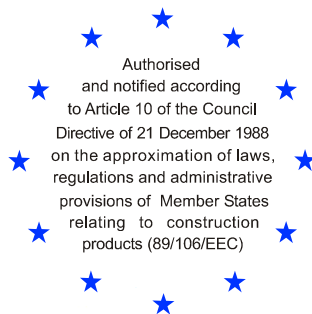




European Technical Approval ETA-10/0198

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung
Trade name

Befestigungsschrauben SFS
Fastening screws SFS

Zulassungsinhaber
Holder of approval

SFS intec AG
Rosenbergsaustraße 10
9435 Heerbrugg
SCHWEIZ

Zulassungsgegenstand
und Verwendungszweck
*Generic type and use
of construction product*

Befestigungsschrauben für Bauteile und Bleche aus Metall
Fastening screws for metal members and sheeting

Geltungsdauer:
Validity: vom
from
bis
to

26 June 2013
26 June 2018

Herstellwerk
Manufacturing plant

SFS intec AG
Rosenbergsaustraße 10
9435 Heerbrugg
SCHWEIZ

Diese Zulassung umfasst
This Approval contains

104 Seiten einschließlich 91 Anhänge
104 pages including 91 annexes

Diese Zulassung ersetzt
This Approval replaces

ETA-10/0198 mit Geltungsdauer vom 17.08.2010 bis 17.08.2015
ETA-10/0198 with validity from 17.08.2010 to 17.08.2015

I LEGAL BASES AND GENERAL CONDITIONS

- 1 This European technical approval is issued by Deutsches Institut für Bautechnik in accordance with:
 - Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products¹, modified by Council Directive 93/68/EEC² and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council³;
 - *Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998⁴, as amended by Article 2 of the law of 8 November 2011⁵;*
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¹ Official Journal of the European Communities L 40, 11 February 1989, p. 12
² Official Journal of the European Communities L 220, 30 August 1993, p. 1
³ Official Journal of the European Union L 284, 31 October 2003, p. 25
⁴ *Bundesgesetzblatt Teil I 1998*, p. 812
⁵ *Bundesgesetzblatt Teil I 2011*, p. 2178
⁶ Official Journal of the European Communities L 17, 20 January 1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of the product/products and intended use

1.1 Definition of the construction product

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

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

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

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

Table 1 Different types of fastening screws

Annex	Application	Fastening screw	Description
Annex 6	Steel / Steel	SFS SX3 - A12 (S12) - 6,0 x L SFS SX3 - L12 - A12 (S12) - 6,0 x L SFS SX3 - D12 - A12 (S12) - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer ≥ Ø12 mm
Annex 7	Steel / Steel	SFS SX3 - S14 - 6,0 x L SFS SX3 - L12 - S14 - 6,0 x L SFS SX3 - D12 - S14 - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer ≥ Ø14 mm
Annex 8	Steel / Steel	SFS SX3 - S16 - 6,0 x L SFS SX3 - L12 - S16 - 6,0 x L SFS SX3 - D12 - S16 - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer ≥ Ø16 mm
Annex 9	Steel / Steel	SFS SX3 - S19 - 6,0 x L SFS SX3 - L12 - S19 - 6,0 x L SFS SX3 - D12 - S19 - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer ≥ Ø19 mm
Annex 10	Steel / Steel	SFS SX3 - S22 - 6,0 x L SFS SX3 - L12 - S22 - 6,0 x L SFS SX3 - D12 - S22 - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer ≥ Ø22 mm
Annex 11	Steel / Steel	SFS SX3 - A12 (S12) - 6,0 x L SFS SX3 - L12 - A12 (S12) - 6,0 x L SFS SX3 - D12 - A12 (S12) - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer ≥ Ø12 mm
Annex 12	Steel / Steel	SFS SX3 - S14 - 6,0 x L SFS SX3 - L12 - S14 - 6,0 x L SFS SX3 - D12 - S14 - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer ≥ Ø14 mm
Annex 13	Steel / Steel	SFS SX3 - S16 - 6,0 x L SFS SX3 - L12 - S16 - 6,0 x L SFS SX3 - D12 - S16 - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer ≥ Ø16 mm

Annex	Application	Fastening screw	Description
Annex 14	Steel / Steel	SFS SX3 - S19 - 6,0 x L SFS SX3 - L12 - S19 - 6,0 x L SFS SX3 - D12 - S19 - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 19$ mm
Annex 15	Steel / Steel	SFS SX3 - S22 - 6,0 x L SFS SX3 - L12 - S22 - 6,0 x L SFS SX3 - D12 - S22 - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 22$ mm
Annex 16	Steel / Steel	SFS SX5 - A12 (S12) - 5,5 x L SFS SX5 - L12 - A12 (S12) - 5,5 x L SFS SX5 - D12 - A12 (S12) - 5,5 x L	with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 12$ mm
Annex 17	Steel / Steel	SFS SX5 - S14 - 5,5 x L SFS SX5 - L12 - S14 - 5,5 x L SFS SX5 - D12 - S14 - 5,5 x L	with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 14$ mm
Annex 18	Steel / Steel	SFS SX5 - S16 - 5,5 x L SFS SX5 - L12 - S16 - 5,5 x L SFS SX5 - D12 - S16 - 5,5 x L	with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 16$ mm
Annex 19	Steel / Steel	SFS SX5 - S19 - 5,5 x L SFS SX5 - L12 - S19 - 5,5 x L SFS SX5 - D12 - S19 - 5,5 x L	with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 19$ mm
Annex 20	Steel / Steel	SFS SX5 - S22 - 5,5 x L SFS SX5 - L12 - S22 - 5,5 x L SFS SX5 - D12 - S22 - 5,5 x L	with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 22$ mm
Annex 21	Steel / Steel	SFS SX14 - S16 - 5,5 x L SFS SX14 - L12 - S16 - 5,5 x L	with hexagon head or irius® Drive and sealing washer $\geq \varnothing 16$ mm
Annex 22 ^{*)}	Steel / Timber	SFS SXW - S16 - 6,5 x L SFS SXW - L12 - S16 - 6,5 x L	with hexagon head or irius® Drive and sealing washer $\geq \varnothing 16$ mm
Annex 23	Steel / Steel	SFS SXC5 - S19 - 5,5 x L SFS SXC5 - L12 - S19 - 5,5 x L	with hexagon head or irius® Drive and sealing washer $\geq \varnothing 19$ mm
Annex 24	Steel / Steel	SFS SXC14 - S19 - 5,5 x L SFS SXC14 - L12 - S19 - 5,5 x L	with hexagon head or irius® Drive and sealing washer $\geq \varnothing 19$ mm
Annex 25 ^{*)}	Steel / Timber	SFS SXCW - S19 - 6,5 x L SFS SXCW - L12 - S19 - 6,5 x L	with hexagon head or irius® Drive and sealing washer $\geq \varnothing 19$ mm
Annex 26	Steel / Steel	SFS SL3/2 - 5 - S - SV16 - 6,0 x L	with thread free zone, Hexagon head and SV washer 13 x 16 mm
Annex 27	Steel / Steel	SFS SL3/2 - 5 - S - SV16 - 6,0 x L	with thread free zone, Hexagon head and SV washer 13 x 16 mm
Annex 28	Steel / Steel	SFS SL2 - S - S14 - 4,8 x L	with thread free zone, Hexagon head and Sealing washer $\geq \varnothing 14$ mm

Annex	Application	Fastening screw	Description
Annex 29	Steel / Steel	SFS SL2 - S - S14 - 5,5 x L	with thread free zone, Hexagon head and Sealing washer $\geq \varnothing 14$ mm
Annex 30	Steel / Steel	SFS SL2 - S - A14 - 5,5 x L	with thread free zone, Hexagon head and Sealing washer $\geq \varnothing 14$ mm
Annex 31	Steel / Steel	SFS SL2 - S - S14 - 6,3 x L SFS SL2 - S - L12 - S14 - 6,3 x L	with thread free zone, Hexagon head or irius® Drive and sealing washer $\geq \varnothing 14$ mm
Annex 32	Steel / Steel	SFS SLG - S - S14 - 4,8 x L	with thread free zone, Hexagon head and Sealing washer $\geq \varnothing 14$ mm
Annex 33	Steel / Steel	SFS TDA - S - S16 - 6,5 x L	with hexagon head and sealing washer $\geq \varnothing 16$ mm
Annex 34	Steel / Steel	SFS TDB - S - S16 - 6,3 x L	with hexagon head and sealing washer $\geq \varnothing 16$ mm
Annex 35	Steel / Steel	SFS TDB - S - S16 - 6,3 x L SFS TDB - S - S16 - 6,3 x L - W38	with hexagon head and sealing washer $\geq \varnothing 16$ mm
Annex 36	Steel / Steel	SFS TDC - S - S16 - 6,3 x L	with hexagon head and sealing washer $\geq \varnothing 16$ mm
Annex 37	Steel / Steel	SFS SD2 - T16 - 6,3 x L	with hexagon head and sealing washer $\geq \varnothing 16$ mm
Annex 38	Steel / Steel	SFS SD3 - T15 - 4,8 x L SFS SD3 - L12 - T15 - 4,8 x L	with hexagon head or irius® Drive and sealing washer $\geq \varnothing 15$ mm
Annex 39	Steel / Steel	SFS SD3/15 - T15 - 4,8 x L SFS SD3/15 - L12 - T15 - 4,8 x L	with hexagon head or irius® Drive and sealing washer $\geq \varnothing 15$ mm
Annex 40	Steel / Steel	SFS SD3 - T15 - 5,5 x L SFS SD3 - L12 - T15 - 5,5 x L SFS SD3 - D12 - T15 - 5,5 x L	with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 15$ mm
Annex 41	Steel / Steel	SFS SD3 - T16 - 6,3 x L SFS SD3 - L12 - T16 - 6,3 x L SFS SD3 - D12 - T16 - 6,3 x L	with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 16$ mm
Annex 42	Steel / Steel	SFS SDP3 - Z - 5,5 x L	mit Polyamid Hexagon head
Annex 43	Steel / Steel	SFS SD5 - H15 - 5,5 x L	Hexagon head with flange $\varnothing 15$ mm
Annex 44	Steel / Steel	SFS SD6 - T15 - 5,5 x L SFS SD6 - L12 - T15 - 5,5 x L SFS SDZ6 - T15 (S16) - 5,5 x L	with hexagon head, Zamac or irius® Drive and sealing washer $\geq \varnothing 15$ mm
Annex 45	Steel / Steel	SFS SD6 - T16 - 6,3 x L SFS SD6 - L12 - T16 - 6,3 x L	with hexagon head or irius® Drive and sealing washer $\geq \varnothing 16$ mm
Annex 46	Steel / Steel	SFS SD6 - H15 - 5,5 x L	Hexagon head with flange $\varnothing 15$ mm

Annex	Application	Fastening screw	Description
Annex 47	Steel / Steel	SFS SD8 - H15 - 5,5 x L	Hexagon head with flange Ø15 mm
Annex 48	Steel / Steel	SFS SD14 - T15 (S16) - 5,5 x L SFS SD14 - L12 - T15 (S16) - 5,5 x L SFS SDZ14 - T15 (S16) - 5,5 x L	with hexagon head, Zamac or irius® Drive and sealing washer ≥ Ø15 mm
Annex 49	Steel / Steel	SFS SD14 - H15 - 5,5 x L	Hexagon head with flange Ø15 mm
Annex 50	Steel / Steel	SFS SL2 - T - A14 - 4,8 x L SFS SLZ2 - T - A14 - 4,8 x L	with thread free zone, Hexagon head or Zamac and Sealing washer ≥ Ø14 mm
Annex 51	Steel / Steel	SFS SL2 - 4,8 x L	with thread free zone and Hexagon head
Annex 52	Steel / Steel	SFS SL2 - H15 - 6,3 x L	with thread free zone and Hexagon head with flange Ø15 mm
Annex 53	Steel / Steel	SFS SL3 - H15 - 6,3 x L	with thread free zone and Hexagon head with flange Ø15 mm
Annex 54	Steel / Steel	SFS SDL3 - L12 - T15 - 5,5 x L	with thread free zone, irius® Drive and sealing washer ≥ Ø15 mm
Annex 55*)	Steel / Timber	SFS SW2 - S - S16 - 6 x 42	with hexagon head and sealing washer ≥ Ø16 mm
Annex 56*)	Steel / Timber Steel / Steel	SFS TDA - S - S16 - 6,5 x L	with hexagon head and sealing washer ≥ Ø16 mm
Annex 57*)	Steel / Timber	SFS SW - T - A14 - 4,8 x L	with hexagon head and sealing washer ≥ Ø14 mm
Annex 58*)	Steel / Timber	SFS SW3 - T - T16 - 6,5 x L SFS SW3 - T - L12 - T16 - 6,5 x L SFS SWZ3 - T - T16 (S16) - 6,5 x L	with hexagon head, Zamac or irius® Drive and sealing washer ≥ Ø16 mm
Annex 59*)	Steel / Timber	SFS SW3 - T - H15 - 6,5 x L	Hexagon head with flange Ø15 mm
Annex 60	Alu / Alu Rm ≥ 165 N/mm ²	SFS SX3 - A12 (S12) - 6,0 x L SFS SX3 - L12 - A12 (S12) - 6,0 x L SFS SX3 - D12 - A12 (S12) - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer ≥ Ø12 mm
Annex 61	Alu / Alu Rm ≥ 215 N/mm ²	SFS SX3 - A12 (S12) - 6,0 x L SFS SX3 - L12 - A12 (S12) - 6,0 x L SFS SX3 - D12 - A12 (S12) - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer ≥ Ø12 mm
Annex 62	Alu / Alu Rm ≥ 165 N/mm ²	SFS SX5 - A12 (S12) - 5,5 x L SFS SX5 - L12 - A12 (S12) - 5,5 x L SFS SX5 - D12 - A12 (S12) - 5,5 x L	with hexagon head, torx or irius® Drive and sealing washer ≥ Ø12 mm
Annex 63	Alu / Alu Rm ≥ 215 N/mm ²	SFS SX5 - A12 (S12) - 5,5 x L SFS SX5 - L12 - A12 (S12) - 5,5 x L SFS SX5 - D12 - A12 (S12) - 5,5 x L	with hexagon head, torx or irius® Drive and sealing washer ≥ Ø12 mm
Annex 64	Alu / Alu Rm ≥ 165 N/mm ²	SFS SL2 - S - S14 - 5,5 x L	with thread free zone, Hexagon head and Sealing washer ≥ Ø14 mm

Annex	Application	Fastening screw	Description
Annex 65	Alu / Alu $R_m \geq 215 \text{ N/mm}^2$	SFS SL2 - S - S14 - 5,5 x L	with thread free zone, Hexagon head and Sealing washer $\geq \varnothing 14 \text{ mm}$
Annex 66	Alu / Alu $R_m \geq 165 \text{ N/mm}^2$	SFS SL2 - S - S14 - 6,3 x L SFS SL2 - S - L12 - S14 - 6,3 x L	with thread free zone, Hexagon head or irius® Drive and sealing washer $\geq \varnothing 14 \text{ mm}$
Annex 67	Alu / Alu $R_m \geq 215 \text{ N/mm}^2$	SFS SL2 - S - S14 - 6,3 x L SFS SL2 - S - L12 - S14 - 6,3 x L	with thread free zone, Hexagon head or irius® Drive and sealing washer $\geq \varnothing 14 \text{ mm}$
Annex 68	Alu / Alu $R_m \geq 165 \text{ N/mm}^2$	SFS TDA - S - S16 - 6,5 x L	with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$
Annex 69	Alu / Alu $R_m \geq 215 \text{ N/mm}^2$	SFS TDA - S - S16 - 6,5 x L	with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$
Annex 70	Alu / Alu $R_m \geq 165 \text{ N/mm}^2$	SFS TDB - S - S16 - 6,3 x L	with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$
Annex 71	Alu / Alu $R_m \geq 215 \text{ N/mm}^2$	SFS TDB - S - S16 - 6,3 x L	with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$
Annex 72	Alu / Steel $R_m \geq 165 \text{ N/mm}^2$	SFS SX3 - A12 (S12) - 6,0 x L SFS SX3 - L12 - A12 (S12) - 6,0 x L SFS SX3 - D12 - A12 (S12) - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 12 \text{ mm}$
Annex 73	Alu / Steel $R_m \geq 215 \text{ N/mm}^2$	SFS SX3 - A12 (S12) - 6,0 x L SFS SX3 - L12 - A12 (S12) - 6,0 x L SFS SX3 - D12 - A12 (S12) - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 12 \text{ mm}$
Annex 74	Alu / Steel $R_m \geq 165 \text{ N/mm}^2$	SFS SX3 - A12 (S12) - 6,0 x L SFS SX3 - L12 - A12 (S12) - 6,0 x L SFS SX3 - D12 - A12 (S12) - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 12 \text{ mm}$
Annex 75	Alu / Steel $R_m \geq 215 \text{ N/mm}^2$	SFS SX3 - A12 (S12) - 6,0 x L SFS SX3 - L12 - A12 (S12) - 6,0 x L SFS SX3 - D12 - A12 (S12) - 6,0 x L	with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 12 \text{ mm}$
Annex 76	Alu / Steel $R_m \geq 165 \text{ N/mm}^2$	SFS SX5 - A12 (S12) - 5,5 x L SFS SX5 - L12 - A12 (S12) - 5,5 x L SFS SX5 - D12 - A12 (S12) - 5,5 x L	with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 12 \text{ mm}$
Annex 77	Alu / Steel $R_m \geq 215 \text{ N/mm}^2$	SFS SX5 - A12 (S12) - 5,5 x L SFS SX5 - L12 - A12 (S12) - 5,5 x L SFS SX5 - D12 - A12 (S12) - 5,5 x L	with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 12 \text{ mm}$
Annex 78	Alu / Steel $R_m \geq 165 \text{ N/mm}^2$	SFS SL3/2 - 5 - S - SV16 - 6,0 x L	with thread free zone, Hexagon head and SV washer 13 x 16 mm
Annex 79	Alu / Steel $R_m \geq 215 \text{ N/mm}^2$	SFS SL3/2 - 5 - S - SV16 - 6,0 x L	with thread free zone, Hexagon head and SV washer 13 x 16 mm

Annex	Application	Fastening screw	Description
Annex 80	Alu / Steel $R_m \geq 165 \text{ N/mm}^2$	SFS SL3/2 - 5 - S - SV16 - 6,0 x L	with thread free zone, Hexagon head and SV washer 13 x 16 mm
Annex 81	Alu / Steel $R_m \geq 215 \text{ N/mm}^2$	SFS SL3/2 - 5 - S - SV16 - 6,0 x L	with thread free zone, Hexagon head and SV washer 13 x 16 mm
Annex 82	Alu / Steel $R_m \geq 165 \text{ N/mm}^2$	SFS TDA - S - S16 - 6,5 x L	with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$
Annex 83	Alu / Steel $R_m \geq 215 \text{ N/mm}^2$	SFS TDA - S - S16 - 6,5 x L	with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$
Annex 84	Alu / Steel $R_m \geq 165 \text{ N/mm}^2$	SFS TDB - S - S16 - 6,3 x L	with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$
Annex 85	Alu / Steel $R_m \geq 215 \text{ N/mm}^2$	SFS TDB - S - S16 - 6,3 x L	with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$
Annex 86*)	Alu / Timber $R_m \geq 165 \text{ N/mm}^2$	SFS SXW - S16 - 6,5 x L SFS SXW - L12 - S16 - 6,5 x L	with hexagon head or irius® Drive and sealing washer $\geq \text{Ø}16 \text{ mm}$
Annex 87*)	Alu / Timber $R_m \geq 215 \text{ N/mm}^2$	SFS SXW - S16 - 6,5 x L SFS SXW - L12 - S16 - 6,5 x L	with hexagon head or irius® Drive and sealing washer $\geq \text{Ø}16 \text{ mm}$
Annex 88*)	Alu / Timber $R_m \geq 165 \text{ N/mm}^2$	SFS SW2 - S - S16 - 6 x 42	with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$
Annex 89*)	Alu / Timber $R_m \geq 215 \text{ N/mm}^2$	SFS SW2 - S - S16 - 6 x 42	with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$
Annex 90*)	Alu / Timber $R_m \geq 165 \text{ N/mm}^2$	SFS TDA - S - S16 - 6,5 x L	with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$
Annex 91*)	Alu / Timber $R_m \geq 215 \text{ N/mm}^2$	SFS TDA - S - S16 - 6,5 x L	with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

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

1.2 Intended use

The fastening screws are intended to be used for fastening steel sheeting to steel substructures and as far as stated in Table 1 to timber substructures. The sheeting can either be used as wall or roof cladding or as load bearing wall and roof element.

The fastening screws can also be used for the fastening of other thin gauge steel members.

The component to be fastened (adjacent to the screw-head) is component I and the substructure is component II.

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

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

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

2 Characteristics of product and methods of verification

2.1 Characteristics of product

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

The characteristic material values, dimensions and tolerances of the fastening screws neither indicated in this section nor in the Annexes shall correspond to the respective values laid down in the technical documentation⁷ to this European technical approval.

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

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

2.2 Methods of verification

The assessment of the fitness of the fastening screws for the intended use in relation to the Essential Requirements ER 1 (Mechanical resistance and stability), ER 2 (Safety in case of fire), ER 4 (Safety in use) and additional aspects of durability has been made in accordance with section 3.2 of the Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC⁸.

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

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

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

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

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

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

According to the Decision 99/92 of the European Commission⁸ system 3 of the attestation of conformity applies.

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

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

This system of attestation of conformity is defined as follows:

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

- (a) Tasks for the manufacturer:
 - (1) factory production control;
- (b) Tasks for the approved body:
 - (2) initial type-testing of the product.

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

3.2 Responsibilities

3.2.1 Tasks for the manufacturer

3.2.1.1 Factory production control

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

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

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

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

3.2.1.2 Other tasks for the manufacturer

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

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

3.2.2 Tasks for the approved bodies

The approved body shall perform the

- initial type-testing of the product,

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

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

3.3 CE marking

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

- the name and address of the producer (legal entity responsible for the manufacture),

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

- the last two digits of the year in which the CE marking was affixed,
- the number of the European technical approval,
- the name of the product.

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

4.1 Manufacturing

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

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

4.2 Design

4.2.1 General

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

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

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

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

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

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

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

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

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

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

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

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

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

4.2.2 Additional rules for connections with timber substructures

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

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

The following terms are used:

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

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

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

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

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

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

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

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

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

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

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

4.2.3 Additional rules for fastening of perforated sheets

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

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

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

4.3 Installation

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

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

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

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

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

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

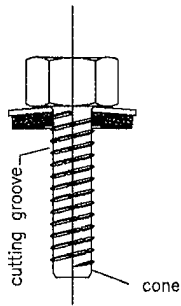
5 Indications to the manufacturer

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

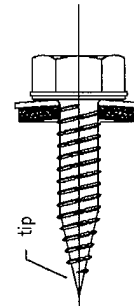
In addition all installation data (predrill diameter, torque moment, application limits) shall be shown clearly on the package and/or on an enclosed instruction sheet, preferably using illustration(s).

Uwe Bender
Head of Department

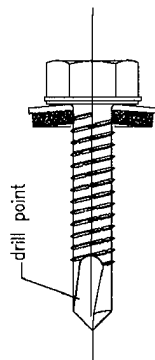
beglaubigt:
Ulbrich



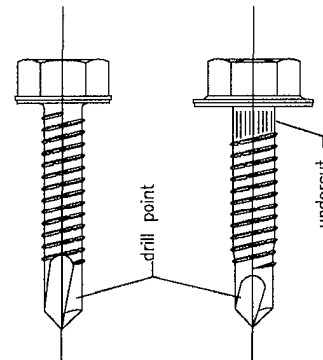
self tapping screw
with sealing washer



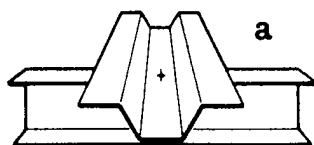
self tapping screw
with sealing washer



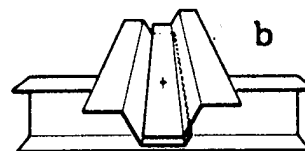
self-drilling screw
with sealing washer



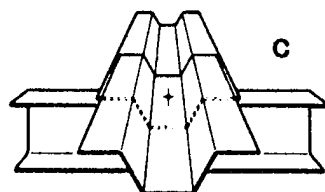
self-drilling screw
with integrated washer



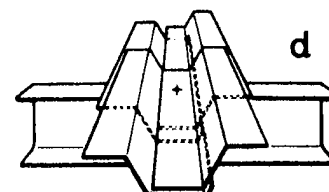
Single connection



Side lap connection



End overlap connection

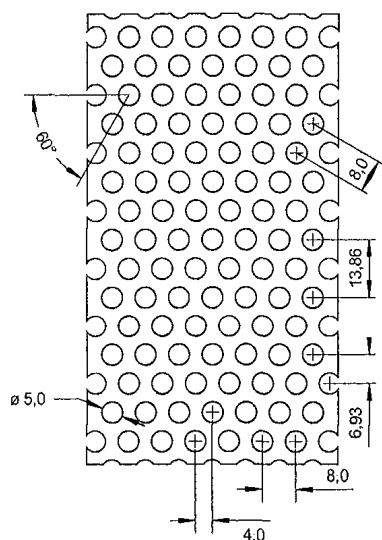


Side lap + end overlap connection

Fastening screws SFS

Examples for screws
Types of connection

Annex 1



Hole pattern I

**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 10088 or similar

Washer: stainless steel - EN 10088
EPDM sealing washer

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: at least S235 - EN 10025-1 or
at least S280GD - EN 10346 or
structural timber at least strength grade C24

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

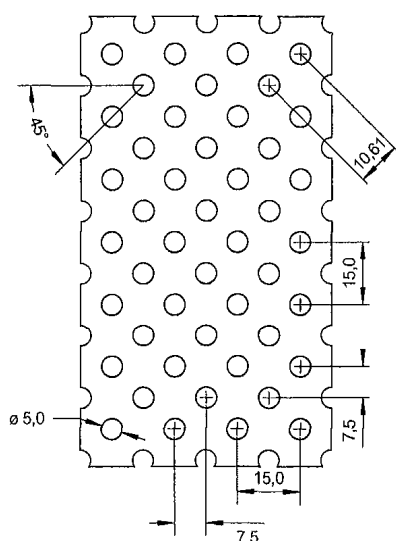
The thickness of the perforated sheets which are exposed to wind loads shall be at least 1,00 mm.

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

Fastening screws SFS

Fastening of perforated sheets

Annex 2



Hole pattern II

**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 10088 or similar
Washer: stainless steel - EN 10088
EPDM sealing washer

Component I: S280GD - EN 10346

Component II: at least S235 - EN 10025-1 or
at least S280GD - EN 10346 or
structural timber at least strength grade C24

screw / $\varnothing$ 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							
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	—	—	—	—	—	—	—	—
0,75	2,48	2,52	2,84	2,76	2,38	2,64	3,16	3,24
0,88	3,04	3,12	3,42	3,32	3,02	3,28	3,78	3,88
1,00	3,56	3,70	3,84	3,84	3,64	3,96	4,36	4,50
1,13	4,14	4,26	4,40	4,40	4,36	4,70	5,00	5,18
1,25	4,68	4,84	4,92	4,94	5,06	5,40	5,60	5,84
1,50	5,76	6,04	5,90	6,10	6,62	6,94	6,88	7,16
$N_{R,k}$ [kN] for $t_{N,i}$ [mm]	0,50	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—
	0,63	—	—	—	—	—	—	—
	0,75	2,88	3,16	3,24	3,14	2,86	3,46	3,72
	0,88	3,42	3,72	3,76	3,70	3,40	4,02	4,30
	1,00	3,92	4,28	4,28	4,20	3,90	4,56	4,82
	1,13	4,46	4,86	4,88	4,72	4,44	5,12	5,38
	1,25	4,96	5,42	5,42	5,26	4,94	5,66	5,88
	1,50	6,04	6,60	6,60	6,38	6,00	6,74	6,92

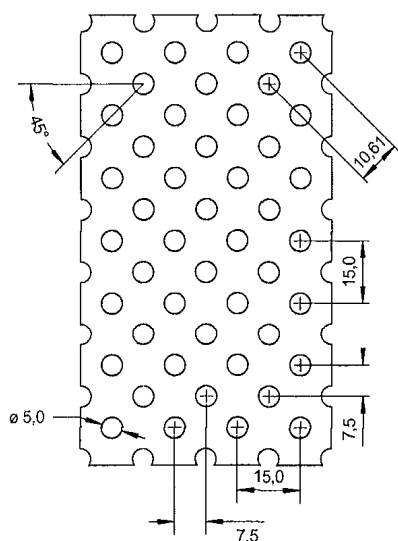
The thickness of the perforated sheets which are exposed to wind loads shall be at least 1,00 mm.

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

Fastening screws SFS

Fastening of perforated sheets

Annex 3



Hole pattern II

**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 10088 or similar

Washer: stainless steel - EN 10088
EPDM sealing washer

Component I: S320GD - EN 10346

Component II: at least S235 - EN 10025-1 or
at least S280GD - EN 10346 or
structural timber at least strength grade C24

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

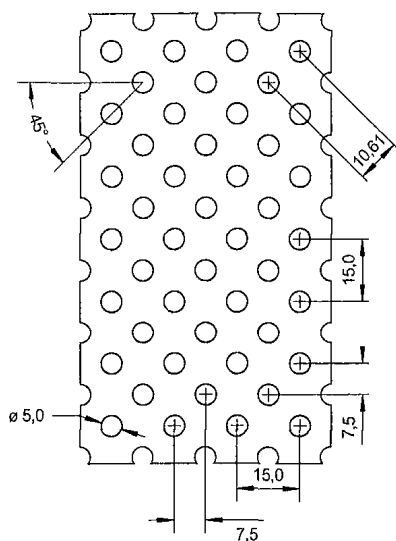
The thickness of the perforated sheets which are exposed to wind loads shall be at least 1,00 mm.

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

Fastening screws SFS

Fastening of perforated sheets

Annex 4



Hole pattern II

**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 10088 or similar

Washer: stainless steel - EN 10088
EPDM sealing washer

Component I: S350GD - EN 10346

Component II: at least S235 - EN 10025-1 or
at least S280GD - EN 10346 or
structural timber at least strength grade C24

screw / $\varnothing$ 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							
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
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

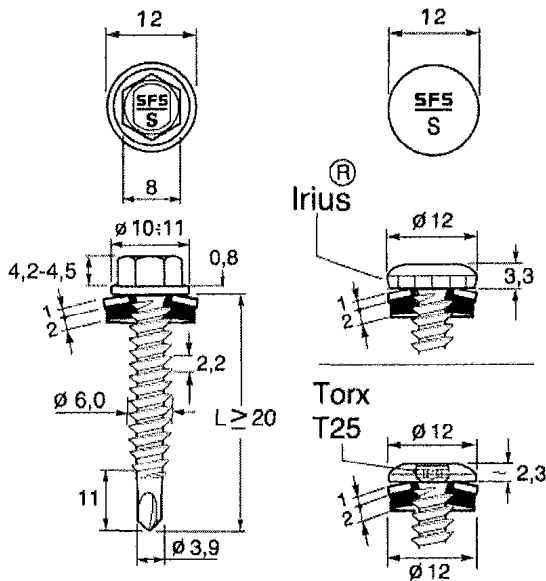
The thickness of the perforated sheets which are exposed to wind loads shall be at least 1,00 mm.

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

Fastening screws SFS

Fastening of perforated sheets

Annex 5



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088

Washer: aluminium alloy AW-AMg3 - EN 485,
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity

$\Sigma t_i \leq 3,00 \text{ mm}$

Timber substructures

no performance determined

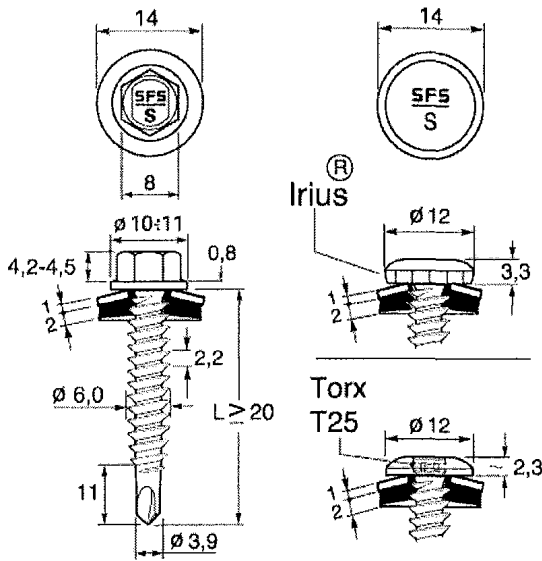
$t_{N,II}$ =	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75	2,00	
$M_{t,nom}$ =										
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,98 ^a —	1,20 ^a ac	1,45 ^a ac	1,61 ^a ac	1,69 ^a ac	1,76 ^a ac	1,90 ^a ac	1,90 ^a ac	1,90 ^a ac
	0,55	1,03 ^a —	1,25 ^a ac	1,53 ^a ac	1,68 ^a ac	1,80 ^a ac	1,91 ^a ac	2,13 ^a ac	2,13 ^a ac	2,13 ^a a
	0,63	1,11 ^a —	1,34 ^a ac	1,66 ^a ac	1,79 ^a ac	1,98 ^a ac	2,15 ^a ac	2,50 ^a ac	2,50 ^a ac	2,50 ^a a
	0,75	1,11 ^a —	1,47 ^a ac	1,85 ^a ac	1,96 ^a ac	2,25 ^a ac	2,51 ^a ac	3,06 ^a ac	3,06 ^a a	3,06 ^a a
	0,88	1,11 ^a —	1,47 ^a ac	1,85 ^a ac	2,05 ac	2,44 ac	2,79 ac	3,53 a	3,66 a	3,79 a
	1,00	1,11 ^a —	1,47 ^a ac	1,85 ^a ac	2,14 ac	2,62 ac	3,05 a	3,96 a	4,21 a	4,46 a
	1,13	1,11 ^a —	1,47 ^a ac	1,85 ^a a	2,23 a	2,80 a	3,33 a	4,43 a	4,81 a	— —
	1,25	1,11 ^a —	1,47 ^a a	1,85 ^a a	2,32 a	2,98 a	3,59 a	4,86 a	5,36 a	— —
	1,50	1,11 ^a —	1,47 ^a a	1,85 ^a a	2,32 a	2,98 a	3,59 a	4,86 a	— —	— —
	1,75	1,11 ^a —	— —	— —	— —	— —	— —	— —	— —	— —
2,00	1,11 ^a —	— —	— —	— —	— —	— —	— —	— —	— —	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,89 —	1,14 ac	1,22 ^a ac	1,22 ^a ac	1,22 ^a ac	1,22 ^a ac	1,22 ^a ac	1,22 ^a ac	1,22 ^a ac
	0,55	0,89 —	1,14 ac	1,54 ac	1,54 ^a ac	1,54 ^a ac	1,54 ^a ac	1,54 ^a ac	1,54 ^a ac	1,54 ^a a
	0,63	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,04 ac	2,04 ^a ac	2,04 ^a ac	2,04 ^a ac	2,04 ^a a
	0,75	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,38 ac	2,80 ^a ac	2,80 ^a a	2,80 ^a a
	0,88	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,38 ac	3,14 a	3,63 a	3,63 ^a a
	1,00	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,38 a	3,14 a	3,86 a	4,39 a
	1,13	0,89 —	1,14 ac	1,66 a	1,81 a	2,10 a	2,38 a	3,14 a	3,86 a	— —
	1,25	0,89 —	1,14 a	1,66 a	1,81 a	2,10 a	2,38 a	3,14 a	3,86 a	— —
	1,50	0,89 —	1,14 a	1,66 a	1,81 a	2,10 a	2,38 a	3,14 a	— —	— —
	1,75	0,89 —	— —	— —	— —	— —	— —	— —	— —	— —
2,00	0,89 —	— —	— —	— —	— —	— —	— —	— —	— —	

Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SX3 - A12 (S12) - 6,0 x L , SFS SX3 - L12 - A12 (S12) - 6,0 x L ,
SFS SX3 - D12 - A12 (S12) - 6,0 x L
with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 12 \text{ mm}$

Annex 6



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity

$\Sigma t_i \leq 3,00 \text{ mm}$

Timber substructures

no performance determined

$t_{N,II}$ =	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75	2,00	
$M_{t,nom}$ =										
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,98 ^a —	1,20 ^a ac	1,45 ^a ac	1,61 ^a ac	1,69 ^a ac	1,76 ^a ac	1,90 ^a ac	1,90 ^a ac	1,90 ^a ac
	0,55	1,03 ^a —	1,25 ^a ac	1,53 ^a ac	1,68 ^a ac	1,80 ^a ac	1,91 ^a ac	2,13 ^a ac	2,13 ^a ac	2,13 ^a a
	0,63	1,11 ^a —	1,34 ^a ac	1,66 ^a ac	1,79 ^a ac	1,98 ^a ac	2,15 ^a ac	2,50 ^a ac	2,50 ^a ac	2,50 ^a a
	0,75	1,11 ^a —	1,47 ^a ac	1,85 ^a ac	1,96 ^a ac	2,25 ^a ac	2,51 ^a ac	3,06 ^a ac	3,06 ^a a	3,06 ^a a
	0,88	1,11 ^a —	1,47 ^a ac	1,85 ^a ac	2,05 ac	2,44 ac	2,79 ac	3,53 a	3,66 a	3,79 a
	1,00	1,11 ^a —	1,47 ^a ac	1,85 ^a ac	2,14 ac	2,62 ac	3,05 a	3,96 a	4,21 a	4,46 a
	1,13	1,11 ^a —	1,47 ^a ac	1,85 ^a a	2,23 a	2,80 a	3,33 a	4,43 a	4,81 a	— —
	1,25	1,11 ^a —	1,47 ^a a	1,85 ^a a	2,32 a	2,98 a	3,59 a	4,86 a	5,36 a	— —
	1,50	1,11 ^a —	1,47 ^a a	1,85 ^a a	2,32 a	2,98 a	3,59 a	4,86 a	— —	— —
	1,75	1,11 ^a —	— —	— —	— —	— —	— —	— —	— —	— —
2,00	1,11 ^a —	— —	— —	— —	— —	— —	— —	— —	— —	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,89 —	1,14 ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac
	0,55	0,89 —	1,14 ac	1,66 ac	1,69 ac	1,69 ^a ac	1,69 ^a ac	1,69 ^a ac	1,69 ^a ac	1,69 ^a a
	0,63	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,25 ac	2,25 ^a ac	2,25 ^a ac	2,25 ^a a
	0,75	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,38 ac	3,09 ac	3,09 ^a a	3,09 ^a a
	0,88	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,38 ac	3,14 a	3,86 a	4,00 ^a a
	1,00	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,38 a	3,14 a	3,86 a	4,57 a
	1,13	0,89 —	1,14 ac	1,66 a	1,81 a	2,10 a	2,38 a	3,14 a	3,86 a	— —
	1,25	0,89 —	1,14 a	1,66 a	1,81 a	2,10 a	2,38 a	3,14 a	3,86 a	— —
	1,50	0,89 —	1,14 a	1,66 a	1,81 a	2,10 a	2,38 a	3,14 a	— —	— —
	1,75	0,89 —	— —	— —	— —	— —	— —	— —	— —	— —
2,00	0,89 —	— —	— —	— —	— —	— —	— —	— —	— —	

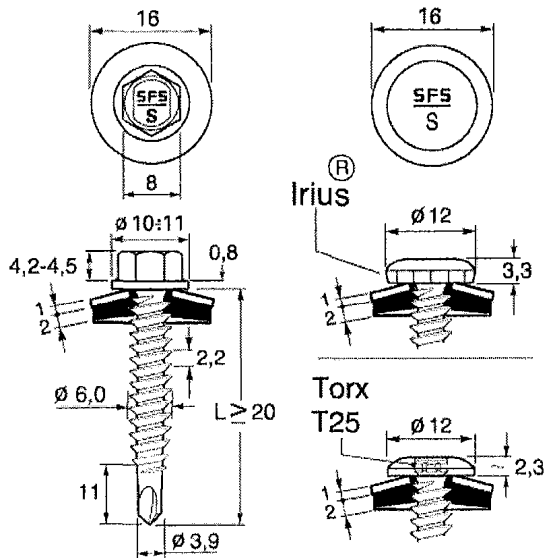
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SX3 - S14 - 6,0 x L , SFS SX3 - L12 - S14 - 6,0 x L , SFS SX3 - D12 - S14 - 6,0 x L

with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 7



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity

$\Sigma t_i \leq 3,00 \text{ mm}$

Timber substructures

no performance determined

$t_{N,II}$ =	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75	2,00	
$M_{t,nom}$ =										
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,98 ^a —	1,20 ^a ac	1,45 ^a ac	1,61 ^a ac	1,69 ^a ac	1,76 ^a ac	1,90 ^a ac	1,90 ^a ac	1,90 ^a ac
	0,55	1,03 ^a —	1,25 ^a ac	1,53 ^a ac	1,68 ^a ac	1,80 ^a ac	1,91 ^a ac	2,13 ^a ac	2,13 ^a ac	2,13 ^a a
	0,63	1,11 ^a —	1,34 ^a ac	1,66 ^a ac	1,79 ^a ac	1,98 ^a ac	2,15 ^a ac	2,50 ^a ac	2,50 ^a ac	2,50 ^a a
	0,75	1,11 ^a —	1,47 ^a ac	1,85 ^a ac	1,96 ^a ac	2,25 ^a ac	2,51 ^a ac	3,06 ^a ac	3,06 ^a a	3,06 ^a a
	0,88	1,11 ^a —	1,47 ^a ac	1,85 ^a ac	2,05 ac	2,44 ac	2,79 ac	3,53 a	3,66 a	3,79 a
	1,00	1,11 ^a —	1,47 ^a ac	1,85 ^a ac	2,14 ac	2,62 ac	3,05 a	3,96 a	4,21 a	4,46 a
	1,13	1,11 ^a —	1,47 ^a ac	1,85 ^a a	2,23 a	2,80 a	3,33 a	4,43 a	4,81 a	— —
	1,25	1,11 ^a —	1,47 ^a a	1,85 ^a a	2,32 a	2,98 a	3,59 a	4,86 a	5,36 a	— —
	1,50	1,11 ^a —	1,47 ^a a	1,85 ^a a	2,32 a	2,98 a	3,59 a	4,86 a	— —	— —
	1,75	1,11 ^a —	— —	— —	— —	— —	— —	— —	— —	— —
2,00	1,11 ^a —	— —	— —	— —	— —	— —	— —	— —	— —	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,89 —	1,14 ac	1,52 ^a ac	1,52 ^a ac	1,52 ^a ac	1,52 ^a ac	1,52 ^a ac	1,52 ^a ac	1,52 ^a ac
	0,55	0,89 —	1,14 ac	1,66 ac	1,81 ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a a
	0,63	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,38 ac	2,70 ^a ac	2,70 ^a ac	2,70 ^a a
	0,75	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,38 ac	3,14 ac	3,50 ^a a	3,50 ^a a
	0,88	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,38 ac	3,14 a	3,86 a	4,52 a
	1,00	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,38 a	3,14 a	3,86 a	4,57 a
	1,13	0,89 —	1,14 ac	1,66 a	1,81 a	2,10 a	2,38 a	3,14 a	3,86 a	— —
	1,25	0,89 —	1,14 a	1,66 a	1,81 a	2,10 a	2,38 a	3,14 a	3,86 a	— —
	1,50	0,89 —	1,14 a	1,66 a	1,81 a	2,10 a	2,38 a	3,14 a	— —	— —
	1,75	0,89 —	— —	— —	— —	— —	— —	— —	— —	— —
2,00	0,89 —	— —	— —	— —	— —	— —	— —	— —	— —	

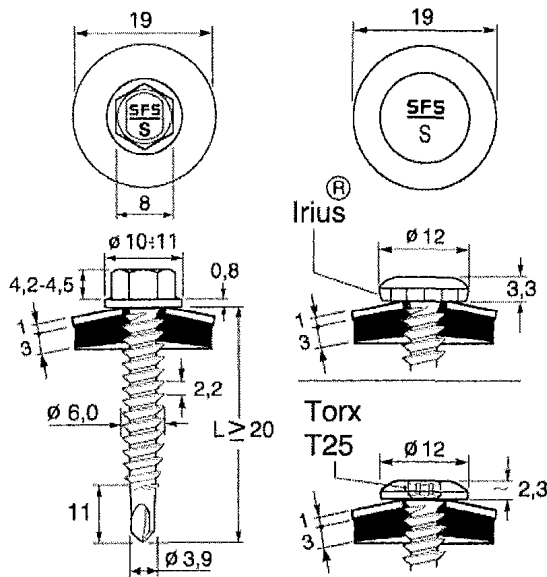
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SX3 - S16 - 6,0 x L , SFS SX3 - L12 - S16 - 6,0 x L , SFS SX3 - D12 - S16 - 6,0 x L

with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 8



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity

$\Sigma t_i \leq 3,00 \text{ mm}$

Timber substructures

no performance determined

$t_{N,II} =$	0,63		0,75		0,88		1,00		1,13		1,25		1,50		1,75		2,00		
$M_{l,nom} =$																			
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,98 ^a	—	1,20 ^a	ac	1,45 ^a	ac	1,61 ^a	ac	1,69 ^a	ac	1,76 ^a	ac	1,90 ^a	ac	1,90 ^a	ac	1,90 ^a	ac
	0,55	1,03 ^a	—	1,25 ^a	ac	1,53 ^a	ac	1,68 ^a	ac	1,80 ^a	ac	1,91 ^a	ac	2,13 ^a	ac	2,13 ^a	ac	2,13 ^a	a
	0,63	1,11 ^a	—	1,34 ^a	ac	1,66 ^a	ac	1,79 ^a	ac	1,98 ^a	ac	2,15 ^a	ac	2,50 ^a	ac	2,50 ^a	ac	2,50 ^a	a
	0,75	1,11 ^a	—	1,47 ^a	ac	1,85 ^a	ac	1,96 ^a	ac	2,25 ^a	ac	2,51 ^a	ac	3,06 ^a	ac	3,06 ^a	a	3,06 ^a	a
	0,88	1,11 ^a	—	1,47 ^a	ac	1,85 ^a	ac	2,05	ac	2,44	ac	2,79	ac	3,53	a	3,66	a	3,79	a
	1,00	1,11 ^a	—	1,47 ^a	ac	1,85 ^a	ac	2,14	ac	2,62	ac	3,05	a	3,96	a	4,21	a	4,46	a
	1,13	1,11 ^a	—	1,47 ^a	ac	1,85 ^a	a	2,23	a	2,80	a	3,33	a	4,43	a	4,81	a	—	—
	1,25	1,11 ^a	—	1,47 ^a	a	1,85 ^a	a	2,32	a	2,98	a	3,59	a	4,86	a	5,36	a	—	—
	1,50	1,11 ^a	—	1,47 ^a	a	1,85 ^a	a	2,32	a	2,98	a	3,59	a	4,86	a	—	—	—	—
	1,75	1,11 ^a	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2,00	1,11 ^a	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,89	—	1,14	ac	1,66	ac	1,81	ac	1,87 ^a	ac	1,87 ^a	ac	1,87 ^a	ac	1,87 ^a	ac	1,87 ^a	ac
	0,55	0,89	—	1,14	ac	1,66	ac	1,81	ac	2,10	ac	2,36	ac	2,36 ^a	ac	2,36 ^a	ac	2,36 ^a	a
	0,63	0,89	—	1,14	ac	1,66	ac	1,81	ac	2,10	ac	2,38	ac	3,14	ac	3,14 ^a	ac	3,14 ^a	a
	0,75	0,89	—	1,14	ac	1,66	ac	1,81	ac	2,10	ac	2,38	ac	3,14	ac	3,86	a	4,31	a
	0,88	0,89	—	1,14	ac	1,66	ac	1,81	ac	2,10	ac	2,38	ac	3,14	a	3,86	a	4,57	a
	1,00	0,89	—	1,14	ac	1,66	ac	1,81	ac	2,10	ac	2,38	a	3,14	a	3,86	a	4,57	a
	1,13	0,89	—	1,14	ac	1,66	a	1,81	a	2,10	a	2,38	a	3,14	a	3,86	a	—	—
	1,25	0,89	—	1,14	a	1,66	a	1,81	a	2,10	a	2,38	a	3,14	a	3,86	a	—	—
	1,50	0,89	—	1,14	a	1,66	a	1,81	a	2,10	a	2,38	a	3,14	a	—	—	—	—
	1,75	0,89	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2,00	0,89	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

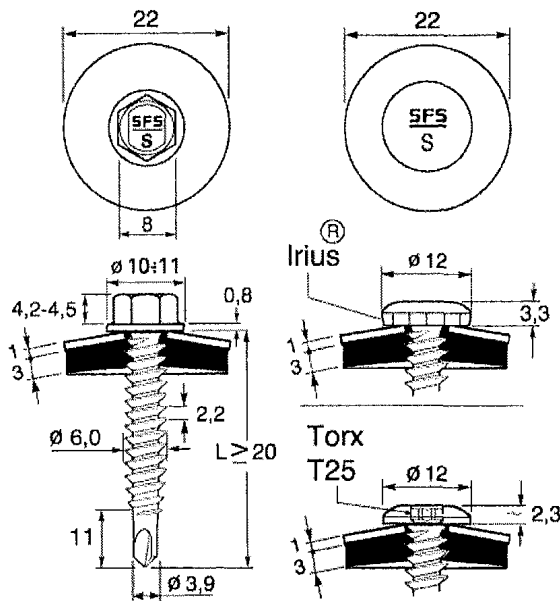
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SX3 - S19 - 6,0 x L , SFS SX3 - L12 - S19 - 6,0 x L , SFS SX3 - D12 - S19 - 6,0 x L

with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 19 \text{ mm}$

Annex 9



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity

$\Sigma t_i \leq 3,00 \text{ mm}$

Timber substructures

no performance determined

$t_{N,II}$ =	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75	2,00	
$M_{t,nom}$ =										
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,98 ^a —	1,20 ^a ac	1,45 ^a ac	1,61 ^a ac	1,69 ^a ac	1,76 ^a ac	1,90 ^a ac	1,90 ^a ac	1,90 ^a ac
	0,55	1,03 ^a —	1,25 ^a ac	1,53 ^a ac	1,68 ^a ac	1,80 ^a ac	1,91 ^a ac	2,13 ^a ac	2,13 ^a ac	2,13 ^a a
	0,63	1,11 ^a —	1,34 ^a ac	1,66 ^a ac	1,79 ^a ac	1,98 ^a ac	2,15 ^a ac	2,50 ^a ac	2,50 ^a ac	2,50 ^a a
	0,75	1,11 ^a —	1,47 ^a ac	1,85 ^a ac	1,96 ^a ac	2,25 ^a ac	2,51 ^a ac	3,06 ^a ac	3,06 ^a a	3,06 ^a a
	0,88	1,11 ^a —	1,47 ^a ac	1,85 ^a ac	2,05 ac	2,44 ac	2,79 ac	3,53 a	3,66 a	3,79 a
	1,00	1,11 ^a —	1,47 ^a ac	1,85 ^a ac	2,14 ac	2,62 ac	3,05 a	3,96 a	4,21 a	4,46 a
	1,13	1,11 ^a —	1,47 ^a ac	1,85 ^a a	2,23 a	2,80 a	3,33 a	4,43 a	4,81 a	— —
	1,25	1,11 ^a —	1,47 ^a a	1,85 ^a a	2,32 a	2,98 a	3,59 a	4,86 a	5,36 a	— —
	1,50	1,11 ^a —	1,47 ^a a	1,85 ^a a	2,32 a	2,98 a	3,59 a	4,86 a	— —	— —
	1,75	1,11 ^a —	— —	— —	— —	— —	— —	— —	— —	— —
2,00	1,11 ^a —	— —	— —	— —	— —	— —	— —	— —	— —	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,33 ac	2,33 ^a ac	2,33 ^a ac	2,33 ^a ac
	0,55	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,38 ac	2,94 ac	2,94 ^a ac	2,94 ^a a
	0,63	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,38 ac	3,14 ac	3,86 ac	3,91 ^a a
	0,75	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,38 ac	3,14 ac	3,86 a	4,57 a
	0,88	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,38 ac	3,14 a	3,86 a	4,57 a
	1,00	0,89 —	1,14 ac	1,66 ac	1,81 ac	2,10 ac	2,38 a	3,14 a	3,86 a	4,57 a
	1,13	0,89 —	1,14 ac	1,66 a	1,81 a	2,10 a	2,38 a	3,14 a	3,86 a	— —
	1,25	0,89 —	1,14 a	1,66 a	1,81 a	2,10 a	2,38 a	3,14 a	3,86 a	— —
	1,50	0,89 —	1,14 a	1,66 a	1,81 a	2,10 a	2,38 a	3,14 a	— —	— —
	1,75	0,89 —	— —	— —	— —	— —	— —	— —	— —	— —
	2,00	0,89 —	— —	— —	— —	— —	— —	— —	— —	— —

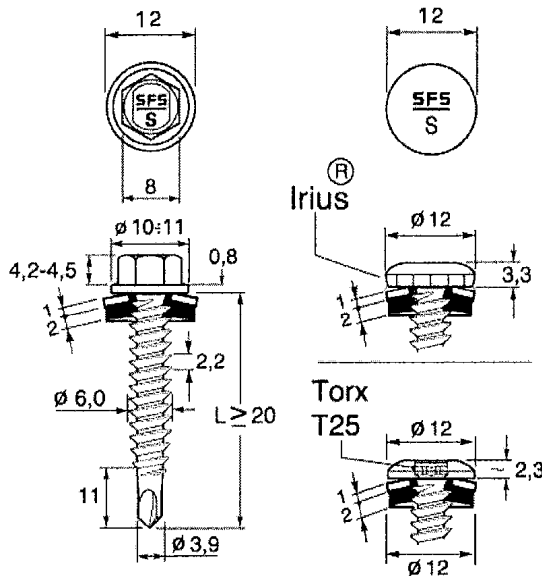
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SX3 - S22 - 6,0 x L , SFS SX3 - L12 - S22 - 6,0 x L , SFS SX3 - D12 - S22 - 6,0 x L

with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 22 \text{ mm}$

Annex 10



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088

Washer: aluminium alloy AW-AMg3 - EN 485,
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity

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

Timber substructures

no performance determined

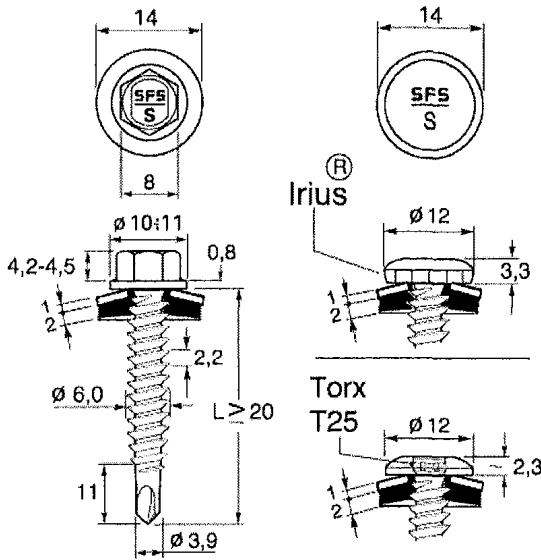
$t_{N,II}$ =	2 x 0,63	2 x 0,75	2 x 0,88	2 x 1,00	2 x 1,13	2 x 1,25	2 x 1,50	2 x 1,75	
$M_{t,nom}$ =									
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,88 ^a ac	1,87 ^a ac	1,89 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	— —
	0,55	0,98 ^a ac	2,01 ^a ac	2,05 ^a ac	2,08 ^a ac	2,10 ^a ac	2,12 ^a ac	2,12 ^a a	— —
	0,63	1,15 ^a ac	2,24 ^a ac	2,30 ^a ac	2,36 ^a ac	2,41 ^a ac	2,45 ^a ac	2,45 ^a a	— —
	0,75	1,39 ^a ac	2,58 ^a ac	2,68 ^a ac	2,77 ^a ac	2,87 ^a ac	2,96 ^a ac	2,96 ^a a	— —
	0,88	1,66 —	2,67 —	3,30 —	3,36 ac	3,44 ac	3,66 a	3,79 a	— —
	1,00	1,90 —	2,75 —	3,36 —	4,01 ac	4,01 a	4,01 a	4,01 a	— —
	1,13	2,17 —	2,84 —	3,41 —	4,01 a	4,55 a	4,55 a	— —	— —
	1,25	2,41 —	2,92 —	3,47 —	4,01 a	4,55 a	5,05 a	— —	— —
	1,50	2,41 —	2,92 —	3,47 —	4,01 a	4,55 a	5,05 a	— —	— —
	1,75	— —	— —	— —	— —	— —	— —	— —	— —
	2,00	— —	— —	— —	— —	— —	— —	— —	— —
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,22 ^a ac	1,22 ^a ac	1,22 ^a ac	1,22 ^a ac	1,22 ^a ac	1,22 ^a ac	1,22 ^a ac	— —
	0,55	1,40 ac	1,54 ^a ac	1,54 ^a ac	1,54 ^a ac	1,54 ^a ac	1,54 ^a ac	1,54 ^a a	— —
	0,63	1,40 ac	1,98 ac	2,04 ^a ac	2,04 ^a ac	2,04 ^a ac	2,04 ^a ac	2,04 ^a a	— —
	0,75	1,40 ac	1,98 ac	2,61 ac	2,80 ^a ac	2,80 ^a ac	2,80 ^a ac	2,80 ^a a	— —
	0,88	1,40 —	1,98 —	2,61 —	3,19 ac	3,63 ac	3,63 ^a a	3,63 ^a a	— —
	1,00	1,40 —	1,98 —	2,61 —	3,19 ac	3,78 a	4,37 a	4,39 ^a a	— —
	1,13	1,40 —	1,98 —	2,61 —	3,19 a	3,78 a	4,37 a	— —	— —
	1,25	1,40 —	1,98 —	2,61 —	3,19 a	3,78 a	4,37 a	— —	— —
	1,50	1,40 —	1,98 —	2,61 —	3,19 a	3,78 a	4,37 a	— —	— —
	1,75	— —	— —	— —	— —	— —	— —	— —	— —
	2,00	— —	— —	— —	— —	— —	— —	— —	— —

Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SX3 - A12 (S12) - 6,0 x L , SFS SX3 - L12 - A12 (S12) - 6,0 x L ,
SFS SX3 - D12 - A12 (S12) - 6,0 x L
with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 12 \text{ mm}$

Annex 11



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088
Washer: stainless steel (1.4301) - EN 10088
Component I: S280GD, S320GD or S350GD - EN 10346
Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity

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

Timber substructures

no performance determined

$t_{N,II} =$	2 x 0,63		2 x 0,75		2 x 0,88		2 x 1,00		2 x 1,13		2 x 1,25		2 x 1,50		2 x 1,75	
$M_{t,nom} =$																
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,88 ^a ac	1,87 ^a ac	1,89 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	—	—	
	0,55	0,98 ^a ac	2,01 ^a ac	2,05 ^a ac	2,08 ^a ac	2,10 ^a ac	2,12 ^a ac	2,12 ^a ac	2,12 ^a ac	2,12 ^a ac	2,12 ^a ac	2,12 ^a ac	2,12 ^a a	—	—	
	0,63	1,15 ^a ac	2,24 ^a ac	2,30 ^a ac	2,36 ^a ac	2,41 ^a ac	2,41 ^a ac	2,45 ^a ac	2,45 ^a ac	2,45 ^a ac	2,45 ^a ac	2,45 ^a ac	2,45 ^a a	—	—	
	0,75	1,39 ^a ac	2,58 ^a ac	2,68 ^a ac	2,77 ^a ac	2,87 ^a ac	2,87 ^a ac	2,96 ^a ac	2,96 ^a ac	2,96 ^a ac	2,96 ^a ac	2,96 ^a ac	2,96 ^a a	—	—	
	0,88	1,66 —	2,67 —	3,30 —	3,36 ac	3,44 ac	3,44 ac	3,66 a	3,66 a	3,66 a	3,66 a	3,66 a	3,79 a	—	—	
	1,00	1,90 —	2,75 —	3,36 —	4,01 ac	4,01 a	4,01 a	4,01 a	4,01 a	4,01 a	4,01 a	4,01 a	4,01 a	—	—	
	1,13	2,17 —	2,84 —	3,41 —	4,01 a	4,55 a	4,55 a	4,55 a	4,55 a	4,55 a	4,55 a	4,55 a	—	—	—	
	1,25	2,41 —	2,92 —	3,47 —	4,01 a	4,55 a	4,55 a	5,05 a	5,05 a	5,05 a	5,05 a	5,05 a	—	—	—	
	1,50	2,41 —	2,92 —	3,47 —	4,01 a	4,55 a	4,55 a	5,05 a	5,05 a	5,05 a	5,05 a	5,05 a	—	—	—	
	1,75	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	
	2,00	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,34 ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac	—	—	
	0,55	1,40 ac	1,69 ^a ac	1,69 ^a ac	1,69 ^a ac	1,69 ^a ac	1,69 ^a ac	1,69 ^a ac	1,69 ^a ac	1,69 ^a ac	1,69 ^a ac	1,69 ^a ac	1,69 ^a a	—	—	
	0,63	1,40 ac	1,98 ac	2,25 ^a ac	2,25 ^a ac	2,25 ^a ac	2,25 ^a ac	2,25 ^a ac	2,25 ^a ac	2,25 ^a ac	2,25 ^a ac	2,25 ^a ac	2,25 ^a a	—	—	
	0,75	1,40 ac	1,98 ac	2,61 ac	3,09 ac	3,09 ^a ac	3,09 ^a ac	3,09 ^a ac	3,09 ^a ac	3,09 ^a ac	3,09 ^a ac	3,09 ^a ac	3,09 ^a a	—	—	
	0,88	1,40 —	1,98 —	2,61 —	3,19 ac	3,78 ac	3,78 ac	4,00 ^a a	4,00 ^a a	4,00 ^a a	4,00 ^a a	4,00 ^a a	4,00 ^a a	—	—	
	1,00	1,40 —	1,98 —	2,61 —	3,19 ac	3,78 a	3,78 a	4,37 a	4,37 a	4,37 a	4,37 a	4,37 a	4,84 ^a a	—	—	
	1,13	1,40 —	1,98 —	2,61 —	3,19 a	3,78 a	3,78 a	4,37 a	4,37 a	4,37 a	4,37 a	4,37 a	—	—	—	
	1,25	1,40 —	1,98 —	2,61 —	3,19 a	3,78 a	3,78 a	4,37 a	4,37 a	4,37 a	4,37 a	4,37 a	—	—	—	
	1,50	1,40 —	1,98 —	2,61 —	3,19 a	3,78 a	3,78 a	4,37 a	4,37 a	4,37 a	4,37 a	4,37 a	—	—	—	
	1,75	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	
	2,00	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	

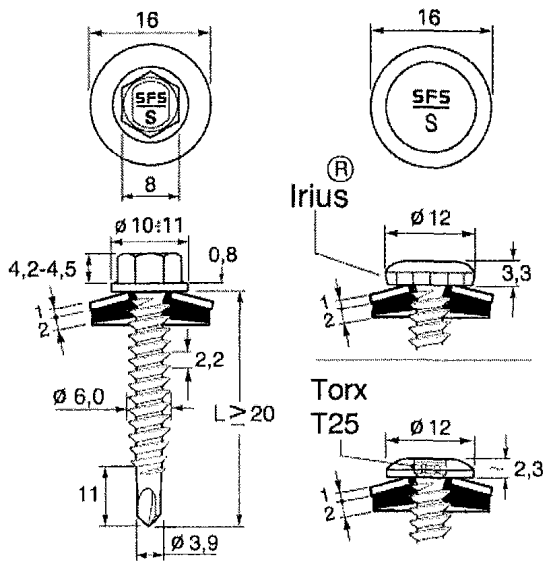
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SX3 - S14 - 6,0 x L , SFS SX3 - L12 - S14 - 6,0 x L , SFS SX3 - D12 - S14 - 6,0 x L

with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 12



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088
Washer: stainless steel (1.4301) - EN 10088
Component I: S280GD, S320GD or S350GD - EN 10346
Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

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

Timber substructures

no performance determined

$t_{N,II} =$	2 x 0,63	2 x 0,75	2 x 0,88	2 x 1,00	2 x 1,13	2 x 1,25	2 x 1,50	2 x 1,75	
$M_{t,nom} =$									
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,88 ^a ac	1,87 ^a ac	1,89 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	— —
	0,55	0,98 ^a ac	2,01 ^a ac	2,05 ^a ac	2,08 ^a ac	2,10 ^a ac	2,12 ^a ac	2,12 ^a a	— —
	0,63	1,15 ^a ac	2,24 ^a ac	2,30 ^a ac	2,36 ^a ac	2,41 ^a ac	2,45 ^a ac	2,45 ^a a	— —
	0,75	1,39 ^a ac	2,58 ^a ac	2,68 ^a ac	2,77 ^a ac	2,87 ^a ac	2,96 ^a ac	2,96 ^a a	— —
	0,88	1,66 —	2,67 —	3,30 —	3,36 ac	3,44 ac	3,66 a	3,79 a	— —
	1,00	1,90 —	2,75 —	3,36 —	4,01 ac	4,01 a	4,01 a	4,01 a	— —
	1,13	2,17 —	2,84 —	3,41 —	4,01 a	4,55 a	4,55 a	— —	— —
	1,25	2,41 —	2,92 —	3,47 —	4,01 a	4,55 a	5,05 a	— —	— —
	1,50	2,41 —	2,92 —	3,47 —	4,01 a	4,55 a	5,05 a	— —	— —
	1,75	— —	— —	— —	— —	— —	— —	— —	— —
2,00	— —	— —	— —	— —	— —	— —	— —	— —	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,40 ac	1,52 ^a ac	1,52 ^a ac	1,52 ^a ac	1,52 ^a ac	1,52 ^a ac	1,52 ^a ac	— —
	0,55	1,40 ac	1,91 ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a a	— —
	0,63	1,40 ac	1,98 ac	2,61 ac	2,70 ^a ac	2,70 ^a ac	2,70 ^a ac	2,70 ^a a	— —
	0,75	1,40 ac	1,98 ac	2,61 ac	3,19 ac	3,50 ac	3,50 ^a ac	3,50 ^a a	— —
	0,88	1,40 —	1,98 —	2,61 —	3,19 ac	3,78 ac	4,37 a	4,52 ^a a	— —
	1,00	1,40 —	1,98 —	2,61 —	3,19 ac	3,78 a	4,37 a	5,47 a	— —
	1,13	1,40 —	1,98 —	2,61 —	3,19 a	3,78 a	4,37 a	— —	— —
	1,25	1,40 —	1,98 —	2,61 —	3,19 a	3,78 a	4,37 a	— —	— —
	1,50	1,40 —	1,98 —	2,61 —	3,19 a	3,78 a	4,37 a	— —	— —
	1,75	— —	— —	— —	— —	— —	— —	— —	— —
2,00	— —	— —	— —	— —	— —	— —	— —	— —	

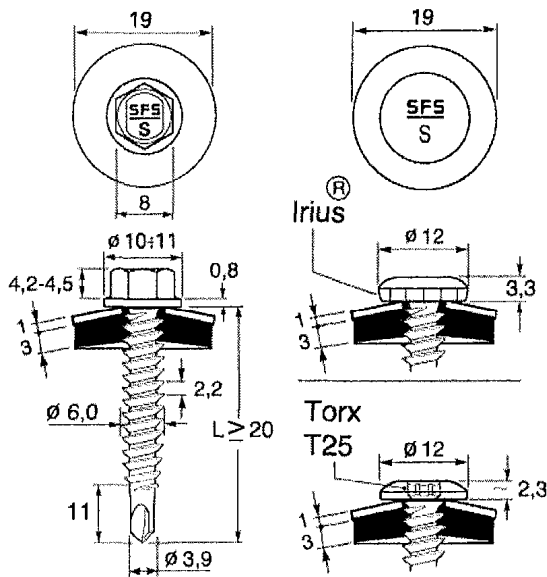
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SX3 - S16 - 6,0 x L , SFS SX3 - L12 - S16 - 6,0 x L , SFS SX3 - D12 - S16 - 6,0 x L

with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 13



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity

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

Timber substructures

no performance determined

$t_{N,II} =$	2 x 0,63	2 x 0,75	2 x 0,88	2 x 1,00	2 x 1,13	2 x 1,25	2 x 1,50	2 x 1,75	
$M_{t,nom} =$									
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,88 ^a ac	1,87 ^a ac	1,89 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a ac	— —
	0,55	0,98 ^a ac	2,01 ^a ac	2,05 ^a ac	2,08 ^a ac	2,10 ^a ac	2,12 ^a ac	2,12 ^a a	— —
	0,63	1,15 ^a ac	2,24 ^a ac	2,30 ^a ac	2,36 ^a ac	2,41 ^a ac	2,45 ^a ac	2,45 ^a a	— —
	0,75	1,39 ^a ac	2,58 ^a ac	2,68 ^a ac	2,77 ^a ac	2,87 ^a ac	2,96 ^a ac	2,96 ^a a	— —
	0,88	1,66 —	2,67 —	3,30 —	3,36 ac	3,44 ac	3,66 a	3,79 a	— —
	1,00	1,90 —	2,75 —	3,36 —	4,01 ac	4,01 a	4,01 a	4,01 a	— —
	1,13	2,17 —	2,84 —	3,41 —	4,01 a	4,55 a	4,55 a	— —	— —
	1,25	2,41 —	2,92 —	3,47 —	4,01 a	4,55 a	5,05 a	— —	— —
	1,50	2,41 —	2,92 —	3,47 —	4,01 a	4,55 a	5,05 a	— —	— —
	1,75	— —	— —	— —	— —	— —	— —	— —	— —
2,00	— —	— —	— —	— —	— —	— —	— —	— —	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,40 ac	1,87 ac	1,87 ^a ac	1,87 ^a ac	1,87 ^a ac	1,87 ^a ac	1,87 ^a ac	— —
	0,55	1,40 ac	1,98 ac	2,36 ^a ac	2,36 ^a ac	2,36 ^a ac	2,36 ^a ac	2,36 ^a a	— —
	0,63	1,40 ac	1,98 ac	2,61 ac	3,14 ac	3,14 ^a ac	3,14 ^a ac	3,14 ^a a	— —
	0,75	1,40 ac	1,98 ac	2,61 ac	3,19 ac	3,78 ac	4,31 ac	4,31 ^a a	— —
	0,88	1,40 —	1,98 —	2,61 —	3,19 ac	3,78 ac	4,37 a	5,57 a	— —
	1,00	1,40 —	1,98 —	2,61 —	3,19 ac	3,78 a	4,37 a	5,82 a	— —
	1,13	1,40 —	1,98 —	2,61 —	3,19 a	3,78 a	4,37 a	— —	— —
	1,25	1,40 —	1,98 —	2,61 —	3,19 a	3,78 a	4,37 a	— —	— —
	1,50	1,40 —	1,98 —	2,61 —	3,19 a	3,78 a	4,37 a	— —	— —
	1,75	— —	— —	— —	— —	— —	— —	— —	— —
2,00	— —	— —	— —	— —	— —	— —	— —	— —	

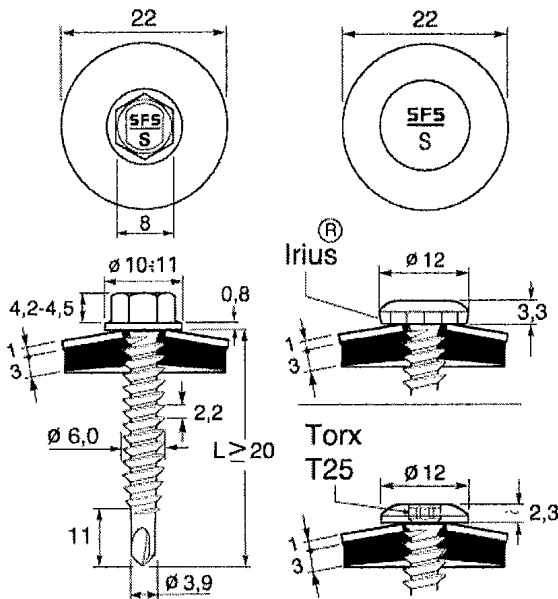
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SX3 - S19 - 6,0 x L , SFS SX3 - L12 - S19 - 6,0 x L , SFS SX3 - D12 - S19 - 6,0 x L

with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 19 \text{ mm}$

Annex 14



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity

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

Timber substructures

no performance determined

$t_{N,II} =$	2 x 0,63	2 x 0,75	2 x 0,88	2 x 1,00	2 x 1,13	2 x 1,25	2 x 1,50	2 x 1,75	
$M_{t,nom} =$									
$V_{R,k} \text{ [kN] for } t_{N,I} \text{ [mm]}$	0,50	0,88 ^a ac	1,87 ^a ac	1,89 ^a ac	1,91 ^a ac	1,91 ^a ac	1,91 ^a —	1,91 ^a ac	— —
	0,55	0,98 ^a ac	2,01 ^a ac	2,05 ^a ac	2,08 ^a ac	2,10 ^a ac	2,12 ^a —	2,12 ^a a	— —
	0,63	1,15 ^a ac	2,24 ^a ac	2,30 ^a ac	2,36 ^a ac	2,41 ^a ac	2,45 ^a —	2,45 ^a a	— —
	0,75	1,39 ^a ac	2,58 ^a ac	2,68 ^a ac	2,77 ^a ac	2,87 ^a ac	2,96 ^a ac	2,96 ^a a	— —
	0,88	1,66 —	2,67 —	3,30 —	3,36 ac	3,44 ac	3,66 ac	3,79 a	— —
	1,00	1,90 —	2,75 —	3,36 —	4,01 ac	4,01 a	4,01 a	4,01 a	— —
	1,13	2,17 —	2,84 —	3,41 —	4,01 a	4,55 a	4,55 a	— —	— —
	1,25	2,41 —	2,92 —	3,47 —	4,01 a	4,55 a	5,05 a	— —	— —
	1,50	2,41 —	2,92 —	3,47 —	4,01 a	4,55 a	5,05 a	— —	— —
	1,75	— —	— —	— —	— —	— —	— —	— —	— —
2,00	— —	— —	— —	— —	— —	— —	— —	— —	
$N_{R,k} \text{ [kN] for } t_{N,I} \text{ [mm]}$	0,50	1,40 ac	1,98 ac	2,33 ^a ac	2,33 ^a ac	2,33 ^a ac	2,33 ^a —	2,33 ^a ac	— —
	0,55	1,40 ac	1,98 ac	2,61 ac	2,94 ^a ac	2,94 ^a ac	2,94 ^a —	2,94 ^a a	— —
	0,63	1,40 ac	1,98 ac	2,61 ac	3,19 ac	3,78 ac	3,91 ^a —	3,91 ^a a	— —
	0,75	1,40 ac	1,98 ac	2,61 ac	3,19 ac	3,78 ac	4,37 ac	5,37 ^a a	— —
	0,88	1,40 —	1,98 —	2,61 —	3,19 ac	3,78 ac	4,37 ac	5,82 a	— —
	1,00	1,40 —	1,98 —	2,61 —	3,19 ac	3,78 a	4,37 a	5,82 a	— —
	1,13	1,40 —	1,98 —	2,61 —	3,19 a	3,78 a	4,37 a	— —	— —
	1,25	1,40 —	1,98 —	2,61 —	3,19 a	3,78 a	4,37 a	— —	— —
	1,50	1,40 —	1,98 —	2,61 —	3,19 a	3,78 a	4,37 a	— —	— —
	1,75	— —	— —	— —	— —	— —	— —	— —	— —
2,00	— —	— —	— —	— —	— —	— —	— —	— —	

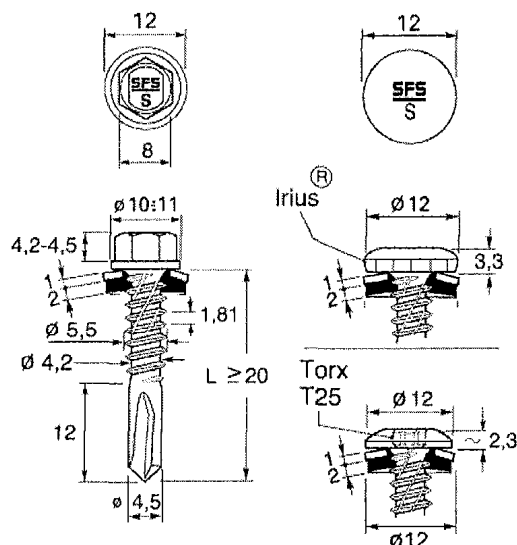
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SX3 - S22 - 6,0 x L , SFS SX3 - L12 - S22 - 6,0 x L , SFS SX3 - D12 - S22 - 6,0 x L

with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 22 \text{ mm}$

Annex 15



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088

Washer: aluminium alloy AW-AlMg3 - EN 485,
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity

$\Sigma t_i \leq 5,00 \text{ mm}$

Timber substructures

no performance determined

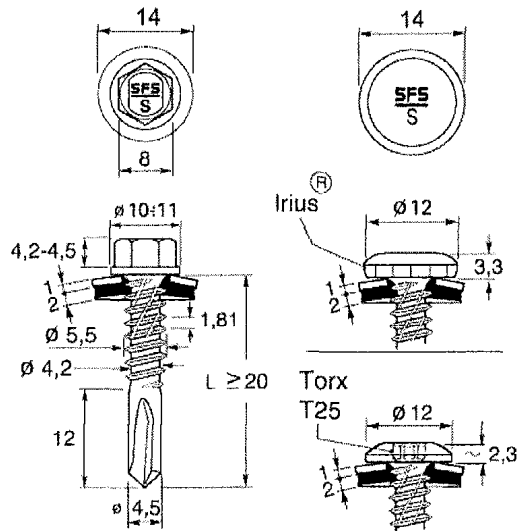
$t_{N,II} =$	1,50	1,75	2,00	2,50	3,00	4,00
$M_{t,nom} =$						
$V_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$						
0,50	1,57 ^a ac	1,67 ^a ac	1,76 ^a ac	1,76 ^a ac	1,76 ^a ac	1,76 ^a ac
0,55	1,71 ^a ac	1,79 ^a ac	1,86 ^a ac	1,86 ^a ac	1,86 ^a ac	1,86 ^a a
0,63	1,94 ^a ac	1,99 ^a ac	2,03 ^a ac	2,03 ^a ac	2,03 ^a ac	2,03 ^a a
0,75	2,28 ^a ac	2,28 ^a ac	2,28 ^a ac	2,28 ^a ac	2,28 ^a ac	2,28 ^a a
0,88	2,86 ^a ac	2,86 ^a ac	2,86 ^a ac	3,04 ^a ac	3,27 ^a ac	3,27 ^a a
1,00	3,43 ^a ac	3,43 ^a ac	3,43 ^a ac	3,74 ^a ac	4,18 ^a ac	4,18 ^a a
1,13	3,43 ^a ac	3,66 ^a ac	3,89 ^a ac	4,50 ^a ac	5,17 ^a a	—
1,25	3,43 ^a ac	3,87 ^a ac	4,31 ^a ac	5,20 ^a ac	6,08 ^a a	—
1,50	3,43 ^a ac	3,87 ^a ac	4,31 ^a ac	5,20 ^a a	6,08 ^a a	—
1,75	3,43 ^a ac	3,87 ^a a	4,31 ^a a	5,20 ^a a	6,08 ^a a	—
2,00	3,43 ^a a	3,87 ^a a	4,31 ^a a	5,20 ^a a	6,08 ^a a	—
$N_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$						
0,50	1,22 ^a ac	1,22 ^a ac	1,22 ^a ac	1,22 ^a ac	1,22 ^a ac	1,22 ^a ac
0,55	1,54 ^a ac	1,54 ^a ac	1,54 ^a ac	1,54 ^a ac	1,54 ^a ac	1,54 ^a a
0,63	2,04 ac	2,04 ^a ac	2,04 ^a ac	2,04 ^a ac	2,04 ^a ac	2,04 ^a a
0,75	2,09 ac	2,69 ac	2,80 ^a ac	2,80 ^a ac	2,80 ^a ac	2,80 ^a a
0,88	2,09 ac	2,69 ac	3,28 ac	3,63 ^a ac	3,63 ^a ac	3,63 ^a a
1,00	2,09 ac	2,69 ac	3,28 ac	4,15 ac	4,39 ^a ac	4,39 ^a a
1,13	2,09 ac	2,69 ac	3,28 ac	4,15 ac	5,02 a	—
1,25	2,09 ac	2,69 ac	3,28 ac	4,15 ac	5,02 a	—
1,50	2,09 ac	2,69 ac	3,28 ac	4,15 a	5,02 a	—
1,75	2,09 ac	2,69 a	3,28 a	4,15 a	5,02 a	—
2,00	2,09 a	2,69 a	3,28 a	4,15 a	5,02 a	—

Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SX5 - A12 (S12) - 5,5 x L , SFS SX5 - L12 - A12 (S12) - 5,5 x L ,
SFS SX5 - D12 - A12 (S12) - 5,5 x L
with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 12 \text{ mm}$

Annex 16



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity

$\Sigma t_i \leq 5,00 \text{ mm}$

Timber substructures

no performance determined

$t_{N,II} =$	1,50	1,75	2,00	2,50	3,00	4,00
$M_{t,nom} =$						
$V_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$	0,50	1,57 ^a ac	1,67 ^a ac	1,76 ^a ac	1,76 ^a ac	1,76 ^a ac
	0,55	1,71 ^a ac	1,79 ^a ac	1,86 ^a ac	1,86 ^a ac	1,86 ^a a
	0,63	1,94 ^a ac	1,99 ^a ac	2,03 ^a ac	2,03 ^a ac	2,03 ^a a
	0,75	2,28 ^a ac	2,28 ^a ac	2,28 ^a ac	2,28 ^a ac	2,28 ^a a
	0,88	2,86 ^a ac	2,86 ^a ac	2,86 ^a ac	3,04 ^a ac	3,27 ^a a
	1,00	3,43 ^a ac	3,43 ^a ac	3,43 ^a ac	3,74 ^a ac	4,18 ^a a
	1,13	3,43 ^a ac	3,66 ^a ac	3,89 ^a ac	4,50 ^a ac	5,17 ^a a
	1,25	3,43 ^a ac	3,87 ^a ac	4,31 ^a ac	5,20 ^a ac	6,08 ^a a
	1,50	3,43 ^a ac	3,87 ^a ac	4,31 ^a ac	5,20 ^a a	6,08 ^a a
	1,75	3,43 ^a ac	3,87 ^a a	4,31 ^a a	5,20 ^a a	6,08 ^a a
	2,00	3,43 ^a a	3,87 ^a a	4,31 ^a a	5,20 ^a a	6,08 ^a a
$N_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$	0,50	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac	1,34 ^a ac
	0,55	1,69 ^a ac	1,69 ^a ac	1,69 ^a ac	1,69 ^a ac	1,69 ^a a
	0,63	2,09 ac	2,25 ^a ac	2,25 ^a ac	2,25 ^a ac	2,25 ^a a
	0,75	2,09 ac	2,69 ac	3,09 ac	3,09 ^a ac	3,09 ^a a
	0,88	2,09 ac	2,69 ac	3,28 ac	4,00 ac	4,00 ^a a
	1,00	2,09 ac	2,69 ac	3,28 ac	4,15 ac	4,84 ^a a
	1,13	2,09 ac	2,69 ac	3,28 ac	4,15 ac	5,02 a
	1,25	2,09 ac	2,69 ac	3,28 ac	4,15 ac	5,02 a
	1,50	2,09 ac	2,69 ac	3,28 ac	4,15 a	5,02 a
	1,75	2,09 ac	2,69 a	3,28 a	4,15 a	5,02 a
	2,00	2,09 a	2,69 a	3,28 a	4,15 a	5,02 a

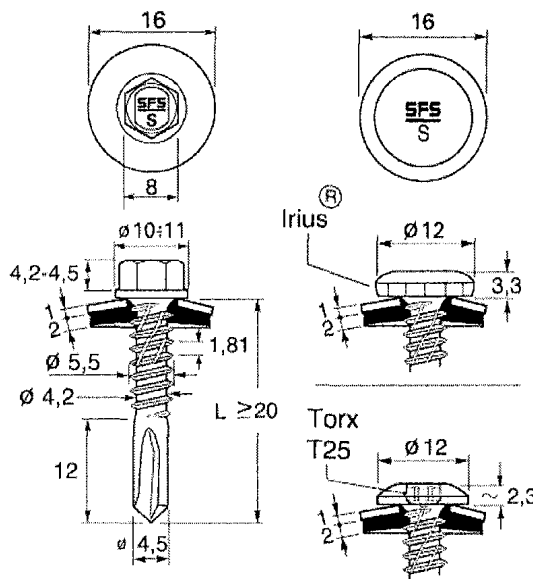
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SX5 - S14 - 5,5 x L , SFS SX5 - L12 - S14 - 5,5 x L , SFS SX5 - D12 - S14 - 5,5 x L

with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 17



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088
Washer: stainless steel (1.4301) - EN 10088
Component I: S280GD, S320GD or S350GD - EN 10346
Component II: S235, S275 or S355 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drilling capacity $\Sigma t_i \leq 5,00$ mm

Timber substructures

no performance determined

$t_{N,II} =$	1,50	1,75	2,00	2,50	3,00	4,00
$M_{t,nom} =$						
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50 1,57 ^a ac	0,55 1,71 ^a ac	0,63 1,94 ^a ac	0,75 2,28 ^a ac	0,88 2,86 ^a ac	1,00 3,43 ^a ac
	1,13 3,43 ^a ac	1,25 3,43 ^a ac	1,50 3,43 ^a ac	1,75 3,43 ^a ac	2,00 3,43 ^a a	2,00 3,43 ^a a
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50 1,52 ^a ac	0,55 1,91 ^a ac	0,63 2,09 ac	0,75 2,09 ac	0,88 2,09 ac	1,00 2,09 ac
	1,13 2,09 ac	1,25 2,09 ac	1,50 2,09 ac	1,75 2,09 ac	2,00 2,09 a	2,00 2,09 a

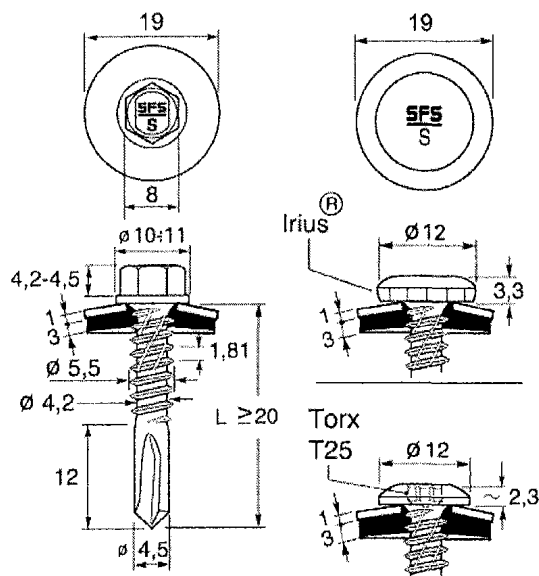
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SX5 - S16 - 5,5 x L , SFS SX5 - L12 - S16 - 5,5 x L , SFS SX5 - D12 - S16 - 5,5 x L

with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 16$ mm

Annex 18



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity

$\Sigma t_i \leq 5,00 \text{ mm}$

Timber substructures

no performance determined

$t_{N,II} =$	1,50	1,75	2,00	2,50	3,00	4,00
$M_{t,nom} =$						
$V_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$	0,50	1,57 ^a ac	1,67 ^a ac	1,76 ^a ac	1,76 ^a ac	1,76 ^a ac
	0,55	1,71 ^a ac	1,79 ^a ac	1,86 ^a ac	1,86 ^a ac	1,86 ^a a
	0,63	1,94 ^a ac	1,99 ^a ac	2,03 ^a ac	2,03 ^a ac	2,03 ^a a
	0,75	2,28 ^a ac	2,28 ^a ac	2,28 ^a ac	2,28 ^a ac	2,28 ^a a
	0,88	2,86 ^a ac	2,86 ^a ac	2,86 ^a ac	3,04 ^a ac	3,27 ^a a
	1,00	3,43 ^a ac	3,43 ^a ac	3,43 ^a ac	3,74 ^a ac	4,18 ^a a
	1,13	3,43 ^a ac	3,66 ^a ac	3,89 ^a ac	4,50 ^a ac	5,17 ^a a
	1,25	3,43 ^a ac	3,87 ^a ac	4,31 ^a ac	5,20 ^a ac	6,08 ^a a
	1,50	3,43 ^a ac	3,87 ^a ac	4,31 ^a ac	5,20 ^a a	6,08 ^a a
	1,75	3,43 ^a ac	3,87 ^a a	4,31 ^a a	5,20 ^a a	6,08 ^a a
	2,00	3,43 ^a a	3,87 ^a a	4,31 ^a a	5,20 ^a a	6,08 ^a a
$N_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$	0,50	1,87 ^a ac	1,87 ^a ac	1,87 ^a ac	1,87 ^a ac	1,87 ^a ac
	0,55	2,09 ac	2,36 ^a ac	2,36 ^a ac	2,36 ^a ac	2,36 ^a a
	0,63	2,09 ac	2,69 ac	3,14 ac	3,14 ^a ac	3,14 ^a a
	0,75	2,09 ac	2,69 ac	3,28 ac	4,15 ac	4,31 ^a a
	0,88	2,09 ac	2,69 ac	3,28 ac	4,15 ac	5,02 ac
	1,00	2,09 ac	2,69 ac	3,28 ac	4,15 ac	5,02 ac
	1,13	2,09 ac	2,69 ac	3,28 ac	4,15 ac	5,02 a
	1,25	2,09 ac	2,69 ac	3,28 ac	4,15 ac	5,02 a
	1,50	2,09 ac	2,69 ac	3,28 ac	4,15 a	5,02 a
	1,75	2,09 ac	2,69 a	3,28 a	4,15 a	5,02 a
	2,00	2,09 a	2,69 a	3,28 a	4,15 a	5,02 a

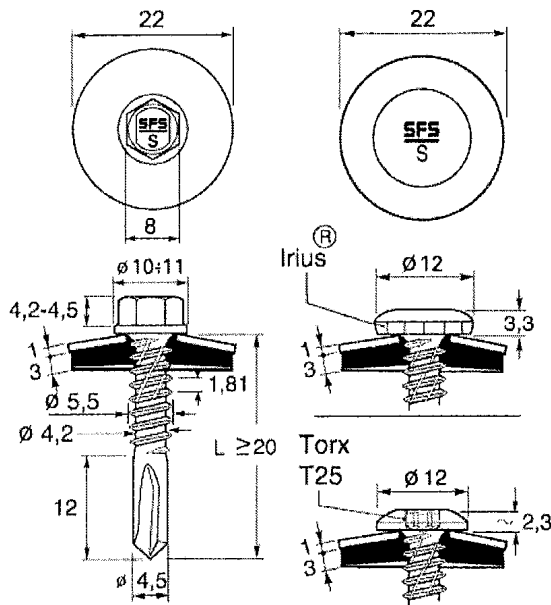
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SX5 - S19 - 5,5 x L, SFS SX5 - L12 - S19 - 5,5 x L, SFS SX5 - D12 - S19 - 5,5 x L

with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 19 \text{ mm}$

Annex 19



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity

$\Sigma t_i \leq 5,00 \text{ mm}$

Timber substructures

no performance determined

$t_{N,II} =$	1,50	1,75	2,00	2,50	3,00	4,00
$M_{t,nom} =$						
$V_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$	0,50	1,57 ^a ac	1,67 ^a ac	1,76 ^a ac	1,76 ^a ac	1,76 ^a ac
	0,55	1,71 ^a ac	1,79 ^a ac	1,86 ^a ac	1,86 ^a ac	1,86 ^a a
	0,63	1,94 ^a ac	1,99 ^a ac	2,03 ^a ac	2,03 ^a ac	2,03 ^a a
	0,75	2,28 ^a ac	2,28 ^a ac	2,28 ^a ac	2,28 ^a ac	2,28 ^a a
	0,88	2,86 ^a ac	2,86 ^a ac	2,86 ^a ac	3,04 ^a ac	3,27 ^a ac
	1,00	3,43 ^a ac	3,43 ^a ac	3,43 ^a ac	3,74 ^a ac	4,18 ^a ac
	1,13	3,43 ^a ac	3,66 ^a ac	3,89 ^a ac	4,50 ^a ac	5,17 ^a a
	1,25	3,43 ^a ac	3,87 ^a ac	4,31 ^a ac	5,20 ^a ac	6,08 ^a a
	1,50	3,43 ^a ac	3,87 ^a ac	4,31 ^a ac	5,20 ^a a	6,08 ^a a
	1,75	3,43 ^a ac	3,87 ^a a	4,31 ^a a	5,20 ^a a	6,08 ^a a
	2,00	3,43 ^a a	3,87 ^a a	4,31 ^a a	5,20 ^a a	6,08 ^a a
$N_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$	0,50	2,09 ac	2,33 ^a ac	2,33 ^a ac	2,33 ^a ac	2,33 ^a ac
	0,55	2,09 ac	2,69 ac	2,94 ^a ac	2,94 ^a ac	2,94 ^a a
	0,63	2,09 ac	2,69 ac	3,28 ac	3,91 ac	3,91 ^a a
	0,75	2,09 ac	2,69 ac	3,28 ac	4,15 ac	5,02 ac
	0,88	2,09 ac	2,69 ac	3,28 ac	4,15 ac	5,02 ac
	1,00	2,09 ac	2,69 ac	3,28 ac	4,15 ac	5,02 ac
	1,13	2,09 ac	2,69 ac	3,28 ac	4,15 ac	5,02 a
	1,25	2,09 ac	2,69 ac	3,28 ac	4,15 ac	5,02 a
	1,50	2,09 ac	2,69 ac	3,28 ac	4,15 a	5,02 a
	1,75	2,09 ac	2,69 a	3,28 a	4,15 a	5,02 a
	2,00	2,09 a	2,69 a	3,28 a	4,15 a	5,02 a

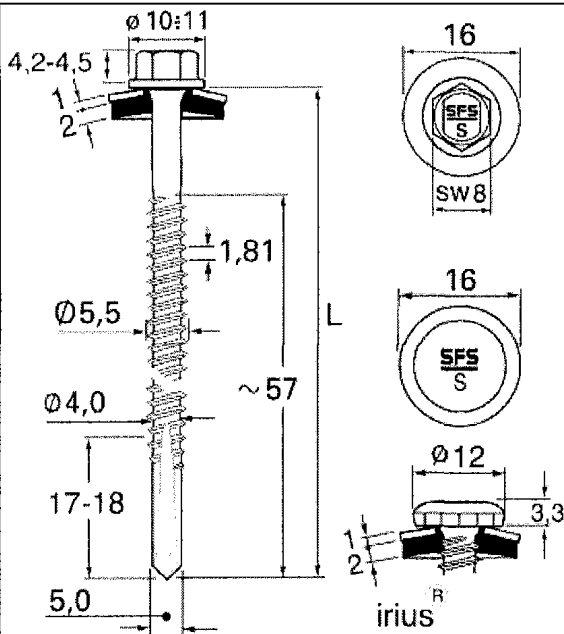
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SX5 - S22 - 5,5 x L , SFS SX5 - L12 - S22 - 5,5 x L , SFS SX5 - D12 - S22 - 5,5 x L

with hexagon head, torx or irius® Drive and sealing washer $\geq \varnothing 22 \text{ mm}$

Annex 20



Materials

Fastener: stainless steel (1.4401) - EN 10088,
stainless steel (1.4567) - EN 10088
Washer: stainless steel (1.4301) - EN 10088
Component I: S280GD, S320GD or S350GD - EN 10346
Component II: S235, S275 or S355 - EN 10025-1

Drilling capacity

$\Sigma t_i \leq 14,00 \text{ mm}$

Timber substructures

no performance determined

$t_{N,II} =$	4,00	5,00	6,00	8,00	10,0	12,0	13,0	14,0		
$M_{t,nom} =$									—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	2,20 abcd	2,20 abcd	2,20 abcd	2,20 abcd	2,20 abcd	2,20 abcd	2,20 ac	—	—
	0,55	2,50 abcd	2,50 abcd	2,50 abcd	2,50 abcd	2,50 abcd	2,50 ac	2,50 ac	—	—
	0,63	2,80 abcd	2,80 abcd	2,80 abcd	2,80 abcd	2,80 abcd	2,80 ac	2,80 a	—	—
	0,75	3,40 abcd	3,40 abcd	3,40 abcd	3,40 abcd	3,40 abcd	3,40 ac	3,40 a	—	—
	0,88	4,00 abcd	4,00 abcd	4,00 abcd	4,00 abcd	4,00 abcd	4,00 ac	4,00 a	—	—
	1,00	4,50 abcd	4,50 abcd	4,50 abcd	4,50 abcd	4,50 abcd	4,50 ac	4,50 a	—	—
	1,13	5,10 ac	5,10 ac	5,10 ac	5,10 ac	5,10 ac	5,10 a	—	—	—
	1,25	5,60 ac	5,60 ac	5,60 ac	5,60 ac	5,60 ac	5,60 a	—	—	—
	1,50	6,40 ac	6,40 ac	6,90 ac	6,90 ac	6,90 ac	6,90 a	—	—	—
	1,75	6,40 ac	6,40 ac	6,90 ac	6,90 ac	6,90 ac	6,90	—	—	—
2,00	6,40 ac	6,40 ac	6,90 ac	6,90 ac	6,90 ac	6,90	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,80 abcd	1,80 abcd	1,80 abcd	1,80 abcd	1,80 abcd	1,80 abcd	1,80 ac	—	—
	0,55	2,10 abcd	2,10 abcd	2,10 abcd	2,10 abcd	2,10 abcd	2,10 ac	2,10 ac	—	—
	0,63	2,40 abcd	2,40 abcd	2,40 abcd	2,40 abcd	2,40 abcd	2,40 ac	2,40 a	—	—
	0,75	3,00 abcd	3,00 abcd	3,00 abcd	3,00 abcd	3,00 abcd	3,00 ac	3,00 a	—	—
	0,88	3,60 abcd	3,60 abcd	3,60 abcd	3,60 abcd	3,60 abcd	3,60 ac	3,60 a	—	—
	1,00	4,20 abcd	4,20 abcd	4,20 abcd	4,20 abcd	4,20 abcd	4,20 ac	4,20 a	—	—
	1,13	5,40 ac	5,40 ac	5,40 ac	5,40 ac	5,40 ac	5,40 a	—	—	—
	1,25	6,60 ac	6,60 ac	6,60 ac	6,60 ac	6,60 ac	6,60 a	—	—	—
	1,50	7,10 ac	10,9 ac	10,9 ac	10,9 ac	10,9 ac	10,9 a	—	—	—
	1,75	7,10 ac	10,9 ac	10,9 ac	10,9 ac	10,9 ac	10,9	—	—	—
	2,00	7,10 ac	10,9 ac	10,9 ac	10,9 ac	10,9 ac	10,9	—	—	—

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

Self drilling screw

SFS SX14 - S16 - 5,5 x L , SFS SX14 - L12 - S16 - 5,5 x L

with hexagon head or irius® Drive and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 21

	Materials Fastener: stainless steel (1.4301, 1.4567, 1.4401) – EN 10088 Washer: stainless steel (1.4301) - EN 10088 Component I: S280GD or S320GD - EN 10346 Component II: structural 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 $l_{ef} \geq 26,0 \text{ mm}$
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$L_{ef} =$	26	32	39	60	64	71	78	
$M_{t,nom} =$								
$V_{R,k} [\text{KN}]$ for $t_{w,i} [\text{mm}]$								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,06	—	1,31	—	1,60	—	2,45	—
0,75	1,06	—	1,31	—	1,60	—	2,45	—
0,88	1,06	—	1,31	—	1,60	—	2,45	—
1,00	1,06	—	1,31	—	1,60	—	2,45	—
1,13	1,06	—	1,31	—	1,60	—	2,45	—
1,25	1,06	—	1,31	—	1,60	—	2,45	—
1,50	1,06	—	1,31	—	1,60	—	2,45	—
1,75	1,06	—	1,31	—	1,60	—	2,45	—
2,00	1,06	—	1,31	—	1,60	—	2,45	—
$N_{R,k} [\text{KN}]$ for $t_{w,i} [\text{mm}]$								
0,50	1,30	—	1,46	—	1,46	—	1,46	—
0,55	1,30	—	1,60	—	1,84	—	1,84	—
0,63	1,30	—	1,60	—	1,95	—	2,70	—
0,75	1,30	—	1,60	—	1,95	—	3,00	—
0,88	1,30	—	1,60	—	1,95	—	3,00	—
1,00	1,30	—	1,60	—	1,95	—	3,00	—
1,13	1,30	—	1,60	—	1,95	—	3,00	—
1,25	1,30	—	1,60	—	1,95	—	3,00	—
1,50	1,30	—	1,60	—	1,95	—	3,00	—
1,75	1,30	—	1,60	—	1,95	—	3,00	—
2,00	1,30	—	1,60	—	1,95	—	3,00	—

- The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.

Self-drilling screw

SFS SXW - S16 - 6,5 x L, SFS SXW - L12 - S16 - 6,5 x L
with hexagon head or irius® drive system and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 22

	Materials Fastener: stainless steel (1.4401, 1.4567) - EN 10088 Washer: stainless steel (1.4301) - EN 10088 Component I: S280GD, S320GD or S350GD - EN 10346 Component II: S235, S275 or S355 - EN 10025-1 S280GD, S320GD or S350GD - EN 10346 Drilling-capacity: $\Sigma t_i \leq 5,00 \text{ mm}$ Timber substructures no performance determined
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$t_{N,II} =$	1,50	2,00	2,50	3,00	4,00	—	—	—
$M_{t,nom} =$	—							
$V_{R,k} [\text{kN}]$ for $t_{N,I}$ [mm]	0,40	—	—	—	—	—	—	—
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	—	—	—	—	—	—	—	—
0,75	—	—	—	—	—	—	—	—
0,88	—	—	—	—	—	—	—	—
1,00	—	—	—	—	—	—	—	—
1,13	—	—	—	—	—	—	—	—
1,25	—	—	—	—	—	—	—	—
1,50	—	—	—	—	—	—	—	—
1,75	—	—	—	—	—	—	—	—
$N_{R,k} [\text{kN}]$ for $t_{N,I}$ [mm]	0,40	1,44	1,53 ^a	1,53 ^a	1,53 ^a	1,53 ^a	—	—
0,50	1,44	—	1,84 ^a	1,84 ^a	1,84 ^a	1,84 ^a	—	—
0,55	1,44	—	2,10 ^a	2,10 ^a	2,10 ^a	2,10 ^a	—	—
0,63	1,44	—	2,33	2,53 ^a	2,53 ^a	2,53 ^a	—	—
0,75	1,44	—	2,33	3,17	3,17 ^a	3,17 ^a	—	—
0,88	1,44	—	2,33	3,31	3,99 ^a	3,99 ^a	—	—
1,00	1,44	—	2,33	3,31	4,29	4,80 ^a	—	—
1,13	1,44	—	2,33	3,31	4,29	—	—	—
1,25	1,44	—	2,33	3,31	4,29	—	—	—
1,50	1,44	—	2,33	3,31	4,29	—	—	—
1,75	1,44	—	2,33	3,31	4,29	—	—	—

- If component I is made of S320GD or S350GD the values $N_{R,k} [\text{kN}]$ may be increased by 8,3%.

Self-drilling screw

SFS SXC5 - S19 - 5,5 x L, SFS SXC5 - L12 - S19 - 5,5 x L
with hexagon head or irius® drive system and sealing washer $\geq \varnothing 19 \text{ mm}$

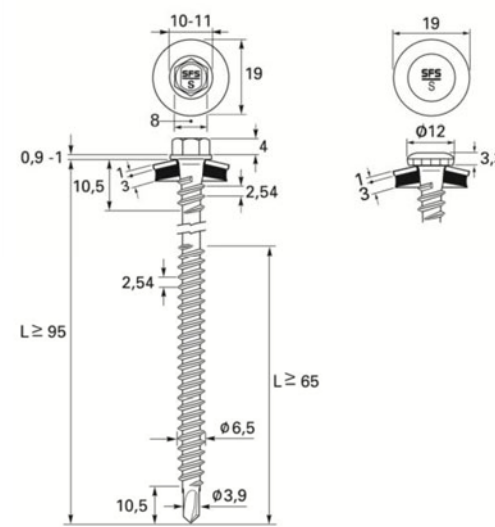
Annex 23

	Materials Fastener: stainless steel (1.4401, 1.4567) - EN 10088 Washer: stainless steel (1.4301) - EN 10088 Component I: S280GD, S320GD or S350GD - EN 10346 Component II: S235, S275 or S355 - EN 10025-1 S280GD, S320GD or S350GD - EN 10346 Drilling-capacity: $\Sigma t_i \leq 14,00 \text{ mm}$ Timber substructures no performance determined
--	--

$t_{N,II} =$	—	—	—	$\geq 4,0$	—	—	—	—
$M_{t,nom} =$	—							
$V_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$	0,40	—	—	—	—	—	—	—
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,60	—	—	—	—	—	—	—	—
0,63	—	—	—	—	—	—	—	—
0,70	—	—	—	—	—	—	—	—
0,75	—	—	—	—	—	—	—	—
0,88	—	—	—	—	—	—	—	—
1,00	—	—	—	—	—	—	—	—
1,13	—	—	—	—	—	—	—	—
1,25	—	—	—	—	—	—	—	—
$N_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$	0,40	—	—	—	1,24	—	—	—
0,50	—	—	—	—	2,04	—	—	—
0,55	—	—	—	—	2,34	—	—	—
0,60	—	—	—	—	2,64	—	—	—
0,63	—	—	—	—	2,82	—	—	—
0,70	—	—	—	—	3,20	—	—	—
0,75	—	—	—	—	3,52	—	—	—
0,88	—	—	—	—	4,46	—	—	—
1,00	—	—	—	—	5,40	—	—	—
1,13	—	—	—	—	5,40	—	—	—
1,25	—	—	—	—	5,40	—	—	—

- Index a: If component I is made of S320GD or S350GD the values may be increased by 8,0%.

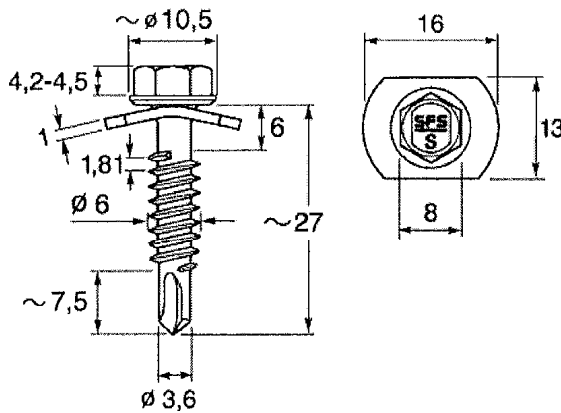
Self-drilling screw	Annex 24
SFS SXC14 - S19 - 5,5 x L, SFS SXC14 - L12 - S19 - 5,5 x L with hexagon head or irius® drive system and sealing washer $\geq \varnothing 19 \text{ mm}$	

	Materials Fastener: stainless steel (1.4567, 1.4401) - EN 10088 Washer: stainless steel (1.4301) - EN 10088 Component I: S280GD or S320GD - EN 10346 Component II: structural timber - EN 14081
	Predrill diameter see table below
	Timber substructures performance determined with $M_{y,Rk} = 9,742 \text{ Nm}$ $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 35,0 \text{ mm}$

$t_{N,II} =$	—	—	—	—	—	—	—	—
$M_{t,nom} =$	—	—	—	—	—	—	—	—
$V_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$	0,40	—	—	—	—	—	—	—
	0,50	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—
	0,63	—	—	—	—	—	—	—
	0,75	—	—	—	—	—	—	—
	0,88	—	—	—	—	—	—	—
	1,00	—	—	—	—	—	—	—
	1,13	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—
	1,50	—	—	—	—	—	—	—
	1,75	—	—	—	—	—	—	—
	$N_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$	0,40	—	—	—	—	—	—
0,50		—	—	—	1,60	—	—	—
0,55		—	—	—	2,00	—	—	—
0,63		—	—	—	2,10	—	—	—
0,75		—	—	—	2,10	—	—	—
0,88		—	—	—	2,10	—	—	—
1,00		—	—	—	2,10	—	—	—
1,13		—	—	—	2,10	—	—	—
1,25		—	—	—	2,10	—	—	—
1,50		—	—	—	2,10	—	—	—
1,75		—	—	—	2,10	—	—	—

- If component I is made of S350GD the values $N_{R,k} [\text{kN}]$ may be increased by 8,3%.The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.

Self-drilling screw	Annex 25
SFS SXCW - S19 - 6,5 x L, SFS SXCW - L12 - S19 - 6,5 x L with hexagon head or irius® drive system and sealing washer $\geq \varnothing 19 \text{ mm}$	



Materials

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

Drilling capacity $\Sigma t_i \leq 3,80$ mm

Timber substructures

no performance determined

$t_{N,II} =$	0,60	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$M_{t,nom} =$									
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—	—
0,60	—	—	—	—	—	—	0,90 ^a ac	0,90 ^a ac	0,90 ^a ac
0,63	—	—	—	—	—	—	0,94 ^a ac	0,94 ^a ac	0,94 ^a ac
0,75	—	—	—	—	—	—	1,30 ^a ac	1,30 ^a ac	1,30 ^a ac
0,88	—	—	—	—	1,66 ^a ac	1,66 ^a ac	1,66 ^a ac	1,66 ^a ac	1,66 ^a ac
1,00	—	—	—	1,88 ^b ac	1,88 ^b ac	1,96	2,01	—	—
1,13	—	—	—	1,88 ^b ac	2,05 ^b ac	2,28	2,48	—	—
1,25	0,99 ^b ac	1,03 ^b ac	1,46 ^b ac	1,88 ^b ac	2,22 ^b ac	2,60	2,97	—	—
1,50	0,99 ^b ac	1,03 ^b ac	1,46 ^b ac	1,88 ^b ac	2,22 ^b ac	—	—	—	—
2,00	0,99 ^b ac	1,03 ^b ac	1,46 ^b ac	1,88 ^b ac	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—	—
0,60	—	—	—	—	—	—	1,23 ^a ac	1,23 ^a ac	1,23 ^a ac
0,63	—	—	—	—	—	—	1,28 ^a ac	1,28 ^a ac	1,28 ^a ac
0,75	—	—	—	—	—	—	1,74 ^a ac	1,74 ^a ac	1,74 ^a ac
0,88	—	—	—	—	1,82 ^b ac	2,17 ac	2,51 ac	2,59 ^a ac	2,59 ^a ac
1,00	—	—	—	1,49 ^b ac	1,82 ^b ac	2,17	2,51	—	—
1,13	—	—	—	1,49 ^b ac	1,82 ^b ac	2,17	2,51	—	—
1,25	0,79 ^b ac	0,82 ^b ac	1,15 ^b ac	1,49 ^b ac	1,82 ^b ac	2,17	2,51	—	—
1,50	0,79 ^b ac	0,82 ^b ac	1,15 ^b ac	1,49 ^b ac	1,82 ^b ac	—	—	—	—
2,00	0,79 ^b ac	0,82 ^b ac	1,15 ^b ac	1,49 ^b ac	—	—	—	—	—

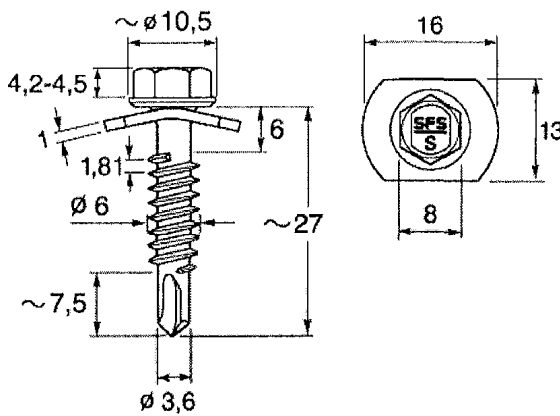
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.
Index b: If component II is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SL3/2 - 5 - S - SV16 - 6,0 x L

with thread free zone, Hexagon head and SV washer 13 x 16 mm

Annex 26



Materials

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

Drilling capacity

$\Sigma t_i \leq 3,80 \text{ mm}$

Timber substructures

no performance determined

$t_{N,II} =$	2 x 0,63	2 x 0,75	2 x 0,88	2 x 1,00	2 x 1,13	2 x 1,25	2 x 1,50	2 x 1,75
$M_{t,nom} =$								
$V_{R,k} [\text{kN}] \text{ for } t_{N,I} [\text{mm}]$	0,50	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,60	—	—	—	—	—	—	—	—
0,63	—	—	—	—	—	—	—	—
0,75	—	—	—	—	—	—	—	—
0,88	—	—	—	—	—	—	—	—
1,00	—	2,10 ^a ac	2,23 ^a ac	2,35 ^c ac	2,79 ^b ac	3,23 ^b ac	—	—
1,13	—	2,35 ^a ac	2,57 ^a ac	2,79 ^a ac	3,21 ac	3,62 ac	—	—
1,25	—	2,60 ^a ac	2,92 ^a ac	3,24 ^a ac	3,62 ac	4,01 ac	—	—
1,50	—	3,09 ^a ac	3,61 ^a ac	4,12 ^a ac	—	—	—	—
2,00	—	3,09 ^a ac	3,61 ^a ac	—	—	—	—	—
$N_{R,k} [\text{kN}] \text{ for } t_{N,I} [\text{mm}]$	0,50	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,60	—	—	—	—	—	—	—	—
0,63	—	—	—	—	—	—	—	—
0,75	—	—	—	—	—	—	—	—
0,88	—	—	—	—	—	—	—	—
1,00	—	2,43 ^b ac	2,94 ^b ac	3,45 ^b ac	3,69 ac	3,69 ^a ac	—	—
1,13	—	2,43 ^b ac	2,94 ^b ac	3,45 ^b ac	3,92 ac	4,38 ac	—	—
1,25	—	2,43 ^b ac	2,94 ^b ac	3,45 ^b ac	3,92 ac	4,38 ac	—	—
1,50	—	2,43 ^b ac	2,94 ^b ac	3,45 ^b ac	—	—	—	—
2,00	—	2,43 ^b ac	2,94 ^b ac	—	—	—	—	—

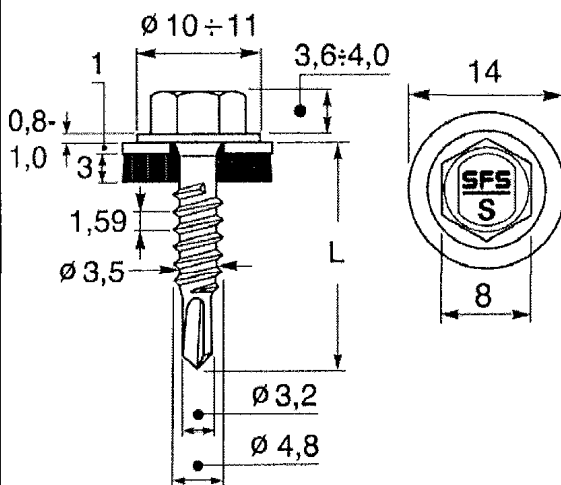
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.
Index b: If component II is made of S320GD or S350GD the value may be increased by 8,0%.

Self drilling screw

SFS SL3/2 - 5 - S - SV16 - 6,0 x L

with thread free zone, Hexagon head and SV washer 13 x 16 mm

Annex 27



Materials

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

Drilling capacity

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

Timber substructures

no performance determined

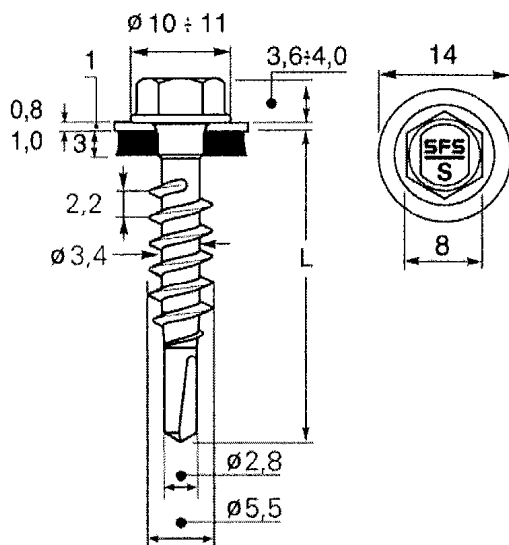
$t_{N,II} =$	0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50
$M_{t,nom} =$										
$V_{R,k} [\text{kN}] \text{ for } t_{N,I} [\text{mm}]$	0,40	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58	0,58
	0,50	0,58	0,69	0,69	0,69	0,69	0,69	0,69	0,69	0,69
	0,55	0,58	0,69	0,80	0,80	0,80	0,80	0,80	0,80	—
	0,63	0,58	0,69	0,80	0,98	0,98	0,98	0,98	0,98	—
	0,75	0,58	0,69	0,80	0,98	1,26	1,26	1,26	1,26	—
	0,88	0,58	0,69	0,80	0,98	1,26	1,82	1,82	—	—
	1,00	0,58	0,69	0,80	0,98	1,26	1,82	2,35	—	—
	1,13	0,58	0,69	0,80	0,98	1,26	—	—	—	—
	1,25	0,58	0,69	0,80	0,98	1,26	—	—	—	—
	1,50	0,58	0,69	—	—	—	—	—	—	—
	1,75	—	—	—	—	—	—	—	—	—
$N_{R,k} [\text{kN}] \text{ for } t_{N,I} [\text{mm}]$	0,40	0,30	0,42	0,49	0,59	0,76	0,96	1,07	1,07	1,07
	0,50	0,30	0,42	0,49	0,59	0,76	0,96	1,16	1,16	1,16
	0,55	0,30	0,42	0,49	0,59	0,76	0,96	1,16	1,16	—
	0,63	0,30	0,42	0,49	0,59	0,76	0,96	1,16	1,16	—
	0,75	0,30	0,42	0,49	0,59	0,76	0,96	1,16	1,16	—
	0,88	0,30	0,42	0,49	0,59	0,76	0,96	1,16	—	—
	1,00	0,30	0,42	0,49	0,59	0,76	0,96	1,16	—	—
	1,13	0,30	0,42	0,49	0,59	0,76	—	—	—	—
	1,25	0,30	0,42	0,49	0,59	0,76	—	—	—	—
	1,50	0,30	0,42	—	—	—	—	—	—	—
	1,75	—	—	—	—	—	—	—	—	—

Self drilling screw

SFS SL2 - S - S14 - 4,8 x L

with thread free zone, Hexagon head and Sealing washer $\geq \text{Ø}14 \text{ mm}$

Annex 28



Materials

Fastener: stainless steel (1.4301) - EN 10088,
stainless steel (1.4401) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S280GD, S320GD or S350GD - EN 10346

Drilling capacity

$\Sigma t_i \leq 2,00$ mm

Timber substructures

no performance determined

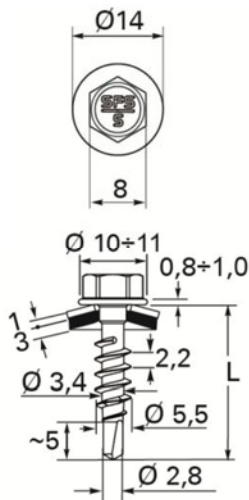
$t_{N,II} =$	0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50
$M_{t,nom} =$										
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,48	0,48	0,48	0,48	0,48	0,48	0,48	0,48	0,48
0,50	0,48	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75	0,75
0,55	0,48	0,75	0,90	0,90	0,90	0,90	0,90	0,90	0,90	—
0,63	0,48	0,75	0,90	1,13	1,13	1,13	1,13	1,13	1,13	—
0,75	0,48	0,75	0,90	1,13	1,48	1,48	1,48	1,48	1,48	—
0,88	0,48	0,75	0,90	1,13	1,48	1,73	1,73	—	—	—
1,00	0,48	0,75	0,90	1,13	1,48	1,73	1,97	—	—	—
1,13	0,48	0,75	0,90	1,13	1,48	—	—	—	—	—
1,25	0,48	0,75	0,90	1,13	1,48	—	—	—	—	—
1,50	0,48	0,75	—	—	—	—	—	—	—	—
1,75	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,43	0,57	0,65	0,79	1,00	1,00	1,00	1,00	1,00
0,50	0,43	0,57	0,65	0,79	1,03	1,32	1,61	1,61	1,61	1,61
0,55	0,43	0,57	0,65	0,79	1,03	1,32	1,61	1,61	1,61	—
0,63	0,43	0,57	0,65	0,79	1,03	1,32	1,61	1,61	1,61	—
0,75	0,43	0,57	0,65	0,79	1,03	1,32	1,61	1,61	1,61	—
0,88	0,43	0,57	0,65	0,79	1,03	1,32	1,61	—	—	—
1,00	0,43	0,57	0,65	0,79	1,03	1,32	1,61	—	—	—
1,13	0,43	0,57	0,65	0,79	1,03	—	—	—	—	—
1,25	0,43	0,57	0,65	0,79	1,03	—	—	—	—	—
1,50	0,43	0,57	—	—	—	—	—	—	—	—
1,75	—	—	—	—	—	—	—	—	—	—

Self drilling screw

SFS SL2 - S - S14 - 5,5 x L

with thread free zone, Hexagon head and Sealing washer $\geq \varnothing 14$ mm

Annex 29



Materials

Fastener: stainless steel (1.4301) – EN 10088
stainless steel (1.4401) – EN 10088

Washer: aluminium alloy AW-AMg3 – EN 485
with vulcanized EPDM

Component I: S280GD, S320GD or S350GD – EN 10346

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

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

Timber substructures

no performance determined

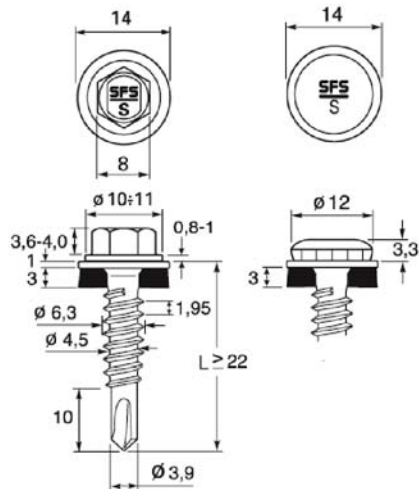
$t_{N,II}$ [mm] =	0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50
$M_{t, nom}$ =	—									
$V_{R,k}$ [kN] for $t_{N,II}$ [mm]	0,50	0,48 -	0,48 -	0,48 -	0,48 -	0,48 -	0,48 -	0,48 -	0,48 -	0,48 -
	0,55	0,48 -	0,75 -	0,75 -	0,75 -	0,75 -	0,75 -	0,75 -	0,75 -	0,75 -
	0,63	0,48 -	0,75 -	0,90 -	0,90 -	0,90 -	0,90 -	0,90 -	0,90 -	0,90 -
	0,75	0,48 -	0,75 -	0,90 -	1,13 -	1,13 -	1,13 -	1,13 -	1,13 -	1,13 -
	0,88	0,48 -	0,75 -	0,90 -	1,13 -	1,48 -	1,48 -	1,48 -	1,48 -	1,48 -
	1,00	0,48 -	0,75 -	0,90 -	1,13 -	1,48 -	1,73 -	1,73 -	-	-
	1,13	0,48 -	0,75 -	0,90 -	1,13 -	1,48 -	1,73 -	1,97 -	-	-
	1,25	0,48 -	0,75 -	0,90 -	1,13 -	1,48 -	-	-	-	-
	1,50	0,48 -	0,75 -	0,90 -	1,13 -	1,48 -	-	-	-	-
	2,00	0,48 -	0,75 -	-	-	-	-	-	-	-
$N_{R,k}$ [kN] for $t_{N,II}$ [mm]	0,50	0,43 -	0,57 -	0,65 -	0,79 -	1,03 -	1,32 -	1,37 -	1,37 -	1,37 -
	0,55	0,43 -	0,57 -	0,65 -	0,79 -	1,03 -	1,32 -	1,61 -	1,61 -	1,61 -
	0,63	0,43 -	0,57 -	0,65 -	0,79 -	1,03 -	1,32 -	1,61 -	1,61 -	-
	0,75	0,43 -	0,57 -	0,65 -	0,79 -	1,03 -	1,32 -	1,61 -	1,61 -	-
	0,88	0,43 -	0,57 -	0,65 -	0,79 -	1,03 -	1,32 -	1,61 -	1,61 -	-
	1,00	0,43 -	0,57 -	0,65 -	0,79 -	1,03 -	1,32 -	1,61 -	-	-
	1,13	0,43 -	0,57 -	0,65 -	0,79 -	1,03 -	1,32 -	1,61 -	-	-
	1,25	0,43 -	0,57 -	0,65 -	0,79 -	1,03 -	-	-	-	-
	1,50	0,43 -	0,57 -	0,65 -	0,79 -	1,03 -	-	-	-	-
	2,00	0,43 -	0,57 -	-	-	-	-	-	-	-

Self-drilling screw

SFS SL2-S-A14-5,5 x L

with hexagon head and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 30



Materials

Fastener: stainless steel (1.4301) - EN 10088

Washer: stainless steel (1.4301) - EN 10088
with vulcanized EPDM

Component I: S280GD, S320GD or S350GD - EN 10346

Component II: S280GD, S320GD or S350GD - EN 10346

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

Timber substructures

no performance determined

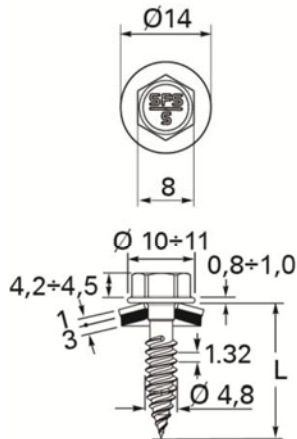
$t_{N,II} =$	0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50
$M_{t,nom} =$	—									
$V_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$	0,40	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57
0,50	0,57	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80	0,80
0,55	0,57	0,80	0,95	0,95	0,95	0,95	0,95	0,95	0,95	—
0,63	0,57	0,80	0,95	1,18	1,18	1,18	1,18	1,18	1,18	—
0,75	0,57	0,80	0,95	1,18	1,55	1,55	1,55	1,55	1,55	—
0,88	0,57	0,80	0,95	1,18	1,55	2,27	2,27	2,27	—	—
1,00	0,57	0,80	0,95	1,18	1,55	2,27	2,98	—	—	—
1,13	0,57	0,80	0,95	1,18	1,55	2,27	—	—	—	—
1,25	0,57	0,80	0,95	1,18	1,55	—	—	—	—	—
1,50	0,57	0,80	—	—	—	—	—	—	—	—
1,75	—	—	—	—	—	—	—	—	—	—
$N_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$	0,40	0,57	0,74	0,84	0,99	1,23	1,28	1,28	1,28	1,28
0,50	0,57	0,74	0,84	0,99	1,23	1,36	1,36	1,36	1,36	1,36
0,55	0,57	0,74	0,84	0,99	1,23	1,50	1,50	1,50	1,50	—
0,63	0,57	0,74	0,84	0,99	1,23	1,61	1,73	1,73	1,73	—
0,75	0,57	0,74	0,84	0,99	1,23	1,61	1,98	1,98	1,98	—
0,88	0,57	0,74	0,84	0,99	1,23	1,61	1,98	1,98	—	—
1,00	0,57	0,74	0,84	0,99	1,23	1,61	1,98	—	—	—
1,13	0,57	0,74	0,84	0,99	1,23	1,61	—	—	—	—
1,25	0,57	0,74	0,84	0,99	1,23	—	—	—	—	—
1,50	0,57	0,74	—	—	—	—	—	—	—	—
1,75	—	—	—	—	—	—	—	—	—	—

- If both components I and II are made of S320GD or S350GD all values may be increased by 8,0%.

Self-drilling screw

SFS SL2 - S - S14 - 6,3 x L, SFS SL2 - S - L12 - S14 - 6,3 x L
with hexagon head or irius® drive system and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 31



Materials

Fastener: stainless steel (1.4301) - EN 10088

Washer: stainless steel (1.4301) - EN 10088
with vulcanized EPDM

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling-capacity: $\Sigma t_i \leq 1,80 \text{ mm}$

Timber substructures

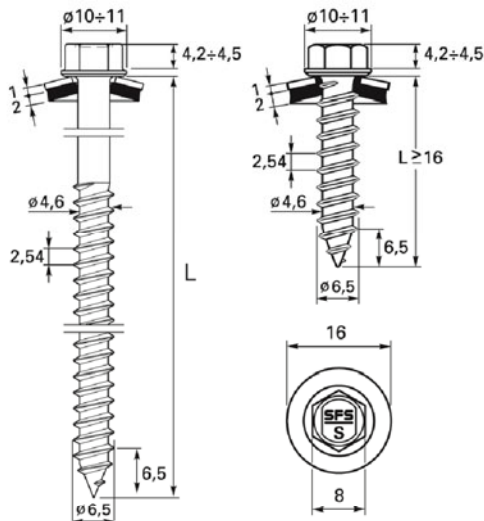
no performance determined

$t_{N,II}$ [mm] =	0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25
$M_{t, nom}$ =	—								
$V_{R,k}$ [kN] for $t_{N,II}$ [mm]	0,40	0,66 -	0,66 -	0,66 -	0,66 -	0,66 -	0,66 -	- -	- -
0,50	0,66	-	0,80 -	0,80 -	0,80 -	0,80 -	0,80 -	- -	- -
0,55	0,66	-	0,80 -	0,98 -	0,98 -	0,98 -	0,98 -	- -	- -
0,63	0,66	-	0,80 -	0,98 -	1,28 -	1,28 -	1,28 -	- -	- -
0,75	0,66	-	0,80 -	0,98 -	1,28 -	1,72 -	1,72 -	- -	- -
0,88	0,66	-	0,80 -	0,98 -	1,28 -	1,72 -	1,72 -	- -	- -
1,00	-	-	- -	- -	- -	- -	- -	- -	- -
1,13	-	-	- -	- -	- -	- -	- -	- -	- -
1,25	-	-	- -	- -	- -	- -	- -	- -	- -
1,50	-	-	- -	- -	- -	- -	- -	- -	- -
$N_{R,k}$ [kN] for $t_{N,II}$ [mm]	0,40	0,52 -	0,73 -	0,82 -	0,95 -	0,95 -	0,95 -	- -	- -
0,50	0,52	-	0,73 -	0,82 -	0,97 -	1,20 -	1,20 -	- -	- -
0,55	0,52	-	0,73 -	0,82 -	0,97 -	1,20 -	1,20 -	- -	- -
0,63	0,52	-	0,73 -	0,82 -	0,97 -	1,20 -	1,20 -	- -	- -
0,75	0,52	-	0,73 -	0,82 -	0,97 -	1,20 -	1,20 -	- -	- -
0,88	0,52	-	0,73 -	0,82 -	0,97 -	1,20 -	1,20 -	- -	- -
1,00	-	-	- -	- -	- -	- -	- -	- -	- -
1,13	-	-	- -	- -	- -	- -	- -	- -	- -
1,25	-	-	- -	- -	- -	- -	- -	- -	- -
1,50	-	-	- -	- -	- -	- -	- -	- -	- -

Self-tapping screw

SFS SLG – S – S14 – 4,8 x L
with hexagon head and sealing washer $\geq \text{Ø}14 \text{ mm}$

Annex 32



Materials

Fastener: stainless steel (1.4301) - EN 10088

Washer: stainless steel (1.4301) - EN 10088
with vulcanized EPDM

Component I: S280GD or S320GD - EN 10346

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

Predrill diameter

see table below

Timber substructures

see Annex 56

$t_{N,II} =$	2 x 0,63		2 x 0,75		2 x 0,88		2 x 1,00		2 x 1,13		2 x 1,25		2 x 1,50		2 x 1,75			
$d_{pd} =$	—		ø 4,0						ø 4,5						—			
$M_{t,nom} =$	—		5 Nm														—	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	1,36 ^a ac	1,48 ^a ac	1,60 ^a ac	1,60 ^a ac	1,60 ^a ac	1,60 ^a ac	1,60 ^a ac	1,60 ^a ac	1,60 ^a ac	1,60 ^a ac	1,60 ^a ac	—	—		
	0,55	—	—	1,54 ^a ac	1,72 ^a ac	1,90 ^a ac	1,90 ^a ac	1,90 ^a ac	1,90 ^a ac	1,90 ^a ac	1,90 ^a ac	1,90 ^a ac	1,90 ^a ac	1,90 ^a ac	—	—		
	0,63	—	—	1,83 ^a ac	2,10 ^a ac	2,37 ^a ac	2,37 ^a ac	2,37 ^a ac	2,37 ^a ac	2,37 ^a ac	2,37 ^a ac	2,37 ^a ac	2,37 ^a ac	2,37 ^a ac	—	—		
	0,75	—	—	2,30 ^a ac	2,72 ^a ac	3,14 ^a ac	3,14 ^a ac	3,14 ^a ac	3,14 ^a ac	3,14 ^a ac	3,14 ^a ac	3,14 ^a ac	3,14 ^a ac	3,14 ^a ac	—	—		
	0,88	—	—	2,49 ^a ac	2,94 ^a ac	3,40 ^a ac	3,40 ^a ac	3,40 ^a ac	3,40 ^a ac	3,40 ^a ac	3,40 ^a ac	3,40 ^a ac	3,40 ^a ac	3,40 ^a ac	—	—		
	1,00	—	—	2,67 ^a ac	3,16 ^a ac	3,65 ^a ac	3,65 ^a ac	3,65 ^a ac	3,65 ^a ac	3,65 ^a ac	3,65 ^a ac	3,65 ^a ac	3,65 ^a ac	3,65 ^a ac	—	—		
	1,13	—	—	2,67 ^a —	3,16 ^a —	3,66 ^a ac	3,66 ^a ac	3,66 ^a ac	3,66 ^a ac	3,66 ^a ac	3,66 ^a ac	3,66 ^a ac	3,66 ^a ac	3,66 ^a ac	—	—		
	1,25	—	—	2,67 ^a —	3,17 ^a —	3,67 ^a ac	3,67 ^a ac	3,67 ^a ac	3,67 ^a ac	3,67 ^a ac	3,67 ^a ac	3,67 ^a ac	3,67 ^a ac	3,67 ^a ac	—	—		
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	1,50	—	—	2,67 ^a —	3,18 ^a —	3,68 ^a ac	3,68 ^a ac	3,68 ^a ac	3,68 ^a ac	3,68 ^a ac	3,68 ^a ac	3,68 ^a ac	3,68 ^a ac	3,68 ^a ac	—	—		
	1,75	—	—	2,67 ^a —	3,18 ^a —	3,68 ^a —	3,68 ^a —	3,68 ^a —	3,68 ^a —	3,68 ^a —	3,68 ^a —	3,68 ^a —	3,68 ^a —	3,68 ^a —	—	—		
	2,00	—	—	2,67 ^a —	3,18 ^a —	3,68 ^a —	3,68 ^a —	3,68 ^a —	3,68 ^a —	3,68 ^a —	3,68 ^a —	3,68 ^a —	3,68 ^a —	3,68 ^a —	—	—		
	0,50	—	—	1,68 ^a ac	1,68 ^a ac	1,68 ^a ac	1,68 ^a ac	1,68 ^a ac	1,68 ^a ac	1,68 ^a ac	1,68 ^a ac	1,68 ^a ac	1,68 ^a ac	1,68 ^a ac	—	—		
	0,55	—	—	1,88 ^a ac	1,88 ^a ac	1,88 ^a ac	1,88 ^a ac	1,88 ^a ac	1,88 ^a ac	1,88 ^a ac	1,88 ^a ac	1,88 ^a ac	1,88 ^a ac	1,88 ^a ac	—	—		
	0,63	—	—	2,18 ^b ac	2,70 ac	2,70 ac	2,70 ac	2,70 ac	2,70 ac	2,70 ac	2,70 ac	2,70 ac	2,70 ac	2,70 ac	—	—		
	0,75	—	—	2,18 ^b ac	2,77 ^b ac	3,36 ac	3,36 ac	3,36 ac	3,36 ac	3,36 ac	3,36 ac	3,36 ac	3,36 ac	3,36 ac	—	—		
	0,88	—	—	2,18 ^b ac	2,77 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	—	—		
1,00	—	—	2,18 ^b ac	2,77 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	—	—			
1,13	—	—	2,18 ^b —	2,77 ^b —	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	—	—			
1,25	—	—	2,18 ^b —	2,77 ^b —	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	—	—			
1,50	—	—	2,18 ^b —	2,77 ^b —	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	3,36 ^b ac	—	—			
1,75	—	—	2,18 ^b —	2,77 ^b —	3,36 ^b —	3,36 ^b —	3,36 ^b —	3,36 ^b —	3,36 ^b —	3,36 ^b —	3,36 ^b —	3,36 ^b —	3,36 ^b —	—	—			
2,00	—	—	2,18 ^b —	2,77 ^b —	3,36 ^b —	3,36 ^b —	3,36 ^b —	3,36 ^b —	3,36 ^b —	3,36 ^b —	3,36 ^b —	3,36 ^b —	3,36 ^b —	—	—			

- Index a: If both components I and II are made of S320GD or S350GD the value may be increased by 8,0%.
- Index b: If component II is made of S320GD or S350GD the value may be increased by 8,0%.

Self-tapping screw

SFS TDA - S - S16 - 6,5 x L
with hexagon head and sealing washer $\geq \varnothing 16$ mm

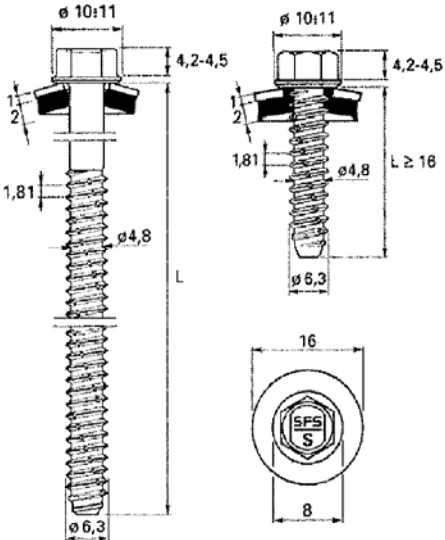
Annex 33

	Materials Fastener: stainless steel (1.4301) - EN 10088 Washer: stainless steel (1.4301) - EN 10088 with vulcanized EPDM Component I: S280GD, S320GD or S350GD - EN 10346 Component II: S235, S275 or S355 - EN 10025-1 S280GD, S320GD or S350GD - EN 10346 Predrill diameter see table below Timber substructures no performance determined
--	--

$t_{N,II} =$	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2 x 1,25	2 x 1,50
$d_{pd} =$									Ø 5,0
$M_{t,nom} =$									
$V_{R,k}$ for $t_{N,I} =$	0,50	—	—	—	—	—	—	1,84 ^a ac	1,84 ^a ac
	0,55	—	—	—	—	—	—	2,06 ^a ac	2,06 ^a ac
	0,63	—	—	—	—	—	—	2,34 ac	2,53 ^a ac
	0,75	—	—	—	—	—	—	2,88 ac	3,22 ^a ac
	0,88	—	—	—	—	—	—	3,81 ac	4,47 ac
	1,00	—	—	—	—	—	—	3,81 ac	5,02 ac
	1,13	—	—	—	—	—	—	3,81 —	5,02 —
	1,25	—	—	—	—	—	—	3,81 —	5,02 —
	1,50	—	—	—	—	—	—	3,81 —	5,02 —
	1,75	—	—	—	—	—	—	3,81 —	5,02 —
	2,00	—	—	—	—	—	—	3,81 —	5,02 —
$N_{R,k}$ for $t_{N,I} =$	0,50	—	—	—	—	—	—	1,84 ^a ac	1,84 ^a ac
	0,55	—	—	—	—	—	—	2,05 ^a ac	2,05 ^a ac
	0,63	—	—	—	—	—	—	2,80 ac	2,80 ac
	0,75	—	—	—	—	—	—	3,39 ac	3,60 ac
	0,88	—	—	—	—	—	—	3,39 ac	4,29 ac
	1,00	—	—	—	—	—	—	3,39 ac	4,57 ac
	1,13	—	—	—	—	—	—	3,39 —	4,57 —
	1,25	—	—	—	—	—	—	3,39 —	4,57 —
	1,50	—	—	—	—	—	—	3,39 —	4,57 —
	1,75	—	—	—	—	—	—	3,39 —	4,57 —
	2,00	—	—	—	—	—	—	3,39 —	4,57 —

- If component I is made of S320GD or S350GD all values may be increased by 8,0%.

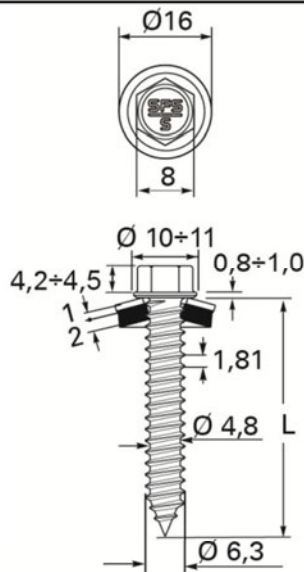
Self-tapping screw	Annex 34
SFS TDB - S - S16 - 6,3 x L with hexagon head and sealing washer $\geq \varnothing 16$ mm	

	Materials Fastener: stainless steel (1.4301, 1.4401, 1.4547) – EN 10088 Washer: stainless steel (1.4301) – EN 10088 with vulcanized EPDM Component I: S280GD, S320GD or S350GD – EN 10346 Component II: S235, S275, S355 – EN 10025 only for SFS-TDB-S-S16-6,3xL-W38: S420 with $R_m \leq 630 \text{ N/mm}^2$ – EN 10025 Pre-drill diameter: see table Timber substructures no performance determined
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$t_{N,II} =$	1,25	1,50	2,00	3,00	4,00	6,00	7,00	10,00	>10,00 ^b	
$d_{pd} =$	Ø 5,0			Ø 5,3			Ø 5,5	Ø 5,7		Ø 5,8
$M_{t,nom} =$										
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,84 ^a ac	1,84 ^a ac	1,84 ^a ac	1,84 ^a ac	1,84 ^a ac	1,84 ^a ac	1,84 ^a ac	1,84 ^a ac	1,84 ^a ac
	0,55	2,06 ^a ac	2,06 ^a ac	2,06 ^a ac	2,06 ^a ac	2,06 ^a ac	2,06 ^a ac	2,06 ^a ac	2,06 ^a ac	2,06 ^a ac
	0,63	2,50 ac	2,70 ac	2,90 abcd	3,00 abcd	3,10 abcd	3,10 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	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	4,40 abcd	4,40 abcd
	1,00	3,20 ac	3,60 ac	4,10 ac	4,80 abcd	4,90 abcd	5,10 abcd	5,10 abcd	5,10 abcd	5,10 abcd
	1,13	3,40 ac	4,00 ac	4,60 ac	5,40 ac	5,60 ac	5,80 ac	5,80 ac	5,80 ac	5,80 ac
	1,25	3,60 ac	4,20 ac	5,00 ac	6,10 ac	6,30 ac	6,50 ac	6,50 ac	6,50 ac	6,50 ac
	1,50	3,70 ac	4,40 ac	5,70 ac	6,80 ac	7,10 ac	7,30 ac	7,30 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	8,10 ac	8,10 ac
2,00	5,00 -	6,50 -	8,80 -	10,3 -	10,6 -	11,3 -	11,3 -	11,3 -	11,3 -	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,84 ^a ac	1,84 ^a ac	1,84 ^a ac	1,84 ^a ac	1,84 ^a ac	1,84 ^a ac	1,84 ^a ac	1,84 ^a ac	1,84 ^a ac
	0,55	2,00 ac	2,05 ^a ac	2,05 ^a abcd	2,05 ^a ac	2,05 ^a ac	2,05 ^a ac	2,05 ^a ac	2,05 ^a ac	2,05 ^a ac
	0,63	2,00 ac	2,70 ac	2,80 abcd	2,80 abcd	2,80 abcd	2,80 abcd	2,80 abcd	2,80 abcd	2,80 abcd
	0,75	2,00 ac	2,70 ac	3,60 ac	3,60 abcd	3,60 abcd	3,60 abcd	3,60 abcd	3,60 abcd	3,60 abcd
	0,88	2,00 ac	2,70 ac	3,60 ac	4,29 abcd	4,29 abcd	4,29 abcd	4,29 abcd	4,29 abcd	4,29 abcd
	1,00	2,00 ac	2,70 ac	3,60 ac	4,85 abcd	4,85 abcd	4,85 abcd	4,85 abcd	4,85 abcd	4,85 abcd
	1,13	2,00 ac	2,70 ac	3,60 ac	4,85 ac	4,85 ac	4,85 ac	4,85 ac	4,85 ac	4,85 ac
	1,25	2,00 ac	2,70 ac	3,60 ac	4,90 ac	4,90 ac	4,90 ac	4,90 ac	4,90 ac	4,90 ac
	1,50	2,00 ac	2,70 ac	3,60 ac	5,90 ac	5,90 ac	5,90 ac	5,90 ac	5,90 ac	5,90 ac
	1,75	2,00 ac	2,70 ac	3,60 ac	6,00 ac	7,10 ac	7,10 ac	7,10 ac	7,10 ac	7,10 ac
2,00	2,00 -	2,70 -	3,60 -	6,00 -	7,30 -	7,60 -	7,60 -	7,60 -	7,60 -	

- Index a: For component I of S320GD or S350GD the indicated values of $V_{R,k}$ can be increased by 8,3 %.
- Index b: Only for SFS TDB-S-S16-6,3xL-W38 and for component II made of S235 or S280GD. For component II made of S275, S355, S420, S320GD, S350GD the maximum screw-in depth of the fully threaded part is 25,0 mm.

Self-tapping screw SFS TDB – S – S16 – 6,3 x L, SFS TDB – S – S16 – 6,3 x L – W 38 with hexagon head and sealing washer $\geq \text{Ø } 16 \text{ mm}$ (W38 with wax coating)	Annex 35
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Materials

Fastener: stainless steel (1.4301) – EN 10088,
stainless steel (1.4401) – EN 10088,
stainless steel (1.4547) – EN 10088

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

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S235, S275, S355 – EN 10025

Predrill diameter

see table below

Timber substructures

no performance determined

$t_{H,II} =$	1,25		1,50		2,00		3,00		4,00	
$d_{p,d} =$	Ø 5,0				Ø 5,3					
$M_{t,nom} =$										
$N_{R,k}$ [kN] for $t_{H,II}$ [mm]	0,50	1,84* ac	1,84* ac	1,84* ac	1,84* ac	1,84* ac	1,84* ac	1,84* ac	1,84* ac	1,84* ac
	0,55	2,06* ac	2,06* ac	2,06* ac	2,06* ac	2,06* ac	2,06* ac	2,06* ac	2,06* ac	2,06* ac
	0,63	2,50 ac	2,70 ac	2,90 abcd	3,00 abcd	3,10 abcd	3,10 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	3,70 abcd	3,70 abcd
	0,88	2,80 ac	3,20 ac	3,80 ac	4,10 abcd	4,30 abcd	4,30 abcd	4,30 abcd	4,30 abcd	4,30 abcd
	1,00	3,20 ac	3,60 ac	4,10 ac	4,80 abcd	4,90 abcd	4,90 abcd	4,90 abcd	4,90 abcd	4,90 abcd
	1,13	3,40 ac	4,00 ac	4,60 ac	5,40 ac	5,60 ac	5,60 ac	5,60 ac	5,60 ac	5,60 ac
	1,25	3,60 ac	4,20 ac	5,00 ac	6,10 ac	6,30 ac	6,30 ac	6,30 ac	6,30 ac	6,30 ac
	1,50	3,70 ac	4,40 ac	5,70 ac	6,80 ac	7,10 ac	7,10 ac	7,10 ac	7,10 ac	7,10 ac
	1,75	3,70 ac	4,70 ac	6,20 ac	7,60 ac	7,70 ac	7,70 ac	7,70 ac	7,70 ac	7,70 ac
	2,00	5,00 -	6,50 -	8,80 -	10,3 -	10,6 -	10,6 -	10,6 -	10,6 -	10,6 -
$N_{R,k}$ [kN] for $t_{H,II}$ [mm]	0,50	1,84* ac	1,84* ac	1,84* ac	1,84* ac	1,84* ac	1,84* ac	1,84* ac	1,84* ac	1,84* ac
	0,55	2,00 ac	2,05* ac	2,05* abcd	2,05* ac	2,05* ac	2,05* ac	2,05* ac	2,05* ac	2,05* ac
	0,63	2,00 ac	2,70 ac	2,80 abcd	2,80 abcd	2,80 abcd	2,80 abcd	2,80 abcd	2,80 abcd	2,80 abcd
	0,75	2,00 ac	2,70 ac	3,60 ac	3,60 abcd	3,60 abcd	3,60 abcd	3,60 abcd	3,60 abcd	3,60 abcd
	0,88	2,00 ac	2,70 ac	3,60 ac	4,29 abcd	4,29 abcd	4,29 abcd	4,29 abcd	4,29 abcd	4,29 abcd
	1,00	2,00 ac	2,70 ac	3,60 ac	4,85 abcd	4,85 abcd	4,85 abcd	4,85 abcd	4,85 abcd	4,85 abcd
	1,13	2,00 ac	2,70 ac	3,60 ac	4,85 ac	4,85 ac	4,85 ac	4,85 ac	4,85 ac	4,85 ac
	1,25	2,00 ac	2,70 ac	3,60 ac	4,90 ac	4,90 ac	4,90 ac	4,90 ac	4,90 ac	4,90 ac
	1,50	2,00 ac	2,70 ac	3,60 ac	5,90 ac	5,90 ac	5,90 ac	5,90 ac	5,90 ac	5,90 ac
	1,75	2,00 ac	2,70 ac	3,60 ac	6,00 ac	7,10 ac	7,10 ac	7,10 ac	7,10 ac	7,10 ac
	2,00	2,00 -	2,70 -	3,60 -	6,00 -	7,30 -	7,30 -	7,30 -	7,30 -	7,30 -

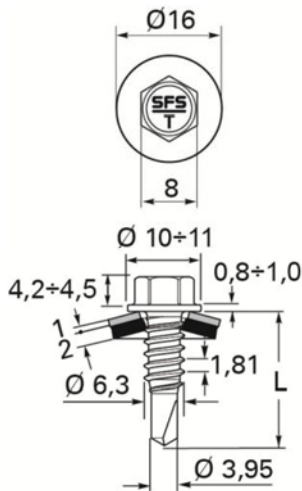
- Index a: For component I of S320GD or S350GD the indicated values can be increased by 8,0 %.

Self-tapping screw

SFS TDC – S – S16 – 6,3 x L

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

Annex 36



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: carbon steel
with vulcanized EPDM

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S235, S355 – EN 10025
S280GD, S320GD or S350GD – EN 10346

Drilling-capacity: $\Sigma t_i \leq 3,00 \text{ mm}$

Timber substructures

no performance determined

$t_{H,II} [\text{mm}] =$	0,75	0,88	1,00	1,13	1,50	1,75	2,00
$M_{t, nom} =$	–						
$N_{R,k} [\text{kN}]$ for $t_{H,II} [\text{mm}]$							
0,50	-	-	-	-	-	-	-
0,55	-	-	-	-	-	-	-
0,63	1,54	1,54	1,54	1,54	1,54	1,54	1,54
0,75	1,54	1,54	1,54	1,54	1,54	-	-
0,88	1,54	2,39	2,39	2,39	-	-	-
1,00	1,54	2,39	2,39	-	-	-	-
1,13	-	-	-	-	-	-	-
1,25	-	-	-	-	-	-	-
1,50	-	-	-	-	-	-	-
2,00	-	-	-	-	-	-	-
$N_{R,k} [\text{kN}]$ for $t_{H,II} [\text{mm}]$							
0,50	-	-	-	-	-	-	-
0,55	-	-	-	-	-	-	-
0,63	1,17	1,60	1,92	1,92	1,92	1,92	1,92
0,75	1,17	1,60	1,92	1,92	1,92	-	-
0,88	1,17	1,60	1,92	1,92	-	-	-
1,00	1,17	1,60	1,92	-	-	-	-
1,13	-	-	-	-	-	-	-
1,25	-	-	-	-	-	-	-
1,50	-	-	-	-	-	-	-
2,00	-	-	-	-	-	-	-

Self-drilling screw

SFS SD2 - T16 - 6,3 x L

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

Annex 37

	Materials Fastener: carbon steel case hardened and galvanized Washer: carbon steel with vulcanized EPDM Component I: S280GD, S320GD or S350GD – EN 10346 Component II: S235 – EN 10025 S280GD or S320GD – EN 10346 Drilling-capacity: $\Sigma t_i \leq 3,25 \text{ mm}$ Timber substructures no performance determined
--	---

$t_{N,II} [\text{mm}] =$	1,00	1,25	1,50	2,00	2,50
$M_{t,nom} =$	–				
$V_{R,k} [\text{kN}] \text{ for } t_{N,II} [\text{mm}]$	0,50	- - 1,57 ^{a)} ac	1,57 ^{a)} ac	1,57 ^{a)} ac	1,57 ^{a)} ac
	0,55	- - 1,63 ^{a)} ac	1,63 ^{a)} ac	1,63 ^{a)} ac	1,63 ^{a)} ac
	0,63	- - 1,72 ^{a)} ac	1,72 ^{a)} ac	1,72 ^{a)} ac	- -
	0,75	- - 2,43 ^{a)} ac	2,43 ^{a)} ac	2,43 ^{a)} ac	- -
	0,88	- - 2,92 -	3,11 -	3,49 ac	- -
	1,00	- - 3,37 -	3,73 -	4,46 ac	- -
	1,13	- - 3,64 -	3,90 -	- -	- -
	1,25	- - 3,89 -	4,07 -	- -	- -
	1,50	- - 4,40 -	4,40 -	- -	- -
	2,00	- - 4,40 -	- -	- -	- -
$N_{R,k} [\text{kN}] \text{ for } t_{N,II} [\text{mm}]$	0,50	- - 1,53 ac	1,53 ac	1,53 ac	1,53 ac
	0,55	- - 1,65 ac	1,71 ac	1,71 ac	1,71 ac
	0,63	- - 1,65 ac	1,98 ac	1,98 ac	- -
	0,75	- - 1,65 ac	2,16 ac	2,41 ac	- -
	0,88	- - 1,65 -	2,16 -	2,86 ac	- -
	1,00	- - 1,65 -	2,16 -	3,03 ac	- -
	1,13	- - 1,65 -	2,16 -	- -	- -
	1,25	- - 1,65 -	2,16 -	- -	- -
	1,50	- - 1,65 -	2,16 -	- -	- -
	2,00	- - 1,65 -	- -	- -	- -

- Index a): for component I of S320GD the indicated values can be increased by 8,3 %.

Self-drilling screw

SFS SD3 – T15 – 4,8 x L, SFS SD3 – L12 – T15 – 4,8 x L
with hexagon head or irius® drive system and sealing washer $\geq \text{Ø } 15 \text{ mm}$

Annex 38

	Materials Fastener: carbon steel case hardened and galvanized Washer: carbon steel with vulcanized EPDM Component I: S280GD, S320GD or S350GD – EN 10346 Component II: S235, S355 – EN 10025 S280GD, S320GD or S350GD – EN 10346 Drilling-capacity: $\Sigma t_i \leq 3,50 \text{ mm}$ Timber substructures no performance determined
--	---

$t_{N,II} [\text{mm}] =$	2x 0,63	2x 0,88	2x 1,00	2x 1,13	2x 1,25
$M_{t, nom} =$	–				
$N_{R,k} [\text{kN}]$ for $t_{N,II} [\text{mm}]$					
0,50	-	-	-	-	-
0,55	-	-	-	-	-
0,63	1,64	1,64	1,64	1,64	1,64
0,75	2,22	2,22	2,22	2,22	-
0,88	2,84	2,84	2,84	2,84	-
1,00	2,87	3,06	3,06	-	-
1,13	2,90	3,29	3,29	-	-
1,25	2,90	3,29	3,29	-	-
1,50	2,90	3,29	3,29	-	-
2,00	-	-	-	-	-
$N_{R,k} [\text{kN}]$ for $t_{N,II} [\text{mm}]$					
0,50	-	-	-	-	-
0,55	-	-	-	-	-
0,63	1,41	1,98	1,98	1,98	1,98
0,75	1,41	2,41	2,41	2,41	-
0,88	1,41	2,58	2,71	2,71	-
1,00	1,41	2,58	2,71	-	-
1,13	1,41	2,58	2,71	-	-
1,25	1,41	2,58	2,71	-	-
1,50	1,41	2,58	2,71	-	-
2,00	-	-	-	-	-

Self-drilling screw

SFS SD3/15 – T15 – 4,8 L, SFS SD3/15 – L12 – T15 – 4,8 x L
with hexagon head or irius® drive system and sealing washer $\geq \text{Ø } 15 \text{ mm}$

Annex 39

	Materials Fastener: carbon steel case hardened and galvanized Washer: carbon steel with vulcanized EPDM Component I: S280GD, S320GD or S350GD – EN 10346 Component II: S235 – EN 10025 S280GD or S320GD – EN 10346 Drilling-capacity: $\Sigma t_i \leq 3,25 \text{ mm}$ Timber substructures no performance determined
--	---

$t_{N,II} [\text{mm}] =$	1,00	1,25	1,50	2,00	2,50
$M_{t, \text{nom}} =$	–				
$N_{R,k} [\text{kN}] \text{ for } t_{N,I} [\text{mm}]$					
0,50	-	1,19 ac	1,19 ac	1,19 ac	1,19 ac
0,55	-	1,30 -	1,30 -	1,30 ac	1,30 ac
0,63	-	1,47 -	1,47 -	1,47 ac	-
0,75	-	1,72 -	1,72 -	1,72 ac	-
0,88	-	2,49 -	2,62 -	2,87 ac	-
1,00	-	3,20 -	3,45 -	3,94 ac	-
1,13	-	3,63 -	3,81 -	-	-
1,25	-	4,03 -	4,14 -	-	-
1,50	-	4,82 -	4,82 -	-	-
2,00	-	4,82 -	-	-	-
$N_{R,k} [\text{kN}] \text{ for } t_{N,I} [\text{mm}]$					
0,50	-	1,53 ac	1,53 ac	1,53 ac	1,53 ac
0,55	-	1,71 -	1,71 -	1,71 ac	1,71 ac
0,63	-	1,71 -	1,98 -	1,98 ac	-
0,75	-	1,71 -	2,36 -	2,41 ac	-
0,88	-	1,71 -	2,36 -	2,86 ac	-
1,00	-	1,71 -	2,36 -	3,16 ac	-
1,13	-	1,71 -	2,36 -	-	-
1,25	-	1,71 -	2,36 -	-	-
1,50	-	1,71 -	2,36 -	-	-
2,00	-	1,71 -	-	-	-

Self-drilling screw

SFS SD3-T15-5,5 x L, SFS SD3-L12-T15-5,5 x L, SFS SD3-D12-T15-5,5 x L
with hexagon head, torx head or irius® drive system and sealing washer $\geq \text{Ø } 15 \text{ mm}$

Annex 40

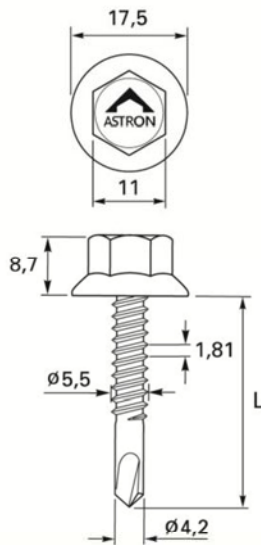
	Materials Fastener: carbon steel case hardened and galvanized Washer: carbon steel with vulcanized EPDM Component I: S280GD, S320GD or S350GD – EN 10346 Component II: S235 – EN 10025 S280GD or S320GD – EN 10346 Drilling-capacity: $\Sigma t_i \leq 3,25 \text{ mm}$ Timber substructures no performance determined
--	---

$t_{N,II} [\text{mm}] =$	1,00	1,25	1,50	2,00	2,50
$M_{t,nom} =$	–				
$V_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$					
0,50	-	1,61 ac	1,61 ac	1,61 ac	1,61 ac
0,55	-	1,86 -	1,86 -	1,86 -	1,86 -
0,63	-	2,27 -	2,27 -	2,27 -	-
0,75	-	2,88 -	2,88 -	2,88 -	-
0,88	-	3,42 -	3,65 -	4,10 -	-
1,00	-	3,92 -	4,36 -	5,23 -	-
1,13	-	4,02 -	4,36 -	-	-
1,25	-	4,12 -	4,36 -	-	-
1,50	-	4,32 -	4,36 -	-	-
2,00	-	4,32 -	-	-	-
$N_{R,k} [\text{kN}]$ for $t_{N,I} [\text{mm}]$					
0,50	-	1,70 ac	1,70 ac	1,70 ac	1,70 ac
0,55	-	1,93 -	1,93 -	1,93 -	1,93 -
0,63	-	2,29 -	2,29 -	2,29 -	-
0,75	-	2,42 -	2,83 -	2,83 -	-
0,88	-	2,42 -	3,36 -	3,77 -	-
1,00	-	2,42 -	3,36 -	3,91 -	-
1,13	-	2,42 -	3,36 -	-	-
1,25	-	2,42 -	3,36 -	-	-
1,50	-	2,42 -	3,36 -	-	-
2,00	-	2,42 -	-	-	-

Self-drilling screw

SFS SD3-T16-6,3 x L, SFS SD3-L12-T16-6,3 x L, SFS SD3-D12-T16-6,3 x L
with hexagon head, torx head or irius® drive system and sealing washer $\geq \text{Ø } 16 \text{ mm}$

Annex 41



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD or S320GD - EN 10346

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

Drilling-capacity: $\Sigma t_i \leq 3,22 \text{ mm}$

Timber substructures

no performance determined

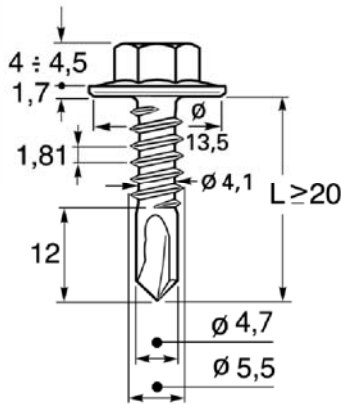
$t_{N,II} =$	1,00	1,13	1,25	1,30	1,75	2,72	3,00	4,00
$M_{t,nom} =$								
$V_{R,k} [\text{kN}]$ for $t_{N,I}$ [mm]	0,50	— —	— —	— —	1,76 ac	2,04 ac	2,04 ac	— —
	0,55	— —	— —	— —	1,76 ac	2,04 ac	— —	— —
	0,63	— —	— —	— —	1,76 ac	2,04 ac	— —	— —
	0,75	— —	— —	— —	1,76 ac	2,04 ac	— —	— —
	0,88	— —	— —	— —	1,76 ac	2,04 ac	— —	— —
	1,00	— —	— —	— —	1,76 ac	2,04 ac	— —	— —
	1,13	— —	— —	— —	1,76 ac	2,04 ac	— —	— —
	1,25	— —	— —	— —	1,76 ac	2,04 ac	— —	— —
	1,50	— —	— —	— —	1,76 ac	— —	— —	— —
	1,75	— —	— —	— —	1,76 ac	— —	— —	— —
	2,00	— —	— —	— —	— —	— —	— —	— —
$N_{R,k} [\text{kN}]$ for $t_{N,I}$ [mm]	0,50	— —	— —	— —	1,34 ac	1,94 ac	1,94 ac	— —
	0,55	— —	— —	— —	1,34 ac	1,94 ac	— —	— —
	0,63	— —	— —	— —	1,34 ac	1,94 ac	— —	— —
	0,75	— —	— —	— —	1,34 ac	1,94 ac	— —	— —
	0,88	— —	— —	— —	1,34 ac	1,94 ac	— —	— —
	1,00	— —	— —	— —	1,34 ac	1,94 ac	— —	— —
	1,13	— —	— —	— —	1,34 ac	1,94 ac	— —	— —
	1,25	— —	— —	— —	1,34 ac	1,94 ac	— —	— —
	1,50	— —	— —	— —	1,34 ac	— —	— —	— —
	1,75	— —	— —	— —	1,34 ac	— —	— —	— —
	2,00	— —	— —	— —	— —	— —	— —	— —

- If both components I and II are made of S350GD all values may be increased by 17,0%.

Self-drilling screw

SFS SDP3 - Z - 5,5 x L
with polyamid hexagon head

Annex 42



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling-capacity: $\Sigma t_i \leq 5,00$ mm

Timber substructures

no performance determined

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

Self-drilling screw

SFS SD5 - H15 - 5,5 x L
hexagon flange head Ø15 mm

Annex 43

	Materials Fastener: carbon steel case hardened and galvanized Washer: carbon steel with vulcanized EPDM Component I: S280GD, S320GD or S350GD – EN 10346 Component II: S235, S275 or S355 - EN 10025-1 S280GD, S320GD or S350GD - EN 10346 Drilling capacity $\Sigma t_i \leq 6,00 \text{ mm}$ Timber substructures no performance determined
--	--

$t_{H,II} [\text{mm}] =$	1,50	2,00	2,50	3,00	4,00	5,00
$M_{t, \text{nom}} =$	—					
$V_{R,k} [\text{kN}] \text{ for } t_{H,I} [\text{mm}]$	0,50	1,57 ac	1,76 ac	1,76 ac	1,76 ac	1,76 ac
	0,55	1,71 ac	1,86 ac	1,86 ac	1,86 ac	1,86 a
	0,63	1,94 ac	2,03 ac	2,03 ac	2,03 ac	2,03 a
	0,75	2,28 ac	2,28 ac	2,28 ac	2,28 ac	2,28 a
	0,88	2,86 ac	2,86 ac	3,04 ac	3,27 ac	3,27 a
	1,00	3,43 ac	3,43 ac	3,74 ac	4,18 ac	4,18 a
	1,13	3,43 ac	3,89 ac	4,50 ac	5,17 a	5,17 a
	1,25	3,43 ac	4,31 ac	5,20 a	6,08 a	6,08 a
	1,50	3,43 ac	4,31 a	5,20 a	6,08 a	6,08 a
	2,00	3,43 a	4,31 a	5,20 a	6,08 a	6,08 a
$N_{R,k} [\text{kN}] \text{ for } t_{H,I} [\text{mm}]$	0,50	1,53 ac	1,53 ac	1,53 ac	1,53 ac	1,53 ac
	0,55	1,71 ac	1,71 ac	1,71 ac	1,71 ac	1,71 a
	0,63	2,20 ac	1,98 ac	1,98 ac	1,98 ac	1,98 a
	0,75	2,20 ac	2,41 ac	2,41 ac	2,41 ac	2,41 a
	0,88	2,20 ac	2,86 ac	2,86 ac	2,86 ac	2,86 a
	1,00	2,20 ac	3,20 ac	3,20 ac	3,29 ac	3,29 a
	1,13	2,20 ac	3,20 ac	3,20 ac	3,73 a	3,73 a
	1,25	2,20 ac	3,20 ac	3,20 a	4,10 a	4,10 a
	1,50	2,20 ac	3,20 a	3,20 a	5,00 a	5,00 a
	2,00	2,20 a	3,20 a	3,20 a	5,40 a	5,40 a

- For component I made of S320GD or S350GD the indicated values of $V_{R,k}$ can be increased by 8,0 %.

Self-drilling screw

Annex 44

SFS SD6-T15(S16)-5,5xL, SFS SD6-L12-T15(S16)-5,5xL, SFS SD6-T15(S16)-5,5xL
with hexagon head, irius® drive system or Zamac head and sealing washer $\geq \varnothing 15 \text{ mm}$

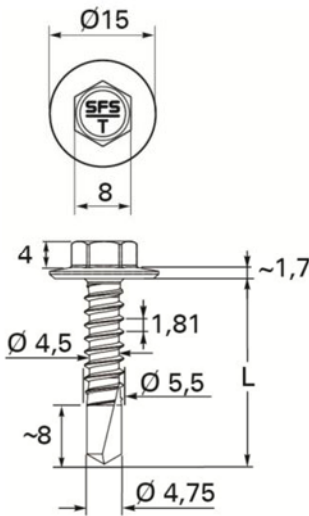
	Materials Fastener: carbon steel case hardened and galvanized Washer: carbon steel with vulcanized EPDM Component I: S280GD, S320GD or S350GD – EN 10346 Component II: S235, S275 or S355 - EN 10025-1 S280GD, S320GD or S350GD - EN 10346 Drilling capacity $\Sigma t_i \leq 6,00 \text{ mm}$ Timber substructures no performance determined
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$t_{N,II} [\text{mm}] =$	1,50	2,00	2,50	3,00	4,00	5,00
$M_{t, \text{nom}} =$	—					
$N_{R,k} [\text{kN}] \text{ for } t_{N,I} [\text{mm}]$	0,50	1,97 ac	1,97 -	1,97 -	1,99 -	1,99 -
	0,55	1,99 -	2,05 -	2,13 -	2,19 -	2,19 -
	0,63	2,27 -	2,35 -	2,44 -	2,51 -	2,51 -
	0,75	2,71 -	2,80 -	2,90 -	2,99 -	2,99 -
	0,88	3,18 -	3,36 -	3,54 -	3,72 -	3,72 -
	1,00	3,61 -	3,87 -	4,13 -	4,39 ac	4,39 a
	1,13	3,61 -	3,87 -	4,13 -	4,39 ac	4,39 a
	1,25	3,61 -	3,87 -	4,13 -	4,39 ac	4,39 a
	1,50	3,61 -	3,87 -	4,13 -	4,39 ac	4,39 a
	2,00	3,61 -	3,87 -	4,13 -	4,39 ac	4,39 a
$N_{R,k} [\text{kN}] \text{ for } t_{N,I} [\text{mm}]$	0,50	1,95 ac	1,95 -	1,95 -	1,95 -	1,95 -
	0,55	2,13 -	2,33 -	2,33 -	2,33 -	2,33 -
	0,63	2,13 -	2,93 -	2,93 -	2,93 -	2,93 -
	0,75	2,13 -	3,20 -	3,83 -	3,83 -	3,83 -
	0,88	2,13 -	3,20 -	4,59 -	4,59 -	4,59 -
	1,00	2,13 -	3,20 -	4,63 -	5,29 ac	5,29 a
	1,13	2,13 -	3,20 -	4,63 -	5,29 ac	5,29 a
	1,25	2,13 -	3,20 -	4,63 -	5,29 ac	5,29 a
	1,50	2,13 -	3,20 -	4,63 -	5,29 ac	5,29 a
	2,00	2,13 -	3,20 -	4,63 -	5,29 ac	5,29 a

Self-drilling screw

SFS SD6 – T16 – 6,3 x L, SFS SD6 – L12 – T16 – 6,3 x L
with hexagon head or irius® drive system and sealing washer $\geq \text{Ø } 16 \text{ mm}$

Annex 45



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD – EN 10346

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

Drilling capacity

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

Timber substructures

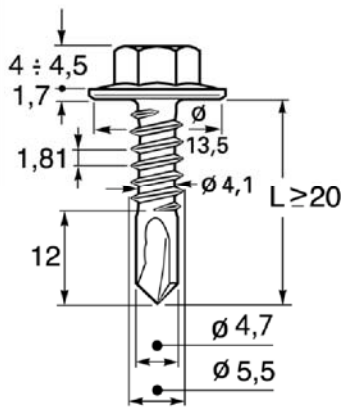
no performance determined

$t_{N,II} [\text{mm}] =$	1,50	2,00	2,50	3,00	4,00	5,00
$M_{t, \text{nom}} =$	—					
$N_{R,k} [\text{kN}]$ for $t_{N,II} [\text{mm}]$	0,50	1,57 ac	1,76 ac	1,76 ac	1,76 ac	1,76 ac
	0,55	1,71 ac	1,86 ac	1,86 ac	1,86 ac	1,86 a
	0,63	1,94 ac	2,03 ac	2,03 ac	2,03 ac	2,03 a
	0,75	2,28 ac	2,28 ac	2,28 ac	2,28 ac	2,28 a
	0,88	2,86 ac	2,86 ac	3,04 ac	3,27 ac	3,27 a
	1,00	3,43 ac	3,43 ac	3,74 ac	4,18 ac	4,18 a
	1,13	3,43 ac	3,89 ac	4,50 ac	5,17 a	5,17 a
	1,25	3,43 ac	4,31 ac	5,20 a	6,08 a	6,08 a
	1,50	3,43 ac	4,31 a	5,20 a	6,08 a	6,08 a
	2,00	3,43 a	4,31 a	5,20 a	6,08 a	6,08 a
$N_{R,k} [\text{kN}]$ for $t_{N,II} [\text{mm}]$	0,50	1,15 ac	1,15 ac	1,15 ac	1,15 ac	1,15 ac
	0,55	1,28 ac	1,28 ac	1,28 ac	1,28 ac	1,28 a
	0,63	1,80 ac	1,80 ac	1,80 ac	1,80 ac	1,80 a
	0,75	2,20 ac	3,20 ac	3,20 ac	3,20 ac	3,20 a
	0,88	2,20 ac	3,20 ac	3,20 ac	4,00 ac	4,00 a
	1,00	2,20 ac	3,20 ac	3,20 ac	4,80 ac	4,80 a
	1,13	2,20 ac	3,20 ac	3,20 ac	5,20 a	5,20 a
	1,25	2,20 ac	3,20 ac	3,20 a	5,40 a	5,60 a
	1,50	2,20 ac	3,20 a	3,20 a	5,40 a	5,80 a
	2,00	2,20 a	3,20 a	3,20 a	5,40 a	5,80 a

Self-drilling screw

SFS SD6 – H15 – 5,5 x L
with hexagon flange head Ø15 mm

Annex 46



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD or S320GD - EN 10346

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

Drilling capacity

$\Sigma t_i \leq 8,00 \text{ mm}$

Timber substructures

no performance determined

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

Self-drilling screw

SFS SD8 - H15 - 5,5 x L
hexagon flange head Ø15 mm

Annex 47

	Materials Fastener: carbon steel case hardened and galvanized Washer: carbon steel with vulcanized EPDM Component I: S280GD, S320GD or S350GD – EN 10346 Component II: S235, S275 or S355 – EN 10025 Drilling capacity $\Sigma t_i \leq 14,00 \text{ mm}$ Timber substructures no performance determined
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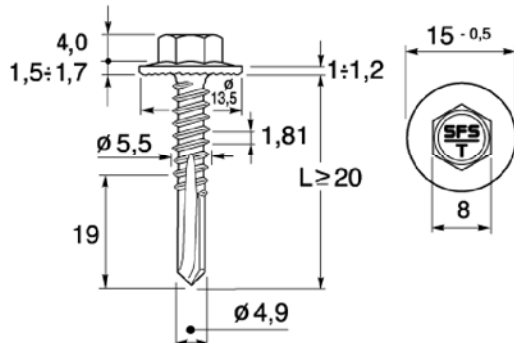
$t_{N,II} [\text{mm}] =$	4,00	5,00	6,00	8,00	10,00	12,00
$M_{k,nom} =$	–					
$V_{R,k} [\text{kN}] \text{ for } t_{N,II} [\text{mm}]$	0,50	0,75 -	0,75 -	0,75 -	0,75 -	0,75 -
	0,55	0,88 -	0,88 -	0,88 -	0,88 -	0,88 -
	0,63	2,63 ac	2,63 ac	2,63 ac	2,63 ac	2,63 ac
	0,75	5,25 ac	5,25 ac	5,25 ac	5,25 ac	5,25 ac
	0,88	6,22 ac	6,35 ac	6,49 ac	6,49 ac	6,49 a
	1,00	7,19 ac	7,46 ac	7,72 ac	7,72 ac	7,72 a
	1,13	7,19 -	7,46 -	7,72 -	7,97 -	7,97 -
	1,25	7,19 -	7,46 -	7,72 -	8,22 -	8,22 -
	1,50	7,19 -	7,46 -	7,72 -	8,72 -	8,72 -
	2,00	7,19 -	7,46 -	7,72 -	8,72 -	8,72 -
$N_{R,k} [\text{kN}] \text{ for } t_{N,II} [\text{mm}]$	0,50	1,53 -	1,53 -	1,53 -	1,53 -	1,53 -
	0,55	1,71 -	1,71 -	1,71 -	1,71 -	1,71 -
	0,63	1,98 ac	1,98 ac	1,98 ac	1,98 ac	1,98 ac
	0,75	2,41 ac	2,41 ac	2,41 ac	2,41 ac	2,41 ac
	0,88	2,86 ac	2,86 ac	2,86 ac	2,86 ac	2,86 a
	1,00	3,29 ac	3,29 ac	3,29 ac	3,29 ac	3,29 a
	1,13	3,73 -	3,73 -	3,73 -	3,73 -	3,73 -
	1,25	4,10 -	4,10 -	4,10 -	4,10 -	4,10 -
	1,50	5,00 -	5,00 -	5,00 -	5,00 -	5,00 -
	2,00	6,77 -	6,77 -	6,77 -	6,77 -	6,77 -

- For component I of S320GD or S350GD the indicated values of $V_{R,k}$ can be increased by 8,0 %.

Self-drilling screw

SFS SD14–T15 (S16)–5,5 x L, SFS SD14–L12–T15 (S16)–5,5 x L, SFS SDZ14–T15 (S16)–5,5 x L
with hexagon head, irius® drive system or Zamac head and sealing washer $\geq \text{Ø } 15 \text{ mm}$

Annex 48



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity

$\Sigma t_i \leq 14,00 \text{ mm}$

Timber substructures

no performance determined

$t_{N,II} =$	4,00	5,00	6,00	8,00	10,0	12,0	13,0	14,0
$M_{t,nom} =$	—							
$V_{R,k} [\text{kN}]$ for $t_{N,I}$	0,50	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—
	0,63	2,63 ^a ac	2,63 ^a ac	2,63 ^a ac	2,63 ^a ac	2,63 ^a ac	2,63 ^a —	—
	0,75	5,25 ^a ac	5,25 ^a ac	5,25 ^a ac	5,25 ^a ac	5,25 ^a ac	5,25 ^a —	—
	0,88	6,22 ^a ac	6,35 ^a ac	6,49 ^a ac	6,49 ^a ac	6,49 ^a ac	6,49 ^a a	—
	1,00	7,19 ^a ac	7,46 ^a ac	7,72 ^a ac	7,72 ^a ac	7,72 ^a ac	7,72 ^a a	—
	1,13	7,19 ^a —	7,46 ^a ac	7,72 ^a —	7,97 —	7,97 —	7,97 —	—
	1,25	7,19 ^a —	7,46 ^a ac	7,72 ^a —	8,22 —	8,22 —	8,22 —	—
	1,50	7,19 ^a —	7,46 ^a ac	7,72 ^a —	8,72 —	8,72 —	8,72 —	—
	1,75	7,19 ^a —	7,46 ^a ac	7,72 ^a —	8,72 —	8,72 —	8,72 —	—
	2,00	7,19 ^a —	7,46 ^a ac	7,72 ^a —	8,72 —	8,72 —	8,72 —	—
$N_{R,k} [\text{kN}]$ for $t_{N,I}$	0,50	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—
	0,63	2,00 ^a ac	2,00 ^a ac	2,00 ^a ac	2,00 ^a ac	2,00 ^a ac	2,00 ^a —	—
	0,75	2,90 ^a ac	2,90 ^a ac	2,90 ^a ac	2,90 ^a ac	2,90 ^a ac	2,90 ^a —	—
	0,88	3,62 ^a ac	3,62 ^a ac	3,62 ^a ac	3,62 ^a ac	3,62 ^a ac	3,62 ^a a	—
	1,00	4,33 ^a ac	4,33 ^a ac	4,33 ^a ac	4,33 ^a ac	4,33 ^a ac	4,33 ^a a	—
	1,13	5,23 —	5,23 —	5,23 —	5,23 —	5,23 —	5,23 —	—
	1,25	6,13 —	6,13 —	6,13 —	6,13 —	6,13 —	6,13 —	—
	1,50	6,99 —	8,75 —	9,62 —	9,62 —	9,62 —	9,62 —	—
	1,75	6,99 —	8,75 —	9,62 —	9,62 —	9,62 —	9,62 —	—
	2,00	6,99 —	8,75 —	9,62 —	9,62 —	9,62 —	9,62 —	—

- Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

Self-drilling screw

SFS SD14 – H15 – 5,5 x L
hexagon flange head Ø15 mm

Annex 49

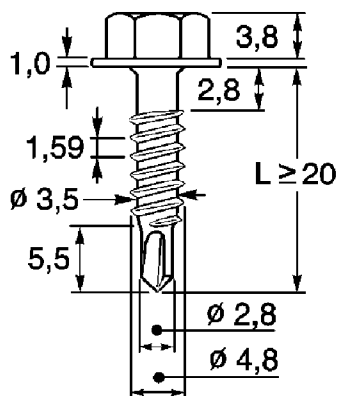
	Materials Fastener: carbon steel case hardened and galvanized Washer: aluminium alloy AW-AMg3 – EN 485 with vulcanized EPDM Component I: S280GD, S320GD or S350GD – EN 10346 Component II: S235, S275 or S355 - EN 10025-1 S280GD, S320GD or S350GD - EN 10346 Drilling capacity $\Sigma t_i \leq 2,00 \text{ mm}$ 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
$M_{t, \text{nom}} =$	—									
$V_{R,k} [\text{kN}] \text{ for } t_{N,I} [\text{mm}]$	0,40	0,58 -	0,58 -	0,58 -	0,58 -	0,58 -	0,58 -	0,58 -	0,58 -	0,58 -
	0,50	0,58 -	0,69 -	0,69 -	0,69 -	0,69 -	0,69 -	0,69 -	0,69 -	0,69 -
	0,55	0,58 -	0,69 -	0,80 -	0,80 -	0,80 -	0,80 -	0,80 -	0,80 -	- -
	0,63	0,58 -	0,69 -	0,80 -	0,98 -	0,98 -	0,98 -	0,98 -	0,98 -	- -
	0,75	0,58 -	0,69 -	0,80 -	0,98 -	1,26 -	1,26 -	1,26 -	1,26 -	- -
	0,88	0,58 -	0,69 -	0,80 -	0,98 -	1,26 -	1,82 -	1,82 -	- -	- -
	1,00	0,58 -	0,69 -	0,80 -	0,98 -	1,26 -	1,82 -	2,35 -	- -	- -
	1,13	0,58 -	0,69 -	0,80 -	0,98 -	1,26 -	- -	- -	- -	- -
	1,25	0,58 -	0,69 -	0,80 -	0,98 -	1,26 -	- -	- -	- -	- -
	1,50	0,58 -	0,69 -	- -	- -	- -	- -	- -	- -	- -
$N_{R,k} [\text{kN}] \text{ for } t_{N,I} [\text{mm}]$	0,40	0,30 -	0,42 -	0,49 -	0,80 -	1,00 -	1,09 -	1,09 -	1,09 -	1,09 -
	0,50	0,30 -	0,42 -	0,49 -	0,80 -	1,00 -	1,40 -	1,70 -	1,90 -	1,92 -
	0,55	0,30 -	0,42 -	0,49 -	0,80 -	1,00 -	1,40 -	1,70 -	1,90 -	2,10 -
	0,63	0,30 -	0,42 -	0,49 -	0,80 -	1,00 -	1,40 -	1,70 -	1,90 -	2,10 -
	0,75	0,30 -	0,42 -	0,49 -	0,80 -	1,00 -	1,40 -	1,70 -	1,90 -	2,10 -
	0,88	0,30 -	0,42 -	0,49 -	0,80 -	1,00 -	1,40 -	1,70 -	- -	- -
	1,00	0,30 -	0,42 -	0,49 -	0,80 -	1,00 -	1,40 -	1,70 -	- -	- -
	1,13	0,30 -	0,42 -	0,49 -	0,80 -	1,00 -	- -	- -	- -	- -
	1,25	0,30 -	0,42 -	0,49 -	0,80 -	1,00 -	- -	- -	- -	- -
	1,50	0,30 -	0,42 -	- -	- -	- -	- -	- -	- -	- -

Self-drilling screw

SFS SL2 – T – A14 – 4,8 x L, SFS SLZ2 – T – A14 – 4,8 x L
with hexagon head or Zamac head and sealing washer $\geq \text{Ø } 14 \text{ mm}$

Annex 50



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity

$\Sigma t_i \leq 2,50 \text{ mm}$

Timber substructures

no performance determined

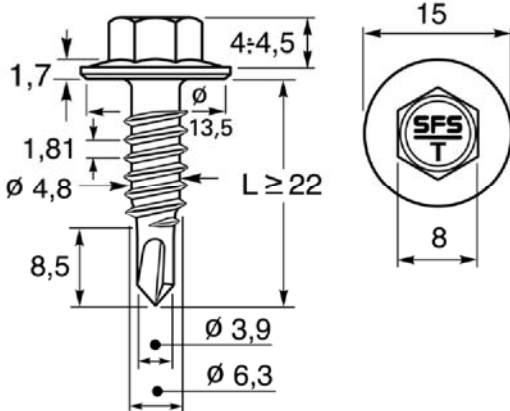
$t_{N,II} =$	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$M_{t,nom} =$	—							
$V_{R,k} [\text{kN}]$ for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—
	0,63	1,40	—	1,40	—	1,90	—	2,40
	0,75	1,40	—	1,90	—	2,60	—	2,60
	0,88	1,80	—	1,90	—	2,80	—	2,80
	1,00	2,10	—	2,50	—	2,80	—	3,60
	1,13	2,10	—	2,50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

Self-drilling screw

SFS SL2 – 4,8 x L

with threadfree zone and hexagon flange head Ø15 mm

Annex 51



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity

$\Sigma t_i \leq 2,25 \text{ mm}$

Timber substructures

no performance determined

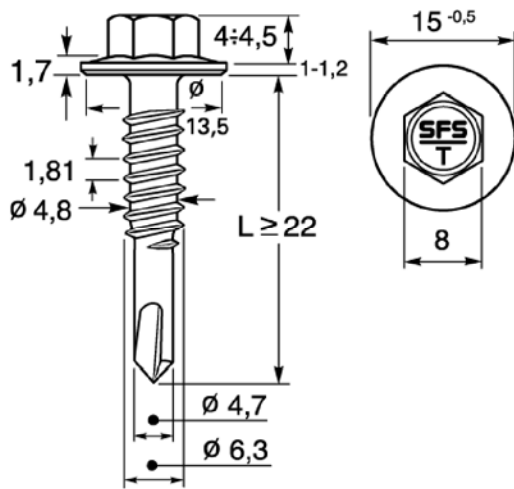
$t_{N,II} =$	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$M_{t,nom} =$	—							
$V_{R,k} [\text{kN}]$ for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—
	0,63	0,90	—	1,00	—	1,30	a	1,40
	0,75	0,90	—	2,70	—	2,70	—	2,70
	0,88	0,90	—	2,70	—	3,60	—	3,60
	1,00	0,90	—	2,70	—	3,60	—	3,90
	1,13	0,90	—	2,70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

Self-drilling screw

SFS SL2 – H15 – 6,3 x L

with threadfree zone and hexagon flange head Ø15 mm

Annex 52



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity

$\Sigma t_i \leq 3,00 \text{ mm}$

Timber substructures

no performance determined

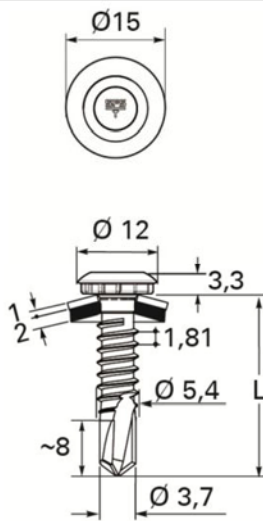
$t_{N,II} =$	0,75	0,88	1,00	1,13	1,25	1,50	1,75	2,00
$M_{t,nom} =$	—							
$V_{R,k} [\text{kN}]$ for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	—	—	—	—	—	—	—	—
0,75	—	—	—	—	—	—	—	—
0,88	—	—	—	—	—	—	—	—
1,00	—	—	—	—	3,50	4,10	4,10	4,10
1,13	—	—	—	—	3,60	4,10	4,10	—
1,25	—	—	3,20	3,40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

Self-drilling screw

SFS SL3 - H15 - 6,3 x L

with threadfree zone and hexagon flange head Ø15 mm

Annex 53



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: carbon steel
with vulcanized EPDM

Component I: S280GD, S320GD or S350GD – EN 10346

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

Drilling capacity

$\Sigma t_i \leq 3,25 \text{ mm}$

Timber substructures

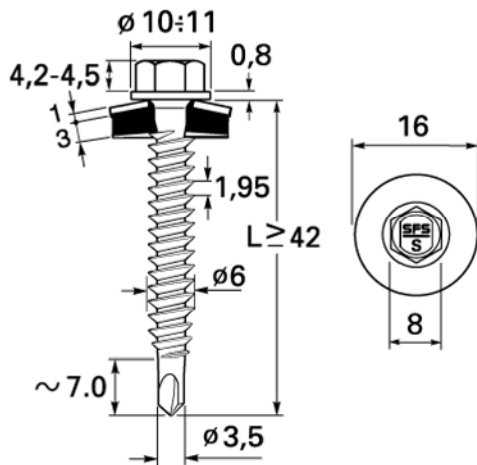
no performance determined

$t_{H,II} [\text{mm}] =$	1,25	1,50	2,00	2,50
$M_{t, nom} =$	—			
$V_{R,k} [\text{kN}] \text{ for } t_{H,II} [\text{mm}]$	0,50	1,79 ac	1,79 ac	1,79 ac
	0,55	1,92 ac	1,92 ac	1,92 a
	0,63	2,13 ac	2,13 ac	2,13 a
	0,75	2,44 ac	2,44 ac	2,44 a
	0,88	2,57 -	2,57 -	2,57 -
	1,00	3,11 -	3,11 -	3,11 -
	1,13	3,43 -	3,43 -	3,43 -
	1,25	3,72 -	3,72 -	3,72 -
	1,50	4,33 -	4,33 -	4,33 -
	2,00	4,33 -	4,33 -	4,33 -
$N_{R,k} [\text{kN}] \text{ for } t_{H,II} [\text{mm}]$	0,50	1,90 ac	1,90 ac	1,90 ac
	0,55	2,12 ac	2,12 ac	2,12 a
	0,63	2,18 ac	2,47 ac	2,47 a
	0,75	2,18 ac	2,93 ac	3,00 a
	0,88	2,18 -	2,93 -	3,47 -
	1,00	2,18 -	2,93 -	3,90 -
	1,13	2,18 -	2,93 -	3,90 -
	1,25	2,18 -	2,93 -	3,90 -
	1,50	2,18 -	2,93 -	3,90 -
	2,00	2,18 -	2,93 -	3,90 -

Self-drilling screw

SFS SDL3 – L12 – T15 – 5,5 x L
with irius® drive system and sealing washer $\geq \text{Ø } 15 \text{ mm}$

Annex 54



Materials

Fastener: stainless steel (1.4301) - EN 10088

Washer: stainless steel (1.4301) - EN 10088
with vulcanized EPDM

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: structural timber - EN 14081

Predrill diameter

see table below

Timber substructures

performance determined with

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

$f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 24,0 \text{ mm}$

$L_{ef} =$	24		25		26		27		28		29		30		31		32			
$M_{t,nom} =$																				
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,96	—	1,00	—	1,02	—	1,02	—	1,02 ^a	—	1,02 ^a	—	1,02 ^a	—	1,02 ^a	—	1,02 ^a	—	1,02 ^a
	0,55	0,96	—	1,00	—	1,04	—	1,08	—	1,10	—	1,10	—	1,10 ^a	—	1,10 ^a	—	1,10 ^a	—	1,10 ^a
	0,63	0,96	—	1,00	—	1,04	—	1,08	—	1,12	—	1,16	—	1,20	—	1,21	—	1,21	—	1,21 ^a
	0,75	0,96	—	1,00	—	1,04	—	1,08	—	1,12	—	1,16	—	1,20	—	1,24	—	1,28	—	1,40 ^a
	0,88	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	1,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	1,13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	1,25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	1,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	1,75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,30	—	1,35	—	1,40	—	1,46	—	1,51	—	1,57	—	1,59	—	1,59	—	1,59 ^a	—
0,55		1,30	—	1,35	—	1,40	—	1,46	—	1,51	—	1,57	—	1,62	—	1,67	—	1,73	—	1,93 ^a
0,63		1,30	—	1,35	—	1,40	—	1,46	—	1,51	—	1,57	—	1,62	—	1,67	—	1,73	—	2,44 ^a
0,75		1,30	—	1,35	—	1,40	—	1,46	—	1,51	—	1,57	—	1,62	—	1,67	—	1,73	—	3,28 ^a
0,88		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1,00		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1,13		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1,25		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1,50		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1,75		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2,00		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

bearing resistance of
component I

pull-through resistance
component I

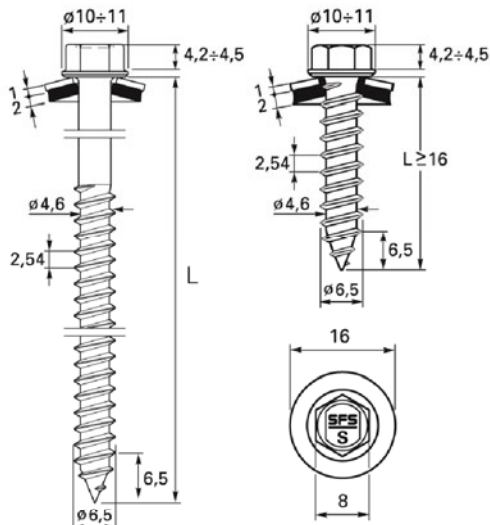
- Index a: For component I of S320GD or S350GD the indicated values can be increased by 8,0 %.
- The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.

Self-drilling screw

SFS SW2 - S - S16 - 6 x 42

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

Annex 55



Materials

Fastener: stainless steel (1.4301) - EN 10088

Washer: stainless steel (1.4301) - EN 10088
with vulcanized EPDM

Component I: S280GD or S320GD - EN 10346

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

Predrill diameter

see table below

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} =	0,63		0,75		0,88		1,00		1,13		1,25		1,50		2,00		3,00			
d _{pd} =	Ø 3,5		Ø 4,0		Ø 4,5								Ø 5,0							
M _{t,nom} =																				
V _{R,k} for t _{N,I} =	0,50	0,82	ac	1,07 ^c	ac	1,35 ^c	ac	1,60 ^c	ac	1,60 ^c	ac	1,60 ^c	ac	1,60 ^c	ac	1,60 ^c	ac	1,60 ^c	1,55 ^c	
	0,55	1,00	ac	1,24	ac	1,52	ac	1,75	ac	1,87	ac	1,95	ac	2,10	ac	2,10	ac	2,10	ac	1,71 ^c
	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	ac	2,90
	0,75	1,40	—	1,60	—	1,90	—	2,20 ^a	ac	2,50	ac	2,70	ac	3,10 ^b	ac	3,40	ac	3,50	ac	3,50
	0,88	1,50	—	1,70	—	2,00	—	2,30 ^a	—	2,60	ac	2,80	ac	3,20 ^b	ac	3,90	ac	4,00	ac	4,00
	1,00	1,60	—	1,80	—	2,10	—	2,50 ^a	—	2,80	—	3,10	—	3,16 ^b	—	4,40	—	4,50	ac	4,50
	1,13	1,60	—	1,81	—	2,20	—	2,60 ^a	—	2,90	—	3,20	—	3,80 ^b	—	4,40	—	5,00	—	5,00
	1,25	1,60	—	1,82	—	2,30	—	2,70 ^a	—	3,00	—	3,30	—	4,00 ^b	—	4,70	—	5,40	—	5,40
	1,50	1,60	—	1,83	—	2,40	—	2,80 ^a	—	3,20	—	3,50	—	4,00 ^b	—	4,90	—	5,70	—	5,70
	1,75	1,60	—	1,84	—	2,40	—	2,80 ^a	—	3,20	—	3,50	—	4,00 ^b	—	4,90	—	5,70	—	5,70
2,00	1,60	—	1,85	—	2,40	—	2,80 ^a	—	3,20	—	3,50	—	4,00 ^b	—	4,90	—	5,70	—	5,70	
N _{R,k} for t _{N,I} =	0,50	1,00	ac	1,20	ac	1,40	ac	1,50	ac	1,68	ac	1,68 ^c	ac	1,68 ^c	ac	1,68 ^c	ac	1,68 ^c	ac	1,68 ^c
	0,55	1,00	ac	1,20	ac	1,40	ac	1,50	ac	1,70	ac	1,88	ac	1,88	ac	1,88	ac	1,88	ac	1,88
	0,63	1,00	—	1,20	—	1,80	—	1,50 ^a	ac	1,70	ac	1,90	ac	2,30	ac	2,70	ac	2,70	ac	2,70
	0,75	1,00	—	1,20	—	1,90	—	1,50 ^a	ac	1,70	ac	1,90	ac	2,30	ac	3,40	ac	3,40	ac	3,40
	0,88	1,00	—	1,20	—	2,00	—	1,50 ^a	—	1,70	ac	1,90	ac	2,30 ^b	ac	3,80	ac	4,10	ac	4,10
	1,00	1,00	—	1,20	—	2,10	—	1,50 ^a	—	1,70	—	1,90	—	2,30 ^b	—	3,80	—	4,80	ac	4,80
	1,13	1,00	—	1,20	—	2,20	—	1,50 ^a	—	1,70	—	1,90	—	2,30 ^b	—	3,80	—	5,50	—	5,50
	1,25	1,00	—	1,20	—	2,30	—	1,50 ^a	—	1,70	—	1,90	—	2,30 ^b	—	3,80	—	5,60	—	5,60
	1,50	1,00	—	1,20	—	2,40	—	1,50 ^a	—	1,70	—	1,90	—	2,30 ^b	—	3,80	—	5,60	—	5,60
	1,75	1,00	—	1,20	—	2,40	—	1,50 ^a	—	1,70	—	1,90	—	2,30 ^b	—	3,80	—	5,60	—	5,60
2,00	1,00	—	1,20	—	2,40	—	1,50 ^a	—	1,70	—	1,90	—	2,30 ^b	—	3,80	—	5,60	—	5,60	

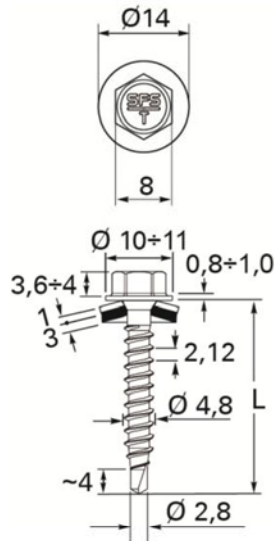
- Index a: If predrill diameter $d_{pd} = 4,0 \text{ mm}$ the values $N_{R,k}$ [kN] and $V_{R,k}$ [kN] may be increased by 7,0%.
- Index b: If predrill diameter $d_{pd} = 4,5 \text{ mm}$ the values $N_{R,k}$ [kN] may be increased by 15,0% and the values $V_{R,k}$ [kN] may be increased by 10,0%.
- Index c: If component I is made of S320GD or S350GD the value may be increased by 8,0%. The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.

Self-tapping screw

SFS TDA - S - S16 - 6,5 x L

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

Annex 56



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: aluminium alloy AW-AIMg3 – EN 485
with vulcanized EPDM seal

Component I: S280GD, 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

$M_{y,Rk} = 6,070 \text{ Nm}$
 $f_{ax,k} = 13,31 \text{ N/mm}^2$ for $l_{ef} \geq 24,0 \text{ mm}$

$L_{ef} =$	24	29	38	48	58		
$M_{t,nom} =$							
$V_{R,k} [\text{KN}]$ for $t_{w,i} [\text{mm}]$	0,50	0,87 – 1,05	1,19 – 1,28	1,19 – 1,28	1,19 – 1,28	– –	1,19
	0,55	0,87 – 1,05	1,28 – 1,37	1,28 – 1,42	1,28 – 1,42	– –	1,28
	0,63	0,87 – 1,05	1,37 – 1,37	1,42 – 1,63	1,42 – 1,63	– –	1,42
	0,75	0,87 – 1,05	1,37 – 1,37	1,63 – 1,72	1,63 – 1,72	– –	1,63
	0,88	0,87 – 1,05	1,37 – 1,37	1,72 – 1,73	1,72 – 1,81	– –	1,72
	1,00	0,87 – 1,05	1,37 – 1,37	1,73 – 1,73	1,81 – 1,81	– –	1,81
	1,13	0,87 – 1,05	1,37 – 1,37	1,73 – 1,81	1,81 – 1,81	– –	1,81
	1,25	0,87 – 1,05	1,37 – 1,73	1,81 – 1,81	1,81 – 1,81	– –	1,81
	1,50	0,87 – 1,05	1,37 – 1,73	1,81 – 1,81	1,81 – 1,81	– –	1,81
	1,75	0,87 – 1,05	1,37 – 1,73	1,81 – 1,81	1,81 – 1,81	– –	1,81
	2,00	0,87 – 1,05	1,37 – 1,73	1,81 – 1,81	1,81 – 1,81	– –	1,81
$N_{R,k} [\text{KN}]$ for $t_{w,i} [\text{mm}]$	0,50	1,38 – 1,66	1,92 – 2,14	1,92 – 2,14	1,92 – 2,14	– –	1,92
	0,55	1,38 – 1,66	2,14 – 2,18	2,14 – 2,49	2,14 – 2,49	– –	2,14
	0,63	1,38 – 1,66	2,18 – 2,18	2,49 – 2,76	2,49 – 3,02	– –	2,49
	0,75	1,38 – 1,66	2,18 – 2,18	2,76 – 2,76	3,02 – 3,33	– –	3,02
	0,88	1,38 – 1,66	2,18 – 2,18	2,76 – 2,76	3,33 – 3,33	– –	3,33
	1,00	1,38 – 1,66	2,18 – 2,18	2,76 – 2,76	3,33 – 3,33	– –	3,33
	1,13	1,38 – 1,66	2,18 – 2,18	2,76 – 2,76	3,33 – 3,33	– –	3,33
	1,25	1,38 – 1,66	2,18 – 2,18	2,76 – 2,76	3,33 – 3,33	– –	3,33
	1,50	1,38 – 1,66	2,18 – 2,18	2,76 – 2,76	3,33 – 3,33	– –	3,33
	1,75	1,38 – 1,66	2,18 – 2,18	2,76 – 2,76	3,33 – 3,33	– –	3,33
	2,00	1,38 – 1,66	2,18 – 2,18	2,76 – 2,76	3,33 – 3,33	– –	3,33

- The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.

Self-drilling screw

SFS SW – T – A14 – 4,8 x L

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

Annex 57

	Materials Fastener: carbon steel case hardened and galvanized Washer: carbon steel with vulcanized EPDM Component I: S280GD, 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 $M_{y,Rk} = 14,94 \text{ Nm}$ $f_{ax,k} = 13,18 \text{ N/mm}^2$ for $l_{ef} \geq 32,0 \text{ mm}$
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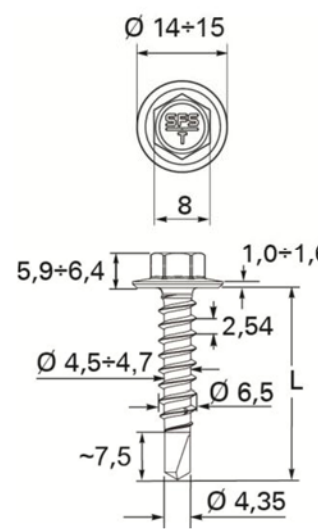
$L_{ef} =$	32	39	60	64	71	78	
$M_{t,nom} =$							
$V_{R,k} [\text{KN}]$ for $t_{w,i}$ [mm]	0,50	1,57 – 1,58	1,58 – 1,58	1,58 – 1,58	1,58 – 1,58	1,58 – 1,58	1,58
	0,55	1,57 – 1,73	1,73 – 1,73	1,73 – 1,73	1,73 – 1,73	1,73 – 1,73	1,73
	0,63	1,57 – 1,91	1,91 – 1,97	1,97 – 1,97	1,97 – 1,97	1,97 – 1,97	1,97
	0,75	1,57 – 1,91	1,91 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33
	0,88	1,57 – 1,91	1,91 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33
	1,00	1,57 – 1,91	1,91 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33
	1,13	1,57 – 1,91	1,91 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33
	1,25	1,57 – 1,91	1,91 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33
	1,50	1,57 – 1,91	1,91 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33
	1,75	1,57 – 1,91	1,91 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33
	2,00	1,57 – 1,91	1,91 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33 – 2,33	2,33
$N_{R,k} [\text{KN}]$ for $t_{w,i}$ [mm]	0,50	1,63 – 1,63	1,63 – 1,63	1,63 – 1,63	1,63 – 1,63	1,63 – 1,63	1,63
	0,55	1,93 – 1,93	1,93 – 1,93	1,93 – 1,93	1,93 – 1,93	1,93 – 1,93	1,93
	0,63	2,41 – 2,41	2,41 – 2,41	2,41 – 2,41	2,41 – 2,41	2,41 – 2,41	2,41
	0,75	2,46 – 3,00	3,00 – 3,13	3,13 – 3,13	3,13 – 3,13	3,13 – 3,13	3,13
	0,88	2,46 – 3,00	3,00 – 3,91	3,91 – 3,91	3,91 – 3,91	3,91 – 3,91	3,91
	1,00	2,46 – 3,00	3,00 – 4,62	4,62 – 4,68	4,68 – 4,68	4,68 – 4,68	4,68
	1,13	2,46 – 3,00	3,00 – 4,62	4,62 – 4,68	4,68 – 4,68	4,68 – 4,68	4,68
	1,25	2,46 – 3,00	3,00 – 4,62	4,62 – 4,68	4,68 – 4,68	4,68 – 4,68	4,68
	1,50	2,46 – 3,00	3,00 – 4,62	4,62 – 4,68	4,68 – 4,68	4,68 – 4,68	4,68
	1,75	2,46 – 3,00	3,00 – 4,62	4,62 – 4,68	4,68 – 4,68	4,68 – 4,68	4,68
	2,00	2,46 – 3,00	3,00 – 4,62	4,62 – 4,68	4,68 – 4,68	4,68 – 4,68	4,68

- The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.

Self-drilling screw

SFS SW3 – T – T16(S16) – 6,5 x L, SFS SW3 – T – L12 – T16(S16) – 6,5 x L
SFS SWZ3 – T – T16 (S16) – 6,5 x L
with hexagon head, irius® drive system or Zamac head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 58

	Materials Fastener: carbon steel case hardened and galvanized Washer: none Component I: S280GD, 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 $M_{y,Rk} = 14,94 \text{ Nm}$ $f_{ax,k} = 13,18 \text{ N/mm}^2$ for $l_{ef} \geq 32,0 \text{ mm}$
---	---

$L_{ef} =$	32	39	60	64	71	78	
$M_{t,nom} =$							
$V_{R,k} [\text{KN}]$ for $t_{w,i} [\text{mm}]$	0,50	1,57 –	1,58 –	1,58 –	1,58 –	1,58 –	1,58
	0,55	1,57 –	1,73 –	1,73 –	1,73 –	1,73 –	1,73
	0,63	1,57 –	1,91 –	1,97 –	1,97 –	1,97 –	1,97
	0,75	1,57 –	1,91 –	2,33 –	2,33 –	2,33 –	2,33
	0,88	1,57 –	1,91 –	2,33 –	2,33 –	2,33 –	2,33
	1,00	1,57 –	1,91 –	2,33 –	2,33 –	2,33 –	2,33
	1,13	1,57 –	1,91 –	2,33 –	2,33 –	2,33 –	2,33
	1,25	1,57 –	1,91 –	2,33 –	2,33 –	2,33 –	2,33
	1,50	1,57 –	1,91 –	2,33 –	2,33 –	2,33 –	2,33
	1,75	1,57 –	1,91 –	2,33 –	2,33 –	2,33 –	2,33
	2,00	1,57 –	1,91 –	2,33 –	2,33 –	2,33 –	2,33
$N_{R,k} [\text{KN}]$ for $t_{w,i} [\text{mm}]$	0,50	1,84 –	1,84 –	1,84 –	1,84 –	1,84 –	1,84
	0,55	2,01 –	2,01 –	2,01 –	2,01 –	2,01 –	2,01
	0,63	2,29 –	2,29 –	2,29 –	2,29 –	2,29 –	2,29
	0,75	2,46 –	2,71 –	2,71 –	2,71 –	2,71 –	2,71
	0,88	2,46 –	3,00 –	3,55 –	3,55 –	3,55 –	3,55
	1,00	2,46 –	3,00 –	4,33 –	4,33 –	4,33 –	4,33
	1,13	2,46 –	3,00 –	4,33 –	4,33 –	4,33 –	4,33
	1,25	2,46 –	3,00 –	4,33 –	4,33 –	4,33 –	4,33
	1,50	2,46 –	3,00 –	4,33 –	4,33 –	4,33 –	4,33
	1,75	2,46 –	3,00 –	4,33 –	4,33 –	4,33 –	4,33
	2,00	2,46 –	3,00 –	4,33 –	4,33 –	4,33 –	4,33

- The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.

Self-drilling screw

SFS SW3 – T – H15 – 6,5 x L
with hexagon head with flange $\varnothing 15 \text{ mm}$

Annex 59

	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401 or 1.4567 Washer: aluminum-alloy AW-Almg3 - EN 485, stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: aluminum-alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Drilling capacity $\Sigma t_i \leq 3,00 \text{ mm}$ Timber substructures no performance determined
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$t_{N,II} =$	1,00			1,20			1,50			2,00			2,50			3,00			4,00			5,00			6,00		
$M_{t,nom} =$																											
$V_{R,k} \text{ for } t_{N,I} =$	0,50	0,65	ac	0,69	ac	0,69	ac	0,69	ac	0,69	a	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	0,60	0,80	ac	0,80	ac	0,86	ac	0,97	a	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	0,70	0,99	ac	0,99	ac	1,04	ac	1,25	a	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	0,80	1,19	ac	1,19	ac	1,21	a	1,53	a	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	0,90	1,31	ac	1,31	ac	1,38	a	1,81	a	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	1,00	1,42	ac	1,42	a	1,55	a	2,08	a	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	1,20	1,42	a	1,45	a	1,90	a	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	1,50	1,42	a	1,45	a	1,90	a	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
$N_{R,II,k} =$	0,72			0,82			1,26			1,85			2,65			—			—			—			—		

- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

SFS SX3 - A12 (S12) - 6,0 x L, SFS SX3 - L12 - A12 (S12) - 6,0 x L,
SFS SX3 - D12 - A12 (S12) - 6,0 x L
with hexagon head, torx head or irius® drive system and sealing washer $\geq \varnothing 12 \text{ mm}$

Annex 60

	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401 or 1.4567 Washer: aluminum-alloy AW-Almg3 - EN 485, stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: aluminum-alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Drilling capacity $\Sigma t_i \leq 3,00 \text{ mm}$ Timber substructures no performance determined
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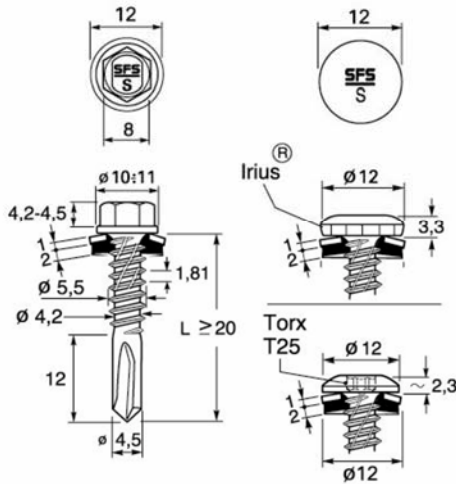
$t_{N,II} =$	1,00		1,20		1,50		2,00		2,50		3,00		4,00		5,00		6,00	
$M_{t,nom} =$																		
$V_{R,k}$ for $t_{N,I} =$	0,50	0,85	ac	0,90	ac	0,90	ac	0,90	ac	0,90	a	—	—	—	—	—	—	—
	0,60	1,04	ac	1,04	ac	1,12	ac	1,26	a	—	—	—	—	—	—	—	—	—
	0,70	1,30	ac	1,30	ac	1,35	ac	1,63	a	—	—	—	—	—	—	—	—	—
	0,80	1,55	ac	1,55	ac	1,57	a	1,99	a	—	—	—	—	—	—	—	—	—
	0,90	1,70	ac	1,70	ac	1,80	a	2,35	a	—	—	—	—	—	—	—	—	—
	1,00	1,85	ac	1,85	a	2,02	a	2,71	a	—	—	—	—	—	—	—	—	—
	1,20	1,85	a	1,89	a	2,47	a	—	—	—	—	—	—	—	—	—	—	—
	1,50	1,85	a	1,89	a	2,47	a	—	—	—	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,II,k} =$	0,93		1,06		1,64		2,41		3,45		—		—		—		—	

- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

SFS SX3 - A12 (S12) - 6,0 x L, SFS SX3 - L12 - A12 (S12) - 6,0 x L,
SFS SX3 - D12 - A12 (S12) - 6,0 x L
with hexagon head, torx head or irius® drive system and sealing washer $\geq \varnothing 12 \text{ mm}$

Annex 61

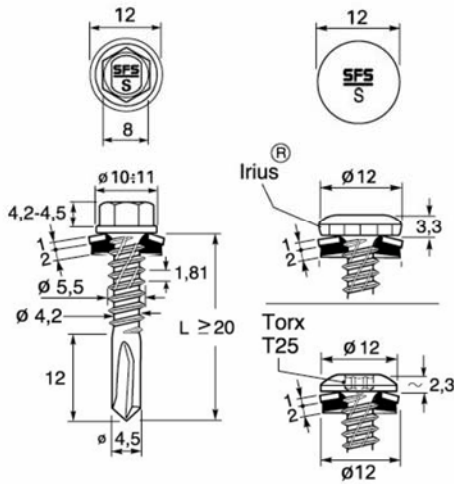


no performance determined

$t_{N,II} =$	1,50			2,00			2,50			3,00			3,50			4,00			5,00			6,00			8,00		
$M_{t,nom} =$																											
$V_{R,k}$ for $t_{N,I} =$	0,50	0,71	ac	0,89	ac	0,89	ac	0,89	ac	0,89	ac	0,89	ac	0,89	ac	—	—	—	—	—	—	—	—	—	—		
	0,60	0,83	ac	1,06	ac	1,06	ac	1,06	ac	1,06	ac	1,06	ac	1,06	a	—	—	—	—	—	—	—	—	—	—		
	0,70	0,95	ac	1,23	ac	1,23	ac	1,23	ac	1,23	ac	1,23	ac	1,23	a	—	—	—	—	—	—	—	—	—	—		
	0,80	1,06	ac	1,40	ac	1,40	ac	1,40	ac	1,40	ac	1,40	a	1,40	a	—	—	—	—	—	—	—	—	—	—		
	0,90	1,18	ac	1,49	ac	1,52	ac	1,55	ac	1,58	ac	1,58	a	1,60	a	—	—	—	—	—	—	—	—	—	—		
	1,00	1,30	ac	1,57	ac	1,63	ac	1,69	ac	1,75	ac	1,75	a	1,80	a	—	—	—	—	—	—	—	—	—	—		
	1,20	1,30	ac	1,74	ac	1,86	ac	1,97	ac	2,09	ac	2,09	a	—	—	—	—	—	—	—	—	—	—	—	—		
	1,50	1,30	ac	1,74	ac	1,86	ac	1,97	ac	2,09	ac	2,09	a	—	—	—	—	—	—	—	—	—	—	—	—		
2,00	1,30	a	1,74	a	1,86	a	1,97	a	2,09	a	2,09	a	—	—	—	—	—	—	—	—	—	—	—	—			
$N_{R,II,k} =$	1,00			1,13			1,74			2,35			3,12			3,88			—			—			—		

- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

SFS SX5 - A12 (S12) - 5,5 x L, SFS SX5 - L12 - A12 (S12) - 5,5 x L,
SFS SX5 - D12 - A12 (S12) - 5,5 x L
with hexagon head. torx head or irius® drive system and sealing washer $\geq \varnothing 12$ mm



Materials

Fastener: stainless steel, EN 10088
material-Nr. 1.4301, 1.4401 or 1.4567

Washer: aluminum-alloy AW-Almg3 - EN 485,
stainless steel, EN 10088
material-Nr. 1.4301 with vulcanized EPDM

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

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

Drilling capacity

$\Sigma t_i \leq 5,00 \text{ mm}$

Timber substructures

no performance determined

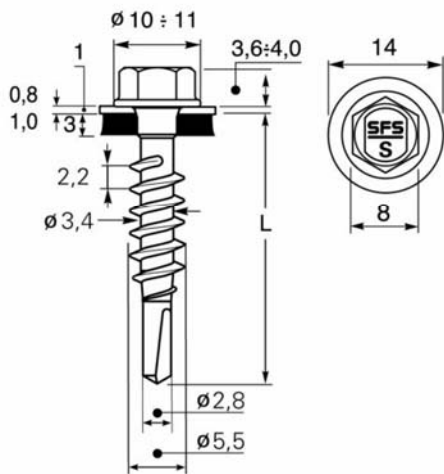
$t_{N,II} =$	1,50		2,00		2,50		3,00		3,50		4,00		5,00		6,00		8,00		
$M_{t,nom} =$																			
$V_{R,k}$ for $t_{N,I} =$	0,50	0,76	ac	1,16	ac	1,16	ac	1,16	ac	1,16	ac	1,16	ac	—	—	—	—	—	—
	0,60	0,90	ac	1,38	ac	1,38	ac	1,38	ac	1,38	ac	1,38	a	—	—	—	—	—	—
	0,70	1,04	ac	1,60	ac	1,61	ac	1,61	ac	1,61	ac	1,61	a	—	—	—	—	—	—
	0,80	1,18	ac	1,82	ac	1,83	ac	1,83	ac	1,83	a	1,83	a	—	—	—	—	—	—
	0,90	1,32	ac	1,93	ac	1,98	ac	2,02	ac	2,06	a	2,09	a	—	—	—	—	—	—
	1,00	1,46	ac	2,04	ac	2,13	ac	2,20	ac	2,28	a	2,35	a	—	—	—	—	—	—
	1,20	1,46	ac	2,26	ac	2,42	ac	2,57	a	2,72	a	—	—	—	—	—	—	—	—
	1,50	1,46	ac	2,26	ac	2,42	a	2,57	a	2,72	a	—	—	—	—	—	—	—	—
	2,00	1,46	a	2,26	a	2,42	a	2,57	a	2,72	a	—	—	—	—	—	—	—	—
$N_{R,II,k} =$	1,31		1,48		2,28		3,07		4,06		5,05		—		—		—		

- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

SFS SX5 - A12 (S12) - 5,5 x L, SFS SX5 - L12 - A12 (S12) - 5,5 x L,
SFS SX5 - D12 - A12 (S12) - 5,5 x L
with hexagon head, torx head or irius® drive system and sealing washer $\geq \varnothing 12 \text{ mm}$

Annex 63



Materials

- Fastener: stainless steel, EN 10088
material-Nr. 1.4301 or 1.4401
- Washer: stainless steel, EN 10088
material-Nr. 1.4301 with vulcanized EPDM
- Component I: aluminum-Alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573
- Component II: aluminum-Alloy
with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573

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

Timber substructures

no performance determined

$t_{N,II} =$	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50
$M_{t,nom} =$									
$V_{R,k} \text{ for } t_{N,II} =$	0,40	0,17 –	0,17 –	0,17 –	0,17 –	0,17 –	0,17 –	0,17 –	0,17 –
0,50	0,17	–	0,31 –	0,31 –	0,31 –	0,31 –	0,31 –	0,31 –	0,31 –
0,60	0,17	–	0,31 –	0,45 –	0,45 –	0,45 –	0,45 –	0,45 –	– –
0,70	0,17	–	0,31 –	0,45 –	0,59 –	0,59 –	0,59 –	0,59 –	– –
0,80	0,17	–	0,31 –	0,45 –	0,59 –	0,73 –	0,73 –	0,73 –	– –
0,90	0,17	–	0,31 –	0,45 –	0,59 –	0,73 –	0,82 –	0,82 –	– –
1,00	0,17	–	0,31 –	0,45 –	0,59 –	0,73 –	0,82 –	0,91 –	– –
1,20	0,17	–	0,31 –	0,45 –	0,59 –	0,73 –	– –	– –	– –
1,50	0,17	–	0,31 –	– –	– –	– –	– –	– –	– –
$N_{R,II,k} =$	0,16	0,26	0,36	0,47	0,57	0,67	0,77	0,77	0,77

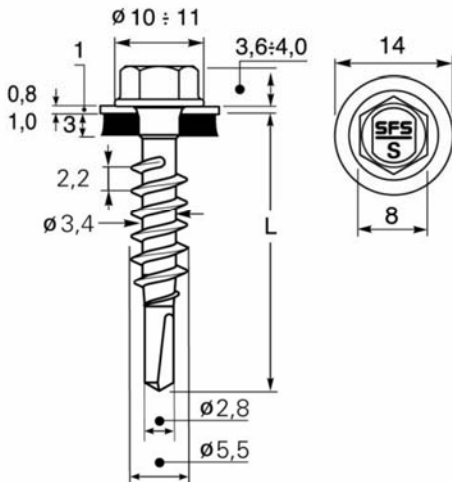
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

SFS SL2 - S - S14 - 5,5 x L

with threadfree zone and hexagon head and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 64



Materials

- Fastener: stainless steel, EN 10088
material-Nr. 1.4301 or 1.4401
- Washer: stainless steel, EN 10088
material-Nr. 1.4301 with vulcanized EPDM
- Component I: aluminum-Alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573
- Component II: aluminum-Alloy
with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573

Drilling capacity

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

Timber substructures

no performance determined

$t_{N,II} =$	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50
$M_{t,nom} =$									
$V_{R,k} \text{ for } t_{N,I} =$	0,40	0,22 –	0,22 –	0,22 –	0,22 –	0,22 –	0,22 –	0,22 –	0,22 –
0,50	0,22 –	0,40 –	0,40 –	0,40 –	0,40 –	0,40 –	0,40 –	0,40 –	0,40 –
0,60	0,22 –	0,40 –	0,58 –	0,58 –	0,58 –	0,58 –	0,58 –	0,58 –	– –
0,70	0,22 –	0,40 –	0,58 –	0,77 –	0,77 –	0,77 –	0,77 –	0,77 –	– –
0,80	0,22 –	0,40 –	0,58 –	0,77 –	0,95 –	0,95 –	0,95 –	0,95 –	– –
0,90	0,22 –	0,40 –	0,58 –	0,77 –	0,95 –	1,07 –	1,07 –	– –	– –
1,00	0,22 –	0,40 –	0,58 –	0,77 –	0,95 –	1,07 –	1,18 –	– –	– –
1,20	0,22 –	0,40 –	0,58 –	0,77 –	0,95 –	– –	– –	– –	– –
1,50	0,22 –	0,40 –	– –	– –	– –	– –	– –	– –	– –
$N_{R,II,k} =$	0,21	0,34	0,48	0,61	0,75	0,88	1,00	1,00	1,00

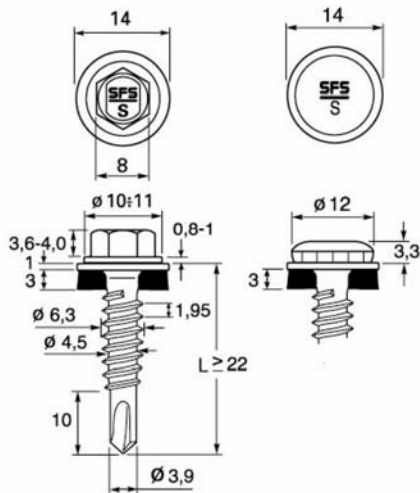
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

SFS SL2 - S - S14 - 5,5 x L

with threadfree zone and hexagon head and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 65



Materials

Fastener: stainless steel, EN 10088
material-Nr. 1.4301, 1.4401, 1.4567 or 1.4578

Washer: stainless steel, EN 10088
material-Nr. 1.4301 with vulcanized EPDM

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

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

Drilling capacity

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

Timber substructures

no performance determined

$t_{N,II} =$	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50
$M_{t,nom} =$									
$V_{R,k} \text{ for } t_{N,II} =$	0,40	0,10 –	0,10 –	0,10 –	0,10 –	0,10 –	0,10 –	0,10 –	0,10 –
	0,50	0,10 –	0,28 –	0,28 –	0,28 –	0,28 –	0,28 –	0,28 –	0,28 –
	0,60	0,10 –	0,28 –	0,45 –	0,45 –	0,45 –	0,45 –	0,45 –	– –
	0,70	0,10 –	0,28 –	0,45 –	0,62 –	0,62 –	0,62 –	0,62 –	– –
	0,80	0,10 –	0,28 –	0,45 –	0,62 –	0,79 –	0,79 –	0,79 –	– –
	0,90	0,10 –	0,28 –	0,45 –	0,62 –	0,79 –	0,97 –	0,97 –	– –
	1,00	0,10 –	0,28 –	0,45 –	0,62 –	0,79 –	0,97 –	1,15 –	– –
	1,20	0,10 –	0,28 –	0,45 –	0,62 –	0,79 –	– –	– –	– –
	1,50	0,10 –	0,28 –	– –	– –	– –	– –	– –	– –
$N_{R,II,k} =$	0,28	0,35	0,44	0,54	0,63	0,75	0,87	0,87	0,87

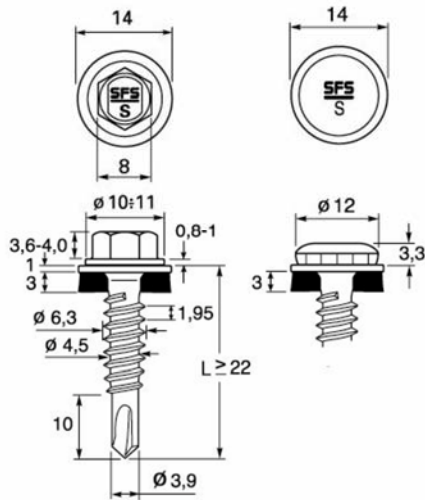
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

SFS SL2 - S - S14 - 6,3 x L, SFS SL2 - S - L12 - S14 - 6,3 x L

with threadfree zone and hexagon head or irius® drive system and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 66



Materials

Fastener: stainless steel, EN 10088
material-Nr. 1.4301, 1.4401, 1.4567 or 1.4578

Washer: stainless steel, EN 10088
material-Nr. 1.4301 with vulcanized EPDM

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

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

Drilling capacity

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

Timber substructures

no performance determined

$t_{N,II} =$	0,40	0,50	0,60	0,70	0,80	0,90	1,00	1,20	1,50
$M_{t,nom} =$									
$V_{R,k} \text{ for } t_{N,II} =$	0,40	0,13 –	0,13 –	0,13 –	0,13 –	0,13 –	0,13 –	0,13 –	0,13 –
	0,50	0,13 –	0,36 –	0,36 –	0,36 –	0,36 –	0,36 –	0,36 –	0,36 –
	0,60	0,13 –	0,36 –	0,58 –	0,58 –	0,58 –	0,58 –	0,58 –	– –
	0,70	0,13 –	0,36 –	0,58 –	0,81 –	0,81 –	0,81 –	0,81 –	– –
	0,80	0,13 –	0,36 –	0,58 –	0,81 –	1,03 –	1,03 –	1,03 –	– –
	0,90	0,13 –	0,36 –	0,58 –	0,81 –	1,03 –	1,26 –	1,26 –	– –
	1,00	0,13 –	0,36 –	0,58 –	0,81 –	1,03 –	1,26 –	1,49 –	– –
	1,20	0,13 –	0,36 –	0,58 –	0,81 –	1,03 –	– –	– –	– –
	1,50	0,13 –	0,36 –	– –	– –	– –	– –	– –	– –
$N_{R,II,k} =$		0,37	0,46	0,58	0,70	0,82	0,98	1,14	1,14

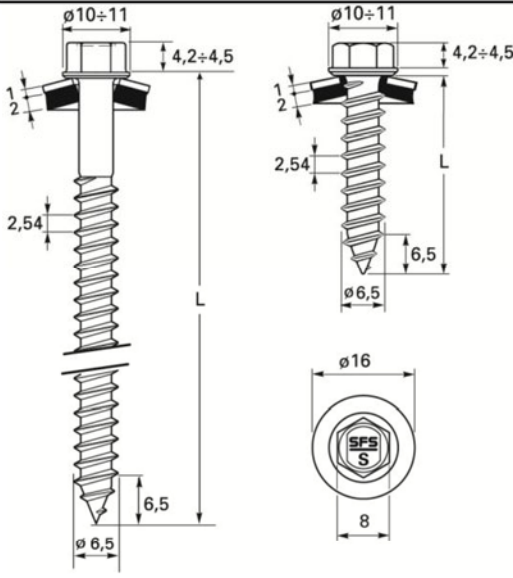
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

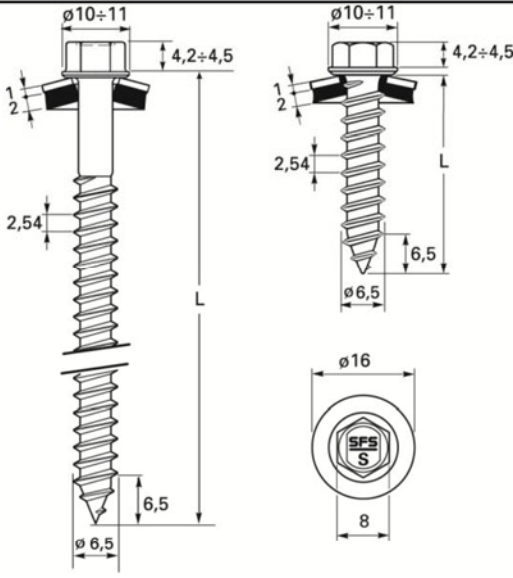
Self-drilling screw

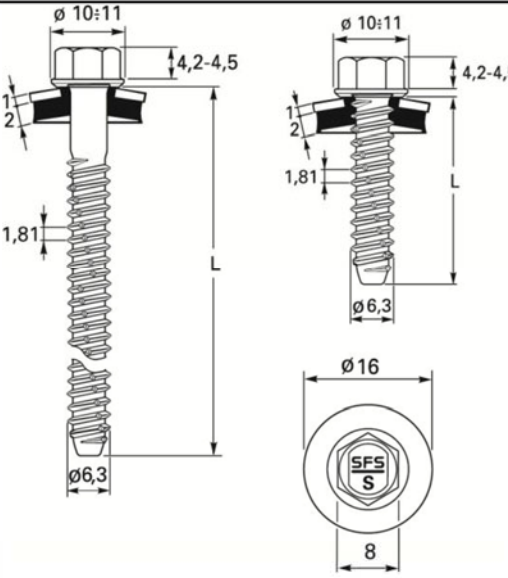
SFS SL2 - S - S14 - 6,3 x L, SFS SL2 - S - L12 - S14 - 6,3 x L

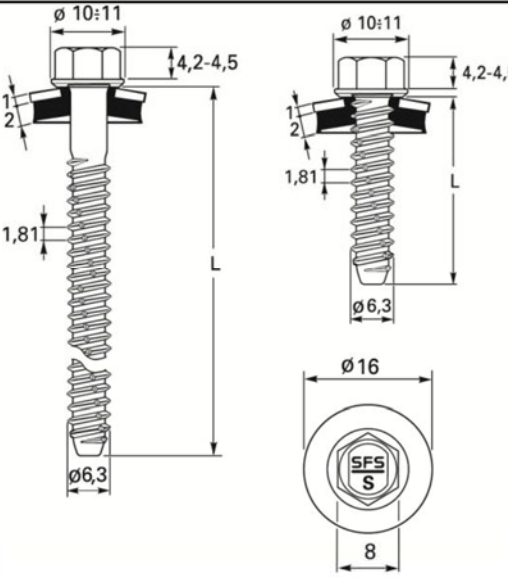
with threadfree zone and hexagon head or irius® drive system and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 67

		Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401 or 1.4547 Washer: stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: aluminum-Alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573																																																																																																																								
		Drilling capacity see table below																																																																																																																								
		Timber substructures see Annex 56																																																																																																																								
<table><tr><td>$t_{N,II} =$</td><td>0,50</td><td>0,70</td><td>0,80</td><td>0,90</td><td>1,00</td><td>1,20</td><td>1,50</td><td>2,00</td><td>3,00</td></tr><tr><td>$d_{pd} =$</td><td colspan="2">Ø 4,0</td><td colspan="5">Ø 4,5</td><td>Ø 5,0</td><td>Ø 5,3</td></tr><tr><td rowspan="9">$V_{R,k} \text{ for } t_{N,I} =$</td><td>0,50</td><td>0,24 –</td><td>0,40 –</td><td>0,49 –</td><td>0,57 –</td><td>0,65 –</td><td>0,82 –</td><td>0,86 –</td><td>0,86 –</td></tr><tr><td>0,60</td><td>0,24 –</td><td>0,40 –</td><td>0,49 –</td><td>0,57 –</td><td>0,65 –</td><td>0,82 –</td><td>1,03 –</td><td>1,03 –</td></tr><tr><td>0,70</td><td>0,24 –</td><td>0,40 –</td><td>0,49 –</td><td>0,57 –</td><td>0,65 –</td><td>0,82 –</td><td>1,03 –</td><td>1,20 –</td></tr><tr><td>0,80</td><td>0,24 –</td><td>0,40 –</td><td>0,49 –</td><td>0,57 –</td><td>0,65 –</td><td>0,82 –</td><td>1,03 –</td><td>1,37 –</td></tr><tr><td>0,90</td><td>0,24 –</td><td>0,40 –</td><td>0,49 –</td><td>0,57 –</td><td>0,65 –</td><td>0,82 –</td><td>1,03 –</td><td>1,37 –</td></tr><tr><td>1,00</td><td>0,24 –</td><td>0,40 –</td><td>0,49 –</td><td>0,57 –</td><td>0,67 –</td><td>0,82 –</td><td>1,03 –</td><td>1,37 –</td></tr><tr><td>1,20</td><td>0,24 –</td><td>0,40 –</td><td>0,49 –</td><td>0,57 –</td><td>0,67 –</td><td>0,88 –</td><td>1,08 –</td><td>1,41 –</td></tr><tr><td>1,50</td><td>0,24 –</td><td>0,40 –</td><td>0,49 –</td><td>0,57 –</td><td>0,67 –</td><td>0,88 –</td><td>1,24 –</td><td>1,53 –</td></tr><tr><td>2,00</td><td>0,24 –</td><td>0,40 –</td><td>0,49 –</td><td>0,57 –</td><td>0,67 –</td><td>0,88 –</td><td>1,24 –</td><td>1,90 –</td></tr><tr><td>$N_{R,II,k} =$</td><td>–</td><td>–</td><td>–</td><td>0,36</td><td>0,42</td><td>0,55</td><td>0,77</td><td>1,19</td><td>2,19</td></tr></table>											$t_{N,II} =$	0,50	0,70	0,80	0,90	1,00	1,20	1,50	2,00	3,00	$d_{pd} =$	Ø 4,0		Ø 4,5					Ø 5,0	Ø 5,3	$V_{R,k} \text{ for } t_{N,I} =$	0,50	0,24 –	0,40 –	0,49 –	0,57 –	0,65 –	0,82 –	0,86 –	0,86 –	0,60	0,24 –	0,40 –	0,49 –	0,57 –	0,65 –	0,82 –	1,03 –	1,03 –	0,70	0,24 –	0,40 –	0,49 –	0,57 –	0,65 –	0,82 –	1,03 –	1,20 –	0,80	0,24 –	0,40 –	0,49 –	0,57 –	0,65 –	0,82 –	1,03 –	1,37 –	0,90	0,24 –	0,40 –	0,49 –	0,57 –	0,65 –	0,82 –	1,03 –	1,37 –	1,00	0,24 –	0,40 –	0,49 –	0,57 –	0,67 –	0,82 –	1,03 –	1,37 –	1,20	0,24 –	0,40 –	0,49 –	0,57 –	0,67 –	0,88 –	1,08 –	1,41 –	1,50	0,24 –	0,40 –	0,49 –	0,57 –	0,67 –	0,88 –	1,24 –	1,53 –	2,00	0,24 –	0,40 –	0,49 –	0,57 –	0,67 –	0,88 –	1,24 –	1,90 –	$N_{R,II,k} =$	–	–	–	0,36	0,42	0,55	0,77	1,19	2,19
$t_{N,II} =$	0,50	0,70	0,80	0,90	1,00	1,20	1,50	2,00	3,00																																																																																																																	
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$N_{R,II,k} =$	–	–	–	0,36	0,42	0,55	0,77	1,19	2,19																																																																																																																	
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers																																																																																																																										
Self-tapping screw									Annex 68																																																																																																																	
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$t_{N,II} =$	0,50	0,70	0,80	0,90	1,00	1,20	1,50	2,00	3,00																																																																																																																														
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		Drilling capacity see table below																																																																																																																							
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<table><tr><td>$t_{N,II} =$</td><td>1,20</td><td>1,50</td><td>2,00</td><td>2,50</td><td>3,00</td><td>4,00</td><td>5,00</td><td>6,00</td><td>$\geq 7,00$</td></tr><tr><td>$d_{pd} =$</td><td colspan="2">$\varnothing 4,5$</td><td colspan="3">$\varnothing 5,0$</td><td colspan="2">$\varnothing 5,3$</td><td colspan="2">$\varnothing 5,5$</td></tr><tr><td rowspan="8">$V_{R,k} \text{ for } t_{N,I} =$</td><td>0,50</td><td>0,79 –</td><td>0,83 –</td><td>0,83 –</td><td>0,83 –</td><td>0,83 –</td><td>0,83 –</td><td>0,83 –</td><td>0,83 –</td></tr><tr><td>0,60</td><td>0,79 –</td><td>1,00 –</td><td>1,00 –</td><td>1,00 –</td><td>1,00 –</td><td>1,00 –</td><td>1,00 –</td><td>1,00 –</td></tr><tr><td>0,70</td><td>0,79 –</td><td>1,00 –</td><td>1,16 –</td><td>1,16 –</td><td>1,16 –</td><td>1,16 –</td><td>1,16 –</td><td>1,16 –</td></tr><tr><td>0,80</td><td>0,79 –</td><td>1,00 –</td><td>1,33 –</td><td>1,33 –</td><td>1,33 –</td><td>1,33 –</td><td>1,33 –</td><td>1,33 –</td></tr><tr><td>0,90</td><td>0,79 –</td><td>1,00 –</td><td>1,33 –</td><td>1,50 –</td><td>1,50 –</td><td>1,50 –</td><td>1,50 –</td><td>1,50 –</td></tr><tr><td>1,00</td><td>0,80 –</td><td>1,00 –</td><td>1,33 –</td><td>1,66 –</td><td>1,66 –</td><td>1,66 –</td><td>1,66 –</td><td>1,66 –</td></tr><tr><td>1,20</td><td>0,87 –</td><td>1,06 –</td><td>1,37 –</td><td>1,68 –</td><td>2,00 –</td><td>2,00 –</td><td>2,00 –</td><td>2,00 –</td></tr><tr><td>1,50</td><td>0,87 –</td><td>1,22 –</td><td>1,50 –</td><td>1,79 –</td><td>2,07 –</td><td>2,49 –</td><td>2,49 –</td><td>2,49 –</td></tr><tr><td rowspan="2">$N_{R,II,k} =$</td><td>2,00</td><td>0,87 –</td><td>1,22 –</td><td>1,87 –</td><td>2,12 –</td><td>2,36 –</td><td>2,84 –</td><td>3,33 –</td><td>3,33 –</td></tr><tr><td></td><td>0,54</td><td>0,76</td><td>1,17</td><td>1,64</td><td>2,15</td><td>4,21</td><td>4,63</td><td>6,09</td></tr></table>										$t_{N,II} =$	1,20	1,50	2,00	2,50	3,00	4,00	5,00	6,00	$\geq 7,00$	$d_{pd} =$	$\varnothing 4,5$		$\varnothing 5,0$			$\varnothing 5,3$		$\varnothing 5,5$		$V_{R,k} \text{ for } t_{N,I} =$	0,50	0,79 –	0,83 –	0,83 –	0,83 –	0,83 –	0,83 –	0,83 –	0,83 –	0,60	0,79 –	1,00 –	1,00 –	1,00 –	1,00 –	1,00 –	1,00 –	1,00 –	0,70	0,79 –	1,00 –	1,16 –	1,16 –	1,16 –	1,16 –	1,16 –	1,16 –	0,80	0,79 –	1,00 –	1,33 –	1,33 –	1,33 –	1,33 –	1,33 –	1,33 –	0,90	0,79 –	1,00 –	1,33 –	1,50 –	1,50 –	1,50 –	1,50 –	1,50 –	1,00	0,80 –	1,00 –	1,33 –	1,66 –	1,66 –	1,66 –	1,66 –	1,66 –	1,20	0,87 –	1,06 –	1,37 –	1,68 –	2,00 –	2,00 –	2,00 –	2,00 –	1,50	0,87 –	1,22 –	1,50 –	1,79 –	2,07 –	2,49 –	2,49 –	2,49 –	$N_{R,II,k} =$	2,00	0,87 –	1,22 –	1,87 –	2,12 –	2,36 –	2,84 –	3,33 –	3,33 –		0,54	0,76	1,17	1,64	2,15	4,21	4,63	6,09
$t_{N,II} =$	1,20	1,50	2,00	2,50	3,00	4,00	5,00	6,00	$\geq 7,00$																																																																																																																
$d_{pd} =$	$\varnothing 4,5$		$\varnothing 5,0$			$\varnothing 5,3$		$\varnothing 5,5$																																																																																																																	
$V_{R,k} \text{ for } t_{N,I} =$	0,50	0,79 –	0,83 –	0,83 –	0,83 –	0,83 –	0,83 –	0,83 –	0,83 –																																																																																																																
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	1,20	0,87 –	1,06 –	1,37 –	1,68 –	2,00 –	2,00 –	2,00 –	2,00 –																																																																																																																
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$N_{R,II,k} =$	2,00	0,87 –	1,22 –	1,87 –	2,12 –	2,36 –	2,84 –	3,33 –	3,33 –																																																																																																																
		0,54	0,76	1,17	1,64	2,15	4,21	4,63	6,09																																																																																																																
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers																																																																																																																									
Self-tapping screw								Annex 70																																																																																																																	
SFS TDB - S - S16 - 6,3 x L																																																																																																																									
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$																																																																																																																									

		Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401 or 1.4547 Washer: stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: aluminum-Alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573																																																																																																																	
		Drilling capacity see table below																																																																																																																	
		Timber substructures no performance determined																																																																																																																	
<table><tr><td>$t_{N,II} =$</td><td>1,20</td><td>1,50</td><td>2,00</td><td>2,50</td><td>3,00</td><td>4,00</td><td>5,00</td><td>6,00</td><td>$\geq 7,00$</td></tr><tr><td>$d_{pd} =$</td><td colspan="2">$\varnothing 4,5$</td><td colspan="3">$\varnothing 5,0$</td><td colspan="2">$\varnothing 5,3$</td><td colspan="2">$\varnothing 5,5$</td></tr><tr><td rowspan="9">$V_{R,k} \text{ for } t_{N,II} =$</td><td>0,50</td><td>1,03 –</td><td>1,08 –</td><td>1,08 –</td><td>1,08 –</td><td>1,08 –</td><td>1,08 –</td><td>1,08 –</td><td>1,08 –</td></tr><tr><td>0,60</td><td>1,03 –</td><td>1,30 –</td><td>1,30 –</td><td>1,30 –</td><td>1,30 –</td><td>1,30 –</td><td>1,30 –</td><td>1,30 –</td></tr><tr><td>0,70</td><td>1,03 –</td><td>1,30 –</td><td>1,52 –</td><td>1,52 –</td><td>1,52 –</td><td>1,52 –</td><td>1,52 –</td><td>1,52 –</td></tr><tr><td>0,80</td><td>1,03 –</td><td>1,30 –</td><td>1,73 –</td><td>1,73 –</td><td>1,73 –</td><td>1,73 –</td><td>1,73 –</td><td>1,73 –</td></tr><tr><td>0,90</td><td>1,03 –</td><td>1,30 –</td><td>1,73 –</td><td>1,95 –</td><td>1,95 –</td><td>1,95 –</td><td>1,95 –</td><td>1,95 –</td></tr><tr><td>1,00</td><td>1,04 –</td><td>1,30 –</td><td>1,73 –</td><td>2,17 –</td><td>2,17 –</td><td>2,17 –</td><td>2,17 –</td><td>2,17 –</td></tr><tr><td>1,20</td><td>1,14 –</td><td>1,38 –</td><td>1,79 –</td><td>2,19 –</td><td>2,60 –</td><td>2,60 –</td><td>2,60 –</td><td>2,60 –</td></tr><tr><td>1,50</td><td>1,14 –</td><td>1,59 –</td><td>1,96 –</td><td>2,33 –</td><td>2,70 –</td><td>3,25 –</td><td>3,25 –</td><td>3,25 –</td></tr><tr><td>2,00</td><td>1,14 –</td><td>1,59 –</td><td>2,44 –</td><td>2,76 –</td><td>3,07 –</td><td>3,70 –</td><td>4,33 –</td><td>4,33 –</td></tr><tr><td>$N_{R,II,k} =$</td><td>0,71</td><td>0,99</td><td>1,53</td><td>2,13</td><td>2,80</td><td>5,48</td><td>6,03</td><td>7,93</td><td>7,93</td></tr></table>				$t_{N,II} =$	1,20	1,50	2,00	2,50	3,00	4,00	5,00	6,00	$\geq 7,00$	$d_{pd} =$	$\varnothing 4,5$		$\varnothing 5,0$			$\varnothing 5,3$		$\varnothing 5,5$		$V_{R,k} \text{ for } t_{N,II} =$	0,50	1,03 –	1,08 –	1,08 –	1,08 –	1,08 –	1,08 –	1,08 –	1,08 –	0,60	1,03 –	1,30 –	1,30 –	1,30 –	1,30 –	1,30 –	1,30 –	1,30 –	0,70	1,03 –	1,30 –	1,52 –	1,52 –	1,52 –	1,52 –	1,52 –	1,52 –	0,80	1,03 –	1,30 –	1,73 –	1,73 –	1,73 –	1,73 –	1,73 –	1,73 –	0,90	1,03 –	1,30 –	1,73 –	1,95 –	1,95 –	1,95 –	1,95 –	1,95 –	1,00	1,04 –	1,30 –	1,73 –	2,17 –	2,17 –	2,17 –	2,17 –	2,17 –	1,20	1,14 –	1,38 –	1,79 –	2,19 –	2,60 –	2,60 –	2,60 –	2,60 –	1,50	1,14 –	1,59 –	1,96 –	2,33 –	2,70 –	3,25 –	3,25 –	3,25 –	2,00	1,14 –	1,59 –	2,44 –	2,76 –	3,07 –	3,70 –	4,33 –	4,33 –	$N_{R,II,k} =$	0,71	0,99	1,53	2,13	2,80	5,48	6,03	7,93	7,93
$t_{N,II} =$	1,20	1,50	2,00	2,50	3,00	4,00	5,00	6,00	$\geq 7,00$																																																																																																										
$d_{pd} =$	$\varnothing 4,5$		$\varnothing 5,0$			$\varnothing 5,3$		$\varnothing 5,5$																																																																																																											
$V_{R,k} \text{ for } t_{N,II} =$	0,50	1,03 –	1,08 –	1,08 –	1,08 –	1,08 –	1,08 –	1,08 –	1,08 –																																																																																																										
	0,60	1,03 –	1,30 –	1,30 –	1,30 –	1,30 –	1,30 –	1,30 –	1,30 –																																																																																																										
	0,70	1,03 –	1,30 –	1,52 –	1,52 –	1,52 –	1,52 –	1,52 –	1,52 –																																																																																																										
	0,80	1,03 –	1,30 –	1,73 –	1,73 –	1,73 –	1,73 –	1,73 –	1,73 –																																																																																																										
	0,90	1,03 –	1,30 –	1,73 –	1,95 –	1,95 –	1,95 –	1,95 –	1,95 –																																																																																																										
	1,00	1,04 –	1,30 –	1,73 –	2,17 –	2,17 –	2,17 –	2,17 –	2,17 –																																																																																																										
	1,20	1,14 –	1,38 –	1,79 –	2,19 –	2,60 –	2,60 –	2,60 –	2,60 –																																																																																																										
	1,50	1,14 –	1,59 –	1,96 –	2,33 –	2,70 –	3,25 –	3,25 –	3,25 –																																																																																																										
	2,00	1,14 –	1,59 –	2,44 –	2,76 –	3,07 –	3,70 –	4,33 –	4,33 –																																																																																																										
$N_{R,II,k} =$	0,71	0,99	1,53	2,13	2,80	5,48	6,03	7,93	7,93																																																																																																										
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers																																																																																																																			
Self-tapping screw			Annex 71																																																																																																																
SFS TDB - S - S16 - 6,3 x L																																																																																																																			
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$																																																																																																																			

	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401, 1.4567 or 1.4578 Washer: stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: S235 or S275 - EN 10025-1 S280GD, S320GD or S350GD - EN 10346 Drilling capacity $\Sigma t_i \leq 3,00 \text{ mm}$ Timber substructures no performance determined
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$t_{N,II} =$	0,75		0,88		1,00		1,13		1,25		1,50		1,75		2,00		2,50		
$M_{t,nom} =$																			
$V_{R,k}$ for $t_{N,I} =$	0,50	0,56	ac	0,73	ac	0,78	ac	0,78	ac	0,78	ac	0,78	ac	0,78	ac	0,78	ac	0,78	a
	0,60	0,76	ac	0,86	ac	0,92	ac	0,92	ac	0,93	ac	0,97	ac	0,98	ac	0,98	a	—	—
	0,70	0,96	ac	0,98	ac	1,06	ac	1,06	ac	1,07	ac	1,16	ac	1,17	a	1,18	a	—	—
	0,80	1,06	ac	1,11	ac	1,20	ac	1,20	ac	1,22	ac	1,35	a	1,37	a	1,38	a	—	—
	0,90	1,06	ac	1,24	ac	1,34	ac	1,34	ac	1,37	a	1,54	a	1,57	a	1,59	a	—	—
	1,00	1,06	ac	1,36	ac	1,48	ac	1,48	a	1,51	a	1,73	a	1,76	a	1,79	a	—	—
	1,20	1,06	a	1,36	a	1,48	a	1,64	a	1,80	a	2,11	a	2,15	a	—	—	—	—
	1,50	1,06	a	1,36	a	1,48	a	1,64	a	1,80	a	2,11	a	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,II,k} =$	1,14 ^{a)}		1,66 ^{a)}		1,81 ^{a)}		2,10		2,38		3,14		3,86		4,57		5,71		

- Index a: If component t_{II} is made of S320GD or S350GD the value may be increased by 8,0%
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw	Annex 72
SFS SX3 - A12 (S12) - 6,0 x L, SFS SX3 - L12 - A12 (S12) - 6,0 x L, SFS SX3 - D12 - A12 (S12) - 6,0 x L with hexagon head, torx head or Irius® drive system and sealing washer $\geq \varnothing 12 \text{ mm}$	

	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401, 1.4567 or 1.4578 Washer: aluminum-alloy AW-Almg3 - EN 485, stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: S235 or S275 - EN 10025-1 S280GD, S320GD or S350GD - EN 10346 Drilling capacity $\Sigma t_i \leq 3,00 \text{ mm}$ Timber substructures no performance determined
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$t_{N,II} =$	0,75		0,88		1,00		1,13		1,25		1,50		1,75		2,00		2,50		
$M_{t,nom} =$																			
$V_{R,k}$ for $t_{N,I} =$	0,50	0,74	ac	0,95	ac	1,02	ac	1,02	ac	1,02	ac	1,02	ac	1,02	ac	1,02	ac	1,02	a
	0,60	0,99	ac	1,11	ac	1,20	ac	1,20	ac	1,21	ac	1,27	ac	1,27	ac	1,28	a	—	—
	0,70	1,25	ac	1,28	ac	1,38	ac	1,38	ac	1,40	ac	1,51	ac	1,53	a	1,54	a	—	—
	0,80	1,37	ac	1,44	ac	1,57	ac	1,57	ac	1,59	ac	1,76	a	1,78	a	1,80	a	—	—
	0,90	1,37	ac	1,61	ac	1,75	ac	1,75	ac	1,78	a	2,01	a	2,04	a	2,07	a	—	—
	1,00	1,37	ac	1,77	ac	1,93	ac	1,93	a	1,96	a	2,26	a	2,29	a	2,33	a	—	—
	1,20	1,37	a	1,77	a	1,93	a	2,14	a	2,34	a	2,75	a	2,80	a	—	—	—	—
	1,50	1,37	a	1,77	a	1,93	a	2,14	a	2,34	a	2,75	a	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,I,II,k} =$	1,14 ^{a)}		1,66 ^{a)}		1,81 ^{a)}		2,10		2,38		3,14		3,86		4,57		5,71		

- Index a: If component t_{II} is made of S320GD or S350GD the value may be increased by 8,0%
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw	Annex 73
SFS SX3 - A12 (S12) - 6,0 x L, SFS SX3 - L12 - A12 (S12) - 6,0 x L, SFS SX3 - D12 - A12 (S12) - 6,0 x L with hexagon head, torx head or Irius® drive system and sealing washer $\geq \varnothing 12 \text{ mm}$	

	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401, 1.4567 or 1.4578 Washer: aluminum-alloy AW-Almg3 - EN 485, stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: S280GD, S320GD or S350GD - EN 10346 Drilling-capacity: $\Sigma t_i \leq 4,00 \text{ mm}$ Timber substructures no performance determined
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$t_{N,II} =$	2x0,63	2x0,75	2x0,88	2x1,00	2x1,13	2x1,25	2x1,50	—	—
$M_{t,nom} =$									
$V_{R,k} \text{ for } t_{N,I} =$	0,50	0,65 ac	0,70 ac	0,75 ac	0,78 ac	0,78 ac	0,78 ac	0,78 ac	— — — —
	0,60	0,65 ac	1,02 ac	1,07 ac	1,10 ac	1,10 ac	1,10 ac	1,10 a	— — — —
	0,70	0,65 ac	1,18 ac	1,39 ac	1,42 ac	1,42 ac	1,42 ac	1,42 a	— — — —
	0,80	0,65 ac	1,18 ac	1,71 ac	1,74 ac	1,74 ac	1,74 a	1,74 a	— — — —
	0,90	0,65 ac	1,18 ac	1,71 ac	1,90 ac	1,90 a	1,90 a	1,90 a	— — — —
	1,00	0,65 ac	1,18 ac	1,71 ac	2,06 ac	2,06 a	2,06 a	2,06 a	— — — —
	1,20	0,65 ac	1,18 ac	1,71 a	2,06 a	2,06 a	2,06 a	— —	— — — —
	1,50	0,65 ac	1,18 a	1,71 a	2,06 a	2,06 a	2,06 a	— —	— — — —
	2,00	— —	— —	— —	— —	— —	— —	— —	— — — —
$N_{R,II,k} =$	1,40 ^{a)}	1,98 ^{a)}	2,61 ^{a)}	3,19 ^{a)}	3,78	4,37	5,82	—	—

- Index a: If component t_{II} is made of S320GD or S350GD the value may be increased by 8,0%
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw	Annex 74
SFS SX3 - A12 (S12) - 6,0 x L, SFS SX3 - L12 - A12 (S12) - 6,0 x L, SFS SX3 - D12 - A12 (S12) - 6,0 x L with hexagon head, torx head or Irius[®] drive system and sealing washer $\geq \varnothing 12 \text{ mm}$	

	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401, 1.4567 or 1.4578 Washer: aluminum-alloy AW-Almg3 - EN 485, stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: S280GD, S320GD or S350GD - EN 10346 Drilling capacity $\Sigma t_i \leq 4,00 \text{ mm}$ Timber substructures no performance determined
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$t_{N,II} =$	2x0,63		2x0,75		2x0,88		2x1,00		2x1,13		2x1,25		2x1,50		—		—		
$M_{t,nom} =$																			
$V_{R,k}$ for $t_{N,I} =$	0,50	0,85	ac	0,92	ac	0,98	ac	1,02	ac	1,02	ac	1,02	ac	1,02	ac	—	—	—	—
	0,60	0,85	ac	1,33	ac	1,40	ac	1,44	ac	1,44	ac	1,44	ac	1,44	a	—	—	—	—
	0,70	0,85	ac	1,33	ac	1,81	ac	1,85	ac	1,85	ac	1,85	ac	1,85	a	—	—	—	—
	0,80	0,85	ac	1,33	ac	2,22	ac	2,27	ac	2,27	ac	2,27	a	2,27	a	—	—	—	—
	0,90	0,85	ac	1,33	ac	2,22	ac	2,48	ac	2,48	a	2,48	a	2,48	a	—	—	—	—
	1,00	0,85	ac	1,33	ac	2,22	ac	2,68	ac	2,68	a	2,68	a	2,68	a	—	—	—	—
	1,20	0,85	ac	1,33	ac	2,22	a	2,68	a	2,68	a	2,72	a	—	—	—	—	—	—
	1,50	0,85	ac	1,33	a	2,22	a	2,68	a	2,68	a	2,72	a	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
$N_{R,II,k} =$	1,40 ^{a)}		1,98 ^{a)}		2,61 ^{a)}		3,19 ^{a)}		3,78		4,37		5,82		—		—		

- Index a: If component t_{II} is made of S320GD or S350GD the value may be increased by 8,0%
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw	Annex 75
SFS SX3 - A12 (S12) - 6,0 x L, SFS SX3 - L12 - A12 (S12) - 6,0 x L, SFS SX3 - D12 - A12 (S12) - 6,0 x L with hexacon head, torx head or Irius[®] drive system and sealing washer $\geq \varnothing 12 \text{ mm}$	

	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401, 1.4567 or 1.4578 Washer: aluminum-alloy AW-Almg3 - EN 485, stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: S235, S275, S355 - EN 10025-1 S280GD, S320GD or S350GD - EN 10346 Drilling capacity $\Sigma t_i \leq 5,00 \text{ mm}$ Timber substructures no performance determined
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$t_{N,II} =$	1,50			1,75			2,00			2,50			3,00			4,00			5,00			6,00			7,00		
$M_{t,nom} =$																											
$V_{R,k}$ for $t_{N,I} =$	0,50	0,70	ac	0,80	ac	0,89	ac	0,89	ac	0,89	ac	0,89	ac	—	—	—	—	—	—	—	—	—	—	—	—	—	
	0,60	0,95	ac	1,01	ac	1,07	ac	1,07	ac	1,07	ac	1,07	a	—	—	—	—	—	—	—	—	—	—	—	—		
	0,70	1,19	ac	1,23	ac	1,26	ac	1,26	ac	1,26	ac	1,26	a	—	—	—	—	—	—	—	—	—	—	—	—		
	0,80	1,44	ac	1,44	ac	1,44	ac	1,44	ac	1,44	ac	1,44	a	—	—	—	—	—	—	—	—	—	—	—	—		
	0,90	1,55	ac	1,55	ac	1,55	ac	1,55	ac	1,58	ac	1,63	a	—	—	—	—	—	—	—	—	—	—	—	—		
	1,00	1,66	ac	1,66	ac	1,66	ac	1,66	ac	1,72	ac	1,82	a	—	—	—	—	—	—	—	—	—	—	—	—		
	1,20	1,66	ac	1,72	ac	1,77	ac	1,88	ac	1,99	a	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	1,50	1,66	ac	1,72	ac	1,77	ac	1,88	a	1,99	a	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	2,00	1,66	a	1,72	a	1,77	a	1,88	a	1,99	a	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
$N_{R,II,k} =$	1,88			2,38			2,87			4,34			5,81			7,28			—			—			—		

- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

SFS SX5 - A12 (S12) - 5,5 x L, SFS SX5 - L12 - A12 (S12) - 5,5 x L,
SFS SX5 - D12 - A12 (S12) - 5,5 x L
with hexagon head, torx head or Irius® drive system and sealing washer $\geq \varnothing 12 \text{ mm}$

Annex 76

	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401, 1.4567 or 1.4578 Washer: aluminum-alloy AW-Almg3 - EN 485, stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: S235, S275, S355 - EN 10025-1 S280GD, S320GD or S350GD - EN 10346 Drilling capacity $\Sigma t_i \leq 5,00 \text{ mm}$ Timber substructures no performance determined
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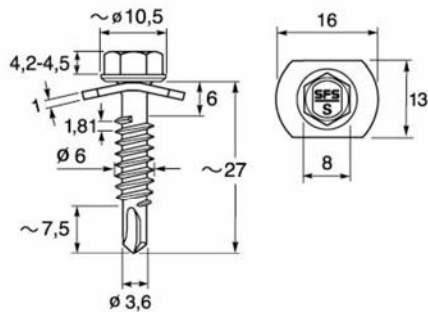
$t_{N,II} =$	1,50			1,75			2,00			2,50			3,00			4,00			5,00			6,00			7,00		
$M_{t,nom} =$																											
$V_{R,k}$ for $t_{N,I} =$	0,50	0,91	ac	1,03	ac	1,16	ac	1,16	ac	1,16	ac	1,16	ac	—	—	—	—	—	—	—	—	—	—	—	—		
	0,60	1,23	ac	1,31	ac	1,40	ac	1,40	ac	1,40	ac	1,40	a	—	—	—	—	—	—	—	—	—	—	—			
	0,70	1,56	ac	1,60	ac	1,64	ac	1,64	ac	1,64	ac	1,64	a	—	—	—	—	—	—	—	—	—	—	—			
	0,80	1,88	ac	1,88	ac	1,88	ac	1,88	ac	1,88	ac	1,88	a	—	—	—	—	—	—	—	—	—	—	—			
	0,90	2,03	ac	2,03	ac	2,03	ac	2,03	ac	2,06	ac	2,13	a	—	—	—	—	—	—	—	—	—	—	—			
	1,00	2,17	ac	2,17	ac	2,17	ac	2,17	ac	2,24	ac	2,38	a	—	—	—	—	—	—	—	—	—	—	—			
	1,20	2,17	ac	2,24	ac	2,31	ac	2,46	ac	2,60	a	—	—	—	—	—	—	—	—	—	—	—	—				
	1,50	2,17	ac	2,24	ac	2,31	ac	2,46	a	2,60	a	—	—	—	—	—	—	—	—	—	—	—	—				
	2,00	2,17	a	2,24	a	2,31	a	2,46	a	2,60	a	—	—	—	—	—	—	—	—	—	—	—	—				
$N_{R,II,k} =$	1,88			2,38			2,87			4,34			5,81			7,28			—			—			—		

- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

SFS SX5 - A12 (S12) - 5,5 x L, SFS SX5 - L12 - A12 (S12) - 5,5 x L,
SFS SX5 - D12 - A12 (S12) - 5,5 x L
with hexagon head, torx head or Irius® drive system and sealing washer $\geq \varnothing 12 \text{ mm}$

Annex 77



Materials

Fastener: stainless steel, EN 10088
material-Nr. 1.4301

Washer: stainless steel, EN 10088
material-Nr. 1.4301

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

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

Drilling capacity $\Sigma t_i \leq 3,90 \text{ mm}$

Timber substructures

no performance determined

$t_{N,II} =$	0,60		0,63		0,75		0,88		1,00		1,13		1,25		1,50		2,00		
$M_{t,nom} =$																			
$V_{R,k} \text{ for } t_{N,I} =$	0,80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	1,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	1,20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	1,50	1,20	ac	1,20	ac	1,40	ac	1,57	ac	1,74	ac	1,76	ac	1,77	ac	1,77	ac	1,77	ac
	2,00	1,20	ac	1,20	ac	1,83	ac	2,04	ac	2,25	ac	2,41	ac	2,57	ac	2,88	ac	2,88	ac
	2,50	1,20	ac	1,20	ac	1,83	ac	2,43	ac	2,43	ac	2,50	ac	2,57	ac	—	—	—	—
	3,00	1,20	ac	1,20	ac	2,01	ac	2,81	ac	—	—	—	—	—	—	—	—	—	
	3,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
4,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
$N_{R,II,k} =$	0,79		0,82		1,15		1,49		1,82		2,17		2,51		3,21		3,21		

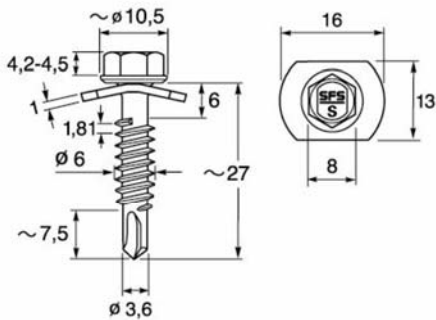
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

SFS SL3/2 - 5 - S - SV16 - 6,0 x L

with thread free zone, hexagon head and SV washer 13 x 16 mm

Annex 78



Materials

Fastener: stainless steel, EN 10088
material-Nr. 1.4301

Washer: stainless steel, EN 10088
material-Nr. 1.4301

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

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

Drilling capacity $\Sigma t_i \leq 3,90 \text{ mm}$

Timber substructures

no performance determined

$t_{N,II} =$	0,60	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00										
$M_{t,nom} =$																			
$V_{R,k}$ for $t_{N,I} =$	0,80	—	—	—	—	—	—	—	—	—									
	1,00	—	—	—	—	—	—	—	—	—									
	1,20	—	—	—	—	—	—	—	—	—									
	1,50	1,20	ac	1,20	ac	1,60	ac	1,93	ac	2,26	ac	2,28	ac	2,30	ac	2,30	ac	2,30	ac
	2,00	1,20	ac	1,20	ac	1,83	ac	2,35	ac	2,87	ac	3,09	ac	3,31	ac	3,75	ac	3,75	ac
	2,50	1,20	ac	1,20	ac	1,83	ac	2,58	ac	2,87	ac	3,09	—	3,31	—	—	—	—	—
	3,00	1,20	ac	1,20	ac	2,01	ac	2,81	ac	—	—	—	—	—	—	—	—	—	—
	3,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4,00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
$N_{R,II,k} =$	0,79	0,82	1,15	1,49	1,82	2,17	2,51	3,21	3,21										

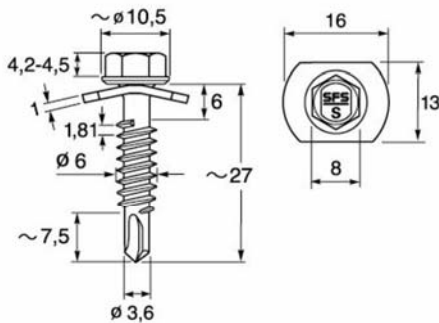
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

SFS SL3/2 - 5 - S - SV16 - 6,0 x L

with thread free zone, hexagon head and SV washer 13 x 16 mm

Annex 79

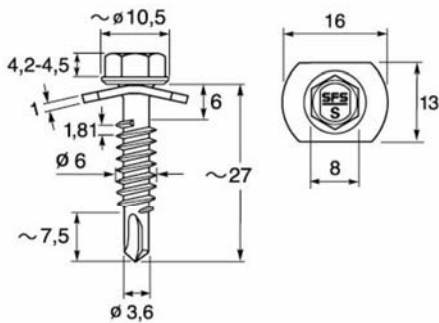


no performance determined

$t_{N,II} =$	—	—	2x0,75	2x0,88	2x1,00	2x1,13	2x1,25	—	—
$M_{t,nom} =$									
$V_{R,k}$ for $t_{N,I} =$	0,80	—	—	—	—	—	—	—	—
	1,00	—	—	—	—	—	—	—	—
	1,20	—	—	—	—	—	—	—	—
	1,50	—	—	—	—	—	—	—	—
	2,00	—	—	—	—	—	—	—	—
	2,50	—	—	—	—	—	—	—	—
	3,00	—	—	—	—	—	—	—	—
	3,50	—	—	—	—	—	—	—	—
4,00	—	—	—	—	—	—	—	—	
$N_{R,II,k} =$	—	—	2,43	2,94	3,45	3,92	4,38	—	—

- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

with thread free zone, hexagon head and SV washer 13 x 16 mm



Materials

Fastener: stainless steel, EN 10088
material-Nr. 1.4301

Washer: stainless steel, EN 10088
material-Nr. 1.4301

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

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

Drilling capacity $\Sigma t_i \leq 3,90 \text{ mm}$

Timber substructures

no performance determined

$t_{N,II} =$	—	—	2x0,75	2x0,88	2x1,00	2x1,13	2x1,25	—	—
$M_{t,nom} =$									
$V_{R,k}$ for $t_{N,II} =$	0,80	—	—	—	—	—	—	—	—
1,00	—	—	—	—	—	—	—	—	—
1,20	—	—	—	—	—	—	—	—	—
1,50	—	—	—	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—	—
2,50	—	—	—	—	—	—	—	—	—
3,00	—	—	—	—	—	—	—	—	—
3,50	—	—	—	—	—	—	—	—	—
4,00	—	—	—	—	—	—	—	—	—
$N_{R,II,k} =$	—	—	2,43	2,94	3,45	3,92	4,38	—	—

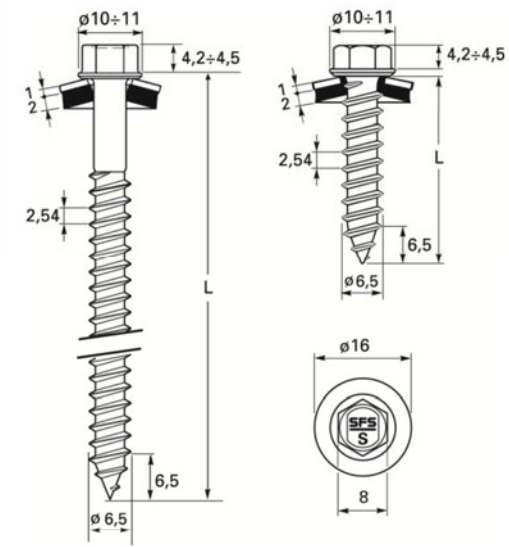
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

SFS SL3/2 - 5 - S - SV16 - 6,0 x L

with thread free zone, hexagon head and SV washer 13 x 16 mm

Annex 81

	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401 or 1.4547 Washer: stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: S235 - EN 10025-1 S280GD, S320GD or S350GD - EN 10346
	Drilling capacity see table below
	Timber substructures see Annex 56

$t_{N,II} =$	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00	3,00
$d_{pd} =$	Ø 3,5	Ø 4,0	Ø 4,5				Ø 5,0		
$V_{R,k} \text{ for } t_{N,I} =$	0,50	0,35 –	0,44 –	0,55 –	0,65 –	0,76 –	0,86 –	0,86 –	0,86 –
	0,60	0,35 –	0,44 –	0,55 –	0,65 –	0,76 –	0,86 –	1,03 –	1,03 –
	0,70	0,35 –	0,44 –	0,55 –	0,65 –	0,76 –	0,86 –	1,03 –	1,20 –
	0,80	0,35 –	0,44 –	0,55 –	0,65 –	0,76 –	0,86 –	1,03 –	1,37 –
	0,90	0,35 –	0,44 –	0,56 –	0,65 –	0,76 –	0,86 –	1,03 –	1,37 –
	1,00	0,35 –	0,44 –	0,56 –	0,67 –	0,76 –	0,86 –	1,03 –	1,37 –
	1,20	0,35 –	0,44 –	0,56 –	0,67 –	0,81 –	0,92 –	1,08 –	1,41 –
	1,50	0,35 –	0,44 –	0,56 –	0,67 –	0,81 –	0,94 –	1,24 –	1,53 –
	2,00	0,35 –	0,44 –	0,56 –	0,67 –	0,81 –	0,94 –	1,24 –	1,90 –
$N_{R,II,k} =$	1,00	1,20	1,40	1,50 ¹⁾	1,70	1,90	2,30 ²⁾	3,80	5,60

- Index 1): If predrill diameter $d_{pd} = 4,0 \text{ mm}$ the values $N_{R,II,k}$ may be increased by 7,0%

- Index 2): If predrill diameter $d_{pd} = 4,5 \text{ mm}$ the values $N_{R,II,k}$ may be increased by 15,0%

- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-tapping screw	Annex 82
SFS TDA - S - S16 - 6,5 x L	
with hexagon head and sealing washer $\geq \text{Ø } 16 \text{ mm}$	

	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401 or 1.4547 Washer: stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: S235 - EN 10025-1 S280GD, S320GD or S350GD - EN 10346
	Drilling capacity see table below
	Timber substructures see Annex 56

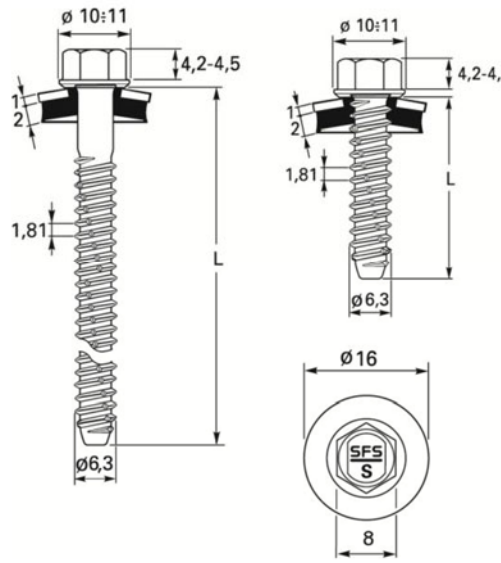
$t_{N,II} =$	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00	3,00
$d_{pd} =$	Ø 3,5	Ø 4,0	Ø 4,5				Ø 5,0		
$V_{R,k} \text{ for } t_{N,I} =$	0,50	0,45 –	0,58 –	0,72 –	0,85 –	0,99 –	1,12 –	1,12 –	1,12 –
	0,60	0,45 –	0,58 –	0,72 –	0,85 –	0,99 –	1,12 –	1,34 –	1,34 –
	0,70	0,45 –	0,58 –	0,72 –	0,85 –	0,99 –	1,12 –	1,34 –	1,57 –
	0,80	0,45 –	0,58 –	0,72 –	0,85 –	0,99 –	1,12 –	1,34 –	1,79 –
	0,90	0,45 –	0,58 –	0,72 –	0,85 –	0,99 –	1,12 –	1,34 –	1,78 –
	1,00	0,45 –	0,58 –	0,72 –	0,88 –	1,05 –	1,12 –	1,34 –	2,01 –
	1,20	0,45 –	0,58 –	0,72 –	0,88 –	1,05 –	1,20 –	1,41 –	2,68 –
	1,50	0,45 –	0,58 –	0,72 –	0,88 –	1,05 –	1,23 –	1,61 –	2,77 –
$N_{R,II,k} =$	1,00	1,20	1,40	1,50 ¹⁾	1,70	1,90	2,30 ²⁾	3,80	5,60

- Index 1): If predrill diameter $d_{pd} = 4,0 \text{ mm}$ the values $N_{R,II,k}$ may be increased by 7,0%

- Index 2): If predrill diameter $d_{pd} = 4,5 \text{ mm}$ the values $N_{R,II,k}$ may be increased by 15,0%

- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

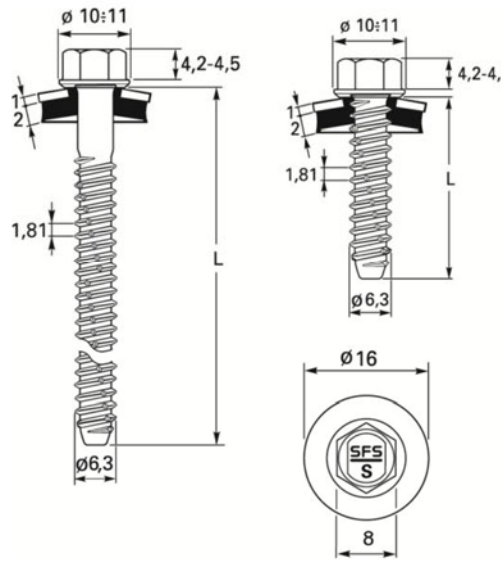
Self-tapping screw	Annex 83
SFS TDA - S - S16 - 6,5 x L	
with hexagon head and sealing washer $\geq \text{Ø } 16 \text{ mm}$	

	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401 or 1.4547 Washer: stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: S235 - EN 10025-1 S280GD, S320GD or S350GD - EN 10346 Drilling capacity see table below Timber substructures no performance determined
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$t_{N,II} =$	1,25		1,50		2,00		2,50		3,00		4,00		5,00		6,00		8,0 - 10,0		$\geq 10,00^a$		
$d_{pd} =$	$\varnothing 5,0$				$\varnothing 5,3$										$\varnothing 5,5$		$\varnothing 5,7$		$\varnothing 5,8$		
$V_{R,k}$ for $t_{N,I} =$	0,50	0,83	—	0,83	—	0,83	—	0,83	—	0,83	—	0,83	—	0,83	—	0,83	—	0,83	—	0,83	—
	0,60	0,83	—	1,00	—	1,00	—	1,00	—	1,00	—	1,00	—	1,00	—	1,00	—	1,00	—	1,00	—
	0,70	0,83	—	1,00	—	1,16	—	1,16	—	1,16	—	1,16	—	1,16	—	1,16	—	1,16	—	1,16	—
	0,80	0,83	—	1,00	—	1,33	—	1,33	—	1,33	—	1,33	—	1,33	—	1,33	—	1,33	—	1,33	—
	0,90	0,83	—	1,00	—	1,33	—	1,50	—	1,50	—	1,50	—	1,50	—	1,50	—	1,50	—	1,50	—
	1,00	0,83	—	1,00	—	1,33	—	1,66	—	1,66	—	1,66	—	1,66	—	1,66	—	1,66	—	1,66	—
	1,20	0,90	—	1,06	—	1,37	—	1,68	—	2,00	—	2,00	—	2,00	—	2,00	—	2,00	—	2,00	—
	1,50	0,93	—	1,22	—	1,50	—	1,79	—	2,07	—	2,49	—	2,49	—	2,49	—	2,49	—	2,49	—
	2,00	0,93	—	1,22	—	1,87	—	2,12	—	2,36	—	2,84	—	3,33	—	3,33	—	3,33	—	3,33	—
$N_{R,II,k} =$	2,00		2,70		3,60		3,60		6,00		7,30		7,30		7,60		7,60		7,60		

- Index a): only for component II made of S235 or S280GD
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-tapping screw SFS TDB - S - S16 - 6,3 x L with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$	Annex 84
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	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401 or 1.4547 Washer: stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: S235 - EN 10025-1 S280GD, S320GD or S350GD - EN 10346 Drilling capacity see table below Timber substructures no performance determined
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$t_{N,II} =$	1,25		1,50		2,00		2,50		3,00		4,00		5,00		6,00		8,0 - 10,0		$\geq 10,00^a$		
$d_{pd} =$	$\varnothing 4,5$				$\varnothing 5,3$										$\varnothing 5,5$		$\varnothing 5,7$		$\varnothing 5,8$		
$V_{R,k}$ for $t_{N,I} =$	0,50	1,08	—	1,08	—	1,08	—	1,08	—	1,08	—	1,08	—	1,08	—	1,08	—	1,08	—	1,08	—
	0,60	1,08	—	1,30	—	1,30	—	1,30	—	1,30	—	1,30	—	1,30	—	1,30	—	1,30	—	1,30	—
	0,70	1,08	—	1,30	—	1,52	—	1,52	—	1,52	—	1,52	—	1,52	—	1,52	—	1,52	—	1,52	—
	0,80	1,08	—	1,30	—	1,73	—	1,73	—	1,73	—	1,73	—	1,73	—	1,73	—	1,73	—	1,73	—
	0,90	1,08	—	1,30	—	1,73	—	1,95	—	1,95	—	1,95	—	1,95	—	1,95	—	1,95	—	1,95	—
	1,00	1,08	—	1,30	—	1,73	—	2,17	—	2,17	—	2,17	—	2,17	—	2,17	—	2,17	—	2,17	—
	1,20	1,18	—	1,38	—	1,79	—	2,19	—	2,60	—	2,60	—	2,60	—	2,60	—	2,60	—	2,60	—
	1,50	1,21	—	1,59	—	1,96	—	2,33	—	2,70	—	3,25	—	3,25	—	3,25	—	3,25	—	3,25	—
	2,00	1,21	—	1,59	—	2,44	—	2,76	—	3,07	—	3,70	—	4,33	—	4,33	—	4,33	—	4,33	—
$N_{R,I,k} =$	2,00		2,70		3,60		3,60		6,00		7,30		7,30		7,60		7,60		7,60		

- Index a): only for component II made of S235 or S280GD
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-tapping screw SFS TDB - S - S16 - 6,3 x L with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$	Annex 85
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	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4567 or 1.4401 Washer: stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: structural 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 $l_{ef} \geq 26,0 \text{ mm}$
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$L_{ef} =$	26	32	39	45	52	58	64	71	78	
$M_{t,nom} =$										
$V_{R,k} \text{ for } t_{N,I} =$	0,50	0,86 –	0,86 –	0,86 –	0,86 –	0,86 –	0,86 –	0,86 –	0,86 –	0,86
	0,60	1,03 –	1,03 –	1,03 –	1,03 –	1,03 –	1,03 –	1,03 –	1,03 –	1,03
	0,70	1,06 –	1,20 –	1,20 –	1,20 –	1,20 –	1,20 –	1,20 –	1,20 –	1,20
	0,80	1,06 –	1,31 –	1,37 –	1,37 –	1,37 –	1,37 –	1,37 –	1,37 –	1,37
	0,90	1,06 –	1,31 –	1,54 –	1,54 –	1,54 –	1,54 –	1,54 –	1,54 –	1,54
	1,00	1,06 –	1,31 –	1,60 –	1,72 –	1,72 –	1,72 –	1,72 –	1,72 –	1,72
	1,20	1,06 –	1,31 –	1,60 –	1,84 –	2,06 –	2,06 –	2,06 –	2,06 –	2,06
	1,50	1,06 –	1,31 –	1,60 –	1,84 –	2,13 –	2,37 –	2,46 –	2,55 –	2,57
	2,00	1,06 –	1,31 –	1,60 –	1,84 –	2,13 –	2,37 –	2,46 –	2,55 –	2,64
$N_{R,II,k} =$		1,30	1,60	1,95	2,26	2,61	2,91	3,21	3,56	3,91

bearing resistance of comp. I

- The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

SFS SXW - S16 - 6,5 x L, SFS SXW - L12 - S16 - 6,5 x L

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

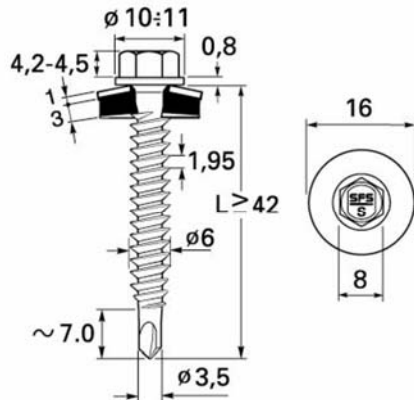
Annex 86

	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4567 or 1.4401 Washer: stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: structural 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 $l_{ef} \geq 26,0 \text{ mm}$
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$L_{ef} =$	26	32	39	45	52	58	64	71	78		
$M_{t,nom} =$											
$V_{R,k}$ for $t_{N,I} =$	0,50	1,06 –	1,12 –	1,12 –	1,12 –	1,12 –	1,12 –	1,12 –	1,12 –	1,12 –	1,12
	0,60	1,06 –	1,31 –	1,34 –	1,34 –	1,34 –	1,34 –	1,34 –	1,34 –	1,34 –	1,34
	0,70	1,06 –	1,31 –	1,57 –	1,57 –	1,57 –	1,57 –	1,57 –	1,57 –	1,57 –	1,57
	0,80	1,06 –	1,31 –	1,60 –	1,79 –	1,79 –	1,79 –	1,79 –	1,79 –	1,79 –	1,79
	0,90	1,06 –	1,31 –	1,60 –	1,84 –	2,01 –	2,01 –	2,01 –	2,01 –	2,01 –	2,01
	1,00	1,06 –	1,31 –	1,60 –	1,84 –	2,13 –	2,24 –	2,24 –	2,24 –	2,24 –	2,24
	1,20	1,06 –	1,31 –	1,60 –	1,84 –	2,13 –	2,37 –	2,46 –	2,55 –	2,64 –	2,68
	1,50	1,06 –	1,31 –	1,60 –	1,84 –	2,13 –	2,37 –	2,46 –	2,55 –	2,64 –	3,35
	2,00	1,06 –	1,31 –	1,60 –	1,84 –	2,13 –	2,37 –	2,46 –	2,55 –	2,64 –	4,47
$N_{R,II,k} =$	1,30	1,61	1,96	2,26	2,61	2,91	3,21	3,56	3,91		

- The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw SFS SXW - S16 - 6,5 x L, SFS SXW - L12 - S16 - 6,5 x L with hexagon head or irius® drive system and sealing washer $\geq \varnothing 16 \text{ mm}$	Annex 87
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Materials

Fastener: stainless steel, EN 10088
material-Nr. 1.4301

Washer: stainless steel, EN 10088
material-Nr. 1.4301 with vulcanized EPDM

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

Component II: structural timber - EN 14081

Drilling capacity

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

Timber substructures

performance determined with

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

$f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 24,0 \text{ mm}$

$L_{ef} =$	24		25		26		27		28		29		30		31		32				
$M_{t,nom} =$																					
$V_{R,k}$ for $t_{N,I} =$	0,50	0,59	—	0,59	—	0,59	—	0,59	—	0,59	—	0,59	—	0,59	—	0,59	—	0,59	—	0,59	bearing resistance of comp. I
	0,60	0,80	—	0,80	—	0,80	—	0,80	—	0,80	—	0,80	—	0,80	—	0,80	—	0,80	—	0,80	
	0,70	0,96	—	1,00	—	1,01	—	1,01	—	1,01	—	1,01	—	1,01	—	1,01	—	1,01	—	1,01	
	0,80	0,96	—	1,00	—	1,04	—	1,08	—	1,12	—	1,14	—	1,14	—	1,14	—	1,14	—	1,14	
	0,90	0,96	—	1,00	—	1,04	—	1,08	—	1,12	—	1,16	—	1,20	—	1,24	—	1,26	—	1,26	
	1,00	0,96	—	1,00	—	1,04	—	1,08	—	1,12	—	1,16	—	1,20	—	1,24	—	1,26	—	1,26	
	1,20	0,96	—	1,00	—	1,04	—	1,08	—	1,12	—	1,16	—	1,20	—	1,24	—	1,26	—	1,26	
	1,50	0,96	—	1,00	—	1,04	—	1,08	—	1,12	—	1,16	—	1,20	—	1,24	—	1,26	—	1,26	
2,00	0,96	—	1,00	—	1,04	—	1,08	—	1,12	—	1,16	—	1,20	—	1,24	—	1,26	—	1,26		
$N_{R,II,k} =$	1,27		1,32		1,38		1,43		1,48		1,53		1,59		1,64		1,69				

bearing resistance of comp. I

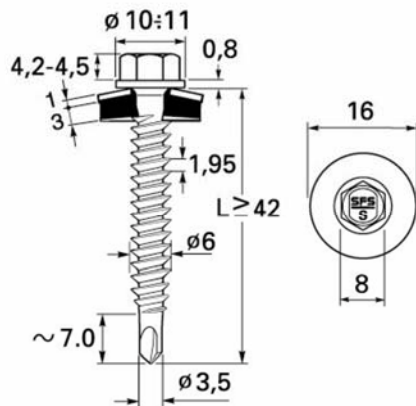
- The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

SFS SW2 - S - S16 - 6 x L

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

Annex 88



Materials

Fastener: stainless steel, EN 10088
material-Nr. 1.4301

Washer: stainless steel, EN 10088
material-Nr. 1.4301 with vulcanized EPDM

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

Component II: structural timber - EN 14081

Drilling capacity

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

Timber substructures

performance determined with

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

$f_{ax,k} = 9,800 \text{ N/mm}^2$ for $l_{ef} \geq 24,0 \text{ mm}$

$L_{ef} =$	24	25	26	27	28	29	30	31	32		
$M_{t,nom} =$											
$V_{R,k}$ for $t_{N,I} =$	0,50	0,70	—	0,70	—	0,70	—	0,70	—	0,70	0,70
	0,60	0,80	—	0,93	—	0,93	—	0,93	—	0,93	0,93
	0,70	0,96	—	1,00	—	1,08	—	1,12	—	1,16	1,16
	0,80	0,96	—	1,00	—	1,04	—	1,12	—	1,16	1,16
	0,90	0,96	—	1,00	—	1,04	—	1,12	—	1,20	1,24
	1,00	0,96	—	1,00	—	1,04	—	1,12	—	1,20	1,24
	1,20	0,96	—	1,00	—	1,04	—	1,12	—	1,20	1,24
	1,50	0,96	—	1,00	—	1,04	—	1,12	—	1,20	1,24
	2,00	0,96	—	1,00	—	1,04	—	1,12	—	1,20	1,24
$N_{R,II,k} =$	1,27	1,32	1,38	1,43	1,48	1,53	1,59	1,64	1,69		

bearing resistance of comp. I

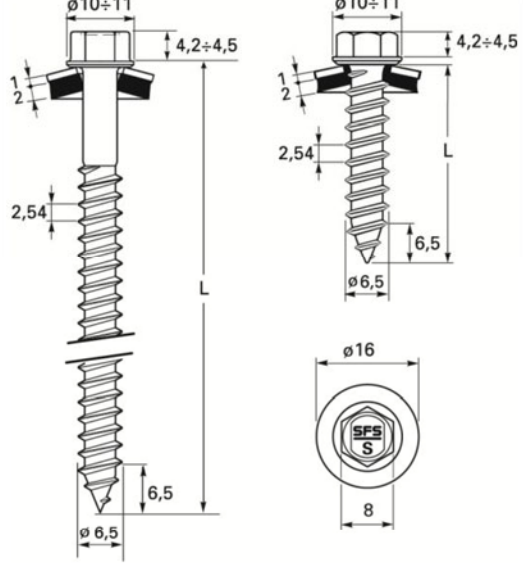
- The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

SFS SW2 - S - S16 - 6 x L

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

Annex 89

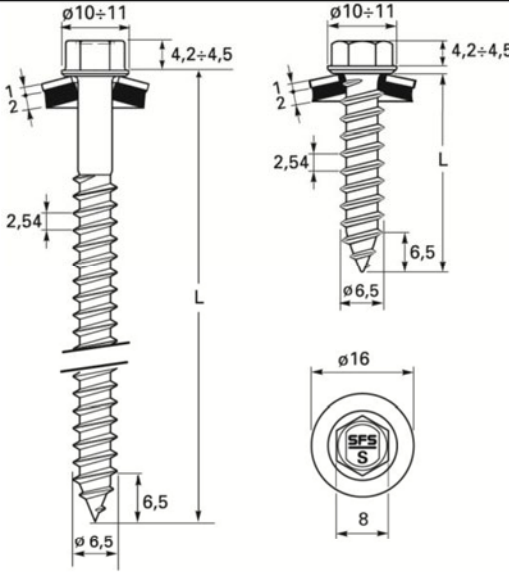
	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401 or 1.4547 Washer: stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 165 \text{ N/mm}^2$ – EN 573 Component II: structural timber - EN 14081
	Drilling capacity see table below Timber substructures performance determined with $M_{y,Rk} = 9,742 \text{ Nm}$ $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 32,0 \text{ mm}$

$t_{N,II} =$	32	39	60	64	71	78	–	
$d_{pd} =$	$\varnothing 4,8$							
$V_{R,k}$ for $t_{N,I} =$	0,50 0,60 0,70 0,80 0,90 1,00 1,20 1,50 2,00	0,86 – 1,03 – 1,20 – 1,37 – 1,54 – 1,57 – 1,57 – 1,57 – 1,57 –	0,86 – 1,03 – 1,20 – 1,37 – 1,54 – 1,72 – 1,91 – 1,91 – 1,91 –	0,86 – 1,03 – 1,20 – 1,37 – 1,54 – 1,72 – 2,06 – 2,27 – 2,27 –	0,86 – 1,03 – 1,20 – 1,37 – 1,54 – 1,72 – 2,06 – 2,31 – 2,31 –	0,86 – 1,03 – 1,20 – 1,37 – 1,54 – 1,72 – 2,06 – 2,38 – 2,38 –	0,86 – 1,03 – 1,20 – 1,37 – 1,54 – 1,72 – 2,06 – 2,45 – 2,45 –	0,86 1,03 1,20 1,37 1,54 1,72 2,06 2,57 3,43 bearing resistance of comp. I
$N_{R,II,k} =$	1,60	1,90	3,00	3,20	3,56	3,91		

- The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.

- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-tapping screw	Annex 90
SFS TDA - S - S16 - 6,5 x L	
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$	

	Materials Fastener: stainless steel, EN 10088 material-Nr. 1.4301, 1.4401 or 1.4547 Washer: stainless steel, EN 10088 material-Nr. 1.4301 with vulcanized EPDM Component I: aluminum-Alloy with $R_{m,min} = 215 \text{ N/mm}^2$ – EN 573 Component II: structural timber - EN 14081 Drilling capacity see table below Timber substructures performance determined with $M_{y,Rk} = 9,742 \text{ Nm}$ $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 32,0 \text{ mm}$
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$t_{N,II} =$	32	39	60	64	71	78	–
$d_{pd} =$	$\varnothing 4,8$						
$V_{R,k}$ for $t_{N,I} =$	0,50	1,12 –	1,12 –	1,12 –	1,12 –	1,12 –	1,12
	0,60	1,23 –	1,34 –	1,34 –	1,34 –	1,34 –	1,34
	0,70	1,57 –	1,57 –	1,57 –	1,57 –	1,57 –	1,57
	0,80	1,57 –	1,79 –	1,79 –	1,79 –	1,79 –	1,79
	0,90	1,57 –	1,91 –	2,01 –	2,01 –	2,01 –	2,01
	1,00	1,57 –	1,91 –	2,24 –	2,24 –	2,24 –	2,24
	1,20	1,57 –	1,91 –	2,27 –	2,31 –	2,38 –	2,45
	1,50	1,57 –	1,91 –	2,27 –	2,31 –	2,38 –	2,45
	2,00	1,57 –	1,91 –	2,27 –	2,31 –	2,38 –	2,45
$N_{R,II,k} =$	1,60	1,90	3,00	3,20	3,56	3,91	

- The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-tapping screw

SFS TDA - S - S16 - 6,5 x L

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

Annex 91