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General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Fastening screws JA, JB, JT, JZ and JF

Product family
to which the construction product belongs

Fastening screws for metal members and sheeting

Manufacturer

EJOT Baubefestigungen GmbH
In der Stockwiese 35
57334 Bad Laasphe
DEUTSCHLAND

Manufacturing plant

EJOT manufacturing plants
2, 8, 9, 12, 13, 15 - 21, 25, 30 - 32

This European Technical Assessment
contains

162 pages including 149 annexes which form an integral
part of this assessment

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EAD 330046-01-0602

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Specific Part

1 Technical description of the 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.

Table 1 – Fastening screws for metal members and sheeting

Annex	Fastening screw	Component I	Component II
8	JT2-2-4,2xL JT2-3-4,8xL	S280GD to S350GD	S235 S280GD to S350GD
9	JT2-2H/3-4,8xL	S280GD to S350GD	S235 S280GD to S350GD
10	JT2-2H-4,8xL	S280GD to S350GD	S235 S280GD to S350GD
11	JT2-T-2H-4,8xL	S280GD to S350GD	S235 S280GD to S350GD
12	JT2-2H-5,5xL	S280GD to S350GD	S235 S280GD to S350GD
13	JT2-2-Plus-5,5xL	S280GD to S350GD	S235 to S275 S280GD to S450GD HX300LAD to HX460LAD
14	JT2-2H-Plus-5,5xL	S280GD to S350GD	S235 to S275 S280GD to S450GD HX300LAD to HX460LAD
15	JT2-2H-Plus-5,5xL	S280GD to S350GD	S235 to S275 S280GD to S450GD HX300LAD to HX460LAD
16	JT2-2H-Plus-5,5xL	S280GD to S350GD	S235 to S275 S280GD to S450GD HX300LAD to HX460LAD
17	JT2-2H-Plus-5,5xL	S280GD to S350GD	S235 to S275 S280GD to S450GD HX300LAD to HX460LAD
18	JT2-3H-5,5xL	S280GD to S350GD	S235 S280GD to S350GD
19	JT2-3H-5,5xL	S280GD to S350GD	S280GD to S350GD
20	JT2-3-5,5xL	S280GD to S350GD	S235 S280GD to S350GD
21	JT2-3-5,5xL	S280GD to S350GD	S235 S280GD to S350GD
22	JT2-6-5,5xL	S280GD to S350GD	S235 to S355 S280GD to S450GD HX300LAD to HX460LAD

Table 1 - continued

Annex	Fastening screw	Component I	Component II
23	JT2-6-5,5xL	S280GD to S350GD	S235 to S355 S280GD to S450GD HX300LAD to HX460LAD
24	JT2-8-5,5xL	S280GD to S350GD	S235 to S355
25	JT2-8-5,5xL	S280GD to S350GD	S235 to S355
26	JT2-6-6,3xL	S280GD to S350GD	S235 to S355 S280GD to S350GD
27	JT2-6-6,3xL	S280GD to S350GD	S235 to S355 S280GD to S350GD
28	JT2-12-5,5xL	S280GD	S235 to S355
29	JT2-12-5,5xL	S320GD to S350GD	S235 to S355
30	JT2-18-5,5xL	S280GD to S350GD	S235 to S355
31	JT2-18-5,5xL	S280GD to S350GD	S235 to S355
32	JT2-18-5,5xL	S280GD to S350GD	S235 to S355
33	JT3-2H-4,8xL JT6-2H-4,8xL	S280GD to S350GD	S235 to S275 S280GD to S450GD HX300LAD to HX460LAD
34	JT3-3H-4,8xL JT6-3H-4,8xL	S280GD to S350GD	S235 S320GD to S350GD
35	JT3-FR-2H-4,8xL JT6-FR-2H-4,8xL	S280GD to S350GD	S235 to S275 S280GD to S450GD HX300LAD to HX460LAD
36	JT3-(FR)-2-4,9xL JT6-(FR)-2-4,9xL	S280GD to S350GD	Timber
37	JT3-(FR)-2-4,9xL JT4-(FR)-2-4,9xL JT9-(FR)-2-4,9xL JT6-(FR)-2-4,9xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Timber
38	JT3-(FR)-2-4,9xL JT4-(FR)-2-4,9xL JT9-(FR)-2-4,9xL JT6-(FR)-2-4,9xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Timber
39	JT3-2H-5,5xL JT6-2H-5,5xL	S280GD to S350GD	S235 S280GD to S350GD
40	JT3-2-6,0xL JT3-FR-2-6,0xL JT6-2-6,0xL JT6-FR-2-6,0xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$ Timber

Table 1 - continued

Annex	Fastening screw	Component I	Component II
41	JT3-2-6,0xL JT3-FR-2-6,0xL JT6-2-6,0xL JT6-FR-2-6,0xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$ Timber
42	JT3-2-6,0xL JT3-FR-2-6,0xL JT6-2-6,0xL JT6-FR-2-6,0xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	S235 S280GD to S320GD Timber
43	JT3-2-6,0xL JT3-FR-2-6,0xL JT6-2-6,0xL JT6-FR-2-6,0xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	S235 S280GD to S320GD Timber
44	JT3-2-6,0xL JT3-FR-2-6,0xL JT6-2-6,0xL JT6-FR-2-6,0xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Timber
45	JT3-2-6,0xL JT3-FR-2-6,0xL JT6-2-6,0xL JT6-FR-2-6,0xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Timber
46	JT3-2H-Plus - 5,5xL JT6-2H-Plus - 5,5xL JT3-FR-2H-Plus - 5,5xL JT6-FR-2H-Plus - 5,5xL	S280GD to S350GD	S235 to S275 S280GD to S450GD HX300LAD to HX460LAD
47	JT3-2H-Plus - 5,5xL JT6-2H-Plus - 5,5xL JT3-FR-2H-Plus - 5,5xL JT6-FR-2H-Plus - 5,5xL	S280GD to S350GD	S280GD to S350GD
48	JT3-FR-2H-Plus-5,5xL JT6-FR-2H-Plus-5,5xL	S280GD to S350GD	S235 to S275 S280GD to S450GD HX300LAD to HX460LAD
49	JT3-FR-2H-Plus-5,5xL JT6-FR-2H-Plus-5,5xL	S280GD to S350GD	S280GD to S350GD
50	JT3-2H-Plus - 5,5xL JT6-2H-Plus - 5,5xL JT3-FR-2H-Plus - 5,5xL JT6-FR-2H-Plus - 5,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$
51	JT3-2H-Plus - 5,5xL JT6-2H-Plus - 5,5xL JT3-FR-2H-Plus - 5,5xL JT6-FR-2H-Plus - 5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$
52	JT3-2H-Plus - 5,5xL JT6-2H-Plus - 5,5xL JT3-FR-2H-Plus - 5,5xL JT6-FR-2H-Plus - 5,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	S235 to S275 S280GD to S450GD HX300LAD to HX460LAD
53	JT3-2H-Plus - 5,5xL JT6-2H-Plus - 5,5xL JT3-FR-2H-Plus - 5,5xL JT6-FR-2H-Plus - 5,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	S280GD to S350GD

Table 1 - continued

Annex	Fastening screw	Component I	Component II
54	JT3-2H-Plus - 5,5xL JT6-2H-Plus - 5,5xL JT3-FR-2H-Plus - 5,5xL JT6-FR-2H-Plus - 5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	S235 to S275 S280GD to S450GD HX300LAD to HX460LAD
55	JT3-2H-Plus - 5,5xL JT6-2H-Plus - 5,5xL JT3-FR-2H-Plus - 5,5xL JT6-FR-2H-Plus - 5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	S280GD to S350GD
56	JT3-3-5,5xL JT3-FR-3-5,5xL JT6-3-5,5xL JT6-FR-3-5,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$
57	JT3-3-5,5xL JT3-FR-3-5,5xL JT6-3-5,5xL JT6-FR-3-5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$
58	JT3-3-5,5xL JT3-FR-3-5,5xL JT6-3-5,5xL JT6-FR-3-5,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	S235 S280GD to S350GD
59	JT3-3-5,5xL JT3-FR-3-5,5xL JT6-3-5,5xL JT6-FR-3-5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	S235 S280GD to S350GD
60	JT3-3H-5,5xL JT6-3H-5,5xL JT3-FR-3H-5,5xL JT6-FR-3H-5,5xL	S280GD to S350GD	S280GD to S350GD
61	JT3-3H-5,5xL JT6-3H-5,5xL JT3-FR-3H-5,5xL JT6-FR-3H-5,5xL	S280GD to S350GD	S235 to S355 S280GD to S350GD
62	JT3-3-5,5xL JT6-3-5,5xL JT3-FR-3-5,5xL JT6-FR-3-5,5xL	S280GD to S350GD	S235 S280GD to S350GD
63	JT3-6-5,5xL JT6-6-5,5xL JT3-FR-6-5,5xL JT6-FR-6-5,5xL	S280GD to S350GD	S235 to S355 S280GD to S450GD HX300LAD to HX460LAD
64	JT3-6-5,5xL JT6-6-5,5xL JT3-FR-6-5,5xL JT6-FR-6-5,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$
65	JT3-6-5,5xL JT6-6-5,5xL JT3-FR-6-5,5xL JT6-FR-6-5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$
66	JT3-6-5,5xL JT6-6-5,5xL JT3-FR-6-5,5xL JT6-FR-6-5,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	S235 to S355 S280GD to S450GD HX300LAD to HX460LAD

Table 1 - continued

Annex	Fastening screw	Component I	Component II
67	JT3-6-5,5xL JT6-6-5,5xL JT3-FR-6-5,5xL JT6-FR-6-5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	S235 to S355 S280GD to S450GD HX300LAD to HX460LAD
68	JT3-12-5,5xL JT6-12-5,5xL JT3-FR-12-5,5xL JT6-FR-12-5,5xL	S280GD	S235 to S355
69	JT3-12-5,5xL JT6-12-5,5xL JT3-FR-12-5,5xL JT6-FR-12-5,5xL	S320GD to S350GD	S235 to S355
70	JT3-12-5,5xL JT6-12-5,5xL JT3-FR-12-5,5xL JT6-FR-12-5,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$
71	JT3-12-5,5xL JT6-12-5,5xL JT3-FR-12-5,5xL JT6-FR-12-5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$
72	JT3-12-5,5xL JT6-12-5,5xL JT3-FR-12-5,5xL JT6-FR-12-5,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	S235 to S355
73	JT3-12-5,5xL JT6-12-5,5xL JT3-FR-12-5,5xL JT6-FR-12-5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	S235 to S355
74	JT3-18-5,5xL JT6-18-5,5xL JT3-FR-18-5,5xL JT6-FR-18-5,5xL	S280GD	S235 to S355
75	JT3-18-5,5xL JT6-18-5,5xL JT3-FR-18-5,5xL JT6-FR-18-5,5xL	S320GD to S350GD	S235 to S355
76	JT3-18-5,5xL JT6-18-5,5xL JT3-FR-18-5,5xL JT6-FR-18-5,5xL	S280GD	S235 to S355
77	JT3-18-5,5xL JT6-18-5,5xL JT3-FR-18-5,5xL JT6-FR-18-5,5xL	S320GD to S350GD	S235 to S355
78	JT3-18-5,5xL JT6-18-5,5xL JT3-FR-18-5,5xL JT6-FR-18-5,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$
79	JT3-18-5,5xL JT6-18-5,5xL JT3-FR-18-5,5xL JT6-FR-18-5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$

Table 1 - continued

Annex	Fastening screw	Component I	Component II
80	JT3-18-5,5xL JT6-18-5,5xL JT3-FR-18-5,5xL JT6-FR-18-5,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$
81	JT3-18-5,5xL JT6-18-5,5xL JT3-FR-18-5,5xL JT6-FR-18-5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$
82	JT3-18-5,5xL JT6-18-5,5xL JT3-FR-18-5,5xL JT6-FR-18-5,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	S235 to S355
83	JT3-18-5,5xL JT6-18-5,5xL JT3-FR-18-5,5xL JT6-FR-18-5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	S235 to S355
84	JT3-18-5,5xL JT6-18-5,5xL JT3-FR-18-5,5xL JT6-FR-18-5,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	S235 to S355
85	JT3-18-5,5xL JT6-18-5,5xL JT3-FR-18-5,5xL JT6-FR-18-5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	S235 to S355
86	JT3-6-6,3xL JT6-6-6,3xL	S280GD to S350GD	S235 to S355 S280GD to S450GD HX300LAD to HX460LAD
87	JT3-2-6,5xL JT6-2-6,5xL	S280GD	S235 S280GD to S350GD Timber
88	JT3-2-6,5xL JT6-2-6,5xL	S280GD	Timber
89	JT3-2-6,5xL JT6-2-6,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Timber
90	JT3-2-6,5xL JT6-2-6,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Timber
91	JT3-2-6,5xL JT6-2-6,5xL	S320GD to S350GD	S235 S280GD to S350GD Timber
92	JT3-2-6,5xL JT6-2-6,5xL	S320GD to S350GD	Timber
93	JF3-6,8xL JF6-6,8xL JF3-(FR-)6,8xL JF6-(FR-)6,8xL	S280GD to S350GD	Timber
94	JF3-6,8xL JF6-6,8xL JF3-(FR-)6,8xL JF6-(FR-)6,8xL	S280GD to S350GD	Timber

Table 1 - continued

Annex	Fastening screw	Component I	Component II
95	JF3-6,8xL JF6-6,8xL JF3-(FR-)6,8xL JF6-(FR-)6,8xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Timber
96	JF3-6,8xL JF6-6,8xL JF3-(FR-)6,8xL JF6-(FR-)6,8xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Timber
97	JF3-6,8xL JF6-6,8xL JF3-(FR-)6,8xL JF6-(FR-)6,8xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Timber
98	JF3-6,8xL JF6-6,8xL JF3-(FR-)6,8xL JF6-(FR-)6,8xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Timber
99	JA1-6,5xL	S280GD to S350GD	S235 S280GD to S350GD Timber
100	JA1-6,5xL	S280GD to S350GD	Timber
101	JZ1-6,3xL JB1-6,3xL	S280GD to S350GD	S235 S280GD to S350GD
102	JZ1-6,3xL	S280GD to S350GD	S235 S280GD to S350GD
103	JA3-6,5xL	S280GD to S350GD	S235 S280GD to S350GD Timber
104	JA3-6,5xL	S280GD to S350GD	S235 S280GD to S350GD Timber
105	JA3-6,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$ Timber
106	JA3-6,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$ Timber
107	JA3-6,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	S235 S280GD to S350GD Timber
108	JA3-6,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	S235 S280GD to S350GD Timber
109	JZ3-6,3xL JZ5-6,3xL JB3-6,3xL	S280GD to S350GD	S235 to S355 S280GD to S450GD HX300LAD to HX460LAD
110	JZ3-6,3xL JZ5-6,3xL	S280GD to S350GD	S235 to S355 S280GD to S450GD HX300LAD to HX460LAD

Table 1 - continued

Annex	Fastening screw	Component I	Component II
111	JZ3-6,3xL JZ5-6,3xL JB3-6,3xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$
112	JZ3-6,3xL JZ5-6,3xL JB3-6,3xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$
113	JZ3-6,3xL JZ5-6,3xL JB3-6,3xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	S235 to S355 S280GD to S450GD HX300LAD to HX460LAD
114	JZ3-6,3xL JZ5-6,3xL JB3-6,3xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	S235 to S355 S280GD to S450GD HX300LAD to HX460LAD
115	JZ3-8,0xL JZ5-8,0xL	S280GD to S350GD	S235 to S355 S280GD to S350GD
116	JZ7-6,3xL JB7-6,3xL	S280GD to S350GD	S235 to S355 S280GD to S350GD
117	JZ7-6,3xL JB7-6,3xL	S280GD to S350GD	S235 to S355 S280GD to S350GD
118	JF3-2H-4,8xL JF6-2H-4,8xL JF3-FR-2H-4,8xL JF6-FR-2H-4,8xL	S280GD to S350GD	S280GD to S350GD
119	JF3-2H-4,8xL JF6-2H-4,8xL JF3-FR-2H-4,8xL JF6-FR-2H-4,8xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$
120	JF3-2H-4,8xL JF6-2H-4,8xL JF3-FR-2H-4,8xL JF6-FR-2H-4,8xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$
121	JF3-2H-4,8xL JF6-2H-4,8xL JF3-FR-2H-4,8xL JF6-FR-2H-4,8xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	S280GD to S350GD
122	JF3-2H-4,8xL JF6-2H-4,8xL JF3-FR-2H-4,8xL JF6-FR-2H-4,8xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	S280GD to S350GD
123	JF2-2H-4,8xL	S280GD to S350GD	S280GD to S350GD
124	JF3-2-5,5xL JF6-2-5,5xL JF3-FR-2-5,5xL JF6-FR-2-5,5xL	S280GD to S350GD	S280GD to S350GD
125	JF3-2-5,5xL JF6-2-5,5xL JF3-FR-2-5,5xL JF6-FR-2-5,5xL	S280GD to S350GD	S280GD to S350GD

Table 1 - continued

Annex	Fastening screw	Component I	Component II
126	JF3-2-5,5xL JF6-2-5,5xL JF3-FR-2-5,5xL JF6-FR-2-5,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$
127	JF3-2-5,5xL JF6-2-5,5xL JF3-FR-2-5,5xL JF6-FR-2-5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$
128	JF3-2-5,5xL JF6-2-5,5xL JF3-FR-2-5,5xL JF6-FR-2-5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	S280GD to S350GD
129	JT3-LT-2-6,0xL – KD16	S280GD to S350GD	S280GD to S350GD Timber
130	JT3-LT-2-6,0xL – KD16	S280GD to S350GD	S280GD to S350GD Timber
131	JT3-LT-2-6,0xL – KD16 JT4-LT-2-6,0xL – KD16 JT9-LT-2-6,0xL – KD16	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$ Timber
132	JT3-LT-2-6,0xL – KD16 JT4-LT-2-6,0xL – KD16 JT9-LT-2-6,0xL – KD16	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$
133	JT3-LT-2-6,0xL – KD16 JT4-LT-2-6,0xL – KD16 JT9-LT-2-6,0xL – KD16	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$
134	JT3-LT-2-6,0xL – KD16 JT4-LT-2-6,0xL – KD16 JT9-LT-2-6,0xL – KD16	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$
135	JT3-LT-3-5,5xL JT6-LT-3-5,5xL	S280GD to S350GD	S235 S280GD to S350GD
136	JT3-LT-3-5,5xL JT6-LT-3-5,5xL	S280GD to S350GD	S235 S280GD to S350GD
137	JT3-LT-3-5,5xL – KD16 JT4-LT-3-5,5xL – KD16 JT6-LT-3-5,5xL – KD16 JT9-LT-3-5,5xL – KD16	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$
138	JT3-LT-3-5,5xL – KD16 JT4-LT-3-5,5xL – KD16 JT6-LT-3-5,5xL – KD16 JT9-LT-3-5,5xL – KD16	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$
139	JT3-LT-3-5,5xL – KD16 JT6-LT-3-5,5xL – KD16	Aluminium $R_m \geq 165 \text{ N/mm}^2$	S235 S280GD to S350GD
140	JT3-LT-3-5,5xL – KD16 JT6-LT-3-5,5xL – KD16	Aluminium $R_m \geq 215 \text{ N/mm}^2$	S235 S280GD to S350GD
141	JA3-LT-6,0xL – KD16	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Timber

Table 1 - continued

Annex	Fastening screw	Component I	Component II
142	JA3-LT-6,0xL – KD16	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Timber
143	JF3-LT-2-5,5xL – KD16 JF6-LT-2-5,5xL – KD16	S280GD to S350GD	S280GD to S350GD
144	JF3-LT-2-5,5xL – KD16 JF6-LT-2-5,5xL – KD16	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$
145	JF3-LT-2-5,5xL – KD16 JF6-LT-2-5,5xL – KD16	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$
146	JT4-4-4,8xL JT9-4-4,8xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$
147	JT4-4-4,8xL JT9-4-4,8xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$
148	JT4-6-5,5xL JT9-6-5,5xL	Aluminium $R_m \geq 165 \text{ N/mm}^2$	Aluminium $R_m \geq 165 \text{ N/mm}^2$
149	JT4-6-5,5xL JT9-6-5,5xL	Aluminium $R_m \geq 215 \text{ N/mm}^2$	Aluminium $R_m \geq 215 \text{ N/mm}^2$

2 Specification of the intended use in accordance with the applicable European Assessment Document 330046-01-0602

The fastening screws are intended to be used for fastening metal sheeting to metal or 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 any other thin gauge metal members. The intended use comprises fastening screws and connections for indoor and outdoor applications. Fastening screws which are intended to be used in external environments with $\geq C2$ corrosion according to the standard EN ISO 12944-2 are made of stainless steel. Furthermore the intended use comprises connections with predominantly static loads (e.g. wind loads, dead loads). The fastening screws are not intended for re-use.

The performances given in Section 3 are only valid if the fastening screws for sandwich panels are used in compliance with the specifications and conditions given in Annex (1-149).

The verification and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the fastening screws of at least 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, 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.

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

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Shear Resistance of the Connection	see Annexes to this ETA
Tension Resistance of the Connection	see Annexes to this ETA
Design Resistance in case of combined Tension and Shear Forces (interaction)	see Annexes to this ETA
Check of Deformation Capacity in case of constraining forces due to temperature	No performance assessed
Durability	No performance assessed

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 330046-01-0602, the applicable European legal act is: Commission Decision 1998/214/EC, amended by 2001/596/EC.

The system to be applied is: 2+

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

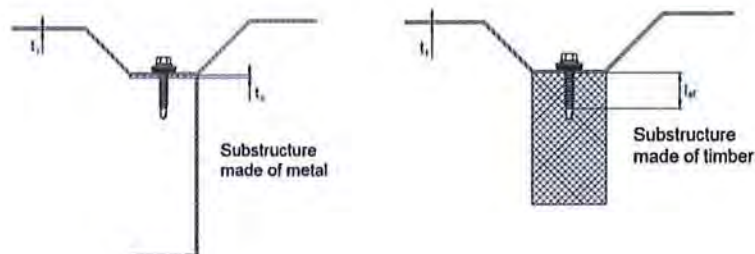
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

Issued in Berlin on 23 March 2018 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Schult

Examples of execution and connection



Materials and dimensions

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

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

$t_{N,I}$	Thickness of component I
$t_{N,II}$	Thickness of component II made of metal
l_{ef}	Effective screw-in length in component II made of timber (without drill point)
l_g	Screw-in length in component II made of timber (with drill point)
d_{pd}	Pre-drill diameter of component I and II
$M_{t,nom}$	Tightening torque of the fastening screw

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

Performance characteristics

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

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

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

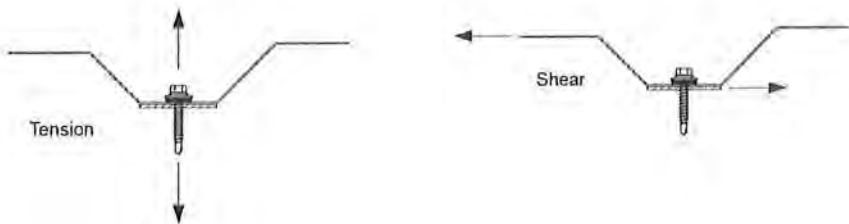
$N_{R,I,k}$	Characteristic value of pull-through resistance for component I
$N_{R,II,k}$	Characteristic value of pull-out resistance for component II
$V_{R,I,k}$	Characteristic value of hole bearing resistance for component I
$V_{R,II,k}$	Characteristic value of hole bearing resistance for component II
$M_{y,Rk}$	Characteristic value of yield moment of the fastening screw (for component II made of timber)
$f_{ax,k}$	Characteristic value of withdrawal strength for component II made of timber
$f_{h,k}$	Characteristic value of embedding strength for component II made of timber

Fastening screws JA, JB, JT, JZ and JF

Annex 1

Terms and explanations

Occurred loadings of a connection



Design values

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

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

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

Special conditions

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

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

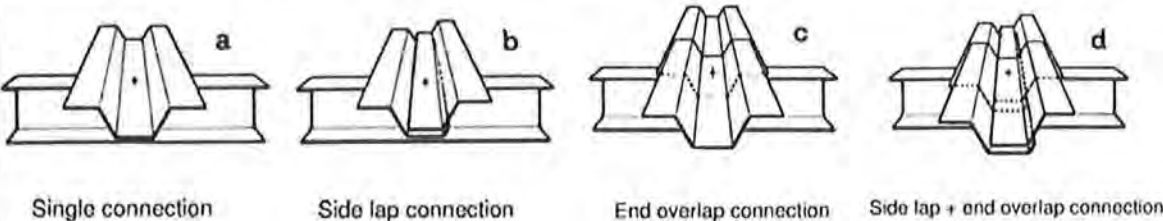
In case of combined loading by tension and shear forces the following interaction equation has to be taken into account:

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

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

Types of connection

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



Installation conditions

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

Fastening screws JA, JB, JT, JZ and JF	Annex 2
Design and installation	

Component I made of perforated sheeting

The characteristic values of tension and shear resistance are determined as follows:

$$N_{R,k} = \min \left\{ N_{R,I,k} \quad N_{R,II,k} \right\} \quad V_{R,k} = \min \left\{ V_{R,I,k} \quad V_{R,k} \right\}$$

$N_{R,I,k}$ and $V_{R,I,k}$ are given in Annex 4 to 7.

$N_{R,II,k}$ and $V_{R,k}$ are given in the Annex of the fastening screw.

Component I made of aluminium alloy

The characteristic value of tension resistance is determined as follows:

$$N_{R,k} = \min \left\{ N_{R,I,k} \quad N_{R,II,k} \right\}$$

$N_{R,I,k}$ is determined according to EN 1999-1-4:2007 + AC:2009, equation (8.13).

$N_{R,II,k}$ is given in the Annex of the fastening screw.

Component II made of timber

The characteristic values of tension and shear resistance for other k_{mod} or ρ_k as indicated in the Annex of the fastening screw can be determined as follows:

$$N_{R,k} = \min \left\{ N_{R,I,k} \quad N_{R,II,k} * k_{mod} \right\} \quad V_{R,k} = \min \left\{ V_{R,I,k} \quad V_{R,II,k} * k_{mod} \right\}$$

$N_{R,I,k}$ and $V_{R,I,k}$ are given in the Annex of the fastening screw.

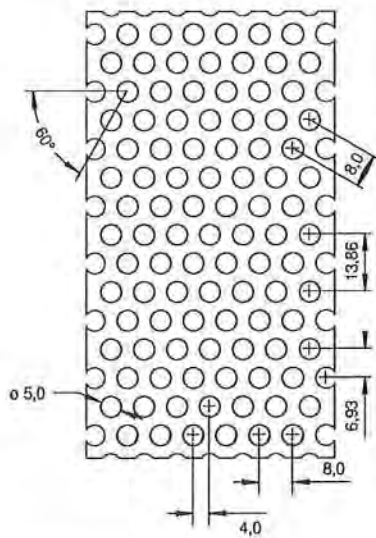
$N_{R,II,k}$ is determined according to EN 1995-1-1:2014 + A1:2008, equation (8.40a), with $f_{ax,k}$ given in Annex of the fastening screw.

$V_{R,II,k}$ is determined according to EN 1995-1-1:2004 + A1:2008, equation (8.9), with $M_{Y,Rk}$ given in the Annex of the fastening screw and $f_{h,k}$ according to EN 1995-1-1:2014 + A1:2008, equation (8.15) and equation (8.16).

Fastening screws JA, JB, JT, JZ and JF

Additional provisions

Annex 3



Type of Fastener

self tapping screw $\phi 6,3$ mm and $\phi 6,5$ mm
and
self drilling screw from $\phi 5,5$ mm to $\phi 6,3$ mm

Materials

Fastener: stainless steel – EN ISO 3506 or similar

Washer: stainless steel – EN ISO 3506
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

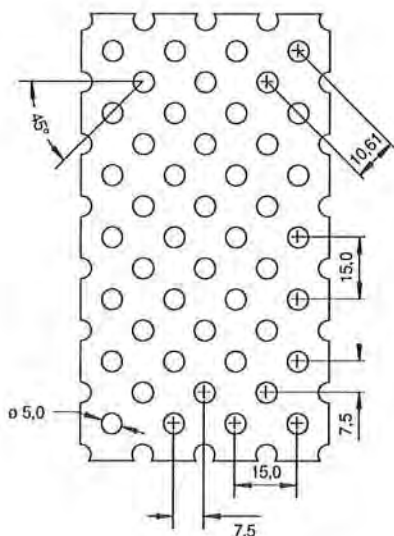
sheet / ϕ washer	perforated sheets made of S280GD with $R_{m,min} = 360 \text{ N/mm}^2$				perforated sheets made of S320GD with $R_{m,min} = 390 \text{ N/mm}^2$				perforated sheets made of S350GD with $R_{m,min} = 420 \text{ N/mm}^2$			
	16 mm	19 mm	22 mm	25 mm	16 mm	19 mm	22 mm	25 mm	16 mm	19 mm	22 mm	25 mm
$M_{t,nom}$	5 Nm											
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$												
0,5	—	—	—	—	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—	—	—	—	—
0,63	—	—	—	—	—	—	—	—	—	—	—	—
0,75	2,16	2,22	2,24	2,38	2,34	2,4	2,44	2,58	2,54	2,6	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
1,5	4,46	4,74	4,56	4,72	4,84	5,12	4,96	5,10	5,22	5,54	5,34	5,50
$N_{R,k} [\text{kN}]$ for $t_{N,I} =$												
0,5	—	—	—	—	—	—	—	—	—	—	—	—
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
1,5	4,36	4,46	5,12	5,12	4,74	4,84	5,56	5,56	5,1	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 screws JA, JB, JT, JZ and JF

Annex 4

Fastening of perforated sheets



Type of Fastener

self tapping screw $\phi 6,3$ mm and $\phi 6,5$ mm
and
self drilling screw from $\phi 5,5$ mm to $\phi 6,3$ mm

Materials

Fastener: stainless steel – EN ISO 3506 or similar

Washer: stainless steel – EN ISO 3506
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

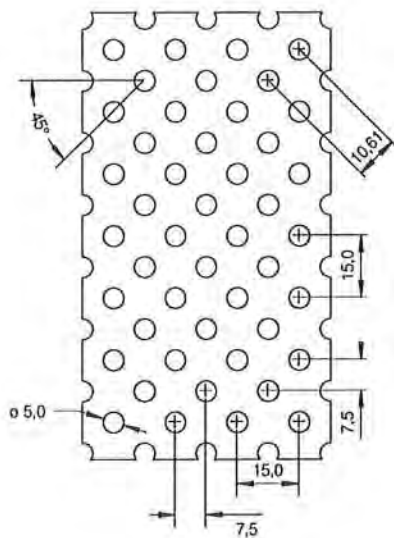
screw / ϕ washer	self drilling screws $\phi 5,5$ mm and $\phi 6,0$ mm				self tapping screws and self drilling screws $\phi 6,3$ mm and $\phi 6,5$ mm			
	16 mm	19 mm	22 mm	25 mm	16 mm	19 mm	22 mm	25 mm
$M_{t,nom}$	5 Nm							
$V_{R,k}$ [kN] for $t_{N,I} =$								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
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 $t_{N,I} =$								
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 screws JA, JB, JT, JZ and JF

Annex 5

Fastening of perforated sheets



Type of Fastener

self tapping screw $\varnothing 6,3$ mm and $\varnothing 6,5$ mm
and
self drilling screw from $\varnothing 5,5$ mm to $\varnothing 6,3$ mm

Materials

Fastener: stainless steel – EN ISO 3506 or similar

Washer: stainless steel – EN ISO 3506
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

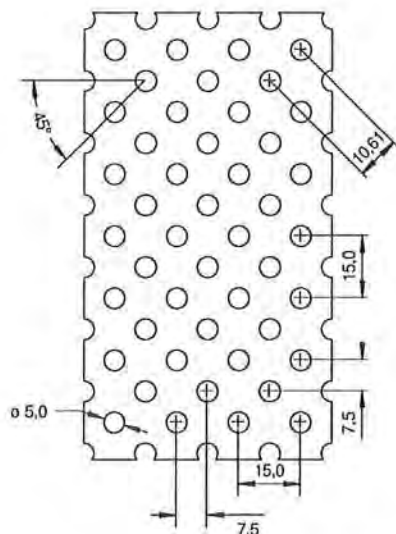
screw / $\varnothing$ washer	self drilling screws $\varnothing 5,5$ mm and $\varnothing 6,0$ mm				self tapping screws and self drilling screws $\varnothing 6,3$ mm and $\varnothing 6,5$ mm			
	16 mm	19 mm	22 mm	25 mm	16 mm	19 mm	22 mm	25 mm
$M_{t,nom}$	5 Nm							
$V_{R,k}$ [kN] for $t_{N,I} =$								
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 $t_{N,I} =$								
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 screws JA, JB, JT, JZ and JF

Annex 6

Fastening of perforated sheets



Type of Fastener

self tapping screw $\varnothing 6,3$ mm and $\varnothing 6,5$ mm
and
self drilling screw from $\varnothing 5,5$ mm to $\varnothing 6,3$ mm

Materials

Fastener: stainless steel – EN ISO 3506 or similar

Washer: stainless steel – EN ISO 3506
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

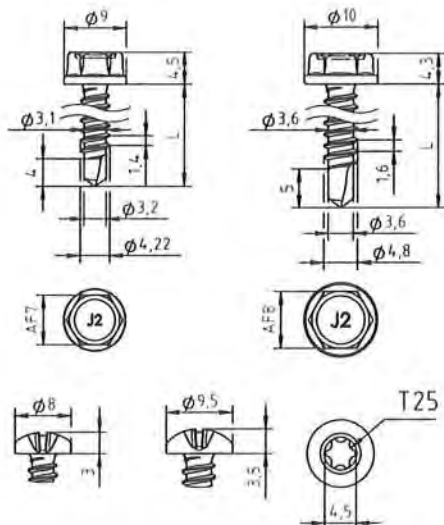
screw / $\varnothing$ washer	self drilling screws $\varnothing 5,5$ mm and $\varnothing 6,0$ mm				self tapping screws and self drilling screws $\varnothing 6,3$ mm and $\varnothing 6,5$ mm			
	16 mm	19 mm	22 mm	25 mm	16 mm	19 mm	22 mm	25 mm
$M_{t,nom}$	5 Nm							
$V_{R,k}$ [kN] for $t_{N,J} =$								
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 $t_{N,J} =$								
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 screws JA, JB, JT, JZ and JF

Annex 7

Fastening of perforated sheets



Materials

Fastener: carbon steel
case hardened and corrosion-resistant

Washer: none

Component I: S280GD to S350GD - EN 10346

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

Drilling capacity: see remark below

Timber substructures:

no performance determined

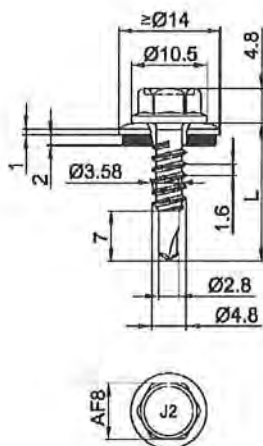
$t_{N,II}$ [mm]	0,63		0,75		0,88		1,00		1,13		1,25		1,50		2,00	
$M_{t,nom}$	JT2-4,2 x L : 4Nm										—					
	JT2-4,8 x L : 4 Nm						JT2-4,8 x L : 5 Nm									
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,50	—	1,90	—	1,90	—	1,90	—	1,90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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-2-4,2xL, JT2-3-4,8xL
with hexagon head or round head

Annex 8



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD to S350GD – EN 10346

Component II: S235 – EN 10025-1
S280GD to 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 $t_{N,I} =$											
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 $t_{N,I} =$											
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	—	—	—	—	—	—	—	—	—	—

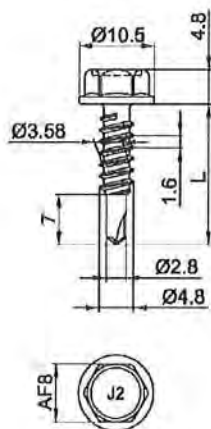
— If both components I and II are made of S320GD or S350GD the values may be increased by 8,3%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-2H/3-4,8xL

with undercut, hexagon head and sealing washer $\geq \text{Ø}14$ mm

Annex 9



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

Washer: none

Component I: S280GD to S350GD - EN 10346

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

Drilling capacity: $\Sigma t_i \leq 2,20$ mm

Timber substructures:

no performance determined

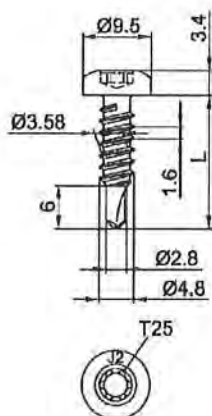
$t_{N,II}$ [mm]	0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75
$M_{t,nom}$	—										
$V_{R,k}$ [kN] for $t_{N,I} =$											
0,40	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92
0,50	0,92	1,42	1,42	1,42	1,42	1,42	1,42	1,42	1,42	1,42	—
0,55	0,92	1,42	1,67	1,67	1,67	1,67	1,67	1,67	1,67	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 $t_{N,I} =$											
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%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-2H-4,8xL
with undercut and hexagon head

Annex 10



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

Washer: none

Component I: S280GD to S350GD - EN 10346

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

Drilling capacity: $\Sigma t_i \leq 2,20$ mm

Timber substructures:

no performance determined

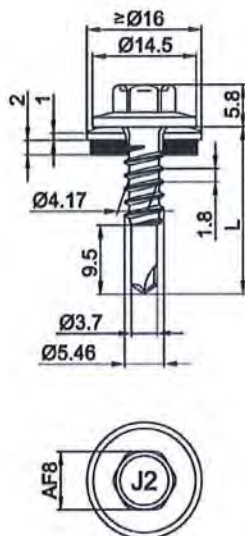
$t_{N,II}$ [mm]	0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75
$M_{t,nom}$	—										
$V_{R,k}$ [kN] for $t_{N,I} =$											
0,40	0,69	0,69	0,69	0,69	0,69	0,69	0,69	0,69	0,69	0,69	0,69
0,50	0,69	1,37	1,37	1,37	1,37	1,37	1,37	1,37	1,37	1,37	—
0,55	0,69	1,37	1,70	1,70	1,70	1,70	1,70	1,70	1,70	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 $t_{N,I} =$											
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%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-T-2H-4,8xL
with undercut and round head

Annex 11



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity: $\Sigma t \leq 2,50$ mm

Timber substructures:

no performance determined

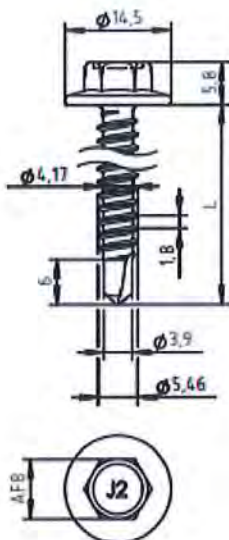
$t_{N,II}$ [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$M_{t,nom}$	5 Nm							
$V_{R,k}$ [kN] for $t_{N,I} =$								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,00	—	1,00	—	1,00	—	1,00	ac
0,75	1,00	—	2,00	—	2,00	—	2,00	—
0,88	1,00	—	2,00	—	2,00	—	2,00	—
1,00	1,00	—	2,00	—	2,00	—	2,00	—
1,13	1,00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

Fastening screws JA, JB, JT, JZ and JF

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

with undercut, hexagon head and sealing washer $\geq \varnothing 16$ mm

Annex 12



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

Washer: none

Component I: S280GD to S350GD - EN 10346

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

Drilling capacity: $\Sigma t_i \leq 3,50$ mm

Timber substructures:

no performance determined

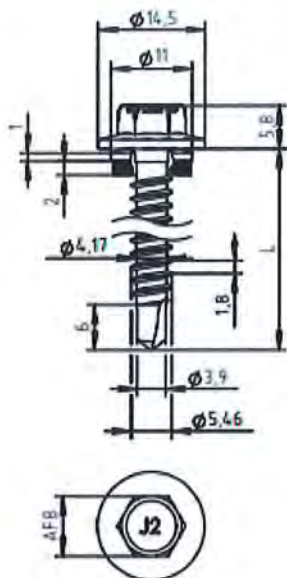
$t_{N,II}$ [mm]	0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$M_{t,nom}$	—										
$V_{R,k}$ [kN] for $t_{N,I} =$											
0,50	0,66	0,95	1,02	1,13	1,3	1,48	1,65	1,83	1,91	1,91	1,91
0,55	0,66	0,95	1,11	1,21	1,37	1,54	1,7	1,88	2,03	2,12	2,12
0,63	0,66	0,95	1,11	1,38	1,52	1,68	1,83	1,99	2,13	2,43	2,45
0,75	0,66	0,95	1,11	1,38	1,81	1,96	2,08	2,22	2,35	2,62	2,88
0,88	0,66	0,95	1,11	1,38	1,81	2,34	2,45	2,57	2,68	2,91	3,14
1,00	0,66	0,95	1,11	1,38	1,81	2,34	2,86	2,96	3,06	3,25	3,45
1,13	0,66	0,95	1,11	1,38	1,81	2,34	2,86	3,46	3,54	3,7	3,87
1,25	0,66	0,95	1,11	1,38	1,81	2,34	2,86	3,46	4,05	4,18	4,32
1,50	0,66	0,95	1,11	1,38	1,81	2,34	2,86	3,46	4,05	5,36	5,44
1,75	0,66	0,95	1,11	1,38	1,81	2,34	2,86	3,46	4,05	5,36	—
2,00	0,66	0,95	1,11	1,38	1,81	2,34	2,86	3,46	4,05	5,36	—
$N_{R,k}$ [kN] for $t_{N,I} =$											
0,50	0,30	0,41	0,47	0,56	0,73	1,06	1,16	1,16	1,16	1,16	1,16
0,55	0,30	0,41	0,47	0,56	0,73	1,06	1,29	1,29	1,29	1,29	1,29
0,63	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,49	1,49	1,49	1,49
0,75	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,79	1,79	1,79
0,88	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,12	2,12
1,00	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,42	2,42
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 component I is made of S320GD or S350GD and component II is made of S320GD to S450GD respectively HX340LAD to HX460LAD the values may be increased by 8,3%.

Fastening screws JA, JB, JT, JZ and JF

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

Annex 13



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD to S350GD - EN 10346

Component II: S235 to S275 - EN 10025-1
S280GD to S450GD - EN 10346
HX300LAD to HX460LAD - 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 $t_{N,I} =$	0,50	0,56	0,60	0,64	0,68	0,83	0,98	1,13	1,13	1,13	1,13
	0,55	0,58	0,67	0,73	0,78	0,94	1,09	1,25	1,25	1,25	1,25
	0,63	0,60	0,71	0,82	0,87	1,04	1,21	1,38	1,38	1,38	1,38
	0,75	0,62	0,74	0,86	0,97	1,15	1,33	1,51	1,51	1,51	1,51
	0,88	0,62	0,74	0,86	1,02	1,42	2,04	2,67	2,67	2,67	2,67
	1,00	0,62	0,74	0,86	1,06	1,56	2,15	2,77	2,77	2,77	2,77
	1,13	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92
	1,25	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92
	1,50	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92
	1,75	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	—
	2,00	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	—
$N_{R,k}$ [kN] for $t_{N,I} =$	0,50	0,30	0,41	0,47	0,56	0,73	1,06	1,21	1,21	1,21	1,21
	0,55	0,30	0,41	0,47	0,56	0,73	1,06	1,35	1,35	1,35	1,35
	0,63	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,56	1,56	1,56
	0,75	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,87	1,87
	0,88	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,22
	1,00	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,53
	1,13	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,25	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,50	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59
	1,75	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	—
	2,00	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	—

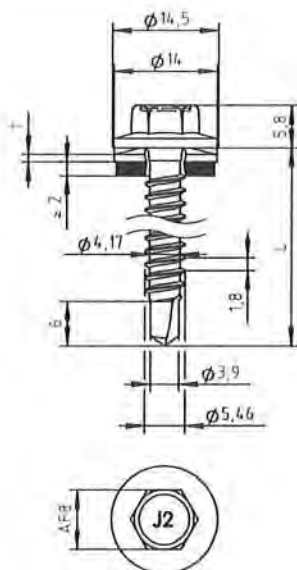
- If both component I is made of S320GD or S350GD and component II is made of S320GD to S450GD respectively HX340LAD to HX460LAD the values may be increased by 8,3%.

Fastening screws JA, JB, JT, JZ and JF

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

with undercut, hexagon head and sealing washer $\geq \varnothing 11$ mm

Annex 14



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD to S350GD - EN 10346

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

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

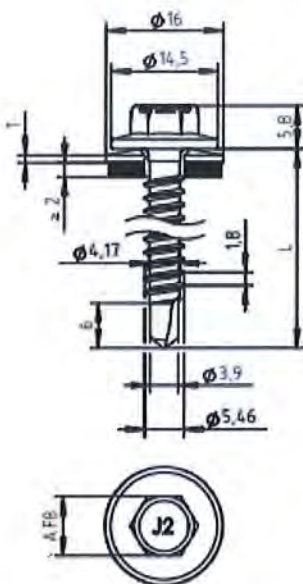
- If both component I is made of S320GD or S350GD and component II is made of S320GD to S450GD respectively HX340LAD to HX460LAD the values may be increased by 8,3%.

Fastening screws JA, JB, JT, JZ and JF

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

with undercut, hexagon head and sealing washer $\geq \varnothing 14$ mm

Annex 15



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD to S350GD - EN 10346

Component II: S235 to S275 - EN 10025-1
S280GD to S450GD - EN 10346
HX300LAD to HX460LAD - 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 $t_{N,I} =$											
0,50	0,56	0,60	0,64	0,68	0,83	0,98	1,13	1,13	1,13	1,13	1,13
0,55	0,58	0,67	0,73	0,78	0,94	1,09	1,25	1,25	1,25	1,25	1,25
0,63	0,60	0,71	0,82	0,87	1,04	1,21	1,38	1,38	1,38	1,38	1,38
0,75	0,62	0,74	0,86	0,97	1,15	1,33	1,51	1,51	1,51	1,51	1,51
0,88	0,62	0,74	0,86	1,02	1,42	2,04	2,67	2,67	2,67	2,67	2,67
1,00	0,62	0,74	0,86	1,06	1,56	2,15	2,77	2,77	2,77	2,77	2,77
1,13	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92	3,92
1,25	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92	3,92
1,50	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92	3,92
1,75	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92	—
2,00	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92	—
$N_{R,k}$ [kN] for $t_{N,I} =$											
0,50	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,65	1,65	1,65	1,65
0,55	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,83	1,83	1,83
0,63	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,23	2,23
0,75	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59	2,59
0,88	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59	2,59
1,00	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59	2,59
1,13	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59	2,59
1,25	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59	2,59
1,50	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59	2,59
1,75	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59	—
2,00	0,30	0,41	0,47	0,56	0,73	1,06	1,40	1,71	1,99	2,59	—

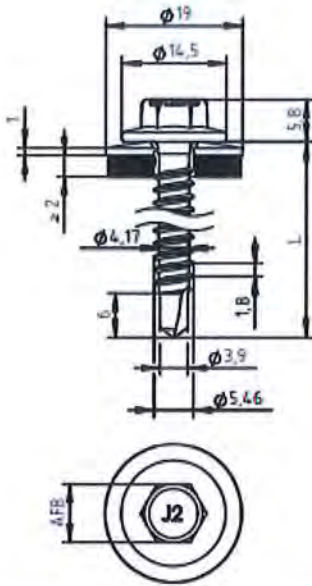
– If both component I is made of S320GD or S350GD and component II is made of S320GD to S450GD respectively HX340LAD to HX460LAD the values may be increased by 8,3%.

Fastening screws JA, JB, JT, JZ and JF

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

with undercut, hexagon head and sealing washer $\geq \varnothing 16$ mm

Annex 16



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity: $\Sigma t \leq 3,50 \text{ mm}$

Timber substructures:

no performance determined

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

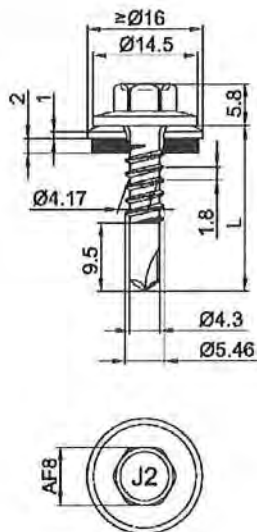
– If both component I is made of S320GD or S350GD and component II is made of S320GD to S450GD respectively HX340LAD to HX460LAD the values may be increased by 8,3%.

Fastening screws JA, JB, JT, JZ and JF

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

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

Annex 17



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD to S350GD - EN 10346

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

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

Timber substructures:

no performance determined

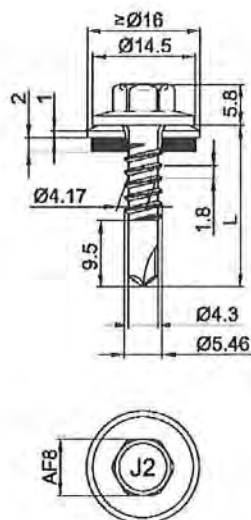
$t_{N,II}$ [mm]	1,00	1,13	1,25	1,50	2,00	2,50	3,00
$M_{t,nom}$	5 Nm						
$V_{R,k}$ [kN] for $t_{N,I} =$							
0,50	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—
0,63	1,40	1,50	1,00	1,00	1,00	1,00	ac
0,75	1,80	1,90	2,00	2,00	2,00	2,00	—
0,88	2,20	2,30	2,00	2,00	2,00	2,00	—
1,00	2,60	2,80	2,00	2,00	2,00	2,00	—
1,13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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-3H-5,5xL

with undercut, hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 18



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD to S350GD - EN 10346

Component II: S280GD to S350GD - EN 10346

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

Timber substructures:

no performance determined

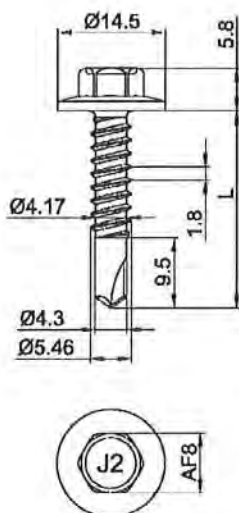
$t_{N,II} [\text{mm}]$	2 x 0,75	2 x 0,88	2 x 1,00	2 x 1,13	2 x 1,25	2 x 1,50
$M_{t,nom}$	5 Nm					
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$						
0,50	—	—	—	—	—	—
0,55	—	—	—	—	—	—
0,63	1,60	1,60	1,60	1,60	1,60	—
0,75	1,90	1,90	1,90	1,90	1,90	—
0,88	2,20	2,20	2,20	2,20	2,20	—
1,00	2,60	2,60	2,60	2,60	2,60	—
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	—	—	—	—	—
$N_{R,k} [\text{kN}]$ for $t_{N,I} =$						
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	—	—	—	—	—

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-3H-5,5xL

with undercut, hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 19



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

Washer: none

Component I: S280GD, S320GD or S350GD - EN 10346

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

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

Timber substructures:

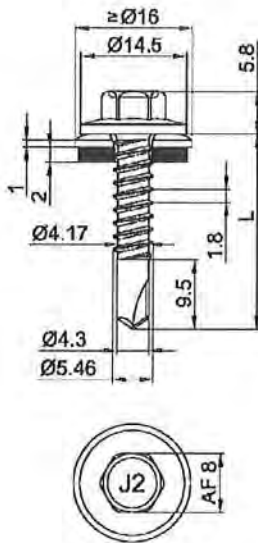
no performance determined

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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-3-5,5xL
with hexagon head

Annex 20



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD, S320GD or S350GD - EN 10346

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

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

Timber substructures

no performance determined

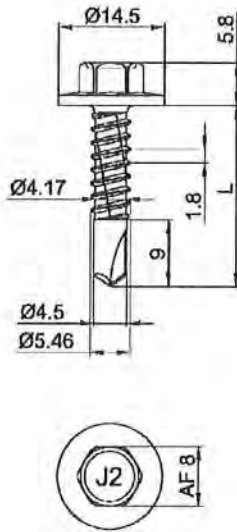
$t_{N,II}$ [mm]	1,00	1,13	1,25	1,50	2,00	2,50	3,00
$M_{t,nom}$	7 Nm						
$V_{R,k}$ [kN] for $t_{N,I} =$							
0,50	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—
0,63	1,40	1,40	1,70	2,00	2,50 ac	2,70 ac	—
0,75	1,80	1,80	2,20	2,40	3,00 ac	3,50 a	—
0,88	2,20	2,20	2,60	2,90	3,40	4,10 a	—
1,00	2,60	2,60	3,00	3,40	4,20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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-3-5,5xL

with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 21



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

Washer: none

Component I: S280GD to S350GD - EN 10346

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

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures

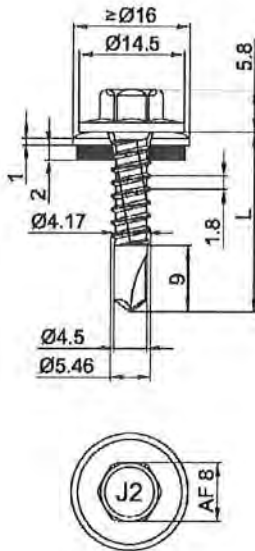
no performance determined

$t_{N,II}$ [mm]	1,50		2,00		2,50		3,00		4,00		5,00		
$M_{t,nom}$	7 Nm												
$V_{R,k}$ [kN] for $t_{N,I} =$	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 $t_{N,I} =$	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	—	—	—

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-6-5,5xL
with hexagon head

Annex 22



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD to S350GD - EN 10346

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

Drilling capacity: $\Sigma t_i \leq 6,00$ mm

Timber substructures:

no performance determined

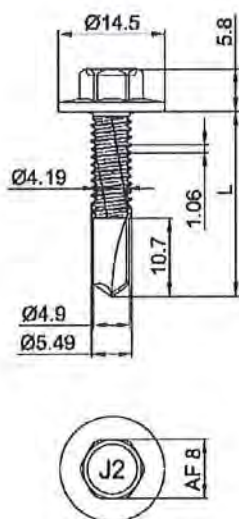
$t_{N,II}$ [mm]	1,50		2,00		2,50		3,00		4,00		5,00		
$M_{t,nom}$	7 Nm												
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	—	—	—	—	—	—	—	—	—	—	—	
	0,55	—	—	—	—	—	—	—	—	—	—	—	
	0,63	2,40	ac	2,80	ac	2,80	ac	2,80	abcd	3,80	abcd	3,80	abcd
	0,75	2,70	—	3,50	ac	3,50	ac	3,50	ac	4,60	ac	4,60	ac
	0,88	3,10	—	4,20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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-6-5,5xL

with hexagon head and sealing washer $\geq \varnothing 16$ mm

Annex 23



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

Washer: none

Component I: S280GD to S350GD - EN 10346

Component II: S235 to S355 - EN 10025-1

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

Timber substructures:

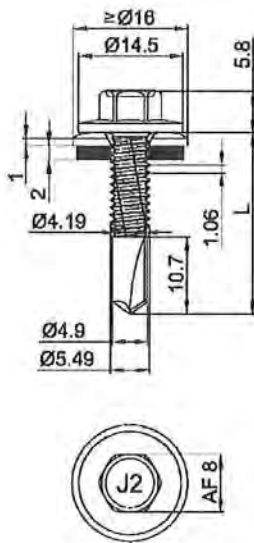
no performance determined

$t_{N,II} [\text{mm}]$	4,00	5,00	6,00	8,00
$M_{t,nom}$	7 Nm			
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$				
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 —	—
$N_{R,k} [\text{kN}]$ for $t_{N,I} =$				
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 —	—

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-8-5,5xL
with hexagon head

Annex 24



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD to S350GD - EN 10346

Component II: S235 to S355 - EN 10025-1

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

Timber substructures:

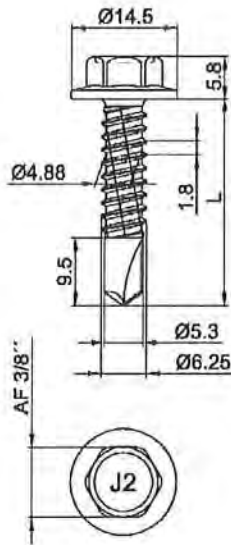
no performance determined

$t_{N,II} [\text{mm}]$	4,00	5,00	6,00	8,00
$M_{t,nom}$	7 Nm			
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$				
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 —
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 —	— —
$N_{R,k} [\text{kN}]$ for $t_{N,I} =$				
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 —	— —

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-8-5xL
with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 25



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

Washer: none

Component I: S280GD to S350GD - EN 10346

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

Drilling capacity: $\Sigma t \leq 6,50 \text{ mm}$

Timber substructures:

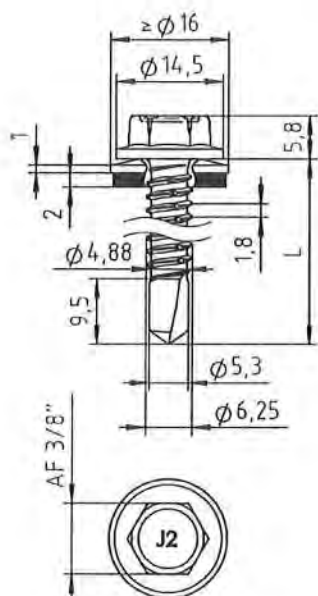
no performance determined

$t_{N,II}$ [mm]	2,00		2,50		3,00		4,00		5,00	
$M_{t,nom}$	7 Nm									
$V_{R,k}$ [kN] for $t_{N,I} =$	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 $t_{N,I} =$	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	—	— —

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-6-6,3xL
with hexagon head

Annex 26



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD to S350GD - EN 10346

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

Drilling capacity: $\Sigma t_i \leq 6,50$ mm

Timber substructures:

No performance determined

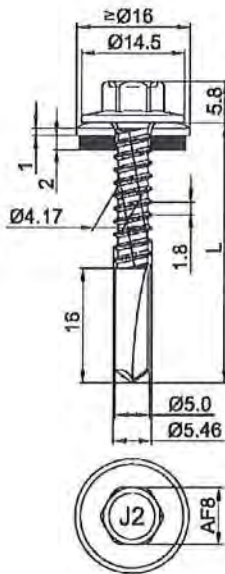
$t_{N,II}$ [mm]	2,00		2,50		3,00		4,00		5,00		6,00	
$M_{t,nom}$	7 Nm										—	
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—
	0,63	2,40	abcd	2,40	abcd	2,40	abcd	2,40	abcd	2,40	ac	—
	0,75	2,90	ac	3,10	ac	3,10	ac	3,10	ac	3,10	ac	—
	0,88	3,50	ac	3,80	ac	3,80	ac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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-6-6,3xL

with hexagon head and sealing washer $\geq \varnothing 16$ mm

Annex 27



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD - EN 10346

Component II: S235 to S355 - EN 10025-1

Drilling capacity: $\Sigma t_i \leq 13,00$ mm

Timber substructures:

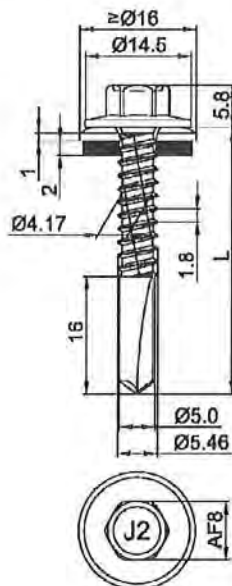
no performance determined

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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-12-5,5xL
with hexagon head and sealing washer $\geq \text{Ø}16$ mm

Annex 28



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S320GD or S350GD - EN 10346

Component II: S235 to S355 - EN 10025-1

Drilling capacity: $\Sigma t \leq 13,00$ mm

Timber substructures

no performance determined

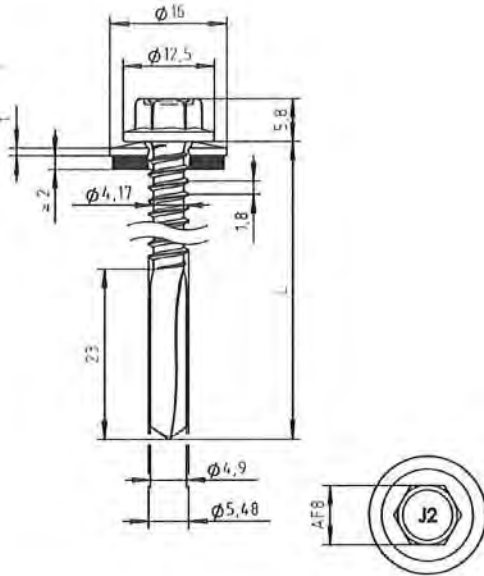
$t_{N,II}$ [mm]	4,00		5,00		6,00		8,00		10,00		12,00	
$M_{t,nom}$	7 Nm											
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—
	0,63	2,50	ac	2,50	ac	2,50	ac	2,50	ac	2,50	ac	2,50
	0,75	3,20	ac	3,20	ac	3,20	ac	3,20	ac	3,20	ac	3,20
	0,88	3,90	ac	3,90	ac	3,90	ac	3,90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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-12-5,5xL

with hexagon head and sealing washer $\geq \varnothing 16$ mm

Annex 29



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD to S350GD - EN 10346

Component II: S235 to S355 - EN 10025-1

Drilling capacity: $\Sigma t_i \leq 18,00 \text{ mm}$

Timber substructures

no performance determined

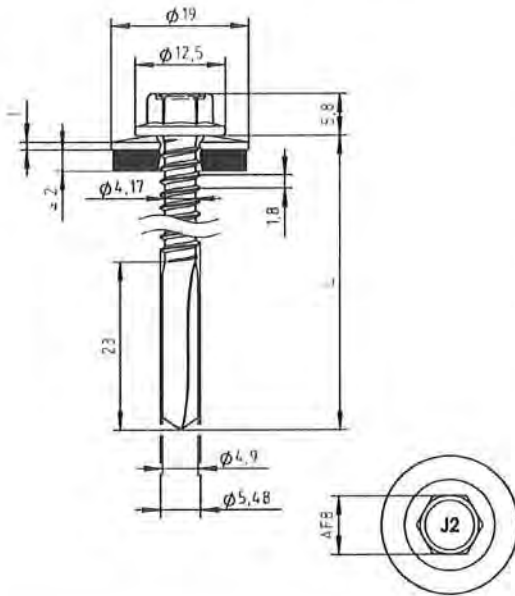
$t_{N,II} [\text{mm}]$	4,00	5,00	6,00	8,00	10,00	12,00	14,00	16,00
$M_{t,nom}$	5 Nm							
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$								
0,50	1,91	1,91	1,91	1,91	1,91	1,91	1,91	1,91
0,55	2,12	2,12	2,12	2,12	2,12	2,12	2,12	2,12
0,63	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20
0,75	2,80	2,80	2,80	2,80	2,80	2,80	2,80	2,80
0,88	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50
1,00	4,20	4,20	4,20	4,20	4,20	4,20	4,20	4,20
1,13	4,20	4,90	4,90	4,90	4,90	4,90	4,90	4,90
1,25	4,20	5,60	5,60	5,60	5,60	5,60	5,60	5,60
1,50	4,20	6,40	7,20	7,20	7,20	7,20	7,20	7,20
1,75	4,20	6,40	7,20	7,20	7,20	7,20	7,20	7,20
2,00	4,20	6,40	7,20	7,20	7,20	7,20	7,20	7,20
$N_{R,k} [\text{kN}]$ for $t_{N,I} =$								
0,50	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77
0,55	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96
0,63	2,27	2,27	2,27	2,27	2,27	2,27	2,27	2,27
0,75	2,73	2,73	2,73	2,73	2,73	2,73	2,73	2,73
0,88	3,23	3,23	3,23	3,23	3,23	3,23	3,23	3,23
1,00	3,69	3,69	3,69	3,69	3,69	3,69	3,69	3,69
1,13	4,19	4,19	4,19	4,19	4,19	4,19	4,19	4,19
1,25	4,65	4,65	4,65	4,65	4,65	4,65	4,65	4,65
1,50	4,70	5,61	5,61	5,61	5,61	5,61	5,61	5,61
1,75	4,70	5,61	5,61	5,61	5,61	5,61	5,61	5,61
2,00	4,70	5,61	5,61	5,61	5,61	5,61	5,61	5,61

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-18-5,5xL

with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 30



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD to S350GD - EN 10346

Component II: S235 to S355 - EN 10025-1

Drilling capacity: $\Sigma t_i \leq 18,00$ mm

Timber substructures:

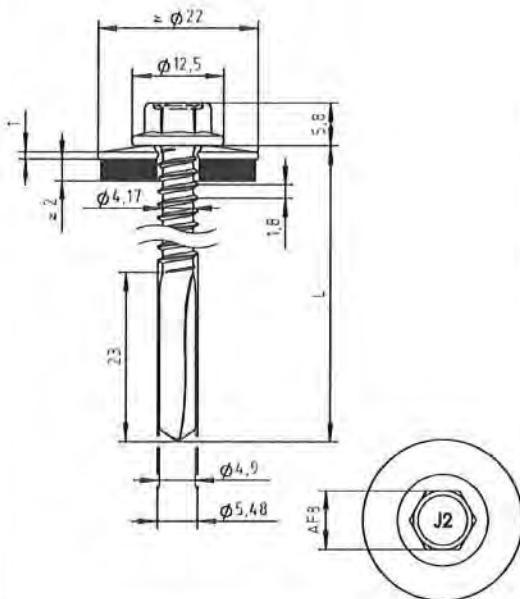
No performance determined

$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,00	12,00	14,00	16,00
$M_{t,nom}$	5 Nm							
$V_{R,k}$ [kN] for $t_{N,I} =$								
0,50	1,91	—	1,91	—	1,91	—	1,91	—
0,55	2,12	—	2,12	—	2,12	—	2,12	—
0,63	2,20	—	2,20	—	2,20	—	2,20	—
0,75	2,80	—	2,80	—	2,80	—	2,80	—
0,88	3,50	—	3,50	—	3,50	—	3,50	—
1,00	4,20	—	4,20	—	4,20	—	4,20	—
1,13	4,20	—	4,90	—	4,90	—	4,90	—
1,25	4,20	—	5,60	—	5,60	—	5,60	—
1,50	4,20	—	6,40	—	7,20	—	7,20	—
1,75	4,20	—	6,40	—	7,20	—	7,20	—
2,00	4,20	—	6,40	—	7,20	—	7,20	—
$N_{R,k}$ [kN] for $t_{N,I} =$								
0,50	2,10	—	2,10	—	2,10	—	2,10	—
0,55	2,33	—	2,33	—	2,33	—	2,33	—
0,63	2,69	—	2,69	—	2,69	—	2,69	—
0,75	3,24	—	3,24	—	3,24	—	3,24	—
0,88	3,83	—	3,83	—	3,83	—	3,83	—
1,00	4,38	—	4,38	—	4,38	—	4,38	—
1,13	4,70	—	4,97	—	4,97	—	4,97	—
1,25	4,70	—	5,52	—	5,52	—	5,52	—
1,50	4,70	—	6,40	—	6,40	—	6,40	—
1,75	4,70	—	6,40	—	6,40	—	6,40	—
2,00	4,70	—	6,40	—	6,40	—	6,40	—

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-18-5,5xL
with hexagon head and sealing washer $\geq \varnothing 19$ mm

Annex 31



Materials:

Fastener: carbon steel
case hardened and corrosion-resistant

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

Component I: S280GD to S350GD - EN 10346

Component II: S235 to S355 - EN 10025-1

Drilling capacity: $\Sigma t \leq 18,00$ mm

Timber substructures:

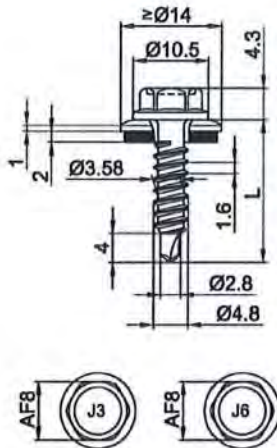
No performance determined

$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,00	12,00	14,00	16,00
$M_{t,nom}$	5 Nm							
$V_{R,k}$ [kN] for $t_{N,I} =$								
0,50	1,91	—	1,91	—	1,91	—	1,91	—
0,55	2,12	—	2,12	—	2,12	—	2,12	—
0,63	2,20	—	2,20	—	2,20	—	2,20	—
0,75	2,80	—	2,80	—	2,80	—	2,80	—
0,88	3,50	—	3,50	—	3,50	—	3,50	—
1,00	4,20	—	4,20	—	4,20	—	4,20	—
1,13	4,20	—	4,90	—	4,90	—	4,90	—
1,25	4,20	—	5,60	—	5,60	—	5,60	—
1,50	4,20	—	6,40	—	7,20	—	7,20	—
1,75	4,20	—	6,40	—	7,20	—	7,20	—
2,00	4,20	—	6,40	—	7,20	—	7,20	—
$N_{R,k}$ [kN] for $t_{N,I} =$								
0,50	2,43	—	2,43	—	2,43	—	2,43	—
0,55	2,69	—	2,69	—	2,69	—	2,69	—
0,63	3,12	—	3,12	—	3,12	—	3,12	—
0,75	3,75	—	3,75	—	3,75	—	3,75	—
0,88	4,44	—	4,44	—	4,44	—	4,44	—
1,00	4,70	—	5,07	—	5,07	—	5,07	—
1,13	4,70	—	5,76	—	5,76	—	5,76	—
1,25	4,70	—	6,39	—	6,39	—	6,39	—
1,50	4,70	—	6,40	—	6,40	—	6,40	—
1,75	4,70	—	6,40	—	6,40	—	6,40	—
2,00	4,70	—	6,40	—	6,40	—	6,40	—

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT2-18-5,5xL
with hexagon head and sealing washer $\geq \phi 22$ mm

Annex 32



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

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

Drilling capacity: $\Sigma t \leq 2,20$ mm

Timber substructures:

no performance determined

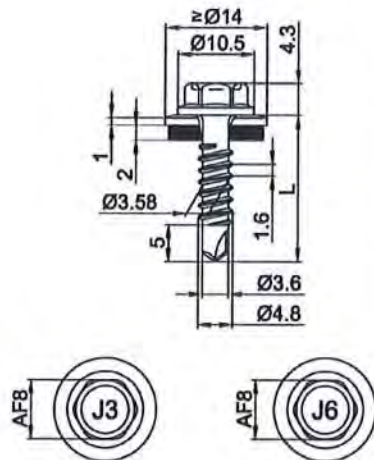
$t_{N,II}$ [mm]	0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75
$M_{t,nom}$	—										
$V_{R,k}$ [kN] for $t_{N,I} =$	0,40	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55
	0,50	0,55	0,89	0,89	0,89	0,89	0,89	0,89	0,89	0,89	—
	0,55	0,55	0,89	1,06	1,06	1,06	1,06	1,06	1,06	1,06	—
	0,63	0,55	0,89	1,06	1,28	1,28	1,28	1,28	1,28	1,28	—
	0,75	0,55	0,89	1,06	1,28	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	—	—
	1,00	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 $t_{N,I} =$	0,40	0,42	0,62	0,72	0,88	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	—
	0,55	0,42	0,62	0,72	0,88	1,12	1,38	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	—
	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%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-2H-4,8xL, JT6-2H-4,8xL
with undercut and hexagon head and sealing washer $\geq \varnothing 14$ mm

Annex 33



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

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

Drilling capacity: $\Sigma t \leq 3,25 \text{ mm}$

Timber substructures:

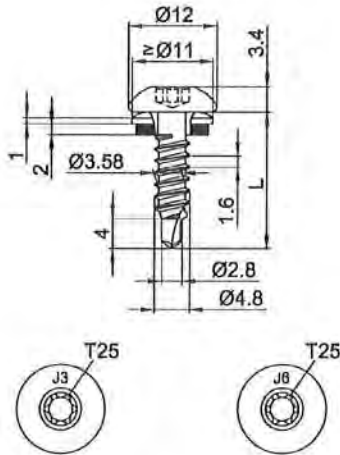
no performance determined

$t_{N,II}$ [mm]	0,75		0,88		1,00		1,13		1,25		1,50		2,00		
$M_{t,nom}$	3 Nm														
$V_{R,k}$ [kN] for $t_{N,j} =$	0,50	1,00	ac	1,10	ac	1,20	ac	1,20	ac	1,20	abcd	1,20	abc	1,20	ab
	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	—	2,00	ac	2,00	ac	2,10	ac	2,10	ac	2,10	a
	0,88	1,60	—	1,90	—	2,50	—	2,50	—	2,70	—	2,70	—	2,70	a
	1,00	1,60	—	2,10	—	2,90	—	2,90	—	3,10	—	3,10	—	3,10	a
	1,13	1,60	—	2,10	—	2,90	—	2,90	—	3,40	—	3,40	—	3,50	—
	1,25	1,60	—	2,10	—	2,90	—	2,90	—	3,70	—	3,70	—	3,80	—
	1,50	1,60	—	2,10	—	2,90	—	2,90	—	3,70	—	3,70	—	—	—
	1,75	1,60	—	2,10	—	2,90	—	2,90	—	3,70	—	3,70	—	—	—
	2,00	1,60	—	2,10	—	2,90	—	2,90	—	3,70	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,j} =$	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	—	—	—	—	—

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-3H-4,8xL, JT6-3H-4,8xL
with undercut, hexagon head and sealing washer $\geq \text{Ø}14 \text{ mm}$

Annex 34



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

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

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

Timber substructures:

no performance determined

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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-FR-2H-4,8xL, JT6-FR-2H-4,8xL

with undercut round head with Torx® drive system and sealing washer $\geq \text{Ø}11 \text{ mm}$

Annex 35

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 Component I: S280GD to S350GD – EN 10346 Component II: timber – EN 14081 Drilling capacity: $\Sigma t_i \leq 2 \times 1,00 \text{ mm}$ Timber substructures: performance determined with $M_{y,Rk} = 5,990 \text{ Nm}$ $f_{ax,k} = 9,800 \text{ N/mm}^2 \text{ for } l_{ef} \geq 20 \text{ mm}$
--	--

$t_{N,i}$ [mm]	l_g [mm]											
	25	27	30	32	35	37	40	42	45	47	50	
$V_{R,k}$ [kN] for $t_{N,i} =$	0,40	1,33	1,33	1,33	1,33	1,33	1,33	1,33	1,33	1,33	1,33	1,33
	0,50	1,36	1,39	1,42	1,44	1,47	1,50	1,53	1,55	1,58	1,61	1,63
	0,55	1,36	1,39	1,42	1,44	1,47	1,50	1,53	1,55	1,58	1,61	1,63
	0,63	1,36	1,39	1,42	1,44	1,47	1,50	1,53	1,55	1,58	1,61	1,63
	0,75	1,36	1,39	1,42	1,44	1,47	1,50	1,53	1,55	1,58	1,61	1,63
	0,88	1,36	1,39	1,42	1,44	1,47	1,50	1,53	1,55	1,58	1,61	1,63
	1,00	1,36	1,39	1,42	1,44	1,47	1,50	1,53	1,55	1,58	1,61	1,63
	1,13	—	—	—	—	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—	—	—	—	—
	1,50	—	—	—	—	—	—	—	—	—	—	—
	1,75	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,i} =$	0,40	0,85	0,95	0,95	0,95	0,95	0,95	0,95	0,95	0,95	0,95	0,95
	0,50	0,85	0,96	1,06	1,17	1,21	1,21	1,21	1,21	1,21	1,21	1,21
	0,55	0,85	0,96	1,06	1,17	1,28	1,35	1,35	1,35	1,35	1,35	1,35
	0,63	0,85	0,96	1,06	1,17	1,28	1,39	1,50	1,56	1,56	1,56	1,56
	0,75	0,85	0,96	1,06	1,17	1,28	1,39	1,50	1,60	1,71	1,82	1,87
	0,88	0,85	0,96	1,06	1,17	1,28	1,39	1,50	1,60	1,71	1,82	1,93
	1,00	0,85	0,96	1,06	1,17	1,28	1,39	1,50	1,60	1,71	1,82	1,93
	1,13	—	—	—	—	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—	—	—	—	—
	1,50	—	—	—	—	—	—	—	—	—	—	—
	1,75	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—

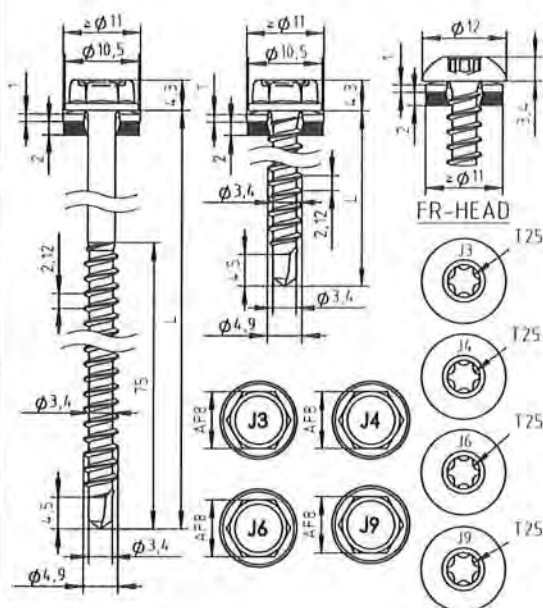
– The values indicated above, depending on the screw depth l_g , shall apply for $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and timber strength classes see section 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-2-4,9xL, JT6-(FR)-2-4,9xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

Annex 36



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: timber – EN 14081

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

Timber substructures:

performance determined with

$M_{y,Rk} = 5,990 \text{ Nm}$

$f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 20 \text{ mm}$

$t_{N,I}$ [mm]	l_g [mm]										
	25	27	29	31	33	35	37	39	41		
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	0,50 —	0,50 —	0,50 —	0,50 —	0,50 —	0,50 —	0,50 —	0,50 —	0,50	
	0,60	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	
	0,80	0,73 —	0,81 —	0,88 —	0,95 —	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	
	1,00	0,73 —	0,81 —	0,88 —	0,95 —	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	
	1,50	0,73 —	0,81 —	0,88 —	0,95 —	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	
$N_{R, II, k}$ [kN] =	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	

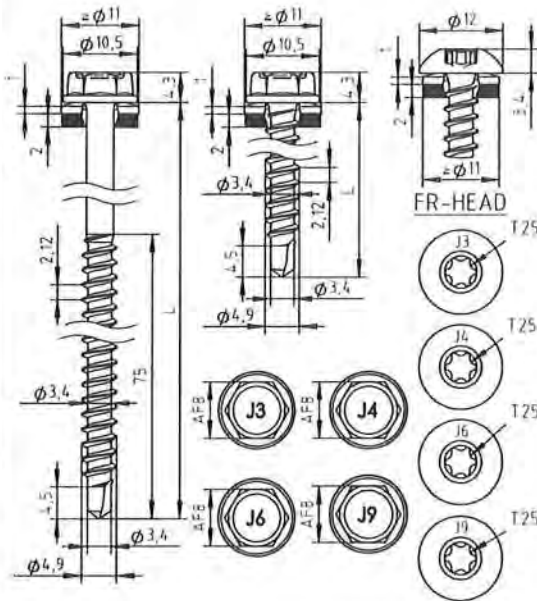
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
- The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-2-4,9xL, JT6-(FR)-2-4,9xL, JT4-(FR)-2-4,9xL,
JT9-(FR)-2-4,9xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 11 \text{ mm}$

Annex 37



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: timber – EN 14081

Drilling capacity: $\Sigma t \leq 2,00 \text{ mm}$

Timber substructures:

performance determined with

$M_{y,Rk} = 5,990 \text{ Nm}$

$f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 20 \text{ mm}$

$t_{N,I}$ [mm]	L_g [mm]									
	25	27	29	31	33	35	37	39	41	
$V_{R,k}$ [kN] for $t_{N,I} =$										bearing resistance of component I
0,50	0,66	—	0,66	—	0,66	—	0,66	—	0,66	
0,60	0,73	—	0,81	—	0,87	—	0,87	—	0,87	
0,70	0,73	—	0,81	—	0,88	—	0,95	—	1,03	
0,80	0,73	—	0,81	—	0,88	—	0,95	—	1,03	
0,90	0,73	—	0,81	—	0,88	—	0,95	—	1,03	
1,00	0,73	—	0,81	—	0,88	—	0,95	—	1,03	
1,20	0,73	—	0,81	—	0,88	—	0,95	—	1,03	
1,50	0,73	—	0,81	—	0,88	—	0,95	—	1,03	failure of component II see chapter 4.2.2
2,00	0,73	—	0,81	—	0,88	—	0,95	—	1,03	
$N_{R,II,k}$ [kN] =	0,86	0,95	1,04	1,12	1,21	1,30	1,38	1,47	1,56	

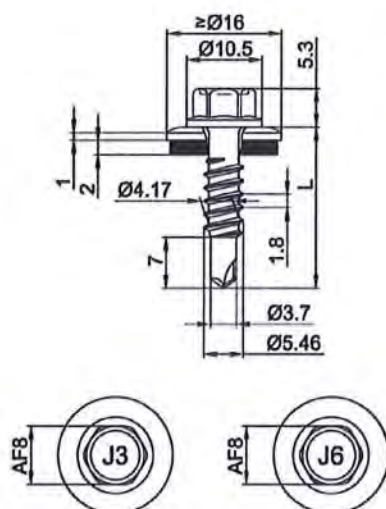
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
- The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-2-4,9xL, JT6-(FR)-2-4,9xL, JT4-(FR)-2-4,9xL,
JT9-(FR)-2-4,9xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

Annex 38



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S235 – EN 10025-1
S280GD to 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	
$M_{I,nom}$	5 Nm															
$V_{R,k}$ [kN] for $t_{N,I} =$	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 $t_{N,I} =$	0,50	0,32	—	0,43	—	0,49	—	0,59	—	0,76	—	0,81	—	1,08	ac	1,08
	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-2H-5,5xL, JT6-2H-5,5xL
with undercut, hexagon head and sealing washer $\geq \text{Ø}16$ mm

Annex 39

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Drilling capacity: $\Sigma t_i \leq 2,00 \text{ mm}$ Timber substructures: performance determined with $M_{y,Rk} = 7,911 \text{ Nm}$ $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 24 \text{ mm}$ $f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 28 \text{ mm}$
--	--

$t_{N,II} [\text{mm}]$	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50	
$M_{t,nom}$	—									
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$										bearing resistance of component I
0,40	0,29	—	0,29	—	0,29	—	0,29	—	0,29	
0,50	0,29	—	0,42	—	0,51	—	0,60	—	0,69	
0,60	0,29	—	0,42	—	0,53	—	0,63	—	0,71	
0,70	0,29	—	0,42	—	0,53	—	0,65	—	0,74	
0,80	0,29	—	0,42	—	0,53	—	0,65	—	0,76	
0,90	0,29	—	0,42	—	0,55	—	0,68	—	0,81	
1,00	0,29	—	0,42	—	0,56	—	0,71	—	0,85	
1,20	0,29	—	0,42	—	0,59	—	0,77	—	0,94	1,24
1,50	0,29	—	0,42	—	—	—	—	—	—	1,59
$N_{R,II,k} [\text{kN}] =$	0,22	0,28	0,35	0,43	0,50	0,58	0,68	0,86	1,18	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 national technical approval Z-14.4-426.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-2-6,0xL, JT6-(FR)-2-6,0xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 40

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 timber – EN 14081 Drilling capacity: $\Sigma t_i \leq 2,00 \text{ mm}$ Timber substructures: performance determined with $M_{y,Rk} = 7,911 \text{ Nm}$ $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 24 \text{ mm}$ $f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 28 \text{ mm}$
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$t_{N,II} [\text{mm}]$	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50	
$M_{t,nom}$	—									
$V_{R,k} [\text{kN}]$ 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 —	0,38 — 0,38 —	0,38 — 0,38 —	0,38 — 0,38 —	0,38
	0,50	0,38 — 0,55 —	0,67 — 0,67 —	0,78 — 0,78 —	0,90 — 0,90 —	0,98 — 0,98 —	1,05 — 1,05 —	1,05 — 1,05 —	1,05 — 1,05 —	1,05
	0,60	0,38 — 0,55 —	0,70 — 0,70 —	0,81 — 0,81 —	0,93 — 0,93 —	1,02 — 1,02 —	1,10 — 1,10 —	1,10 — 1,10 —	— —	1,10
	0,70	0,38 — 0,55 —	0,70 — 0,70 —	0,84 — 0,84 —	0,96 — 0,96 —	1,07 — 1,07 —	1,15 — 1,15 —	1,15 — 1,15 —	— —	1,15
	0,80	0,38 — 0,55 —	0,70 — 0,70 —	0,84 — 0,84 —	0,99 — 0,99 —	1,11 — 1,11 —	1,20 — 1,20 —	1,20 — 1,20 —	— —	1,20
	0,90	0,38 — 0,55 —	0,72 — 0,72 —	0,88 — 0,88 —	1,05 — 1,05 —	1,15 — 1,15 —	1,25 — 1,25 —	1,25 — 1,25 —	— —	1,25
	1,00	0,38 — 0,55 —	0,74 — 0,74 —	0,92 — 0,92 —	1,11 — 1,11 —	1,21 — 1,21 —	1,30 — 1,30 —	— —	— —	1,30
	1,20	0,38 — 0,55 —	0,78 — 0,78 —	1,00 — 1,00 —	1,23 — 1,23 —	— —	— —	— —	— —	1,61
	1,50	0,38 — 0,55 —	— —	— —	— —	— —	— —	— —	— —	2,08
$N_{R,II,k} [\text{kN}] =$		0,29	0,37	0,46	0,55	0,64	0,75	0,87	1,12	1,53
										failure of component III 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 national technical approval Z-14.4-426.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-2-6,0xL, JT6-(FR)-2-6,0xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 14 \text{ mm}$

Annex 41

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: S235 – EN 10025-1 S280GD, S320GD – EN 10346 timber – EN 14081 Drilling capacity: $\Sigma t_i \leq 2,00 \text{ mm}$
	Timber substructures: performance determined with $M_{y,Rk} = 7,911 \text{ Nm}$ $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 24 \text{ mm}$ $f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 28 \text{ mm}$

$t_{N,II} [\text{mm}]$	0,40	0,50	0,63	0,75	0,88	1,00	1,25	1,50	
$M_{t,nom}$	—								
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$									bearing resistance of component I
0,40	0,29	—	0,29	—	0,29	—	0,29	—	
0,50	0,40	—	0,40	—	0,65	—	0,73	—	
0,60	0,40	—	0,50	—	0,67	—	0,76	—	
0,70	0,40	—	0,50	—	0,61	—	0,70	—	
0,80	0,40	—	0,50	—	0,61	—	0,71	—	
0,90	0,40	—	0,50	—	0,61	—	0,75	—	
1,00	0,40	—	0,50	—	0,61	—	0,78	—	
1,20	0,40	—	0,50	—	0,61	—	0,86	—	1,24
1,50	0,40	—	0,50	—	0,61	—	—	—	1,59
$N_{R,II,k} [\text{kN}] =$	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 national technical approval Z-14.4-426.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-2-6,0xL, JT6-(FR)-2-6,0xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 42

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: S235 – EN 10025-1 S280GD, S320GD – EN 10346 timber – EN 14081 Drilling capacity: $\Sigma t \leq 2,00 \text{ mm}$ Timber substructures: performance determined with $M_{y,Rk} = 7,911 \text{ Nm}$ $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 24 \text{ mm}$ $f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 28 \text{ mm}$
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$t_{N,II} [\text{mm}]$	0,40	0,50	0,63	0,75	0,88	1,00	1,25	1,50	
$M_{t,nom}$	—								
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$									bearing resistance of component I
0,40	0,38	—	0,38	—	0,38	—	0,38	—	
0,50	0,52	—	0,52	—	0,84	—	0,95	—	
0,60	0,52	—	0,65	—	0,87	—	0,99	—	
0,70	0,52	—	0,65	—	0,79	—	0,90	—	
0,80	0,52	—	0,65	—	0,79	—	0,92	—	
0,90	0,52	—	0,65	—	0,79	—	0,97	—	
1,00	0,52	—	0,65	—	0,79	—	1,02	—	
1,20	0,52	—	0,65	—	0,79	—	1,12	—	1,61
1,50	0,52	—	0,65	—	0,79	—	—	—	2,08
$N_{R,II,k} [\text{kN}] =$	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 national technical approval Z-14.4-426.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-2-6,0xL, JT6-(FR)-2-6,0xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 43

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: timber – EN 14081 Drilling capacity: $\Sigma t \leq 2,00 \text{ mm}$ Timber substructures: performance determined with $M_{y,Rk} = 7,911 \text{ Nm}$ $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 24 \text{ mm}$ $f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 28 \text{ mm}$
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$t_{N,I}$ [mm]	l_g [mm]							
	31	36	41	46	51	56	≥ 61	
$V_{R,k}$ [kN] for $t_{N,I} =$	0,40	0,29 —	0,29 —	0,29 —	0,29 —	0,29 —	0,29 —	0,29
	0,50	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
	0,70	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
	0,90	0,97 —	0,97 —	0,97 —	0,97 —	0,97 —	0,97 —	0,97
	1,00	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —	1,00
	1,20	1,24 —	1,24 —	1,24 —	1,24 —	1,24 —	1,24 —	1,24
	1,50	1,59 —	1,59 —	1,59 —	1,59 —	1,59 —	1,59 —	1,59
	2,00	1,59 —	1,59 —	1,59 —	1,59 —	1,59 —	1,59 —	1,59
$N_{R, II, k}$ [kN] =	1,11	1,34	1,80	2,06	2,33	2,59	2,86	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 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 national technical approval 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 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Annex 44

Self-drilling screw JT3-(FR)-2-6,0xL, JT6-(FR)-2-6,0xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 16 \text{ mm}$

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: timber – EN 14081
	Drilling capacity: $\Sigma t_i \leq 2,00 \text{ mm}$
	Timber substructures: performance determined with $M_{y,Rk} = 7,911 \text{ Nm}$ $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 24 \text{ mm}$ $f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 28 \text{ mm}$

$t_{N,I}$ [mm]	l_g [mm]								
	31	36	41	46	51	56	≥ 61		
$V_{R,k}$ [kN] for $t_{N,I} =$	0,40	0,38 —	0,38 —	0,38 —	0,38 —	0,38 —	0,38 —	0,38 —	0,38
	0,50	1,05 —	1,05 —	1,05 —	1,05 —	1,05 —	1,05 —	1,05 —	1,05
	0,60	1,10 —	1,10 —	1,10 —	1,10 —	1,10 —	1,10 —	1,10 —	1,10
	0,70	1,15 —	1,15 —	1,15 —	1,15 —	1,15 —	1,15 —	1,15 —	1,15
	0,80	1,20 —	1,20 —	1,20 —	1,20 —	1,20 —	1,20 —	1,20 —	1,20
	0,90	1,25 —	1,25 —	1,25 —	1,25 —	1,25 —	1,25 —	1,25 —	1,25
	1,00	1,30 —	1,30 —	1,30 —	1,30 —	1,30 —	1,30 —	1,30 —	1,30
	1,20	1,61 —	1,61 —	1,61 —	1,61 —	1,61 —	1,61 —	1,61 —	1,61
	1,50	1,67 —	1,73 —	1,85 —	1,91 —	1,98 —	2,04 —	2,08 —	2,08
	2,00	1,67 —	1,73 —	1,85 —	1,91 —	1,98 —	2,04 —	2,08 —	2,08
$N_{R,I,k}$ [kN] =	1,11	1,34	1,80	2,06	2,33	2,59	2,86	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 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 national technical approval 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 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-2-6,0xL, JT6-(FR)-2-6,0xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 45

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S280GD to S350GD – EN 10346 Component II: S235 to S275 – EN 10025-1 S280GD to S450GD – EN 10346 HX300LAD to HX460LAD – EN 10346 Drilling capacity: $\Sigma t_i \leq 3,50 \text{ mm}$ Timber substructures: no performance determined
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$t_{N,II} [\text{mm}]$	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				
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$											
0,50	0,56	0,60	0,64	0,68	0,83	0,98	1,13	1,13	1,13	1,13	1,13
0,55	0,58	0,67	0,73	0,78	0,94	1,09	1,25	1,25	1,25	1,25	1,25
0,63	0,60	0,71	0,82	0,87	1,04	1,21	1,38	1,38	1,38	1,38	1,38
0,75	0,62	0,74	0,86	0,97	1,15	1,33	1,51	1,51	1,51	1,51	1,51
0,88	0,62	0,74	0,86	1,02	1,42	2,04	2,67	2,67	2,67	2,67	2,67
1,00	0,62	0,74	0,86	1,06	1,56	2,15	2,77	2,77	2,77	2,77	2,77
1,13	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92	3,92
1,25	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92	3,92
1,50	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92	3,92
1,75	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92	—
2,00	0,62	0,74	0,86	1,11	1,70	2,28	2,87	3,22	3,57	3,92	—
$N_{R,k} [\text{kN}]$ for $t_{N,I} =$											
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 component I is made of S320GD or S350GD and component II is made of S320GD to S450GD respectively HX340LAD to HX460LAD the values may be increased by 8,3%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)2H-Plus-5,5xL, JT6-(FR-)2H-Plus-5,5xL
with undercut, hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}16 \text{ mm}$

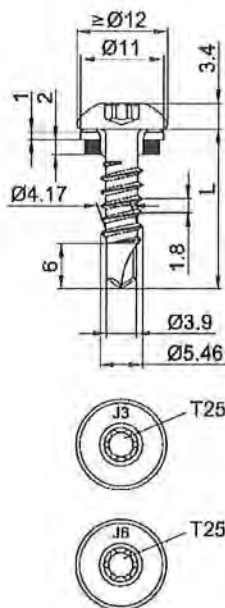
Annex 46

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S280GD, S320GD or S350GD – EN 10346 Component II: S280GD to S350GD – EN 10346 Drilling capacity: $\Sigma t_i \leq 3,50 \text{ mm}$ Timber substructures: no performance determined
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$t_{N,II} [\text{mm}]$	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		
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$						
0,40	—	—	—	—	—	—
0,50	—	—	—	—	—	—
0,55	—	—	—	—	—	—
0,63	1,65	1,78	1,91	2,04	2,04	2,04
0,75	1,65	2,60	2,76	2,92	2,92	2,92
0,88	1,65	2,60	3,39	3,55	3,55	3,55
1,00	1,65	2,60	3,39	4,17	4,17	4,17
1,13	1,65	2,60	3,39	4,17	4,17	—
1,25	1,65	2,60	3,39	4,17	—	—
1,50	1,65	2,60	3,39	4,17	—	—
1,75	1,65	2,60	—	—	—	—
$N_{R,k} [\text{kN}]$ for $t_{N,I} =$						
0,40	1,01	1,48	1,48	1,48	1,48	1,48
0,50	1,01	1,65	1,65	1,65	1,65	1,65
0,55	1,01	1,78	1,83	1,83	1,83	1,83
0,63	1,01	1,78	2,23	2,23	2,23	2,23
0,75	1,01	1,78	2,31	2,84	2,84	2,84
0,88	1,01	1,78	2,31	2,84	2,84	2,84
1,00	1,01	1,78	2,31	2,84	2,84	2,84
1,13	1,01	1,78	2,31	2,84	2,84	—
1,25	1,01	1,78	2,31	2,84	—	—
1,50	1,01	1,78	2,31	2,84	—	—
1,75	1,01	1,78	—	—	—	—

- If both component I is made of S320GD or S350GD and component II is made of S320GD to S450GD respectively HX340LAD to HX460LAD the values may be increased by 8,3%.

Fastening screws JA, JB, JT, JZ and JF	
Self-drilling screw JT3-(FR-)2H-Plus-5,5xL, JT6-(FR-)2H-Plus-5,5xL with undercut, hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}16 \text{ mm}$	Annex 47



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

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

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

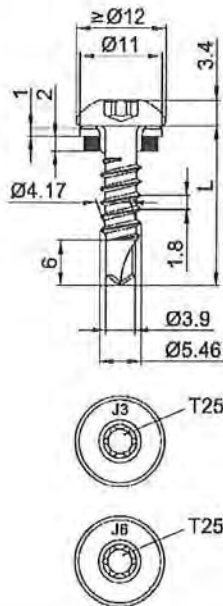
- If both component I is made of S320GD or S350GD and component II is made of S320GD to S450GD respectively HX340LAD to HX460LAD the values may be increased by 8,3%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-FR-2H-Plus-5,5xL, JT6-FR-2H-Plus-5,5xL

with undercut, hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 11$ mm

Annex 48



Materials:

Fastener: stainless steel (A2) – EN ISO 3506

stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S280GD to S350GD – EN 10346

Drilling capacity: $\Sigma t \leq 3,50 \text{ mm}$

Timber substructures:

no performance determined

$t_{N,II} [\text{mm}]$	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		
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$						
0,40	—	—	—	—	—	—
0,50	—	—	—	—	—	—
0,55	—	—	—	—	—	—
0,63	1,65	1,78	1,91	2,04	2,04	2,04
0,75	1,65	2,60	2,76	2,92	2,92	2,92
0,88	1,65	2,60	3,39	3,55	3,55	3,55
1,00	1,65	2,60	3,39	4,17	4,17	4,17
1,13	1,65	2,60	3,39	4,17	4,17	—
1,25	1,65	2,60	3,39	4,17	—	—
1,50	1,65	2,60	3,39	4,17	—	—
1,75	1,65	2,60	—	—	—	—
$N_{R,k} [\text{kN}]$ for $t_{N,I} =$						
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%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-FR-2H-Plus-5,5xL, JT6-FR-2H-Plus-5,5xL

with undercut, round head with Torx® drive system and sealing washer $\geq \text{Ø}11 \text{ mm}$

Annex 49

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Drilling capacity: $\Sigma t_i \leq 3,50 \text{ mm}$ Timber substructures: no performance determined
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$t_{N,II}$ [mm]	0,40		0,50		0,60		0,70		0,80		0,90		1,00		1,20		1,50		
$M_{t,nom}$	—																		
$V_{R,k}$ [kN] for $t_{N,j} =$	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	0,19	—	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	—
$N_{R,II,k}$ [kN] =	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)2H-Plus-5,5xL, JT6-(FR-)2H-Plus-5,5xL

with undercut, round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

Annex 50

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Drilling capacity: $\Sigma t \leq 3,50 \text{ mm}$ Timber substructures: no performance determined
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t _{N,II} [mm]	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50	
M _{t,nom}	—									
V _{R,k} [kN] 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} [kN] =	0,19	0,28	0,37	0,47	0,56	0,65	0,73	0,95	1,19	

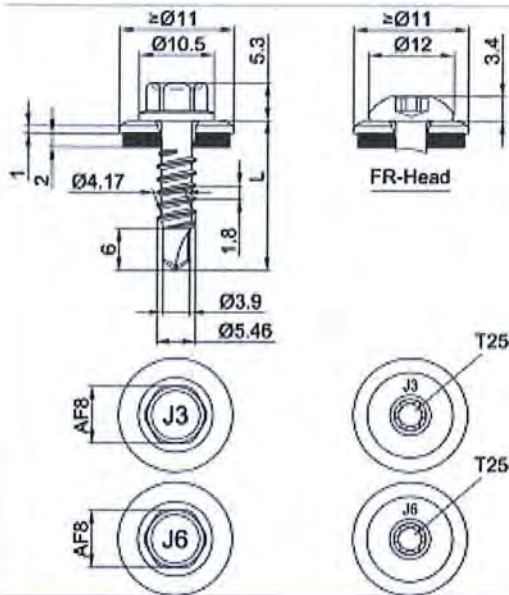
— Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)2H-Plus-5,5xL, JT6-(FR-)2H-Plus-5,5xL

with undercut, round head with Torx® drive system and sealing washer $\geq \text{Ø}11 \text{ mm}$

Annex 51



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

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

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

Timber substructures:

no performance determined

t _{N,II} [mm]	0,40	0,50	0,63	0,75	0,88	1,00	1,25	1,50	2,00
M _{t,nom}	—								
V _{R,k} [kN] for t _{N,I} =	0,40	0,19 —	0,19 —	0,19 —	0,19 —	0,19 —	0,19 —	0,19 ac	0,19 ac
	0,50	0,35 —	0,35 —	0,35 —	0,40 —	0,47 —	0,53 —	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
	0,70	0,35 —	0,42 —	0,49 —	0,53 —	0,61 —	0,68 —	0,84 —	0,99 ac
	0,80	0,35 —	0,42 —	0,49 —	0,56 —	0,66 —	0,76 —	0,99 —	1,22 ac
	0,90	0,35 —	0,42 —	0,49 —	0,56 —	0,70 —	0,83 —	1,03 —	1,34 —
	1,00	0,35 —	0,42 —	0,49 —	0,56 —	0,74 —	0,91 —	0,19 —	1,47 —
	1,20	0,35 —	0,42 —	0,49 —	0,56 —	0,74 —	0,91 —	1,31 —	1,71 —
	1,50	0,35 —	0,42 —	0,49 —	0,56 —	0,74 —	0,91 —	1,50 —	2,08 —
N _{R,II,k} [kN] =	0,30	0,41	0,56	0,73	1,06	1,40	0,73	2,59	2,59

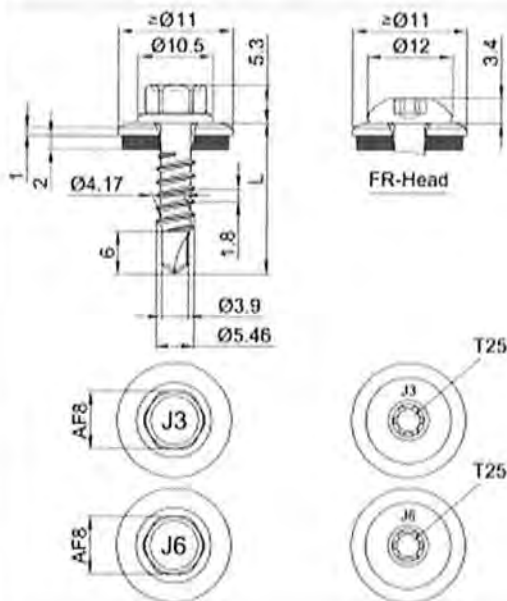
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
- Component II of steel S320GD the indicated values of the pull-out resistance $N_{R,II,k}$ can be increased by 8,0%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)2H-Plus-5,5xL, JT6-(FR-)2H-Plus-5,5xL

with undercut, round head with Torx® drive system and sealing washer $\geq \text{Ø}11 \text{ mm}$

Annex 52



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: S280GD to S350GD – EN 10346

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

Timber substructures:

no performance determined

$t_{N,II} [\text{mm}]$	2x0,63	2x0,75	2x0,88	3x1,00	2x1,13	2x1,25
$M_{t,nom}$	—					
$V_{R,k} [\text{kN}]$ 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	— —	— —
$N_{R,II,k} [\text{kN}] =$	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 the indicated values of the pull-out resistance $N_{R,II,k}$ can be increased by 8,0%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)2H-Plus-5,5xL, JT6-(FR-)2H-Plus-5,5xL

with undercut, round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

Annex 53

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: S235 to S275 – EN 10025-1 S280GD to S350GD – EN 10346 HX300LAD to HX460LAD – EN 10346 Drilling capacity: $\Sigma t_i \leq 3,50 \text{ mm}$ Timber substructures: no performance determined
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$t_{N,II}$ [mm]	0,40	0,50	0,63	0,75	0,88	1,00	1,25	1,50	2,00	
$M_{t,nom}$	—									
$V_{R,k}$ [kN] 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 a	0,99 ac	0,99 ac
	0,70	0,46 —	0,55 —	0,64 —	0,69 —	0,78 —	0,86 —	1,08 a	1,29 ac	1,29 ac
	0,80	0,46 —	0,55 —	0,64 —	0,73 —	0,83 —	0,93 —	1,26 a	1,59 ac	1,59 a
	0,90	0,46 —	0,55 —	0,64 —	0,73 —	0,87 —	1,00 —	1,38 a	1,75 —	1,75 —
	1,00	0,46 —	0,55 —	0,64 —	0,73 —	0,96 —	1,18 —	1,55 a	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 —
$N_{R,II,k}$ [kN] =	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 the indicated values of the pull-out resistance $N_{R,II,k}$ can be increased by 8,0%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)2H-Plus-5,5xL, JT6-(FR-)2H-Plus-5,5xL

with undercut, round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

Annex 54

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: S280GD to S350GD – EN 10346
	Drilling capacity: $\Sigma t_i \leq 3,50 \text{ mm}$
	Timber substructures: no performance determined

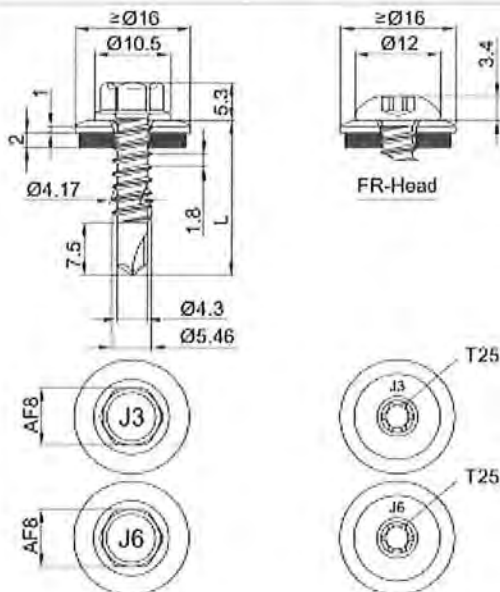
$t_{N,II}$ [mm]	2x0,63	2x0,75	2x0,88	2x1,00	2x1,13	2x1,25
$M_{t,nom}$	—					
$V_{R,k}$ [kN] for $t_{N,I} =$						
0,40	0,77 —	0,77 ac	0,77 ac	0,77 ac	0,77 ac	0,77 ac
0,50	0,96 —	0,97 ac	0,99 ac	1,00 ac	1,00 ac	1,00 ac
0,60	1,05 —	1,06 ac	1,15 ac	1,23 ac	1,23 ac	1,23 a
0,70	1,14 —	1,14 ac	1,30 ac	1,46 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	— —	— —
$N_{R,II,k}$ [kN] =	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 the indicated values of the pull-out resistance $N_{R,II,k}$ can be increased by 8,0%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)2H-Plus-5,5xL, JT6-(FR-)2H-Plus-5,5xL
with undercut, round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

Annex 55



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Drilling capacity: $\Sigma t \leq 4,20 \text{ mm}$

Timber substructures:

no performance determined

$t_{N,II} [\text{mm}]$	1,50	2,00	2,50	3,00
$M_{t,nom}$	—			
$V_{R,k} [\text{kN}]$ 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 —	— —	— —
$N_{R,II,k} [\text{kN}] =$	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)3-5,5xL, JT6-(FR-)3-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 56

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Drilling capacity: $\Sigma t_i \leq 4,20 \text{ mm}$ Timber substructures: no performance determined
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$t_{N,II} [\text{mm}]$	1,50	2,00	2,50	3,00
$M_{t,nom}$	—			
$V_{R,k} [\text{kN}]$ 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 —	— —	— —
$N_{R,II,k} [\text{kN}] =$	0,90	1,40	2,10	2,80

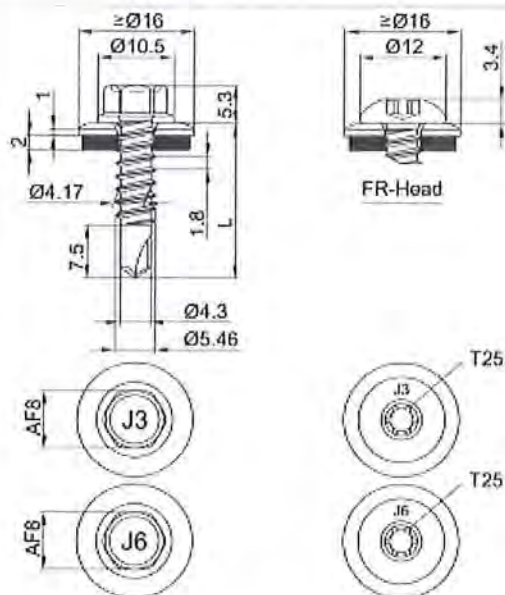
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-3-5,5xL, JT6-(FR)-3-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 57



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

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

Drilling capacity: $\Sigma t_i \leq 4,00 \text{ mm}$

Timber substructures:

no performance determined

$t_{N,II} [\text{mm}]$	1,50	2,00	2,50
$M_{t,nom}$	—		
$V_{R,k} [\text{kN}]$ 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 —	— —
$N_{R,II,k} [\text{kN}] =$	2,00	2,90	3,90

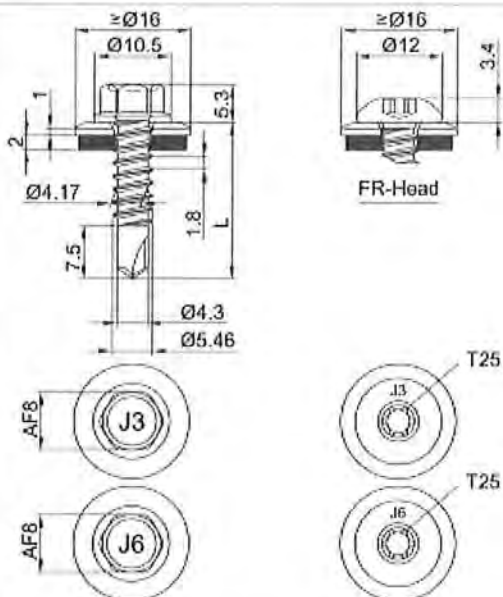
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)3-5,5xL, JT6-(FR-)3-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 58



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

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

Drilling capacity: $\Sigma t_i \leq 4,00 \text{ mm}$

Timber substructures:

no performance determined

$t_{N,II} [\text{mm}]$	1,50	2,00	2,50
$M_{t,nom}$	—		
$V_{R,k} [\text{kN}]$ 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 —	— —
$N_{R,II,k} [\text{kN}] =$	2,00	2,90	3,90

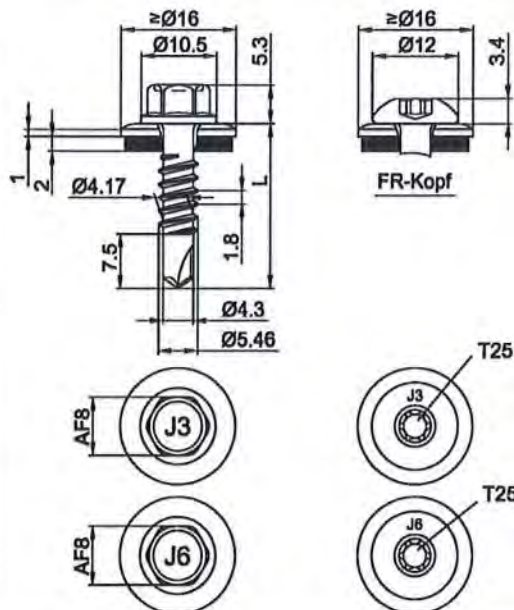
— Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-3-5,5xL, JT6-(FR)-3-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 59



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S280GD to S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 3,50$ mm

Timber substructures:

no performance determined

$t_{N,II}$ [mm]	2 x 0,75	2 x 0,88	2 x 1,00	2 x 1,13	2 x 1,25	2 x 1,50
$M_{t,nom}$	5Nm					
$V_{R,k}$ [kN] for $t_{N,I} =$						
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	—	—	—	—	—	—
2,00	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I} =$						
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	—	—	—	—	—

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)3H-5,5xL, JT6-(FR-)3H-5,5xL

with undercut, hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 16$ mm

Annex 60

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S280GD, S320GD or S350GD – EN 10346 Component II: S235 to S355 – EN 10025-1 S280GD to S350GD – EN 10346
	Drilling capacity: $\Sigma t_i \leq 3,50 \text{ mm}$
	Timber substructures: no performance determined

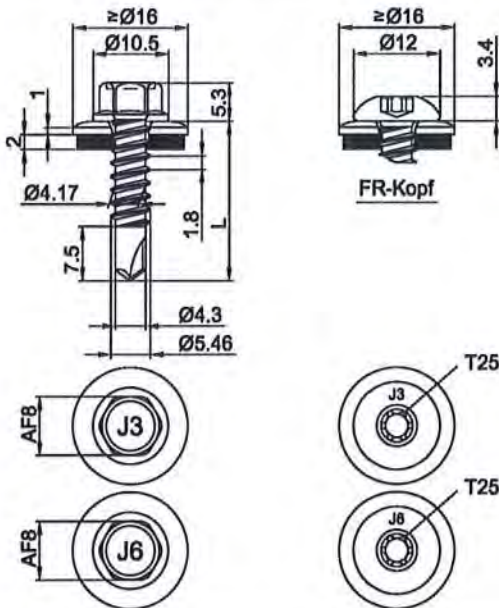
$t_{N,II}$ [mm]	1,00	1,13	1,25	1,50	2,00	2,50	3,00
$M_{t,nom}$	5Nm						
$V_{R,k}$ [kN] for $t_{N,I} =$							
0,50	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—
0,63	1,40	1,50	1,60	1,90	2,30	2,50	—
0,75	1,80	1,90	2,00	2,20	2,70	3,20	—
0,88	2,20	2,30	2,50	2,70	3,30	3,70	—
1,00	2,50	2,70	2,90	3,30	4,00	4,40	—
1,13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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-3H-5,5xL, JT6-(FR)-3H-5,5xL

with undercut, hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 61



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD, S320GD or S350GD – EN 10346

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

Drilling capacity: $\Sigma t \leq 3,50 \text{ mm}$

Timber substructures:

no performance determined

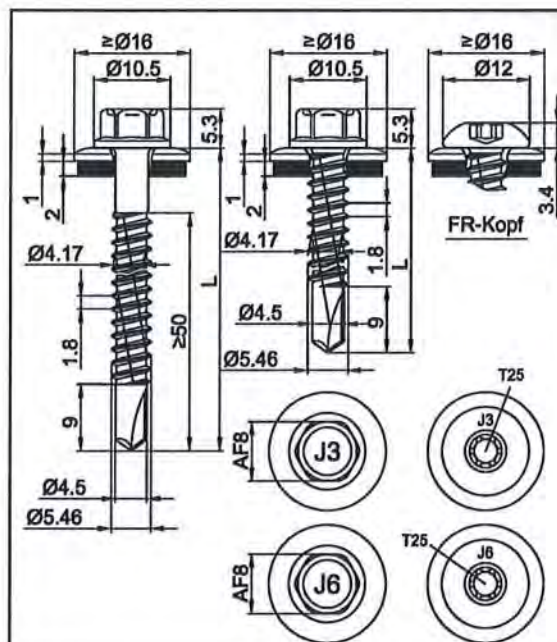
$t_{N,II}$ [mm]	1,00	1,13	1,25	1,50	2,00	2,50	3,00
$M_{t,nom}$	5Nm						
$V_{R,k}$ [kN] for $t_{N,I} =$							
0,50	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—
0,63	1,40	1,40	1,70	2,00	2,50 ac	2,70 ac	—
0,75	1,80	1,80	2,20	2,40	3,00	3,50 a	—
0,88	2,10	2,10	2,50	2,90	3,30	3,60 a	—
1,00	2,50	2,50	2,90	3,20	4,00	4,40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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-3-5,5xL, JT6-(FR)-3-5,5xL

with undercut, hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 62



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

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

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

Timber substructures:

no performance determined

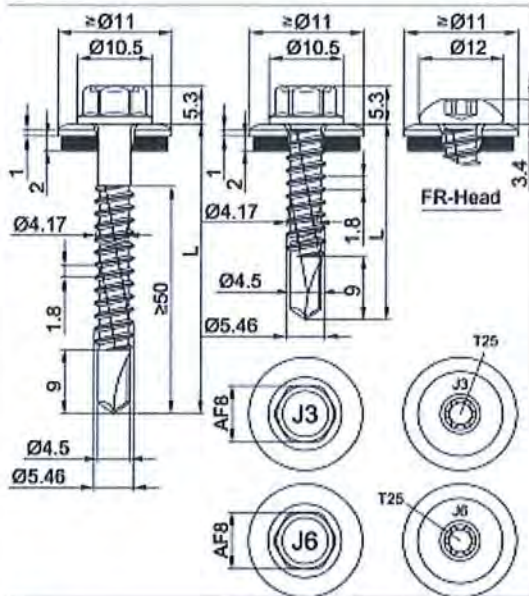
$t_{N,II}$ [mm]	1,00		2,00		2,50		3,00		4,00		2x1,50		
$M_{t,nom}$	5 Nm												
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	—	—	—	—	—	—	—	—	—	—	—	
	0,55	—	—	—	—	—	—	—	—	—	—	—	
	0,63	2,10	ac	2,40	ac	2,60	ac	2,90	ac	2,90	ac	2,40	ac
	0,75	2,50	—	2,80	ac	3,10	ac	3,30	ac	3,30	ac	3,10	ac
	0,88	2,90	—	3,20	—	3,40	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 $t_{N,I} =$	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	ac	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	—

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-6-5,5xL, JT6-(FR)-6-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 63



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

$t_{N,II}$ [mm]	2,00		2,50		3,00		4,00		
$M_{t,nom}$	—								
$V_{R,k}$ [kN] 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	
$N_{R,II,k}$ [kN] =	1,03		1,68		2,33		3,63		

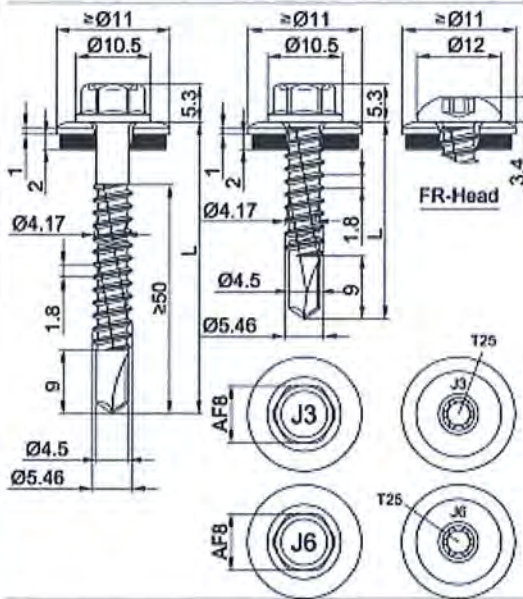
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-6-5,5xL, JT6-(FR)-6-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

Annex 64



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506
Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal
Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573
Component II: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

$t_{N,II} [\text{mm}]$	2,00	2,50	3,00	4,00
$M_{t,nom}$	—			
$V_{R,k} [\text{kN}]$ 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
$N_{R,II,k} [\text{kN}] =$	1,35	2,20	3,04	4,73

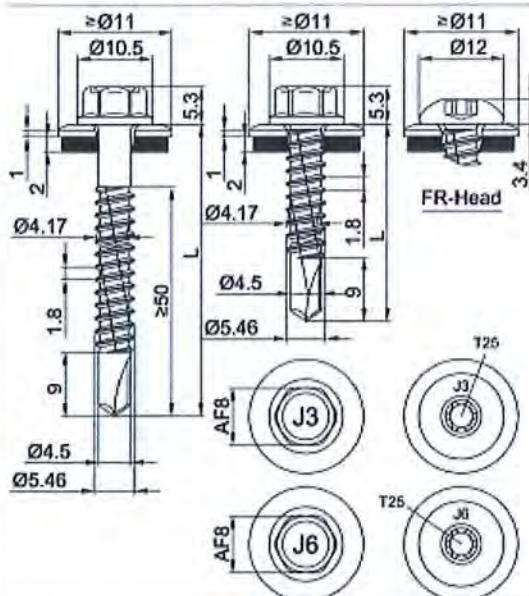
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-6-5,5xL, JT6-(FR)-6-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}11 \text{ mm}$

Annex 65



Materials:

- Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506
- Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal
- Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573
- Component II: S235 to S355 – EN 10025-1
S280GD to S450GD – EN 10346
HX300LAD to HX460LAD – EN 10346

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

$t_{N,II} [\text{mm}]$	1,50	1,75	2,00	2,50	3,00	4,00	2x1,50
$M_{t,nom}$	—						
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$	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 —
$N_{R,I,k} [\text{kN}] =$	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-6-5,5xL, JT6-(FR)-6-5,5xL

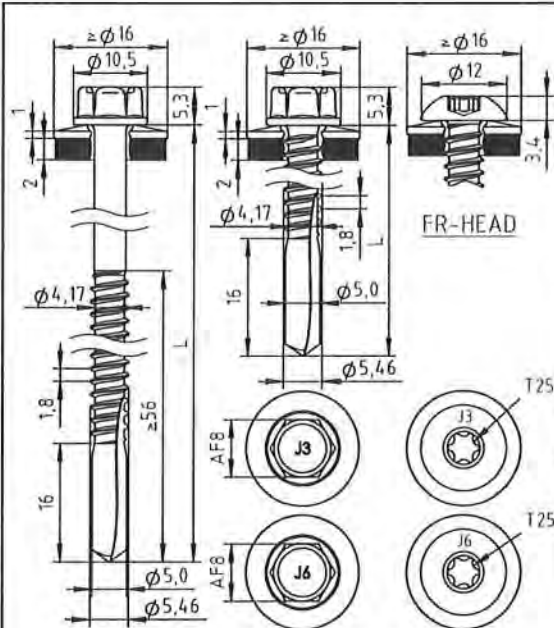
with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}11 \text{ mm}$

Annex 67

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S280GD – EN 10346 Component II: S235 to S355 – EN 10025-1
	Drilling capacity: $\Sigma t \leq 13,00 \text{ mm}$
	Timber substructures: no performance determined

$t_{N,II} [\text{mm}]$	4,00		5,00		6,00		8,00		10,00		12,00	
$M_{t,nom}$	7 Nm											
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$	0,50	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—
	0,63	2,20	ac	2,20	ac	2,20	ac	2,20	ac	2,20	ac	ac
	0,75	2,80	ac	2,80	ac	2,80	ac	2,80	ac	2,80	ac	ac
	0,88	3,50	ac	3,50	ac	3,50	ac	3,50	ac	3,50	ac	a
	1,00	4,20	—	4,20	ac	4,20	ac	4,20	ac	4,20	ac	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	—	—
$N_{R,k} [\text{kN}]$ for $t_{N,I} =$	0,50	1,30	ac	1,30	ac	1,30	ac	1,30	ac	1,30	ac	ac
	0,55	1,64	ac	1,64	ac	1,64	ac	1,64	ac	1,64	ac	ac
	0,63	2,40	ac	2,40	ac	2,40	ac	2,40	ac	2,40	ac	ac
	0,75	3,10	ac	3,10	ac	3,10	ac	3,10	ac	3,10	ac	ac
	0,88	3,90	ac	3,90	ac	3,90	ac	3,90	ac	3,90	ac	a
	1,00	4,70	—	4,70	ac	4,70	ac	4,70	ac	4,70	ac	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	—	—

Fastening screws JA, JB, JT, JZ and JF	Annex 68
Self-drilling screw JT3-(FR-)12-5,5xL, JT6-(FR-)12-5,5xL with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø} 16 \text{ mm}$	



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S320GD or S350GD – EN 10346

Component II: S235 to S355 – EN 10025-1

Drilling capacity: $\Sigma t \leq 13,00$ mm

Timber substructures:

no performance determined

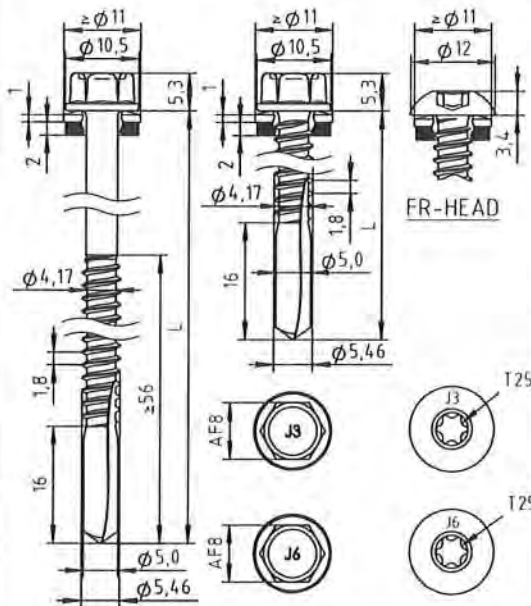
$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,00	12,00
$M_{t,nom}$	7 Nm					
$V_{R,k}$ [kN] for $t_{N,I} =$						
0,50	—	—	—	—	—	—
0,55	—	—	—	—	—	—
0,63	2,50	ac	2,50	ac	2,50	ac
0,75	3,20	ac	3,20	ac	3,20	ac
0,88	3,90	ac	3,90	ac	3,90	ac
1,00	4,20	—	4,60	ac	4,60	ac
1,13	4,20	—	5,30	—	5,30	—
1,25	4,20	—	6,00	—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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)12-5,5xL, JT6-(FR-)12-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 16$ mm

Annex 69



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

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

Timber substructures:

no performance determined

$t_{N,II} [\text{mm}]$	4,00	5,00	6,00	8,00	10,00	12,00
$M_{t,nom}$	—					
$V_{R,k} [\text{kN}]$ 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 ac	— —
$N_{R,II,k} [\text{kN}] =$	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)12-5,5xL, JT6-(FR-)12-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

Annex 70

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Drilling capacity: $\Sigma t \leq 13,00 \text{ mm}$ Timber substructures: no performance determined
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$t_{N,II}$ [mm]	4,00		5,00		6,00		8,00		10,00		12,00		
$M_{t,nom}$	—												
$V_{R,k}$ [kN] 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	ac	—	—	
$N_{R,II,k}$ [kN] =	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)12-5,5xL, JT6-(FR-)12-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

Annex 71

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S280GD – EN 10346 Component II: S235 to S355 – EN 10025-1 Drilling capacity: $\Sigma t \leq 18,0$ mm Timber substructures: no performance determined
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$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	7 Nm							
$V_{R,k}$ [kN] for $t_{N,I} =$								
0,40	1,50	—	1,50	—	1,50	—	1,50	—
0,50	1,91	—	1,91	—	1,91	—	1,91	—
0,55	2,12	—	2,12	—	2,12	—	2,12	—
0,63	2,20	—	2,20	—	2,20	—	2,20	—
0,75	2,80	—	2,80	—	2,80	—	2,80	—
0,88	3,50	—	3,50	—	3,50	—	3,50	—
1,00	4,20	—	4,20	—	4,20	—	4,20	—
1,13	4,20	—	4,90	—	4,90	—	4,90	—
1,25	4,20	—	5,60	—	5,60	—	5,60	—
1,50	4,20	—	6,40	—	7,20	—	7,20	—
1,75	4,20	—	6,40	—	7,20	—	7,20	—
2,00	4,20	—	6,40	—	7,20	—	7,20	—
$N_{R,k}$ [kN] for $t_{N,I} =$								
0,40	0,95	—	0,95	—	0,95	—	0,95	—
0,50	1,21	—	1,21	—	1,21	—	1,21	—
0,55	1,35	—	1,35	—	1,35	—	1,35	—
0,63	1,56	—	1,56	—	1,56	—	1,56	—
0,75	1,87	—	1,87	—	1,87	—	1,87	—
0,88	2,22	—	2,22	—	2,22	—	2,22	—
1,00	2,53	—	2,53	—	2,53	—	2,53	—
1,13	2,88	—	2,88	—	2,88	—	2,88	—
1,25	3,19	—	3,19	—	3,19	—	3,19	—
1,50	3,85	—	3,85	—	3,85	—	3,85	—
1,75	4,40	—	4,40	—	4,40	—	4,40	—
2,00	4,40	—	4,40	—	4,40	—	4,40	—

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 11$ mm

Annex 74

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S320GD or S350GD – EN 10346 Component II: S235 to S355 – EN 10025-1
Drilling capacity: $\Sigma t_i \leq 18,0$ mm	Timber substructures: no performance determined

$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	7 Nm							
$V_{R,k}$ [kN] for $t_{N,I} =$								
0,40	1,62	—	1,62	—	1,62	—	1,62	—
0,50	2,07	—	2,07	—	2,07	—	2,07	—
0,55	2,30	—	2,30	—	2,30	—	2,30	—
0,63	2,50	—	2,50	—	2,50	—	2,50	—
0,75	3,20	—	3,20	—	3,20	—	3,20	—
0,88	3,90	—	3,90	—	3,90	—	3,90	—
1,00	4,20	—	4,60	—	4,60	—	4,60	—
1,13	4,20	—	5,30	—	5,30	—	5,30	—
1,25	4,20	—	6,00	—	6,00	—	6,00	—
1,50	4,20	—	6,40	—	7,60	—	7,60	—
1,75	4,20	—	6,40	—	7,60	—	7,60	—
2,00	4,20	—	6,40	—	7,60	—	7,60	—
$N_{R,k}$ [kN] for $t_{N,I} =$								
0,40	1,03	—	1,03	—	1,03	—	1,03	—
0,50	1,32	—	1,32	—	1,32	—	1,32	—
0,55	1,46	—	1,46	—	1,46	—	1,46	—
0,63	1,69	—	1,69	—	1,69	—	1,69	—
0,75	2,03	—	2,03	—	2,03	—	2,03	—
0,88	2,40	—	2,40	—	2,40	—	2,40	—
1,00	2,75	—	2,75	—	2,75	—	2,75	—
1,13	3,12	—	3,12	—	3,12	—	3,12	—
1,25	3,46	—	3,46	—	3,46	—	3,46	—
1,50	4,18	—	4,18	—	4,18	—	4,18	—
1,75	4,70	—	4,74	—	4,74	—	4,74	—
2,00	4,70	—	4,74	—	4,74	—	4,74	—

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 11$ mm

Annex 75

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S280GD – EN 10346 Component II: S235 to S355 – EN 10025-1 Drilling capacity: $\Sigma t \leq 18,0$ mm Timber substructures: no performance determined
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$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	7 Nm							
$V_{R,k}$ [kN] for $t_{N,I} =$								
0,40	1,50 ac	1,50 ac	1,50 ac	1,50 ac	1,50 ac	1,50 ac	1,50 ac	1,50 ac
0,50	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac
0,55	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac
0,63	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 ac
0,75	2,80 ac	2,80 ac	2,80 ac	2,80 ac	2,80 ac	2,80 ac	2,80 ac	2,80 ac
0,88	3,50 ac	3,50 ac	3,50 ac	3,50 ac	3,50 ac	3,50 ac	3,50 ac	3,50 ac
1,00	4,20 —	4,20 ac	4,20 ac	4,20 ac	4,20 ac	4,20 ac	4,20 ac	4,20 ac
1,13	4,20 —	4,90 —	4,90 —	4,90 —	4,90 —	4,90 —	4,90 —	4,90 —
1,25	4,20 —	5,60 —	5,60 —	5,60 —	5,60 —	5,60 —	5,60 —	5,60 —
1,50	4,20 —	6,40 —	7,20 —	7,20 —	7,20 —	7,20 —	7,20 —	7,20 —
1,75	4,20 —	6,40 —	7,20 —	7,20 —	7,20 —	7,20 —	7,20 —	7,20 —
2,00	4,20 —	6,40 —	7,20 —	7,20 —	7,20 —	7,20 —	7,20 —	7,20 —
$N_{R,k}$ [kN] for $t_{N,I} =$								
0,40	1,38 ac	1,38 ac	1,38 ac	1,38 ac	1,38 ac	1,38 ac	1,38 ac	1,38 ac
0,50	1,77 ac	1,77 ac	1,77 ac	1,77 ac	1,77 ac	1,77 ac	1,77 ac	1,77 ac
0,55	1,96 ac	1,96 ac	1,96 ac	1,96 ac	1,96 ac	1,96 ac	1,96 ac	1,96 ac
0,63	2,40 ac	2,40 ac	2,40 ac	2,40 ac	2,40 ac	2,40 ac	2,40 ac	2,40 ac
0,75	3,10 ac	3,10 ac	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 ac	3,90 ac	3,90 ac
1,00	4,70 —	4,70 ac	4,70 ac	4,70 ac	4,70 ac	4,70 ac	4,70 ac	4,70 ac
1,13	4,70 —	5,60 —	5,60 —	5,60 —	5,60 —	5,60 —	5,60 —	5,60 —
1,25	4,70 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —
1,50	4,70 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —
1,75	4,70 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —
2,00	4,70 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —	6,40 —

Fastening screws JA, JB, JT, JZ and JF Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 16$ mm	Annex 76
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	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S320GD or S350GD – EN 10346 Component II: S235 to S355 – EN 10025-1
Drilling capacity: $\Sigma t \leq 18,0$ mm	
Timber substructures: no performance determined	

$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	7 Nm							
$V_{R,k}$ [kN] for $t_{N,I} =$								
0,40	1,62 ac	1,62 ac	1,62 ac	1,62 ac	1,62 ac	1,62 ac	1,62 ac	1,62 ac
0,50	2,07 ac	2,07 ac	2,07 ac	2,07 ac	2,07 ac	2,07 ac	2,07 ac	2,07 ac
0,55	2,30 ac	2,30 ac	2,30 ac	2,30 ac	2,30 ac	2,30 ac	2,30 ac	2,30 ac
0,63	2,50 ac	2,50 ac	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	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 ac	3,90 ac	3,90 ac
1,00	4,20 —	4,60 ac	4,60 ac	4,60 ac	4,60 ac	4,60 ac	4,60 ac	4,60 ac
1,13	4,20 —	5,30 —	5,30 —	5,30 —	5,30 —	5,30 —	5,30 —	5,30 —
1,25	4,20 —	6,00 —	6,00 —	6,00 —	6,00 —	6,00 —	6,00 —	6,00 —
1,50	4,20 —	6,40 —	7,20 —	7,60 —	7,60 —	7,60 —	7,60 —	7,60 —
1,75	4,20 —	6,40 —	7,20 —	7,60 —	7,60 —	7,60 —	7,60 —	7,60 —
2,00	4,20 —	6,40 —	7,20 —	7,60 —	7,60 —	7,60 —	7,60 —	7,60 —
$N_{R,k}$ [kN] for $t_{N,I} =$								
0,40	1,50 ac	1,50 ac	1,50 ac	1,50 ac	1,50 ac	1,50 ac	1,50 ac	1,50 ac
0,50	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac	1,91 ac
0,55	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac	2,12 ac
0,63	2,60 ac	2,60 ac	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	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 ac	4,20 ac	4,20 ac
1,00	4,70 —	5,00 ac	5,00 ac	5,00 ac	5,00 ac	5,00 ac	5,00 ac	5,00 ac
1,13	4,70 —	6,00 —	6,00 —	6,00 —	6,00 —	6,00 —	6,00 —	6,00 —
1,25	4,70 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —
1,50	4,70 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —
1,75	4,70 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —
2,00	4,70 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 16$ mm

Annex 77

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Drilling capacity: $\Sigma t \leq 18,0 \text{ mm}$ Timber substructures: no performance determined
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$t_{N,II} [\text{mm}]$	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	—							
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$								
0,50	0,77	—	0,77	—	0,77	—	0,77	—
0,60	0,94	—	0,94	—	0,94	—	0,94	—
0,70	1,10	—	1,10	—	1,10	—	1,10	—
0,80	1,27	—	1,27	—	1,27	—	1,27	—
0,90	1,48	—	1,48	—	1,48	—	1,48	—
1,00	1,69	—	1,69	—	1,69	—	1,69	—
1,20	1,94	—	1,94	—	1,94	—	1,94	—
1,50	2,32	—	2,32	—	2,32	—	2,32	—
2,00	2,91	—	3,00	—	3,26	—	3,26	—
$N_{R,k} [\text{kN}]$	1,11	1,58	2,21	3,48	3,48	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

Annex 78

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Drilling capacity: $\Sigma t \leq 18,0 \text{ mm}$ Timber substructures: no performance determined
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$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	—							
$V_{R,k}$ [kN] for $t_{N,I} =$								
0,50	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
0,60	1,22	1,22	1,22	1,22	1,22	1,22	1,22	1,22
0,70	1,44	1,44	1,44	1,44	1,44	1,44	1,44	1,44
0,80	1,66	1,66	1,66	1,66	1,66	1,66	1,66	1,66
0,90	1,93	1,93	1,93	1,93	1,93	1,93	1,93	1,93
1,00	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20
1,20	2,52	2,52	2,52	2,52	2,52	2,52	2,52	2,52
1,50	3,02	3,02	3,02	3,02	3,02	3,02	3,02	3,02
2,00	3,79	3,91	4,02	4,25	4,25	4,25	4,25	4,25
$N_{R,k}$ [kN]	1,45	2,06	2,89	4,54	4,54	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR)-18-5,5xL, JT6-(FR)-18-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

Annex 79

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Drilling capacity: $\Sigma t_i \leq 18,0 \text{ mm}$ Timber substructures: no performance determined
--	--

$t_{N,i} [\text{mm}]$	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	—							
$V_{R,k} [\text{kN}]$ for $t_{N,i} =$								
0,50	0,77	—	0,77	—	0,77	—	0,77	—
0,60	0,94	—	0,94	—	0,94	—	0,94	—
0,70	1,10	—	1,10	—	1,10	—	1,10	—
0,80	1,27	—	1,27	—	1,27	—	1,27	—
0,90	1,48	—	1,48	—	1,48	—	1,48	—
1,00	1,69	—	1,69	—	1,69	—	1,69	—
1,20	1,94	—	1,94	—	1,94	—	1,94	—
1,50	2,32	—	2,32	—	2,32	—	2,32	—
2,00	2,91	—	3,00	—	3,26	—	3,26	—
$N_{R,k} [\text{kN}]$	1,11	1,58	2,21	3,48	3,48	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 80

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Drilling capacity: $\Sigma t_i \leq 18,0 \text{ mm}$ Timber substructures: no performance determined
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$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	—							
$V_{R,k}$ [kN] for $t_{N,I} =$								
0,50	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
0,60	1,22	1,22	1,22	1,22	1,22	1,22	1,22	1,22
0,70	1,44	1,44	1,44	1,44	1,44	1,44	1,44	1,44
0,80	1,66	1,66	1,66	1,66	1,66	1,66	1,66	1,66
0,90	1,93	1,93	1,93	1,93	1,93	1,93	1,93	1,93
1,00	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20
1,20	2,52	2,52	2,52	2,52	2,52	2,52	2,52	2,52
1,50	3,02	3,02	3,02	3,02	3,02	3,02	3,02	3,02
2,00	3,79	3,91	4,02	4,25	4,25	4,25	4,25	4,25
$N_{R,k}$ [kN]	1,45	2,06	2,89	4,54	4,54	4,54	4,54	4,54

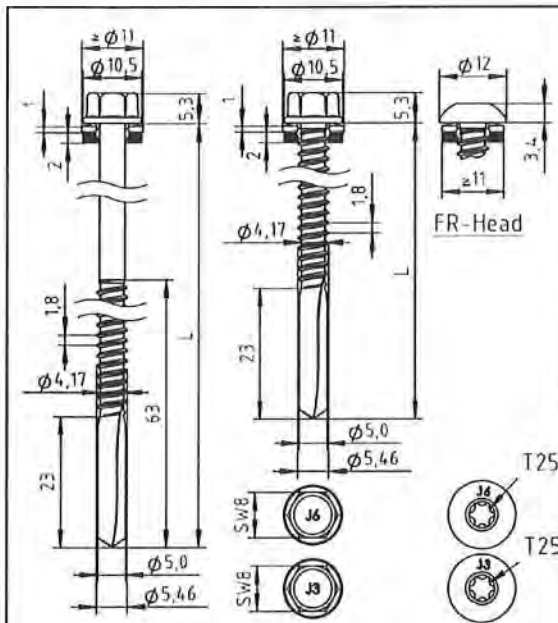
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 81



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: S235 to S355 – EN 10025-1

Drilling capacity: $\Sigma t_i \leq 18,0 \text{ mm}$

Timber substructures:

no performance determined

$t_{N,II} [\text{mm}]$	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	—							
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$								
0,50	0,77	—	0,77	—	0,77	—	0,77	—
0,60	0,94	—	0,94	—	0,94	—	0,94	—
0,70	1,10	—	1,10	—	1,10	—	1,10	—
0,80	1,27	—	1,27	—	1,27	—	1,27	—
0,90	1,48	—	1,48	—	1,48	—	1,48	—
1,00	1,69	—	1,69	—	1,69	—	1,69	—
1,20	1,94	—	1,94	—	1,94	—	1,94	—
1,50	2,32	—	2,32	—	2,32	—	2,32	—
2,00	2,91	—	3,00	—	3,26	—	3,26	—
$N_{R,k} [\text{kN}]$	4,70	6,40	6,40	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

Annex 82

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: S235 to S355 – EN 10025-1 Drilling capacity: $\Sigma t_i \leq 18,0 \text{ mm}$ Timber substructures: no performance determined
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$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	—							
$V_{R,k}$ [kN] for $t_{N,I} =$								
0,50	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —
0,60	1,22 —	1,22 —	1,22 —	1,22 —	1,22 —	1,22 —	1,22 —	1,22 —
0,70	1,44 —	1,44 —	1,44 —	1,44 —	1,44 —	1,44 —	1,44 —	1,44 —
0,80	1,66 —	1,66 —	1,66 —	1,66 —	1,66 —	1,66 —	1,66 —	1,66 —
0,90	1,93 —	1,93 —	1,93 —	1,93 —	1,93 —	1,93 —	1,93 —	1,93 —
1,00	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —	2,20 —
1,20	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —
1,50	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —
2,00	3,79 —	3,91 —	4,02 —	4,25 —	4,25 —	4,25 —	4,25 —	4,25 —
$N_{R,k}$ [kN]	4,70	6,40	6,40	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}11 \text{ mm}$

Annex 83

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: S235 to S355 – EN 10025-1 Drilling capacity: $\Sigma t \leq 18,0 \text{ mm}$ Timber substructures: no performance determined
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$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,0	12,0	14,0	16,0
$M_{t,nom}$	—							
$V_{R,k}$ [kN] for $t_{N,I} =$								
0,50	1,00 ac	1,00 ac	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 ac	1,22 ac	1,22 ac
0,70	1,44 ac	1,44 ac	1,44 ac	1,44 ac	1,44 ac	1,44 ac	1,44 ac	1,44 ac
0,80	1,66 ac	1,66 ac	1,66 ac	1,66 ac	1,66 ac	1,66 ac	1,66 ac	1,66 ac
0,90	1,93 ac	1,93 ac	1,93 ac	1,93 ac	1,93 ac	1,93 ac	1,93 ac	1,93 ac
1,00	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 ac	2,20 ac
1,20	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —	2,52 —
1,50	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —	3,02 —
2,00	3,79 —	3,91 —	4,02 —	4,25 —	4,25 —	4,25 —	4,25 —	4,25 —
$N_{R,k}$ [kN]	4,70	6,40	6,40	6,40	6,40	6,40	6,40	6,40

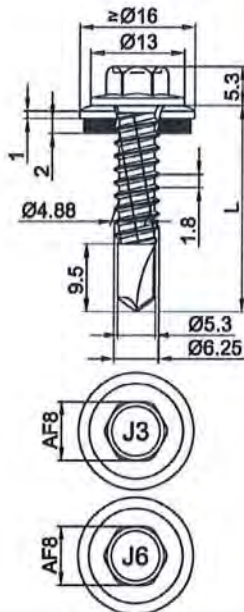
– Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-(FR-)18-5,5xL, JT6-(FR-)18-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 85



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

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

Drilling capacity: $\Sigma t_i \leq 6,50$ mm

Timber substructures:

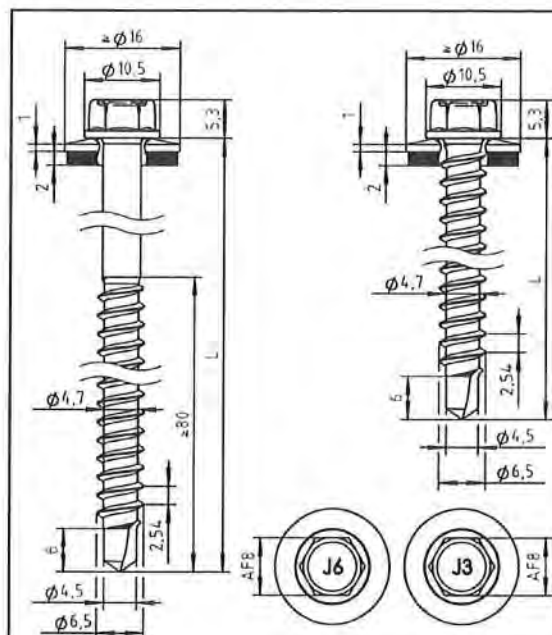
no performance determined

$t_{N,II}$ [mm]	2,00	2,50	3,00	4,00	5,00	6,00
$M_{t,nom}$	7Nm					
$V_{R,k}$ [kN] for $t_{N,I} =$						
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 $t_{N,I} =$						
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 a	— —
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 —	— —	— —

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-6-6,3xL, JT6-6-6,3xL
with hexagon head and sealing washer $\geq \varnothing 16$ mm

Annex 86



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4 / 1.4578) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD – EN 10346

Component II: S235 – EN 10025-1
S280GD to S350GD – EN 10346
timber – EN 14081

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

Timber substructures

Performance determined with

$M_{y,Rk} = 9,742 \text{ Nm}$
 $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$

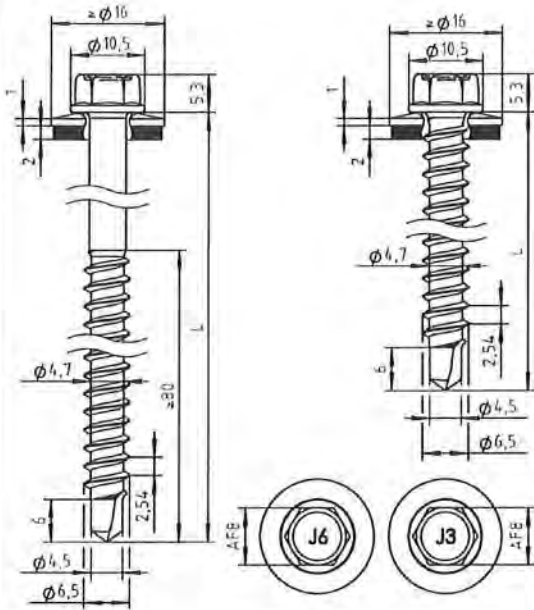
$t_{N,II} [\text{mm}]$	0,63	0,75	0,88	1,00	1,13	1,25	1,50	
$M_{t,nom}$	3 Nm							
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$								bearing resistance of component I
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30
0,75	1,30	1,80	1,80	1,80	1,80	1,80	1,80	1,80
0,88	1,30	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	—	—	—	—	—	—	—	—
$N_{R,k} [\text{kN}]$ for $t_{N,I} =$								pull-through resistance of component I
0,50	0,43	0,54	0,70	0,86	0,86	ac	0,86	1,19
0,55	0,55	0,68	0,89	1,09	1,09	ac	1,09	1,50
0,63	0,80	1,00	1,30	1,60	1,60	ac	1,60	2,20
0,75	0,80	1,00	1,30	1,60	1,60	ac	1,60	2,80
0,88	0,80	1,00	1,30	1,60	1,60	ac	—	3,50
1,00	0,80	1,00	1,30	1,60	—	ac	—	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	—	—	—	—	—	—	—	—

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-2-6,5xL, JT6-2-6,5xL

with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

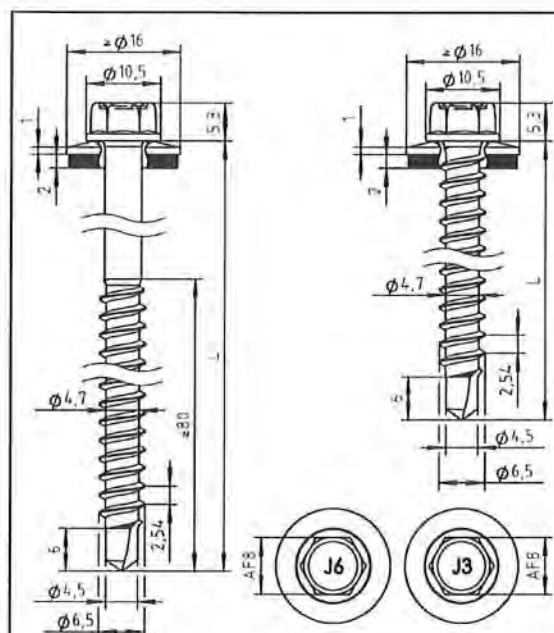
Annex 87

		Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S280GD – EN 10346 Component II: timber – EN 14081	
		Drilling capacity: $\Sigma t_i \leq 2,00 \text{ mm}$	
		Timber substructures Performance determined with $M_{y,Rk} = 9,742 \text{ Nm}$ $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$	

$t_{n,i}$ [mm]	32	38	42	48	52	58	62	68	72	78	82	
$V_{R,k} [\text{kN}]$ for $t_{n,i} =$ 0,50 0,55 0,63 0,75 0,88 1,00 1,13 1,25 1,50 1,75 2,00	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—
	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30
	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80
	2,04	2,10	2,17	2,29	2,29	2,35	2,42	2,48	2,54	2,60	2,60	2,60
	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	2,04	2,10	2,17	2,23	2,29	2,35	2,42	2,48	2,54	2,60	2,67	3,30
	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	
$N_{R,k} [\text{kN}]$ for $t_{n,i} =$ 0,50 0,55 0,63 0,75 0,88 1,00 1,13 1,25 1,50 1,75 2,00	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19
	1,30	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
	1,30	1,56	1,81	2,06	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20
	1,30	1,56	1,81	2,06	2,31	2,56	2,80	2,80	2,80	2,80	2,80	2,80
	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,50	3,50	3,50
	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	4,20
	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,00
	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	3,31	3,56	3,81	5,90
	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 indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF	Annex 88
Self-drilling screw JT3-2-6,5xL, JT6-2-6,5xL with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$	



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: timber – EN 14081

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

Timber substructures

Performance determined with

$M_{y,Rk} = 9,742 \text{ Nm}$
 $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$

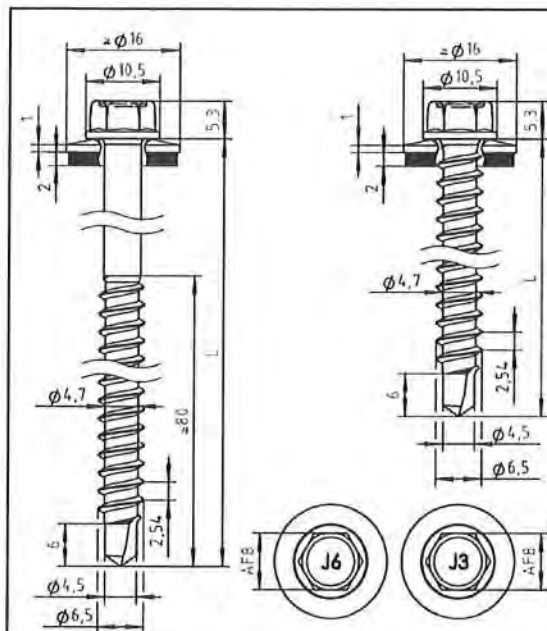
$t_{N,i}$ [mm]	l_g [mm]									
	33	36	39	42	45	48	51	54	60	
$V_{R,k}$ [kN] for $t_{N,i} =$	0,50	0,54 —	0,54 —	0,54 —	0,54 —	0,54 —	0,54 —	0,54 —	0,54 —	0,54
	0,60	0,74 —	0,74 —	0,74 —	0,74 —	0,74 —	0,74 —	0,74 —	0,74 —	0,74
	0,70	0,93 —	0,93 —	0,93 —	0,93 —	0,93 —	0,93 —	0,93 —	0,93 —	0,93
	0,80	1,13 —	1,13 —	1,13 —	1,13 —	1,13 —	1,13 —	1,13 —	1,13 —	1,13
	0,90	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
	1,20	1,30 —	1,45 —	1,60 —	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
	2,00	1,30 —	1,45 —	1,60 —	1,70 —	1,70 —	1,70 —	1,70 —	1,70 —	1,70
$N_{R,II,k}$ [kN] =	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 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-2-6,5xL, JT6-2-6,5xL
with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 89



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S320GD – EN 10346

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

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

Timber substructures

Performance determined with

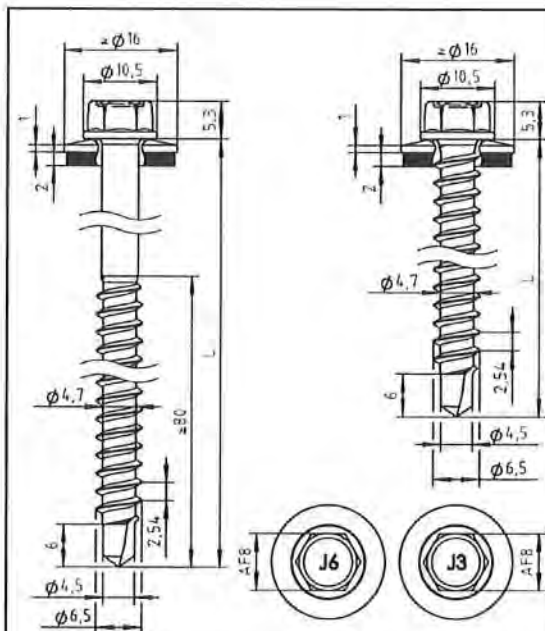
$M_{y,Rk} = 9,742 \text{ Nm}$
 $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$

$t_{N,II}$ [mm]	0,63		0,75		0,88		1,00		1,13		1,25		1,50				
$M_{t,nom}$	3 Nm															—	
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	bearing resistance of component I	
	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	—	1,80	—	—	—	—	—	—	—	—	—	—	3,30		
	1,75	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
2,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
$N_{R,k}$ [kN] for $t_{N,I} =$	0,50	0,43	—	0,54	—	0,70	—	0,86	—	0,86	—	0,86	—	0,86	—	1,30	pull-through resistance of component I
	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-2-6,5xL, JT6-2-6,5xL
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 91



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S320GD or S350GD – EN 10346

Component II: timber – EN 14081

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

Timber substructures

Performance determined with

$M_{y,Rk} = 9,742 \text{ Nm}$
 $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$

$t_{N,I}$ [mm]	l_g [mm]													
	32	38	42	48	52	58	62	68	72	78	82			
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	—	—	—	—	—	—	—	—	—	—	—	bearing resistance of component I	
	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		
	0,75	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	—	—	—	—	—	—	—	—	—	—	—		—
$N_{R,k}$ [kN] 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	pull-through resistance of component I	
	0,55	1,30	1,56	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		
	0,75	1,30	1,56	1,81	2,06	2,31	2,56	2,81	3,06	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		
	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	—	—	—	—	—	—	—	—	—	—	—		—

- The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-2-6,5xL, JT6-2-6,5xL

with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 92

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S280GD to S350GD – EN 10346 Component II: timber – EN 14081 Drilling capacity: $\Sigma t_i \leq 1,00 \text{ mm}$ Timber substructures Performance determined with $M_{y,Rk} = 10,744 \text{ Nm}$ $f_{ax,k} = 11,080 \text{ N/mm}^2 \text{ for } l_{ef} \geq 34 \text{ mm}$
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$t_{N,I}$ [mm]	l_g [mm]											
	45	48	51	54	57	60	63	66	69	72	75	
$V_{R,k}$ [kN] for $t_{N,I} =$	0,40	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77
	0,50	2,02	2,07	2,12	2,17	2,22	2,26	2,26	2,26	2,26	2,26	2,26
	0,55	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,51
	0,63	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53
	0,75	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53
	0,88	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53
	1,00	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53
	1,13	—	—	—	—	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—	—	—	—	—
	1,50	—	—	—	—	—	—	—	—	—	—	—
	1,75	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I} =$	0,40	0,95	0,95	0,95	0,95	0,95	0,95	0,95	0,95	0,95	0,95	0,95
	0,50	1,21	1,21	1,21	1,21	1,21	1,21	1,21	1,21	1,21	1,21	1,21
	0,55	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35
	0,63	1,56	1,56	1,56	1,56	1,56	1,56	1,56	1,56	1,56	1,56	1,56
	0,75	1,87	1,87	1,87	1,87	1,87	1,87	1,87	1,87	1,87	1,87	1,87
	0,88	2,22	2,22	2,22	2,22	2,22	2,22	2,22	2,22	2,22	2,22	2,22
	1,00	2,31	2,51	2,53	2,53	2,53	2,53	2,53	2,53	2,53	2,53	2,53
	1,13	—	—	—	—	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—	—	—	—	—
	1,50	—	—	—	—	—	—	—	—	—	—	—
	1,75	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—

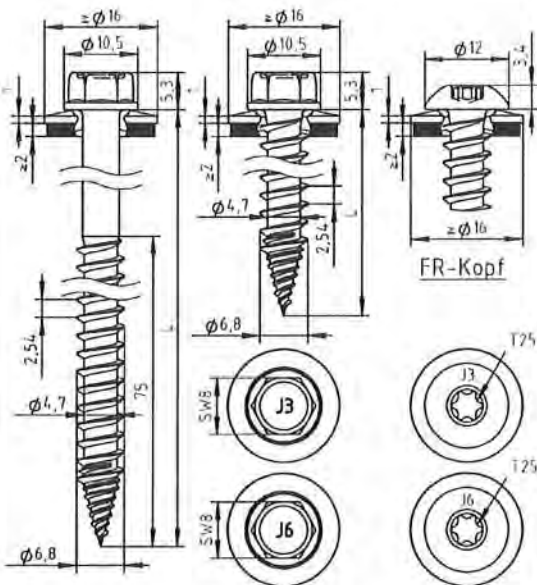
- The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR-)6,8xL, JF6-(FR-)6,8xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

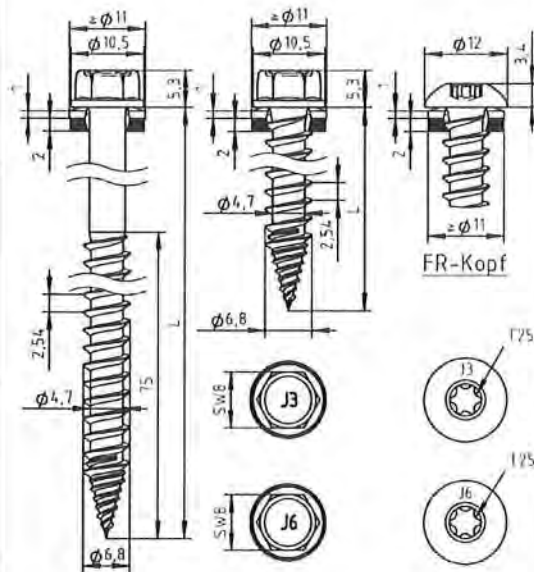
Annex 93

													Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S280GD to S350GD – EN 10346 Component II: timber – EN 14081	
													Drilling capacity: $\Sigma t \leq 1,00 \text{ mm}$	
													Timber substructures: performance determined with $M_{y,Rk} = 10,744 \text{ Nm}$ $f_{ax,k} = 11,080 \text{ N/mm}^2 \text{ for } l_{ef} \geq 34 \text{ mm}$	

$t_{N,I}$ [mm]	45	48	51	54	57	60	63	66	69	72	75	
l_g [mm]												
$V_{R,k}$ [kN] for $t_{N,I} =$	0,40	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77
	0,50	2,02	2,07	2,12	2,17	2,22	2,26	2,26	2,26	2,26	2,26	2,26
	0,55	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,51
	0,63	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53
	0,75	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53
	0,88	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53
	1,00	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53
	1,13	—	—	—	—	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—	—	—	—	—
	1,50	—	—	—	—	—	—	—	—	—	—	—
	1,75	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I} =$	0,40	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38
	0,50	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77	1,77
	0,55	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96	1,96
	0,63	2,27	2,27	2,27	2,27	2,27	2,27	2,27	2,27	2,27	2,27	2,27
	0,75	2,31	2,51	2,71	2,73	2,73	2,73	2,73	2,73	2,73	2,73	2,73
	0,88	2,31	2,51	2,71	2,92	3,12	3,23	3,23	3,23	3,23	3,23	3,23
	1,00	2,31	2,51	2,71	2,92	3,12	3,32	3,53	3,69	3,69	3,69	3,69
	1,13	—	—	—	—	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—	—	—	—	—
	1,50	—	—	—	—	—	—	—	—	—	—	—
	1,75	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—
bearing resistance of component I												
pull-through resistance of component I												

– The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF		Annex 94
Self-drilling screw (chipless) JF3-(FR-)6,8xL, JF6-(FR-)6,8xL with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 16 \text{ mm}$		



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: timber – EN 14081

Drilling capacity: $\Sigma t \leq 1,50 \text{ mm}$

Timber substructures:

performance determined with

$M_{y,Rk} = 10,744 \text{ Nm}$
 $f_{ax,k} = 11,080 \text{ N/mm}^2$ for $l_{ef} \geq 34 \text{ mm}$

$t_{N,I}$ [mm]	l_g [mm]											
	45	48	51	54	57	60	63	66	69	72	75	
$V_{R,k}$ [kN] for $t_{N,I} =$												
0,40	—	—	—	—	—	—	—	—	—	—	—	—
0,50	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92
0,60	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15
0,70	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38
0,80	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61
0,90	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84
1,00	2,02	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07
1,20	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,38	2,38	2,38	2,38
1,50	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	2,76
2,00	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,I,k}$ [kN]	2,31	2,51	2,71	2,92	3,12	3,32	3,53	3,73	3,93	4,14	4,34	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 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR-)6,8xL, JF6-(FR-)6,8xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

Annex 95

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: timber – EN 14081 Drilling capacity: $\Sigma t_i \leq 1,50 \text{ mm}$ Timber substructures: performance determined with $M_{y,Rk} = 10,744 \text{ Nm}$ $f_{ax,k} = 11,080 \text{ N/mm}^2$ for $l_{el} \geq 34 \text{ mm}$
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$t_{N,i}$ [mm]	l_g [mm]											
	45	48	51	54	57	60	63	66	69	72	75	
$V_{R,k}$ [kN] for $t_{N,i} =$												
0,40	—	—	—	—	—	—	—	—	—	—	—	—
0,50	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20
0,60	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
0,70	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80
0,80	2,02	2,07	2,10	2,10	2,10	2,10	2,10	2,10	2,10	2,10	2,10	2,10
0,90	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,40	2,40	2,40	2,40
1,00	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	2,70
1,20	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	3,10
1,50	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	3,60
2,00	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,II,k}$ [kN]	2,31	2,51	2,71	2,92	3,12	3,32	3,53	3,73	3,93	4,14	4,34	failure of component II see chapter 4.2.2

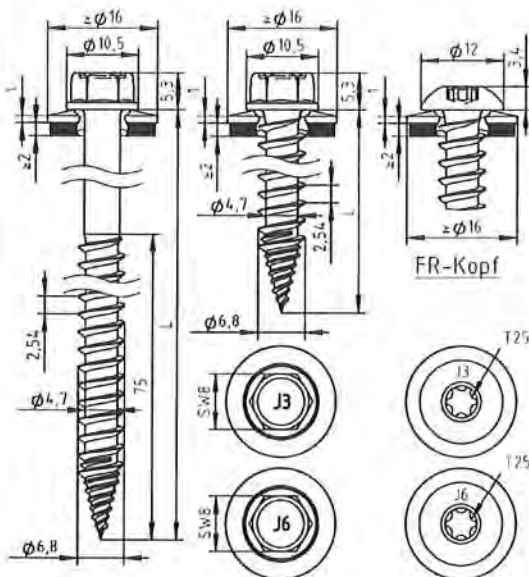
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
- The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR-)6,8xL, JF6-(FR-)6,8xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 11 \text{ mm}$

Annex 96



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 1,50 \text{ mm}$

Timber substructures:

performance determined with

$M_{y,Rk} = 10,744 \text{ Nm}$
 $f_{ax,k} = 11,080 \text{ N/mm}^2$ for $l_{ef} \geq 34 \text{ mm}$

$t_{N,i}$ [mm]	l_g [mm]											
	45	48	51	54	57	60	63	66	69	72	75	
$V_{R,k}$ [kN] for $t_{N,i} =$												
0,40	—	—	—	—	—	—	—	—	—	—	—	—
0,50	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92	0,92
0,60	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15	1,15
0,70	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38
0,80	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61	1,61
0,90	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84
1,00	2,02	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07	2,07
1,20	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,38	2,38	2,38	2,38
1,50	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	2,76
2,00	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,II,k}$ [kN] =	2,31	2,51	2,71	2,92	3,12	3,32	3,53	3,73	3,93	4,14	4,34	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 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR)-6,8xL, JF6-(FR)-6,8xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}16 \text{ mm}$

Anhang 97

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: timber – EN 14081 Drilling capacity: $\Sigma t_i \leq 1,50 \text{ mm}$ Timber substructures: performance determined with $M_{y,Rk} = 10,744 \text{ Nm}$ $f_{ax,k} = 11,080 \text{ N/mm}^2$ for $l_{ef} \geq 34 \text{ mm}$
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$t_{N,I}$ [mm]	l_g [mm]											
	45	48	51	54	57	60	63	66	69	72	75	
$V_{R,k}$ [kN] for $t_{N,I} =$												
0,40	—	—	—	—	—	—	—	—	—	—	—	—
0,50	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20
0,60	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
0,70	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80	1,80
0,80	2,02	2,07	2,10	2,10	2,10	2,10	2,10	2,10	2,10	2,10	2,10	2,10
0,90	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,40	2,40	2,40	2,40
1,00	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	2,70
1,20	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	3,10
1,50	2,02	2,07	2,12	2,17	2,22	2,28	2,33	2,38	2,43	2,48	2,53	3,60
2,00	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,II,k}$ [kN] =	2,31	2,51	2,71	2,92	3,12	3,32	3,53	3,73	3,93	4,14	4,34	failure of component II see chapter 4.2.2

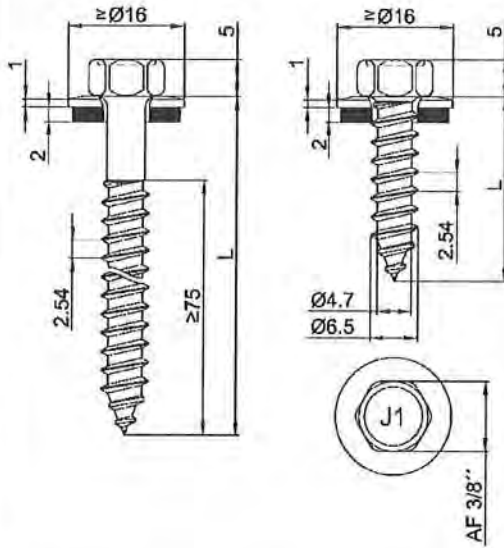
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
- The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR)-6,8xL, JF6-(FR)-6,8xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 16 \text{ mm}$

Annex 98



Materials:

Fastener: stainless steel (1.4529) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S320GD – EN 10346

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

Pre-drill diameter: see table

Timber substructures:

performance determined with

$M_{y,Rk} = 9,742 \text{ Nm}$
 $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$

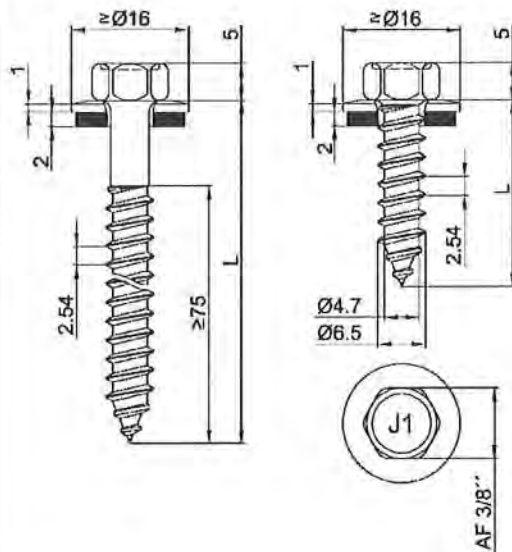
$t_{N,II}$ [mm]	0,63		0,75		0,88		1,00		1,13		1,25		1,50		2,00			
d_{pd} [mm]	Ø 3,5		Ø 4,0		Ø 4,5								Ø 5,0		Ø 5,3			
$M_{t,nom}$	3 Nm										5 Nm							
$V_{R,k}$ [kN] for $t_{N,I} =$																		
0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	bearing resistance of component I	
0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
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 $t_{N,I} =$																	pull-through resistance of component I	
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	

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JA1-6,5xL

with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 99



Materials:

Fastener: stainless steel (1.4529) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: timber – EN 14081

Pre-drill diameter: see table

Timber substructures:

performance determined with

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

$F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$

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

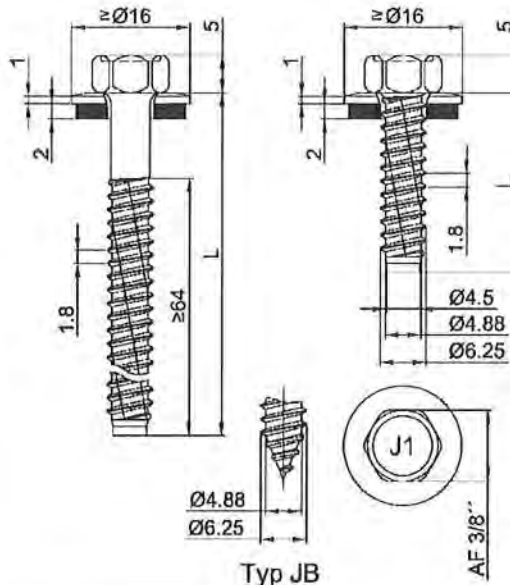
- The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JA1-6,5xL

with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 100



Typ JB

Materials:

Fastener: stainless steel (1.4529) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

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

Pre-drill diameter: see table

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 $t_{N,I} =$	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	—	10,30	—	10,60	—	11,30	—	11,30	—	
$N_{R,k}$ [kN] for $t_{N,I} =$	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	ac	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	6,90	ac	7,10	ac
	2,00	2,00	—	2,70	—	3,60	—	6,00	—	7,30	—	7,30	—	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 mit $t_{II} \leq 2,00$ mm

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JZ1-6,3xL, JB1-6,3xL, JZ5-6,3xL
with hexagon head and sealing washer $\geq \text{Ø}16$ mm

Annex 101

	Materials: Fastener: stainless steel (1.4529) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S280GD, S320GD or S350GD – EN 10346 Component II: S235 – EN 10025-1 S280GD to S350GD – EN 10346 Pre-drill diameter: see table Timber substructures: no performance determined
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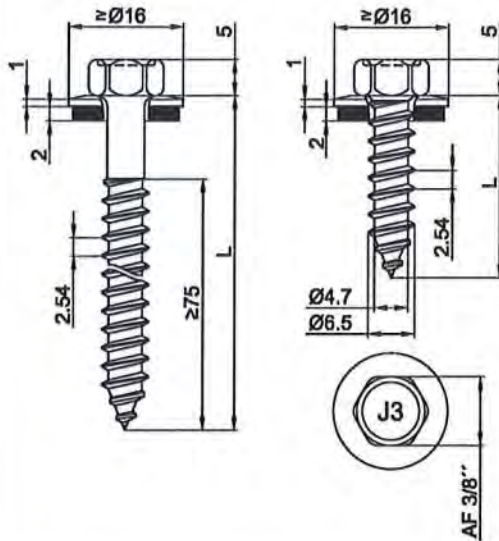
$t_{N,II}$ [mm]	4,00		5,00		6,00		$\geq 7,00$	
d_{pd} [mm]	$\varnothing$ 5,3				$\varnothing$ 5,5		$\varnothing$ 5,7	
$M_{I,nom}$	5 Nm							
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—
	0,63	3,40	abcd	3,40	abcd	3,40	abcd	3,40 abcd
	0,75	4,20	ac	4,20	ac	4,20	ac	4,20 ac
	0,88	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 $t_{N,I} =$	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	—	11,60	—	13,40	—	13,40 —

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JZ1-6,3xL

with hexagon head and sealing washer ≥ Ø22 mm

Annex 102



Materials:

Fastener: stainless steel (A2/ 1.4567) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

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

Pre-drill diameter: see table

Timber substructures:

performance determined with

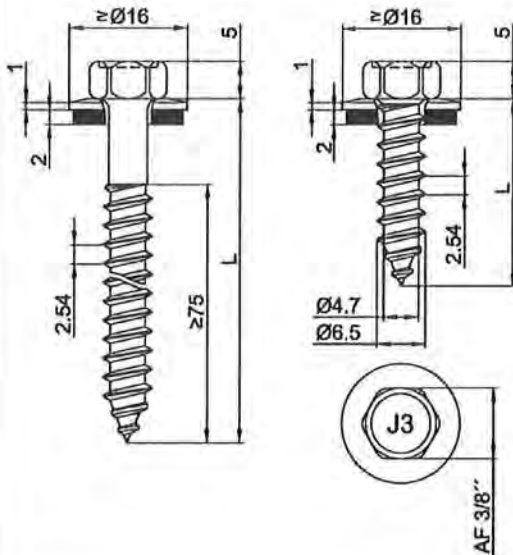
$M_{y,Rk} = 9,742 \text{ Nm}$
 $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$

$t_{N,II}$ [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 $t_{N,I} =$	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 $t_{N,I} =$	0,50		0,49 —		0,59 —		0,70 —		0,76 ac		0,86 ac		0,97 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	

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JA3-6,5xL
with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 103



Materials:

Fastener: stainless steel (A2/ 1.4567) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: timber – EN 14081

Pre-drill diameter: see table

Timber substructures:

performance determined with

$M_{y,Rk} = 9,742 \text{ Nm}$
 $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$

$l_g [\text{mm}] =$	26	31	36	41	46	51	56	61	66	71	76	
$d_{pd} [\text{mm}]$	$\varnothing 4,5$											
$V_{R,k} [\text{kN}]$ 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
$N_{R,k} [\text{kN}]$ 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

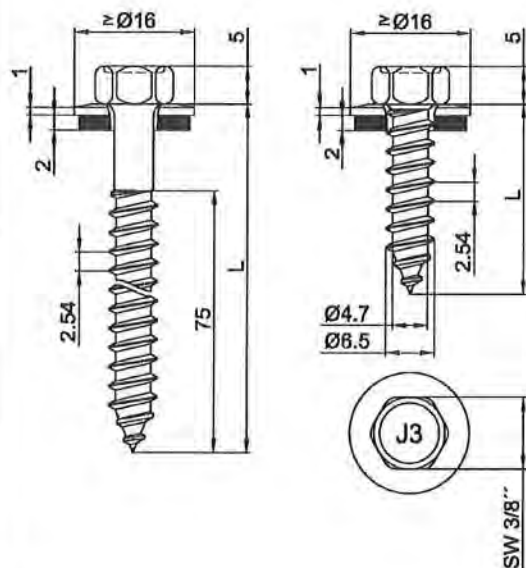
— The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JA3-6,5xL

with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 104



Materials:

Fastener: stainless steel (A2/ 1.4567) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573
timber – EN 14081

Pre-drill diameter: see table

Timber substructures:

performance determined with

$M_{y,Rk} = 9,742 \text{ Nm}$
 $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$

$t_{N,II}$ [mm]	0,50	0,70	0,90	1,00	1,20	1,50	2,00	2,50	3,00		
d_{pd} [mm]	Ø 4,0		Ø 4,5						Ø 5,0		
$M_{t,nom}$	—										
$V_{R,k}$ [kN] 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	
$N_{R,II,k}$ [kN] =	—	—	0,36	0,42	0,55	0,77	1,23	1,77	2,38	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.
- Timber substructures (component II): predrilling the holes with Ø4,80 mm is necessary.

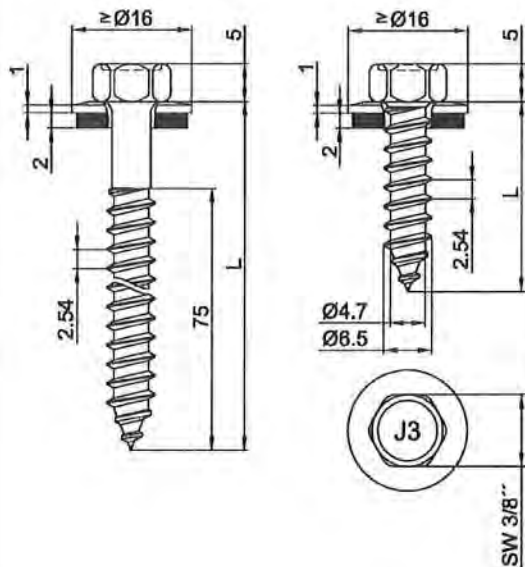
Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JA3-6,5xL

with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 105

	Materials: Fastener: stainless steel (A2/ 1.4567) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: alluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 timber – EN 14081 Pre-drill diameter: see table Timber substructures: performance determined with $M_{y,Rk} = 9,742 \text{ Nm}$ $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$																																																																																																																																																																	
<table><tr><th>$t_{N,II} [\text{mm}]$</th><th>0,50</th><th>0,70</th><th>0,90</th><th>1,00</th><th>1,20</th><th>1,50</th><th>2,00</th><th>2,50</th><th>3,00</th><th rowspan="3"></th></tr><tr><th>$d_{pd} [\text{mm}]$</th><th colspan="2">Ø 4,0</th><th colspan="7">Ø 4,5</th><th>Ø 5,0</th></tr><tr><th>$M_{t,nom}$</th><th colspan="10">—</th></tr><tr><td>$V_{R,k} [\text{kN}]$ for $t_{N,I} =$</td><td>0,50</td><td>0,31 —</td><td>0,53 —</td><td>0,74 —</td><td>0,85 —</td><td>1,06 —</td><td>1,20 ac</td><td>1,20 ac</td><td>1,20 abcd</td><td>1,20 abcd</td><td>1,20</td></tr><tr><td></td><td>0,60</td><td>0,31 —</td><td>0,53 —</td><td>0,74 —</td><td>0,85 —</td><td>1,06 —</td><td>1,30 —</td><td>1,50 ac</td><td>1,50 ac</td><td>1,50 ac</td><td>1,50</td></tr><tr><td></td><td>0,70</td><td>0,31 —</td><td>0,53 —</td><td>0,74 —</td><td>0,85 —</td><td>1,06 —</td><td>1,40 —</td><td>1,80 —</td><td>1,80 ac</td><td>1,80 ac</td><td>1,80</td></tr><tr><td></td><td>0,80</td><td>0,31 —</td><td>0,53 —</td><td>0,74 —</td><td>0,85 —</td><td>1,06 —</td><td>1,50 —</td><td>1,90 —</td><td>2,10 —</td><td>2,10 ac</td><td>2,10</td></tr><tr><td></td><td>0,90</td><td>0,31 —</td><td>0,53 —</td><td>0,75 —</td><td>0,85 —</td><td>1,06 —</td><td>1,65 —</td><td>2,10 —</td><td>2,30 —</td><td>2,40 —</td><td>2,40</td></tr><tr><td></td><td>1,00</td><td>0,31 —</td><td>0,53 —</td><td>0,75 —</td><td>0,88 —</td><td>1,06 —</td><td>1,80 —</td><td>2,30 —</td><td>2,50 —</td><td>2,70 —</td><td>2,70</td></tr><tr><td></td><td>1,20</td><td>0,31 —</td><td>0,53 —</td><td>0,75 —</td><td>0,88 —</td><td>1,15 —</td><td>2,10 —</td><td>2,40 —</td><td>2,80 —</td><td>3,10 —</td><td>3,10</td></tr><tr><td></td><td>1,50</td><td>0,31 —</td><td>0,53 —</td><td>0,75 —</td><td>0,88 —</td><td>1,15 —</td><td>2,80 —</td><td>3,00 —</td><td>3,30 —</td><td>3,60 —</td><td>3,60</td></tr><tr><td></td><td>2,00</td><td>0,31 —</td><td>0,53 —</td><td>0,75 —</td><td>0,88 —</td><td>1,15 —</td><td>2,80 —</td><td>3,00 —</td><td>3,30 —</td><td>3,60 —</td><td>3,60</td></tr><tr><td>$N_{R,II,k} [\text{kN}] =$</td><td>—</td><td>—</td><td>0,47</td><td>0,55</td><td>0,71</td><td>1,00</td><td>1,60</td><td>2,30</td><td>3,10</td><td>failure of component II see chapter 4.2.2</td></tr></table>											$t_{N,II} [\text{mm}]$	0,50	0,70	0,90	1,00	1,20	1,50	2,00	2,50	3,00		$d_{pd} [\text{mm}]$	Ø 4,0		Ø 4,5							Ø 5,0	$M_{t,nom}$	—										$V_{R,k} [\text{kN}]$ 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	$N_{R,II,k} [\text{kN}] =$	—	—	0,47	0,55	0,71	1,00	1,60	2,30	3,10	failure of component II see chapter 4.2.2
$t_{N,II} [\text{mm}]$	0,50	0,70	0,90	1,00	1,20	1,50	2,00	2,50	3,00																																																																																																																																																									
$d_{pd} [\text{mm}]$	Ø 4,0		Ø 4,5								Ø 5,0																																																																																																																																																							
$M_{t,nom}$	—																																																																																																																																																																	
$V_{R,k} [\text{kN}]$ 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																																																																																																																																																							
$N_{R,II,k} [\text{kN}] =$	—	—	0,47	0,55	0,71	1,00	1,60	2,30	3,10	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. – Timber substructures (component II): predrilling the holes with Ø4,80 mm is necessary.																																																																																																																																																																		
Fastening screws JA, JB, JT, JZ and JF										Annex 106																																																																																																																																																								
Self-tapping screw JA3-6,5xL with hexagon head and sealing washer ≥ Ø16 mm																																																																																																																																																																		



Materials:

Fastener: stainless steel (A2/ 1.4567) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: S235 – EN 10025-1
S280GD to S350GD – EN 10346
timber – EN 14081

Pre-drill diameter: see table

Timber substructures:

performance determined with

$M_{y,Rk} = 9,742 \text{ Nm}$
 $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$

$t_{N,II}$ [mm]	0,63	0,75	0,88	1,00	1,25	1,50	2,00	2,50	3,00		
d_{pd} [mm]	Ø 3,5	Ø 4,0	Ø 4,5			Ø 5,0	Ø 5,3				
$M_{t,nom}$	—										
$V_{R,k}$ [kN] 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	
$N_{R,II,k}$ [kN] =	1,00	1,20	1,40	1,50	1,90	2,30	2,30	2,30	2,30	failure of component II see chapter 4.2.2	

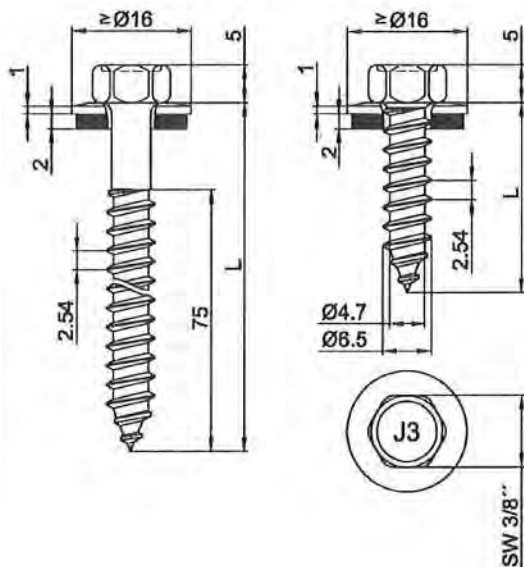
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
- Timber substructures (component II): predrilling the holes with Ø4,80 mm is necessary.

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JA3-6,5xL

with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 107



Materials:

Fastener: stainless steel (A2/ 1.4567) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: S235 – EN 10025-1
S280GD to S350GD – EN 10346
timber – EN 14081

Pre-drill diameter: see table

Timber substructures:

performance determined with

$M_{y,Rk} = 9,742 \text{ Nm}$
 $F_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$

$t_{N,II}$ [mm]	0,63	0,75	0,88	1,00	1,25	1,50	2,00	2,50	3,00		
d_{pd} [mm]	Ø 3,5	Ø 4,0	Ø 4,5			Ø 5,0	Ø 5,3				
$M_{t,nom}$	—										
$V_{R,k}$ [kN] 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
$N_{R,II,k}$ [kN] =	1,00	1,20	1,40	1,50	1,90	2,30	2,30	2,30	2,30	failure of component II see chapter 4.2.2	

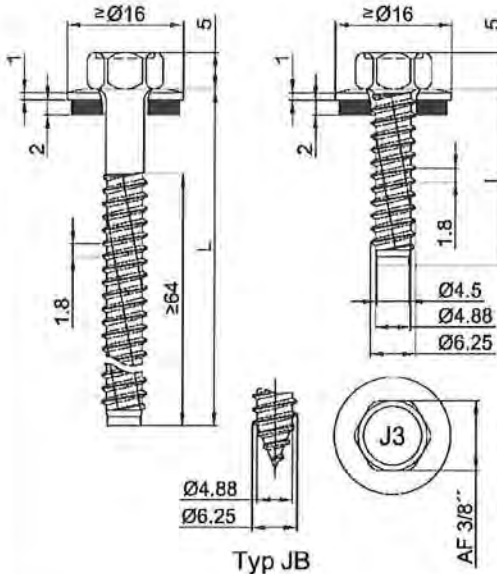
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
- Timber substructures (component II): predrilling the holes with Ø4,80 mm is necessary.

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JA3-6,5xL

with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 108



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal
Component I: S280GD to S350GD – EN 10346
Component II: S235 to S355 – EN 10025-1
S280GD to S450GD – EN 10346
HX300LAD to HX460LAD – EN 10346

Pre-drill diameter: see table

Timber substructures:

no performance determined

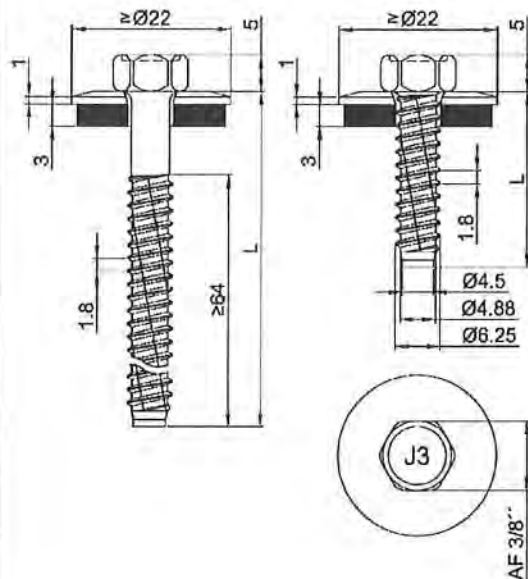
$t_{N,II}$ [mm]	1,25		1,50		2,00		3,00		4,00		6,00		≥7,00		
d_{pd} [mm]	Ø 5,0				Ø 5,3						Ø 5,5		Ø 5,7		
$M_{t,nom}$	5 Nm														
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	
	0,63	2,50	ac	2,70	ac	2,90	abcd	3,00	abcd	3,10	abcd	3,10	abcd	3,10	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	—	10,30	—	10,60	—	11,30	—	11,30	—	
$N_{R,k}$ [kN] for $t_{N,I} =$	0,50	0,97	ac	1,35	ac	1,51	abcd	1,51	abcd	1,51	abdc	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	ac	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	6,90	ac	7,10	ac
2,00	2,00	—	2,70	—	3,60	—	6,00	—	7,30	—	7,30	—	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 mit $t_{II} \leq 2,00$ mm
- HX340 LAD to HX460LAD only for JZ5-6,3xL

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JZ3-6,3xL, JB3-6,3xL, JZ5-6,3xL
with hexagon head and sealing washer $\geq \text{Ø}16$ mm

Annex 109



Materials:

Fastener: stainless steel (A2) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

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

Pre-drill diameter: see table

Timber substructures:

no performance determined

$t_{N,II}$ [mm]	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 $t_{N,I} =$	0,50	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—
	0,63	3,40	abcd	3,40	abcd	3,40	abcd	3,40
	0,75	4,20	ac	4,20	ac	4,20	ac	4,20
	0,88	4,70	ac	4,70	ac	4,70	ac	4,70
	1,00	5,00	ac	5,00	ac	5,10	ac	5,10
	1,13	5,60	ac	5,60	ac	5,80	ac	5,80
	1,25	6,30	—	6,40	—	6,50	ac	6,50
	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 $t_{N,I} =$	0,50	1,67	abcd	1,67	abcd	1,67	abcd	1,67
	0,55	2,11	abcd	2,11	abcd	2,11	abcd	2,11
	0,63	3,10	abcd	3,10	abcd	3,10	abcd	3,10
	0,75	4,00	ac	4,00	ac	4,00	ac	4,00
	0,88	4,40	ac	4,40	ac	4,40	ac	4,40
	1,00	4,60	ac	4,60	ac	4,60	ac	4,60
	1,13	5,10	ac	5,10	ac	5,10	ac	5,10
	1,25	5,10	—	5,10	—	5,10	ac	5,10
	1,50	5,90	—	5,90	—	5,90	—	5,90
	1,75	6,90	—	6,90	—	7,10	—	7,10
2,00	8,80	—	11,60	—	13,40	—	13,40	

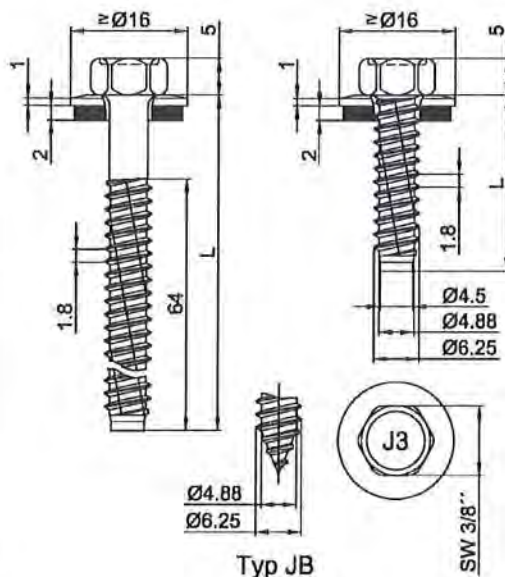
– HX340LAD to HX460LAD only JZ5-6,3xL

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JZ3-6,3xL, JZ5-6,3xL

with hexagon head and sealing washer ≥ Ø22 mm

Annex 110



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal
Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573
Component II: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Pre-drill diameter: see table

Timber substructures:

no performance determined

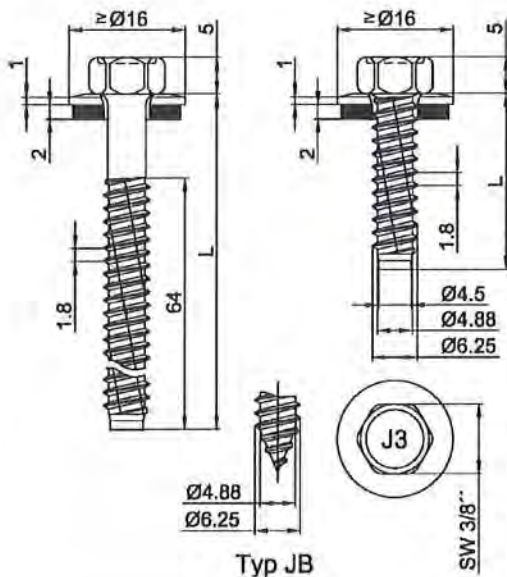
t _{N,II} [mm]	1,20	1,50	2,00	2,50	3,00	4,00	5,00	6,00	≥7,00	
d _{pd} [mm]	Ø 4,5				Ø 5,0		Ø 5,3			Ø 5,5
M _{t,nom}	—									
V _{R,k} [kN] for t _{N,I} =	0,50	0,79 —	0,84 ac	0,84 ac	0,84 abcd	0,84 abcd	0,84 abcd	0,84 abcd	0,84 abcd	0,84 abcd
	0,60	0,79 —	0,96 —	1,07 ac	1,07 ac	1,07 ac	1,07 abcd	1,07 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} [kN] =	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.

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JZ3-6,3xL, JB3-6,3xL, JZ5-6,3xL
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 111



Typ JB

Materials:

Fastener: stainless steel (A2) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Pre-drill diameter: see table

Timber substructures:

no performance determined

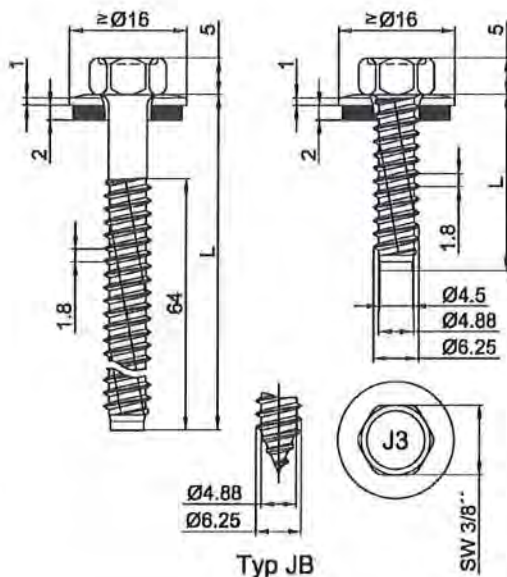
t _{N,II} [mm]	1,20	1,50	2,00	2,50	3,00	4,00	5,00	6,00	≥7,00
d _{pd} [mm]	Ø 4,5				Ø 5,0	Ø 5,3			Ø 5,5
M _{t,nom}	—								
V _{R,k} [kN] for t _{N,I} =	0,50	1,03 —	1,10 ac	1,10 ac	1,10 abcd	1,10 abcd	1,10 abcd	1,10 abcd	1,10 abcd
	0,60	1,03 —	1,25 ac	1,40 ac	1,40 ac	1,40 ac	1,40 abcd	1,40 abcd	1,40 abcd
	0,70	1,03 —	1,40 —	1,70 —	1,70 ac	1,70 ac	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
	0,90	1,03 —	1,65 —	2,00 —	2,25 —	2,30 —	2,30 ac	2,30 ac	2,30 abcd
	1,00	1,04 —	1,80 —	2,10 —	2,50 —	2,60 —	2,,6 ac	2,,6 ac	2,,6 abcd
	1,20	1,14 —	2,10 —	2,40 —	2,70 —	3,00 —	3,10 ac	3,10 ac	3,10 abcd
	1,50	1,14 —	2,80 —	3,00 —	3,30 —	3,50 —	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 —	
N _{R,II,k} [kN] =	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.

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JZ3-6,3xL, JB3-6,3xL, JZ5-6,3xL
with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 112



Materials:

Fastener: stainless steel (A2) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

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

Pre-drill diameter: see table

Timber substructures:

no performance determined

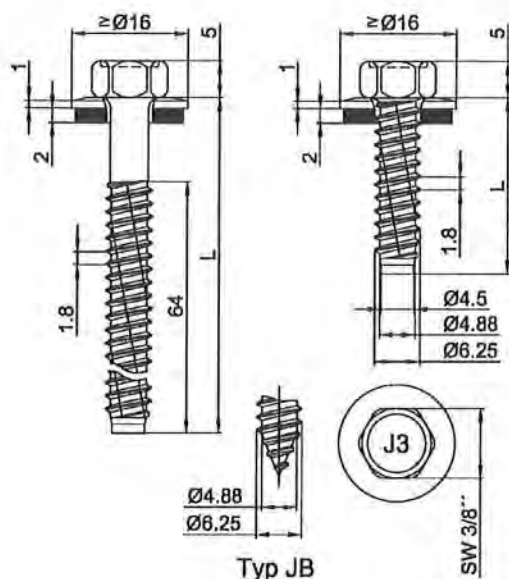
t _{N,II} [mm]	1,25	1,50	2,00	2,50	3,00	4,00	5,00	6,00	≥7,00	
d _{pd} [mm]	Ø 5,0		Ø 5,3						Ø 5,5	Ø 5,7
M _{t,nom}	—									
V _{R,k} [kN] for t _{N,I} =	0,50	0,83 —	0,84 ac	0,84 ac	0,84 abcd	0,84 abcd	0,84 abcd	0,84 abcd	0,84 abcd	0,84 —
	0,60	0,83 —	0,96 —	1,07 ac	1,07 ac	1,07 ac	1,07 abcd	1,07 abcd	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} [kN] =	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.
- HX340LAD to HX460LAD only JZ5-6,3xL

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JZ3-6,3xL, JB3-6,3xL, JZ5-6,3xL
with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 113



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal
Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573
Component II: S235 to S355 – EN 10025-1
S280GD to S350GD – EN 10346
HX300LAD to HX460LAD – EN 10346

Pre-drill diameter: see table

Timber substructures:

no performance determined

$t_{N,II}$ [mm]	1,25	1,50	2,00	2,50	3,00	4,00	5,00	6,00	$\geq 7,00$	
d_{pd} [mm]	$\varnothing 5,0$		$\varnothing 5,3$						$\varnothing 5,5$	$\varnothing 5,7$
$M_{t,nom}$	—									
$V_{R,k}$ [kN] 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 —
$N_{R,II,k}$ [kN] =	2,00	2,70	3,60	3,60	6,00	7,30	7,45	7,60	7,60	

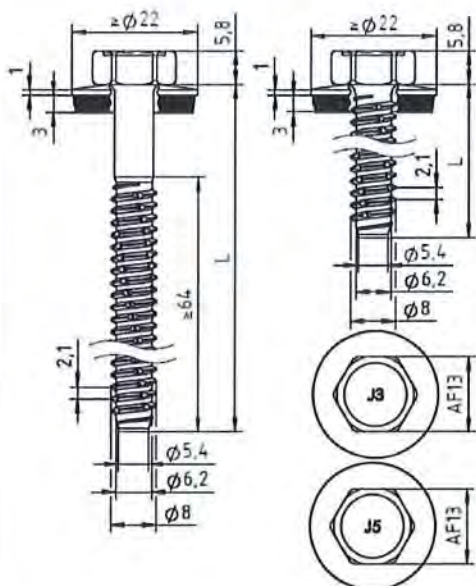
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
- HX340LAD to HX460LAD only JZ5-6,3xL

Fastening screws JA, JB, JT, JZ and JF

Annex 114

Self-tapping screw JZ3-6,3xL, JB3-6,3xL, JZ5-6,3xL

with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$



Materials:

Fastener: stainless steel (A2) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

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

Pre-drill diameter: see table

Timber substructures:

no performance determined

$t_{N,II}$ [mm]	1,50		2,00		3,00		4,00		6,00		8,00		≥10,00		
d_{pd} [mm]	Ø 6,8								Ø 5,3		Ø 5,5		Ø 5,7		
$M_{t,nom}$	10 Nm														
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	0,86	ac	0,86	ac	0,86	ac	0,86	abcd	0,86	abcd	0,86	abcd	0,86	abcd
	0,55	1,30	ac	1,30	ac	1,30	ac	1,30	abcd	1,30	abcd	1,30	abcd	1,30	abcd
	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 $t_{N,I} =$	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	ac	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	—

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JZ3-8,0xL, JZ5-8,0xL
with hexagon head and sealing washer $\geq \varnothing 22$ mm

Annex 115

Typ JB	Materials: Fastener: stainless steel CRONIMAKS® similar to stainless steel (A2) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S280GD to S350GD – EN 10346 Component II: S235 to S355 – EN 10025-1 S280GD to 350GD – EN 10346 Pre-drill diameter: see table Timber substructures: no performance determined
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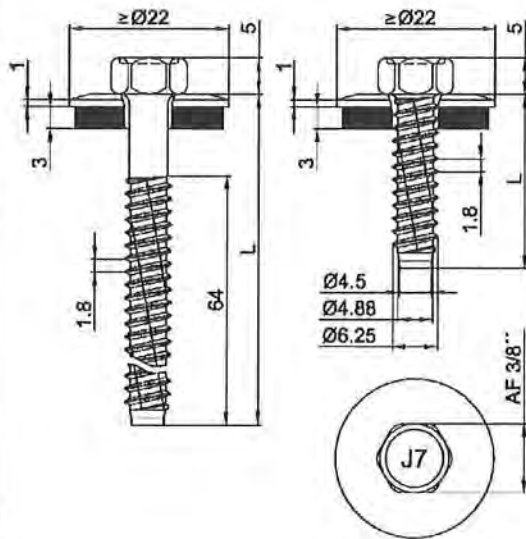
$t_{N,II}$ [mm]	1,25		1,50		2,00		3,00		4,00		6,00		≥7,00		
d_{pd} [mm]	Ø 5,0				Ø 5,3						Ø 5,5		Ø 5,7		
$M_{t,nom}$	5 Nm														
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	
	0,63	2,50	ac	2,70	ac	2,80	abcd	3,00	abcd	3,10	abcd	3,10	abcd	3,10	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	4,40	abcd	4,40	abcd	4,40	abcd
	1,00	3,20	ac	3,60	ac	4,10	ac	4,80	ac	5,10	ac	5,10	ac	5,10	ac
	1,13	3,40	ac	4,00	ac	4,60	ac	5,40	ac	5,80	ac	5,80	ac	5,80	ac
	1,25	3,60	ac	4,20	ac	5,00	ac	6,10	ac	6,50	ac	6,50	ac	6,50	ac
	1,50	3,70	ac	4,40	ac	5,70	ac	6,80	ac	7,30	ac	7,30	ac	7,30	ac
	1,75	3,70	ac	4,70	ac	6,20	ac	7,60	ac	8,10	ac	8,10	ac	8,10	ac
2,00	5,00	—	6,50	—	8,80	—	10,60	—	11,30	—	11,30	—	11,30	—	
$N_{R,k}$ [kN] for $t_{N,I} =$	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 mit $t_{II} \leq 2,00$ mm

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JZ7-6,3xL, JB7-6,3xL
with hexagon head and sealing washer $\geq \text{Ø}16$ mm

Annex 116



Materials:

Fastener: stainless steel CRONIMAKS®
similar to stainless steel (A2) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

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

Pre-drill diameter: see table

Timber substructures:

no performance determined

$t_{N,II}$ [mm]	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 $t_{N,I} =$	0,50	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—
	0,63	3,40	abcd	3,40	abcd	3,40	abcd	3,40
	0,75	4,20	ac	4,20	ac	4,20	ac	4,20
	0,88	4,70	ac	4,70	ac	4,70	ac	4,70
	1,00	5,00	ac	5,00	ac	5,10	ac	5,10
	1,13	5,60	ac	5,60	ac	5,80	ac	5,80
	1,25	6,30	—	6,40	—	6,50	ac	6,50
	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 $t_{N,I} =$	0,50	1,67	abcd	1,67	abcd	1,67	abcd	1,67
	0,55	2,11	abcd	2,11	abcd	2,11	abcd	2,11
	0,63	3,10	abcd	3,10	abcd	3,10	abcd	3,10
	0,75	4,00	ac	4,00	ac	4,00	ac	4,00
	0,88	4,40	ac	4,40	ac	4,40	ac	4,40
	1,00	4,60	ac	4,60	ac	4,60	ac	4,60
	1,13	5,10	ac	5,10	ac	5,10	ac	5,10
	1,25	5,10	—	5,10	—	5,10	ac	5,10
	1,50	5,90	—	5,90	—	5,90	—	5,90
	1,75	6,90	—	6,90	—	7,10	—	7,10
	2,00	8,80	—	11,60	—	13,40	—	13,40

- JZ7-6,3 x L for Bauteile II mit $t_{N,I} \geq 1,25$ mm
- JB7-6,3 x L for Bauteile II mit $t_{N,I} \leq 2,00$ mm

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JZ7-6,3xL, JB7-6,3xL
with hexagon head and sealing washer $\geq \text{Ø}22$ mm

Annex 117

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: S280GD to S350GD – EN 10346 Component II: S280GD to S350GD – EN 10346
	Drilling capacity: $\Sigma t \leq 2,00 \text{ mm}$
	Timber substructures: no performance determined

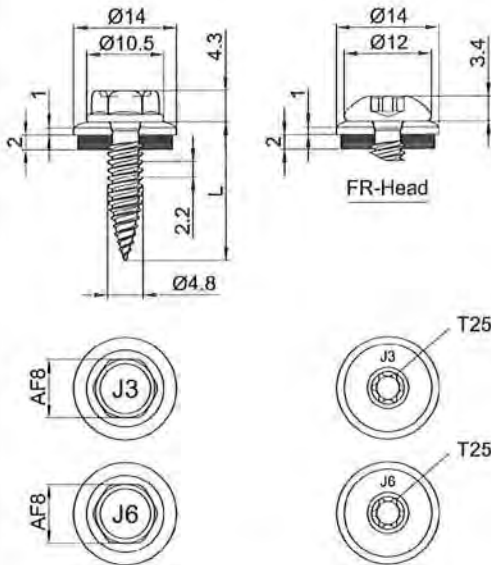
$t_{N,II} [\text{mm}]$	0,40	0,50	0,55	0,63	0,75	0,88
$M_{t,nom}$	—					
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$	0,40	0,65	0,65	0,65	0,65	0,65
	0,50	0,65	0,81	0,81	0,81	0,81
	0,55	0,65	0,81	0,99	0,99	0,99
	0,63	0,65	0,81	0,99	1,26	1,26
	0,75	0,65	0,81	0,99	1,26	1,71
	0,88	0,65	0,81	0,99	1,26	1,71
	1,00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

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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR-)2H-4,8xL, JF6-(FR-)2H-4,8xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}14 \text{ mm}$

Annex 118



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Drilling capacity: $\Sigma t \leq 2,00 \text{ mm}$

Timber substructures:

no performance determined

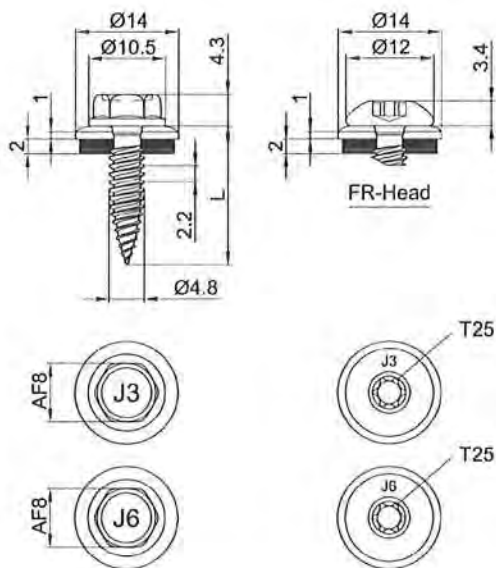
$t_{N,II} [\text{mm}]$	0,50	0,60	0,70	0,80	0,90	1,00
$M_{t,nom}$	—					
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$						
0,50	0,45 —	0,45 —	0,45 —	0,45 —	0,45 —	0,45 —
0,60	0,45 —	0,66 —	0,66 —	0,66 —	0,66 —	0,66 —
0,70	0,45 —	0,66 —	0,88 —	0,88 —	0,88 —	0,88 —
0,80	0,45 —	0,66 —	0,88 —	1,09 —	1,09 —	1,09 —
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 —
$N_{R,II,k} [\text{kN}] =$	0,32	0,42	0,51	0,61	0,71	0,80

- 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR-)2H-4,8xL, JF6-(FR-)2H-4,8xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}14 \text{ mm}$

Annex 119



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Drilling capacity: $\Sigma t \leq 2,00 \text{ mm}$

Timber substructures:

no performance determined

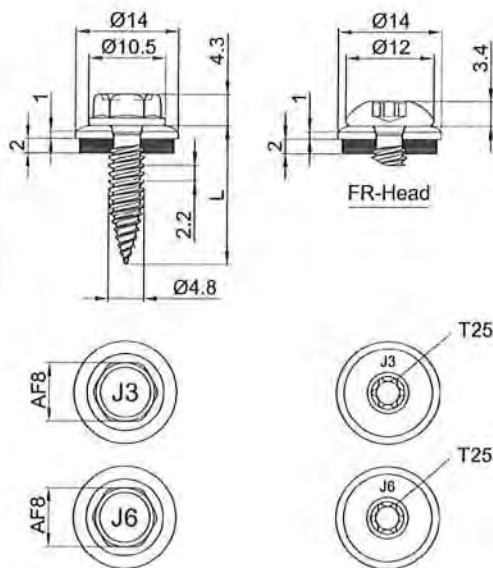
$t_{N,II} [\text{mm}]$	0,50	0,60	0,70	0,80	0,90	1,00
$M_{t,nom}$	—					
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$						
0,50	0,58 —	0,58 —	0,58 —	0,58 —	0,58 —	0,58 —
0,60	0,58 —	0,86 —	0,86 —	0,86 —	0,86 —	0,86 —
0,70	0,58 —	0,86 —	1,14 —	1,14 —	1,14 —	1,14 —
0,80	0,58 —	0,86 —	1,14 —	1,42 —	1,42 —	1,42 —
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 —
$N_{R,II,k} [\text{kN}] =$	0,42	0,54	0,67	0,79	0,92	1,04

— 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR-)2H-4,8xL, JF6-(FR-)2H-4,8xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}14 \text{ mm}$

Annex 120



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: S280GD to S350GD – EN 10346

Drilling capacity: $\Sigma t \leq 2,00 \text{ mm}$

Timber substructures:

no performance determined

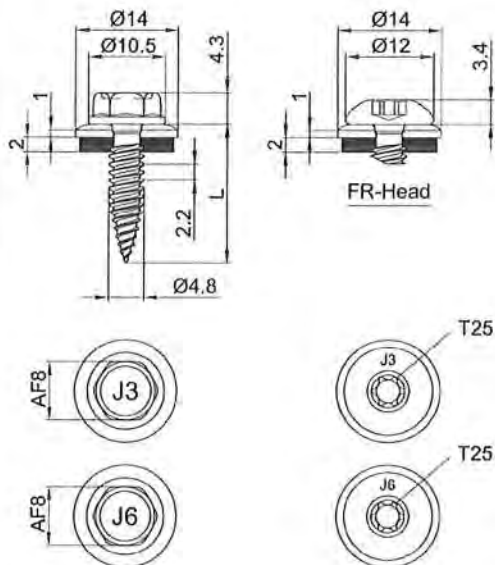
$t_{N,II} [\text{mm}]$	0,50	0,55	0,63	0,75	0,88	1,00
$M_{t,nom}$	—					
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$						
0,50	0,45 —	0,45 —	0,45 —	0,45 —	0,45 —	0,45 —
0,60	0,45 —	0,45 —	0,66 —	0,66 —	0,66 —	0,66 —
0,70	0,45 —	0,45 —	0,66 —	0,88 —	0,88 —	0,88 —
0,80	0,45 —	0,45 —	0,66 —	0,88 —	1,09 —	1,09 —
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 —
$N_{R,II,k} [\text{kN}] =$	0,67	0,78	0,94	1,21	1,50	1,78

— 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.

Fastening screws JA, JB, JT, JZ and JF

Annex 121

Self-drilling screw (chipless) JF3-(FR)-2H-4,8xL, JF6-(FR)-2H-4,8xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}14 \text{ mm}$



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: S280GD to S350GD – EN 10346

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

Timber substructures:

no performance determined

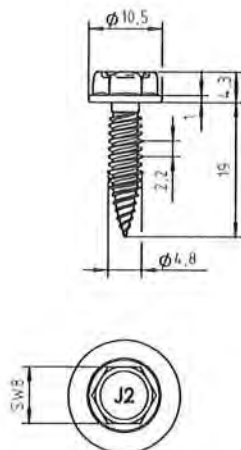
$t_{N,II} [\text{mm}]$	0,50	0,55	0,63	0,75	0,88	1,00
$M_{t,nom}$	—					
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$						
0,50	0,58 —	0,58 —	0,58 —	0,58 —	0,58 —	0,58 —
0,60	0,58 —	0,58 —	0,86 —	0,86 —	0,86 —	0,86 —
0,70	0,58 —	0,58 —	0,86 —	1,14 —	1,14 —	1,14 —
0,80	0,58 —	0,58 —	0,86 —	1,14 —	1,42 —	1,42 —
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 —
$N_{R,II,k} [\text{kN}] =$	0,67	0,78	0,94	1,21	1,50	1,78

- 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR)-2H-4,8xL, JF6-(FR)-2H-4,8xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}14 \text{ mm}$

Annex 122



Materials

Fastener: carbon steel
case hardened and corrosion-resistant

Washer: none

Component I: S280GD to S350GD - EN 10346

Component II: S280GD to S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 2 \times 0,88 \text{ mm}$

Timber substructures:

no performance determined

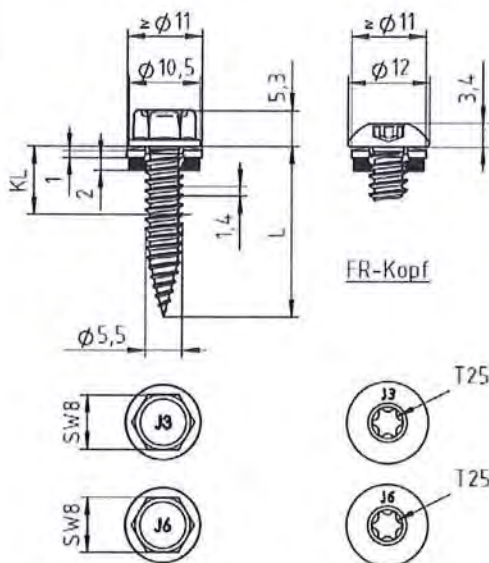
$t_{N,II} [\text{mm}]$	0,40	0,50	0,55	0,63	0,75	0,88
$M_{t,nom}$	—					
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$						
0,40	0,79	0,79	0,79	0,79	0,79	0,79
0,50	0,79	1,18	1,27	1,42	1,65	1,65
0,55	0,79	1,18	1,41	1,56	1,79	1,79
0,63	0,79	1,18	1,41	1,77	2,00	2,00
0,75	0,79	1,18	1,41	1,77	2,35	2,35
0,88	0,79	1,18	1,41	1,77	2,35	2,84
1,00	—	—	—	—	—	—
1,13	—	—	—	—	—	—
1,25	—	—	—	—	—	—
1,50	—	—	—	—	—	—
1,75	—	—	—	—	—	—
2,00	—	—	—	—	—	—
$N_{R,k} [\text{kN}]$ 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	—	—	—	—	—	—
1,75	—	—	—	—	—	—
1,50	—	—	—	—	—	—
2,00	—	—	—	—	—	—

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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF2-2H-4,8xL
with hexagon head

Annex 123



Materials:

Fastener: stainless steel (A2) – EN ISO 3506

stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S280GD to S350GD – EN 10346

Drilling capacity: $\Sigma t \leq 2 \times 1,00 \text{ mm}$

Timber substructures:

no performance determined

$t_{N,II}$ [mm]	0,40	0,50	0,55	0,63	0,75	0,88	1,00
$M_{t,nom}$	—						
$V_{R,x}$ [kN] 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	— —	— —	— —	— —	— —	— —	— —
$N_{R,x}$ [kN] 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	— —	— —	— —	— —	— —	— —	— —

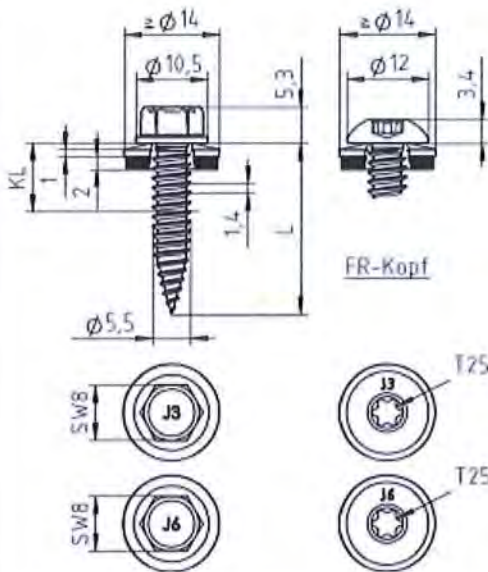
— If both components I and II are made of S320GD or S350GD the values may be increased by 8,3%.

Fastening screws JA, JB, JT, JZ and JF

Annex 124

Self-drilling screw (chipless) JF3-(FR)-2-5,5xL, JF6-(FR)-2-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \text{Ø}11 \text{ mm}$



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: S280GD to S350GD – EN 10346

Component II: S280GD to S350GD – EN 10346

Drilling capacity: $\Sigma t \leq 2 \times 1,00 \text{ mm}$

Timber substructures:

no performance determined

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

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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR)-2-5,5xL, JF6-(FR)-2-5,5xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 125

FR-Kopf	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573
	Drilling capacity: $\Sigma t \leq 2 \times 1,50 \text{ mm}$
	Timber substructures: no performance determined

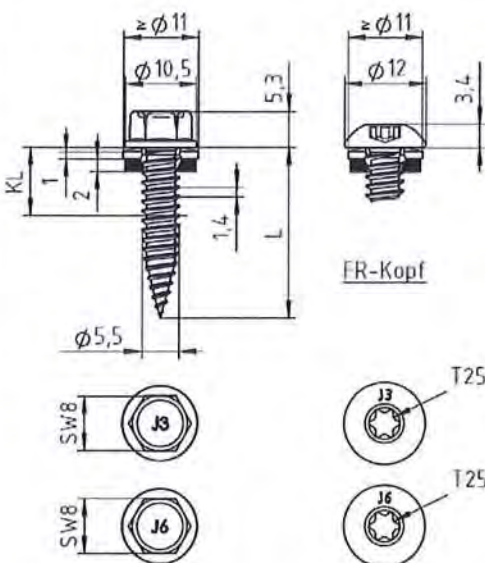
$t_{N,II}$ [mm]	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50
$M_{t,nom}$	—								
$V_{R,k}$ [kN] for $t_{N,I} =$	0,40	0,43 —	0,43 —	0,43 —	0,43 —	0,43 —	0,43 —	0,43 —	0,43 —
	0,50	0,43 —	0,62 —	0,62 —	0,62 —	0,62 —	0,62 —	0,62 —	0,62 —
	0,60	0,43 —	0,62 —	0,71 —	0,71 —	0,71 —	0,71 —	0,71 —	0,71 —
	0,70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

– 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR)-2-5,5xL, JF6-(FR)-2-5,5xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 11 \text{ mm}$

Annex 126

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: stainless steel (A2/A4) – EN ISO 3506 with vulcanised EPDM seal Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Drilling capacity: $\Sigma t \leq 2 \times 1,50 \text{ mm}$ Timber substructures: no performance determined
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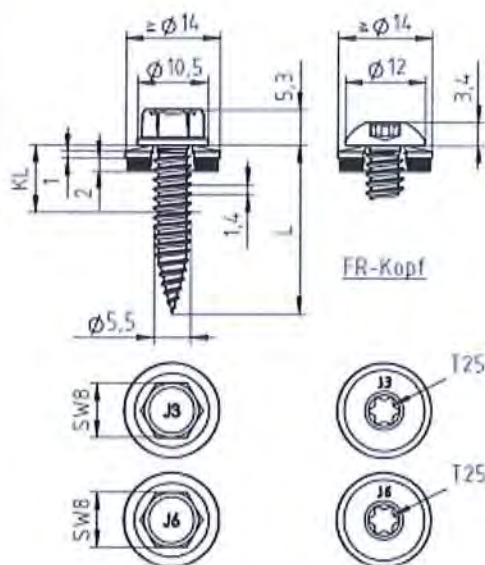
$t_{N,II}$ [mm]	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50	
$M_{t,nom}$	—									
$V_{R,k}$ [kN] for $t_{N,I} =$	0,40	0,55 —	0,55 —	0,55 —	0,55 —	0,55 —	0,55 —	0,55 —	0,55 —	
	0,50	0,55 —	0,79 —	0,79 —	0,79 —	0,79 —	0,79 —	0,79 —	0,79 —	
	0,60	0,55 —	0,79 —	0,91 —	0,91 —	0,91 —	0,91 —	0,91 —	0,91 —	
	0,70	0,55 —	0,79 —	0,91 —	1,03 —	1,03 —	1,03 —	1,03 —	1,03 —	
	0,80	0,55 —	0,79 —	0,91 —	1,03 —	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 —	
	1,00	0,55 —	0,79 —	0,91 —	1,03 —	1,15 —	1,35 —	1,54 —	1,54 —	
	1,20	0,55 —	0,79 —	0,91 —	1,03 —	1,15 —	1,35 —	1,54 —	1,62 —	
	1,50	0,55 —	0,79 —	0,91 —	1,03 —	1,15 —	1,35 —	1,54 —	2,44 —	
$N_{R,II,k}$ [kN] =	0,31	0,46	0,60	0,75	0,89	1,04	1,18	1,47	2,12	

– 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-(FR)-2-5,5xL, JF6-(FR)-2-5,5xL
with hexagon head or round head with Torx® drive system and sealing washer $\geq \phi 11 \text{ mm}$

Annex 127



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: S280GD to S350GD – EN 10346

Drilling capacity: $\Sigma t \leq 1,50 \text{ mm} + 1,00 \text{ mm}$

Timber substructures:

no performance determined

$t_{N,II} [\text{mm}]$	0,40	0,50	0,55	0,63	0,75	0,88	1,00
$M_{t,nom}$	—						
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$							
0,40	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 —
0,60	0,55 —	0,79 —	0,85 —	0,91 —	0,91 —	0,91 —	0,91 —
0,70	0,55 —	0,79 —	0,85 —	0,95 —	1,14 —	1,14 —	1,14 —
0,80	0,55 —	0,79 —	0,85 —	0,95 —	1,14 —	1,42 —	1,42 —
0,90	0,55 —	0,79 —	0,85 —	0,95 —	1,14 —	1,42 —	1,90 —
1,00	0,55 —	0,79 —	0,85 —	0,95 —	1,14 —	1,42 —	2,38 —
1,20	0,55 —	0,79 —	0,85 —	0,95 —	1,14 —	1,42 —	2,38 —
1,50	0,55 —	0,79 —	0,85 —	0,95 —	1,14 —	1,42 —	2,38 —
$N_{R,II,k} [\text{kN}] =$	0,60	0,82	0,94	1,14	1,44	1,80	2,14

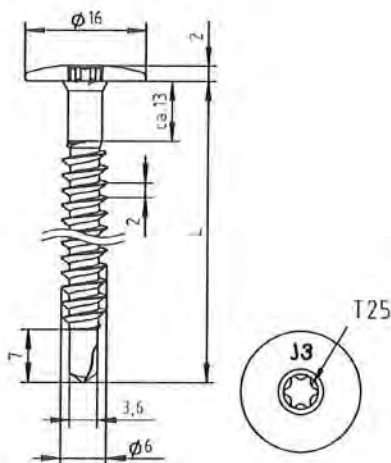
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Fastening screws JA, JB, JT, JZ and JF

Annex 128

Self-drilling screw (chipless) JF3-(FR)-2-5,5xL, JF6-(FR)-2-5,5xL

with hexagon head or round head with Torx® drive system and sealing washer $\geq \varnothing 14 \text{ mm}$



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506
Bauteil I: S280GD to S350GD – EN 10346
Bauteil II: S280GD to S350GD – EN 10346
timber – EN 14081

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

Timber substructures:

performance determined with

$M_{y,Rk} = 7,911 \text{ Nm}$

$f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 24 \text{ mm}$

$f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 28 \text{ mm}$

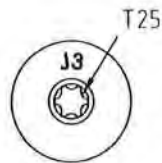
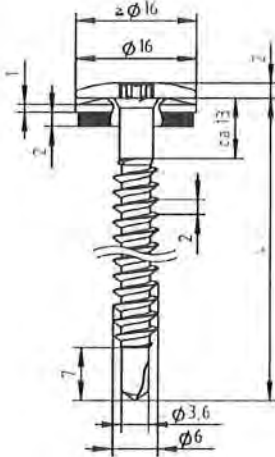
$t_{N,II} =$	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	
$M_{t,nom} =$	—								
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$									bearing resistance of component I
0,40	0,61	—	0,61	—	0,61	—	0,61	—	0,61
0,50	0,88	—	0,88	—	0,88	—	0,88	—	0,88
0,55	1,03	—	1,03	—	1,03	—	1,03	—	1,03
0,63	1,03	—	1,28	—	1,28	—	1,28	—	1,28
0,75	1,03	—	1,28	—	1,69	—	1,69	—	1,69
0,88	1,03	—	1,28	—	2,17	—	2,17	—	2,17
1,00	1,03	—	1,28	—	2,17	—	2,65	—	2,65
1,13	1,03	—	1,28	—	2,17	—	—	—	4,94
1,25	1,03	—	1,28	—	—	—	—	—	5,49
1,50	1,03	—	—	—	—	—	—	—	6,62
$N_{R,k} [\text{kN}]$ for $t_{N,I} =$									pull-through resistance of component I
0,40	0,68	—	0,80	—	1,05	—	1,33	—	1,38
0,50	0,68	—	0,80	—	1,05	—	1,33	—	1,77
0,55	0,68	—	0,80	—	1,05	—	1,33	—	1,96
0,63	0,68	—	0,80	—	1,05	—	1,33	—	2,27
0,75	0,68	—	0,80	—	1,05	—	1,33	—	2,73
0,88	0,68	—	0,80	—	1,05	—	1,33	—	3,23
1,00	0,68	—	0,80	—	1,05	—	1,33	—	3,69
1,13	0,68	—	0,80	—	1,05	—	1,33	—	3,69
1,25	0,68	—	0,80	—	1,05	—	—	—	3,69
1,50	0,68	—	—	—	—	—	—	—	3,69
$N_{R,II,k} [\text{kN}]$	0,68	0,80	1,05	1,33	1,63	1,96	2,26	3,02	failure of component II see chapter 4.2.2

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-LT-2-6,0xL - KD16

with pan head with Torx®-drive

Annex 129



Materials:

Fastener: stainless steel (A2) – EN ISO 3506

stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Bauteil I: S280GD to S350GD – EN 10346

Bauteil II: S280GD to S350GD – EN 10346

Drilling capacity: $\Sigma t \leq 2,00$ mm

Timber substructures:

performance determined with

$M_{y,Rk} = 7,911$ Nm

$f_{ax,k} = 8,575$ N/mm² for $l_{ef} \geq 24$ mm

$f_{ax,k} = 9,800$ N/mm² for $l_{ef} \geq 28$ mm

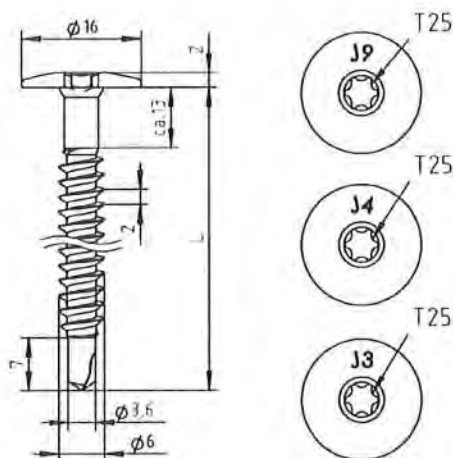
$t_{N,II} =$	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	
$M_{t,nom} =$	—								
$V_{R,k}$ [kN] for $t_{N,I} =$									bearing resistance of component I
0,40	0,61	—	0,61	—	0,61	—	0,61	—	0,61
0,50	0,88	—	0,88	—	0,88	—	0,88	—	0,88
0,55	1,03	—	1,03	—	1,03	—	1,03	—	1,03
0,63	1,03	—	1,28	—	1,28	—	1,28	—	1,28
0,75	1,03	—	1,28	—	1,69	—	1,69	—	1,69
0,88	1,03	—	1,28	—	1,69	—	2,17	—	2,17
1,00	1,03	—	1,28	—	1,69	—	2,17	—	2,17
1,13	1,03	—	1,28	—	1,69	—	2,17	—	2,17
1,25	1,03	—	1,28	—	1,69	—	2,17	—	2,17
1,50	1,03	—	—	—	—	—	—	—	4,94
									5,49
									6,62
$N_{R,k}$ [kN] for $t_{N,I} =$									pull-through resistance of component I
0,40	0,68	—	0,80	—	1,05	—	1,33	—	1,38
0,50	0,68	—	0,80	—	1,05	—	1,33	—	1,38
0,55	0,68	—	0,80	—	1,05	—	1,33	—	1,38
0,63	0,68	—	0,80	—	1,05	—	1,33	—	1,38
0,75	0,68	—	0,80	—	1,05	—	1,33	—	1,38
0,88	0,68	—	0,80	—	1,05	—	1,33	—	1,38
1,00	0,68	—	0,80	—	1,05	—	1,33	—	1,38
1,13	0,68	—	0,80	—	1,05	—	1,33	—	1,38
1,25	0,68	—	0,80	—	1,05	—	1,33	—	1,38
1,50	0,68	—	—	—	—	—	—	—	1,38
$N_{R,II,k}$ [kN]	0,68	0,80	1,05	1,33	1,63	1,96	2,26	3,02	failure of component II see chapter 4.2.2

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-LT-2-6,0xL - KD16

with pan head with Torx®-drive and sealing washer $\geq \phi 16$ mm

Annex 130



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: none

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

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

Timber substructures:

performance determined with

$M_{y,Rk} = 7,911 \text{ Nm}$

$f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 24 \text{ mm}$

$f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 28 \text{ mm}$

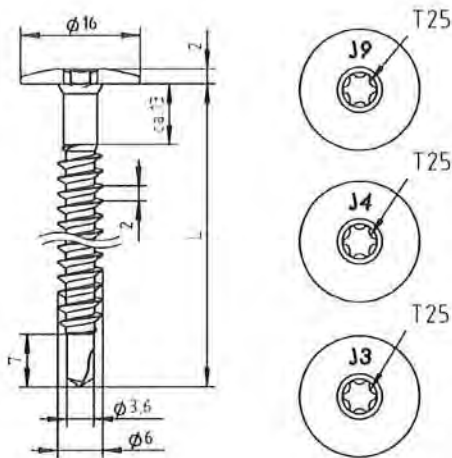
$t_{N,II} =$	0,80	0,90	1,00	1,20	1,50	2,00	
$M_{t,nom} =$							
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$							
0,40	0,29	—	0,29	—	0,29	—	0,29
0,50	0,51	—	0,61	—	0,72	—	0,81
0,60	0,56	—	0,66	—	0,75	—	0,85
0,70	0,63	—	0,72	—	0,80	—	0,89
0,80	0,72	—	0,80	—	0,88	—	0,92
0,90	0,72	—	0,90	—	0,97	—	0,97
1,00	0,72	—	1,01	—	—	—	1,00
1,20	0,72	—	—	—	—	—	1,24
1,50	—	—	—	—	—	—	1,59
$N_{R,II,k} [\text{kN}]$	0,50	0,58	0,68	0,86	1,18	1,81	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-LT-2-6,0xL - KD16, JT4-LT-2-6,0xL - KD16,
JT9-LT-2-6,0xL - KD16
with pan head with Torx®-drive

Annex 131



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: none

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Drilling capacity: $\Sigma t \leq 2,00 \text{ mm}$

Timber substructures:

performance determined with

$M_{y,Rk} = 7,911 \text{ Nm}$

$f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 24 \text{ mm}$

$f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 28 \text{ mm}$

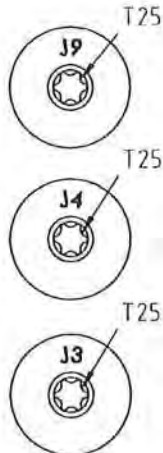
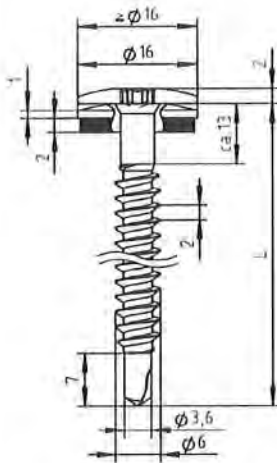
$t_{N,II} =$	0,80	0,90	1,00	1,20	1,50	2,00	
$M_{t,nom} =$							
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$							
0,40	0,38	—	0,38	—	0,38	—	0,38
0,50	0,67	—	0,73	—	0,93	—	1,05
0,60	0,73	—	0,79	—	0,98	—	1,10
0,70	0,83	—	0,88	—	1,05	—	1,15
0,80	0,94	—	0,99	—	1,14	—	1,20
0,90	0,94	—	1,12	—	1,26	—	1,25
1,00	0,94	—	1,32	—	—	—	1,30
1,20	0,94	—	—	—	—	—	1,61
1,50	—	—	—	—	—	—	2,08
$N_{R,II,k} [\text{kN}]$	0,64	0,75	0,87	1,12	1,53	2,33	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.

Fastening screws JA, JB, JT, JZ and JF

**Self-drilling screw JT3-LT-2-6,0xL - KD16, JT4-LT-2-6,0xL - KD16,
JT9-LT-2-6,0xL - KD16**
with pan head with Torx®-drive

Annex 132



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Drilling capacity: $\Sigma t \leq 2,00 \text{ mm}$

Timber substructures:

performance determined with

$M_{y,Rk} = 7,911 \text{ Nm}$

$f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 24 \text{ mm}$

$f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 28 \text{ mm}$

$t_{N,II} =$	0,80	0,90	1,00	1,20	1,50	2,00	
$M_{t,nom} =$							
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$							
0,40	0,29	—	0,29	—	0,29	—	0,29
0,50	0,69	—	0,81	—	0,81	—	0,81
0,60	0,71	—	0,85	—	0,85	—	0,85
0,70	0,74	—	0,89	—	0,89	—	0,89
0,80	0,76	—	0,92	—	0,92	—	0,92
0,90	0,81	—	0,97	—	0,97	—	0,97
1,00	0,85	—	1,00	—	—	—	1,00
1,20	0,94	—	—	—	—	—	1,24
1,50	—	—	—	—	—	—	1,59
$N_{R,II,k} [\text{kN}]$	0,50	0,58	0,68	0,86	1,18	1,81	failure of component II see chapter 4.2.2

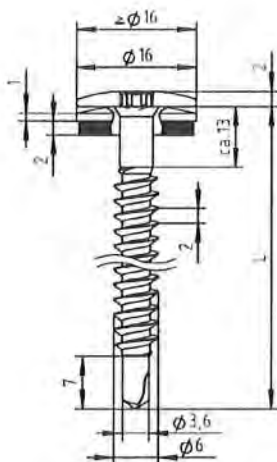
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-LT-2-6,0xL - KD16, JT4-LT-2-6,0xL - KD16,
JT9-LT-2-6,0xL - KD16

with pan head with Torx®-drive and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 133



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: stainless steel (A2/A4) – EN ISO 3506
with vulcanised EPDM seal

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Drilling capacity: $\Sigma t \leq 2,00 \text{ mm}$

Timber substructures:

performance determined with

$M_{y,Rk} = 7,911 \text{ Nm}$

$f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 24 \text{ mm}$

$f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 28 \text{ mm}$

$t_{N,II} =$	0,80	0,90	1,00	1,20	1,50	2,00	
$M_{t,nom} =$							
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$							
0,40	0,38	—	0,38	—	0,38	—	0,38
0,50	0,90	—	1,05	—	1,05	—	1,05
0,60	0,93	—	1,10	—	—	—	1,10
0,70	0,96	—	1,15	—	—	—	1,15
0,80	0,99	—	1,20	—	—	—	1,20
0,90	1,05	—	1,25	—	—	—	1,25
1,00	1,11	—	1,30	—	—	—	1,30
1,20	1,23	—	—	—	—	—	1,61
1,50	—	—	—	—	—	—	2,08
$N_{R,II,k} [\text{kN}]$	0,64	0,75	0,87	1,12	1,53	2,33	failure of component II see chapter 4.2.2

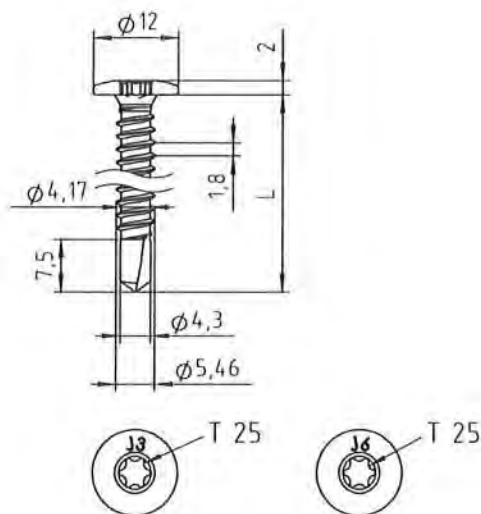
– Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-LT-2-6,0xL - KD16, JT4-LT-2-6,0xL - KD16,
JT9-LT-2-6,0xL - KD16

with pan head with Torx®-drive and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 134



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: none

Bauteil I: S280GD to S350GD – EN 10346

Bauteil II: S280GD to S350GD – EN 10346

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

Timber substructures:

no performance determined

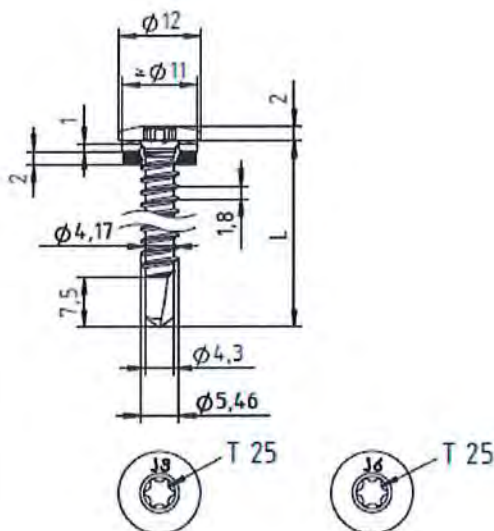
$t_{N,II}$ [mm]	1,00		1,13		1,25		1,50		1,75		2,00		2,50		3,00		
$M_{t,nom}$	5 Nm																
$V_{R,k}$ [kN] for $t_{N,I} =$	0,50	1,21	—	1,30	—	1,39	—	1,57	—	1,57	—	1,57	—	1,57	—	1,57	—
	0,55	1,32	—	1,42	—	1,52	—	1,71	—	1,74	—	1,78	—	1,84	—	—	—
	0,63	1,51	—	1,62	—	1,72	—	1,94	—	2,02	—	2,11	—	2,28	—	—	—
	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	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] 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%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-LT-3-5,5xL, JT6-LT-3-5,5xL
with pan head with Torx®-drive

Annex 135



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: none

Bauteil I: S280GD to S350GD – EN 10346

Bauteil II: S280GD to S350GD – EN 10346

Drilling capacity: $\Sigma t \leq 3,50$ mm

Timber substructures:

no performance determined

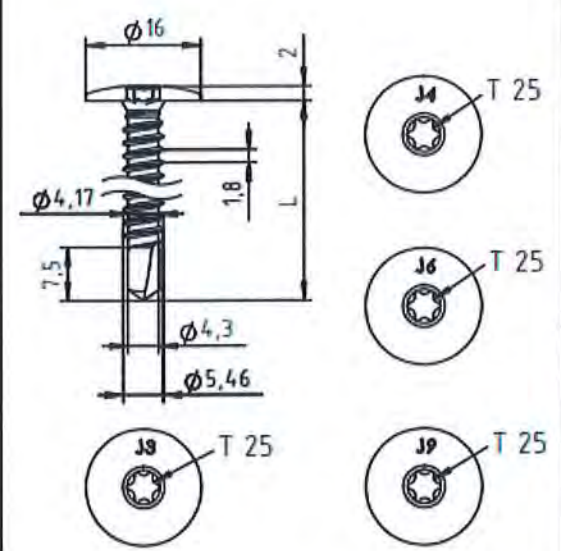
$t_{N,II}$ [mm]	1,00	1,13	1,25	1,50	1,75	2,00	2,50	3,00
$M_{t,nom}$	5 Nm							
$V_{R,k}$ [kN] for $t_{N,I} =$								
0,50	1,60	1,60	1,60	1,60	1,60	1,60	1,60	1,60
0,55	1,68	1,69	1,71	1,82	1,84	1,86	1,89	—
0,63	1,80	1,84	1,88	2,16	2,21	2,26	2,36	—
0,75	1,98	2,06	2,14	2,68	2,78	2,88	3,07	—
0,88	2,17	2,30	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	4,70	—	—
1,75	3,78	4,03	4,26	4,74	5,22	—	—	—
2,00	3,78	4,03	4,26	4,74	—	—	—	—
$N_{R,k}$ [kN] 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%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-LT-3-5,5xL, JT6-LT-3-5,5xL
with pan head with Torx®-drive and sealing washer $\geq \varnothing 11$ mm

Annex 136

	Materials: Fastener: stainless steel (A2) – EN ISO 3506 stainless steel (A4) – EN ISO 3506 Washer: none Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Drilling capacity: $\Sigma t \leq 5,00 \text{ mm}$ Timber substructures: no performance determined
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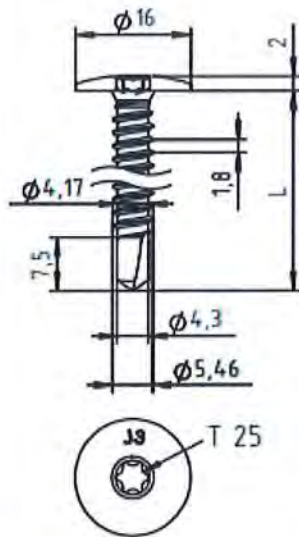
$t_{N,II} [\text{mm}]$	1,50	2,00	2,50	3,00
$M_{t,nom}$	2 Nm			
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$				
0,50	0,68 —	0,68 —	0,68 —	0,68 —
0,60	0,82 —	0,82 —	0,82 —	0,82 —
0,70	0,86 —	0,95 —	0,95 —	0,95 —
0,80	0,92 —	1,09 —	1,09 —	1,09 —
0,90	1,00 —	1,15 —	1,23 —	1,23 —
1,00	1,10 —	1,23 —	1,36 —	1,36 —
1,20	1,33 —	1,43 —	1,53 —	1,63 —
1,50	1,78 —	1,84 —	1,89 —	1,95 —
2,00	1,78 —	2,72 —	2,72 —	2,72 —
$N_{R,t,k} [\text{kN}] =$	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.

Fastening screws JA, JB, JT, JZ and JF

**Self-drilling screw JT3-LT-3-5,5xL - KD16, JT4-LT-3-5,5xL - KD16,
JT6-LT-3-5,5xL - KD16, JT9-LT-3-5,5xL - KD16**
with pan head with Torx®-drive

Annex 137



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: none

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Drilling capacity: $\Sigma t \leq 5,00 \text{ mm}$

Timber substructures:

no performance determined

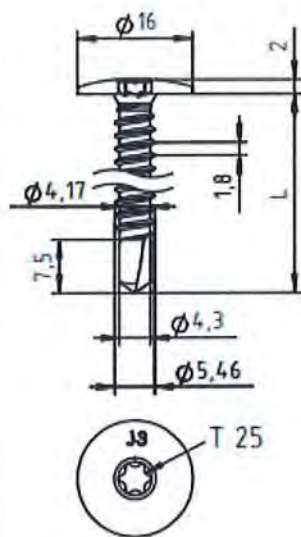
$t_{N,II} [\text{mm}]$	1,50	2,00	2,50	3,00
$M_{t,nom}$	2 Nm			
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$				
0,50	0,89 —	0,89 —	0,89 —	0,89 —
0,60	1,06 —	1,06 —	1,06 —	1,06 —
0,70	1,12 —	1,24 —	1,24 —	1,24 —
0,80	1,20 —	1,42 —	1,42 —	1,42 —
0,90	1,31 —	1,50 —	1,60 —	1,60 —
1,00	1,43 —	1,60 —	1,77 —	1,77 —
1,20	1,74 —	1,87 —	2,00 —	2,13 —
1,50	2,32 —	2,39 —	2,47 —	2,55 —
2,00	2,32 —	3,55 —	3,55 —	3,55 —
$N_{R,II,k} [\text{kN}] =$	0,90	1,40	2,10	2,80

- 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-LT-3-5,5xL - KD16, JT4-LT-3-5,5xL - KD16,
JT6-LT-3-5,5xL - KD16, JT9-LT-3-5,5xL - KD16
with pan head with Torx®-drive

Annex 138



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: none

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

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

Drilling capacity: $\Sigma t \leq 4,50 \text{ mm}$

Timber substructures:

no performance determined

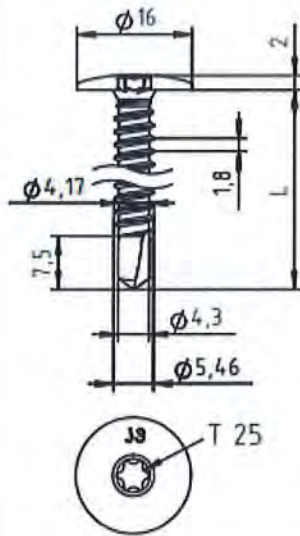
$t_{N,II} [\text{mm}]$	1,50	2,00	2,50
$M_{t,nom}$	5 Nm		
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$			
0,50	0,68 —	0,68 —	0,68 —
0,60	0,80 —	0,82 —	0,82 —
0,70	0,85 —	0,95 —	0,95 —
0,80	0,91 —	1,08 —	1,09 —
0,90	0,99 —	1,14 —	1,23 —
1,00	1,09 —	1,22 —	1,35 —
1,20	1,32 —	1,42 —	1,52 —
1,50	1,71 —	1,83 —	1,89 —
2,00	1,71 —	2,65 —	2,72 —
$N_{R,t,k} [\text{kN}] =$	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-LT-3-5,5xL - KD16, JT6-LT-3-5,5xL - KD16
with pan head with Torx®-drive

Annex 139



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: none

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

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

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

Timber substructures:

no performance determined

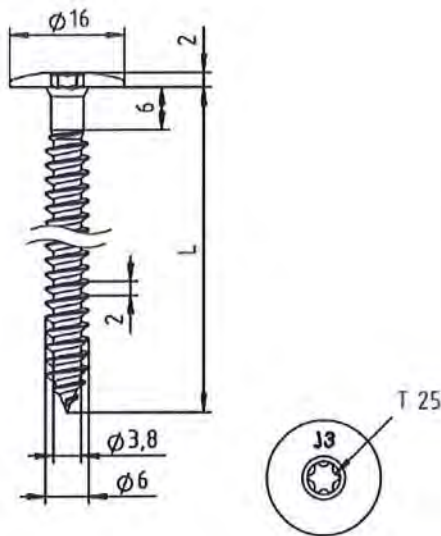
$t_{N,II}$ [mm]	1,50	2,00	2,50
$M_{t,nom}$	5 Nm		
$V_{R,k}$ [kN] for $t_{N,I} =$			
0,50	0,89 —	0,89 —	0,89 —
0,60	1,04 —	1,06 —	1,06 —
0,70	1,10 —	1,24 —	1,24 —
0,80	1,19 —	1,40 —	1,42 —
0,90	1,29 —	1,48 —	1,60 —
1,00	1,42 —	1,59 —	1,76 —
1,20	1,73 —	1,86 —	1,99 —
1,50	2,22 —	2,39 —	2,46 —
2,00	2,22 —	3,46 —	3,55 —
$N_{R,t,k}$ [kN] =	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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT3-LT-3-5,5xL - KD16, JT6-LT-3-5,5xL - KD16
with pan head with Torx®-drive

Annex 140



Materials:

Fastener: stainless steel (A2) – EN ISO 3506

Washer: none

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: timber – EN 14081

Pre-drill diameter: see table

Timber substructures:

performance determined with

$M_{y,k} = 7,911 \text{ Nm}$

$f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 24,0 \text{ mm}$

$f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 28,0 \text{ mm}$

$l_g =$	24	29	34	39	44	49	≥ 54	
$d_{pd} [\text{mm}]$	$\varnothing 3,6$							
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$	0,40	0,29 —	0,29 —	0,29 —	0,29 —	0,29 —	0,29 —	0,29
	0,50	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
	0,70	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
	0,90	0,97 —	0,97 —	0,97 —	0,97 —	0,97 —	0,97 —	0,97
	1,00	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —	1,00 —	1,00
	1,20	1,24 —	1,24 —	1,24 —	1,24 —	1,24 —	1,24 —	1,24
	1,50	1,59 —	1,59 —	1,59 —	1,59 —	1,59 —	1,59 —	1,59
$N_{R,II,k} [\text{kN}] =$		1,11	1,34	1,80	2,06	2,33	2,59	2,86
								failure of component II see chapter 4.2.2

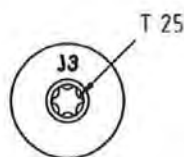
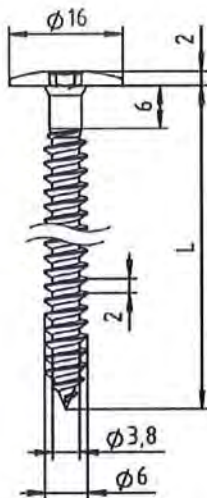
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
- For other areas of application see national technical approval Z-14.4-426.
- The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JA3-LT-6,0xL - KD16

with pan head with Torx®-drive

Annex 141



Materials:

Fastener: stainless steel (A2) – EN ISO 3506

Washer: none

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: timber – EN 14081

Pre-drill diameter: see table

Timber substructures:

performance determined with

$M_{y,k} = 7,911 \text{ Nm}$

$f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 24,0 \text{ mm}$

$f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 28,0 \text{ mm}$

$l_g =$	24	29	34	39	44	49	≥ 54	
$d_{pd} \text{ [mm]}$	$\varnothing 3,6$							
$V_{R,k} \text{ [kN]}$ for $t_{N,I} =$	0,40	0,38 —	0,38 —	0,38 —	0,38 —	0,38 —	0,38 —	0,38
	0,50	1,05 —	1,05 —	1,05 —	1,05 —	1,05 —	1,05 —	1,05
	0,60	1,10 —	1,10 —	1,10 —	1,10 —	1,10 —	1,10 —	1,10
	0,70	1,15 —	1,15 —	1,15 —	1,15 —	1,15 —	1,15 —	1,15
	0,80	1,20 —	1,20 —	1,20 —	1,20 —	1,20 —	1,20 —	1,20
	0,90	1,25 —	1,25 —	1,25 —	1,25 —	1,25 —	1,25 —	1,25
	1,00	1,30 —	1,30 —	1,30 —	1,30 —	1,30 —	1,30 —	1,30
	1,20	1,61 —	1,61 —	1,61 —	1,61 —	1,61 —	1,61 —	1,61
	1,50	1,67 —	1,73 —	1,85 —	1,91 —	1,98 —	2,04 —	2,08
$N_{R,II,k} \text{ [kN]} =$	1,11	1,34	1,80	2,06	2,33	2,59	2,86	failure of component II see chapter 4.2.2

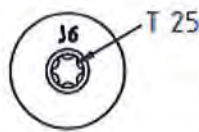
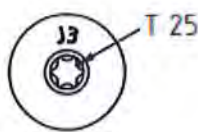
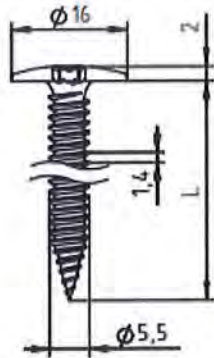
- Pull-through resistance of component I according to EN 1999-1-4, chapter 8.3.3.1 or specifications of the manufacturer of the aluminium structural sheeting.
- For other areas of application see national technical approval Z-14.4-426.
- The values indicated above, depending on the screw depth l_g shall apply to $k_{mod} = 0,90$ and the timber strength class C24 ($\rho_k = 350 \text{ kg/m}^3$). For other values of k_{mod} and strength classes see chapter 4.2.2.

Fastening screws JA, JB, JT, JZ and JF

Self-tapping screw JA3-LT-6,0xL - KD16

with pan head with Torx®-drive

Annex 142



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: none

Component I: S280GD to S350GD – EN 10346

Component II: S280GD to S350GD – EN 10346

Drilling capacity: $\Sigma t \leq 2 \times 1,00 \text{ mm}$

Timber substructures:

no performance determined

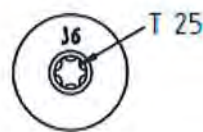
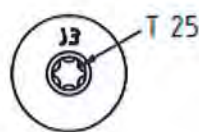
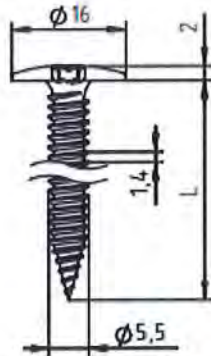
$t_{N,II} [\text{mm}]$	0,40	0,50	0,55	0,63	0,75	0,88	1,00
$M_{t,nom}$	2 Nm						
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$							
0,50	0,79	0,79	0,79	0,79	0,79	0,79	0,79
0,55	0,79	1,18	1,27	1,42	1,65	1,65	1,65
0,63	0,79	1,18	1,41	1,56	1,79	1,79	1,79
0,75	0,79	1,18	1,41	1,77	2,00	2,00	2,00
0,88	0,79	1,18	1,41	1,77	2,35	2,35	2,35
1,00	0,79	1,18	1,41	1,77	2,35	2,84	2,84
$N_{R,k} [\text{kN}]$ for $t_{N,I} =$							
0,50	0,60	0,82	0,94	1,14	1,38	1,38	1,38
0,55	0,60	0,82	0,94	1,14	1,44	1,77	1,77
0,63	0,60	0,82	0,94	1,14	1,44	1,80	1,96
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

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

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-LT-2-5,5xL - KD16, JF6-LT-2-5,5xL - KD16
with pan head with Torx®-drive

Annex 143



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: none

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Drilling capacity: $\Sigma t \leq 1,00 \text{ mm} + 2,00 \text{ mm}$

Timber substructures:

no performance determined

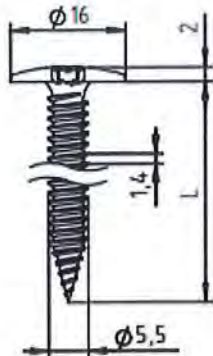
$t_{N,II} [\text{mm}]$	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50	2,00
$M_{t,nom}$	2 Nm									
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$										
0,50	0,24	0,29	0,34	0,39	0,44	0,49	0,54	0,54	0,54	0,54
0,60	0,24	0,34	0,39	0,43	0,48	0,52	0,57	0,66	0,68	0,68
0,70	0,24	0,34	0,45	0,49	0,53	0,57	0,61	0,69	0,82	0,82
0,80	0,24	0,34	0,45	0,57	0,60	0,64	0,68	0,75	0,86	0,95
0,90	0,24	0,34	0,45	0,57	0,69	0,73	0,76	0,82	0,92	1,09
1,00	0,24	0,34	0,45	0,57	0,69	0,83	0,86	0,91	1,00	1,15
$N_{R,II,k} [\text{kN}] =$	0,24	0,35	0,45	0,58	0,69	0,80	0,91	1,13	1,63	1,63

- 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-LT-2-5,5xL - KD16, JF6-LT-2-5,5xL - KD16
with pan head with Torx®-drive

Annex 144



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: none

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Drilling capacity: $\Sigma t \leq 1,00 \text{ mm} + 2,00 \text{ mm}$

Timber substructures:

no performance determined

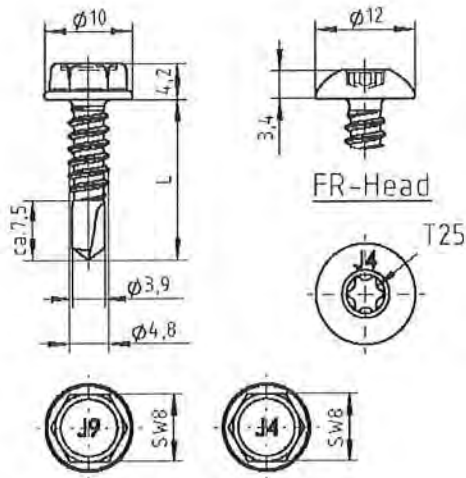
$t_{N,II} [\text{mm}]$	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50	2,00
$M_{t,nom}$	2 Nm									
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$										
0,50	0,32	0,38	0,45	0,51	0,58	0,64	0,71	0,71	0,71	0,71
0,60	0,32	0,45	0,50	0,56	0,62	0,68	0,74	0,86	0,89	0,89
0,70	0,32	0,45	0,59	0,64	0,69	0,75	0,80	0,90	1,06	1,06
0,80	0,32	0,45	0,59	0,74	0,79	0,83	0,88	0,98	1,12	1,24
0,90	0,32	0,45	0,59	0,74	0,90	0,95	0,99	1,07	1,20	1,42
1,00	0,32	0,45	0,59	0,74	0,90	1,08	1,11	1,19	1,31	1,50
$N_{R,II,k} [\text{kN}] =$	0,31	0,46	0,60	0,75	0,89	1,04	1,18	1,47	2,12	2,12

- 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.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw (chipless) JF3-LT-2-5,5xL - KD16, JF6-LT-2-5,5xL - KD16
with pan head with Torx®-drive

Annex 145



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: none

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

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

Timber substructures:

no performance determined

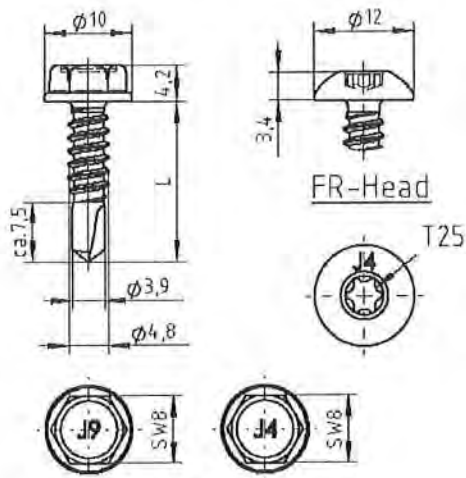
$t_{N,II}$ [mm]	2,00	2,50	3,00
$M_{t,nom}$	2 Nm		
$V_{R,k}$ [kN] for $t_{N,I} =$			
0,50	0,67 ac	0,67 ac	0,67 ac
0,60	0,87 ac	0,87 ac	0,87 ac
0,70	1,06 ac	1,06 ac	1,06 ac
0,80	1,37 —	1,37 —	1,37 ac
0,90	1,67 —	1,67 —	1,67 a
1,00	1,98 —	1,98 —	1,98 a
1,20	2,21 —	2,41 —	2,60 a
1,50	2,56 —	3,04 —	3,52 a
2,00	— —	— —	— —
$N_{R,II,k}$ [kN] =	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.
- Component I and II of aluminium with a tensile strength of $R_m \geq 245 \text{ N/mm}^2$; For $R_m \geq 215 \text{ N/mm}^2$ the indicated values of shear force resistance $V_{R,k}$ can be increased by 14%.
- Component II of aluminium with a tensile strength of $R_m \geq 245 \text{ N/mm}^2$; For $R_m \geq 215 \text{ N/mm}^2$ the indicated values of pull-out resistance $N_{R,II,k}$ can be increased by 14%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT4-(FR-)4-4,8xL, JT9-(FR-)4-4,8xL
with hexagon head or round head with Torx® drive system

Annex 146



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: none

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

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

Timber substructures:

no performance determined

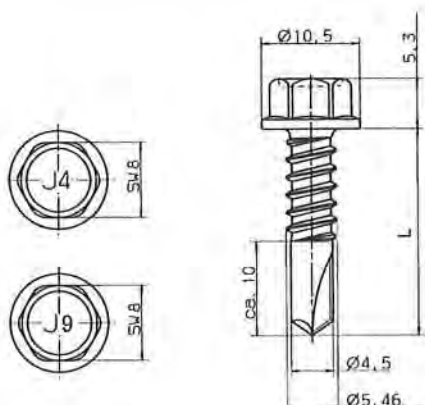
$t_{N,II} [\text{mm}]$	2,00	2,50	3,00
$M_{t,nom}$	2 Nm		
$V_{R,k} [\text{kN}]$ for $t_{N,I} =$			
0,50	0,87 ac	0,87 ac	0,87 ac
0,60	1,13 ac	1,13 ac	1,13 ac
0,70	1,38 ac	1,38 ac	1,38 ac
0,80	1,78 —	1,78 —	1,78 ac
0,90	2,18 —	2,18 —	2,18 a
1,00	2,58 —	2,58 —	2,58 a
1,20	2,88 —	3,14 —	3,39 a
1,50	3,33 —	3,96 —	4,59 a
2,00	— —	— —	— —
$N_{R,II,k} [\text{kN}] =$	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.
- Component I and II of aluminium with a tensile strength of $R_m \geq 245 \text{ N/mm}^2$; For $R_m \geq 215 \text{ N/mm}^2$ the indicated values of shear force resistance $V_{R,k}$ can be increased by 14%.
- Component II of aluminium with a tensile strength of $R_m \geq 245 \text{ N/mm}^2$; For $R_m \geq 215 \text{ N/mm}^2$ the indicated values of pull-out resistance $N_{R,II,k}$ can be increased by 14%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT4-(FR)-4-4,8xL, JT9-(FR)-4-4,8xL
with hexagon head or round head with Torx® drive system

Annex 147



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: none

Component I: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

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

Timber substructures:

no performance determined

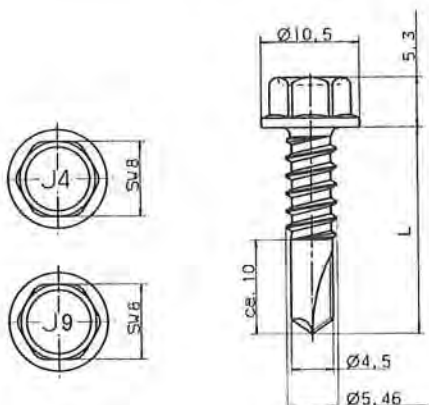
$t_{N,II}$ [mm]	2,00	2,50	3,00	4,00	5,00
$M_{t,nom}$	2 Nm				
$V_{R,k}$ [kN] for $t_{N,I} =$					
0,50	0,71 ac	0,71 ac	0,71 ac	0,71 ac	0,71 ac
0,60	0,94 ac	0,94 ac	0,94 ac	0,94 ac	0,94 ac
0,70	1,17 ac	1,17 ac	1,17 ac	1,17 ac	1,17 ac
0,80	1,40 —	1,40 —	1,40 ac	1,40 ac	1,40 a
0,90	1,62 —	1,62 —	1,62 ac	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 —	— —
$N_{R,II,k}$ [kN] =	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.
- Component I and II of aluminium with a tensile strength of $R_m \geq 245 \text{ N/mm}^2$: For $R_m \geq 215 \text{ N/mm}^2$ the indicated values of shear force resistance $V_{R,k}$ can be increased by 14%.
- Component II of aluminium with a tensile strength of $R_m \geq 245 \text{ N/mm}^2$: For $R_m \geq 215 \text{ N/mm}^2$ the indicated values of pull-out resistance $N_{R,II,k}$ can be increased by 14%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT4-6-5,5xL, JT9-6-5,5xL
with hexagon head

Annex 148



Materials:

Fastener: stainless steel (A2) – EN ISO 3506
stainless steel (A4) – EN ISO 3506

Washer: none

Component I: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Component II: aluminium alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Drilling capacity: $\Sigma t \leq 6,50 \text{ mm}$

Timber substructures:

no performance determined

$t_{N,II} [\text{mm}]$	2,00	2,50	3,00	4,00	5,00
$M_{t,nom}$	2 Nm				
$V_{R,k} [\text{kN}]$ 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 —	— —
$N_{R,II,k} [\text{kN}] =$	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.
- Component I and II of aluminium with a tensile strength of $R_m \geq 245 \text{ N/mm}^2$: For $R_m \geq 215 \text{ N/mm}^2$ the indicated values of shear force resistance $V_{R,k}$ can be increased by 14%.
- Component II of aluminium with a tensile strength of $R_m \geq 245 \text{ N/mm}^2$: For $R_m \geq 215 \text{ N/mm}^2$ the indicated values of pull-out resistance $N_{R,II,k}$ can be increased by 14%.

Fastening screws JA, JB, JT, JZ and JF

Self-drilling screw JT4-6-5,5xL, JT9-6-5,5xL
with hexagon head

Annex 149