x L JT6-2H Plus - 5,5 x L JT3-FR-2H Plus - 5,5 x L JT6-FR-2H Plus - 5,5 x L	steel	steel	with undercut, hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm
Annex 36	JT3-2H Plus - 5,5 x L JT6-2H Plus - 5,5 x L JT3-FR-2H Plus - 5,5 x L JT6-FR-2H Plus - 5,5 x L	steel	steel	with undercut, hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm
Annex 37	JT3-FR-2H Plus-5,5 x L JT6-FR-2H Plus-5,5 x L	steel	steel	with undercut, round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 38	JT3-FR-2H Plus-5,5 x L JT6-FR-2H Plus-5,5 x L	steel	steel	with undercut, round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 39	JT3-2H Plus - 5,5 x L JT6-2H Plus - 5,5 x L JT3-FR-2H Plus - 5,5 x L JT6-FR-2H Plus - 5,5 x L	alu 165	alu 165	with undercut, hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm

Annex	Fastening screw	Comp. I	Comp. I	Description
Annex 40	JT3-2H Plus - 5,5 x L JT6-2H Plus - 5,5 x L JT3-FR-2H Plus - 5,5 x L JT6-FR-2H Plus - 5,5 x L	alu 215	alu 215	with undercut, hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 41	JT3-2H Plus - 5,5 x L JT6-2H Plus - 5,5 x L JT3-FR-2H Plus - 5,5 x L JT6-FR-2H Plus - 5,5 x L	alu 165	steel	with undercut, hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 42	JT3-2H Plus - 5,5 x L JT6-2H Plus - 5,5 x L JT3-FR-2H Plus - 5,5 x L JT6-FR-2H Plus - 5,5 x L	alu 165	steel	with undercut, hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 43	JT3-2H Plus - 5,5 x L JT6-2H Plus - 5,5 x L JT3-FR-2H Plus - 5,5 x L JT6-FR-2H Plus - 5,5 x L	alu 215	steel	with undercut, hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 44	JT3-2H Plus - 5,5 x L JT6-2H Plus - 5,5 x L JT3-FR-2H Plus - 5,5 x L JT6-FR-2H Plus - 5,5 x L	alu 215	steel	with undercut, hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 45	JT3-3-5,5xL JT3-FR-3-5,5xL JT6-3-5,5xL JT6-FR-3-5,5 x L	alu 165	alu 165	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm
Annex 46	JT3-3-5,5xL JT3-FR-3-5,5xL JT6-3-5,5xL JT6-FR-3-5,5 x L	alu 215	alu 215	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm
Annex 47	JT3-3-5,5xL JT3-FR-3-5,5xL JT6-3-5,5xL JT6-FR-3-5,5 x L	alu 165	steel	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm
Annex 48	JT3-3-5,5xL JT3-FR-3-5,5xL JT6-3-5,5xL JT6-FR-3-5,5 x L	alu 215	steel	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm
Annex 49	JT3-3H-5,5 x L JT6-3H-5,5 x L JT3-FR-3H-5,5 x L JT6-FR-3H-5,5 x L	steel	steel	with undercut, hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm
Annex 50	JT3-3H-5,5 x L JT6-3H-5,5 x L JT3-FR-3H-5,5 x L JT6-FR-3H-5,5 x L	steel	steel	with undercut, hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm
Annex 51	JT3-3-5,5 x L JT6-3-5,5 x L JT3-FR-3-5,5 x L JT6-FR-3-5,5 x L	steel	steel	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm
Annex 52	JT3-6-5,5 x L JT6-6-5,5 x L JT3-FR-6-5,5 x L JT6-FR-6-5,5 x L	steel	steel	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm

Annex	Fastening screw	Comp. I	Comp. I	Description
Annex 53	JT3-6-5,5 x L JT6-6-5,5 x L JT3-FR-6-5,5 x L JT6-FR-6-5,5 x L	alu 165	alu 165	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 54	JT3-6-5,5 x L JT6-6-5,5 x L JT3-FR-6-5,5 x L JT6-FR-6-5,5 x L	alu 215	alu 215	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 55	JT3-6-5,5 x L JT6-6-5,5 x L JT3-FR-6-5,5 x L JT6-FR-6-5,5 x L	alu 165	steel	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 56	JT3-6-5,5 x L JT6-6-5,5 x L JT3-FR-6-5,5 x L JT6-FR-6-5,5 x L	alu 215	steel	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 57	JT3-12-5,5 x L JT6-12-5,5 x L JT3-FR-12-5,5 x L JT6-FR-12-5,5 x L	steel	steel	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm
Annex 58	JT3-12-5,5 x L JT6-12-5,5 x L JT3-FR-12-5,5 x L JT6-FR-12-5,5 x L	steel	steel	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm
Annex 59	JT3-12-5,5 x L JT6-12-5,5 x L JT3-FR-12-5,5 x L JT6-FR-12-5,5 x L	alu 165	alu 165	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 60	JT3-12-5,5 x L JT6-12-5,5 x L JT3-FR-12-5,5 x L JT6-FR-12-5,5 x L	alu 215	alu 215	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 61	JT3-12-5,5 x L JT6-12-5,5 x L JT3-FR-12-5,5 x L JT6-FR-12-5,5 x L	alu 165	steel	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 62	JT3-12-5,5 x L JT6-12-5,5 x L JT3-FR-12-5,5 x L JT6-FR-12-5,5 x L	alu 215	steel	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 63	JT3-6-6,3 x L JT6-6-6,3 x L	steel	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 64	JT3-2-6,5 x L JT6-2-6,5 x L	steel	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 65*)	JT3-2-6,5 x L JT6-2-6,5 x L	steel	timber	with hexagon head and sealing washer ≥ Ø16 mm
Annex 66*)	JT3-2-6,5 x L JT6-2-6,5 x L	alu 165	timber	with hexagon head and sealing washer ≥ Ø16 mm
Annex 67*)	JT3-2-6,5 x L JT6-2-6,5 x L	alu 215	timber	with hexagon head and sealing washer ≥ Ø16 mm
Annex 68*)	JT3-2-6,5 x L JT6-2-6,5 x L	steel	timber	with hexagon head and sealing washer ≥ Ø16 mm

Annex	Fastening screw	Comp. I	Comp. I	Description
Annex 69*)	JT3-2-6,5 x L JT6-2-6,5 x L	steel	timber	with hexagon head and sealing washer ≥ Ø16 mm
Annex 70	JA1-6,5 x L	steel	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 71*)	JA1-6,5 x L	steel	timber	with hexagon head and sealing washer ≥ Ø16 mm
Annex 72	JZ1-6,3 x L JB1-6,3 x L	steel	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 73	JZ1-6,3 x L	steel	steel	with hexagon head and sealing washer ≥ Ø22 mm
Annex 74	JA3-6,5 x L	steel	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 75*)	JA3-6,5 x L	steel	timber	with hexagon head and sealing washer ≥ Ø16 mm
Annex 76	JA3-6,5 x L	alu 165	alu 165	with hexagon head and sealing washer ≥ Ø16 mm
Annex 77	JA3-6,5 x L	alu 215	alu 215	with hexagon head and sealing washer ≥ Ø16 mm
Annex 78	JA3-6,5 x L	alu 165	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 79	JA3-6,5 x L	alu 215	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 80	JZ3-6,3 x L JB3-6,3 x L	steel	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 81	JZ3-6,3 x L	steel	steel	with hexagon head and sealing washer ≥ Ø22 mm
Annex 82	JZ3-6,3 x L JB3-6,3 x L	alu 165	alu 165	with hexagon head and sealing washer ≥ Ø16 mm
Annex 83	JZ3-6,3 x L JB3-6,3 x L	alu 215	alu 215	with hexagon head and sealing washer ≥ Ø16 mm
Annex 84	JZ3-6,3 x L JB3-6,3 x L	alu 165	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 85	JZ3-6,3 x L JB3-6,3 x L	alu 215	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 86	JZ3-8,0 x L	steel	steel	with hexagon head and sealing washer ≥ Ø22 mm
Annex 87	JZ7-6,3 x L JB7-6,3 x L	steel	steel	with hexagon head and sealing washer ≥ Ø16 mm
Annex 88	JZ7-6,3 x L JB7-6,3 x L	steel	steel	with hexagon head and sealing washer ≥ Ø22 mm
Annex 89	JF3-2H-4,8 x L JF6-2H-4,8 x L JF3-FR-2H-4,8 x L JF6-FR-2H-4,8 x L	steel	steel	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø14 mm
Annex 90	JF3-2H-4,8 x L JF6-2H-4,8 x L JF3-FR-2H-4,8 x L JF6-FR-2H-4,8 x L	alu 165	alu 165	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø14 mm
Annex 91	JF3-2H-4,8 x L JF6-2H-4,8 x L JF3-FR-2H-4,8 x L JF6-FR-2H-4,8 x L	alu 215	alu 215	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø14 mm

Annex	Fastening screw	Comp. I	Comp. I	Description
Annex 92	JF3-2H-4,8 x L JF6-2H-4,8 x L JF3-FR-2H-4,8 x L JF6-FR-2H-4,8 x L	alu 165	steel	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø14 mm
Annex 93	JF3-2H-4,8 x L JF6-2H-4,8 x L JF3-FR-2H-4,8 x L JF6-FR-2H-4,8 x L	alu 215	steel	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø14 mm
Annex 94	JF2-2H-4,8 x L	steel	steel	with hexagon head
Annex 95	JF3-2-5,5xL JF6-2-5,5xL JF3-FR-2-5,5xL JF6-FR-2-5,5xL	steel	steel	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 96	JF3-2-5,5xL JF6-2-5,5xL JF3-FR-2-5,5xL JF6-FR-2-5,5xL	steel	steel	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø14 mm
Annex 97	JF3-2-5,5xL JF6-2-5,5xL JF3-FR-2-5,5xL JF6-FR-2-5,5xL	alu 165	alu 165	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø14 mm
Annex 98	JF3-2-5,5xL JF6-2-5,5xL JF3-FR-2-5,5xL JF6-FR-2-5,5xL	alu 215	alu 215	with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø14 mm
Annex 99	JT3-LT-3-5,5xL JT6-LT-3-5,5xL	steel	steel	round head with Torx® drive system
Annex 100	JT3-LT-3-5,5xL JT6-LT-3-5,5xL	steel	steel	round head with Torx® drive system and sealing washer ≥ Ø11 mm
Annex 101	JT4-4-4,8xL JT9-4-4,8xL	alu 165	alu 165	with hexagon head
Annex 102	JT4-4-4,8xL JT9-4-4,8xL	alu 215	alu 215	with hexagon head
Annex 103	JT4-6-5,5xL JT9-6-5,5xL	alu 165	alu 165	with hexagon head
Annex 104	JT4-6-5,5xL JT9-6-5,5xL	alu 215	alu 215	with hexagon head

*) These fastening screws are applicable for fastening to timber substructures

[1]) Aluminum alloy with $R_{m,min}$ of 165 N/mm^2

[2]) Aluminum alloy with $R_{m,min}$ of 215 N/mm^2

1.2 Intended use

The fastening screws are intended to be used for fastening steel sheeting to steel substructures and as far as stated in Table 1 to timber substructures. 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 other thin gauge steel members.

The component to be fastened is component I and the substructure is component II.

The intended use comprises fastening screws and connections for indoor and outdoor applications. Fastening screws which are made of stainless steel are intended to be used in external environments with a high or very high corrosion category.

The intended use comprises connections with predominantly static loads (e.g. wind loads, dead loads).

The provisions made in this European technical approval are based on an assumed working life of the fastening screws of 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

2 Characteristics of product and methods of verification

2.1 Characteristics of product

The fastening screws shall correspond to the drawings given in the appropriate Annexes (see Table 1).

The characteristic material values, dimensions and tolerances of the fastening screws neither indicated in this section nor in the Annexes shall correspond to the respective values laid down in the technical documentation[7] to this European technical approval.

The characteristic values of the shear and tension resistance of the connections made with the fastening screws are given in the appropriate Annexes or in section 4.2.

The fastening screws are considered to satisfy the requirements of performance class A1 of the characteristic reaction to fire.

2.2 Methods of verification

The assessment of the fitness of the fastening screws for the intended use in relation to the Essential Requirements ER 1 (Mechanical resistance and stability), ER 2 (Safety in case of fire), ER 4 (Safety in use) and additional aspects of durability has been made in accordance with section 3.2 of the Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC[6].

The assessment of the resistance to fire performance is only relevant to the assembled system (fastening screws, sheeting, substructure) which is not part of the ETA.

The fastening screws are considered to satisfy the requirements of performance class A 1 of the characteristic reaction to fire, in accordance with the provisions of the EC Decision 96/603/EC (as amended) without the need for testing on the basis of its listing in that decision.

Concerning Essential Requirements No. 1 (Mechanical resistance and stability) and No. 4 (Safety in use) the following applies:

The characteristic values of resistance given in the Annexes were determined by shear and tension tests.

The formulas to calculate the design resistance are given in clause 4.2.1.

[7] The technical documentation to this European technical approval is deposited at Deutsches Institut für Bautechnik and, as far as relevant fort the tasks of the approved bodies involved in the attestation of conformity procedure is handed over to the approved bodies.

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

According to the Decision 99/92 of the European Commission[8] system 3 of the attestation of conformity applies.

This system of attestation of conformity is defined as follows:

System 3: Declaration of conformity of the product by the manufacturer on the basis of:

(a) Tasks for the manufacturer:

(1) factory production control;

(b) Tasks for the approved body:

(2) initial type-testing of the product.

Note: Approved bodies are also referred to as "notified bodies".

3.2 Responsibilities

3.2.1 Tasks for the manufacturer

3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall insure that the product is in conformity with this European technical approval.

The manufacturer may only use initial materials stated in the technical documentation of this European technical approval.

The factory production control shall be in accordance with the "control plan relating to this European technical approval" which is part of the technical documentation of this European technical approval. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited with Deutsches Institut für Bautechnik.[9]

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

3.2.1.2 Other tasks for the manufacturer

The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks referred to in section 3.1 in the field of fastening screws in order to undertake the actions laid down in section 3.2.2. For this purpose, the control plan referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the approved body involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of this European technical approval.

3.2.2 Tasks for the approved bodies

The approved body shall perform the

- initial type-testing of the product,

in accordance with the provisions laid down in the control plan.

The approved body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in written reports.

[8] Official Journal of the European Communities L 80 of 18.03.1998.

[9] The "control plan" is a confidential part of the European technical approval and only handed over to the approved body involved in the procedure of attestation of conformity. See section 3.2.2.

3.3 CE marking

The CE marking shall be affixed on each packaging of fastening screws. The letters "CE" shall be followed by the identification number of the approved certification body, where relevant, and be accompanied by the following additional information:

- the name and address of the producer (legal entity responsible for the manufacture),
- the last two digits of the year in which the CE marking was affixed,
- the number of the European technical approval,
- the name of the product.

4 Assumptions under which the fitness of the product for the intended use was favourably assessed

4.1 Manufacturing

The fastening screws are manufactured in accordance with the provisions of the European technical approval using the manufacturing process as laid down in the technical documentation.

The European technical approval is issued for the product on the basis of agreed data/information, deposited with Deutsches Institut für Bautechnik, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to Deutsches Institut für Bautechnik before the changes are introduced. Deutsches Institut für Bautechnik will decide whether or not such changes affect the approval and consequently the validity of the CE marking on the basis of the approval and if so whether further assessment or alterations to the approval shall be necessary.

4.2 Design

4.2.1 General

Fastening screws completely or partly exposed to external weather or similar conditions are made of stainless steel or are protected against corrosion. For the corrosion protection the rules given in EN 1090-2:2008 + A1:2011, EN 1993-1-3:2006 + AC:2009 and EN 1993-1-4:2006 are taken into account.

For the types of connection (a, b, c, d) listed in the Annexes it is not necessary to take into account the effect of constraints due to temperature. For other types of connection it shall be considered for design as long as constraining forces due to temperature do not occur or are not significant (e. g. sufficient flexibility of the structure).

The loading is predominantly static. (Remark: Wind loads are regarded as predominantly static.)

Dimensions, material properties, torque moments $M_{t,norm}$, minimum effective screw-in length l_{ef} and nominal material thicknesses t_N as stated in the ETA or in the Annexes are observed.

The verification concept stated in EN 1990:2002 + A1:2005 +A1:2005/AC:2010 is used for the design of the connections made with the fastening screws. The characteristic values (shear and tension resistance) stated in the Annexes are used for the design of the entire connections.

The following formulas are used to calculate the values of design resistance:

$$N_{Rd} = \frac{N_{Rk}}{\gamma_M}$$

$$V_{Rd} = \frac{V_{Rk}}{\gamma_M}$$

The recommended partial safety factor $\gamma_M = 1.33$ is used in order to determine the corresponding design resistances, provided no values are given in national regulations of the member state in which the fastening screws are used or in the respective National Annex to Eurocode 3.

In case of combined tension and shear forces the linear interaction formula according to EN 1993-1-3:2006 + AC:2009, section 8.3 (8) is taken into account.

$$\frac{N_{Sd}}{N_{Rd}} + \frac{V_{Sd}}{V_{Rd}} \leq 1.0$$

The possibly required reduction of the tension resistance (pull-through resistance) due to the position of the fastener is taken into account:

- in accordance with EN 1993 1 3:2006+ AC:2009, section 8.3 (7) and Fig. 8.2 (component I is made of steel) or EN 1999-1-4:2007 + A1:2011, section 8.1 (6) and Table 8.3 (component I is made of aluminium),
- of 0.7 if the supporting structure is an asymmetric profile (e.g. Z-profile) with $t_{II} < 5$ mm

4.2.2 Additional rules for connections with timber substructures

As far as no other provisions are made in the following EN 1995-1-1:2004 + A1:2008 applies.

Drill points of self drilling screws are not taken into account for the effective screw-in length.

The following terms are used:

l_g - Screw-in length - part of thread screwed into component II including drill point.

l_b - Length of unthreaded part of the drill-point.

l_{ef} - effective screw-in length $l_{ef} = l_g - l_b$

$N_{R,k} = F_{ax,Rk} \bullet k_{mod}$

$V_{R,k} = F_{v,Rk} \bullet k_{mod}$

$F_{ax,Rk}$ according to EN 1995-1-1:2004 + A1:2008, equation (8.40a)

Remark: $F_{ax,Rk} = F_{ax,\alpha,Rk}$ with $\alpha = 90°$

$F_{v,Rk}$ according to EN 1995-1-1:2004 + A1:2008, clause 8.2.3

k_{mod} according to EN 1995-1-1:2004 + A1:2008, Table 3.1

$M_{y,Rk}$ in equation (8.9) of EN 1995-1-1:2004 + A1:2008 and $f_{ax,k}$ in equation (8.40a) of EN 1995-1-1:2004 + A1:2008 are given in the Annexes of this ETA.

The characteristic values for pullout and bearing resistance (timber substructure) calculated according to EN 1995-1-1:2004 + A1:2008 are compared with the characteristic values for component I (pull over and bearing resistance) stated in the right column of the table in the appropriate Annexes. The lower value is used for further calculations.

4.2.3 Additional rules for fastening of perforated sheets

For the fastening of perforated sheets (structural part I) only fastening screws with diameters given in Annexes 2, 3, 4 or 5 are used for which characteristic values are given in the following Annexes for unperforated sheets of same thickness and strength class as for the perforated sheets.

For the calculation of the connection the characteristic values for the connection of unperforated sheets according to the relevant Annex and the characteristic values for the connection of perforated sheets according to Annex 2, 3, 4 or 5 are determined. The lower values are used for further calculations.

The fastening to perforated sheets (structural part II) is not ruled in this ETA.

4.3 Installation

The installation is only carried out according to the manufacturer's instructions. The manufacturer hands over the assembly instructions to the assembler.

It is guaranteed by the execution that no bimetallic corrosion will occur.

For regular shear forces the components I and II are directly connected to each other so that the fastening screws do not get additional bending. The use of compression resistant thermal insulation strips up to a thickness of 3 mm is allowed.

The fastening screws are fixed rectangular to the surface of the components to guarantee a correct load bearing and if necessary rain-proof connection.

Fastening screws for steel substructures are screwed in with the cylindrical part of the thread at least 6 mm if the substructure has a thickness over 6 mm unless otherwise declared in the manufacturer's instruction. Welded drill points are not taken into account for the screw-in length.

The conformity of the installed fasteners with the provisions of the ETA is attested by the executing company.

5 Indications to the manufacturer

It is in the responsibility of the manufacturer to ensure that the information on the specific conditions according to 1, 2, 4.2 and 4.3 (including Annexes referred to) is given to those who are concerned. This information may be given by reproduction of the respective parts of the European technical approval.

In addition all installation data (predrill diameter, torque moment, application limits) shall be shown clearly on the package and/or on an enclosed instruction sheet, preferably using illustration(s).

Andreas Kummerow
p. p. Head of Department

beglaubigt:
Ulbrich

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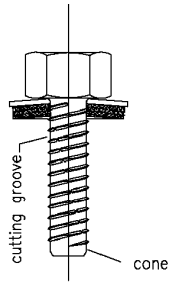
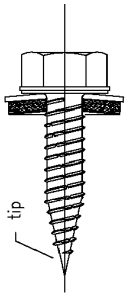
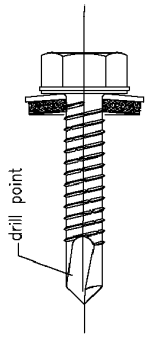


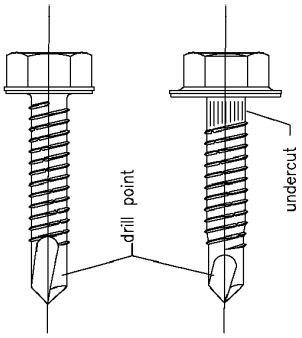
self tapping screw
with sealing washer



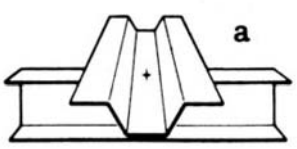
self tapping screw
with sealing washer



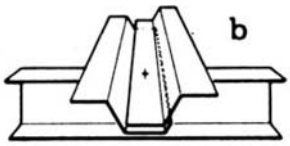
self–drilling screw
with sealing washer



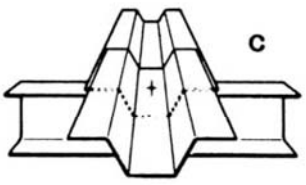
self–drilling screw
with integrated washer



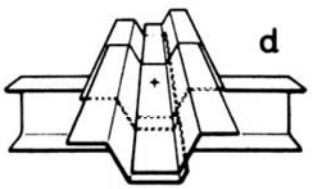
Single connection



Side lap connection



End overlap connection



Side lap + end overlap connection

Screws	**Annex 1**
Examples for screws Types of connection	

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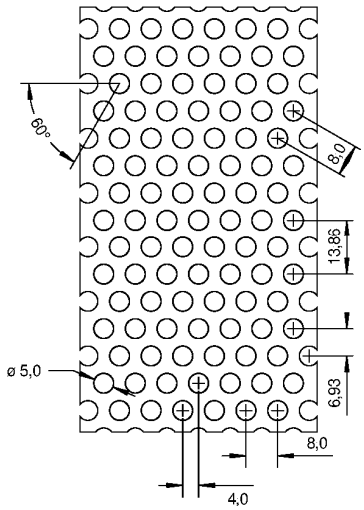

Hole pattern I

Type of Fastener	self tapping screw ø6,3 mm and ø6,5 mm and self drilling screw from ø5,5 mm to ø6,3 mm
Materials	
Fastener:	stainless steel - EN 10088 or similiar
Washer:	stainless steel - EN 10088 EPDM sealing washer
Component I:	S280GD, S320GD or S350GD - EN 10346
Component II:	at least S235 - EN 10025-1 or at least S280GD - EN 10346 or structural timber at least strength grade C24

	sheet / Ø washer	perforated sheets made of S280GD with $R_{m,min}$ = 360 N/mm²				perforated sheets made of S320GD with $R_{m,min}$ = 390 N/mm²				perforated sheets made of S350GD with $R_{m,min}$ = 420 N/mm²			
		16 mm	19 mm	22 mm	25 mm	16 mm	19 mm	22 mm	25 mm	16 mm	19 mm	22 mm	25 mm
$M_{t,nom}$		5 Nm											
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	—	—	—	—	—	—	—	—	—	—	—	—
	0,75	2,16	2,22	2,24	2,38	2,34	2,40	2,44	2,58	2,54	2,60	2,62	2,78
	0,88	2,56	2,64	2,64	2,78	2,78	2,86	2,86	3,02	3,00	3,10	3,10	3,26
	1,00	2,92	3,04	3,02	3,16	3,16	3,30	3,26	3,42	3,42	3,56	3,52	3,68
	1,13	3,32	3,48	3,42	3,56	3,60	3,76	3,70	3,86	3,88	4,10	4,00	4,16
	1,25	3,70	3,88	3,80	3,94	4,00	4,20	4,10	4,26	4,32	4,54	4,42	4,60
	1,50	4,46	4,74	4,56	4,72	4,84	5,12	4,96	5,10	5,22	5,54	5,34	5,50
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	—	—	—	—	—	—	—	—	—	—	—	—
	0,75	1,40	1,94	2,14	2,22	1,52	2,08	3,32	2,42	1,64	2,26	2,50	2,60
	0,88	1,82	2,34	2,62	2,70	1,96	2,54	2,82	2,92	2,12	2,74	3,04	3,14
	1,00	2,24	2,74	3,06	3,14	2,44	2,96	3,32	3,42	2,62	3,20	3,58	3,68
	1,13	2,74	3,18	3,58	3,64	2,98	3,44	3,88	3,96	3,20	3,70	4,18	4,26
	1,25	3,24	3,58	4,08	4,12	3,52	3,88	4,40	4,46	3,78	4,18	4,76	4,80
	1,50	4,36	4,46	5,12	5,12	4,74	4,84	5,56	5,56	5,10	5,22	5,98	5,98

The thickness of the perforated sheets which are exposed to wind loads shall be at least 1,00 mm.

For intermediate values of the washer diameter the characteristic values for the washer with the smaller diameter shall be used.

Fastening of perforated sheets	**Annex 2**

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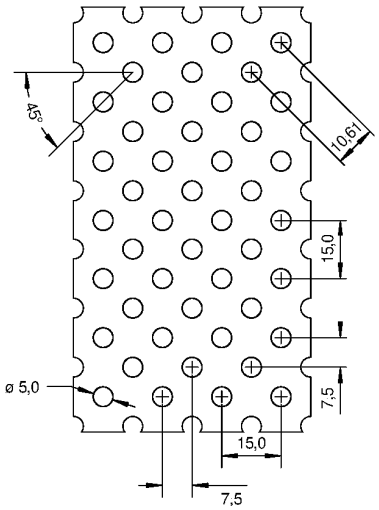


Hole pattern II

Type of Fastener	self tapping screw ø6,3 mm and ø6,5 mm and self drilling screw from ø5,5 mm to ø6,3 mm
Materials	
Fastener:	stainless steel - EN 10088 or similiar
Washer:	stainless steel - EN 10088 EPDM sealing washer
Component I:	S280GD - EN 10346
Component II:	at least S235 - EN 10025-1 or at least S280GD - EN 10346 or structural timber at least strength grade C24

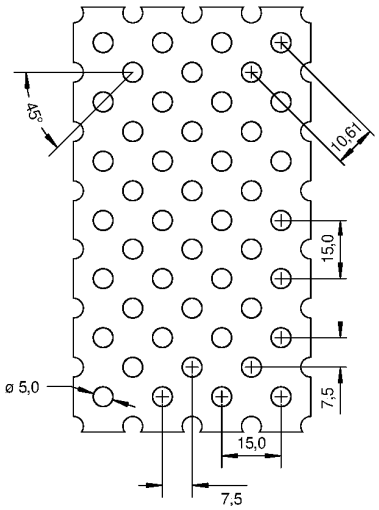
screw / Ø washer		self drilling screws Ø5,5 mm and Ø6,0 mm				self tapping screws and self drilling screws Ø6,3 mm and Ø6,5 mm			
		16 mm	19 mm	22 mm	25 mm	16 mm	19 mm	22 mm	25 mm
$M_{t,nom}$		5 Nm							
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—
	0,63	—	—	—	—	—	—	—	—
	0,75	2,48	2,52	2,84	2,76	2,38	2,64	3,16	3,24
	0,88	3,04	3,12	3,42	3,32	3,02	3,28	3,78	3,88
	1,00	3,56	3,70	3,84	3,84	3,64	3,96	4,36	4,50
	1,13	4,14	4,26	4,40	4,40	4,36	4,70	5,00	5,18
	1,25	4,68	4,84	4,92	4,94	5,06	5,40	5,60	5,84
	1,50	5,76	6,04	5,90	6,10	6,62	6,94	6,88	7,16
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—
	0,63	—	—	—	—	—	—	—	—
	0,75	2,88	3,16	3,24	3,14	2,86	3,46	3,72	3,92
	0,88	3,42	3,72	3,76	3,70	3,40	4,02	4,30	4,46
	1,00	3,92	4,28	4,28	4,20	3,90	4,56	4,82	4,96
	1,13	4,46	4,86	4,88	4,72	4,44	5,12	5,38	5,48
	1,25	4,96	5,42	5,42	5,26	4,94	5,66	5,88	5,94
	1,50	6,04	6,60	6,60	6,38	6,00	6,74	6,92	6,90

The thickness of the perforated sheets which are exposed to wind loads shall be at least 1,00 mm.

For intermediate values of the washer diameter the characteristic values for the washer with the smaller diameter shall be used.

Fastening of perforated sheets	**Annex 3**

Deutsches Institut für Bautechnik DIBt



Hole pattern II

Type of Fastener	self tapping screw ø6,3 mm and ø6,5 mm and self drilling screw from ø5,5 mm to ø6,3 mm
Materials	
Fastener:	stainless steel - EN 10088 or similiar
Washer:	stainless steel - EN 10088 EPDM sealing washer
Component I:	S320GD - EN 10346
Component II:	at least S235 - EN 10025-1 or at least S280GD - EN 10346 or structural timber at least strength grade C24

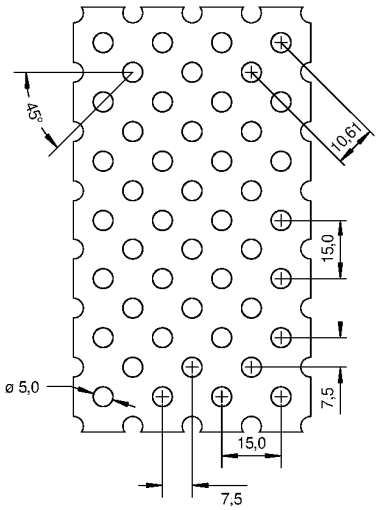
screw / Ø washer		self drilling screws Ø5,5 mm and Ø6,0 mm				self tapping screws and self drilling screws Ø6,3 mm and Ø6,5 mm			
		16 mm	19 mm	22 mm	25 mm	16 mm	19 mm	22 mm	25 mm
$M_{t,nom}$		5 Nm							
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—
	0,63	—	—	—	—	—	—	—	—
	0,75	2,68	2,74	3,08	3,00	2,68	2,88	3,42	3,50
	0,88	3,30	3,38	3,70	3,60	3,36	3,60	4,10	4,22
	1,00	3,86	4,00	4,16	4,16	4,02	4,30	4,72	4,88
	1,13	4,48	4,62	4,76	4,76	4,76	5,08	5,42	5,60
	1,25	5,06	5,24	5,32	5,36	5,50	5,84	6,08	6,30
	1,50	6,24	6,54	6,40	6,60	7,10	7,52	7,46	7,76
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—
	0,63	—	—	—	—	—	—	—	—
	0,75	3,12	3,42	3,50	3,40	3,12	3,68	4,06	4,26
	0,88	3,70	4,04	4,08	4,00	3,70	4,32	4,68	4,86
	1,00	4,24	4,64	4,64	4,54	4,24	4,92	5,24	5,40
	1,13	4,84	5,26	5,28	5,12	4,84	5,54	5,86	5,96
	1,25	5,38	5,88	5,88	5,70	5,38	6,14	6,40	6,48
	1,50	6,54	7,16	7,16	6,92	6,54	7,38	7,54	7,52

The thickness of the perforated sheets which are exposed to wind loads shall be at least 1,00 mm.

For intermediate values of the washer diameter the characteristic values for the washer with the smaller diameter shall be used.

Fastening of perforated sheets	**Annex 4**

Deutsches Institut für Bautechnik DIBt



Hole pattern II

Type of Fastener	self tapping screw ø6,3 mm and ø6,5 mm and self drilling screw from ø5,5 mm to ø6,3 mm
Materials	
Fastener:	stainless steel - EN 10088 or similiar
Washer:	stainless steel - EN 10088 EPDM sealing washer
Component I:	S350GD - EN 10346
Component II:	at least S235 - EN 10025-1 or at least S280GD - EN 10346 or structural timber at least strength grade C24

screw / Ø washer		self drilling screws Ø5,5 mm and Ø6,0 mm				self tapping screws and self drilling screws Ø6,3 mm and Ø6,5 mm			
		16 mm	19 mm	22 mm	25 mm	16 mm	19 mm	22 mm	25 mm
$M_{t,nom}$		5 Nm							
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—
	0,63	—	—	—	—	—	—	—	—
	0,75	2,88	2,92	3,30	3,20	2,98	3,20	3,72	3,92
	0,88	3,54	3,62	3,96	3,86	3,62	3,88	4,42	4,54
	1,00	4,14	4,28	4,46	4,46	4,24	4,52	5,08	5,12
	1,13	4,80	4,94	5,10	5,10	4,92	5,24	5,78	5,74
	1,25	5,44	5,62	5,70	5,72	5,56	5,92	6,46	6,32
	1,50	6,24	6,54	6,40	7,02	6,94	7,36	7,86	7,48
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—
	0,63	—	—	—	—	—	—	—	—
	0,75	3,34	3,66	3,76	3,64	3,52	4,16	4,52	4,64
	0,88	3,96	4,36	4,38	4,28	3,98	4,74	5,04	5,24
	1,00	4,54	4,98	4,96	4,86	4,40	5,24	5,50	5,76
	1,13	5,16	5,64	5,64	5,48	4,86	5,76	5,96	6,32
	1,25	5,80	6,28	6,28	6,14	5,38	6,24	6,40	6,80
	1,50	6,54	7,16	7,16	7,46	6,54	7,38	7,54	7,80

The thickness of the perforated sheets which are exposed to wind loads shall be at least 1,00 mm.

For intermediate values of the washer diameter the characteristic values for the washer with the smaller diameter shall be used.

Fastening of perforated sheets	**Annex 5**

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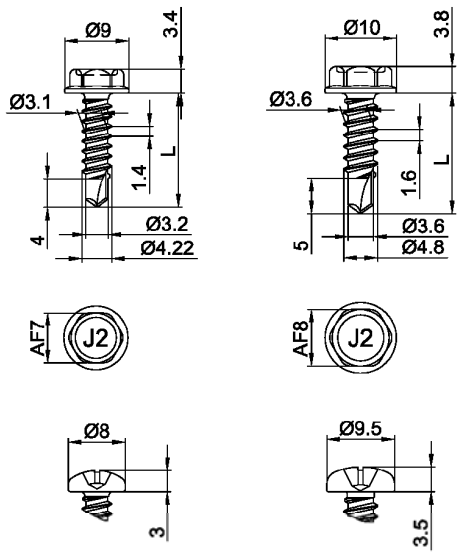

Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity see remark below

Timber substructures

no performance determined

	$t_{N,II}$ [mm]	0,63		0,75		0,88		1,00		1,13		1,25		1,50		2,00	
	$M_{t,nom}$	JT2-4,2 x L: 4 Nm										—					
		JT2-4,8 x L: 4 Nm						JT2-4,8 x L: 5 Nm									
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,50	—	1,90	—	1,90	—	1,90	—	1,90	—	1,90	ac	1,90	ac	1,90	ac
	0,75	1,50	—	1,90	—	2,00	—	2,00	—	2,00	—	2,00	ac	2,00	ac	2,00	ac
	0,88	1,50	—	1,90	—	2,30	—	2,30	—	2,30	—	2,30	a	2,30	a	2,30	a
	1,00	1,50	—	1,90	—	2,30	—	2,60	—	2,60	—	2,60	—	2,60	a	2,60	a
	1,13	1,50	—	1,90	—	2,30	—	2,80	—	2,90	—	2,90	—	2,90	—	2,90	—
	1,25	1,50	—	1,90	—	2,30	—	2,80	—	2,90	—	3,20	—	3,20	—	3,20	—
	1,50	1,50	—	1,90	—	2,30	—	2,80	—	2,90	—	3,20	—	3,70	—	3,70	—
	1,75	1,50	—	1,90	—	2,30	—	2,80	—	2,90	—	3,20	—	3,70	—	3,70	—
	2,00	1,50	—	1,90	—	2,30	—	2,80	—	2,90	—	3,20	—	3,70	—	3,70	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	0,50	—	0,70	—	1,00	—	1,30	—	1,40	—	1,40	ac	1,40	ac	1,40	ac
	0,75	0,50	—	0,70	—	1,00	—	1,30	—	1,50	—	1,50	ac	1,50	ac	1,50	ac
	0,88	0,50	—	0,70	—	1,00	—	1,30	—	1,50	—	1,60	a	1,60	a	1,60	a
	1,00	0,50	—	0,70	—	1,00	—	1,30	—	1,50	—	1,70	—	1,80	a	1,80	a
	1,13	0,50	—	0,70	—	1,00	—	1,30	—	1,50	—	1,70	—	1,90	—	1,90	—
	1,25	0,50	—	0,70	—	1,00	—	1,30	—	1,50	—	1,70	—	2,00	—	2,00	—
	1,50	0,50	—	0,70	—	1,00	—	1,30	—	1,50	—	1,70	—	2,20	—	2,20	—
	1,75	0,50	—	0,70	—	1,00	—	1,30	—	1,50	—	1,70	—	2,20	—	2,20	—
	2,00	0,50	—	0,70	—	1,00	—	1,30	—	1,50	—	1,70	—	2,20	—	2,20	—

Grey highlighted values only for the fastener JT2-4,8 x L

JT2-2-4,2 x L: drilling capacity $\Sigma t_i \leq 2{,}5$ mm
JT2-3-4,8 x L: drilling capacity $\Sigma t_i \leq 4{,}0$ mm

Self drilling screw

JT2-2-4,2 x L
JT2-3-4,8 x L
with hexagon head or round head with Phillips®, Pozidriv® or Torx® drive system

Annex 6

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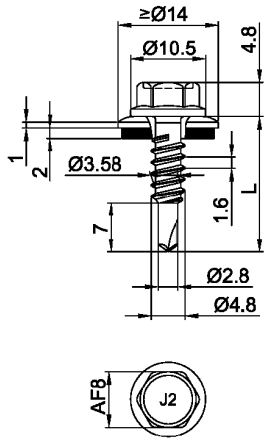


Materials

Fastener: carbon steel
case hardened and galvanized

Washer: carbon steel, galvanized

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 2{,}20$ mm

Timber substructures

no performance determined

	$t_{N,II}$ [mm]	0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75
	$M_{t,nom}$	—										
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,71	0,71	0,71	0,71	0,71	0,71	0,71	0,71	0,71	0,71	0,71
	0,50	0,71	1,18	1,18	1,18	1,18	1,18	1,18	1,18	1,18	1,18	—
	0,55	0,71	1,18	1,42	1,42	1,42	1,42	1,42	1,42	1,42	1,42	—
	0,63	0,71	1,18	1,42	1,71	1,71	1,71	1,71	1,71	1,71	1,71	—
	0,75	0,71	1,18	1,42	1,71	2,14	2,14	2,14	2,14	2,14	—	—
	0,88	0,71	1,18	1,42	1,71	2,14	2,52	2,52	2,52	2,52	—	—
	1,00	0,71	1,18	1,42	1,71	2,14	2,52	2,86	2,86	—	—	—
	1,13	0,71	1,18	1,42	1,71	2,14	2,52	2,86	—	—	—	—
	1,25	0,71	1,18	1,42	1,71	2,14	2,52	—	—	—	—	—
	1,50	0,71	1,18	1,42	1,71	—	—	—	—	—	—	—
	1,75	0,71	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,42	0,62	0,72	0,88	1,08	1,08	1,08	1,08	1,08	1,08	1,08
	0,50	0,42	0,62	0,72	0,88	1,12	1,38	1,54	1,54	1,54	1,54	—
	0,55	0,42	0,62	0,72	0,88	1,12	1,38	1,62	1,62	1,62	1,62	—
	0,63	0,42	0,62	0,72	0,88	1,12	1,38	1,62	1,62	1,62	1,62	—
	0,75	0,42	0,62	0,72	0,88	1,12	1,38	1,62	1,62	1,62	—	—
	0,88	0,42	0,62	0,72	0,88	1,12	1,38	1,62	1,62	1,62	—	—
	1,00	0,42	0,62	0,72	0,88	1,12	1,38	1,62	1,62	—	—	—
	1,13	0,42	0,62	0,72	0,88	1,12	1,38	1,62	—	—	—	—
	1,25	0,42	0,62	0,72	0,88	1,12	1,38	—	—	—	—	—
	1,50	0,42	0,62	0,72	0,88	—	—	—	—	—	—	—
	1,75	0,42	—	—	—	—	—	—	—	—	—	—

If both components I and II are made of S320GD or S350GD the values may be increased by 8,3%.

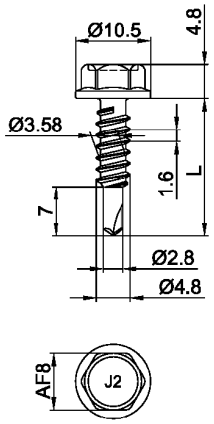
Self drilling screw

JT2-2H/3-4,8 x L

with undercut, hexagon head and sealing washer ≥ Ø14 mm

Annex 7

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 2{,}20$ mm

Timber substructures

no performance determined

$t_{N,II}$ [mm]		0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75
$M_{t,nom}$							—					
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92
	0,50	0,92	1,42	1,42	1,42	1,42	1,42	1,42	1,42	1,42	1,42	—
	0,55	0,92	1,42	1,67	1,67	1,67	1,67	1,67	1,67	1,67	1,67	—
	0,63	0,92	1,42	1,67	1,87	1,87	1,87	1,87	1,87	1,87	1,87	—
	0,75	0,92	1,42	1,67	1,87	2,16	2,16	2,16	2,16	2,16	—	—
	0,88	0,92	1,42	1,67	1,87	2,16	2,75	2,75	2,75	2,75	—	—
	1,00	0,92	1,42	1,67	1,87	2,16	2,75	3,30	3,30	—	—	—
	1,13	0,92	1,42	1,67	1,87	2,16	2,75	3,30	—	—	—	—
	1,25	0,92	1,42	1,67	1,87	2,16	2,75	—	—	—	—	—
	1,50	0,92	1,42	1,67	1,87	—	—	—	—	—	—	—
	1,75	0,92	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,42	0,62	0,72	0,81	0,81	0,81	0,81	0,81	0,81	0,81	0,81
	0,50	0,42	0,62	0,72	0,88	1,12	1,27	1,27	1,27	1,27	1,27	—
	0,55	0,42	0,62	0,72	0,88	1,12	1,38	1,50	1,50	1,50	1,50	—
	0,63	0,42	0,62	0,72	0,88	1,12	1,38	1,50	1,50	1,50	1,50	—
	0,75	0,42	0,62	0,72	0,88	1,12	1,38	1,50	1,50	1,50	—	—
	0,88	0,42	0,62	0,72	0,88	1,12	1,38	1,50	1,50	1,50	—	—
	1,00	0,42	0,62	0,72	0,88	1,12	1,38	1,50	1,50	—	—	—
	1,13	0,42	0,62	0,72	0,88	1,12	1,38	1,50	—	—	—	—
	1,25	0,42	0,62	0,72	0,88	1,12	1,38	—	—	—	—	—
	1,50	0,42	0,62	0,72	0,88	—	—	—	—	—	—	—
	1,75	0,42	—	—	—	—	—	—	—	—	—	—

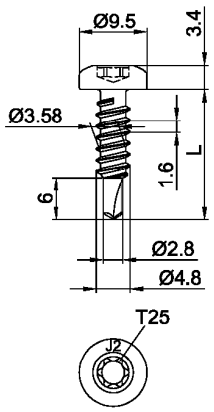
If both components I and II are made of S320GD or S350GD the values may be increased by 8,3%.

Self drilling screw

JT2-2H-4,8 x L
with undercut and hexagon head

Annex 8

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 2{,}20$ mm

Timber substructures

no performance determined

$t_{N,II}$ [mm]		0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75
$M_{t,nom}$							—					
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,69	0,69	0,69	0,69	0,69	0,69	0,69	0,69	0,69	0,69	0,69
	0,50	0,69	1,37	1,37	1,37	1,37	1,37	1,37	1,37	1,37	1,37	—
	0,55	0,69	1,37	1,70	1,70	1,70	1,70	1,70	1,70	1,70	1,70	—
	0,63	0,69	1,37	1,70	1,96	1,96	1,96	1,96	1,96	1,96	1,96	—
	0,75	0,69	1,37	1,70	1,96	2,35	2,35	2,35	2,35	2,35	—	—
	0,88	0,69	1,37	1,70	1,96	2,35	2,70	2,70	2,70	2,70	—	—
	1,00	0,69	1,37	1,70	1,96	2,35	2,70	3,02	3,02	—	—	—
	1,13	0,69	1,37	1,70	1,96	2,35	2,70	3,02	—	—	—	—
	1,25	0,69	1,37	1,70	1,96	2,35	2,70	—	—	—	—	—
	1,50	0,69	1,37	1,70	1,96	—	—	—	—	—	—	—
	1,75	0,69	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,42	0,62	0,72	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85
	0,50	0,42	0,62	0,72	0,88	1,12	1,38	1,38	1,38	1,38	1,38	—
	0,55	0,42	0,62	0,72	0,88	1,12	1,38	1,62	1,62	1,62	1,62	—
	0,63	0,42	0,62	0,72	0,88	1,12	1,38	1,62	1,62	1,62	1,62	—
	0,75	0,42	0,62	0,72	0,88	1,12	1,38	1,62	1,62	1,62	—	—
	0,88	0,42	0,62	0,72	0,88	1,12	1,38	1,62	1,62	1,62	—	—
	1,00	0,42	0,62	0,72	0,88	1,12	1,38	1,62	1,62	—	—	—
	1,13	0,42	0,62	0,72	0,88	1,12	1,38	1,62	—	—	—	—
	1,25	0,42	0,62	0,72	0,88	1,12	1,38	—	—	—	—	—
	1,50	0,42	0,62	0,72	0,88	—	—	—	—	—	—	—
	1,75	0,42	—	—	—	—	—	—	—	—	—	—

If both components I and II are made of S320GD or S350GD the values may be increased by 8,3%.

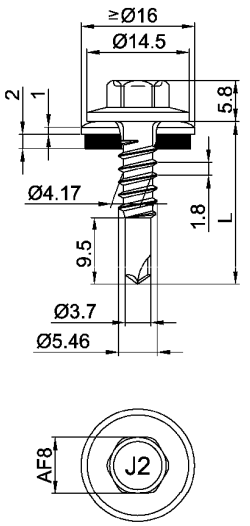
Self drilling screw

JT2-T-2H-4,8 x L

with undercut and round head with Torx® drive system

Annex 9

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: carbon steel, galvanized
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 2{,}50$ mm

Timber substructures

no performance determined

$t_{N,II}$ [mm]		0,63		0,75		0,88		1,00		1,13		1,25		1,50		2,00	
$M_{t,nom}$		5 Nm															
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,00	—	1,00	—	1,00	—	1,00	—	1,00	—	1,00	—	1,00	ac	—	—
	0,75	1,00	—	2,00	—	2,00	—	2,00	—	2,00	—	2,00	—	2,00	—	—	—
	0,88	1,00	—	2,00	—	2,00	—	2,00	—	2,00	—	2,00	—	2,00	—	—	—
	1,00	1,00	—	2,00	—	2,00	—	2,00	—	2,00	—	2,00	—	2,00	—	—	—
	1,13	1,00	—	2,00	—	2,00	—	2,00	—	2,00	—	2,00	—	—	—	—	—
	1,25	1,00	—	2,00	—	2,00	—	2,00	—	2,00	—	2,00	—	—	—	—	—
	1,50	1,00	—	2,00	—	2,00	—	2,00	—	—	—	—	—	—	—	—	—
	1,75	1,00	—	2,00	—	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,38	—	0,49	—	0,59	—	0,70	—	0,86	—	0,97	—	1,24	ac	1,24	ac
	0,55	0,48	—	0,61	—	0,75	—	0,89	—	1,09	—	1,23	—	1,57	ac	—	—
	0,63	0,70	—	0,90	—	1,10	—	1,30	—	1,60	—	1,80	—	2,30	ac	—	—
	0,75	0,70	—	0,90	—	1,10	—	1,30	—	1,60	—	1,80	—	2,30	—	—	—
	0,88	0,70	—	0,90	—	1,10	—	1,30	—	1,60	—	1,80	—	2,30	—	—	—
	1,00	0,70	—	0,90	—	1,10	—	1,30	—	1,60	—	1,80	—	2,30	—	—	—
	1,13	0,70	—	0,90	—	1,10	—	1,30	—	1,60	—	1,80	—	—	—	—	—
	1,25	0,70	—	0,90	—	1,10	—	1,30	—	1,60	—	1,80	—	—	—	—	—
	1,50	0,70	—	0,90	—	1,10	—	1,30	—	—	—	—	—	—	—	—	—
	1,75	0,70	—	0,90	—	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

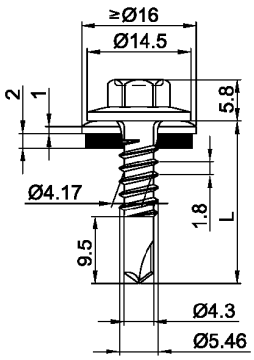
Self drilling screw

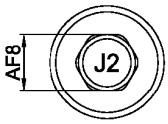
JT2-2H-5,5 x L

with undercut, hexagon head and sealing washer ≥ Ø16 mm

Annex 10

Deutsches Institut für Bautechnik DIBt





Materials

Fastener: carbon steel
case hardened and galvanized

Washer: carbon steel, galvanized
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

no performance determined

$t_{N,II}$ [mm]		1,00		1,13		1,25		1,50		2,00		2,50		3,00		4,00	
$M_{t,nom}$		5 Nm														—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,40	—	1,50	—	1,60	ac	1,90	ac	2,30	ac	2,50	ac	—	—	—	—
	0,75	1,80	—	1,90	—	2,00	ac	2,20	ac	2,70	ac	3,20	a	—	—	—	—
	0,88	2,20	—	2,30	—	2,50	—	2,80	—	3,40	—	3,90	a	—	—	—	—
	1,00	2,60	—	2,80	—	3,00	—	3,40	—	4,20	—	4,60	a	—	—	—	—
	1,13	3,00	—	3,10	—	3,20	—	4,00	—	4,60	—	—	—	—	—	—	—
	1,25	3,50	—	3,70	—	3,90	—	4,40	—	5,20	—	—	—	—	—	—	—
	1,50	4,30	—	4,60	—	4,90	—	5,50	—	6,00	—	—	—	—	—	—	—
	1,75	4,30	—	4,60	—	4,90	—	5,50	—	—	—	—	—	—	—	—	—
	2,00	4,30	—	4,60	—	4,90	—	5,50	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,70	—	0,81	—	0,97	ac	1,24	ac	1,62	ac	1,62	ac	1,62	ac	—	—
	0,55	0,89	—	1,02	—	1,23	ac	1,57	ac	2,05	ac	2,05	ac	—	—	—	—
	0,63	1,30	—	1,50	—	1,80	ac	2,30	ac	3,00	ac	3,00	ac	—	—	—	—
	0,75	1,30	—	1,50	—	1,80	ac	2,30	ac	3,40	ac	4,00	a	—	—	—	—
	0,88	1,30	—	1,50	—	1,80	—	2,30	—	3,40	—	4,60	a	—	—	—	—
	1,00	1,30	—	1,50	—	1,80	—	2,30	—	3,40	—	4,60	a	—	—	—	—
	1,13	1,30	—	1,50	—	1,80	—	2,30	—	3,40	—	—	—	—	—	—	—
	1,25	1,30	—	1,50	—	1,80	—	2,30	—	3,40	—	—	—	—	—	—	—
	1,50	1,30	—	1,50	—	1,80	—	2,30	—	3,40	—	—	—	—	—	—	—
	1,75	1,30	—	1,50	—	1,80	—	2,30	—	—	—	—	—	—	—	—	—
	2,00	1,30	—	1,50	—	1,80	—	2,30	—	—	—	—	—	—	—	—	—

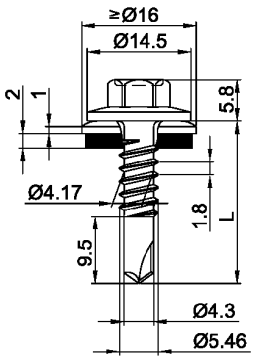
Self drilling screw

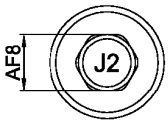
JT2-3H-5,5 x L

with undercut, hexagon head and sealing washer ≥ Ø16 mm

Annex 11

Deutsches Institut für Bautechnik DIBt





Materials

Fastener: carbon steel
case hardened and galvanized

Washer: carbon steel, galvanized
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

no performance determined

$t_{N,II}$ [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		2 x 1,50		2 x 1,75	
$M_{t,nom}$		—		5 Nm												—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	—	—	1,60	—	1,60	—	1,60	—	1,60	—	1,60	—	—	—	—	—
	0,75	—	—	1,90	—	1,90	—	1,90	—	1,90	—	1,90	—	—	—	—	—
	0,88	—	—	2,20	—	2,20	—	2,20	—	2,20	—	2,20	—	—	—	—	—
	1,00	—	—	2,60	—	2,60	—	2,60	—	2,60	—	2,60	—	—	—	—	—
	1,13	—	—	2,60	—	2,60	—	2,60	—	2,60	—	—	—	—	—	—	—
	1,25	—	—	2,60	—	2,60	—	2,60	—	2,60	—	—	—	—	—	—	—
	1,50	—	—	2,60	—	2,60	—	2,60	—	—	—	—	—	—	—	—	—
	1,75	—	—	2,60	—	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	2,60	—	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	0,97	—	1,24	—	1,51	—	1,62	—	1,62	—	1,62	—	—	—
	0,55	—	—	1,23	—	1,57	—	1,91	—	2,05	—	2,05	—	—	—	—	—
	0,63	—	—	1,80	—	2,30	—	2,80	—	3,00	—	3,00	—	—	—	—	—
	0,75	—	—	1,80	—	2,30	—	2,80	—	3,30	—	3,80	—	—	—	—	—
	0,88	—	—	1,80	—	2,30	—	2,80	—	3,30	—	3,80	—	—	—	—	—
	1,00	—	—	1,80	—	2,30	—	2,80	—	3,30	—	3,80	—	—	—	—	—
	1,13	—	—	1,80	—	2,30	—	2,80	—	3,30	—	—	—	—	—	—	—
	1,25	—	—	1,80	—	2,30	—	2,80	—	3,30	—	—	—	—	—	—	—
	1,50	—	—	1,80	—	2,30	—	2,80	—	—	—	—	—	—	—	—	—
	1,75	—	—	1,80	—	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	1,80	—	—	—	—	—	—	—	—	—	—	—	—	—

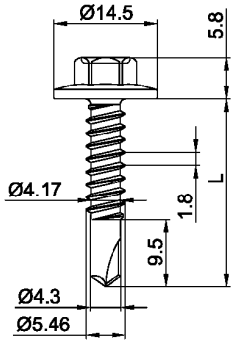
Self drilling screw

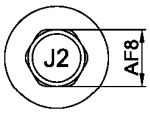
JT2-3H-5,5 x L

with undercut, hexagon head and sealing washer ≥ Ø16 mm

Annex 12

Deutsches Institut für Bautechnik DIBt





Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

no performance determined

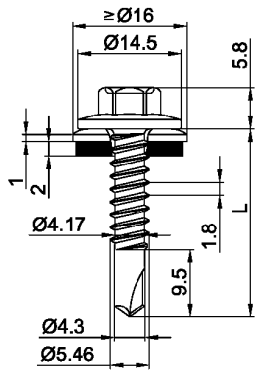
	$t_{N,II}$ [mm]	1,00		1,13		1,25		1,50		2,00		2,50		3,00		4,00	
	$M_{t,nom}$	7 Nm												—			
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,80	—	1,80	—	2,00	—	2,30	—	2,80	ac	2,80	ac	—	—	—	—
	0,75	2,20	—	2,20	—	2,60	—	2,80	—	3,30	ac	3,70	a	—	—	—	—
	0,88	2,60	—	2,60	—	3,00	—	3,30	—	3,60	—	4,30	a	—	—	—	—
	1,00	3,00	—	3,00	—	3,40	—	3,80	—	4,40	—	4,90	a	—	—	—	—
	1,13	3,50	—	3,50	—	3,60	—	4,30	—	4,90	—	—	—	—	—	—	—
	1,25	4,00	—	4,00	—	4,40	—	4,80	—	5,40	—	—	—	—	—	—	—
	1,50	4,80	—	4,80	—	5,40	—	5,80	—	6,40	—	—	—	—	—	—	—
	1,75	4,80	—	4,80	—	5,40	—	5,80	—	—	—	—	—	—	—	—	—
	2,00	4,80	—	4,80	—	5,40	—	5,80	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,30	—	1,30	—	1,80	—	2,10	—	2,10	ac	2,10	ac	—	—	—	—
	0,75	1,30	—	1,30	—	1,80	—	2,30	—	2,90	ac	2,90	a	—	—	—	—
	0,88	1,30	—	1,30	—	1,80	—	2,30	—	3,40	—	3,80	a	—	—	—	—
	1,00	1,30	—	1,30	—	1,80	—	2,30	—	3,40	—	4,60	a	—	—	—	—
	1,13	1,30	—	1,30	—	1,80	—	2,30	—	3,40	—	—	—	—	—	—	—
	1,25	1,30	—	1,30	—	1,80	—	2,30	—	3,40	—	—	—	—	—	—	—
	1,50	1,30	—	1,30	—	1,80	—	2,30	—	3,40	—	—	—	—	—	—	—
	1,75	1,30	—	1,30	—	1,80	—	2,30	—	—	—	—	—	—	—	—	—
	2,00	1,30	—	1,30	—	1,80	—	2,30	—	—	—	—	—	—	—	—	—

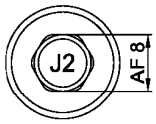
Self drilling screw

JT2-3-5,5 x L
with hexagon head

Annex 13

Deutsches Institut für Bautechnik DIBt





Materials

Fastener: carbon steel
case hardened and galvanized

Washer: carbon steel, galvanized
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

no performance determined

$t_{N,II}$ [mm]		1,00		1,13		1,25		1,50		2,00		2,50		3,00		4,00	
$M_{t,nom}$		7 Nm														—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,40	—	1,40	—	1,70	—	2,00	—	2,50	ac	2,70	ac	—	—	—	—
	0,75	1,80	—	1,80	—	2,20	—	2,40	—	3,00	ac	3,50	a	—	—	—	—
	0,88	2,20	—	2,20	—	2,60	—	2,90	—	3,40	—	4,10	a	—	—	—	—
	1,00	2,60	—	2,60	—	3,00	—	3,40	—	4,20	—	4,60	a	—	—	—	—
	1,13	3,00	—	3,00	—	3,20	—	4,00	—	4,60	—	—	—	—	—	—	—
	1,25	3,50	—	3,50	—	3,90	—	4,40	—	5,20	—	—	—	—	—	—	—
	1,50	4,30	—	4,30	—	4,90	—	5,50	—	6,00	—	—	—	—	—	—	—
	1,75	4,30	—	4,30	—	4,90	—	5,50	—	—	—	—	—	—	—	—	—
	2,00	4,30	—	4,30	—	4,90	—	5,50	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,70	—	0,70	—	0,97	—	1,24	—	1,62	ac	1,62	ac	1,62	ac	—	—
	0,55	0,89	—	0,89	—	1,23	—	1,57	—	2,05	ac	2,05	ac	—	—	—	—
	0,63	1,30	—	1,30	—	1,80	—	2,30	—	3,00	ac	3,00	ac	—	—	—	—
	0,75	1,30	—	1,30	—	1,80	—	2,30	—	3,40	ac	4,20	a	—	—	—	—
	0,88	1,30	—	1,30	—	1,80	—	2,30	—	3,40	—	4,60	a	—	—	—	—
	1,00	1,30	—	1,30	—	1,80	—	2,30	—	3,40	—	4,60	a	—	—	—	—
	1,13	1,30	—	1,30	—	1,80	—	2,30	—	3,40	—	—	—	—	—	—	—
	1,25	1,30	—	1,30	—	1,80	—	2,30	—	3,40	—	—	—	—	—	—	—
	1,50	1,30	—	1,30	—	1,80	—	2,30	—	3,40	—	—	—	—	—	—	—
	1,75	1,30	—	1,30	—	1,80	—	2,30	—	—	—	—	—	—	—	—	—
	2,00	1,30	—	1,30	—	1,80	—	2,30	—	—	—	—	—	—	—	—	—

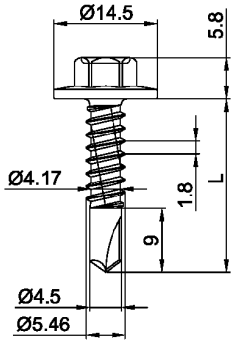
Self drilling screw

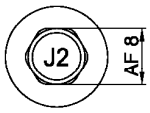
JT2-3-5,5 x L

with hexagon head and sealing washer ≥ Ø16 mm

Annex 14

Deutsches Institut für Bautechnik DIBt





Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235, S275 or S355 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 6{,}00$ mm

Timber substructures

no performance determined

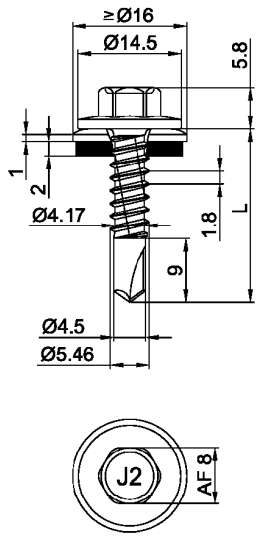
$t_{N,II}$ [mm]		—		—		1,50		2,00		2,50		3,00		4,00		5,00	
$M_{t,nom}$						7 Nm											
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	—	—	—	—	2,60	ac	2,80	ac	2,80	ac	2,80	abcd	3,80	abcd	3,80	abcd
	0,75	—	—	—	—	3,00	—	3,50	ac	3,50	ac	3,50	ac	4,60	ac	4,60	ac
	0,88	—	—	—	—	3,40	—	4,20	—	4,20	ac	4,20	ac	5,30	ac	5,30	ac
	1,00	—	—	—	—	3,80	—	4,50	—	4,50	ac	4,50	ac	6,00	ac	6,00	ac
	1,13	—	—	—	—	4,20	—	4,90	—	4,90	—	4,90	ac	6,70	ac	—	—
	1,25	—	—	—	—	4,60	—	5,30	—	5,30	—	5,30	ac	7,30	ac	—	—
	1,50	—	—	—	—	5,30	—	6,00	—	6,00	—	6,00	—	8,10	—	—	—
	1,75	—	—	—	—	5,30	—	6,00	—	6,00	—	6,00	—	8,10	—	—	—
	2,00	—	—	—	—	5,30	—	6,00	—	6,00	—	6,00	—	8,10	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	—	—	—	—	1,60	ac	2,20	ac	2,20	ac	2,20	abcd	2,20	abcd	2,20	abcd
	0,75	—	—	—	—	1,60	—	2,50	ac	2,90	ac	2,90	ac	2,90	ac	2,90	ac
	0,88	—	—	—	—	1,60	—	2,50	—	3,60	ac	3,60	ac	3,80	ac	3,80	ac
	1,00	—	—	—	—	1,60	—	2,50	—	3,60	ac	4,70	ac	4,70	ac	4,70	ac
	1,13	—	—	—	—	1,60	—	2,50	—	3,60	—	4,80	ac	5,70	ac	—	—
	1,25	—	—	—	—	1,60	—	2,50	—	3,60	—	4,80	ac	6,80	ac	—	—
	1,50	—	—	—	—	1,60	—	2,50	—	3,60	—	4,80	—	6,80	—	—	—
	1,75	—	—	—	—	1,60	—	2,50	—	3,60	—	4,80	—	6,80	—	—	—
	2,00	—	—	—	—	1,60	—	2,50	—	3,60	—	4,80	—	6,80	—	—	—

Self drilling screw

JT2-6-5,5 x L
with hexagon head

Annex 15

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: carbon steel, galvanized
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235, S275 or S355 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 6{,}00$ mm

Timber substructures

no performance determined

	$t_{N,II}$ [mm]	—		—		1,50		2,00		2,50		3,00		4,00		5,00	
	$M_{t,nom}$					7 Nm											
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	—	—	—	—	2,40	ac	2,50	ac	2,50	ac	2,50	abcd	3,40	abcd	3,40	abcd
	0,75	—	—	—	—	2,70	—	3,10	ac	3,10	ac	3,10	ac	4,00	ac	4,00	ac
	0,88	—	—	—	—	3,10	—	3,80	—	3,80	ac	3,80	ac	4,80	ac	4,80	ac
	1,00	—	—	—	—	3,40	—	4,00	—	4,00	ac	4,00	ac	5,30	ac	5,30	ac
	1,13	—	—	—	—	3,80	—	4,40	—	4,40	—	4,40	—	6,00	ac	—	—
	1,25	—	—	—	—	4,10	—	4,80	—	4,80	—	4,80	—	6,60	ac	—	—
	1,50	—	—	—	—	5,00	—	5,40	—	5,40	—	5,40	—	7,30	—	—	—
	1,75	—	—	—	—	5,00	—	5,40	—	5,40	—	5,40	—	7,30	—	—	—
	2,00	—	—	—	—	5,00	—	5,40	—	5,40	—	5,40	—	7,30	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	0,86	ac	1,35	ac	1,62	ac	1,62	abcd	1,62	abcd	1,62	abcd
	0,55	—	—	—	—	1,09	ac	1,71	ac	2,05	ac	2,05	abcd	2,05	abcd	2,05	abcd
	0,63	—	—	—	—	1,60	ac	2,50	ac	3,00	ac	3,00	abcd	3,00	abcd	3,00	abcd
	0,75	—	—	—	—	1,60	—	2,50	ac	3,60	ac	4,10	ac	4,10	ac	4,10	ac
	0,88	—	—	—	—	1,60	—	2,50	—	3,60	ac	4,70	ac	5,00	ac	5,00	ac
	1,00	—	—	—	—	1,60	—	2,50	—	3,60	ac	4,70	ac	5,80	ac	5,80	ac
	1,13	—	—	—	—	1,60	—	2,50	—	3,60	—	4,70	—	5,80	ac	—	—
	1,25	—	—	—	—	1,60	—	2,50	—	3,60	—	4,70	—	5,80	ac	—	—
	1,50	—	—	—	—	1,60	—	2,50	—	3,60	—	4,70	—	5,80	—	—	—
	1,75	—	—	—	—	1,60	—	2,50	—	3,60	—	4,70	—	5,80	—	—	—
	2,00	—	—	—	—	1,60	—	2,50	—	3,60	—	4,70	—	5,80	—	—	—

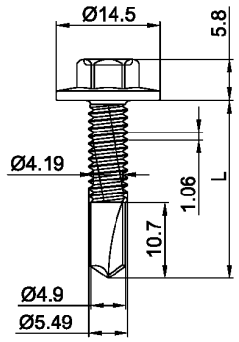
Self drilling screw

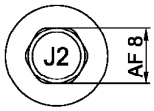
JT2-6-5,5 x L

with hexagon head and sealing washer ≥ Ø16 mm

Annex 16

Deutsches Institut für Bautechnik DIBt





Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235, S275 or S355 - EN 10025-1

Drilling capacity $\Sigma t_i \leq 9{,}50$ mm

Timber substructures

no performance determined

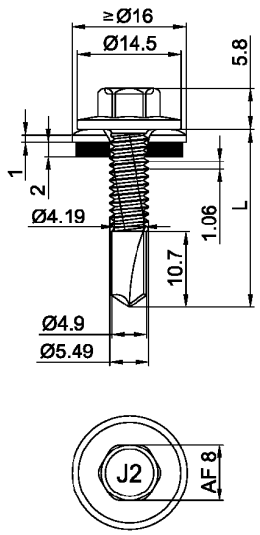
	$t_{N,II}$ [mm]	4,00		5,00		6,00		8,00		10,0		12,0		13,0		14,0	
	$M_{t,nom}$	7 Nm								—							
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	3,80	abcd	3,80	ac	3,80	ac	3,80	ac	—	—	—	—	—	—	—	—
	0,75	4,60	ac	4,60	ac	4,60	ac	4,60	ac	—	—	—	—	—	—	—	—
	0,88	5,30	ac	5,30	ac	5,30	ac	5,30	a	—	—	—	—	—	—	—	—
	1,00	6,00	ac	6,00	ac	6,00	ac	6,00	a	—	—	—	—	—	—	—	—
	1,13	6,70	ac	6,70	ac	6,70	ac	6,70	a	—	—	—	—	—	—	—	—
	1,25	7,30	ac	7,30	ac	7,30	ac	7,30	—	—	—	—	—	—	—	—	—
	1,50	8,10	—	8,10	—	8,10	—	8,10	—	—	—	—	—	—	—	—	—
	1,75	8,10	—	8,10	—	8,10	—	—	—	—	—	—	—	—	—	—	—
	2,00	8,10	—	8,10	—	8,10	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	2,20	abcd	2,20	ac	2,20	ac	2,20	ac	—	—	—	—	—	—	—	—
	0,75	2,90	ac	2,90	ac	2,90	ac	2,90	ac	—	—	—	—	—	—	—	—
	0,88	3,80	ac	3,80	ac	3,80	ac	3,80	a	—	—	—	—	—	—	—	—
	1,00	4,70	ac	4,70	ac	4,70	ac	4,70	a	—	—	—	—	—	—	—	—
	1,13	5,70	ac	5,70	ac	5,70	ac	5,70	a	—	—	—	—	—	—	—	—
	1,25	5,80	ac	6,30	ac	6,80	ac	6,80	—	—	—	—	—	—	—	—	—
	1,50	5,80	—	6,30	—	6,80	—	6,80	—	—	—	—	—	—	—	—	—
	1,75	5,80	—	6,30	—	6,80	—	—	—	—	—	—	—	—	—	—	—
	2,00	5,80	—	6,30	—	6,80	—	—	—	—	—	—	—	—	—	—	—

Self drilling screw

JT2-8-5,5 x L
with hexagon head

Annex 17

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: carbon steel, galvanized
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235, S275 or S355 - EN 10025-1

Drilling capacity $\Sigma t_i \leq 9{,}50$ mm

Timber substructures

no performance determined

$t_{N,II}$ [mm]		4,00		5,00		6,00		8,00		10,0		12,0		13,0		14,0	
$M_{t,nom}$		7 Nm								—							
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	3,00	abcd	3,00	abcd	3,00	abcd	3,00	abcd	—	—	—	—	—	—	—	—
	0,75	3,70	ac	3,70	ac	3,70	ac	3,70	ac	—	—	—	—	—	—	—	—
	0,88	4,20	ac	4,20	ac	4,20	ac	4,20	a	—	—	—	—	—	—	—	—
	1,00	4,80	ac	4,80	ac	4,80	ac	4,80	a	—	—	—	—	—	—	—	—
	1,13	5,40	ac	5,40	ac	5,40	ac	5,40	a	—	—	—	—	—	—	—	—
	1,25	5,80	ac	5,80	ac	5,80	ac	5,80	a	—	—	—	—	—	—	—	—
	1,50	6,70	—	6,70	—	6,70	—	6,70	—	—	—	—	—	—	—	—	—
	1,75	6,70	—	6,70	—	6,70	—	—	—	—	—	—	—	—	—	—	—
	2,00	6,70	—	6,70	—	6,70	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,73	abcd	1,73	abcd	1,73	abcd	1,73	abcd	—	—	—	—	—	—	—	—
	0,55	2,18	abcd	2,18	abcd	2,18	abcd	2,18	abcd	—	—	—	—	—	—	—	—
	0,63	3,20	abcd	3,20	abcd	3,20	abcd	3,20	abcd	—	—	—	—	—	—	—	—
	0,75	4,10	ac	4,10	ac	4,10	ac	4,10	ac	—	—	—	—	—	—	—	—
	0,88	5,00	ac	5,00	ac	5,00	ac	5,00	a	—	—	—	—	—	—	—	—
	1,00	5,80	ac	5,80	ac	5,80	ac	5,80	a	—	—	—	—	—	—	—	—
	1,13	5,80	ac	6,80	ac	6,80	ac	6,80	a	—	—	—	—	—	—	—	—
	1,25	5,80	ac	6,80	ac	7,60	ac	7,60	a	—	—	—	—	—	—	—	—
	1,50	5,80	—	6,80	—	9,30	—	9,30	—	—	—	—	—	—	—	—	—
	1,75	5,80	—	6,80	—	9,30	—	—	—	—	—	—	—	—	—	—	—
	2,00	5,80	—	6,80	—	9,30	—	—	—	—	—	—	—	—	—	—	—

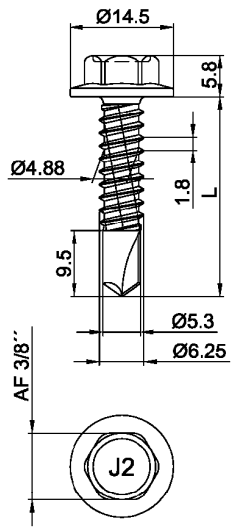
Self drilling screw

JT2-8-5,5 x L

with hexagon head and sealing washer ≥ Ø16 mm

Annex 18

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235, S275 or S355 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 6{,}50$ mm

Timber substructures

no performance determined

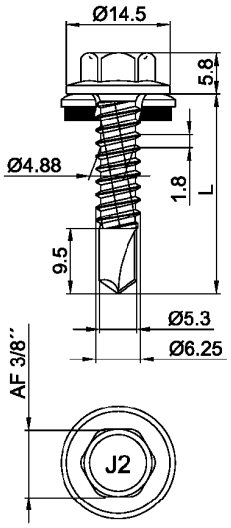
$t_{N,II}$ [mm]		1,50		2,00		2,50		3,00		4,00		5,00		6,00		7,00	
$M_{t,nom}$		—		7 Nm										—			
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	—	—	2,40	abcd	2,40	abcd	2,40	abcd	2,40	abcd	2,40	ac	—	—	—	—
	0,75	—	—	2,90	ac	3,10	ac	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 $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	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	—	—	—	—	—	—	—

Self drilling screw

JT2-6-6,3 x L
with hexagon head

Annex 19

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: carbon steel, galvanized
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235, S275 or S355 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 6{,}50$ mm

Timber substructures

no performance determined

$t_{N,II}$ [mm]		1,50		2,00		2,50		3,00		4,00		5,00		6,00		7,00	
$M_{t,nom}$		—		7 Nm												—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	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	a	—	—	—	—
	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 $t_{N,I}$ [mm]	0,50	—	—	1,13	abcd	1,13	abcd	1,13	abcd	1,13	abcd	1,13	ac	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	a	—	—	—	—
	1,75	—	—	3,40	—	4,70	—	6,20	—	8,70	—	—	—	—	—	—	—
	2,00	—	—	3,40	—	4,70	—	6,20	—	8,70	—	—	—	—	—	—	—

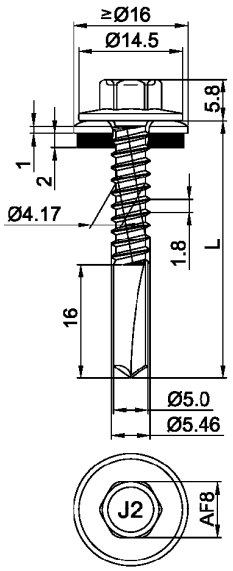
Self drilling screw

JT2-6-6,3 x L

with hexagon head and sealing washer ≥ Ø16 mm

Annex 20

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: carbon steel, galvanized
stainless Steel (1.4301) - EN 10088

Component I: S280GD - EN 10346

Component II: S235, S275 or S355 - EN 10025-1

Drilling capacity $\Sigma t_i \leq 13{,}00$ mm

Timber substructures

no performance determined

$t_{N,II}$ [mm]		4,00		5,00		6,00		8,00		10,0		12,0		13,0		14,0	
$M_{t,nom}$		7 Nm												—		—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	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 $t_{N,I}$ [mm]	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	3,10	ac	3,10	ac	3,10	ac	3,10	ac	3,10	ac	3,10	ac	—	—	—	—
	0,88	3,90	ac	3,90	ac	3,90	ac	3,90	ac	3,90	ac	3,90	a	—	—	—	—
	1,00	4,70	—	4,70	ac	4,70	ac	4,70	ac	4,70	ac	4,70	a	—	—	—	—
	1,13	4,70	—	5,60	—	5,60	—	5,60	—	5,60	—	—	—	—	—	—	—
	1,25	4,70	—	6,40	—	6,40	—	6,40	—	6,40	—	—	—	—	—	—	—
	1,50	4,70	—	6,40	—	6,40	—	6,40	—	6,40	—	—	—	—	—	—	—
	1,75	4,70	—	6,40	—	6,40	—	6,40	—	6,40	—	—	—	—	—	—	—
	2,00	4,70	—	6,40	—	6,40	—	6,40	—	6,40	—	—	—	—	—	—	—

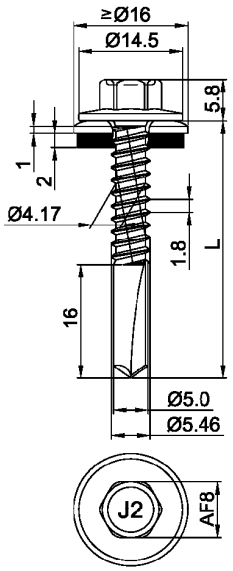
Self drilling screw

JT2-12-5,5 x L

with hexagon head and sealing washer ≥ Ø16 mm

Annex 21

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: carbon steel, galvanized
stainless Steel (1.4301) - EN 10088

Component I: S320GD or S350GD - EN 10346

Component II: S235, S275 or S355 - EN 10025-1

Drilling capacity $\Sigma t_i \leq 13{,}00$ mm

Timber substructures

no performance determined

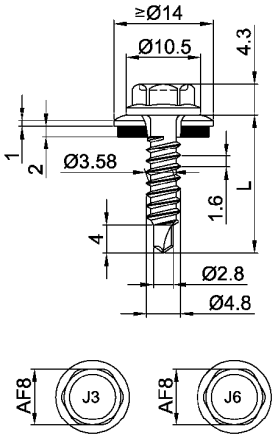
$t_{N,II}$ [mm]		4,00		5,00		6,00		8,00		10,0		12,0		13,0		14,0	
$M_{t,nom}$		7 Nm												—		—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	2,50	ac	2,50	ac	2,50	ac	2,50	ac	2,50	ac	2,50	ac	—	—	—	—
	0,75	3,20	ac	3,20	ac	3,20	ac	3,20	ac	3,20	ac	3,20	ac	—	—	—	—
	0,88	3,90	ac	3,90	ac	3,90	ac	3,90	ac	3,90	ac	3,90	a	—	—	—	—
	1,00	4,20	—	4,60	ac	4,60	ac	4,60	ac	4,60	ac	4,60	a	—	—	—	—
	1,13	4,20	—	5,30	—	5,30	—	5,30	—	5,30	—	—	—	—	—	—	—
	1,25	4,20	—	6,00	—	6,00	—	6,00	—	6,00	—	—	—	—	—	—	—
	1,50	4,20	—	6,40	—	7,20	—	7,60	—	7,60	—	—	—	—	—	—	—
	1,75	4,20	—	6,40	—	7,20	—	7,60	—	7,60	—	—	—	—	—	—	—
	2,00	4,20	—	6,40	—	7,20	—	7,60	—	7,60	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,40	ac	1,40	ac	1,40	ac	1,40	ac	1,40	ac	1,40	ac	—	—	—	—
	0,55	1,77	ac	1,77	ac	1,77	ac	1,77	ac	1,77	ac	1,77	ac	—	—	—	—
	0,63	2,60	ac	2,60	ac	2,60	ac	2,60	ac	2,60	ac	2,60	ac	—	—	—	—
	0,75	3,30	ac	3,30	ac	3,30	ac	3,30	ac	3,30	ac	3,30	ac	—	—	—	—
	0,88	4,20	ac	4,20	ac	4,20	ac	4,20	ac	4,20	ac	4,20	a	—	—	—	—
	1,00	4,70	—	5,00	ac	5,00	ac	5,00	ac	5,00	ac	5,00	a	—	—	—	—
	1,13	4,70	—	6,00	—	6,00	—	6,00	—	6,00	—	—	—	—	—	—	—
	1,25	4,70	—	6,90	—	6,90	—	6,90	—	6,90	—	—	—	—	—	—	—
	1,50	4,70	—	6,90	—	6,90	—	6,90	—	6,90	—	—	—	—	—	—	—
	1,75	4,70	—	6,90	—	6,90	—	6,90	—	6,90	—	—	—	—	—	—	—
	2,00	4,70	—	6,90	—	6,90	—	6,90	—	6,90	—	—	—	—	—	—	—

Self drilling screw

JT2-12-5,5 x L

with hexagon head and sealing washer ≥ Ø16 mm

Annex 22



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4404) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 2{,}20$ mm

Timber substructures

no performance determined

$t_{N,II}$ [mm]		0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75
$M_{t,nom}$							—					
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55
	0,50	0,55	0,89	0,89	0,89	0,89	0,89	0,89	0,89	0,89	0,89	—
	0,55	0,55	0,89	1,06	1,06	1,06	1,06	1,06	1,06	1,06	1,06	—
	0,63	0,55	0,89	1,06	1,28	1,28	1,28	1,28	1,28	1,28	1,28	—
	0,75	0,55	0,89	1,06	1,28	1,61	1,61	1,61	1,61	1,61	—	—
	0,88	0,55	0,89	1,06	1,28	1,61	1,86	1,86	1,86	1,86	—	—
	1,00	0,55	0,89	1,06	1,28	1,61	1,86	2,09	2,09	—	—	—
	1,13	0,55	0,89	1,06	1,28	1,61	1,86	2,09	—	—	—	—
	1,25	0,55	0,89	1,06	1,28	1,61	1,86	—	—	—	—	—
	1,50	0,55	0,89	1,06	1,28	—	—	—	—	—	—	—
	1,75	0,55	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,42	0,62	0,72	0,88	0,97	0,97	0,97	0,97	0,97	0,97	0,97
	0,50	0,42	0,62	0,72	0,88	1,12	1,38	1,39	1,39	1,39	1,39	—
	0,55	0,42	0,62	0,72	0,88	1,12	1,38	1,60	1,60	1,60	1,60	—
	0,63	0,42	0,62	0,72	0,88	1,12	1,38	1,60	1,60	1,60	1,60	—
	0,75	0,42	0,62	0,72	0,88	1,12	1,38	1,60	1,60	1,60	—	—
	0,88	0,42	0,62	0,72	0,88	1,12	1,38	1,60	1,60	1,60	—	—
	1,00	0,42	0,62	0,72	0,88	1,12	1,38	1,60	1,60	—	—	—
	1,13	0,42	0,62	0,72	0,88	1,12	1,38	1,60	—	—	—	—
	1,25	0,42	0,62	0,72	0,88	1,12	1,38	—	—	—	—	—
	1,50	0,42	0,62	0,72	0,88	—	—	—	—	—	—	—
	1,75	0,42	—	—	—	—	—	—	—	—	—	—

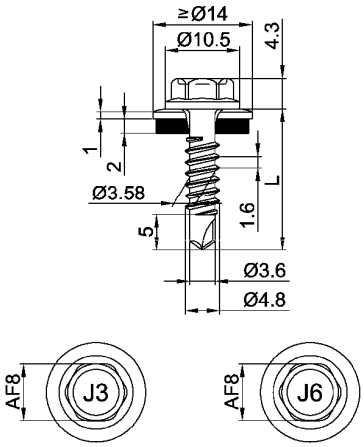
If both components I and II are made of S320GD or S350GD the values may be increased by 8,3%.

Self drilling screw

JT3-2H-4,8 x L
JT6-2H-4,8 x L
with undercut and hexagon head and sealing washer ≥ Ø14 mm

Annex 23

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4404) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}25$ mm

Timber substructures

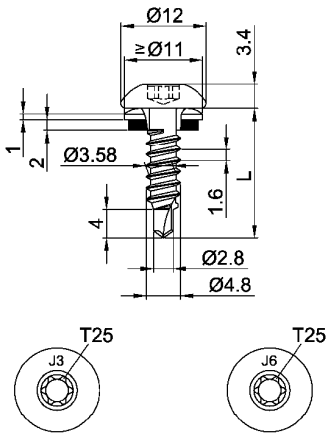
no performance determined

$t_{N,II}$ [mm]		0,63		0,75		0,88		1,00		1,13		1,25		1,50		2,00	
$M_{t,nom}$		—		3 Nm													
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	1,00	ac	1,10	ac	1,20	ac	1,20	ac	1,20	abcd	1,20	abc	1,20	abc
	0,55	—	—	1,15	—	1,25	—	1,40	ac	1,40	ac	1,45	ac	1,45	ac	1,45	ac
	0,63	—	—	1,30	—	1,40	—	1,60	ac	1,60	ac	1,70	ac	1,70	ac	1,70	ac
	0,75	—	—	1,60	—	1,80	—	1,90	ac	2,00	ac	2,10	ac	2,10	ac	2,10	a
	0,88	—	—	1,60	—	1,90	—	2,30	—	2,50	—	2,70	—	2,70	—	2,70	a
	1,00	—	—	1,60	—	2,10	—	2,60	—	2,90	—	3,10	—	3,10	—	3,10	a
	1,13	—	—	1,60	—	2,10	—	2,60	—	2,90	—	3,40	—	3,40	—	3,50	—
	1,25	—	—	1,60	—	2,10	—	2,60	—	2,90	—	3,70	—	3,70	—	3,80	—
	1,50	—	—	1,60	—	2,10	—	2,60	—	2,90	—	3,70	—	3,70	—	—	—
	1,75	—	—	1,60	—	2,10	—	2,60	—	2,90	—	3,70	—	3,70	—	—	—
	2,00	—	—	1,60	—	2,10	—	2,60	—	2,90	—	3,70	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	0,80	ac	1,10	ac	1,20	ac	1,50	ac	1,60	abcd	1,60	abc	1,60	abc
	0,55	—	—	0,80	—	1,10	—	1,20	ac	1,50	ac	1,65	ac	2,00	ac	2,05	ac
	0,63	—	—	0,80	—	1,10	—	1,20	ac	1,50	ac	1,70	ac	2,40	ac	2,50	ac
	0,75	—	—	0,80	—	1,10	—	1,20	ac	1,50	ac	1,70	ac	2,40	ac	3,40	a
	0,88	—	—	0,80	—	1,10	—	1,20	—	1,50	—	1,70	—	2,40	—	3,40	a
	1,00	—	—	0,80	—	1,10	—	1,20	—	1,50	—	1,70	—	2,40	—	3,40	a
	1,13	—	—	0,80	—	1,10	—	1,20	—	1,50	—	1,70	—	2,40	—	3,40	—
	1,25	—	—	0,80	—	1,10	—	1,20	—	1,50	—	1,70	—	2,40	—	3,40	—
	1,50	—	—	0,80	—	1,10	—	1,20	—	1,50	—	1,70	—	2,40	—	—	—
	1,75	—	—	0,80	—	1,10	—	1,20	—	1,50	—	1,70	—	2,40	—	—	—
	2,00	—	—	0,80	—	1,10	—	1,20	—	1,50	—	1,70	—	—	—	—	—

Self drilling screw

JT3-3H-4,8 x L
JT6-3H-4,8 x L
with undercut, hexagon head and sealing washer ≥ Ø14 mm

Annex 24



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4404) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 2{,}20$ mm

Timber substructures

no performance determined

$t_{N,II}$ [mm]		0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75
$M_{t,nom}$							—					
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,49	0,49	0,49	0,49	0,49	0,49	0,49	0,49	0,49	0,49	0,49
	0,50	0,49	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80	—
	0,55	0,49	0,80	0,95	0,95	0,95	0,95	0,95	0,95	0,95	0,95	—
	0,63	0,49	0,80	0,95	1,15	1,15	1,15	1,15	1,15	1,15	1,15	—
	0,75	0,49	0,80	0,95	1,15	1,45	1,45	1,45	1,45	1,45	—	—
	0,88	0,49	0,80	0,95	1,15	1,45	1,68	1,68	1,68	1,68	—	—
	1,00	0,49	0,80	0,95	1,15	1,45	1,68	1,88	1,88	—	—	—
	1,13	0,49	0,80	0,95	1,15	1,45	1,68	1,88	—	—	—	—
	1,25	0,49	0,80	0,95	1,15	1,45	1,68	—	—	—	—	—
	1,50	0,49	0,80	0,95	1,15	—	—	—	—	—	—	—
	1,75	0,49	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,42	0,62	0,72	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85
	0,50	0,42	0,62	0,72	0,88	1,12	1,38	1,38	1,38	1,38	1,38	—
	0,55	0,42	0,62	0,72	0,88	1,12	1,38	1,62	1,62	1,62	1,62	—
	0,63	0,42	0,62	0,72	0,88	1,12	1,38	1,62	1,62	1,62	1,62	—
	0,75	0,42	0,62	0,72	0,88	1,12	1,38	1,62	1,62	1,62	—	—
	0,88	0,42	0,62	0,72	0,88	1,12	1,38	1,62	1,62	1,62	—	—
	1,00	0,42	0,62	0,72	0,88	1,12	1,38	1,62	1,62	—	—	—
	1,13	0,42	0,62	0,72	0,88	1,12	1,38	1,62	—	—	—	—
	1,25	0,42	0,62	0,72	0,88	1,12	1,38	—	—	—	—	—
	1,50	0,42	0,62	0,72	0,88	—	—	—	—	—	—	—
	1,75	0,42	—	—	—	—	—	—	—	—	—	—

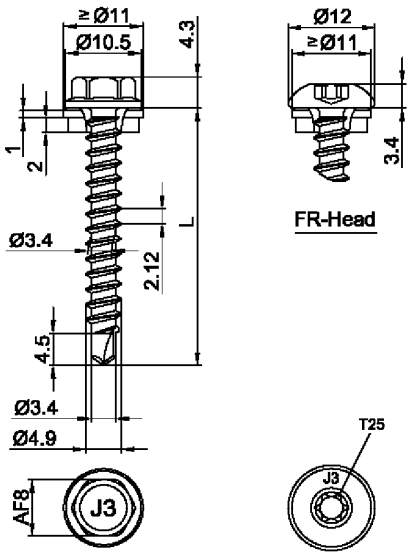
If both components I and II are made of S320GD or S350GD the values may be increased by 8,3%.

Self drilling screw

JT3-FR-2H-4,8 x L
JT6-FR-2H-4,8 x L
with undercut, round head with Torx® drive system and sealing washer ≥ Ø11 mm

Annex 25

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: JT3-(FR-)2-4,9xL and JT4-(FR-)2-4,9xL
stainless steel (1.4301 /1.4567) – EN 10088
JT9-(FR-)2-4,9xL
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: timber – EN 14081

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

for timber substructures following performance were determined

$M_{y,k}$ = 4,672 Nm
$f_{ax,k}$ = 8,575 N/mm² for l_{eff} ≥ 24,5 mm

l_g =	25,00	27,00	29,00	31,00	33,00	35,00	37,00	39,00	41,00	
$M_{t,nom}$ =	—									
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,50 -	0,50 -	0,50 -	0,50 -	0,50 -	0,50 -	0,50 -	0,50 -	0,50 -	0,50
0,60	0,66 -	0,66 -	0,66 -	0,66 -	0,66 -	0,66 -	0,66 -	0,66 -	0,66 -	0,66
0,70	0,73 -	0,81 -	0,82 -	0,82 -	0,82 -	0,82 -	0,82 -	0,82 -	0,82 -	0,82
0,80	0,73 -	0,81 -	0,88 -	0,95 -	0,98 -	0,98 -	0,98 -	0,98 -	0,98 -	0,98
0,90	0,73 -	0,81 -	0,88 -	0,95 -	0,99 -	0,99 -	0,99 -	0,99 -	0,99 -	0,99
1,00	0,73 -	0,81 -	0,88 -	0,95 -	1,00 -	1,00 -	1,00 -	1,00 -	1,00 -	1,00
1,20	0,73 -	0,81 -	0,88 -	0,95 -	1,00 -	1,00 -	1,00 -	1,00 -	1,00 -	1,00
1,50	0,73 -	0,81 -	0,88 -	0,95 -	1,00 -	1,00 -	1,00 -	1,00 -	1,00 -	1,00
2,00	0,73 -	0,81 -	0,88 -	0,95 -	1,00 -	1,00 -	1,00 -	1,00 -	1,00 -	1,00
										failure of component I (bearing)
$N_{R,II,k}$ =	0,86	0,95	1,04	1,12	1,21	1,30	1,38	1,47	1,56	failure of component II see chapter 4.2.2

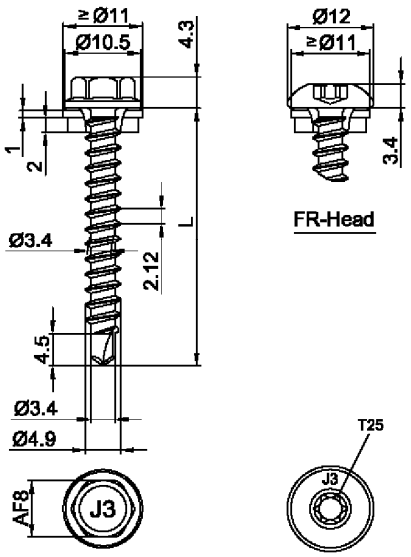
Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
The values indicated above, depending on the screw depth l_g, shall apply to k_{mod} = 0,90 and the timber strength class C24 (ρ_k = 350 kg / m³). For other values of k_{mod} and strength classes see chapter 4.2.2
For k_{mod} < 0,90: failure of component I see right column and failure of component II see chapter 4.2.2 with $f_{1,k} = 80 \cdot 10^{-6} \cdot \rho_k^2$ (load carrying class 3, ρ_k in kg/m³, max. 500 kg/m³) and yield moment $M_{y,k}$ = 5990 Nmm.

Self-drilling screw

JT3-(FR-)2-4,9xL
JT4-(FR-)2-4,9xL
JT9-(FR-)2-4,9xL
With hexagon head or FR-head and seal washer ≥ ∅ 11,0 mm

Annex 26

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: JT3-(FR-)2-4,9xL and JT4-(FR-)2-4,9xL
stainless steel (1.4301 / 1.4567) – EN 10088
JT9-(FR-)2-4,9xL
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: timber – EN 14081

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

for timber substructures following performance were determined

$M_{y,k}$ = 4,672 Nm
$f_{ax,k}$ = 8,575 N/mm² for l_{eff} ≥ 24,5 mm

l_g =	25,00	27,00	29,00	31,00	33,00	35,00	37,00	39,00	41,00	
$M_{t,nom}$ =	—									
0,50	0,66 -	0,66 -	0,66 -	0,66 -	0,66 -	0,66 -	0,66 -	0,66 -	0,66 -	0,66
0,60	0,73 -	0,81 -	0,87 -	0,87 -	0,87 -	0,87 -	0,87 -	0,87 -	0,87 -	0,87
0,70	0,73 -	0,81 -	0,88 -	0,95 -	1,03 -	1,07 -	1,07 -	1,07 -	1,07 -	1,07
0,80	0,73 -	0,81 -	0,88 -	0,95 -	1,03 -	1,10 -	1,17 -	1,25 -	1,28 -	1,28
0,90	0,73 -	0,81 -	0,88 -	0,95 -	1,03 -	1,10 -	1,17 -	1,25 -	1,29 -	1,29
1,00	0,73 -	0,81 -	0,88 -	0,95 -	1,03 -	1,10 -	1,17 -	1,25 -	1,30 -	1,30
1,20	0,73 -	0,81 -	0,88 -	0,95 -	1,03 -	1,10 -	1,17 -	1,25 -	1,30 -	1,30
1,50	0,73 -	0,81 -	0,88 -	0,95 -	1,03 -	1,10 -	1,17 -	1,25 -	1,30 -	1,30
2,00	0,73 -	0,81 -	0,88 -	0,95 -	1,03 -	1,10 -	1,17 -	1,25 -	1,30 -	1,30
$V_{R,k}$ for $t_{N,I}$ =										failure of component I (bearing)
$N_{R,II,k}$ =	0,86	0,95	1,04	1,12	1,21	1,30	1,38	1,47	1,56	failure of component II see chapter 4.2.2

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
The values indicated above, depending on the screw depth l_g, shall apply to k_{mod} = 0,90 and the timber strength class C24 (ρ_k = 350 kg / m³). For other values of k_{mod} and strength classes see chapter 4.2.2
For k_{mod} < 0,90: failure of component I see right column and failure of component II see chapter 4.2.2 with $f_{1,k} = 80 \cdot 10^{-6} \cdot \rho_k^2$ (load carrying class 3, ρ_k in kg/m³, max. 500 kg/m³) and yield moment $M_{y,k}$ = 5990 Nmm.

Self-drilling screw	**Annex 27**
JT3-(FR-)2-4,9xL JT4-(FR-)2-4,9xL JT9-(FR-)2-4,9xL With hexagon head or FR-head and seal washer ≥ Ø 11,0 mm	

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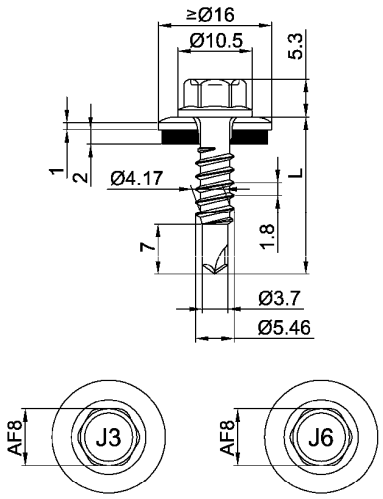

Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4404) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 2{,}50$ mm

Timber substructures

no performance determined

	$t_{N,II}$ [mm]	0,63		0,75		0,88		1,00		1,13		1,25		1,50		2,00	
	$M_{t,nom}$	5 Nm															
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,00	—	1,00	—	1,00	—	1,00	—	1,00	—	1,00	—	1,00	ac	—	—
	0,75	1,00	—	1,70	—	1,70	—	1,70	—	1,70	—	1,70	—	1,70	—	—	—
	0,88	1,00	—	1,70	—	1,70	—	1,70	—	1,70	—	1,70	—	1,70	—	—	—
	1,00	1,00	—	1,70	—	1,70	—	1,70	—	1,70	—	1,70	—	1,70	—	—	—
	1,13	1,00	—	1,70	—	1,70	—	1,70	—	1,70	—	1,70	—	—	—	—	—
	1,25	1,00	—	1,70	—	1,70	—	1,70	—	1,70	—	1,70	—	—	—	—	—
	1,50	1,00	—	1,70	—	1,70	—	1,70	—	—	—	—	—	—	—	—	—
	1,75	1,00	—	1,70	—	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,32	—	0,43	—	0,49	—	0,59	—	0,76	—	0,81	—	1,08	ac	1,08	ac
	0,55	0,41	—	0,55	—	0,61	—	0,75	—	0,95	—	1,02	—	1,36	ac	—	—
	0,63	0,60	—	0,80	—	0,90	—	1,10	—	1,40	—	1,50	—	2,00	ac	—	—
	0,75	0,60	—	0,80	—	0,90	—	1,10	—	1,40	—	1,50	—	2,00	—	—	—
	0,88	0,60	—	0,80	—	0,90	—	1,10	—	1,40	—	1,50	—	2,00	—	—	—
	1,00	0,60	—	0,80	—	0,90	—	1,10	—	1,40	—	1,50	—	2,00	—	—	—
	1,13	0,60	—	0,80	—	0,90	—	1,10	—	1,40	—	1,50	—	—	—	—	—
	1,25	0,60	—	0,80	—	0,90	—	1,10	—	1,40	—	1,50	—	—	—	—	—
	1,50	0,60	—	0,80	—	0,90	—	1,10	—	—	—	—	—	—	—	—	—
	1,75	0,60	—	0,80	—	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Self drilling screw

JT3-2H-5,5 x L
JT6-2H-5,5 x L
with undercut, hexagon head and sealing washer ≥ Ø16 mm

Annex 28

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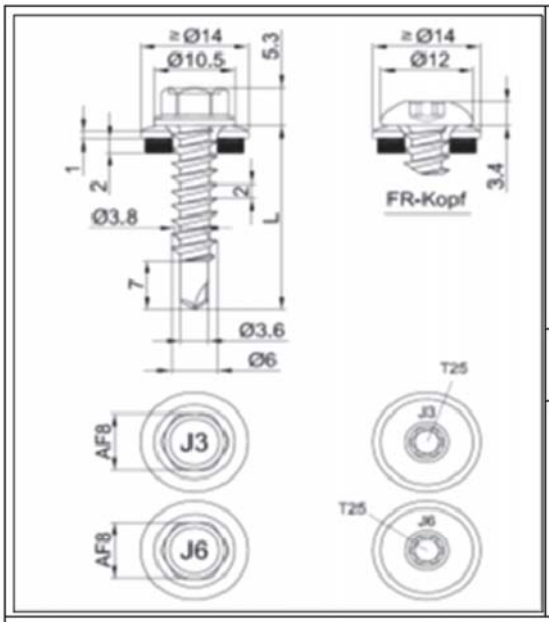

Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573
Timber – EN 14081

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

for timber substructures following performance were determined

$M_{y,k}$ = 7,911 Nm
$f_{ax,k}$ = 8,575 N/mm² for l_{eff} ≥ 26,0 mm

$t_{N,II}$ =	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50	
$M_{t,nom}$ =	—									
$V_{R,k}$ for $t_{N,I}$ = 0,40	0,29 -	0,29 -	0,29 -	0,29 -	0,29 -	0,29 -	0,29 -	0,29 -	0,29 -	0,29
0,50	0,29 -	0,42 -	0,51 -	0,60 -	0,69 -	0,75 -	0,81 -	0,81 -	0,81 -	0,81
0,60	0,29 -	0,42 -	0,53 -	0,63 -	0,71 -	0,78 -	0,85 -	0,85 -	- -	0,85
0,70	0,29 -	0,42 -	0,53 -	0,65 -	0,74 -	0,82 -	0,89 -	0,89 -	- -	0,89
0,80	0,29 -	0,42 -	0,53 -	0,65 -	0,76 -	0,85 -	0,92 -	0,92 -	- -	0,92
0,90	0,29 -	0,42 -	0,55 -	0,68 -	0,81 -	0,88 -	0,97 -	0,97 -	- -	0,97
1,00	0,29 -	0,42 -	0,56 -	0,71 -	0,85 -	0,93 -	1,00 -	- -	- -	1,00
1,20	0,29 -	0,42 -	0,59 -	0,77 -	0,94 -	- -	- -	- -	- -	1,24
1,50	0,29 -	0,42 -	- -	- -	- -	- -	- -	- -	- -	1,59
$N_{R,II,k}$ =	0,22	0,28	0,35	0,43	0,50	0,58	0,68	0,86	1,18	

failure of component I (bearing)

failure of component II see chapter 4.2.2

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
For other areas of application see allgemeinge bauaufsichtliche Zulassung Z-14.4-426.
The values indicated above, depending on the screw depth l_g, shall apply to k_{mod} = 0,90 and the timber strength class C24 (ρ_k = 350 kg / m³). For other values of k_{mod} and strength classes see chapter 4.2.2

Self-drilling screw

JT3-2-6,0xL JT6-2-6,0xL
JT3-FR-2-6,0xL JT6-FR-2-6,0xL
With hexagon head and seal washer ≥ ∅ 14,0 mm

Annex 29

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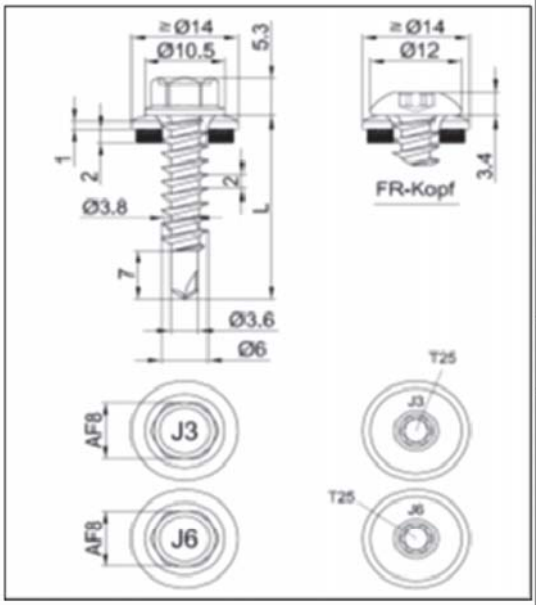

Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573
Timber – EN 14081

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

for timber substructures following performance were determined

$M_{y,k}$ = 7,911 Nm
$f_{ax,k}$ = 8,575 N/mm² for l_{eff} ≥ 26,0 mm

$t_{N,II}$ =	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50	
$M_{t,nom}$ =					—					
$V_{R,k}$ for $t_{N,I}$ = 0,40	0,38 -	0,38 -	0,38 -	0,38 -	0,38 -	0,38 -	0,38 -	0,38 -	0,38 -	0,38
0,50	0,38 -	0,55 -	0,67 -	0,78 -	0,90 -	0,98 -	1,05 -	1,05 -	1,05 -	1,05
0,60	0,38 -	0,55 -	0,70 -	0,81 -	0,93 -	1,02 -	1,10 -	1,10 -	- -	1,10
0,70	0,38 -	0,55 -	0,70 -	0,84 -	0,96 -	1,07 -	1,15 -	1,15 -	- -	1,15
0,80	0,38 -	0,55 -	0,70 -	0,84 -	0,99 -	1,11 -	1,20 -	1,20 -	- -	1,20
0,90	0,38 -	0,55 -	0,72 -	0,88 -	1,05 -	1,15 -	1,25 -	1,25 -	- -	1,25
1,00	0,38 -	0,55 -	0,74 -	0,92 -	1,11 -	1,21 -	1,30 -	- -	- -	1,30
1,20	0,38 -	0,55 -	0,78 -	1,00 -	1,23 -	- -	- -	- -	- -	1,61
1,50	0,38 -	0,55 -	- -	- -	- -	- -	- -	- -	- -	2,08
$N_{R,II,k}$ =	0,29	0,37	0,46	0,55	0,64	0,75	0,87	1,12	1,53	

failure of component I (bearing)

failure of component II see chapter 4.2.2

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
For other areas of application see allgemeinge bauaufsichtliche Zulassung Z-14.4-426.
The values indicated above, depending on the screw depth l_g, shall apply to k_{mod} = 0,90 and the timber strength class C24 (ρ_k = 350 kg / m³). For other values of k_{mod} and strength classes see chapter 4.2.2

Self-drilling screw

JT3-2-6,0xL JT6-2-6,0xL
JT3-FR-2-6,0xL JT6-FR-2-6,0xL
With hexagon head and seal washer ≥ ∅ 14,0 mm

Annex 30

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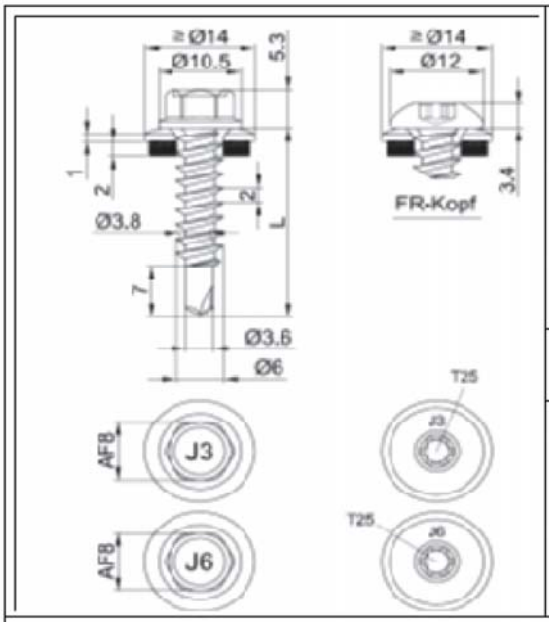

Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346
timber – EN14081

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

for timber substructures following performance were determined

$M_{y,k}$ = 7,911 Nm
$f_{ax,k}$ = 8,575 N/mm² for l_{eff} ≥ 26,0 mm

$t_{N,II}$ =	0,40	0,50	0,63	0,75	0,88	1,00	1,25	1,50	
$M_{t,nom}$ =	—								
$V_{R,k}$ for $t_{N,I}$ = 0,40	0,29 -	0,29 -	0,29 -	0,29 -	0,29 -	0,29 -	0,29 -	0,29 -	0,29
0,50	0,40 -	0,40 -	0,40 -	0,65 -	0,73 -	0,81 -	0,81 -	0,81 -	0,81
0,60	0,40 -	0,50 -	0,50 -	0,67 -	0,76 -	0,85 -	0,85 -	- -	0,85
0,70	0,40 -	0,50 -	0,61 -	0,70 -	0,80 -	0,89 -	0,89 -	- -	0,89
0,80	0,40 -	0,50 -	0,61 -	0,71 -	0,82 -	0,92 -	0,92 -	- -	0,92
0,90	0,40 -	0,50 -	0,61 -	0,75 -	0,86 -	0,97 -	- -	- -	0,97
1,00	0,40 -	0,50 -	0,61 -	0,78 -	0,89 -	1,00 -	- -	- -	1,00
1,20	0,40 -	0,50 -	0,61 -	0,86 -	0,93 -	- -	- -	- -	1,24
1,50	0,40 -	0,50 -	0,61 -	- -	- -	- -	- -	- -	1,59
$N_{R,II,k}$ =	0,53	0,75	0,80	1,05	1,35	1,63	2,26	3,02	

failure of component I (bearing)

failure of component II see chapter 4.2.2

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
Component II of steel S320GD or S350GD: the indicated values of the pull-out resistance $N_{R,II,k}$ can be increased by 8,0%.
For other areas of application see allgemeinge bauaufsichtliche Zulassung Z-14.4-426.
The values indicated above, depending on the screw depth l_g, shall apply to k_{mod} = 0,90 and the timber strength class C24 (ρ_k = 350 kg / m³). For other values of k_{mod} and strength classes see chapter 4.2.2

Self-drilling screw

JT3-2-6,0xL JT6-2-6,0xL
JT3-FR-2-6,0xL JT6-FR-2-6,0xL
With hexagon head or FR-head and seal washer ≥ Ø 14,0 mm

Annex 31

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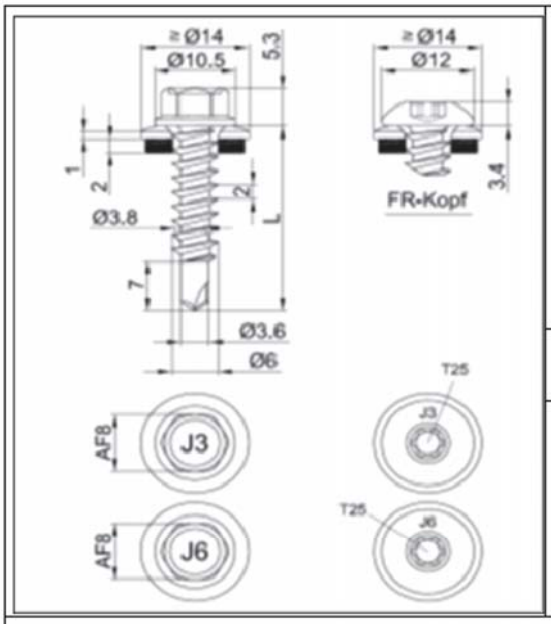

Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346
timber – EN14081

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

for timber substructures following performance were determined

$M_{y,k}$ = 7,911 Nm
$f_{ax,k}$ = 8,575 N/mm² for l_{eff} ≥ 26,0 mm

$t_{N,II}$ =	0,40	0,50	0,63	0,75	0,88	1,00	1,25	1,50	
$M_{t,nom}$ =	—								
$V_{R,k}$ for $t_{N,I}$ = 0,40	0,38 -	0,38 -	0,38 -	0,38 -	0,38 -	0,38 -	0,38 -	0,38 -	failure of component I (bearing)
0,50	0,52 -	0,52 -	0,52 -	0,84 -	0,95 -	1,05 -	1,05 -	1,05 -	
0,60	0,52 -	0,65 -	0,65 -	0,87 -	0,99 -	1,10 -	1,10 -	- -	
0,70	0,52 -	0,65 -	0,79 -	0,90 -	1,03 -	1,15 -	1,15 -	- -	
0,80	0,52 -	0,65 -	0,79 -	0,92 -	1,06 -	1,20 -	1,20 -	- -	
0,90	0,52 -	0,65 -	0,79 -	0,97 -	1,11 -	1,25 -	- -	- -	
1,00	0,52 -	0,65 -	0,79 -	1,02 -	1,16 -	1,30 -	- -	- -	
1,20	0,52 -	0,65 -	0,79 -	1,12 -	1,21 -	- -	- -	- -	
1,50	0,52 -	0,65 -	0,79 -	- -	- -	- -	- -	- -	
$N_{R,II,k}$ =	0,53	0,75	0,80	1,05	1,35	1,63	2,26	3,02	failure of component II see chapter 4.2.2

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
Component II of steel S320GD or S350GD: the indicated values of the pull-out resistance $N_{R,II,k}$ can be increased by 8,0%.
For other areas of application see allgemeinge bauaufsichtliche Zulassung Z-14.4-426.
The values indicated above, depending on the screw depth l_g, shall apply to k_{mod} = 0,90 and the timber strength class C24 (ρ_k = 350 kg / m³). For other values of k_{mod} and strength classes see chapter 4.2.2

Self-drilling screw

JT3-2-6,0xL JT6-2-6,0xL
JT3-FR-2-6,0xL JT6-FR-2-6,0xL
With hexagon head or FR-head and seal washer ≥ Ø 14,0 mm

Annex 32

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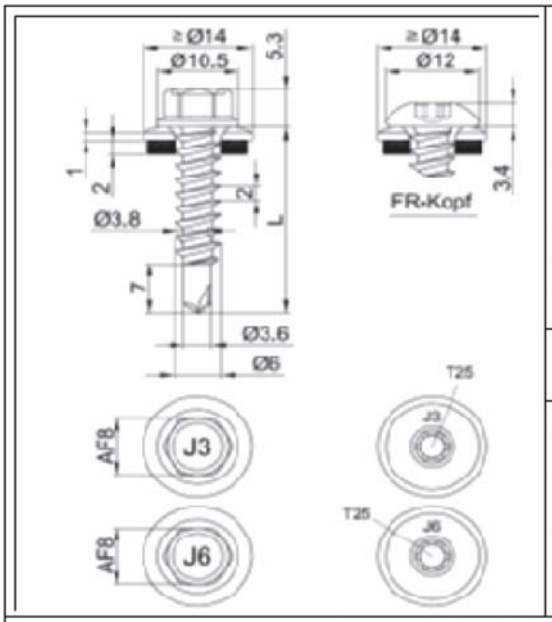


Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: timber – EN14081

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

for timber substructures following performance were determined

$M_{y,k}$ = 7,911 Nm
$f_{ax,k}$ = 8,575 N/mm² for l_{eff} ≥ 26,0 mm

l_g =		31,00	32,00	33,00	34,00	35,00	36,00	≥ 37,00	
$M_{t,nom}$ =		—							
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,81 -	0,81 -	0,81 -	0,81 -	0,81 -	0,81 -	0,81 -	0,81
	0,60	0,85 -	0,85 -	0,85 -	0,85 -	0,85 -	0,85 -	0,85 -	0,85
	0,70	0,89 -	0,89 -	0,89 -	0,89 -	0,89 -	0,89 -	0,89 -	0,89
	0,80	0,92 -	0,92 -	0,92 -	0,92 -	0,92 -	0,92 -	0,92 -	0,92
	0,90	0,96 -	0,97 -	0,97 -	0,97 -	0,97 -	0,97 -	0,97 -	0,97
	1,00	0,96 -	1,00 -	1,00 -	1,00 -	1,00 -	1,00 -	1,00 -	1,00
	1,20	0,96 -	1,00 -	1,04 -	1,08 -	1,12 -	1,16 -	1,20 -	1,24
	1,50	0,96 -	1,00 -	1,04 -	1,08 -	1,12 -	1,16 -	1,20 -	1,59
	2,00	0,96 -	1,00 -	1,04 -	1,08 -	1,12 -	1,16 -	1,20 -	1,59
$N_{R,II,k}$ =		1,27	1,32	1,38	1,43	1,48	1,53	1,59	

failure of component I (bearing)

failure of component II see chapter 4.2.2

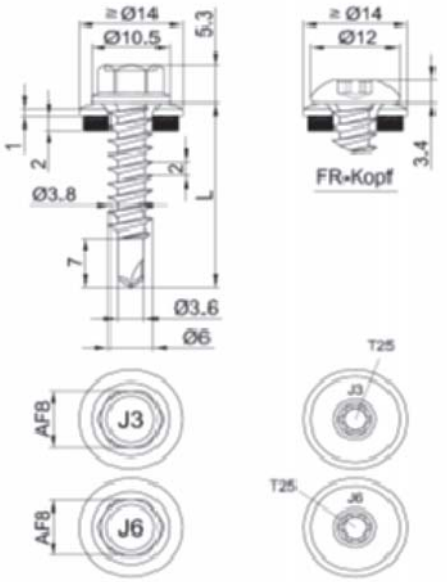
For timber substructures the indicated values of the shear force resistance $V_{R,k}$ shall apply with and without washer.
For other areas of application see allgemeinge bauaufsichtliche Zulassung Z-14.4-426.
The values indicated above, depending on the screw depth l_g, shall apply to k_{mod} = 0,90 and the timber strength class C24 (ρ_k = 350 kg / m³). For other values of k_{mod} and strength classes see chapter 4.2.2
For k_{mod} < 0,90: failure of component I see right column and failure of component II see chapter 4.2.2 with $f_{1,k} = 80 \cdot 10^{-6} \cdot \rho_k^2$ (load carrying class 3, ρ_k in kg/m³, max. 500 kg/m³) and yield moment $M_{y,k}$ = 7.911 Nmm.

Self-drilling screw

JT3-2-6,0xL JT6-2-6,0xL
JT3-FR-2-6,0xL JT6-FR-2-6,0xL
With hexagon head or FR-head and seal washer ≥ Ø 14,0 mm

Annex 33

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: timber – EN 14081

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

for timber substructures following performance were determined

$M_{y,k}$ = 7,911 Nm
$f_{ax,k}$ = 8,575 N/mm² for l_{eff} ≥ 26,0 mm

l_g =	31,00	32,00	33,00	34,00	35,00	36,00	≥ 37,00	
$M_{t,nom}$ =	—							
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,96 -	1,00 -	1,04 -	1,05 -	1,05 -	1,05 -	1,05 -	1,05
0,60	0,96 -	1,00 -	1,04 -	1,08 -	1,10 -	1,10 -	1,10 -	1,10
0,70	0,96 -	1,00 -	1,04 -	1,08 -	1,12 -	1,15 -	1,15 -	1,15
0,80	0,96 -	1,00 -	1,04 -	1,08 -	1,12 -	1,16 -	1,20 -	1,20
0,90	0,96 -	1,00 -	1,04 -	1,08 -	1,12 -	1,16 -	1,20 -	1,25
1,00	0,96 -	1,00 -	1,04 -	1,08 -	1,12 -	1,16 -	1,20 -	1,30
1,20	0,96 -	1,00 -	1,04 -	1,08 -	1,12 -	1,16 -	1,20 -	1,61
1,50	0,96 -	1,00 -	1,04 -	1,08 -	1,12 -	1,16 -	1,20 -	2,08
2,00	0,96 -	1,00 -	1,04 -	1,08 -	1,12 -	1,16 -	1,20 -	2,08
$N_{R,II,k}$ =	1,27	1,32	1,38	1,43	1,48	1,53	1,59	

failure of component I (bearing)

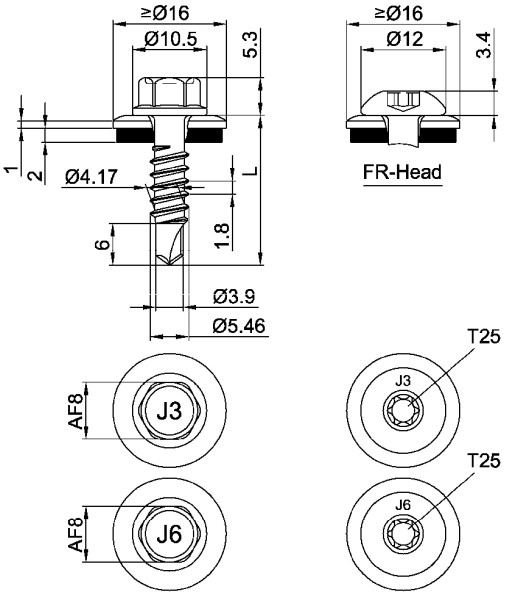
failure of component II see chapter 4.2.2

For timber substructures the indicated values of the shear force resistance $V_{R,k}$ shall apply with and without washer.
For other areas of application see allgemeinge bauaufsichtliche Zulassung Z-14.4-426.
The values indicated above, depending on the screw depth l_g, shall apply to k_{mod} = 0,90 and the timber strength class C24 (ρ_k = 350 kg / m³). For other values of k_{mod} and strength classes see chapter 4.2.2
For k_{mod} < 0,90: failure of component I see right column and failure of component II see chapter 4.2.2 with $f_{1,k} = 80 \cdot 10^{-6} \cdot \rho_k^2$ (load carrying class 3, ρ_k in kg/m³, max. 500 kg/m³) and yield moment $M_{y,k}$ = 7.911 Nmm.

Self-drilling screw

JT3-2-6,0xL JT6-2-6,0xL
JT3-FR-2-6,0xL JT6-FR-2-6,0xL
With hexagon head or FR-head and seal washer ≥ Ø 14,0 mm

Annex 34



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4404) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

no performance determined

$t_{N,II}$ [mm]		0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$M_{t,nom}$		1 Nm			2 Nm			2,5 Nm				
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	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 $t_{N,I}$ [mm]	0,50	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,48	1,48	1,48	1,48
	0,55	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,65	1,65	1,65	1,65
	0,63	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,83	1,83	1,83
	0,75	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,23	2,23
	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	—

If both components I and II are made of S320GD or S350GD the values may be increased by 8,3%.

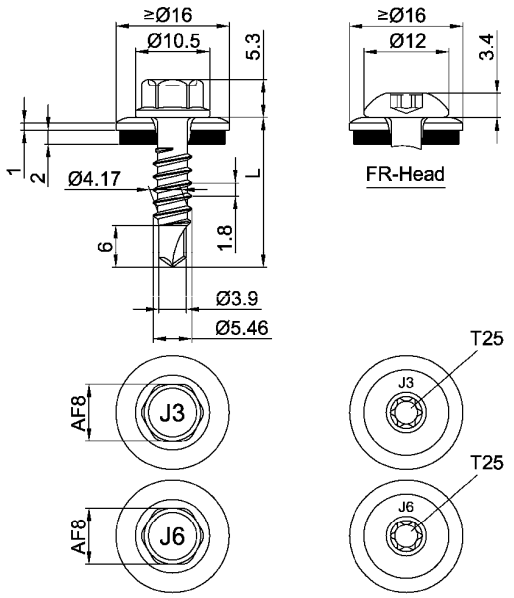
Self drilling screw

JT3-2H Plus - 5,5 x L
JT6-2H Plus - 5,5 x L
JT3-FR-2H Plus - 5,5 x L
JT6-FR-2H Plus - 5,5 x L

with undercut, hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm

Annex 35

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4404) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

no performance determined

	$t_{N,II}$ [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
	$M_{t,nom}$	2 Nm	3 Nm		4 Nm		
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	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 $t_{N,I}$ [mm]	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	—	—	—	—

If both components I and II are made of S320GD or S350GD the values may be increased by 8,3%.

Self drilling screw

JT3-2H Plus - 5,5 x L
JT6-2H Plus - 5,5 x L
JT3-FR-2H Plus - 5,5 x L
JT6-FR-2H Plus - 5,5 x L

with undercut, hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm

Annex 36

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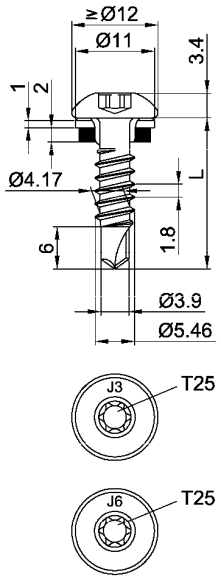


Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4404) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

no performance determined

$t_{N,II}$ [mm]		0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$M_{t,nom}$		1 Nm			2 Nm			2,5 Nm				
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	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 $t_{N,I}$ [mm]	0,50	0,30	0,41	0,47	0,56	0,73	0,86	0,86	0,86	0,86	0,86	0,86
	0,55	0,30	0,41	0,47	0,56	0,73	1,04	1,04	1,04	1,04	1,04	1,04
	0,63	0,30	0,41	0,47	0,56	0,73	1,06	1,20	1,20	1,20	1,20	1,20
	0,75	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,56	1,56	1,56	1,56
	0,88	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,32	2,32
	1,00	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,32	2,32
	1,13	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,32	2,32
	1,25	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,32	2,32
	1,50	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,32	2,32
	1,75	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,32	—
	2,00	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,32	—

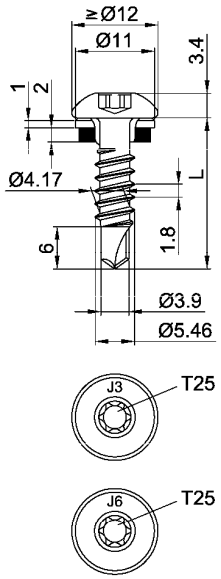
If both components I and II are made of S320GD or S350GD the values may be increased by 8,3%.

Self drilling screw

JT3-FR-2H Plus-5,5 x L
JT6-FR-2H Plus-5,5 x L
with undercut, round head with Torx® drive system and sealing washer ≥ Ø11 mm

Annex 37

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4404) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

no performance determined

	$t_{N,II}$ [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
	$M_{t,nom}$	2 Nm	3 Nm		4 Nm		
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	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 $t_{N,I}$ [mm]	0,40	0,86	0,86	0,86	0,86	0,86	0,86
	0,50	1,01	1,04	1,04	1,04	1,04	1,04
	0,55	1,01	1,20	1,20	1,20	1,20	1,20
	0,63	1,01	1,56	1,56	1,56	1,56	1,56
	0,75	1,01	1,78	2,31	2,32	2,32	2,32
	0,88	1,01	1,78	2,31	2,32	2,32	2,32
	1,00	1,01	1,78	2,31	2,32	2,32	2,32
	1,13	1,01	1,78	2,31	2,32	2,32	—
	1,25	1,01	1,78	2,31	2,32	—	—
	1,50	1,01	1,78	2,31	2,32	—	—
	1,75	1,01	1,78	—	—	—	—

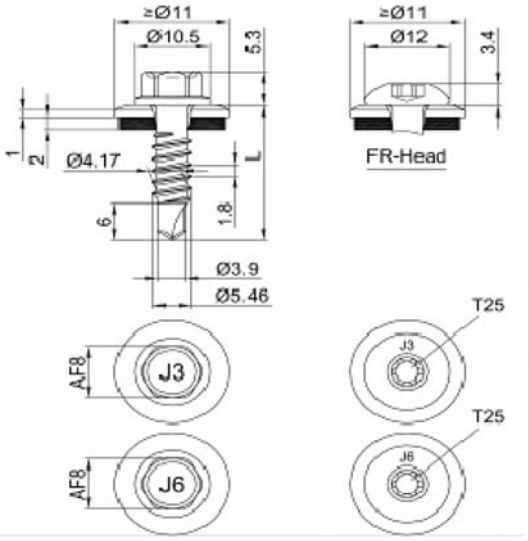
If both components I and II are made of S320GD or S350GD the values may be increased by 8,3%.

Self drilling screw

JT3-FR-2H Plus-5,5 x L
JT6-FR-2H Plus-5,5 x L
with undercut, round head with Torx® drive system and sealing washer ≥ Ø11 mm

Annex 38

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50
$M_{t,nom}$ =	—								
$V_{R,k}$ for $t_{N,I}$ = 0,40	0,19 -	0,19 -	0,19 -	0,19 -	0,19 -	0,19 -	0,19 ac	0,19 ac	0,19 ac
0,50	0,19 -	0,27 -	0,32 -	0,37 -	0,43 -	0,48 -	0,53 ac	0,53 ac	0,53 ac
0,60	0,19 -	0,27 -	0,38 -	0,44 -	0,49 -	0,55 -	0,61 -	0,63 -	0,76 ac
0,70	0,19 -	0,27 -	0,38 -	0,50 -	0,55 -	0,62 -	0,68 -	0,74 -	0,99 ac
0,80	0,19 -	0,27 -	0,38 -	0,50 -	0,61 -	0,69 -	0,76 -	0,84 -	1,22 ac
0,90	0,19 -	0,27 -	0,38 -	0,50 -	0,61 -	0,76 -	0,83 -	0,95 -	1,34 -
1,00	0,19 -	0,27 -	0,38 -	0,50 -	0,61 -	0,76 -	0,91 -	1,05 -	1,47 -
1,20	0,19 -	0,27 -	0,38 -	0,50 -	0,61 -	0,76 -	0,91 -	1,26 -	1,71 -
1,50	0,19 -	0,27 -	0,38 -	0,50 -	0,61 -	0,76 -	0,91 -	1,26 -	2,08 -
$N_{R,II,k}$ =	0,14	0,21	0,28	0,36	0,43	0,50	0,56	0,73	0,91

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-drilling screw

JT3-2H Plus 5,5xL JT6-2H Plus 5,5xL
JT3-FR-2H Plus 5,5xL JT6-FR-2H Plus 5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 11,0 mm

Annex 39

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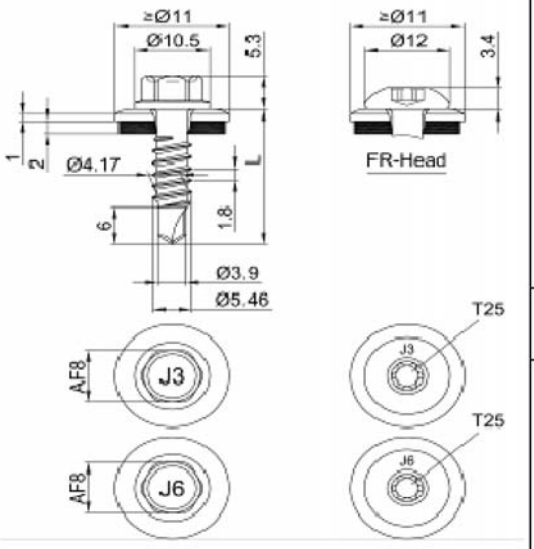

Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		0,40		0,50		0,60		0,70		0,80		0,90		1,00		1,20		1,50	
$M_{t,nom}$ =		—																	
$V_{R,k}$ for $t_{N,I}$ =	0,40	0,24	-	0,24	-	0,24	-	0,24	-	0,24	-	0,24	-	0,24	ac	0,24	ac	0,24	ac
	0,50	0,24	-	0,35	-	0,42	-	0,49	-	0,55	-	0,62	-	0,69	ac	0,69	ac	0,69	ac
	0,60	0,24	-	0,35	-	0,50	-	0,57	-	0,63	-	0,71	-	0,79	-	0,83	-	0,99	ac
	0,70	0,24	-	0,35	-	0,50	-	0,65	-	0,72	-	0,81	-	0,86	-	0,96	-	1,29	ac
	0,80	0,24	-	0,38	-	0,50	-	0,65	-	0,80	-	0,90	-	0,93	-	1,08	-	1,59	ac
	0,90	0,24	-	0,38	-	0,50	-	0,65	-	0,80	-	0,99	-	1,00	-	1,23	-	1,75	-
	1,00	0,24	-	0,38	-	0,50	-	0,65	-	0,80	-	0,99	-	1,18	-	1,37	-	1,91	-
	1,20	0,24	-	0,38	-	0,50	-	0,65	-	0,80	-	0,99	-	1,18	-	1,64	-	2,23	-
	1,50	0,24	-	0,38	-	0,50	-	0,65	-	0,80	-	0,99	-	1,18	-	1,64	-	2,71	-
$N_{R,II,k}$ =		0,19		0,28		0,37		0,47		0,56		0,65		0,73		0,95		1,19	

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-drilling screw

JT3-2H Plus 5,5xL JT6-2H Plus 5,5xL
JT3-FR-2H Plus 5,5xL JT6-FR-2H Plus 5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 11,0 mm

Annex 40

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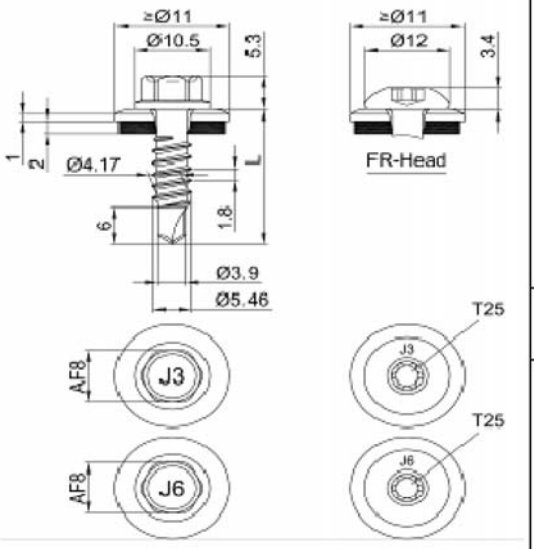


Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =	0,40		0,50		0,63		0,75		0,88		1,00		1,25		1,50		2,00	
$M_{t,nom}$ =	—																	
$V_{R,k}$ for $t_{N,I}$ = 0,40	0,19	-	0,19	-	0,19	-	0,19	-	0,19	-	0,19	ac	0,19	ac	0,19	ac	0,19	ac
0,50	0,35	-	0,35	-	0,35	-	0,40	-	0,47	-	0,53	ac	0,53	ac	0,53	ac	0,53	ac
0,60	0,35	-	0,42	-	0,42	-	0,47	-	0,54	-	0,61	-	0,69	-	0,76	ac	0,76	ac
0,70	0,35	-	0,42	-	0,49	-	0,53	-	0,61	-	0,68	-	0,84	-	0,99	ac	0,99	ac
0,80	0,35	-	0,42	-	0,49	-	0,56	-	0,66	-	0,76	-	0,99	-	1,22	ac	1,22	a
0,90	0,35	-	0,42	-	0,49	-	0,56	-	0,70	-	0,83	-	1,03	-	1,34	-	1,34	-
1,00	0,35	-	0,42	-	0,49	-	0,56	-	0,74	-	0,91	-	1,19	-	1,47	-	1,47	-
1,20	0,35	-	0,42	-	0,49	-	0,56	-	0,74	-	0,91	-	1,31	-	1,71	-	1,71	-
1,50	0,35	-	0,42	-	0,49	-	0,56	-	0,74	-	0,91	-	1,50	-	2,08	-	2,08	-
$N_{R,II,k}$ =	0,30		0,41		0,56		0,73		1,06		1,40		1,99		2,59		2,59	

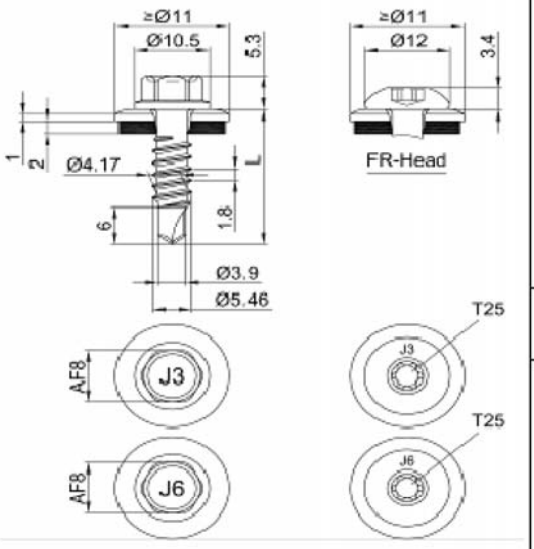
Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Component II of steel S320GD or S350GD: the indicated values of the pull-out resistance $N_{R,II,k}$ can be increased by 8,0%.

Self-drilling screw

JT3-2H Plus 5,5xL JT6-2H Plus 5,5xL
JT3-FR-2H Plus 5,5xL JT6-FR-2H Plus 5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 11,0 mm

Annex 41



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		2x0,63		2x0,75		2x0,88		2x1,00		2x1,13		2x1,25	
$M_{t,nom}$ =		—											
$V_{R,k}$ for $t_{N,I}$ =	0,40	0,58	-	0,58	ac	0,58	ac	0,58	ac	0,58	ac	0,58	ac
	0,50	0,73	-	0,73	ac	0,74	ac	0,77	ac	0,77	ac	0,77	ac
	0,60	0,80	-	0,80	ac	0,87	ac	0,94	ac	0,94	ac	0,94	a
	0,70	0,87	-	0,87	ac	0,99	ac	1,12	ac	1,12	ac	1,12	a
	0,80	0,94	-	0,94	ac	1,12	ac	1,29	a	1,29	a	1,29	a
	0,90	1,12	-	1,19	-	1,36	-	1,51	a	1,51	a	1,51	a
	1,00	1,29	-	1,44	-	1,60	-	1,75	a	1,75	a	1,75	a
	1,20	1,29	-	1,51	-	1,74	-	1,96	a	1,96	a	-	-
	1,50	1,29	-	1,62	-	1,94	-	2,27	a	-	-	-	-
$N_{R,II,k}$ =		1,01		1,78		2,31		2,84		2,84		2,84	

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

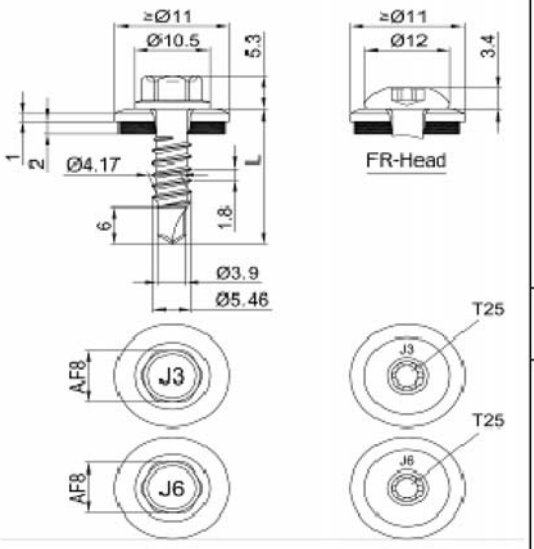
Component II of steel S320GD or S350GD: the indicated values of the pull-out resistance $N_{R,II,k}$ can be increased by 8,0%.

Self-drilling screw

JT3-2H Plus 5,5xL JT6-2H Plus 5,5xL
JT3-FR-2H Plus 5,5xL JT6-FR-2H Plus 5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 11,0 mm

Annex 42

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =	0,40		0,50		0,63		0,75		0,88		1,00		1,25		1,50		2,00	
$M_{t,nom}$ =	—																	
$V_{R,k}$ for $t_{N,I}$ = 0,40	0,24	-	0,24	-	0,24	-	0,24	-	0,24	-	0,24	ac	0,24	ac	0,24	ac	0,24	ac
0,50	0,46	-	0,46	-	0,46	-	0,53	-	0,61	-	0,69	ac	0,69	ac	0,69	ac	0,69	ac
0,60	0,46	-	0,55	-	0,55	-	0,60	-	0,70	-	0,79	-	0,89	-	0,99	ac	0,99	ac
0,70	0,46	-	0,55	-	0,64	-	0,69	-	0,78	-	0,86	-	1,08	-	1,29	ac	1,29	ac
0,80	0,46	-	0,55	-	0,64	-	0,73	-	0,83	-	0,93	-	1,26	-	1,59	ac	1,59	a
0,90	0,46	-	0,55	-	0,64	-	0,73	-	0,87	-	1,00	-	1,38	-	1,75	-	1,75	-
1,00	0,46	-	0,55	-	0,64	-	0,73	-	0,96	-	1,18	-	1,55	-	1,91	-	1,91	-
1,20	0,46	-	0,55	-	0,64	-	0,73	-	0,96	-	1,18	-	1,71	-	2,23	-	2,23	-
1,50	0,46	-	0,55	-	0,64	-	0,73	-	0,96	-	1,18	-	1,95	-	2,71	-	2,71	-
$N_{R,II,k}$ =	0,30		0,41		0,56		0,73		1,06		1,40		1,99		2,59		2,59	

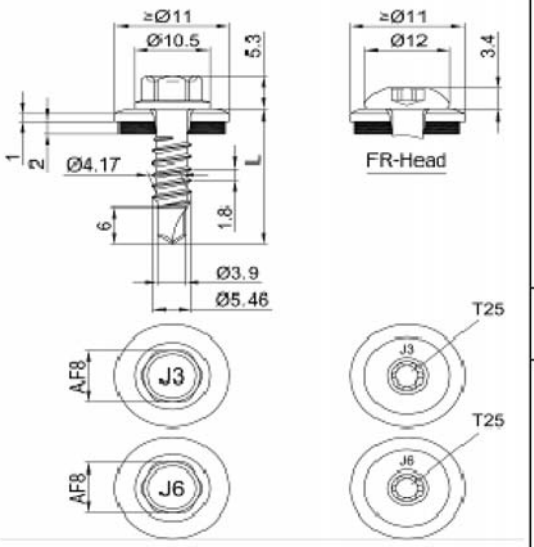
Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Component II of steel S320GD or S350GD: the indicated values of the pull-out resistance $N_{R,II,k}$ can be increased by 8,0%.

Self-drilling screw

JT3-2H Plus 5,5xL JT6-2H Plus 5,5xL
JT3-FR-2H Plus 5,5xL JT6-FR-2H Plus 5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 11,0 mm

Annex 43



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		2x0,63		2x0,75		2x0,88		2x1,00		2x1,13		2x1,25	
$M_{t,nom}$ =		—											
$V_{R,k}$ for $t_{N,I}$ =	0,40	0,77	-	0,77	ac	0,77	ac	0,77	ac	0,77	ac	0,77	ac
	0,50	0,96	-	0,97	ac	0,99	ac	1,00	ac	1,00	ac	1,00	ac
	0,60	1,05	-	1,06	ac	1,15	ac	1,23	ac	1,23	ac	1,23	a
	0,70	1,14	-	1,14	ac	1,30	ac	1,46	ac	1,46	a	1,46	a
	0,80	1,23	-	1,23	ac	1,46	ac	1,68	a	1,68	a	1,68	a
	0,90	1,46	-	1,56	-	1,77	-	1,98	a	1,98	a	1,98	a
	1,00	1,68	-	1,88	-	2,08	-	2,28	a	2,28	a	2,28	a
	1,20	1,68	-	1,97	-	2,26	-	2,55	a	2,55	a	-	-
	1,50	1,68	-	2,11	-	2,53	-	2,96	a	-	-	-	-
$N_{R,II,k}$ =		1,01		1,78		2,31		2,84		2,84		2,84	

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

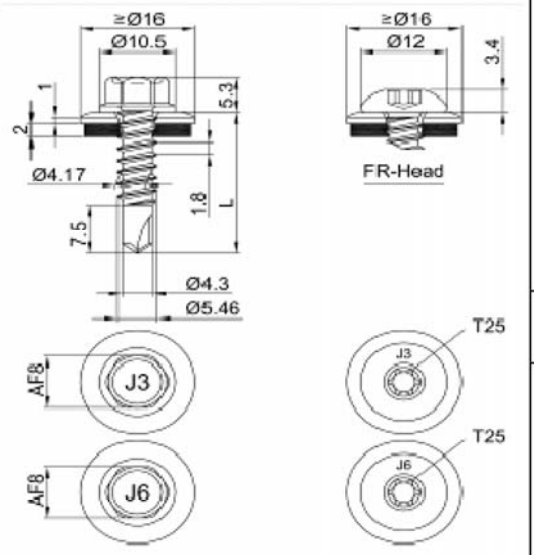
Component II of steel S320GD or S350GD: the indicated values of the pull-out resistance $N_{R,II,k}$ can be increased by 8,0%.

Self-drilling screw

JT3-2H Plus 5,5xL JT6-2H Plus 5,5xL
JT3-FR-2H Plus 5,5xL JT6-FR-2H Plus 5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 11,0 mm

Annex 44

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 4{,}20$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =	1,50		2,00		2,50		3,00	
$M_{t,nom}$ =	—							
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,77	ac	0,77	ac	0,77	abcd	0,77	abcd
0,60	0,84	-	0,96	ac	0,96	ac	0,96	ac
0,70	0,92	-	1,15	-	1,15	ac	1,15	a
0,80	1,07	-	1,23	-	1,30	-	1,30	a
0,90	1,19	-	1,34	-	1,46	-	1,50	-
1,00	1,30	-	1,46	-	1,61	-	1,69	-
1,20	1,53	-	1,69	-	1,84	-	2,00	-
1,50	2,15	-	2,23	-	2,30	-	-	-
2,00	2,15	-	2,23	-	-	-	-	-
$N_{R,II,k}$ =	0,69		1,07		1,61		2,15	

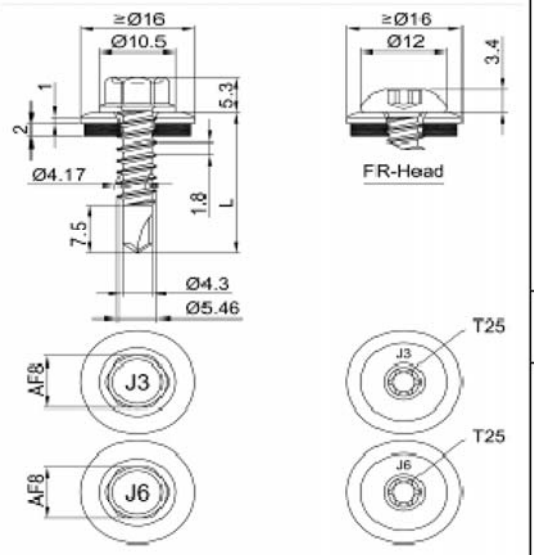
Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-drilling screw

JT3-3-5,5xL JT6-3-5,5xL
JT3-FR-3-5,5xL JT6-FR-3-5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 16 mm

Annex 45

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 4{,}20$ mm

Timber substructures

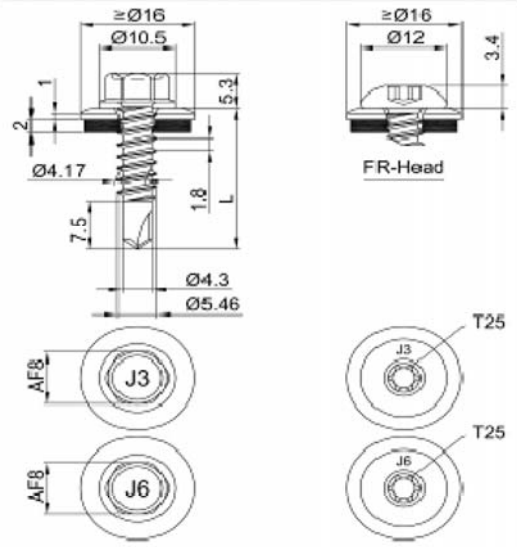
for timber substructures no performance determined

$t_{N,II}$ =	1,50		2,00		2,50		3,00	
$M_{t,nom}$ =	—							
$V_{R,k}$ for $t_{N,I}$ = 0,50	1,00	ac	1,00	ac	1,00	abcd	1,00	abcd
0,60	1,10	-	1,25	ac	1,25	ac	1,25	ac
0,70	1,20	-	1,50	-	1,50	ac	1,50	a
0,80	1,40	-	1,60	-	1,70	-	1,70	a
0,90	1,55	-	1,75	-	1,90	-	1,95	-
1,00	1,70	-	1,90	-	2,10	-	2,20	-
1,20	2,00	-	2,20	-	2,40	-	2,60	-
1,50	2,80	-	2,90	-	3,00	-	-	-
2,00	2,80	-	2,90	-	-	-	-	-
$N_{R,II,k}$ =	0,90		1,40		2,10		2,80	

Self-drilling screw

JT3-3-5,5xL JT6-3-5,5xL
JT3-FR-3-5,5xL JT6-FR-3-5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 16 mm

Annex 46



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		1,50		2,00		2,50	
$M_{t,nom}$ =		—					
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,77	ac	0,77	ac	0,77	abcd
	0,60	0,84	-	0,96	ac	0,96	a
	0,70	0,92	-	1,15	-	1,15	a
	0,80	1,07	-	1,23	-	1,30	-
	0,90	1,19	-	1,34	-	1,46	-
	1,00	1,30	-	1,46	-	1,61	-
	1,20	1,53	-	1,69	-	1,84	-
	1,50	2,15	-	2,23	-	2,30	-
	2,00	2,15	-	2,23	-	-	-
$N_{R,II,k}$ =		2,00		2,90		3,90	

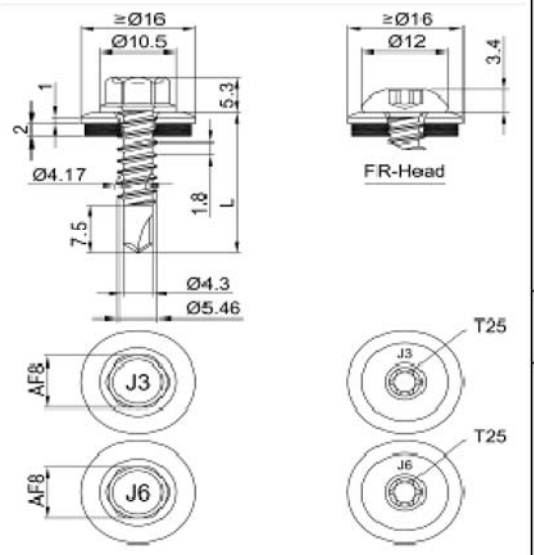
Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-drilling screw

JT3-3-5,5xL JT6-3-5,5xL
JT3-FR-3-5,5xL JT6-FR-3-5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 16,0 mm

Annex 47

Deutsches Institut für Bautechnik DIBt



Materials

Fastener:	stainless steel (1.4301 / 1.4567) – EN 10088 stainless steel (1.4401 / 1.4578) – EN 10088
Washer:	stainless steel (1.4301) – EN 10088 with vulcanised EPDM seal
Component I:	aluminium alloy with $R_{m,min}$ = 215 N/mm² – EN 573
Component II:	S235 – EN 10025-1 S280GD, S320GD – EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		1,50		2,00		2,50	
$M_{t,nom}$ =		—					
$V_{R,k}$ for $t_{N,I}$ =	0,50	1,00	ac	1,00	ac	1,00	abcd
	0,60	1,10	-	1,25	ac	1,25	a
	0,70	1,20	-	1,50	-	1,50	a
	0,80	1,40	-	1,60	-	1,70	-
	0,90	1,55	-	1,75	-	1,90	-
	1,00	1,70	-	1,90	-	2,10	-
	1,20	2,00	-	2,20	-	2,40	-
	1,50	2,80	-	2,90	-	3,00	-
	2,00	2,80	-	2,90	-	-	-
$N_{R,II,k}$ =		2,00		2,90		3,90	

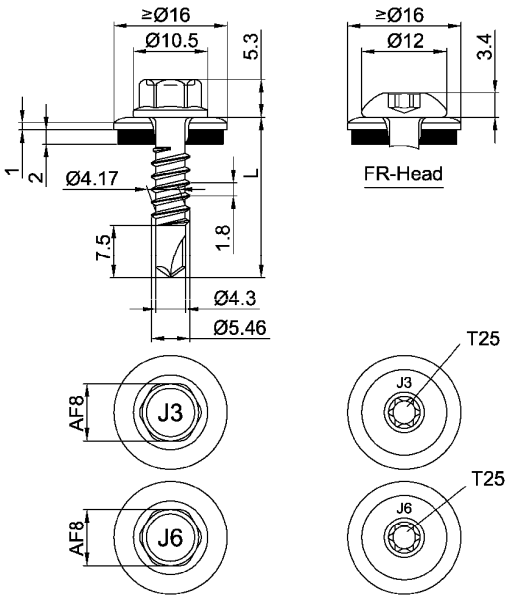
Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-drilling screw

JT3-3-5,5xL JT6-3-5,5xL
JT3-FR-3-5,5xL JT6-FR-3-5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 16,0 mm

Annex 48

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4404) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

no performance determined

$t_{N,II}$ [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		2 x 1,50		2 x 1,75	
$M_{t,nom}$		—		5 Nm												—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	—	—	1,60	—	1,60	—	1,60	—	1,60	—	1,60	—	—	—	—	—
	0,75	—	—	1,90	—	1,90	—	1,90	—	1,90	—	1,90	—	—	—	—	—
	0,88	—	—	2,20	—	2,20	—	2,20	—	2,20	—	2,20	—	—	—	—	—
	1,00	—	—	2,50	—	2,50	—	2,50	—	2,50	—	2,50	—	—	—	—	—
	1,13	—	—	2,50	—	2,50	—	2,50	—	2,50	—	—	—	—	—	—	—
	1,25	—	—	2,50	—	2,50	—	2,50	—	2,50	—	—	—	—	—	—	—
	1,50	—	—	2,50	—	2,50	—	2,50	—	—	—	—	—	—	—	—	—
	1,75	—	—	2,50	—	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	2,50	—	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	0,81	—	0,97	—	1,19	—	1,51	—	1,62	—	1,62	—	—	—
	0,55	—	—	1,02	—	1,23	—	1,50	—	1,91	—	2,05	—	—	—	—	—
	0,63	—	—	1,50	—	1,80	—	2,20	—	2,80	—	3,00	—	—	—	—	—
	0,75	—	—	1,50	—	1,80	—	2,20	—	2,80	—	3,20	—	—	—	—	—
	0,88	—	—	1,50	—	1,80	—	2,20	—	2,80	—	3,20	—	—	—	—	—
	1,00	—	—	1,50	—	1,80	—	2,20	—	2,80	—	3,20	—	—	—	—	—
	1,13	—	—	1,50	—	1,80	—	2,20	—	2,80	—	—	—	—	—	—	—
	1,25	—	—	1,50	—	1,80	—	2,20	—	2,80	—	—	—	—	—	—	—
	1,50	—	—	1,50	—	1,80	—	2,20	—	—	—	—	—	—	—	—	—
	1,75	—	—	1,50	—	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	1,50	—	—	—	—	—	—	—	—	—	—	—	—	—

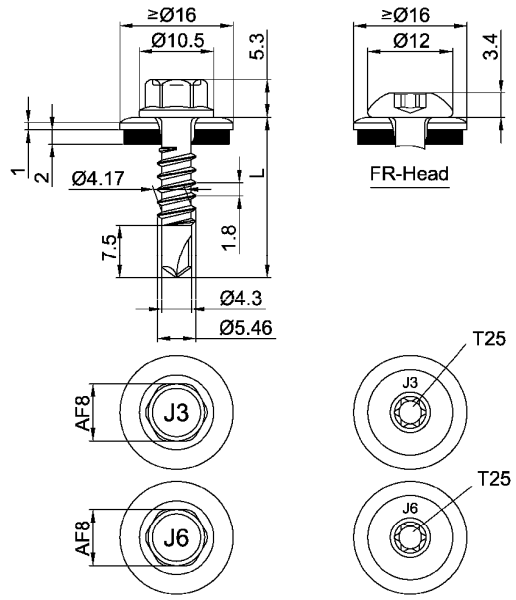
Self drilling screw

JT3-3H-5,5 x L
JT6-3H-5,5 x L
JT3-FR-3H-5,5 x L
JT6-FR-3H-5,5 x L

with undercut, hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm

Annex 49

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4404) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235, S275 or S355 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

no performance determined

$t_{N,II}$ [mm]		1,00		1,13		1,25		1,50		2,00		2,50		3,00		4,00	
$M_{t,nom}$		5 Nm														—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,40	—	1,50	—	1,60	ac	1,90	ac	2,30	ac	2,50	ac	—	—	—	—
	0,75	1,80	—	1,90	—	2,00	ac	2,20	ac	2,70	ac	3,20	a	—	—	—	—
	0,88	2,20	—	2,30	—	2,50	—	2,70	—	3,30	—	3,70	a	—	—	—	—
	1,00	2,50	—	2,70	—	2,90	—	3,30	—	4,00	—	4,40	a	—	—	—	—
	1,13	2,90	—	3,00	—	3,10	—	3,80	—	4,40	—	—	—	—	—	—	—
	1,25	3,40	—	3,50	—	3,80	—	4,20	—	5,00	—	—	—	—	—	—	—
	1,50	4,10	—	4,40	—	4,70	—	5,30	—	5,80	—	—	—	—	—	—	—
	1,75	4,10	—	4,40	—	4,70	—	5,30	—	—	—	—	—	—	—	—	—
	2,00	4,10	—	4,40	—	4,70	—	5,30	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,59	—	0,76	—	0,81	ac	1,08	ac	1,57	ac	1,62	ac	1,62	ac	—	—
	0,55	0,75	—	0,95	—	1,02	ac	1,36	ac	1,98	ac	2,05	ac	—	—	—	—
	0,63	1,10	—	1,40	—	1,50	ac	2,00	ac	2,90	ac	3,00	ac	—	—	—	—
	0,75	1,10	—	1,40	—	1,50	ac	2,00	ac	2,90	ac	3,90	a	—	—	—	—
	0,88	1,10	—	1,40	—	1,50	—	2,00	—	2,90	—	3,90	a	—	—	—	—
	1,00	1,10	—	1,40	—	1,50	—	2,00	—	2,90	—	3,90	a	—	—	—	—
	1,13	1,10	—	1,40	—	1,50	—	2,00	—	2,90	—	—	—	—	—	—	—
	1,25	1,10	—	1,40	—	1,50	—	2,00	—	2,90	—	—	—	—	—	—	—
	1,50	1,10	—	1,40	—	1,50	—	2,00	—	2,90	—	—	—	—	—	—	—
	1,75	1,10	—	1,40	—	1,50	—	2,00	—	—	—	—	—	—	—	—	—
	2,00	1,10	—	1,40	—	1,50	—	2,00	—	—	—	—	—	—	—	—	—

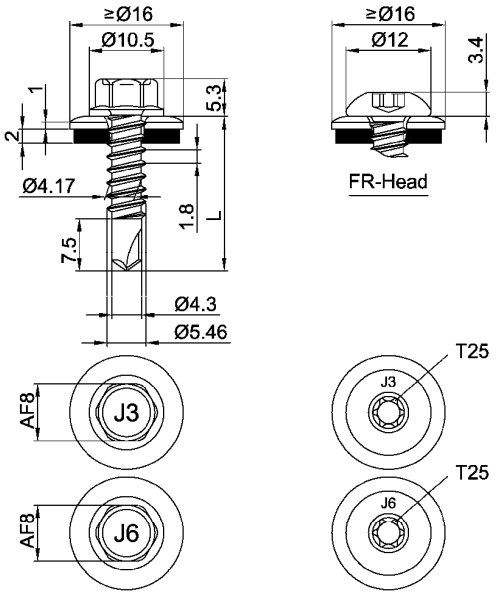
Self drilling screw

JT3-3H-5,5 x L
JT6-3H-5,5 x L
JT3-FR-3H-5,5 x L
JT6-FR-3H-5,5 x L

with undercut, hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm

Annex 50

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4404) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

no performance determined

	$t_{N,II}$ [mm]	1,00		1,13		1,25		1,50		2,00		2,50		3,00		4,00	
	$M_{t,nom}$	7 Nm														—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,40	—	1,40	—	1,70	—	2,00	—	2,50	ac	2,70	ac	—	—	—	—
	0,75	1,80	—	1,80	—	2,20	—	2,40	—	3,00	—	3,50	a	—	—	—	—
	0,88	2,10	—	2,10	—	2,50	—	2,90	—	3,30	—	3,60	a	—	—	—	—
	1,00	2,50	—	2,50	—	2,90	—	3,20	—	4,00	—	4,40	a	—	—	—	—
	1,13	2,90	—	2,90	—	3,10	—	3,80	—	4,40	—	—	—	—	—	—	—
	1,25	3,40	—	3,40	—	3,80	—	4,20	—	5,00	—	—	—	—	—	—	—
	1,50	4,10	—	4,10	—	4,70	—	5,30	—	5,80	—	—	—	—	—	—	—
	1,75	4,10	—	4,10	—	4,70	—	5,30	—	—	—	—	—	—	—	—	—
	2,00	4,10	—	4,10	—	4,70	—	5,30	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,59	—	0,59	—	0,81	—	1,08	—	1,57	ac	1,62	ac	1,62	ac	—	—
	0,55	0,75	—	0,75	—	1,02	—	1,36	—	1,98	ac	2,05	ac	—	—	—	—
	0,63	1,10	—	1,10	—	1,50	—	2,00	—	2,90	ac	3,00	ac	—	—	—	—
	0,75	1,10	—	1,10	—	1,50	—	2,00	—	2,90	—	3,90	a	—	—	—	—
	0,88	1,10	—	1,10	—	1,50	—	2,00	—	2,90	—	3,90	a	—	—	—	—
	1,00	1,10	—	1,10	—	1,50	—	2,00	—	2,90	—	3,90	a	—	—	—	—
	1,13	1,10	—	1,10	—	1,50	—	2,00	—	2,90	—	—	—	—	—	—	—
	1,25	1,10	—	1,10	—	1,50	—	2,00	—	2,90	—	—	—	—	—	—	—
	1,50	1,10	—	1,10	—	1,50	—	2,00	—	2,90	—	—	—	—	—	—	—
	1,75	1,10	—	1,10	—	1,50	—	2,00	—	—	—	—	—	—	—	—	—
	2,00	1,10	—	1,10	—	1,50	—	2,00	—	—	—	—	—	—	—	—	—

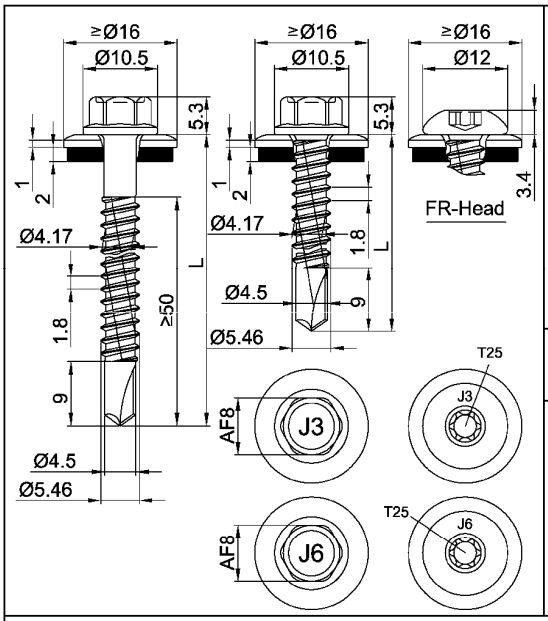
Self drilling screw

JT3-3-5,5 x L
JT6-3-5,5 x L
JT3-FR-3-5,5 x L
JT6-FR-3-5,5 x L

with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm

Annex 51

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4404) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235, S275 or S355 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 6{,}00$ mm

Timber substructures

no performance determined

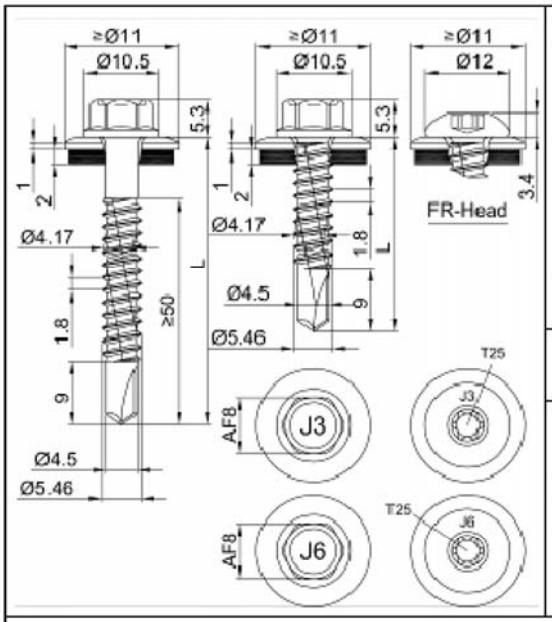
	$t_{N,II}$ [mm]	1,50		2,00		2,50		3,00		4,00		—		2 x 1,50		—	
	$M_{t,nom}$	5 Nm										—		5 Nm		—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	2,10	ac	2,40	ac	2,60	ac	2,90	ac	2,90	ac	—	—	2,40	ac	—	—
	0,75	2,50	—	2,80	ac	3,10	ac	3,30	ac	3,30	ac	—	—	3,10	ac	—	—
	0,88	2,90	—	3,20	—	3,40	ac	3,70	ac	3,70	ac	—	—	3,70	ac	—	—
	1,00	3,10	—	3,40	—	4,00	—	4,20	ac	4,20	ac	—	—	3,70	—	—	—
	1,13	3,30	—	3,80	—	4,50	—	4,60	—	4,60	—	—	—	3,70	—	—	—
	1,25	3,40	—	3,90	—	4,70	—	4,90	—	4,90	—	—	—	3,70	—	—	—
	1,50	3,80	—	4,40	—	5,00	—	5,50	—	5,50	—	—	—	3,70	—	—	—
	1,75	3,80	—	4,40	—	5,00	—	5,50	—	5,50	—	—	—	3,70	—	—	—
	2,00	3,80	—	4,40	—	5,00	—	5,50	—	5,50	—	—	—	3,70	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,92	ac	1,30	ac	1,30	ac	1,30	ac	1,30	ac	—	—	1,30	ac	—	—
	0,55	1,16	ac	1,64	ac	1,64	ac	1,64	ac	1,64	ac	—	—	1,64	ac	—	—
	0,63	1,70	ac	2,40	ac	2,40	ac	2,40	ac	2,40	ac	—	—	2,40	ac	—	—
	0,75	1,70	—	2,60	ac	2,90	ac	2,90	ac	2,90	ac	—	—	2,70	ac	—	—
	0,88	1,70	—	2,60	—	3,50	ac	3,50	ac	3,50	ac	—	—	2,70	ac	—	—
	1,00	1,70	—	2,60	—	3,50	—	4,10	ac	4,10	ac	—	—	2,70	—	—	—
	1,13	1,70	—	2,60	—	3,50	—	4,10	—	4,10	—	—	—	2,70	—	—	—
	1,25	1,70	—	2,60	—	3,50	—	4,10	—	4,10	—	—	—	2,70	—	—	—
	1,50	1,70	—	2,60	—	3,50	—	4,50	—	4,50	—	—	—	2,70	—	—	—
	1,75	1,70	—	2,60	—	3,50	—	4,50	—	4,50	—	—	—	2,70	—	—	—
	2,00	1,70	—	2,60	—	3,50	—	4,50	—	4,50	—	—	—	2,70	—	—	—

Self drilling screw

JT3-6-5,5 x L
JT6-6-5,5 x L
JT3-FR-6-5,5 x L
JT6-FR-6-5,5 x L

with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm

Annex 52



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 6{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		2,00		2,50		3,00		4,00	
$M_{t,nom}$ =		—							
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,71	ac	0,71	ac	0,71	ac	0,71	ac
	0,60	0,89	ac	0,91	ac	0,93	ac	0,93	ac
	0,70	1,07	ac	1,11	ac	1,15	ac	1,15	ac
	0,80	1,25	ac	1,31	ac	1,36	ac	1,36	ac
	0,90	1,43	ac	1,51	ac	1,58	ac	1,58	ac
	1,00	1,61	ac	1,71	ac	1,80	ac	1,80	ac
	1,20	1,80	-	1,93	-	2,06	-	2,17	ac
	1,50	2,09	-	2,27	-	2,45	-	2,72	a
	2,00	2,56	-	2,83	-	3,10	-	3,63	a
$N_{R,II,k}$ =		1,03		1,68		2,33		3,63	

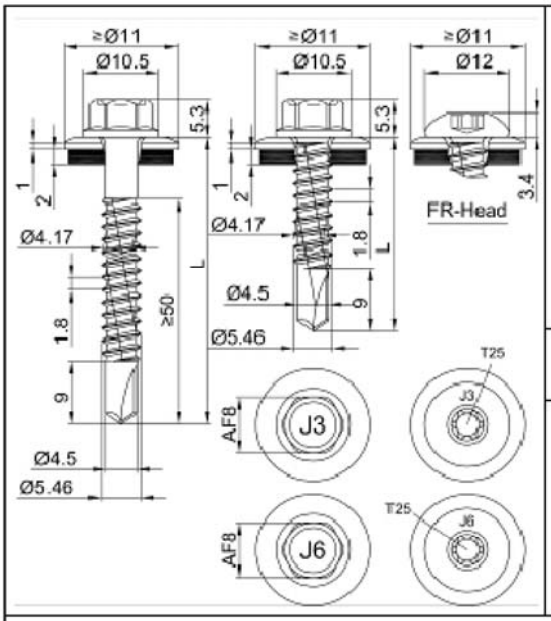
Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-drilling screw

JT3-6-5,5xL JT6-6-5,5xL
JT3-FR-6-5,5xL JT6-FR-6-5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 11,0 mm

Annex 53

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 6{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		2,00		2,50		3,00		4,00	
$M_{t,nom}$ =		—							
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,93	ac	0,93,	ac	0,93	ac	0,93	ac
	0,60	1,16	ac	1,19	ac	1,21	ac	1,21	ac
	0,70	1,39	ac	1,45	ac	1,50	ac	1,50	ac
	0,80	1,63	ac	1,70	ac	1,78	ac	1,78	ac
	0,90	1,86	ac	1,96	ac	2,07	ac	2,07	ac
	1,00	2,09	ac	2,22	ac	2,35	ac	2,35	ac
	1,20	2,34	-	2,51	-	2,69	-	2,72	ac
	1,50	2,71	-	2,95	-	3,19	-	3,48	a
	2,00	3,33	-	3,68	-	4,03	-	4,73	a
$N_{R,II,k}$ =		1,35		2,20		3,04		4,73	

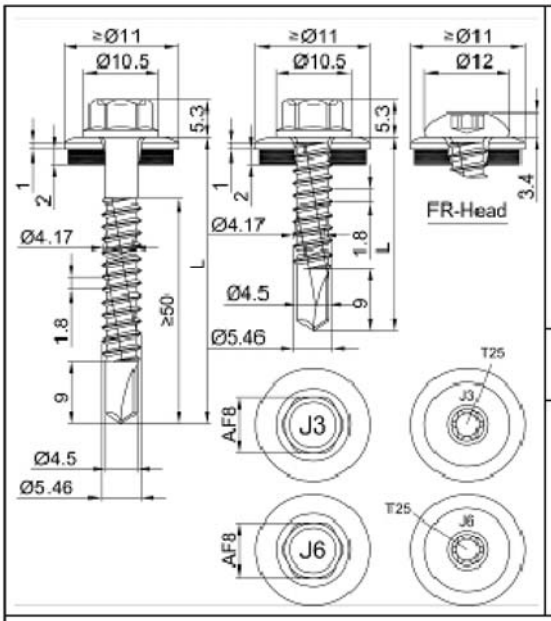
Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-drilling screw

JT3-6-5,5xL JT6-6-5,5xL
JT3-FR-6-5,5xL JT6-FR-6-5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 11,0 mm

Annex 54

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346

Drilling capacity $\Sigma t_i \leq 6{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =	1,50		1,75		2,00		2,50		3,00		4,00		-		2x1,50	
$M_{t,nom}$ =	—															
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,71	ac	0,71	ac	0,71	ac	0,71	ac	0,71	ac	0,71	ac	-	-	0,71	ac
0,60	0,91	ac	0,91	ac	0,91	ac	0,92	ac	0,93	ac	0,93	ac	-	-	0,91	ac
0,70	1,10	ac	1,11	ac	1,12	ac	1,13	ac	1,15	ac	1,15	ac	-	-	1,10	ac
0,80	1,30	ac	1,31	ac	1,32	ac	1,34	ac	1,36	ac	1,36	ac	-	-	1,30	ac
0,90	1,49	ac	1,51	ac	1,53	ac	1,55	ac	1,58	ac	1,58	ac	-	-	1,49	ac
1,00	1,69	ac	1,71	ac	1,73	ac	1,76	ac	1,80	ac	1,80	ac	-	-	1,69	ac
1,20	1,69	-	1,79	-	1,90	-	1,97	-	2,06	-	2,17	ac	-	-	1,69	-
1,50	1,69	-	1,92	-	2,15	-	2,30	-	2,45	-	2,72	a	-	-	1,69	-
2,00	1,69	-	2,13	-	2,56	-	2,83	-	3,10	-	3,63	a	-	-	1,69	-
$N_{R,II,k}$ =	1,70		2,15		2,60		3,50		4,50		4,50		-		2,70	

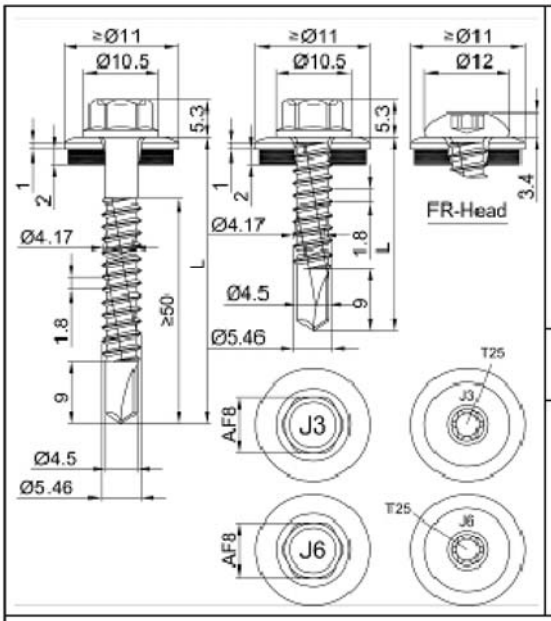
Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-drilling screw

JT3-6-5,5xL JT6-6-5,5xL
JT3-FR-6-5,5xL JT6-FR-6-5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 11,0 mm

Annex 55

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346

Drilling capacity $\Sigma t_i \leq 6{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =	1,50		1,75		2,00		2,50		3,00		4,00		-		2x1,50	
$M_{t,nom}$ =	—															
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,93	ac	0,93	ac	0,93	ac	0,93	ac	0,93	ac	0,93	ac	-	-	0,93	ac
0,60	1,18	ac	1,19	ac	1,19	ac	1,20	ac	1,21	ac	1,21	ac	-	-	1,18	ac
0,70	1,44	ac	1,45	ac	1,46	ac	1,48	ac	1,50	ac	1,50	ac	-	-	1,44	ac
0,80	1,69	ac	1,71	ac	1,72	ac	1,75	ac	1,78	ac	1,78	ac	-	-	1,69	ac
0,90	1,95	ac	1,97	ac	1,99	ac	2,03	ac	2,07	ac	2,07	ac	-	-	1,95	ac
1,00	2,20	ac	2,23	ac	2,25	ac	2,30	ac	2,35	ac	2,35	ac	-	-	2,20	ac
1,20	2,20	-	2,32	-	2,45	-	2,58	-	2,69	-	2,72	ac	-	-	2,20	-
1,50	2,20	-	2,45	-	2,79	-	2,99	-	3,19	-	3,48	a	-	-	2,20	-
2,00	2,20	-	2,67	-	3,33	-	3,68	-	4,03	-	4,73	a	-	-	2,20	-
$N_{R,II,k}$ =	1,70		2,15		2,60		3,50		4,50		4,50		-		2,70	

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-drilling screw

JT3-6-5,5xL JT6-6-5,5xL
JT3-FR-6-5,5xL JT6-FR-6-5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 11,0 mm

Annex 56

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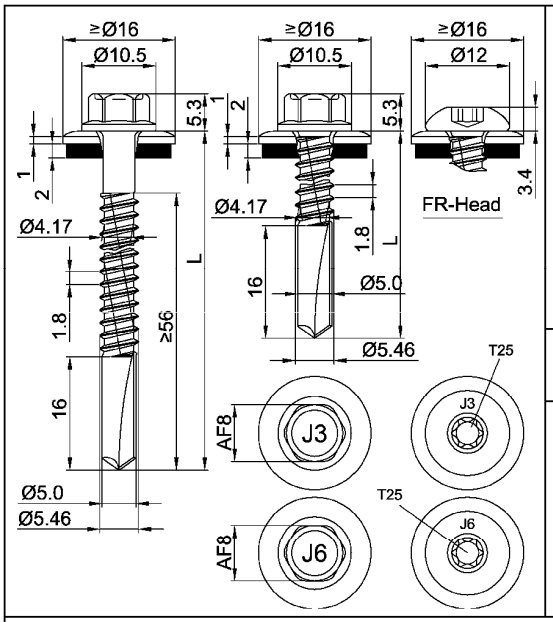


Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4404) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD - EN 10346

Component II: S235, S275 or S355 - EN 10025-1

Drilling capacity $\Sigma t_i \leq 13{,}00$ mm

Timber substructures

no performance determined

	$t_{N,II}$ [mm]	4,00		5,00		6,00		8,00		10,0		12,0		13,0		14,0	
	$M_{t,nom}$	7 Nm												—		—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	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 $t_{N,I}$ [mm]	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	3,10	ac	3,10	ac	3,10	ac	3,10	ac	3,10	ac	3,10	ac	—	—	—	—
	0,88	3,90	ac	3,90	ac	3,90	ac	3,90	ac	3,90	ac	3,90	a	—	—	—	—
	1,00	4,70	—	4,70	ac	4,70	ac	4,70	ac	4,70	ac	4,70	a	—	—	—	—
	1,13	4,70	—	5,60	—	5,60	—	5,60	—	5,60	—	—	—	—	—	—	—
	1,25	4,70	—	6,40	—	6,40	—	6,40	—	6,40	—	—	—	—	—	—	—
	1,50	4,70	—	6,40	—	6,40	—	6,40	—	6,40	—	—	—	—	—	—	—
	1,75	4,70	—	6,40	—	6,40	—	6,40	—	6,40	—	—	—	—	—	—	—
	2,00	4,70	—	6,40	—	6,40	—	6,40	—	6,40	—	—	—	—	—	—	—

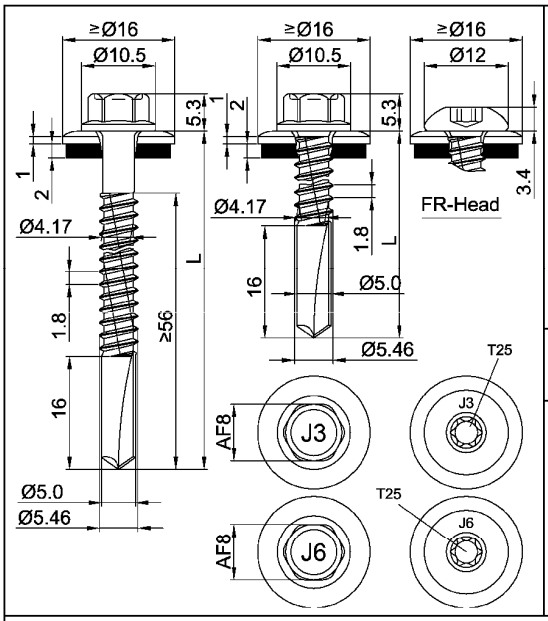
Self drilling screw

JT3-12-5,5 x L
JT6-12-5,5 x L
JT3-FR-12-5,5 x L
JT6-FR-12-5,5 x L

with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm

Annex 57

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4404) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S320GD or S350GD - EN 10346

Component II: S235, S275 or S355 - EN 10025-1

Drilling capacity $\Sigma t_i \leq 13{,}00$ mm

Timber substructures

no performance determined

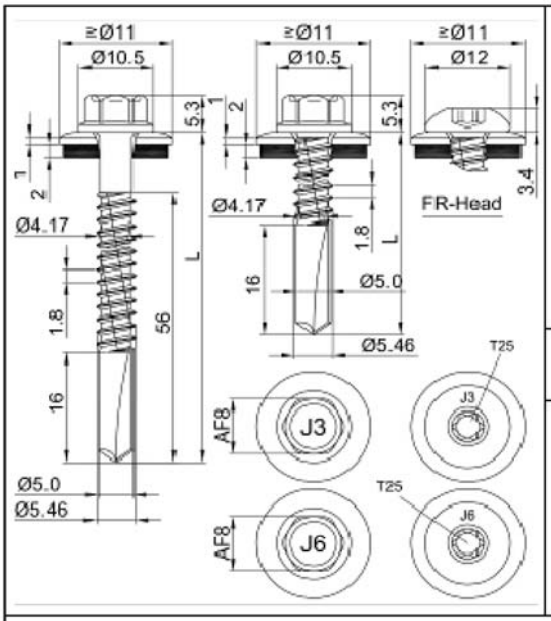
	$t_{N,II}$ [mm]	4,00		5,00		6,00		8,00		10,0		12,0		13,0		14,0	
	$M_{t,nom}$	7 Nm												—		—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	2,50	ac	2,50	ac	2,50	ac	2,50	ac	2,50	ac	2,50	—	—	—	—	—
	0,75	3,20	ac	3,20	ac	3,20	ac	3,20	ac	3,20	ac	3,20	—	—	—	—	—
	0,88	3,90	ac	3,90	ac	3,90	ac	3,90	ac	3,90	ac	3,90	—	—	—	—	—
	1,00	4,20	—	4,60	ac	4,60	ac	4,60	ac	4,60	ac	4,60	—	—	—	—	—
	1,13	4,20	—	5,30	—	5,30	—	5,30	—	5,30	—	—	—	—	—	—	—
	1,25	4,20	—	6,00	—	6,00	—	6,00	—	6,00	—	—	—	—	—	—	—
	1,50	4,20	—	6,40	—	7,20	—	7,60	—	7,60	—	—	—	—	—	—	—
	1,75	4,20	—	6,40	—	7,20	—	7,60	—	7,60	—	—	—	—	—	—	—
	2,00	4,20	—	6,40	—	7,20	—	7,60	—	7,60	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,40	ac	1,40	ac	1,40	ac	1,40	ac	1,40	ac	1,40	—	—	—	—	—
	0,55	1,77	ac	1,77	ac	1,77	ac	1,77	ac	1,77	ac	1,77	—	—	—	—	—
	0,63	2,60	ac	2,60	ac	2,60	ac	2,60	ac	2,60	ac	2,60	—	—	—	—	—
	0,75	3,30	ac	3,30	ac	3,30	ac	3,30	ac	3,30	ac	3,30	—	—	—	—	—
	0,88	4,20	ac	4,20	ac	4,20	ac	4,20	ac	4,20	ac	4,20	—	—	—	—	—
	1,00	4,70	—	5,00	ac	5,00	ac	5,00	ac	5,00	ac	5,00	—	—	—	—	—
	1,13	4,70	—	6,00	—	6,00	—	6,00	—	6,00	—	—	—	—	—	—	—
	1,25	4,70	—	6,90	—	6,90	—	6,90	—	6,90	—	—	—	—	—	—	—
	1,50	4,70	—	6,90	—	6,90	—	6,90	—	6,90	—	—	—	—	—	—	—
	1,75	4,70	—	6,90	—	6,90	—	6,90	—	6,90	—	—	—	—	—	—	—
	2,00	4,70	—	6,90	—	6,90	—	6,90	—	6,90	—	—	—	—	—	—	—

Self drilling screw

JT3-12-5,5 x L
JT6-12-5,5 x L
JT3-FR-12-5,5 x L
JT6-FR-12-5,5 x L

with hexagon head or round head with Torx® drive system and sealing washer ≥ Ø16 mm

Annex 58



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 13{,}00$ mm

Timber substructures

for timber substructures no performance determined

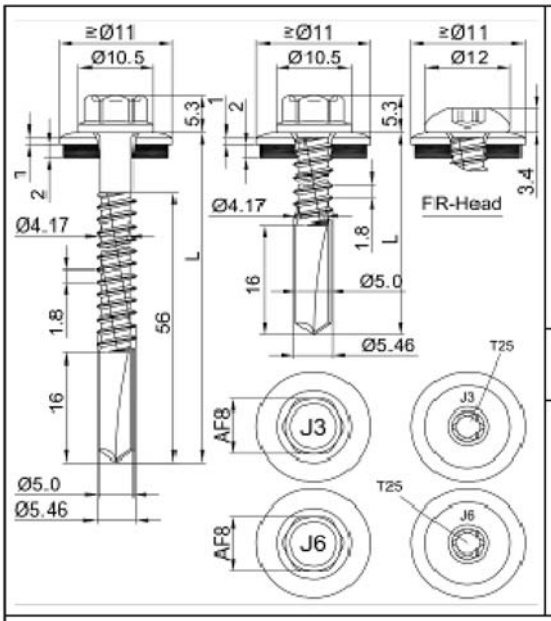
$t_{N,II}$ =		4,00		5,00		6,00		8,00		10,00		12,00	
$M_{t,nom}$ =		—											
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,77	ac	0,77	ac	0,77	ac	0,77	ac	0,77	ac	0,77	ac
	0,60	0,94	ac	0,94	ac	0,94	ac	0,94	ac	0,94	ac	0,94	a
	0,70	1,10	ac	1,10	ac	1,10	ac	1,10	ac	1,10	ac	1,10	a
	0,80	1,27	ac	1,27	ac	1,27	ac	1,27	ac	1,27	ac	1,27	a
	0,90	1,48	ac	1,48	ac	1,48	ac	1,48	ac	1,48	ac	1,48	a
	1,00	1,69	ac	1,69	ac	1,69	ac	1,69	ac	1,69	ac	1,69	a
	1,20	1,94	-	1,94	-	1,94	-	1,94	ac	1,94	ac	-	
	1,50	2,32	-	2,32	-	2,32	-	2,32	ac	2,32	ac	-	
	2,00	2,91	-	3,00	-	3,09	-	3,26	ac	3,26	a	-	
$N_{R,II,k}$ =		1,11		1,58		2,21		3,48		3,48		3,48	

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-drilling screw

JT3-12-5,5xL JT6-12-5,5xL
JT3-FR-12-5,5xL JT6-FR-12-5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 11,0 mm

Annex 59



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 13{,}00$ mm

Timber substructures

for timber substructures no performance determined

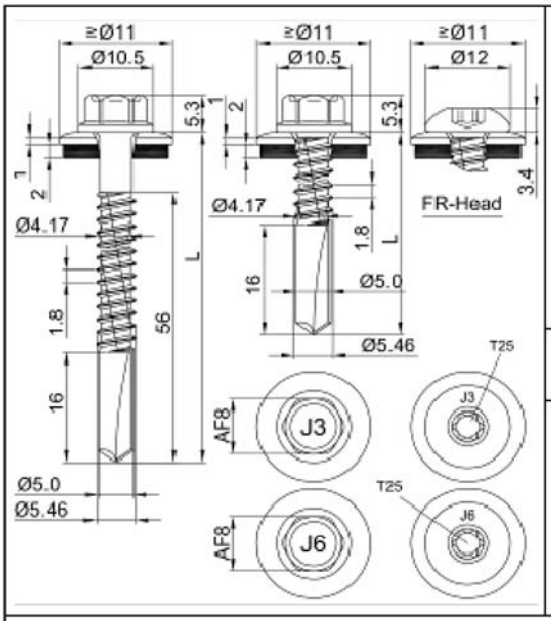
$t_{N,II}$ =	4,00		5,00		6,00		8,00		10,00		12,00	
$M_{t,nom}$ =	—											
$V_{R,k}$ for $t_{N,I}$ = 0,50	1,00	ac	1,00	ac	1,00	ac	1,00	ac	1,00	ac	1,00	ac
0,60	1,22	ac	1,22	ac	1,22	ac	1,22	ac	1,22	ac	1,22	a
0,70	1,44	ac	1,44	ac	1,44	ac	1,44	ac	1,44	ac	1,44	a
0,80	1,66	ac	1,66	ac	1,66	ac	1,66	ac	1,66	ac	1,66	a
0,90	1,93	ac	1,93	ac	1,93	ac	1,93	ac	1,93	ac	1,93	a
1,00	2,20	ac	2,20	ac	2,20	ac	2,20	ac	2,20	ac	2,20	a
1,20	2,52	-	2,52	-	2,52	-	2,52	ac	2,52	ac	-	
1,50	3,02	-	3,02	-	3,02	-	3,02	ac	3,02	ac	-	
2,00	3,79	-	3,91	-	4,02	-	4,25	ac	4,25	a	-	
$N_{R,II,k}$ =	1,45		2,06		2,89		4,54		4,54		4,54	

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-drilling screw

JT3-12-5,5xL JT6-12-5,5xL
JT3-FR-12-5,5xL JT6-FR-12-5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 11,0 mm

Annex 60



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346

Drilling capacity $\Sigma t_i \leq 13{,}00$ mm

Timber substructures

for timber substructures no performance determined

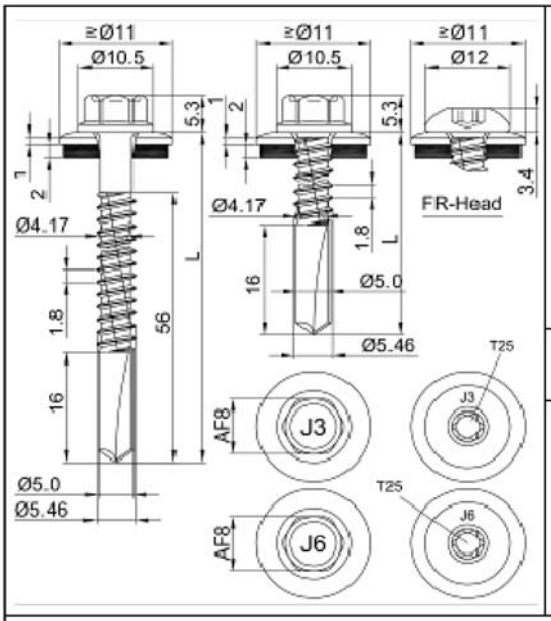
$t_{N,II}$ =		4,00		5,00		6,00		8,00		10,00		12,00	
$M_{t,nom}$ =		—											
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,77	ac	0,77	ac	0,77	ac	0,77	ac	0,77	ac	0,77	ac
	0,60	0,94	ac	0,94	ac	0,94	ac	0,94	ac	0,94	ac	0,94	a
	0,70	1,10	ac	1,10	ac	1,10	ac	1,10	ac	1,10	ac	1,10	a
	0,80	1,27	ac	1,27	ac	1,27	ac	1,27	ac	1,27	ac	1,27	a
	0,90	1,48	ac	1,48	ac	1,48	ac	1,48	ac	1,48	ac	1,48	a
	1,00	1,69	ac	1,69	ac	1,69	ac	1,69	ac	1,69	ac	1,69	a
	1,20	1,94	-	1,94	-	1,94	-	1,94	ac	1,94	ac	-	-
	1,50	2,32	-	2,32	-	2,32	-	2,32	ac	2,32	ac	-	-
	2,00	2,91	-	3,00	-	3,09	-	3,26	ac	3,26	a	-	-
$N_{R,II,k}$ =		4,70		6,40		6,40		6,40		6,40		6,40	

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-drilling screw

JT3-12-5,5xL JT6-12-5,5xL
JT3-FR-12-5,5xL JT6-FR-12-5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 11,0 mm

Annex 61



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346

Drilling capacity $\Sigma t_i \leq 13{,}00$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		4,00		5,00		6,00		8,00		10,00		12,00	
$M_{t,nom}$ =		—											
$V_{R,k}$ for $t_{N,I}$ =	0,50	1,00	ac	1,00	ac	1,00	ac	1,00	ac	1,00	ac	1,00	ac
	0,60	1,22	ac	1,22	ac	1,22	ac	1,22	ac	1,22	ac	1,22	a
	0,70	1,44	ac	1,44	ac	1,44	ac	1,44	ac	1,44	ac	1,44	a
	0,80	1,66	ac	1,66	ac	1,66	ac	1,66	ac	1,66	ac	1,66	a
	0,90	1,93	ac	1,93	ac	1,93	ac	1,93	ac	1,93	ac	1,93	a
	1,00	2,20	ac	2,20	ac	2,20	ac	2,20	ac	2,20	ac	2,20	a
	1,20	2,52	-	2,52	-	2,52	-	2,52	ac	2,52	ac	-	-
	1,50	3,02	-	3,02	-	3,02	-	3,02	ac	3,02	ac	-	-
	2,00	3,79	-	3,91	-	4,02	-	4,25	ac	4,25	a	-	-
$N_{R,II,k}$ =		4,70		6,40		6,40		6,40		6,40		6,40	

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-drilling screw

JT3-12-5,5xL JT6-12-5,5xL
JT3-FR-12-5,5xL JT6-FR-12-5,5xL
With hexagon head or FR-head and seal washer ≥ Ø 11,0 mm

Annex 62

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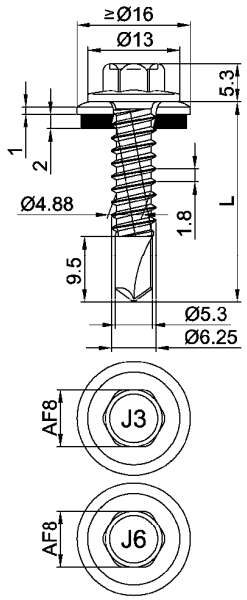


Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4404) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235, S275 or S355 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 6{,}50$ mm

Timber substructures

no performance determined

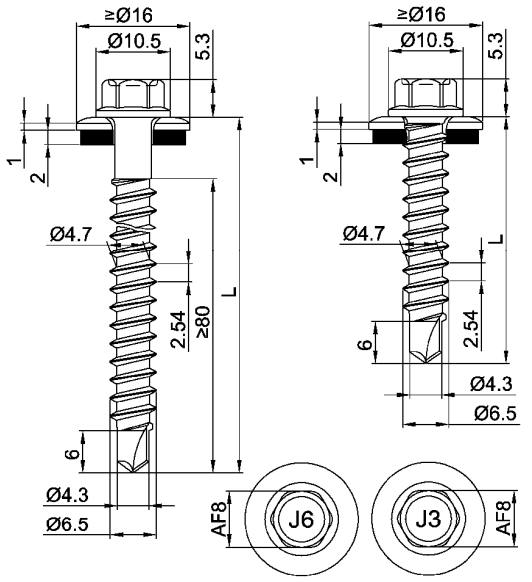
	$t_{N,II}$ [mm]	1,50		2,00		2,50		3,00		4,00		5,00		6,00		7,00	
	$M_{t,nom}$	—		7 Nm												—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	1,80	abcd	1,80	abcd	1,80	abcd	1,80	abcd	1,80	abc	1,80	a	—	—
	0,55	—	—	2,20	abcd	2,20	abcd	2,20	abcd	2,20	abcd	2,20	abc	—	—	—	—
	0,63	—	—	2,60	abcd	2,60	abcd	2,60	abcd	2,60	abcd	2,60	abc	—	—	—	—
	0,75	—	—	3,40	ac	3,40	ac	3,40	ac	3,40	ac	3,40	ac	—	—	—	—
	0,88	—	—	3,80	ac	3,90	ac	4,10	ac	4,10	ac	4,10	a	—	—	—	—
	1,00	—	—	4,20	ac	4,40	ac	4,70	ac	4,70	ac	4,70	a	—	—	—	—
	1,13	—	—	4,70	ac	5,00	ac	5,40	ac	5,70	ac	5,70	a	—	—	—	—
	1,25	—	—	5,10	ac	5,50	ac	6,00	ac	6,60	ac	6,60	a	—	—	—	—
	1,50	—	—	5,70	ac	6,40	ac	7,00	ac	7,50	a	7,90	a	—	—	—	—
	1,75	—	—	5,70	ac	6,40	ac	7,00	ac	7,50	—	—	—	—	—	—	—
	2,00	—	—	5,70	ac	6,40	ac	7,00	ac	7,50	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	1,50	abcd	1,50	abcd	1,50	abcd	1,50	abcd	1,50	abc	1,50	a	—	—
	0,55	—	—	2,10	abcd	2,10	abcd	2,10	abcd	2,10	abcd	2,10	abc	—	—	—	—
	0,63	—	—	2,70	abcd	2,70	abcd	2,70	abcd	2,70	abcd	2,70	abc	—	—	—	—
	0,75	—	—	3,00	ac	3,70	ac	3,70	ac	3,70	ac	3,70	ac	—	—	—	—
	0,88	—	—	3,00	ac	4,20	ac	4,20	ac	4,20	ac	4,20	a	—	—	—	—
	1,00	—	—	3,00	ac	4,20	ac	4,70	ac	4,70	ac	4,70	a	—	—	—	—
	1,13	—	—	3,00	ac	4,20	ac	4,80	ac	5,60	ac	5,60	a	—	—	—	—
	1,25	—	—	3,00	ac	4,20	ac	4,80	ac	6,40	ac	6,40	a	—	—	—	—
	1,50	—	—	3,00	ac	4,20	ac	4,80	ac	8,30	a	8,30	a	—	—	—	—
	1,75	—	—	3,00	ac	4,20	ac	4,80	ac	8,30	—	—	—	—	—	—	—
	2,00	—	—	3,00	ac	4,20	ac	4,80	ac	8,30	—	—	—	—	—	—	—

Self drilling screw

JT3-6-6,3 x L
JT6-6-6,3 x L
with hexagon head and sealing washer ≥ Ø16 mm

Annex 63

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) - EN 10088,
stainless steel (1.4404 / 1.4578) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

performance determined with

$M_{y,Rk}$ = 9,742 Nm
$f_{ax,k}$ = 8,575 N/mm² for $l_{ef} \geq 26{,}0$ mm

$t_{N,II}$ [mm]		0,63		0,75		0,88		1,00		1,13		1,25		1,50		2,00		
$M_{t,nom}$		3 Nm														—		
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,30	—	1,30	—	1,30	—	1,30	—	1,30	—	1,30	—	—	—	—	—	1,30
	0,75	1,30	—	1,80	—	1,80	—	1,80	—	1,80	—	1,80	—	—	—	—	—	1,80
	0,88	1,30	—	1,80	—	2,60	—	2,60	—	2,60	—	—	—	—	—	—	—	2,60
	1,00	1,30	—	1,80	—	2,60	—	3,30	—	—	—	—	—	—	—	—	—	3,30
	1,13	1,30	—	1,80	—	2,60	—	—	—	—	—	—	—	—	—	—	—	3,30
	1,25	1,30	—	1,80	—	—	—	—	—	—	—	—	—	—	—	—	—	3,30
	1,50	1,30	—	1,80	—	—	—	—	—	—	—	—	—	—	—	—	—	3,30
	1,75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,43	—	0,54	—	0,70	—	0,86	—	0,86	—	0,86	—	0,86	—	—	—	1,19
	0,55	0,55	—	0,68	—	0,89	—	1,09	—	1,09	—	1,09	—	—	—	—	—	1,50
	0,63	0,80	—	1,00	—	1,30	—	1,60	—	1,60	—	1,60	—	—	—	—	—	2,20
	0,75	0,80	—	1,00	—	1,30	—	1,60	—	1,60	—	1,60	—	—	—	—	—	2,80
	0,88	0,80	—	1,00	—	1,30	—	1,60	—	1,60	—	—	—	—	—	—	—	3,50
	1,00	0,80	—	1,00	—	1,30	—	1,60	—	—	—	—	—	—	—	—	—	4,20
	1,13	0,80	—	1,00	—	1,30	—	—	—	—	—	—	—	—	—	—	—	5,00
	1,25	0,80	—	1,00	—	—	—	—	—	—	—	—	—	—	—	—	—	5,90
	1,50	0,80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5,90
	1,75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

bearing resistance of component I

pull-through resistance of component I

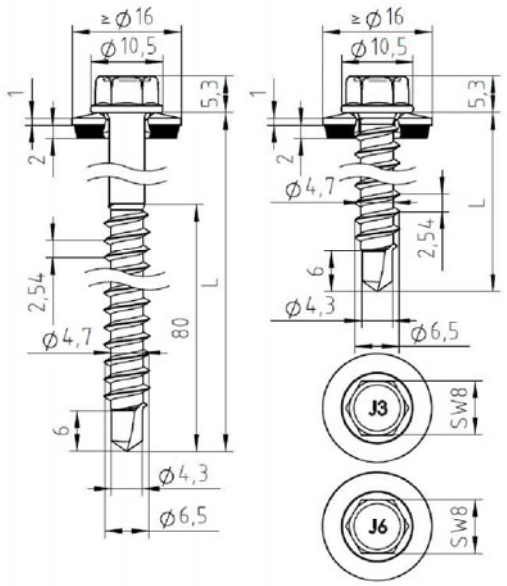
The values listed above in dependence on the screw-in length l_{ef} are valid for k_{mod} = 0,90 and timber strength grade C24 (ρ_a = 350 kg/m³). For other combinations of k_{mod} and timber strength grades see section 4.2.2.

Self drilling screw

JT3-2-6,5 x L
JT6-2-6,5 x L
with hexagon head and sealing washer ≥ Ø16 mm

Annex 64

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD – EN 10346

Component II: structural timber – EN 14081

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

performance determined with

$M_{y,Rk}$ = 9,742 Nm

$f_{ax,k}$ = 8,575 N/mm² for $l_{ef} \geq 26$ mm

	l_g =	32	38	42	48	52	58	62	68	72	78	82	
	$M_{t,nom}$ =	—											
$V_{R,k}$ for $t_{N,I}$ =	0,50	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30
	0,75	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80
	0,88	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,60	2,60
	1,00	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	1,13	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	1,25	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	1,50	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	1,75	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ for $t_{N,I}$ =	0,50	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19
	0,55	1,30	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
	0,63	1,30	1,56	1,81	2,06	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20
	0,75	1,30	1,56	1,81	2,06	2,31	2,56	2,80	2,80	2,80	2,80	2,80	2,80
	0,88	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,50	3,50	3,50
	1,00	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	4,20
	1,13	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,00
	1,25	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,90
	1,50	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,90
	1,75	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—

bearing resistance of component I

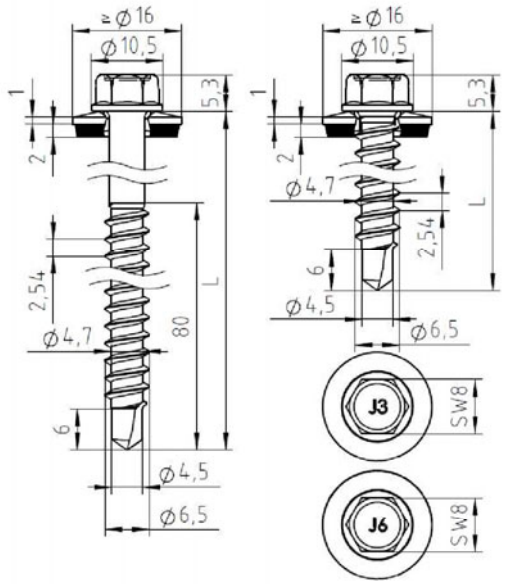
pull-trough resistance of component I

The values listed above in dependence on the screw-in length l_g are valid for k_{mod} = 0,90 and timber strength grade C24 (ρ_k = 350 kg/m³). For other values of k_{mod} and timber strength grades see section 4.2.2.

Self drilling screw

JT3-2-6,5 x L
JT6-2-6,5 x L
with hexagon head and sealing washer ≥ Ø 16 mm

Annex 65



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: timber – EN 14081

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

for timber substructures following performance were determined

$M_{y,k}$ = 9,742 Nm
$f_{ax,k}$ = 8,575 N/mm² for l_{eff} ≥ 32,5 mm

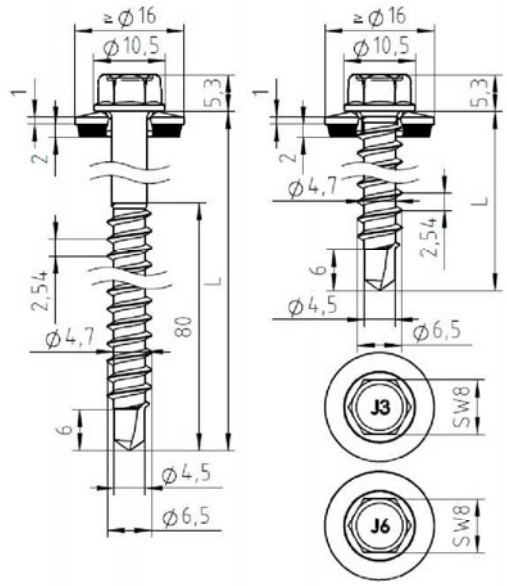
l_g =	33,00	36,00	39,00	42,00	45,00	48,00	51,00	54,00	60,00	
$M_{t,nom}$ =	—									
0,50	0,54 -	0,54 -	0,54 -	0,54 -	0,54 -	0,54 -	0,54 -	0,54 -	0,54 -	0,54
0,60	0,74 -	0,74 -	0,74 -	0,74 -	0,74 -	0,74 -	0,74 -	0,74 -	0,74 -	0,74
0,70	0,93 -	0,93 -	0,93 -	0,93 -	0,93 -	0,93 -	0,93 -	0,93 -	0,93 -	0,93
0,80	1,13 -	1,13 -	1,13 -	1,13 -	1,13 -	1,13 -	1,13 -	1,13 -	1,13 -	1,13
0,90	1,25 -	1,25 -	1,25 -	1,25 -	1,25 -	1,25 -	1,25 -	1,25 -	1,25 -	1,25
1,00	1,30 -	1,37 -	1,37 -	1,37 -	1,37 -	1,37 -	1,37 -	1,37 -	1,37 -	1,37
1,20	1,30 -	1,45 -	1,60 -	1,70 -	1,70 -	1,70 -	1,70 -	1,70 -	1,70 -	1,70
1,50	1,30 -	1,45 -	1,60 -	1,70 -	1,70 -	1,70 -	1,70 -	1,70 -	1,70 -	1,70
2,00	1,30 -	1,45 -	1,60 -	1,70 -	1,70 -	1,70 -	1,70 -	1,70 -	1,70 -	1,70
$V_{R,k}$ for $t_{N,I}$ =										failure of component I (bearing)
$N_{R,II,k}$ =	1,12	1,25	1,38	1,51	1,64	1,77	1,90	2,03	2,16	failure of component II see chapter 4.2.2

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
The values indicated above, depending on the screw depth l_g, shall apply to k_{mod} = 0,90 and the timber strength class C24 (ρ_k = 350 kg / m³). For other values of k_{mod} and strength classes see chapter 4.2.2
For k_{mod} < 0,90: failure of component I see right column and failure of component II see chapter 4.2.2 with $f_{1,k} = 80 \cdot 10^{-6} \cdot \rho_k^2$ (load carrying class 3, ρ_k in kg/m³, max. 500 kg/m³) and yield moment $M_{y,k}$ = 13830 Nmm.

Self-drilling screw

JT3-2-6,5xL JT6-2-6,5xL
With hexagon head and seal washer ≥ ∅ 16,0 mm

Annex 66



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: timber – EN 14081

Drilling capacity

$\Sigma t_i \leq 2{,}00$ mm

Timber substructures

for timber substructures following performance were determined

$M_{y,k}$ = 9,742 Nm
$f_{ax,k}$ = 8,575 N/mm² for l_{eff} ≥ 32,5 mm

l_g =	33,00	36,00	39,00	42,00	45,00	48,00	51,00	54,00	60,00	
$M_{t,nom}$ =	—									
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,70 -	0,70 -	0,70 -	0,70 -	0,70 -	0,70 -	0,70 -	0,70 -	0,70 -	0,70
0,60	0,96 -	0,96 -	0,96 -	0,96 -	0,96 -	0,96 -	0,96 -	0,96 -	0,96 -	0,96
0,70	1,21 -	1,21 -	1,21 -	1,21 -	1,21 -	1,21 -	1,21 -	1,21 -	1,21 -	1,21
0,80	1,30 -	1,45 -	1,47 -	1,47 -	1,47 -	1,47 -	1,47 -	1,47 -	1,47 -	1,47
0,90	1,30 -	1,45 -	1,60 -	1,63 -	1,63 -	1,63 -	1,63 -	1,63 -	1,63 -	1,63
1,00	1,30 -	1,45 -	1,60 -	1,75 -	1,78 -	1,78 -	1,78 -	1,78 -	1,78 -	1,78
1,20	1,30 -	1,45 -	1,60 -	1,75 -	1,90 -	2,05 -	2,20 -	2,22 -	2,22 -	2,22
1,50	1,30 -	1,45 -	1,60 -	1,75 -	1,90 -	2,05 -	2,20 -	2,22 -	2,22 -	2,22
2,00	1,30 -	1,45 -	1,60 -	1,75 -	1,90 -	2,05 -	2,20 -	2,22 -	2,22 -	2,22
										failure of component I (bearing)
$N_{R,II,k}$ =	1,12	1,25	1,38	1,51	1,64	1,77	1,90	2,03	2,16	failure of component II see chapter 4.2.2

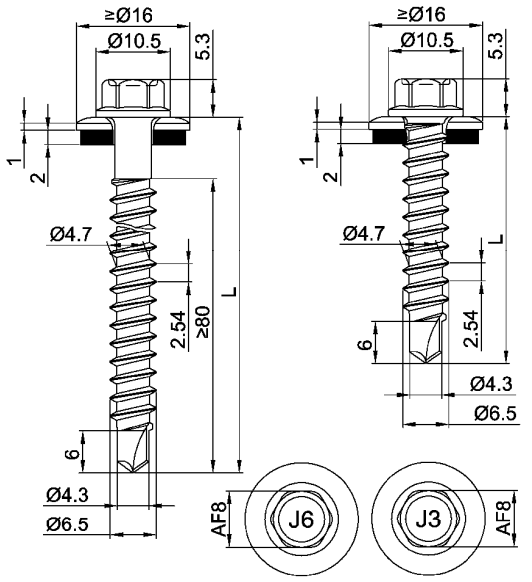
Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
The values indicated above, depending on the screw depth l_g, shall apply to k_{mod} = 0,90 and the timber strength class C24 (ρ_k = 350 kg / m³). For other values of k_{mod} and strength classes see chapter 4.2.2
For k_{mod} < 0,90: failure of component I see right column and failure of component II see chapter 4.2.2 with $f_{1,k} = 80 \cdot 10^{-6} \cdot \rho_k^2$ (load carrying class 3, ρ_k in kg/m³, max. 500 kg/m³) and yield moment $M_{y,k}$ = 13830 Nmm.

Self-drilling screw

JT3-2-6,5xL JT6-2-6,5xL
With hexagon head and seal washer ≥ Ø 16,0 mm

Annex 67

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) - EN 10088,
stainless steel (1.4404 / 1.4578) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S320GD or S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

performance determined with

$M_{y,Rk}$ = 9,742 Nm
$f_{ax,k}$ = 8,575 N/mm² for $l_{ef} \geq 26{,}0$ mm

	$t_{N,II}$ [mm]	0,63		0,75		0,88		1,00		1,13		1,25		1,50		2,00		
	$M_{t,nom}$	3 Nm														—		
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,30	—	1,40	—	1,40	—	1,40	—	1,40	—	1,40	—	—	—	—	—	1,40
	0,75	1,30	—	1,80	—	2,00	—	2,00	—	2,00	—	2,00	—	—	—	—	—	2,00
	0,88	1,30	—	1,80	—	2,60	—	2,60	—	2,80	—	—	—	—	—	—	—	2,80
	1,00	1,30	—	1,80	—	2,60	—	3,30	—	—	—	—	—	—	—	—	—	3,30
	1,13	1,30	—	1,80	—	2,60	—	—	—	—	—	—	—	—	—	—	—	3,30
	1,25	1,30	—	1,80	—	—	—	—	—	—	—	—	—	—	—	—	—	3,30
	1,50	1,30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3,30
	1,75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,43	—	0,54	—	0,70	—	0,86	—	0,86	—	0,86	—	0,86	—	—	—	1,30
	0,55	0,55	—	0,68	—	0,89	—	1,09	—	1,09	—	1,09	—	—	—	—	—	1,64
	0,63	0,80	—	1,00	—	1,30	—	1,60	—	1,60	—	1,60	—	—	—	—	—	2,40
	0,75	0,80	—	1,00	—	1,30	—	1,60	—	1,60	—	1,60	—	—	—	—	—	3,10
	0,88	0,80	—	1,00	—	1,30	—	1,60	—	1,60	—	—	—	—	—	—	—	3,80
	1,00	0,80	—	1,00	—	1,30	—	1,60	—	—	—	—	—	—	—	—	—	4,60
	1,13	0,80	—	1,00	—	1,30	—	—	—	—	—	—	—	—	—	—	—	5,50
	1,25	0,80	—	1,00	—	—	—	—	—	—	—	—	—	—	—	—	—	6,30
	1,50	0,80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6,30
	1,75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

bearing resistance of component I

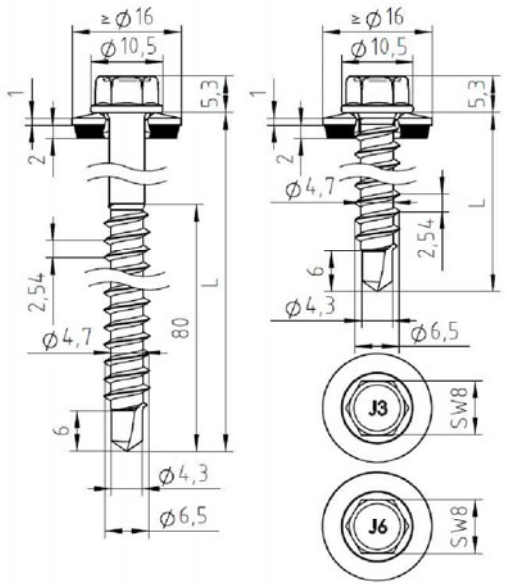
pull-through resistance of component I

The values listed above in dependence on the screw-in length l_{ef} are valid for k_{mod} = 0,90 and timber strength grade C24 (ρ_a = 350 kg/m³). For other combinations of k_{mod} and timber strength grades see section 4.2.2.

Self drilling screw

JT3-2-6,5 x L
JT6-2-6,5 x L
with hexagon head and sealing washer ≥ Ø16 mm

Annex 68



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S320GD or S350GD – EN 10346

Component II: structural timber – EN 14081

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

performance determined with

$M_{y,Rk}$ = 9,742 Nm

$f_{ax,k}$ = 8,575 N/mm² for $l_{ef} \geq 26$ mm

	l_g =	32	38	42	48	52	58	62	68	72	78	82	
	$M_{t,nom}$ =	—											
$V_{R,k}$ for $t_{N,I}$ =	0,50	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40
	0,75	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
	0,88	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	2,80
	1,00	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	1,13	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	1,25	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	1,50	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	1,75	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ for $t_{N,I}$ =	0,50	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30
	0,55	1,30	1,56	1,64	1,64	1,64	1,64	1,64	1,64	1,64	1,64	1,64	1,64
	0,63	1,30	1,56	1,81	2,06	2,31	2,40	2,40	2,40	2,40	2,40	2,40	2,40
	0,75	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,10	3,10	3,10	3,10
	0,88	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,80	3,80
	1,00	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	4,60
	1,13	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,50
	1,25	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	6,30
	1,50	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	6,30
	1,75	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—

bearing resistance of component I

pull-trough resistance of component I

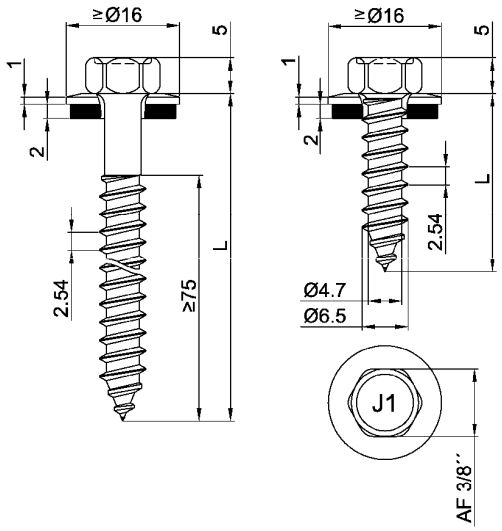
The values listed above in dependence on the screw-in length l_g are valid for k_{mod} = 0,90 and timber strength grade C24 (ρ_k = 350 kg/m³). For other values of k_{mod} and timber strength grades see section 4.2.2.

Self drilling screw

JT3-2-6,5 x L
JT6-2-6,5 x L
with hexagon head and sealing washer ≥ Ø 16 mm

Annex 69

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4529) - EN 10088
Washer: stainless steel (1.4301) - EN 10088
Component I: S280GD, S320GD or S350GD - EN 10346
Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Predrill diameter see table below

Timber substructures

performance determined with

$M_{y,Rk}$ = 9,742 Nm
$f_{ax,k}$ = 8,575 N/mm² for l_{ef} ≥ 26,0 mm

	$t_{N,II}$ [mm]	0,63		0,75		0,88		1,00		1,13		1,25		1,50		2,00		
	d_{pd} [mm]	ø 3,5		ø 4,0		ø 4,5								ø 5,0		ø 5,3		
	$M_{t,nom}$	3 Nm										5 Nm						
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,30	—	1,50	—	1,80	—	2,00	ac	2,30	ac	2,50	ac	2,90	ac	2,90	ac	2,90
	0,75	1,40	—	1,60	—	1,90	—	2,20	ac	2,50	ac	2,70	ac	3,10	ac	3,10	ac	3,10
	0,88	1,50	—	1,70	—	2,00	—	2,30	—	2,60	—	2,80	ac	3,20	ac	3,20	ac	3,20
	1,00	1,50	—	1,80	—	2,10	—	2,50	—	2,80	—	3,10	—	3,60	—	3,60	—	3,60
	1,13	1,60	—	1,80	—	2,20	—	2,60	—	2,90	—	3,20	—	3,80	—	3,80	—	3,80
	1,25	1,60	—	1,90	—	2,30	—	2,70	—	3,00	—	3,30	—	4,00	—	4,00	—	4,00
	1,50	1,60	—	1,90	—	2,40	—	2,80	—	3,20	—	3,50	—	4,00	—	4,00	—	4,00
	1,75	1,60	—	1,90	—	2,40	—	2,80	—	3,20	—	3,50	—	4,00	—	4,00	—	4,00
	2,00	1,60	—	1,90	—	2,40	—	2,80	—	3,20	—	3,50	—	4,00	—	4,00	—	4,00
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,49	—	0,59	—	0,70	—	0,76	ac	0,86	ac	0,97	ac	1,13	ac	1,13	ac	1,19
	0,55	0,61	—	0,75	—	0,89	—	0,95	ac	1,09	ac	1,23	ac	1,43	ac	1,43	ac	1,50
	0,63	0,90	—	1,10	—	1,30	—	1,40	ac	1,60	ac	1,80	ac	2,10	ac	2,10	ac	2,20
	0,75	0,90	—	1,10	—	1,30	—	1,40	ac	1,60	ac	1,80	ac	2,10	ac	2,10	ac	2,80
	0,88	0,90	—	1,10	—	1,30	—	1,40	—	1,60	—	1,80	ac	2,10	ac	2,10	ac	3,50
	1,00	0,90	—	1,10	—	1,30	—	1,40	—	1,60	—	1,80	—	2,20	—	2,20	—	4,20
	1,13	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	5,00
	1,25	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	5,90
	1,50	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	5,90
	1,75	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	5,90
	2,00	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	5,90

bearing resistance of component I

pull-through resistance of component I

The values listed above in dependence on the screw-in length l_{ef} are valid for k_{mod} = 0,90 and timber strength grade C24 (ρ_a = 350 kg/m³). For other combinations of k_{mod} and timber strength grades see section 4.2.2.

Self tapping screw

JA1-6,5 x L

with hexagon head and sealing washer ≥ Ø16 mm

Annex 70

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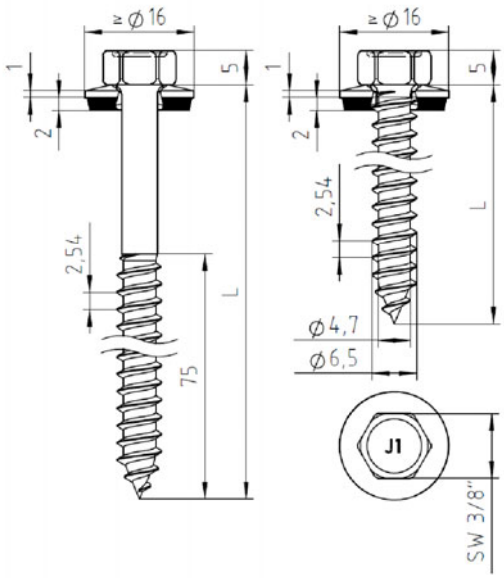


Materials

Fastener: stainless steel (1.4529) - EN 10088
Washer: stainless steel (1.4304) - EN 10088
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: structural timber – EN 14081

Predrill diameter see table below

Timber substructures

performance determined with

$M_{y,Rk}$ = 9,742 Nm
$f_{ax,k}$ = 8,575 N/mm² for $l_{ef} \geq 26$ mm

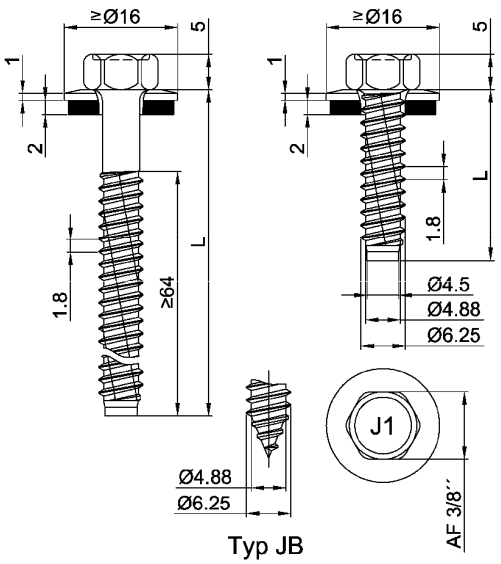
	l_g =	26	31	36	41	46	51	56	61	66	71	76	
	d_{pd} [mm]	Ø 4,5 mm											
	$M_{t,nom}$ =	—											
$V_{R,k}$ for $t_{N,I}$ =	0,50	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	2,90
	0,75	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,10
	0,88	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,20
	1,00	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,60
	1,13	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,80
	1,25	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	4,00
	1,50	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	4,00
	1,75	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	4,00
	2,00	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	4,00
bearing resistance of component I													
$N_{R,k}$ for $t_{N,I}$ =	0,50	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19
	0,55	1,30	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
	0,63	1,30	1,56	1,81	2,06	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20
	0,75	1,30	1,56	1,81	2,06	2,31	2,56	2,80	2,80	2,80	2,80	2,80	2,80
	0,88	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,50	3,50	3,50
	1,00	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	4,20
	1,13	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,00
	1,25	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,90
	1,50	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,90
	1,75	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,90
	2,00	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,90
pull-trough resistance of component I													

The values listed above in dependence on the screw-in length l_g are valid for k_{mod} = 0,90 and timber strength grade C24 (ρ_k = 350 kg/m³). For other values of k_{mod} and timber strength grades see section 4.2.2.

Self tapping screw

JA1-6,5 x L
with hexagon head and sealing washer ≥ Ø 16 mm

Annex 71



Typ JB

Materials

Fastener: stainless steel (1.4529) - EN 10088
Washer: stainless steel (1.4301) - EN 10088
Component I: S280GD, S320GD or S350GD - EN 10346
Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Predrill diameter see table below

Timber substructures

no performance determined

$t_{N,II}$ [mm]		1,25		1,50		2,00		3,00		4,00		6,00		≥ 7,00		—	
d_{pd} [mm]		ø 5,0				ø 5,3						ø 5,5		ø 5,7		—	
$M_{t,nom}$		5 Nm														—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	2,50	ac	2,70	ac	2,90	abcd	3,00	abcd	3,10	abcd	3,10	abcd	3,10	abcd	—	—
	0,75	2,60	ac	3,10	ac	3,30	abcd	3,60	abcd	3,70	abcd	3,70	abcd	3,70	abcd	—	—
	0,88	2,80	ac	3,20	ac	3,80	ac	4,10	abcd	4,30	abcd	4,40	abcd	4,40	abcd	—	—
	1,00	3,20	ac	3,60	ac	4,10	ac	4,80	ac	4,90	ac	5,10	ac	5,10	ac	—	—
	1,13	3,40	ac	4,00	ac	4,60	ac	5,40	ac	5,60	ac	5,80	ac	5,80	ac	—	—
	1,25	3,60	ac	4,20	ac	5,00	ac	6,10	ac	6,30	ac	6,50	ac	6,50	ac	—	—
	1,50	3,70	ac	4,40	ac	5,70	ac	6,80	ac	7,10	ac	7,30	ac	7,30	ac	—	—
	1,75	3,70	ac	4,70	ac	6,20	ac	7,60	ac	7,70	ac	8,10	ac	8,10	ac	—	—
	2,00	5,00	—	6,50	—	8,80	—	10,3	—	10,6	—	11,3	—	11,3	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,97	ac	1,35	ac	1,51	abcd	1,51	abcd	1,51	abcd	1,51	abcd	1,51	abcd	—	—
	0,55	1,23	ac	1,71	ac	1,91	abcd	1,91	abcd	1,91	abcd	1,91	abcd	1,91	abcd	—	—
	0,63	1,80	ac	2,50	ac	2,80	abcd	2,80	abcd	2,80	abcd	2,80	abcd	2,80	abcd	—	—
	0,75	2,00	ac	2,60	ac	3,10	abcd	3,60	abcd	3,60	abcd	3,60	abcd	3,60	abcd	—	—
	0,88	2,00	ac	2,70	ac	3,30	ac	3,80	abcd	3,80	abcd	3,80	abcd	3,80	abcd	—	—
	1,00	2,00	ac	2,70	ac	3,40	ac	4,00	ac	4,00	ac	4,00	ac	4,00	ac	—	—
	1,13	2,00	ac	2,70	ac	3,60	ac	4,40	ac	4,40	ac	4,40	ac	4,40	ac	—	—
	1,25	2,00	ac	2,70	ac	3,60	ac	4,80	ac	4,90	ac	4,90	ac	4,90	ac	—	—
	1,50	2,00	ac	2,70	ac	3,60	ac	5,60	ac	5,90	ac	5,90	ac	5,90	ac	—	—
	1,75	2,00	ac	2,70	ac	3,60	ac	5,80	ac	6,90	ac	7,10	ac	7,10	ac	—	—
	2,00	2,00	—	2,70	—	3,60	—	6,00	—	7,30	—	7,60	—	7,60	—	—	—

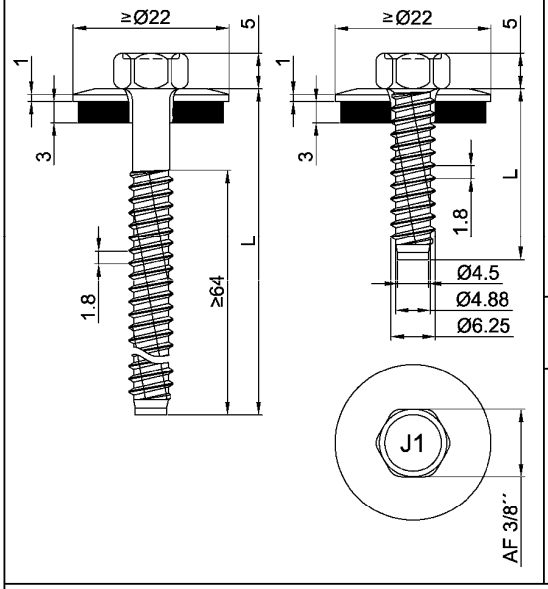
JZ1 - 6,3 x L for components II with $t_{II} \geq 1,25$ mm
JB1 - 6,3 x L for components II with $t_{II} \leq 2,00$ mm

Self tapping screw

JZ1-6,3 x L
JB1-6,3 x L
with hexagon head and sealing washer ≥ Ø16 mm

Annex 72

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4529) - EN 10088
Washer: stainless steel (1.4301) - EN 10088
Component I: S280GD, S320GD or S350GD - EN 10346
Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Predrill diameter see table below

Timber substructures

no performance determined

$t_{N,II}$ [mm]		1,50		2,00		3,00		4,00		5,00		6,00		≥ 7,00		—	
d_{pd} [mm]		—						ø 5,3				ø 5,5		ø 5,7		—	
$M_{t,nom}$		—						5 Nm								—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	—	—	—	—	—	—	3,40	abcd	3,40	abcd	3,40	abcd	3,40	abcd	—	—
	0,75	—	—	—	—	—	—	4,20	ac	4,20	ac	4,20	ac	4,20	ac	—	—
	0,88	—	—	—	—	—	—	4,70	ac	4,70	ac	4,70	ac	4,70	ac	—	—
	1,00	—	—	—	—	—	—	5,00	ac	5,00	ac	5,10	ac	5,10	ac	—	—
	1,13	—	—	—	—	—	—	5,60	ac	5,60	ac	5,80	ac	5,80	ac	—	—
	1,25	—	—	—	—	—	—	6,30	—	6,40	—	6,50	ac	6,50	ac	—	—
	1,50	—	—	—	—	—	—	7,10	—	7,20	—	7,30	—	7,30	—	—	—
	1,75	—	—	—	—	—	—	7,70	—	7,90	—	8,10	—	8,10	—	—	—
	2,00	—	—	—	—	—	—	7,70	—	7,90	—	8,10	—	8,10	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	1,67	abcd	1,67	abcd	1,67	abcd	1,67	abcd	—	—
	0,55	—	—	—	—	—	—	2,11	abcd	2,11	abcd	2,11	abcd	2,11	abcd	—	—
	0,63	—	—	—	—	—	—	3,10	abcd	3,10	abcd	3,10	abcd	3,10	abcd	—	—
	0,75	—	—	—	—	—	—	4,00	ac	4,00	ac	4,00	ac	4,00	ac	—	—
	0,88	—	—	—	—	—	—	4,40	ac	4,40	ac	4,40	ac	4,40	ac	—	—
	1,00	—	—	—	—	—	—	4,60	ac	4,60	ac	4,60	ac	4,60	ac	—	—
	1,13	—	—	—	—	—	—	5,10	ac	5,10	ac	5,10	ac	5,10	ac	—	—
	1,25	—	—	—	—	—	—	5,10	—	5,10	—	5,10	ac	5,10	ac	—	—
	1,50	—	—	—	—	—	—	5,90	—	5,90	—	5,90	—	5,90	—	—	—
	1,75	—	—	—	—	—	—	6,90	—	6,90	—	7,10	—	7,10	—	—	—
	2,00	—	—	—	—	—	—	8,80	—	11,6	—	13,4	—	13,4	—	—	—

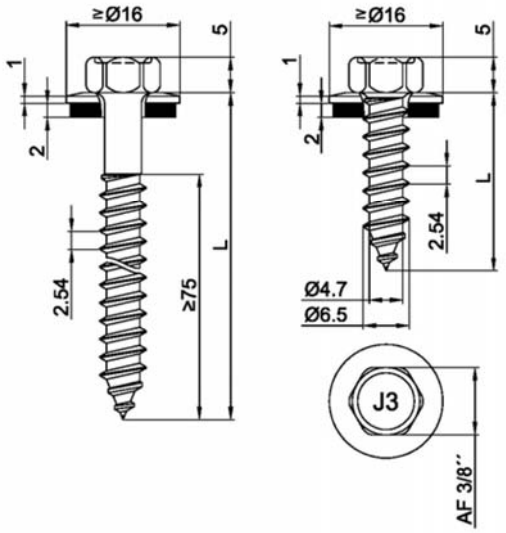
Self tapping screw

JZ1-6,3 x L

with hexagon head and sealing washer ≥ Ø22 mm

Annex 73

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) - EN 10088
Washer: stainless steel (1.4301) - EN 10088
Component I: S280GD, S320GD or S350GD - EN 10346
Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Predrill diameter see table below

Timber substructures

performance determined with

$M_{y,Rk}$ = 9,742 Nm
$f_{ax,k}$ = 8,575 N/mm² for $l_{ef} \geq 26{,}0$ mm

$t_{N,II}$ [mm]	0,63		0,75		0,88		1,00		1,13		1,25		1,50		2,00			
d_{pd} [mm]	ø 3,5		ø 4,0		ø 4,5								ø 5,0		ø 5,3			
$M_{t,nom}$	3 Nm										5 Nm							
$V_{R,k}$ [kN] for $t_{N,I}$ [mm] 0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
0,63	1,30	—	1,50	—	1,80	—	2,00	ac	2,30	ac	2,50	ac	2,90	ac	2,90	ac	2,90	bearing resistance of component I
0,75	1,40	—	1,60	—	1,90	—	2,20	ac	2,50	ac	2,70	ac	3,10	ac	3,10	ac	3,10	
0,88	1,50	—	1,70	—	2,00	—	2,30	—	2,60	—	2,80	ac	3,20	ac	3,20	ac	3,20	
1,00	1,50	—	1,80	—	2,10	—	2,50	—	2,80	—	3,10	—	3,60	—	3,60	—	3,60	
1,13	1,60	—	1,80	—	2,20	—	2,60	—	2,90	—	3,20	—	3,80	—	3,80	—	3,80	
1,25	1,60	—	1,90	—	2,30	—	2,70	—	3,00	—	3,30	—	4,00	—	4,00	—	4,00	
1,50	1,60	—	1,90	—	2,40	—	2,80	—	3,20	—	3,50	—	4,00	—	4,00	—	4,00	
1,75	1,60	—	1,90	—	2,40	—	2,80	—	3,20	—	3,50	—	4,00	—	4,00	—	4,00	
2,00	1,60	—	1,90	—	2,40	—	2,80	—	3,20	—	3,50	—	4,00	—	4,00	—	4,00	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm] 0,50	0,49	—	0,59	—	0,70	—	0,76	ac	0,86	ac	0,97	ac	1,13	ac	1,13	ac	1,19	pull-through resistance of component I
0,55	0,61	—	0,75	—	0,89	—	0,95	ac	1,09	ac	1,23	ac	1,43	ac	1,43	ac	1,50	
0,63	0,90	—	1,10	—	1,30	—	1,40	ac	1,60	ac	1,80	ac	2,10	ac	2,10	ac	2,20	
0,75	0,90	—	1,10	—	1,30	—	1,40	ac	1,60	ac	1,80	ac	2,10	ac	2,10	ac	2,80	
0,88	0,90	—	1,10	—	1,30	—	1,40	—	1,60	—	1,80	ac	2,10	ac	2,10	ac	3,50	
1,00	0,90	—	1,10	—	1,30	—	1,40	—	1,60	—	1,80	—	2,20	—	2,20	—	4,20	
1,13	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	5,00	
1,25	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	5,90	
1,50	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	5,90	
1,75	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	5,90	
2,00	1,00	—	1,20	—	1,40	—	1,50	—	1,70	—	1,90	—	2,30	—	2,30	—	5,90	

The values listed above in dependence on the screw-in length l_{ef} are valid for k_{mod} = 0,90 and timber strength grade C24 (ρ_a = 350 kg/m³). For other combinations of k_{mod} and timber strength grades see section 4.2.2.

Self tapping screw

JA3-6,5 x L

with hexagon head and sealing washer ≥ Ø16 mm

Annex 74

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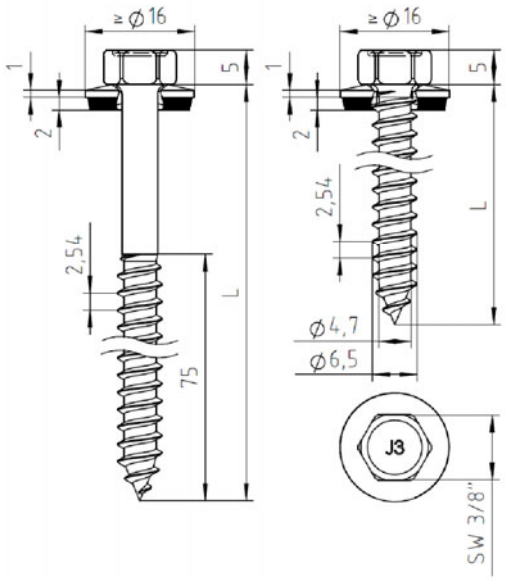

Materials

Fastener: stainless steel (1.4301 / 1.4567) - EN 10088
Washer: stainless steel (1.4301) - EN 10088
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: structural timber – EN 14081

Predrill diameter see table below

Timber substructures

performance determined with

$M_{y,Rk}$ = 9,742 Nm
$f_{ax,k}$ = 8,575 N/mm² for $l_{ef} \geq 26$ mm

l_g =	26	31	36	41	46	51	56	61	66	71	76		
d_{pd} [mm]	Ø 4,5 mm												
$M_{t,nom}$ =	—												
$V_{R,k}$ for $t_{N,I}$ = 0,50	—	—	—	—	—	—	—	—	—	—	—	—	bearing resistance of component I
0,55	—	—	—	—	—	—	—	—	—	—	—	—	
0,63	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	2,90	
0,75	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,10	
0,88	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,20	
1,00	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,60	
1,13	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,80	
1,25	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	4,00	
1,50	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	4,00	
1,75	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	4,00	
2,00	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	4,00	
$N_{R,k}$ for $t_{N,I}$ = 0,50	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	pull-trough resistance of component I
0,55	1,30	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	
0,63	1,30	1,56	1,81	2,06	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20	
0,75	1,30	1,56	1,81	2,06	2,31	2,56	2,80	2,80	2,80	2,80	2,80	2,80	
0,88	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,50	3,50	3,50	
1,00	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	4,20	
1,13	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,00	
1,25	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,90	
1,50	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,90	
1,75	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,90	
2,00	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,90	

The values listed above in dependence on the screw-in length l_g are valid for k_{mod} = 0,90 and timber strength grade C24 (ρ_k = 350 kg/m³). For other values of k_{mod} and timber strength grades see section 4.2.2.

Self tapping screw

JA3-6,5 x L
with hexagon head and sealing washer ≥ Ø 16 mm

Annex 75

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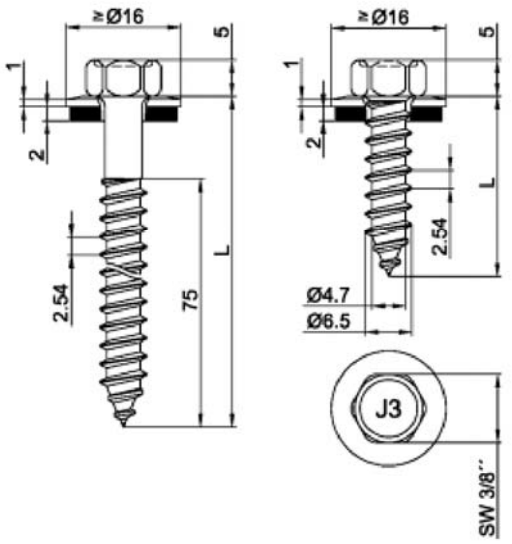


Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573
timber – EN 14081

Pre-drill diameter see table

Timber substructures

for timber substructures following performance were determined

$M_{y,k}$ = 9,742 Nm
$f_{ax,k}$ = 8,575 N/mm² for l_{eff} ≥ 32,5 mm

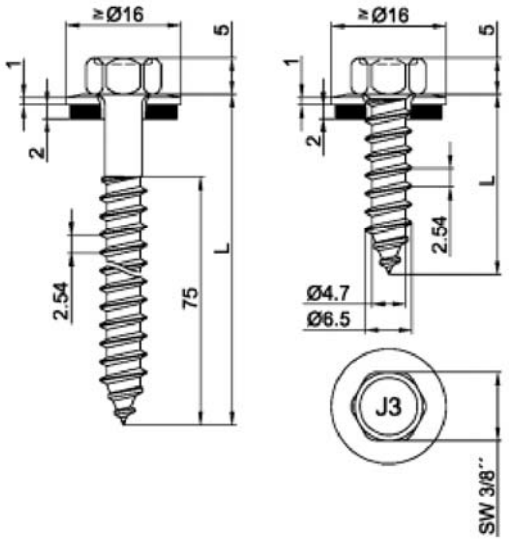
$t_{N,II}$ =	0,50	0,70	0,90	1,00	1,20	1,50	2,00	2,50	3,00	
d_{pd} =	Ø 4,0		Ø 4,5						Ø 5,0	
$M_{t,nom}$ =	—									
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,24 -	0,40 -	0,57 -	0,65 -	0,82 -	0,92 ac	0,92 ac	0,92 abcd	0,92 abcd	0,92
0,60	0,24 -	0,40 -	0,57 -	0,65 -	0,82 -	1,00 -	1,15 ac	1,15 ac	1,15 ac	1,15
0,70	0,24 -	0,40 -	0,57 -	0,65 -	0,82 -	1,07 -	1,38 -	1,38 ac	1,38 ac	1,38
0,80	0,24 -	0,40 -	0,57 -	0,65 -	0,82 -	1,15 -	1,46 -	1,61 -	1,61 ac	1,61
0,90	0,24 -	0,40 -	0,57 -	0,65 -	0,82 -	1,27 -	1,61 -	1,77 -	1,84 -	1,84
1,00	0,24 -	0,40 -	0,57 -	0,67 -	0,82 -	1,38 -	1,77 -	1,92 -	2,07 -	2,07
1,20	0,24 -	0,40 -	0,57 -	0,67 -	0,88 -	1,61 -	1,84 -	2,15 -	2,38 -	2,38
1,50	0,24 -	0,40 -	0,57 -	0,67 -	0,88 -	2,15 -	2,30 -	2,53 -	2,76 -	2,76
2,00	0,24 -	0,40 -	0,57 -	0,67 -	0,88 -	2,15 -	2,30 -	2,53 -	2,76 -	2,76
$N_{R,II,k}$ =	-	-	0,36	0,42	0,55	0,77	1,23	1,77	2,38	

failure of component I (bearing)

failure of component II see chapter 4.2.2

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
The values indicated above, depending on the screw depth l_g, shall apply to k_{mod} = 0,90 and the timber strength class C24 (ρ_k = 350 kg / m³). For other values of k_{mod} and strength classes see chapter 4.2.2
Timber substructures (component II): predrilling the holes with Ø 4,80 mm is necessary.

Self-tapping screw	**Annex 76**
JA3-6,5xL-E16 With hexagon head and seal washer ≥ Ø 16,0 mm	



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573
timber – EN 14081

Pre-drill diameter see table

Timber substructures

for timber substructures following performance were determined

$M_{y,k}$ = 9,742 Nm
$f_{ax,k}$ = 8,575 N/mm² for l_{eff} ≥ 32,5 mm

$t_{N,II}$ =	0,50	0,70	0,90	1,00	1,20	1,50	2,00	2,50	3,00	
d_{pd} =	Ø 4,0		Ø 4,5						Ø 5,0	
$M_{t,nom}$ =	—									
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,31 -	0,53 -	0,74 -	0,85 -	1,06 -	1,20 ac	1,20 ac	1,20 abcd	1,20 abcd	1,20
0,60	0,31 -	0,53 -	0,74 -	0,85 -	1,06 -	1,30 -	1,50 ac	1,50 ac	1,50 ac	1,50
0,70	0,31 -	0,53 -	0,74 -	0,85 -	1,06 -	1,40 -	1,80 -	1,80 ac	1,80 ac	1,80
0,80	0,31 -	0,53 -	0,74 -	0,85 -	1,06 -	1,50 -	1,90 -	2,10 -	2,10 ac	2,10
0,90	0,31 -	0,53 -	0,75 -	0,85 -	1,06 -	1,65 -	2,10 -	2,30 -	2,40 -	2,40
1,00	0,31 -	0,53 -	0,75 -	0,88 -	1,06 -	1,80 -	2,30 -	2,50 -	2,70 -	2,70
1,20	0,31 -	0,53 -	0,75 -	0,88 -	1,15 -	2,10 -	2,40 -	2,80 -	3,10 -	3,10
1,50	0,31 -	0,53 -	0,75 -	0,88 -	1,15 -	2,80 -	3,00 -	3,30 -	3,60 -	3,60
2,00	0,31 -	0,53 -	0,75 -	0,88 -	1,15 -	2,80 -	3,00 -	3,30 -	3,60 -	3,60
$N_{R,II,k}$ =	-	-	0,47	0,55	0,71	1,00	1,60	2,30	3,10	

failure of component I (bearing)

failure of component II see chapter 4.2.2

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
The values indicated above, depending on the screw depth l_g, shall apply to k_{mod} = 0,90 and the timber strength class C24 (ρ_k = 350 kg / m³). For other values of k_{mod} and strength classes see chapter 4.2.2
Timber substructures (component II): predrilling the holes with Ø 4,80 mm is necessary.

Self-tapping screw

JA3-6,5xL-E16

With hexagon head and seal washer ≥ Ø 16,0 mm

Annex 77

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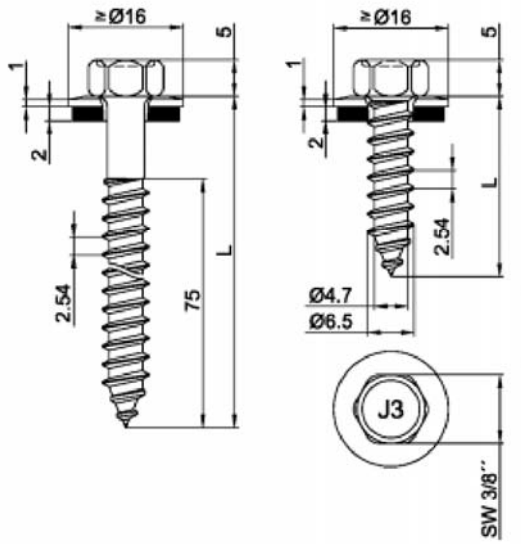


Materials

Fastener: stainless steel (1.4301 7 1.4567) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346
timber – EN 14081

Pre-drill diameter see table

Timber substructures

for timber substructures following performance were determined

$M_{y,k}$ = 9,742 Nm
$f_{ax,k}$ = 8,575 N/mm² for l_{eff} ≥ 32,5 mm

$t_{N,II}$ =	0,63	0,75	0,88	1,00	1,25	1,50	2,00	2,50	3,00	
d_{pd} =	Ø 3,5	Ø 4,0	Ø 4,5			Ø 5,0	Ø 5,3			
$M_{t,nom}$ =	—									
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,35 -	0,44 -	0,55 -	0,65 -	0,86 -	0,92 ac	0,92 ac	0,92 abcd	0,92 abcd	0,92
0,60	0,35 -	0,44 -	0,55 -	0,65 -	0,86 -	1,00 -	1,15 ac	1,15 ac	1,15 ac	1,15
0,70	0,35 -	0,44 -	0,55 -	0,65 -	0,86 -	1,07 -	1,38 -	1,38 ac	1,38 ac	1,38
0,80	0,35 -	0,44 -	0,55 -	0,65 -	0,86 -	1,15 -	1,46 -	1,61 -	1,61 ac	1,61
0,90	0,35 -	0,44 -	0,56 -	0,65 -	0,86 -	1,27 -	1,61 -	1,77 -	1,84 -	1,84
1,00	0,35 -	0,44 -	0,56 -	0,67 -	0,86 -	1,38 -	1,77 -	1,92 -	2,07 -	2,07
1,20	0,35 -	0,44 -	0,56 -	0,67 -	0,92 -	1,61 -	1,84 -	2,15 -	2,38 -	2,38
1,50	0,35 -	0,44 -	0,56 -	0,67 -	0,94 -	2,15 -	2,30 -	2,53 -	2,76 -	2,76
2,00	0,35 -	0,44 -	0,56 -	0,67 -	0,94 -	2,15 -	2,30 -	2,53 -	2,76 -	2,76
$N_{R,II,k}$ =	1,00	1,20	1,40	1,50	1,90	2,30	2,30	2,30	2,30	

$V_{R,k}$ for $t_{N,I}$ = failure of component I (bearing)

$N_{R,II,k}$ = failure of component II see chapter 4.2.2

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
The values indicated above, depending on the screw depth l_g, shall apply to k_{mod} = 0,90 and the timber strength class C24 (ρ_k = 350 kg / m³). For other values of k_{mod} and strength classes see chapter 4.2.2
Timber substructures (component II): predrilling the holes with Ø 4,80 mm is necessary.

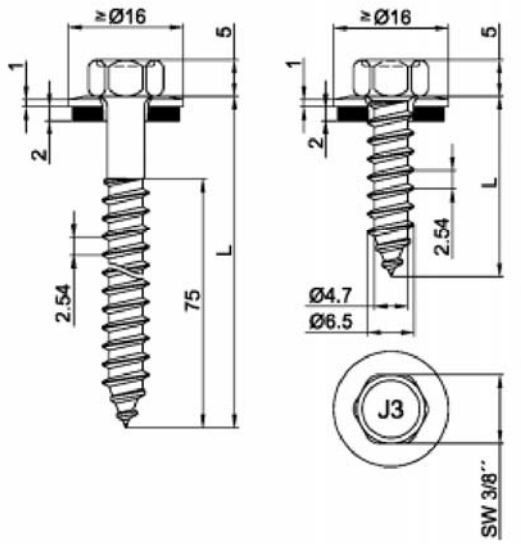
Self-tapping screw

JA3-6,5xL-E16

With hexagon head and seal washer ≥ Ø 16,0 mm

Annex 78

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088

Washer: stainless steel (1.4301) – EN 10088
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346
timber – EN 14081

Pre-drill diameter see table

Timber substructures

for timber substructures following performance were determined

$M_{y,k}$ = 9,742 Nm
$f_{ax,k}$ = 8,575 N/mm² for l_{eff} ≥ 32,5 mm

$t_{N,II}$ =	0,63	0,75	0,88	1,00	1,25	1,50	2,00	2,50	3,00	
d_{pd} =	Ø 3,5	Ø 4,0	Ø 4,5			Ø 5,0	Ø 5,3			
$M_{t,nom}$ =	—									
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,45 -	0,58 -	0,72 -	0,85 -	1,12 -	1,20 ac	1,20 ac	1,20 abcd	1,20 abcd	1,20
0,60	0,45 -	0,58 -	0,72 -	0,85 -	1,12 -	1,30 -	1,50 ac	1,50 ac	1,50 ac	1,50
0,70	0,45 -	0,58 -	0,72 -	0,85 -	1,12 -	1,40 -	1,80 -	1,80 ac	1,80 ac	1,80
0,80	0,45 -	0,58 -	0,72 -	0,85 -	1,12 -	1,50 -	1,90 -	2,10 -	2,10 ac	2,10
0,90	0,45 -	0,58 -	0,72 -	0,85 -	1,12 -	1,65 -	2,10 -	2,30 -	2,40 -	2,40
1,00	0,45 -	0,58 -	0,72 -	0,88 -	1,12 -	1,80 -	2,30 -	2,50 -	2,70 -	2,70
1,20	0,45 -	0,58 -	0,72 -	0,88 -	1,20 -	2,10 -	2,40 -	2,80 -	3,10 -	3,10
1,50	0,45 -	0,58 -	0,72 -	0,88 -	1,23 -	2,80 -	3,00 -	3,30 -	3,60 -	3,60
2,00	0,45 -	0,58 -	0,72 -	0,88 -	1,23 -	2,80 -	3,00 -	3,30 -	3,60 -	3,60
$N_{R,II,k}$ =	1,00	1,20	1,40	1,50	1,90	2,30	2,30	2,30	2,30	

failure of component I (bearing)

failure of component II see chapter 4.2.2

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
The values indicated above, depending on the screw depth l_g, shall apply to k_{mod} = 0,90 and the timber strength class C24 (ρ_k = 350 kg / m³). For other values of k_{mod} and strength classes see chapter 4.2.2
Timber substructures (component II): predrilling the holes with Ø 4,80 mm is necessary.

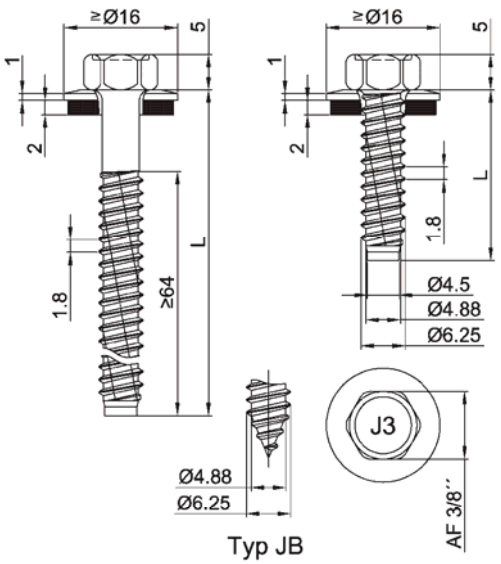
Self-tapping screw

JA3-6,5xL-E16

With hexagon head and seal washer ≥ Ø 16,0 mm

Annex 79

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) - EN 10088
Washer: stainless steel (1.4301) - EN 10088
Component I: S280GD, S320GD or S350GD - EN 10346
Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Predrill diameter see table below

Timber substructures

no performance determined

	$t_{N,II}$ [mm]	1,25		1,50		2,00		3,00		4,00		6,00		≥ 7,00		—	
	d_{pd} [mm]	ø 5,0				ø 5,3						ø 5,5		ø 5,7		—	
	$M_{t,nom}$	5 Nm														—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	2,50	ac	2,70	ac	2,90	abcd	3,00	abcd	3,10	abcd	3,10	abcd	3,10	abcd	—	—
	0,75	2,60	ac	3,10	ac	3,30	abcd	3,60	abcd	3,70	abcd	3,70	abcd	3,70	abcd	—	—
	0,88	2,80	ac	3,20	ac	3,80	ac	4,10	abcd	4,30	abcd	4,40	abcd	4,40	abcd	—	—
	1,00	3,20	ac	3,60	ac	4,10	ac	4,80	ac	4,90	ac	5,10	ac	5,10	ac	—	—
	1,13	3,40	ac	4,00	ac	4,60	ac	5,40	ac	5,60	ac	5,80	ac	5,80	ac	—	—
	1,25	3,60	ac	4,20	ac	5,00	ac	6,10	ac	6,30	ac	6,50	ac	6,50	ac	—	—
	1,50	3,70	ac	4,40	ac	5,70	ac	6,80	ac	7,10	ac	7,30	ac	7,30	ac	—	—
	1,75	3,70	ac	4,70	ac	6,20	ac	7,60	ac	7,70	ac	8,10	ac	8,10	ac	—	—
	2,00	5,00	—	6,50	—	8,80	—	10,3	—	10,6	—	11,3	—	11,3	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,97	ac	1,35	ac	1,51	abcd	1,51	abcd	1,51	abcd	1,51	abcd	1,51	abcd	—	—
	0,55	1,23	ac	1,71	ac	1,91	abcd	1,91	abcd	1,91	abcd	1,91	abcd	1,91	abcd	—	—
	0,63	1,80	ac	2,50	ac	2,80	abcd	2,80	abcd	2,80	abcd	2,80	abcd	2,80	abcd	—	—
	0,75	2,00	ac	2,60	ac	3,10	abcd	3,60	abcd	3,60	abcd	3,60	abcd	3,60	abcd	—	—
	0,88	2,00	ac	2,70	ac	3,30	ac	3,80	abcd	3,80	abcd	3,80	abcd	3,80	abcd	—	—
	1,00	2,00	ac	2,70	ac	3,40	ac	4,00	ac	4,00	ac	4,00	ac	4,00	ac	—	—
	1,13	2,00	ac	2,70	ac	3,60	ac	4,40	ac	4,40	ac	4,40	ac	4,40	ac	—	—
	1,25	2,00	ac	2,70	ac	3,60	ac	4,80	ac	4,90	ac	4,90	ac	4,90	ac	—	—
	1,50	2,00	ac	2,70	ac	3,60	ac	5,60	ac	5,90	ac	5,90	ac	5,90	ac	—	—
	1,75	2,00	ac	2,70	ac	3,60	ac	5,80	ac	6,90	ac	7,10	ac	7,10	ac	—	—
	2,00	2,00	—	2,70	—	3,60	—	6,00	—	7,30	—	7,60	—	7,60	—	—	—

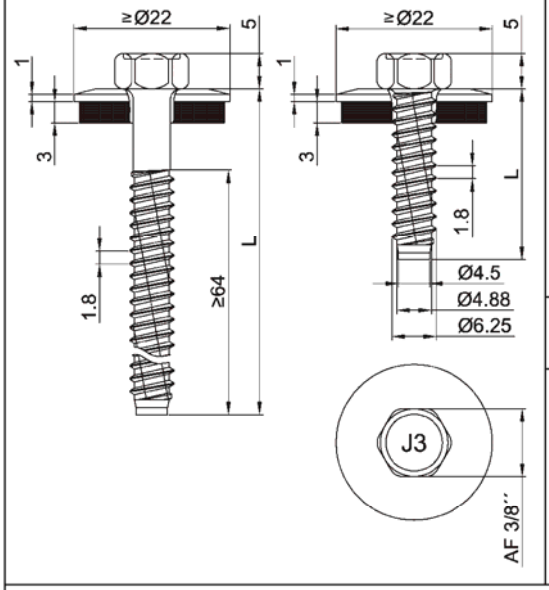
JZ3 - 6,3 x L for components II with $t_{II} \geq 1,25$ mm
JB3 - 6,3 x L for components II with $t_{II} \leq 2,00$ mm

Self tapping screw

JZ3-6,3 x L
JB3-6,3 x L
with hexagon head and sealing washer ≥ Ø16 mm

Annex 80

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) - EN 10088
Washer: stainless steel (1.4301) - EN 10088
Component I: S280GD, S320GD or S350GD - EN 10346
Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Predrill diameter see table below

Timber substructures

no performance determined

$t_{N,II}$ [mm]		1,50		2,00		3,00		4,00		5,00		6,00		≥ 7,00		—	
d_{pd} [mm]		—						ø 5,3				ø 5,5		ø 5,7		—	
$M_{t,nom}$		—						5 Nm								—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	—	—	—	—	—	—	3,40	abcd	3,40	abcd	3,40	abcd	3,40	abcd	—	—
	0,75	—	—	—	—	—	—	4,20	ac	4,20	ac	4,20	ac	4,20	ac	—	—
	0,88	—	—	—	—	—	—	4,70	ac	4,70	ac	4,70	ac	4,70	ac	—	—
	1,00	—	—	—	—	—	—	5,00	ac	5,00	ac	5,10	ac	5,10	ac	—	—
	1,13	—	—	—	—	—	—	5,60	ac	5,60	ac	5,80	ac	5,80	ac	—	—
	1,25	—	—	—	—	—	—	6,30	—	6,40	—	6,50	ac	6,50	ac	—	—
	1,50	—	—	—	—	—	—	7,10	—	7,20	—	7,30	—	7,30	—	—	—
	1,75	—	—	—	—	—	—	7,70	—	7,90	—	8,10	—	8,10	—	—	—
	2,00	—	—	—	—	—	—	7,70	—	7,90	—	8,10	—	8,10	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	1,67	abcd	1,67	abcd	1,67	abcd	1,67	abcd	—	—
	0,55	—	—	—	—	—	—	2,11	abcd	2,11	abcd	2,11	abcd	2,11	abcd	—	—
	0,63	—	—	—	—	—	—	3,10	abcd	3,10	abcd	3,10	abcd	3,10	abcd	—	—
	0,75	—	—	—	—	—	—	4,00	ac	4,00	ac	4,00	ac	4,00	ac	—	—
	0,88	—	—	—	—	—	—	4,40	ac	4,40	ac	4,40	ac	4,40	ac	—	—
	1,00	—	—	—	—	—	—	4,60	ac	4,60	ac	4,60	ac	4,60	ac	—	—
	1,13	—	—	—	—	—	—	5,10	ac	5,10	ac	5,10	ac	5,10	ac	—	—
	1,25	—	—	—	—	—	—	5,10	—	5,10	—	5,10	ac	5,10	ac	—	—
	1,50	—	—	—	—	—	—	5,90	—	5,90	—	5,90	—	5,90	—	—	—
	1,75	—	—	—	—	—	—	6,90	—	6,90	—	7,10	—	7,10	—	—	—
	2,00	—	—	—	—	—	—	8,80	—	11,6	—	13,4	—	13,4	—	—	—

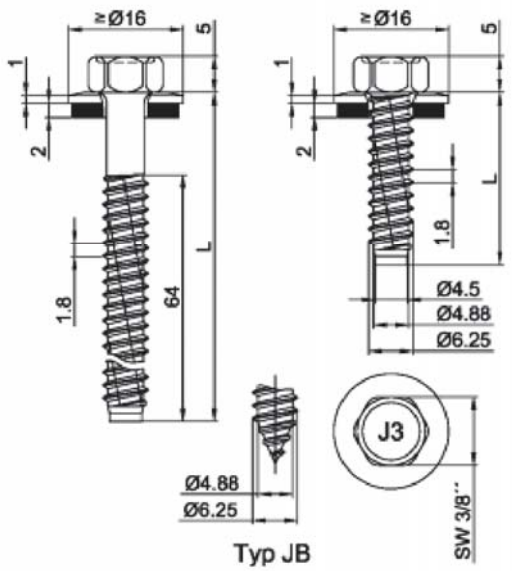
Self tapping screw

JZ3-6,3 x L

with hexagon head and sealing washer ≥ Ø22 mm

Annex 81

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) – EN 10088

Washer: stainless steel (1.4301) – EN 10088 with vulcanised EPDM seal

Component I: aluminium alloy with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: aluminium alloy with $R_{m,min}$ = 165 N/mm² – EN 573

Pre-drill diameter see table

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		1,20		1,50		2,00		2,50		3,00		4,00		5,00		6,00		≥ 7,00	
d_{pd} =		Ø 4,5								Ø 5,0		Ø 5,3						Ø 5,5	
$M_{t,nom}$ =		—																	
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,79	-	0,84	ac	0,84	ac	0,84	abcd	0,84	abcd	0,84	abcd	0,84	abcd	0,84	abcd	0,84	abcd
	0,60	0,79	-	0,96	-	1,07	ac	1,07	ac	1,07	ac	1,07	abcd	1,07	abcd	1,07	abcd	1,07	abcd
	0,70	0,79	-	1,07	-	1,30	-	1,30	ac	1,30	ac	1,30	abcd	1,30	abcd	1,30	abcd	1,30	abcd
	0,80	0,79	-	1,15	-	1,46	-	1,53	-	1,53	-	1,53	ac	1,53	abcd	1,53	abcd	1,53	abcd
	0,90	0,79	-	1,27	-	1,53	-	1,73	-	1,77	-	1,77	ac	1,77	ac	1,77	abcd	1,77	abcd
	1,00	0,80	-	1,38	-	1,61	-	1,92	-	2,00	-	2,00	ac	2,00	ac	2,00	abcd	2,00	abcd
	1,20	0,87	-	1,61	-	1,84	-	2,07	-	2,30	-	2,38	ac	2,38	ac	2,38	abcd	2,38	abcd
	1,50	0,87	-	2,15	-	2,30	-	2,53	-	2,69	-	3,07	ac	3,07	ac	3,07	ac	3,07	ac
	2,00	0,87	-	2,15	-	2,30	-	2,53	-	2,69	-	3,07	-	3,07	-	3,07	-	3,33	-
$N_{R,II,k}$ =		0,54		0,77		1,23		1,77		2,38		3,68		5,30		7,06		7,06	

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-tapping screw

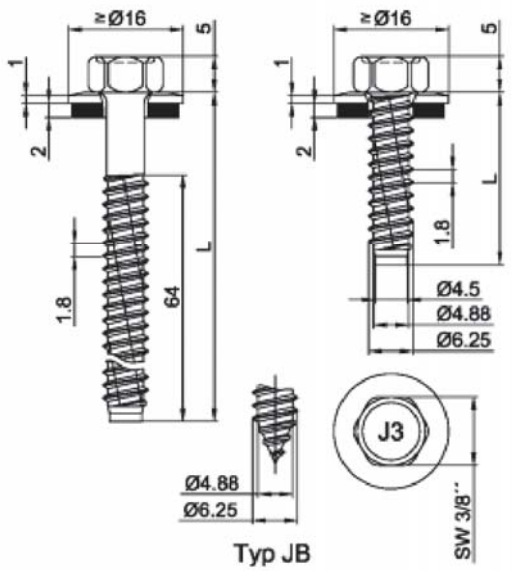
JZ3-6,3xL-E16

JB3-6,3xL-E16

With hexagon head and seal washer ≥ Ø 16,0 mm

Annex 82

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) – EN 10088

Washer: stainless steel (1.4301) – EN 10088 with vulcanised EPDM seal

Component I: aluminium alloy with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: aluminium alloy with $R_{m,min}$ = 215 N/mm² – EN 573

Pre-drill diameter see table

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =	1,20	1,50	2,00	2,50	3,00	4,00	5,00	6,00	≥ 7,00
d_{pd} =	ø 4,5				Ø 5,0	Ø 5,3			Ø 5,5
$M_{t,nom}$ =	—								
$V_{R,k}$ for $t_{N,I}$ = 0,50	1,03 -	1,10 ac	1,10 ac	1,10 abcd	1,10 abcd	1,10 abcd	1,10 abcd	1,10 abcd	1,10 abcd
0,60	1,03 -	1,25 ac	1,40 ac	1,40 ac	1,40 ac	1,40 abcd	1,40 abcd	1,40 abcd	1,40 abcd
0,70	1,03 -	1,40 -	1,70 -	1,70 ac	1,70 ac	1,70 abcd	1,70 abcd	1,70 abcd	1,70 abcd
0,80	1,03 -	1,50 -	1,90 -	2,00 -	2,00 -	2,00 ac	2,00 abcd	2,00 abcd	2,00 abcd
0,90	1,03 -	1,65 -	2,00 -	2,25 -	2,30 -	2,30 ac	2,30 ac	2,30 abcd	2,30 abcd
1,00	1,04 -	1,80 -	2,10 -	2,50 -	2,60 -	2,60 ac	2,60 ac	2,60 abcd	2,60 abcd
1,20	1,14 -	2,10 -	2,40 -	2,70 -	3,00 -	3,10 ac	3,10 ac	3,10 abcd	3,10 abcd
1,50	1,14 -	2,80 -	3,00 -	3,30 -	3,50 -	4,00 ac	4,00 ac	4,00 ac	4,00 ac
2,00	1,14 -	2,80 -	3,00 -	3,30 -	3,50 -	4,00 -	4,00 -	4,00 -	4,33 -
$N_{R,II,k}$ =	0,71	1,00	1,60	2,30	3,10	4,80	6,90	9,20	9,20

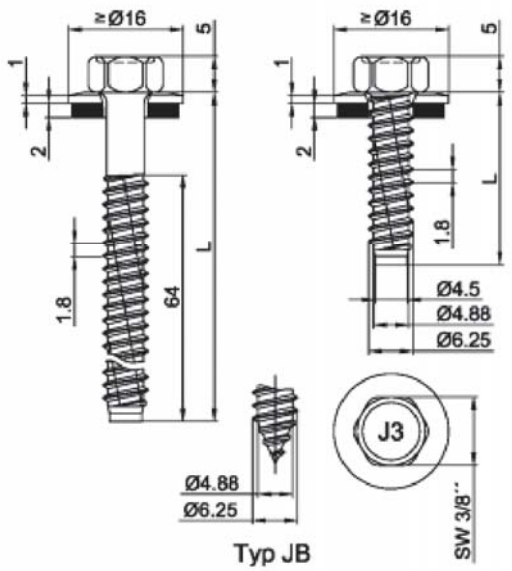
Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-tapping screw

JZ3-6,3xL-E16
JB3-6,3xL-E16
With hexagon head and seal washer ≥ Ø 16,0 mm

Annex 83

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) – EN 10088

Washer: stainless steel (1.4301) – EN 10088 with vulcanised EPDM seal

Component I: aluminium alloy with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346

Pre-drill diameter see table

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		1,25	1,50	2,00	2,50	3,00	4,00	5,00	6,00	≥ 7,00
d_{pd} =		Ø 5,0		Ø 5,3					Ø 5,5	Ø 5,7
$M_{t,nom}$ =		—								
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,83 -	0,84 ac	0,84 ac	0,84 abcd	0,84 abcd	0,84 abcd	0,84 abcd	0,84 abcd	0,84 -
	0,60	0,83 -	0,96 -	1,07 ac	1,07 ac	1,07 ac	1,07 abcd	1,07 abcd	1,07 abcd	1,07 -
	0,70	0,83 -	1,07 -	1,30 -	1,30 ac	1,30 ac	1,30 abcd	1,30 abcd	1,30 abcd	1,30 -
	0,80	0,83 -	1,15 -	1,46 -	1,53 -	1,53 -	1,53 ac	1,53 abcd	1,53 abcd	1,53 -
	0,90	0,83 -	1,27 -	1,53 -	1,73 -	1,77 -	1,77 ac	1,77 ac	1,77 abcd	1,77 -
	1,00	0,83 -	1,38 -	1,61 -	1,92 -	2,00 -	2,00 ac	2,00 ac	2,00 abcd	2,00 -
	1,20	0,90 -	1,61 -	1,84 -	2,07 -	2,30 -	2,38 ac	2,38 ac	2,38 abcd	2,38 -
	1,50	0,93 -	2,15 -	2,30 -	2,53 -	2,69 -	3,07 ac	3,07 ac	3,07 ac	3,07 -
	2,00	0,93 -	2,15 -	2,30 -	2,53 -	2,69 -	3,07 -	3,07 -	3,07 -	3,33 -
$N_{R,II,k}$ =		2,00	2,70	3,60	3,60	6,00	7,30	7,45	7,60	7,60

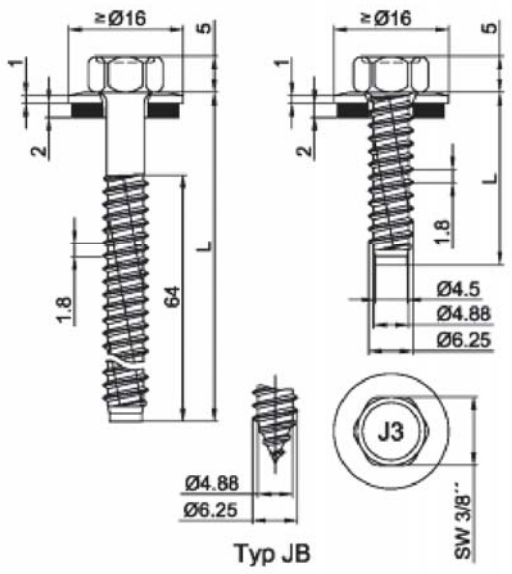
Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-tapping screw

JZ3-6,3xL-E16
JB3-6,3xL-E16
With hexagon head and seal washer ≥ Ø 16,0 mm

Annex 84

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) – EN 10088

Washer: stainless steel (1.4301) – EN 10088 with vulcanised EPDM seal

Component I: aluminium alloy with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: S235 – EN 10025-1
S280GD, S320GD – EN 10346

Pre-drill diameter see table

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		1,25		1,50		2,00		2,50		3,00		4,00		5,00		6,00		≥ 7,00	
d_{pd} =		Ø 5,0				Ø 5,3										Ø 5,5		Ø 5,7	
$M_{t,nom}$ =		—																	
$V_{R,k}$ for $t_{N,I}$ =	0,50	1,08	-	1,10	ac	1,10	ac	1,10	abcd	1,10	abcd	1,10	abcd	1,10	abcd	1,10	abcd	1,10	-
	0,60	1,08	-	1,25	-	1,40	ac	1,40	ac	1,40	ac	1,40	abcd	1,40	abcd	1,40	abcd	1,40	-
	0,70	1,08	-	1,40	-	1,70	-	1,70	ac	1,70	ac	1,70	abcd	1,70	abcd	1,70	abcd	1,70	-
	0,80	1,08	-	1,50	-	1,90	-	2,00	-	2,00	-	2,00	ac	2,00	abcd	2,00	abcd	2,00	-
	0,90	1,08	-	1,65	-	2,00	-	2,25	-	2,30	-	2,30	ac	2,30	ac	2,30	abcd	2,30	-
	1,00	1,08	-	1,80	-	2,10	-	2,50	-	2,60	-	2,60	ac	2,60	ac	2,60	abcd	2,60	-
	1,20	1,18	-	2,10	-	2,40	-	2,70	-	3,00	-	3,10	ac	3,10	ac	3,10	abcd	3,10	-
	1,50	1,21	-	2,80	-	3,00	-	3,30	-	3,50	-	4,00	ac	4,00	ac	4,00	ac	4,00	-
	2,00	1,21	-	2,80	-	3,00	-	3,30	-	3,50	-	4,00	-	4,00	-	4,00	-	4,33	-
$N_{R,II,k}$ =		2,00		2,70		3,60		3,60		6,00		7,30		7,45		7,60		7,60	

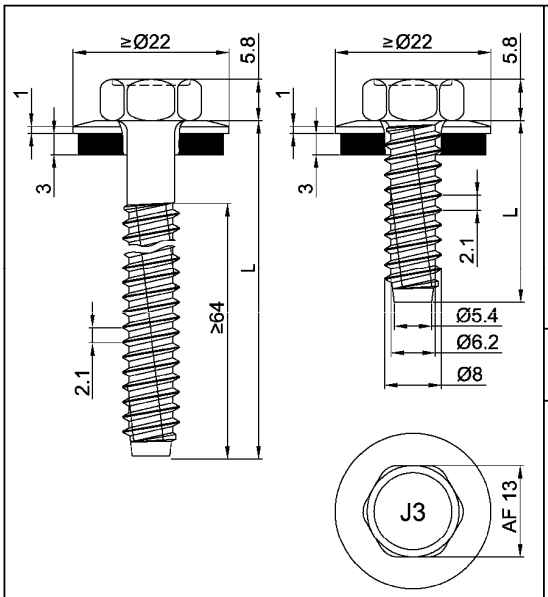
Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-tapping screw

JZ3-6,3xL-E16
JB3-6,3xL-E16
With hexagon head and seal washer ≥ Ø 16,0 mm

Annex 85

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) - EN 10088
Washer: stainless steel (1.4301) - EN 10088
Component I: S280GD, S320GD or S350GD - EN 10346
Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Predrill diameter see table below

Timber substructures

no performance determined

$t_{N,II}$ [mm]		1,50		2,00		3,00		4,00		6,00		8,00		≥ 10,0		—	
d_{pd} [mm]		ø 6,8								ø 7,0		ø 7,2		ø 7,4		—	
$M_{t,nom}$		10 Nm														—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	3,80	ac	3,80	ac	3,80	ac	3,80	abcd	3,80	abcd	3,80	abcd	3,80	abcd	—	—
	0,75	4,70	ac	4,70	ac	4,70	ac	4,70	ac	4,70	abcd	4,70	abcd	4,70	abcd	—	—
	0,88	5,30	—	5,30	ac	5,30	ac	5,30	ac	5,30	ac	5,30	ac	5,30	ac	—	—
	1,00	5,90	—	5,90	—	5,90	—	5,90	ac	5,90	ac	5,90	ac	5,90	ac	—	—
	1,13	6,40	—	6,60	—	6,60	—	6,60	—	6,60	—	6,60	—	6,60	—	—	—
	1,25	6,40	—	6,60	—	6,60	—	6,60	—	6,60	—	6,60	—	6,60	—	—	—
	1,50	6,40	—	7,00	—	7,00	—	7,00	—	7,00	—	7,00	—	7,00	—	—	—
	1,75	6,40	—	7,00	—	7,00	—	7,00	—	7,00	—	7,00	—	7,00	—	—	—
	2,00	6,40	—	7,00	—	7,00	—	7,00	—	7,00	—	7,00	—	7,00	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,19	ac	1,84	ac	2,38	ac	2,38	abcd	2,38	abcd	2,38	abcd	2,38	abcd	—	—
	0,55	1,50	ac	2,32	ac	3,00	ac	3,00	abcd	3,00	abcd	3,00	abcd	3,00	abcd	—	—
	0,63	2,20	ac	3,40	ac	4,40	ac	4,40	abcd	4,40	abcd	4,40	abcd	4,40	abcd	—	—
	0,75	2,20	ac	3,40	ac	5,10	ac	5,30	ac	5,30	abcd	5,30	abcd	5,30	abcd	—	—
	0,88	2,20	—	3,40	ac	5,40	ac	5,70	ac	5,70	ac	5,70	ac	5,70	ac	—	—
	1,00	2,20	—	3,40	—	5,80	—	6,20	ac	6,20	ac	6,20	ac	6,20	ac	—	—
	1,13	2,20	—	3,40	—	5,80	—	6,70	—	6,70	—	6,70	—	6,70	—	—	—
	1,25	2,20	—	3,40	—	5,80	—	6,80	—	6,80	—	6,80	—	6,80	—	—	—
	1,50	2,20	—	3,40	—	5,80	—	6,80	—	6,80	—	6,80	—	6,80	—	—	—
	1,75	2,20	—	3,40	—	5,80	—	6,80	—	6,80	—	6,80	—	6,80	—	—	—
	2,00	2,20	—	3,40	—	5,80	—	6,80	—	6,80	—	6,80	—	6,80	—	—	—

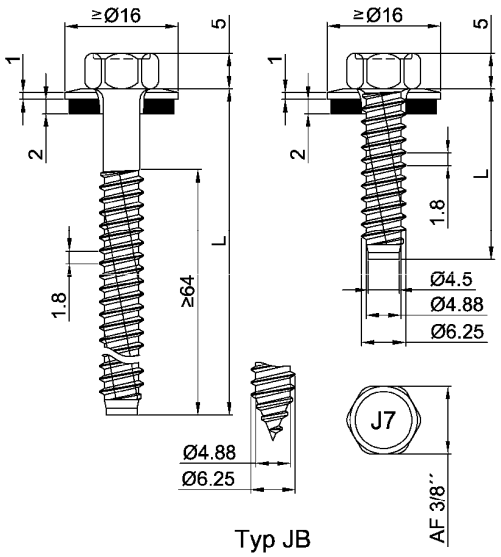
Self tapping screw

JZ3-8,0 x L

with hexagon head and sealing washer ≥ Ø22 mm

Annex 86

Deutsches Institut für Bautechnik DIBt



Typ JB

Materials

Fastener: stainless steel CRONIMAKS®
similiar to stainless steel (1.4301) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235, S275 or S355 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Predrill diameter see table below

Timber substructures

no performance determined

$t_{N,II}$ [mm]		1,25		1,50		2,00		3,00		4,00		6,00		≥ 7,00		—	
d_{pd} [mm]		ø 5,0				ø 5,3						ø 5,5		ø 5,7		—	
$M_{t,nom}$		5 Nm														—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	2,50	ac	2,70	ac	2,80	abcd	3,00	abcd	3,10	abcd	3,10	abcd	3,10	abcd	—	—
	0,75	2,60	ac	3,10	ac	3,30	abcd	3,60	abcd	3,70	abcd	3,70	abcd	3,70	abcd	—	—
	0,88	2,80	ac	3,20	ac	3,80	ac	4,10	abcd	4,30	abcd	4,40	abcd	4,40	abcd	—	—
	1,00	3,20	ac	3,60	ac	4,10	ac	4,80	ac	4,90	ac	5,10	ac	5,10	ac	—	—
	1,13	3,40	ac	4,00	ac	4,60	ac	5,40	ac	5,60	ac	5,80	ac	5,80	ac	—	—
	1,25	3,60	ac	4,20	ac	5,00	ac	6,10	ac	6,30	ac	6,50	ac	6,50	ac	—	—
	1,50	3,70	ac	4,40	ac	5,70	ac	6,80	ac	7,10	ac	7,30	ac	7,30	ac	—	—
	1,75	3,70	ac	4,70	ac	6,20	ac	7,60	ac	7,70	ac	8,10	ac	8,10	ac	—	—
	2,00	5,00	—	6,50	—	8,80	—	10,3	—	10,6	—	11,3	—	11,3	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,97	ac	1,35	ac	1,51	abcd	1,51	abcd	1,51	abcd	1,51	abcd	1,51	abcd	—	—
	0,55	1,23	ac	1,71	ac	1,91	abcd	1,91	abcd	1,91	abcd	1,91	abcd	1,91	abcd	—	—
	0,63	1,80	ac	2,50	ac	2,80	abcd	2,80	abcd	2,80	abcd	2,80	abcd	2,80	abcd	—	—
	0,75	2,00	ac	2,70	ac	3,10	abcd	3,60	abcd	3,60	abcd	3,60	abcd	3,60	abcd	—	—
	0,88	2,00	ac	2,70	ac	3,30	ac	3,80	abcd	3,80	abcd	3,80	abcd	3,80	abcd	—	—
	1,00	2,00	ac	2,70	ac	3,40	ac	4,00	ac	4,00	ac	4,00	ac	4,00	ac	—	—
	1,13	2,00	ac	2,70	ac	3,60	ac	4,40	ac	4,40	ac	4,40	ac	4,40	ac	—	—
	1,25	2,00	ac	2,70	ac	3,60	ac	4,80	ac	4,90	ac	4,90	ac	4,90	ac	—	—
	1,50	2,00	ac	2,70	ac	3,60	ac	5,60	ac	5,90	ac	5,90	ac	5,90	ac	—	—
	1,75	2,00	ac	2,70	ac	3,60	ac	5,80	ac	6,90	ac	7,10	ac	7,10	ac	—	—
	2,00	2,00	—	2,70	—	3,60	—	6,00	—	7,30	—	7,60	—	7,60	—	—	—

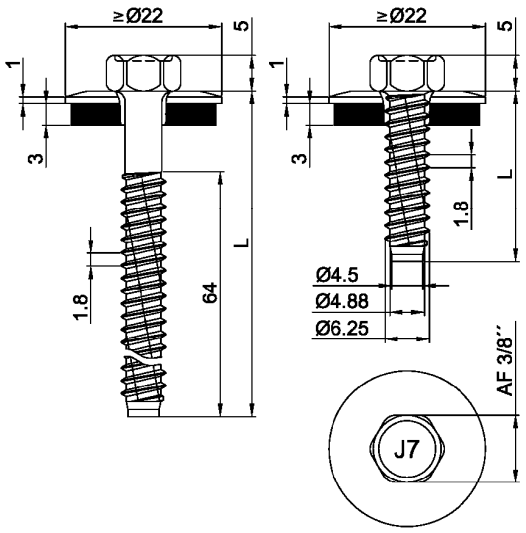
JZ7 - 6,3 x L for components II with $t_{II} \geq 1{,}25$ mm
JB7 - 6,3 x L for components II with $t_{II} \leq 2{,}00$ mm

Self tapping screw

JZ7-6,3 x L
JB7-6,3 x L
with hexagon head and sealing washer ≥ Ø16 mm

Annex 87

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel CRONIMAKS®
similiar to stainless steel (1.4301) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S235, S275 or S355 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Predrill diameter see table below

Timber substructures

no performance determined

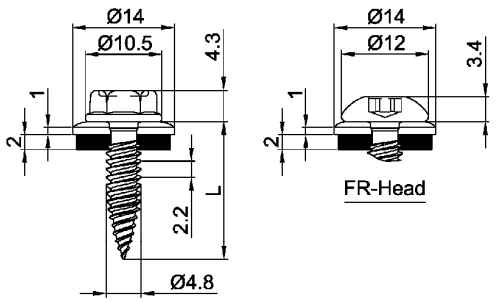
$t_{N,II}$ [mm]		1,50		2,00		3,00		4,00		5,00		6,00		≥ 7,00		—	
d_{pd} [mm]		—						ø 5,3				ø 5,5		ø 5,7		—	
$M_{t,nom}$								5 Nm								—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	—	—	—	—	—	—	3,40	abcd	3,40	abcd	3,40	abcd	3,40	abcd	—	—
	0,75	—	—	—	—	—	—	4,20	ac	4,20	ac	4,20	ac	4,20	ac	—	—
	0,88	—	—	—	—	—	—	4,70	ac	4,70	ac	4,70	ac	4,70	ac	—	—
	1,00	—	—	—	—	—	—	5,00	ac	5,00	ac	5,10	ac	5,10	ac	—	—
	1,13	—	—	—	—	—	—	5,60	ac	5,60	ac	5,80	ac	5,80	ac	—	—
	1,25	—	—	—	—	—	—	6,30	—	6,40	—	6,50	ac	6,50	ac	—	—
	1,50	—	—	—	—	—	—	7,10	—	7,20	—	7,30	—	7,30	—	—	—
	1,75	—	—	—	—	—	—	7,70	—	7,90	—	8,10	—	8,10	—	—	—
	2,00	—	—	—	—	—	—	7,70	—	7,90	—	8,10	—	8,10	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	1,67	abcd	1,67	abcd	1,67	abcd	1,67	abcd	—	—
	0,55	—	—	—	—	—	—	2,11	abcd	2,11	abcd	2,11	abcd	2,11	abcd	—	—
	0,63	—	—	—	—	—	—	3,10	abcd	3,10	abcd	3,10	abcd	3,10	abcd	—	—
	0,75	—	—	—	—	—	—	4,00	ac	4,00	ac	4,00	ac	4,00	ac	—	—
	0,88	—	—	—	—	—	—	4,40	ac	4,40	ac	4,40	ac	4,40	ac	—	—
	1,00	—	—	—	—	—	—	4,60	ac	4,60	ac	4,60	ac	4,60	ac	—	—
	1,13	—	—	—	—	—	—	5,10	ac	5,10	ac	5,10	ac	5,10	ac	—	—
	1,25	—	—	—	—	—	—	5,10	—	5,10	—	5,10	ac	5,10	ac	—	—
	1,50	—	—	—	—	—	—	5,90	—	5,90	—	5,90	—	5,90	—	—	—
	1,75	—	—	—	—	—	—	6,90	—	6,90	—	7,10	—	7,10	—	—	—
	2,00	—	—	—	—	—	—	8,80	—	11,6	—	13,4	—	13,4	—	—	—

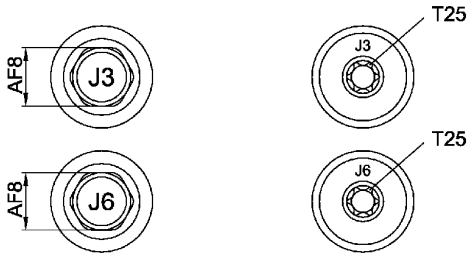
JZ7 - 6,3 x L for components II with $t_{II} \geq 1{,}25$ mm
JB7 - 6,3 x L for components II with $t_{II} \leq 2{,}00$ mm

Self tapping screw

JZ7-6,3 x L
JB7-6,3 x L
with hexagon head and sealing washer ≥ Ø22 mm

Annex 88





Materials

Fastener: stainless steel (1.4301) – EN 10088
stainless steel (1.4404) – EN 10088
Washer: stainless steel (1.4301) – EN 10088
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

for timber substructures no performance determined

	$t_{N,II}$ =	0,40	0,50	0,55	0,63	0,75	0,88
	$M_{t,nom}$ =	—					
$V_{R,k}$ für $t_{N,I}$ =	0,40	0,65	0,65	0,65	0,65	0,65	0,65
	0,50	0,65	0,81	0,81	0,81	0,81	0,81
	0,55	0,65	0,81	0,99	0,99	0,99	0,99
	0,63	0,65	0,81	0,99	1,26	1,26	1,26
	0,75	0,65	0,81	0,99	1,26	1,71	1,71
	0,88	0,65	0,81	0,99	1,26	1,71	2,46
	1,00	—	—	—	—	—	—
	1,13	—	—	—	—	—	—
	1,25	—	—	—	—	—	—
	1,50	—	—	—	—	—	—
	2,00	—	—	—	—	—	—
$N_{R,k}$ für $t_{N,I}$ =	0,40	0,45	0,67	0,78	0,94	1,21	1,46
	0,50	0,45	0,67	0,78	0,94	1,21	1,50
	0,55	0,45	0,67	0,78	0,94	1,21	1,50
	0,63	0,45	0,67	0,78	0,94	1,21	1,50
	0,75	0,45	0,67	0,78	0,94	1,21	1,50
	0,88	0,45	0,67	0,78	0,94	1,21	1,50
	1,00	—	—	—	—	—	—
	1,13	—	—	—	—	—	—
	1,25	—	—	—	—	—	—
	1,50	—	—	—	—	—	—
	2,00	—	—	—	—	—	—

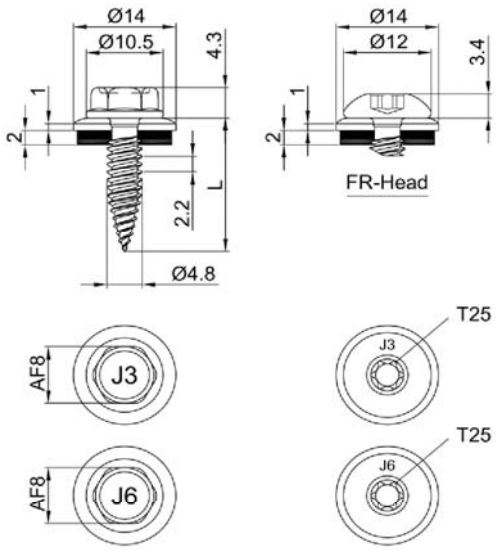
If both components I and II are made of S320GD or S350GD all values may be increased by 8,3%.

Self tapping screw

JF3-2H-4,8 x L JF3-FR-2H-4,8 x L
JF6-2H-4,8 x L JF6-FR-2H-4,8 x L
with hexagon head or round head with Torx® drive system and sealing washer ≥ ∅ 14 mm

Annex 89

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088

Component I: aluminium-Alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: aluminium-Alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		0,50	0,60	0,70	0,80	0,90	1,00
$M_{t,nom}$ =		—					
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,45 -	0,45 -	0,45 -	0,45 -	0,45 -	0,45 -
	0,60	0,45 -	0,66 -	0,66 -	0,66 -	0,66 -	0,66 -
	0,70	0,45 -	0,66 -	0,88 -	0,88 -	0,88 -	0,88 -
	0,80	0,45 -	0,66 -	0,88 -	1,09 -	1,09 -	1,09 -
	0,90	0,45 -	0,66 -	0,88 -	1,09 -	1,46 -	1,46 -
	1,00	0,45 -	0,66 -	0,88 -	1,09 -	1,46 -	1,83 -
$N_{R,II,k}$ =		0,32	0,42	0,51	0,61	0,71	0,80

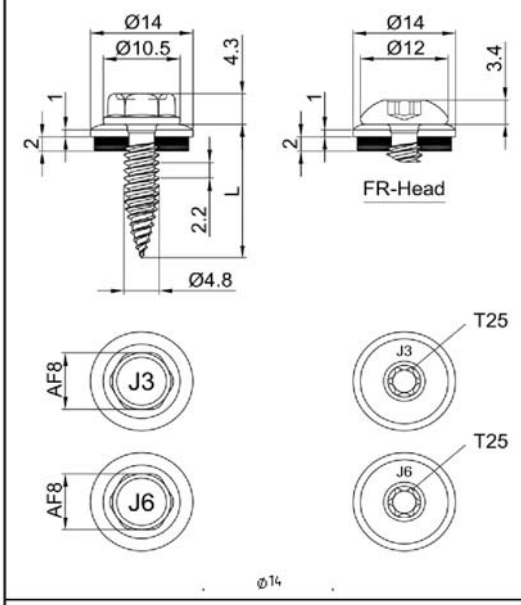
Pull-trough resistance of component I according to EN 1999-1-4, section 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

self-tapping screw

JF3-2H-4,8xL JF6-2H-4,8xL
JF3-FR-2H-4,8xL JF6-FR-2H-4,8xL
with hexagon head or FR head and seal washer ≥ Ø 14 mm

Annex 90

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) – EN 10088
stainless steel (1.4404) – EN 10088

Washer: stainless steel (1.4301) – EN 10088

Component I: aluminium-Alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: aluminium-Alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		0,50	0,60	0,70	0,80	0,90	1,00
$M_{t,nom}$ =		—					
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,58 -	0,58 -	0,58 -	0,58 -	0,58 -	0,58 -
	0,60	0,58 -	0,86 -	0,86 -	0,86 -	0,86 -	0,86 -
	0,70	0,58 -	0,86 -	1,14 -	1,14 -	1,14 -	1,14 -
	0,80	0,58 -	0,86 -	1,14 -	1,42 -	1,42 -	1,42 -
	0,90	0,58 -	0,86 -	1,14 -	1,42 -	1,90 -	1,90 -
	1,00	0,58 -	0,86 -	1,14 -	1,42 -	1,90 -	2,38 -
$N_{R,II,k}$ =		0,42	0,54	0,67	0,79	0,92	1,04

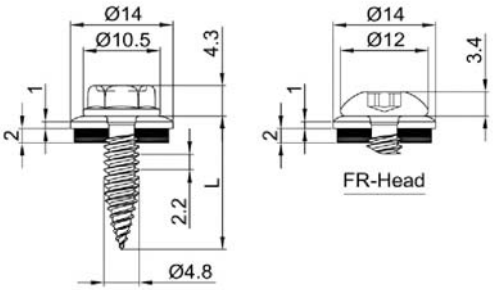
Pull-trough resistance of component I according to EN 1999-1-4, section 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

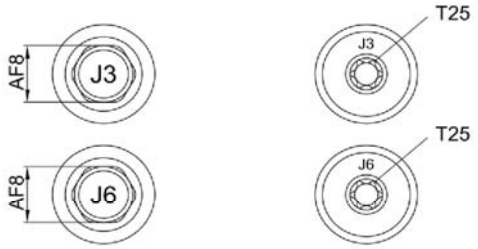
self-tapping screw

JF3-2H-4,8xL JF6-2H-4,8xL
JF3-FR-2H-4,8xL JF6-FR-2H-4,8xL
with hexagon head or FR head and seal washer ≥ Ø 14 mm

Annex 91

Deutsches Institut für Bautechnik DIBt





Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088

Component I: aluminium-Alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		0,50	0,55	0,63	0,75	0,88	1,00
$M_{t,nom}$ =		—					
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,45 -	0,45 -	0,45 -	0,45 -	0,45 -	0,45 -
	0,60	0,45 -	0,45 -	0,66 -	0,66 -	0,66 -	0,66 -
	0,70	0,45 -	0,45 -	0,66 -	0,88 -	0,88 -	0,88 -
	0,80	0,45 -	0,45 -	0,66 -	0,88 -	1,09 -	1,09 -
	0,90	0,45 -	0,45 -	0,66 -	0,88 -	1,09 -	1,46 -
	1,00	0,45 -	0,45 -	0,66 -	0,88 -	1,09 -	1,83 -
$N_{R,II,k}$ =		0,67	0,78	0,94	1,21	1,50	1,78

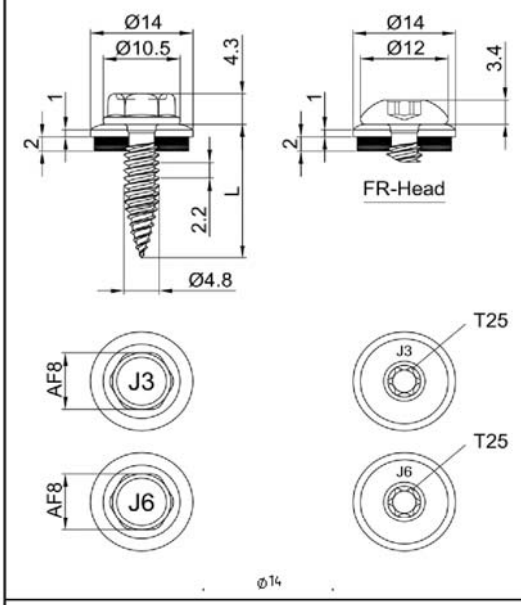
Pull-trough resistance of component I according to EN 1999-1-4, section 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

self-tapping screw

JF3-2H-4,8xL JF6-2H-4,8xL
JF3-FR-2H-4,8xL JF6-FR-2H-4,8xL
with hexagon head or FR head and seal washer ≥ Ø 14 mm

Annex 92

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) – EN 10088
stainless steel (1.4404) – EN 10088

Washer: stainless steel (1.4301) – EN 10088

Component I: aluminium-Alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		0,50	0,60	0,70	0,80	0,90	1,00
$M_{t,nom}$ =		—					
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,58 -	0,58 -	0,58 -	0,58 -	0,58 -	0,58 -
	0,60	0,58 -	0,58 -	0,86 -	0,86 -	0,86 -	0,86 -
	0,70	0,58 -	0,58 -	0,86 -	1,14 -	1,14 -	1,14 -
	0,80	0,58 -	0,58 -	0,86 -	1,14 -	1,42 -	1,42 -
	0,90	0,58 -	0,58 -	0,86 -	1,14 -	1,42 -	1,90 -
	1,00	0,58 -	0,58 -	0,86 -	1,14 -	1,42 -	2,38 -
$N_{R,II,k}$ =		0,67	0,78	0,94	1,21	1,50	1,78

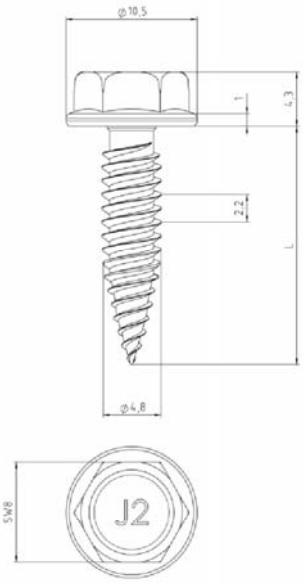
Pull-trough resistance of component I according to EN 1999-1-4, section 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

self-tapping screw

JF3-2H-4,8xL JF6-2H-4,8xL
JF3-FR-2H-4,8xL JF6-FR-2H-4,8xL
with hexagon head or FR head and seal washer ≥ Ø 14 mm

Annex 93

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350 GD – EN 10346

Component II: S280GD, S320GD or S350 GD – EN 10346

Drilling capacity $\Sigma t_i \leq 2 \times 0{,}88$ mm

Timber substructures

for timber substructures no performance determined

	$t_{N,II}$ =	0,40	0,50	0,55	0,63	0,75	0,88
	$M_{t,nom}$ =	—					
$V_{R,k}$ for $t_{N,I}$ =	0,40	0,79	0,79	0,79	0,79	0,79	0,79
	0,50	0,79	1,18	1,27	1,42	1,65	1,65
	0,55	0,79	1,18	1,41	1,56	1,79	1,79
	0,63	0,79	1,18	1,41	1,77	2,00	2,00
	0,75	0,79	1,18	1,41	1,77	2,35	2,35
	0,88	0,79	1,18	1,41	1,77	2,35	2,84
	1,00	—	—	—	—	—	—
	1,13	—	—	—	—	—	—
	1,25	—	—	—	—	—	—
	1,50	—	—	—	—	—	—
	1,75	—	—	—	—	—	—
	2,00	—	—	—	—	—	—
$N_{R,k}$ for $t_{N,I}$ =	0,40	0,52	0,71	0,82	0,92	0,92	0,92
	0,50	0,52	0,71	0,82	1,01	1,30	1,64
	0,55	0,52	0,71	0,82	1,01	1,30	1,64
	0,63	0,52	0,71	0,82	1,01	1,30	1,64
	0,75	0,52	0,71	0,82	1,01	1,30	1,64
	0,88	0,52	0,71	0,82	1,01	1,30	1,64
	1,00	—	—	—	—	—	—
	1,13	—	—	—	—	—	—
	1,25	—	—	—	—	—	—
	1,50	—	—	—	—	—	—
	1,75	—	—	—	—	—	—
	2,00	—	—	—	—	—	—

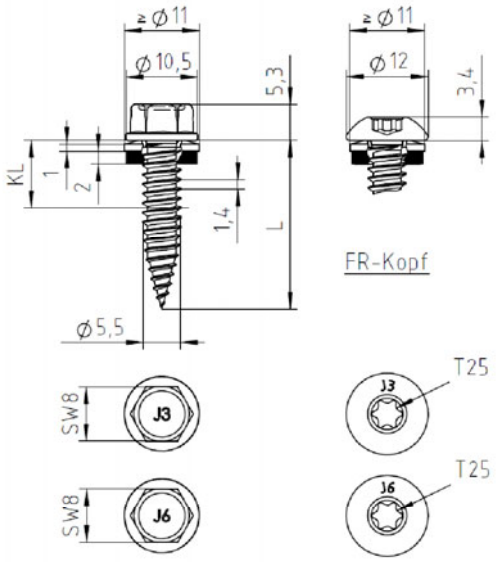
If component I and component II are made of S320GD or S350GD, the values may be increased by 8,3%.

self drilling screw

JF2-2H-4,8 x L
with hexagon head

Annex 94

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity $\Sigma t_i \leq 2 \times 1{,}00$ mm

Timber substructures

for timber substructures no performance determined

	$t_{N,II}$ =	0,40		0,50		0,55		0,63		0,75		0,88		1,00	
	$M_{t,nom}$ =	—													
$V_{R,k}$ for $t_{N,I}$ =	0,40	0,88	—	0,88	—	0,88	—	0,88	—	0,88	—	0,88	—	0,88	—
	0,50	0,88	—	1,56	—	1,56	—	1,56	—	1,56	—	1,56	—	1,56	—
	0,55	0,88	—	1,56	—	1,76	—	1,76	—	1,76	—	1,76	—	1,76	—
	0,63	0,88	—	1,56	—	1,76	—	2,09	—	2,09	—	2,09	—	2,09	—
	0,75	0,88	—	1,56	—	1,76	—	2,09	—	2,57	—	2,57	—	2,57	—
	0,88	0,88	—	1,56	—	1,76	—	2,09	—	2,57	—	3,11	—	3,11	—
	1,00	0,88	—	1,56	—	1,76	—	2,09	—	2,57	—	3,11	—	3,61	—
	1,13	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ for $t_{N,I}$ =	0,40	0,60	—	0,82	—	0,94	—	1,00	—	1,00	—	1,00	—	1,00	—
	0,50	0,60	—	0,82	—	0,94	—	1,14	—	1,44	—	1,67	—	1,67	—
	0,55	0,60	—	0,82	—	0,94	—	1,14	—	1,44	—	1,80	—	1,87	—
	0,63	0,60	—	0,82	—	0,94	—	1,14	—	1,44	—	1,80	—	2,14	—
	0,75	0,60	—	0,82	—	0,94	—	1,14	—	1,44	—	1,80	—	2,14	—
	0,88	0,60	—	0,82	—	0,94	—	1,14	—	1,44	—	1,80	—	2,14	—
	1,00	0,60	—	0,82	—	0,94	—	1,14	—	1,44	—	1,80	—	2,14	—
	1,13	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—	—	—	—	—	—	—	—

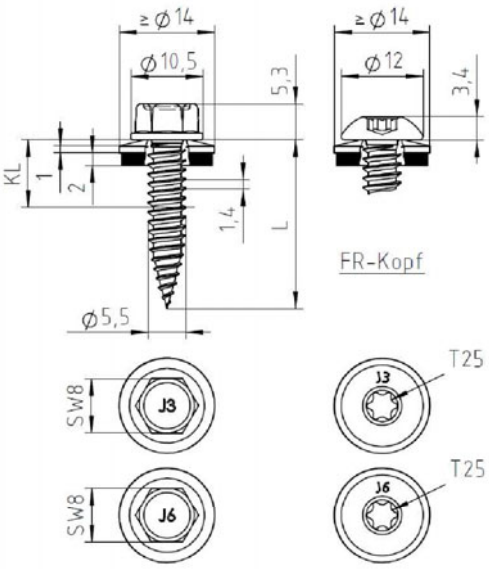
If both components I and II are made of S320GD or S350GD all values may be increased by 8,3%.

Self drilling screw

JF3-2-5,5 x L JF6-2-5,5 x L
JF3-FR-2-5,5 x L JF6-FR-2-5,5 x L
with hexagon head or round head with Torx®-drive and sealing washer ≥ Ø 11 mm

Annex 95

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity $\Sigma t_i \leq 2 \times 1{,}00$ mm

Timber substructures

for timber substructures no performance determined

	$t_{N,II}$ =	0,40		0,50		0,55		0,63		0,75		0,88		1,00	
	$M_{t,nom}$ =	—													
$V_{R,k}$ for $t_{N,I}$ =	0,40	0,96	—	0,96	—	0,96	—	0,96	—	0,96	—	0,96	—	0,96	—
	0,50	0,96	—	1,56	—	1,56	—	1,56	—	1,56	—	1,56	—	1,56	—
	0,55	0,96	—	1,56	—	1,76	—	1,76	—	1,76	—	1,76	—	1,76	—
	0,63	0,96	—	1,56	—	1,76	—	2,09	—	2,09	—	2,09	—	2,09	—
	0,75	0,96	—	1,56	—	1,76	—	2,09	—	2,57	—	2,57	—	2,57	—
	0,88	0,96	—	1,56	—	1,76	—	2,09	—	2,57	—	3,11	—	3,11	—
	1,00	0,96	—	1,56	—	1,76	—	2,09	—	2,57	—	3,11	—	3,61	—
	1,13	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ for $t_{N,I}$ =	0,40	0,60	—	0,82	—	0,94	—	1,14	—	1,44	—	1,46	—	1,46	—
	0,50	0,60	—	0,82	—	0,94	—	1,14	—	1,44	—	1,76	—	1,76	—
	0,55	0,60	—	0,82	—	0,94	—	1,14	—	1,44	—	1,80	—	2,02	—
	0,63	0,60	—	0,82	—	0,94	—	1,14	—	1,44	—	1,80	—	2,14	—
	0,75	0,60	—	0,82	—	0,94	—	1,14	—	1,44	—	1,80	—	2,14	—
	0,88	0,60	—	0,82	—	0,94	—	1,14	—	1,44	—	1,80	—	2,14	—
	1,00	0,60	—	0,82	—	0,94	—	1,14	—	1,44	—	1,80	—	2,14	—
	1,13	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—	—	—	—	—	—	—	—

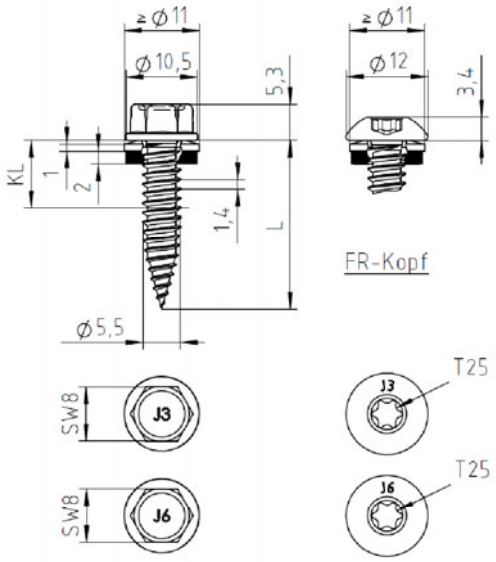
If both components I and II are made of S320GD or S350GD all values may be increased by 8,3%.

Self drilling screw

JF3-2-5,5 x L JF6-2-5,5 x L
JF3-FR-2-5,5 x L JF6-FR-2-5,5 x L
with hexagon head or round head with Torx®-drive and sealing washer ≥ ∅ 14 mm

Annex 96

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088

Component I: aluminium-Alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: aluminium-Alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 2 \times 1{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50
$M_{t,nom}$ =		—								
$V_{R,k}$ for $t_{N,I}$ =	0,40	0,43 —	0,43 —	0,43 —	0,43 —	0,43 —	0,43 —	0,43 —	0,43 —	0,43 —
	0,50	0,43 —	0,62 —	0,62 —	0,62 —	0,62 —	0,62 —	0,62 —	0,62 —	0,62 —
	0,60	0,43 —	0,62 —	0,71 —	0,71 —	0,71 —	0,71 —	0,71 —	0,71 —	0,71 —
	0,70	0,43 —	0,62 —	0,71 —	0,79 —	0,79 —	0,79 —	0,79 —	0,79 —	0,79 —
	0,80	0,43 —	0,62 —	0,71 —	0,79 —	0,88 —	0,88 —	0,88 —	0,88 —	0,88 —
	0,90	0,43 —	0,62 —	0,71 —	0,79 —	0,88 —	1,04 —	1,04 —	1,04 —	1,04 —
	1,00	0,43 —	0,62 —	0,71 —	0,79 —	0,88 —	1,04 —	1,19 —	1,19 —	1,19 —
	1,20	0,43 —	0,62 —	0,71 —	0,79 —	0,88 —	1,04 —	1,19 —	1,24 —	1,24 —
	1,50	0,43 —	0,62 —	0,71 —	0,79 —	0,88 —	1,04 —	1,19 —	1,24 —	1,87 —
$N_{R,II,k}$ =		0,24	0,35	0,45	0,58	0,69	0,80	0,91	1,13	1,63

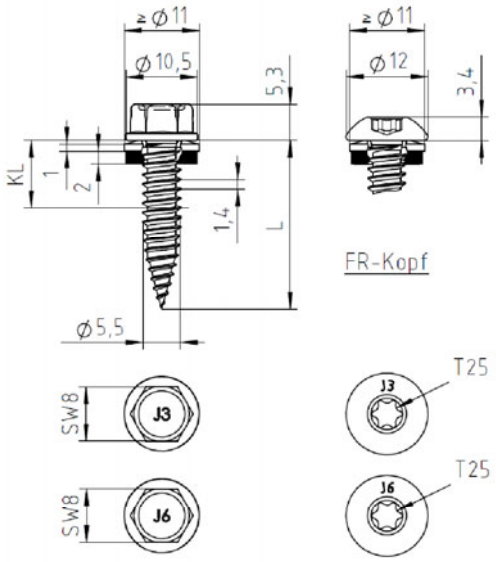
Pull-trough resistance of component I according to EN 1999-1-4, section 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

self drilling screw

JF3-2-5,5 x L JF6-2-5,5 x L
JF3-FR-2-5,5 x L JF6-FR-2-5,5 x L
with hexagon head or round head with Torx®-drive and sealing washer ≥ Ø 11 mm

Annex 97

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) – EN 10088
stainless steel (1.4404) – EN 10088

Washer: stainless steel (1.4301) – EN 10088

Component I: aluminium-Alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: aluminium-Alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 2 \times 1{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50
$M_{t,nom}$ =	—								
$V_{R,k}$ for $t_{N,I}$ = 0,40	0,55 —	0,55 —	0,55 —	0,55 —	0,55 —	0,55 —	0,55 —	0,55 —	0,55 —
0,50	0,55 —	0,79 —	0,79 —	0,79 —	0,79 —	0,79 —	0,79 —	0,79 —	0,79 —
0,60	0,55 —	0,79 —	0,91 —	0,91 —	0,91 —	0,91 —	0,91 —	0,91 —	0,91 —
0,70	0,55 —	0,79 —	0,91 —	1,03 —	1,03 —	1,03 —	1,03 —	1,03 —	1,03 —
0,80	0,55 —	0,79 —	0,91 —	1,03 —	1,15 —	1,15 —	1,15 —	1,15 —	1,15 —
0,90	0,55 —	0,79 —	0,91 —	1,03 —	1,15 —	1,35 —	1,35 —	1,35 —	1,35 —
1,00	0,55 —	0,79 —	0,91 —	1,03 —	1,15 —	1,35 —	1,54 —	1,54 —	1,54 —
1,20	0,55 —	0,79 —	0,91 —	1,03 —	1,15 —	1,35 —	1,54 —	1,62 —	1,62 —
1,50	0,55 —	0,79 —	0,91 —	1,03 —	1,15 —	1,35 —	1,54 —	1,62 —	2,44 —
$N_{R,II,k}$ =	0,31	0,46	0,60	0,75	0,89	1,04	1,18	1,47	2,12

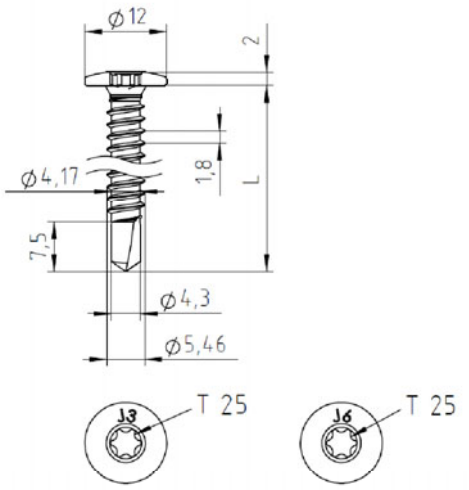
Pull-trough resistance of component I according to EN 1999-1-4, section 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

self drilling screw

JF3-2-5,5 x L JF6-2-5,5 x L
JF3-FR-2-5,5 x L JF6-FR-2-5,5 x L
with hexagon head or round head with Torx®-drive and sealing washer ≥ Ø 11 mm

Annex 98

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: none

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

for timber substructures no performance determined

	$t_{N,II}$ =	1,00	1,13	1,25	1,50	1,75	2,00	2,50	3,00
	$M_{t,nom}$ =	—							
$V_{R,k}$ for $t_{N,I}$ =	0,50	1,21 —	1,30 —	1,39 —	1,57 —	1,57 —	1,57 —	1,57 —	1,57 —
	0,55	1,32 —	1,42 —	1,52 —	1,71 —	1,74 —	1,78 —	1,84 —	— —
	0,63	1,51 —	1,62 —	1,72 —	1,94 —	2,02 —	2,11 —	2,28 —	— —
	0,75	1,78 —	1,91 —	2,03 —	2,28 —	2,44 —	2,61 —	2,93 —	— —
	0,88	2,08 —	2,23 —	2,36 —	2,65 —	2,90 —	3,14 —	3,63 —	— —
	1,00	2,35 —	2,52 —	2,67 —	3,00 —	3,32 —	3,64 —	4,29 —	— —
	1,13	2,71 —	2,90 —	3,07 —	3,43 —	3,79 —	4,16 —	— —	— —
	1,25	3,07 —	3,28 —	3,47 —	3,87 —	4,27 —	4,68 —	— —	— —
	1,50	3,78 —	4,03 —	4,26 —	4,74 —	5,22 —	5,70 —	— —	— —
	1,75	3,78 —	4,03 —	4,26 —	4,74 —	5,22 —	— —	— —	— —
	2,00	2,00 —	4,03 —	4,26 —	4,74 —	— —	— —	— —	— —
$N_{R,k}$ for $t_{N,I}$ =	0,50	1,10 —	1,10 —	1,50 —	1,59[a] —	1,59[a] —	1,59[a] —	1,59[a] —	1,59[a] —
	0,55	1,10 —	1,10 —	1,50 —	1,82[a] —	1,82[a] —	1,82[a] —	1,82[a] —	— —
	0,63	1,10 —	1,10 —	1,50 —	2,00 —	2,16[a] —	2,16[a] —	2,16[a] —	— —
	0,75	1,10 —	1,10 —	1,50 —	2,00 —	2,45 —	2,72[a] —	2,72[a] —	— —
	0,88	1,10 —	1,10 —	1,50 —	2,00 —	2,45 —	2,90 —	3,35 —	— —
	1,00	1,10 —	1,10 —	1,50 —	2,00 —	2,45 —	2,90 —	3,40 —	— —
	1,13	1,10 —	1,10 —	1,50 —	2,00 —	2,45 —	2,90 —	— —	— —
	1,25	1,10 —	1,10 —	1,50 —	2,00 —	2,45 —	2,90 —	— —	— —
	1,50	1,10 —	1,10 —	1,50 —	2,00 —	2,45 —	2,90 —	— —	— —
	1,75	1,10 —	1,10 —	1,50 —	2,00 —	2,45 —	— —	— —	— —
	2,00	1,10 —	1,10 —	1,50 —	2,00 —	— —	— —	— —	— —

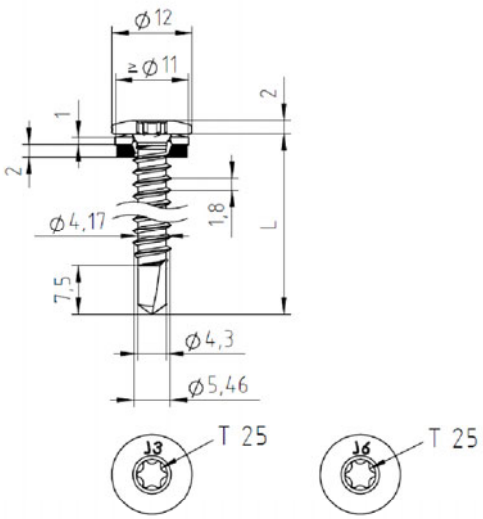
If component I is made of S320GD or S350GD, the values marked with [a] may be increased by 8,3%.

Self drilling screw

JT3-LT-3-5,5 x L JT6-LT-3-5,5 x L
with pan head with Torx®-drive

Annex 99

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301 / 1.4567) – EN 10088
stainless steel (1.4401 / 1.4578) – EN 10088

Washer: stainless steel (1.4301) – EN 10088

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}50$ mm

Timber substructures

for timber substructures no performance determined

	$t_{N,II}$ =	1,00		1,13		1,25		1,50		1,75		2,00		2,50		3,00	
	$M_{t,nom}$ =	—															
$V_{R,k}$ for $t_{N,I}$ =	0,50	1,60	—	1,60	—	1,60	—	1,60	—	1,60	—	1,60	—	1,60	—	1,60	—
	0,55	1,68	—	1,69	—	1,71	—	1,82	—	1,84	—	1,86	—	1,89	—	—	—
	0,63	1,80	—	1,84	—	1,88	—	2,16	—	2,21	—	2,26	—	2,36	—	—	—
	0,75	1,98	—	2,06	—	2,14	—	2,68	—	2,78	—	2,88	—	3,07	—	—	—
	0,88	2,17	—	2,30	—	2,42	—	3,24	—	3,39	—	3,54	—	3,83	—	—	—
	1,00	2,35	—	2,52	—	2,67	—	3,76	—	3,96	—	4,15	—	4,54	—	—	—
	1,13	2,71	—	2,90	—	3,07	—	4,01	—	4,28	—	4,54	—	—	—	—	—
	1,25	3,07	—	3,28	—	3,47	—	4,25	—	4,59	—	4,93	—	—	—	—	—
	1,50	3,78	—	4,03	—	4,26	—	4,74	—	5,22	—	5,70	—	—	—	—	—
	1,75	3,78	—	4,03	—	4,26	—	4,74	—	5,22	—	—	—	—	—	—	—
	2,00	3,78	—	4,03	—	4,26	—	4,74	—	—	—	—	—	—	—	—	—
$N_{R,k}$ for $t_{N,I}$ =	0,50	0,86[a)]	—	0,86[a)]	—	0,86[a)]	—	0,86[a)]	—	0,86[a)]	—	0,86[a)]	—	0,86[a)]	—	0,86[a)]	—
	0,55	1,04	—	1,04	—	1,04[a)]	—	1,04[a)]	—	1,04[a)]	—	1,04[a)]	—	1,04[a)]	—	—	—
	0,63	1,10	—	1,10	—	1,20[a)]	—	1,20[a)]	—	1,20[a)]	—	1,20[a)]	—	1,20[a)]	—	—	—
	0,75	1,10	—	1,10	—	1,50	—	1,56[a)]	—	1,56[a)]	—	1,56[a)]	—	1,56[a)]	—	—	—
	0,88	1,10	—	1,10	—	1,50	—	2,00	—	2,32[a)]	—	2,32[a)]	—	2,32[a)]	—	—	—
	1,00	1,10	—	1,10	—	1,50	—	2,00	—	2,32[a)]	—	2,32[a)]	—	2,32[a)]	—	—	—
	1,13	1,10	—	1,10	—	1,50	—	2,00	—	2,32[a)]	—	2,32[a)]	—	—	—	—	—
	1,25	1,10	—	1,10	—	1,50	—	2,00	—	2,32[a)]	—	2,32[a)]	—	—	—	—	—
	1,50	1,10	—	1,10	—	1,50	—	2,00	—	2,32[a)]	—	2,32[a)]	—	—	—	—	—
	1,75	1,10	—	1,10	—	1,50	—	2,00	—	2,32[a)]	—	—	—	—	—	—	—
	2,00	1,10	—	1,10	—	1,50	—	2,00	—	—	—	—	—	—	—	—	—

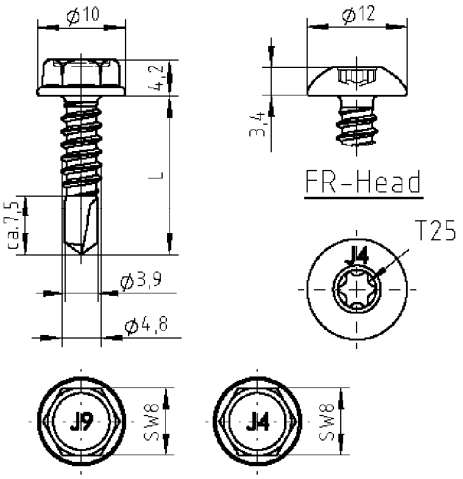
If component I is made of S320GD or S350GD, the values marked with [a)] may be increased by 8,3%.

Self drilling screw

JT3-LT-3-5,5 x L JT6-LT-3-5,5 x L

with pan head with Torx®-drive and sealing washer ≥ Ø 11 mm

Annex 100



Materials

Fastener: JT4-4-4,8xL:
stainless steel (1.4301 / 14567) – EN 10088
JT9-4-4,8xL:
stainless steel (1.4401 / 1.4578) – EN 10088

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 4{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =	2,00		2,50		3,00	
$M_{t,nom}$ =	—					
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,67	ac	0,67	ac	0,67	ac
0,60	0,87	ac	0,87	ac	0,87	ac
0,70	1,06	ac	1,06	ac	1,06	ac
0,80	1,37	-	1,37	-	1,37	ac
0,90	1,67	-	1,67	-	1,67	a
1,00	1,98	-	1,98	-	1,98	a
1,20	2,21	-	2,41	-	2,60	a
1,50	2,56	-	3,04	-	3,52	a
2,00	-	-	-	-	-	-
$N_{R,II,k}$ =	1,40		1,90		2,39	

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-drilling screw	**Annex 101**
JT4-(FR-)4-4,8xL JT9-(FR-)4-4,8xL With hexagon head or FR-head	

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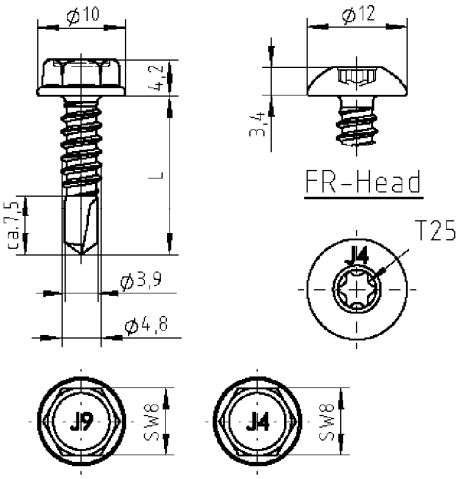


Materials

Fastener: JT4-4-4,8xL:
stainless steel (1.4301 /1.4567) – EN 10088
JT9-4-4,8xL:
stainless steel (1.4401 / 1.4578) – EN 10088

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 4{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =	2,00		2,50		3,00	
$M_{t,nom}$ =	—					
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,87	ac	0,87	ac	0,87	ac
0,60	1,13	ac	1,13	ac	1,13	ac
0,70	1,38	ac	1,38	ac	1,38	ac
0,80	1,78	-	1,78	-	1,78	ac
0,90	2,18	-	2,18	-	2,18	a
1,00	2,58	-	2,58	-	2,58	a
1,20	2,88	-	3,14	-	3,39	a
1,50	3,33	-	3,96	-	4,59	a
2,00	-	-	-	-	-	-
$N_{R,II,k}$ =	1,83		2,48		3,12	

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Further particulars:

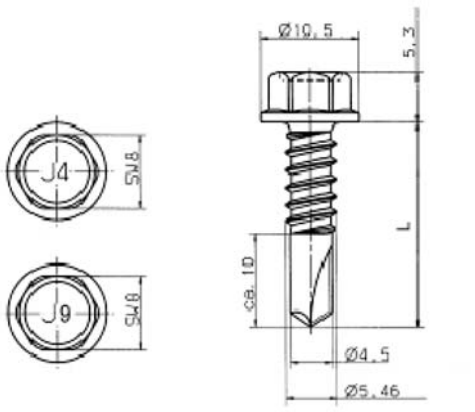
- Component I and II of aluminium with a tensile strength of $R_m \geq 245$ N/mm²: For $R_m \geq 215$ N/mm² the indicated values of the shear force resistance $V_{R,k}$ can be increased by 14%.
- Compontent II of aluminium with a tensile strength of $R_m \geq 245$ N/mm²: For $R_m \geq 215$ N/mm² the indicated values of the pull-out resistance $N_{R,II,k}$ can be increased by 14%.

Self-drilling screw

JT4-(FR-)4-4,8xL
JT9-(FR-)4-4,8xL
With hexagon head or FR-head

Annex 102

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: JT4-6-5,5xL
stainless steel (1.4301 / 1.4567) – EN 10088
JT9-6-5,5xL
stainless steel (1.4401 /1.4578) – EN 10088

Component I: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 165 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 6{,}50$ mm

Timber substructures

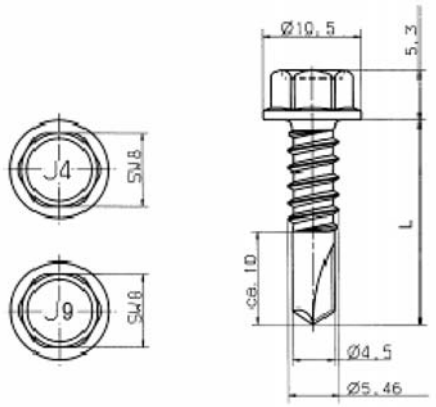
for timber substructures no performance determined

$t_{N,II}$ =	2,00		2,50		3,00		4,00		5,00	
$M_{t,nom}$ =	—									
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,71	ac	0,71	ac	0,71	ac	0,71	ac	0,71	ac
0,60	0,94	ac	0,94	ac	0,94	ac	0,94	ac	0,94	ac
0,70	1,17	ac	1,17	ac	1,17	ac	1,17	ac	1,17	ac
0,80	1,40	-	1,40	-	1,40	ac	1,40	ac	1,40	a
0,90	1,62	-	1,62	-	1,62	ac	1,62	ac	1,62	a
1,00	1,84	-	1,84	-	1,84	ac	1,84	ac	1,84	a
1,20	2,16	-	2,21	-	2,26	-	2,35	-	2,44	a
1,50	2,65	-	2,76	-	2,88	-	3,11	-	3,34	a
2,00	2,65	-	2,76	-	2,88	-	3,11	-	-	-
$N_{R,II,k}$ =	1,36		1,77		2,16		3,43		4,70	

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Self-drilling screw	**Annex 103**
JT4-6-5,5xL JT9-6-5,5xL With hexagon head	

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: JT4-6-5,5xL
stainless steel (1.4301 / 1.4567) – EN 10088
JT9-6-5,5xL
stainless steel (1.4401 / 1.4578) – EN 10088

Component I: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Component II: aluminium alloy
with $R_{m,min}$ = 215 N/mm² – EN 573

Drilling capacity $\Sigma t_i \leq 6{,}50$ mm

Timber substructures

for timber substructures no performance determined

$t_{N,II}$ =		2,00		2,50		3,00		4,00		5,00	
$M_{t,nom}$ =		—									
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,93	ac	0,93	ac	0,93	ac	0,93	ac	0,93	ac
	0,60	1,23	ac	1,23	ac	1,23	ac	1,23	ac	1,23	ac
	0,70	1,53	ac	1,53	ac	1,53	ac	1,53	ac	1,53	ac
	0,80	1,82	-	1,82	-	1,82	ac	1,82	ac	1,82	a
	0,90	2,11	-	2,11	-	2,11	ac	2,11	ac	2,11	a
	1,00	2,40	-	2,40	-	2,40	ac	2,40	ac	2,40	a
	1,20	2,82	-	2,88	-	2,94	-	3,06	-	3,18	a
	1,50	3,45	-	3,60	-	3,75	-	4,05	-	4,35	a
	2,00	3,45	-	3,60	-	3,75	-	4,05	-	-	-
$N_{R,II,k}$ =		1,77		2,30		2,82		4,47		6,12	

Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Further particulars:

- Component I and II of aluminium with a tensile strength of $R_m \geq 245$ N/mm²: For $R_m \geq 215$ N/mm² the indicated values of the shear force resistance $V_{R,k}$ can be increased by 14%.
- Component II of aluminium with a tensile strength of $R_m \geq 245$ N/mm²: For $R_m \geq 215$ N/mm² the indicated values of the pull-out resistance $N_{R,II,k}$ can be increased by 14%.

Self-drilling screw	**Annex 104**
JT4-6-5,5xL JT9-6-5,5xL With hexagon head	