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

Deutsches Institut für Bautechnik

DIBt

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

2 Deutsches Institut für Bautechnik is authorized to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.

3 This European technical approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European technical approval.

4 This European technical approval may be withdrawn by Deutsches Institut für Bautechnik, in particular pursuant to information by the Commission according to Article 5(1) of Council Directive 89/106/EEC.

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

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

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of 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 ≥ Ø19 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 ≥ Ø22 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 ≥ Ø12 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 ≥ Ø14 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 ≥ Ø16 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 ≥ Ø19 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 ≥ Ø22 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 ≥ Ø16 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 ≥ Ø16 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 ≥ Ø19 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 ≥ Ø19 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 ≥ Ø19 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 ≥ Ø14 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 ≥ Ø14 mm
Annex 30	Steel / Steel	SFS SL2 - S - A14 - 5,5 x L	with thread free zone, Hexagon head and Sealing washer ≥ Ø14 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 ≥ Ø14 mm
Annex 32	Steel / Steel	SFS SLG - S - S14 - 4,8 x L	with thread free zone, Hexagon head and Sealing washer ≥ Ø14 mm
Annex 33	Steel / Steel	SFS TDA - S - S16 - 6,5 x L	with hexagon head and sealing washer ≥ Ø16 mm
Annex 34	Steel / Steel	SFS TDB - S - S16 - 6,3 x L	with hexagon head and sealing washer ≥ Ø16 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 ≥ Ø16 mm
Annex 36	Steel / Steel	SFS TDC - S - S16 - 6,3 x L	with hexagon head and sealing washer ≥ Ø16 mm
Annex 37	Steel / Steel	SFS SD2 - T16 - 6,3 x L	with hexagon head and sealing washer ≥ Ø16 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 ≥ Ø15 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 ≥ Ø15 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 ≥ Ø15 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 ≥ Ø16 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 Ø15 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 ≥ Ø15 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 ≥ Ø16 mm
Annex 46	Steel / Steel	SFS SD6 - H15 - 5,5 x L	Hexagon head with flange Ø15 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/mm²	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/mm²	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/mm²	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/mm²	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/mm²	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 Rm ≥ 215 N/mm²	SFS SL2 - S - S14 - 5,5 x L	with thread free zone, Hexagon head and Sealing washer ≥ Ø14 mm
Annex 66	Alu / Alu Rm ≥ 165 N/mm²	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 ≥ Ø14 mm
Annex 67	Alu / Alu Rm ≥ 215 N/mm²	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 ≥ Ø14 mm
Annex 68	Alu / Alu Rm ≥ 165 N/mm²	SFS TDA - S - S16 - 6,5 x L	with hexagon head and sealing washer ≥ Ø16 mm
Annex 69	Alu / Alu Rm ≥ 215 N/mm²	SFS TDA - S - S16 - 6,5 x L	with hexagon head and sealing washer ≥ Ø16 mm
Annex 70	Alu / Alu Rm ≥ 165 N/mm²	SFS TDB - S - S16 - 6,3 x L	with hexagon head and sealing washer ≥ Ø16 mm
Annex 71	Alu / Alu Rm ≥ 215 N/mm²	SFS TDB - S - S16 - 6,3 x L	with hexagon head and sealing washer ≥ Ø16 mm
Annex 72	Alu / Steel Rm ≥ 165 N/mm²	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 73	Alu / Steel Rm ≥ 215 N/mm²	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 74	Alu / Steel Rm ≥ 165 N/mm²	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 75	Alu / Steel Rm ≥ 215 N/mm²	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 76	Alu / Steel Rm ≥ 165 N/mm²	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 77	Alu / Steel Rm ≥ 215 N/mm²	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 78	Alu / Steel Rm ≥ 165 N/mm²	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 Rm ≥ 215 N/mm²	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 Rm ≥ 165 N/mm²	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 Rm ≥ 215 N/mm²	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 Rm ≥ 165 N/mm²	SFS TDA - S - S16 - 6,5 x L	with hexagon head and sealing washer ≥ Ø16 mm
Annex 83	Alu / Steel Rm ≥ 215 N/mm²	SFS TDA - S - S16 - 6,5 x L	with hexagon head and sealing washer ≥ Ø16 mm
Annex 84	Alu / Steel Rm ≥ 165 N/mm²	SFS TDB - S - S16 - 6,3 x L	with hexagon head and sealing washer ≥ Ø16 mm
Annex 85	Alu / Steel Rm ≥ 215 N/mm²	SFS TDB - S - S16 - 6,3 x L	with hexagon head and sealing washer ≥ Ø16 mm
Annex 86*)	Alu / Timber Rm ≥ 165 N/mm²	SFS SXW - S16 - 6,5 x L SFS SXW - L12 - S16 - 6,5 x L	with hexagon head or irius® Drive and sealing washer ≥ Ø16 mm
Annex 87*)	Alu / Timber Rm ≥ 215 N/mm²	SFS SXW - S16 - 6,5 x L SFS SXW - L12 - S16 - 6,5 x L	with hexagon head or irius® Drive and sealing washer ≥ Ø16 mm
Annex 88*)	Alu / Timber Rm ≥ 165 N/mm²	SFS SW2 - S - S16 - 6 x 42	with hexagon head and sealing washer ≥ Ø16 mm
Annex 89*)	Alu / Timber Rm ≥ 215 N/mm²	SFS SW2 - S - S16 - 6 x 42	with hexagon head and sealing washer ≥ Ø16 mm
Annex 90*)	Alu / Timber Rm ≥ 165 N/mm²	SFS TDA - S - S16 - 6,5 x L	with hexagon head and sealing washer ≥ Ø16 mm
Annex 91*)	Alu / Timber Rm ≥ 215 N/mm²	SFS TDA - S - S16 - 6,5 x L	with hexagon head and sealing washer ≥ Ø16 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 documentation[7] to this European technical approval.

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

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

2.2 Methods of verification

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

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

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

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

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

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

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

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

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

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 $l_{ef} = l_g - l_b$

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

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

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

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

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

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

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

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

4.2.3 Additional rules for fastening of perforated sheets

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

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

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

4.3 Installation

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

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

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

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

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

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

5 Indications to the manufacturer

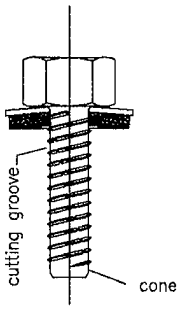
It is in the responsibility of the manufacturer to ensure that the information on the specific conditions according to 1, 2, 4.2 and 4.3 (including Annexes referred to) is given to those who are concerned. This information may be given by reproduction of the respective parts of the European technical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

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

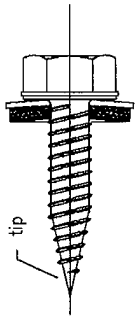
Uwe Bender
Head of Department

beglaubigt:
Ulbrich

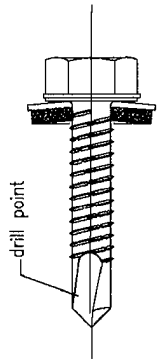
Deutsches Institut für Bautechnik



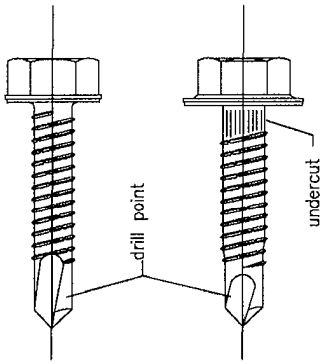
self tapping screw
with sealing washer



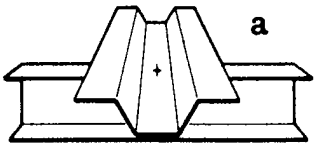
self tapping screw
with sealing washer



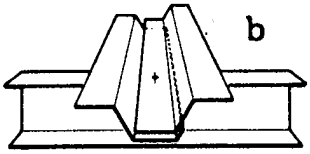
self–drilling screw
with sealing washer



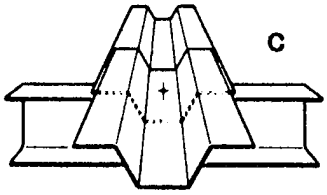
self–drilling screw
with integrated washer



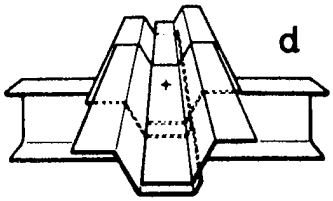
Single connection



Side lap connection



End overlap connection



Side lap + end overlap connection

Fastening screws SFS	**Annex 1**
Examples for screws Types of connection	

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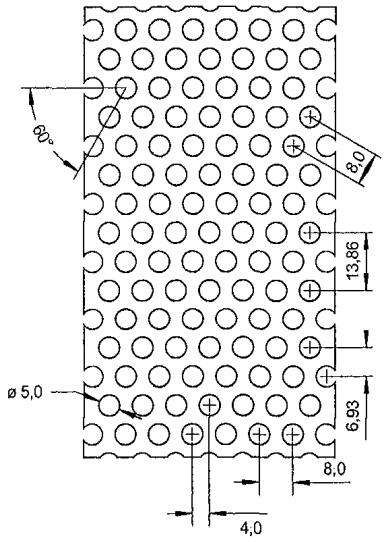

Hole pattern I

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

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

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

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

Fastening screws SFS

Fastening of perforated sheets

Annex 2

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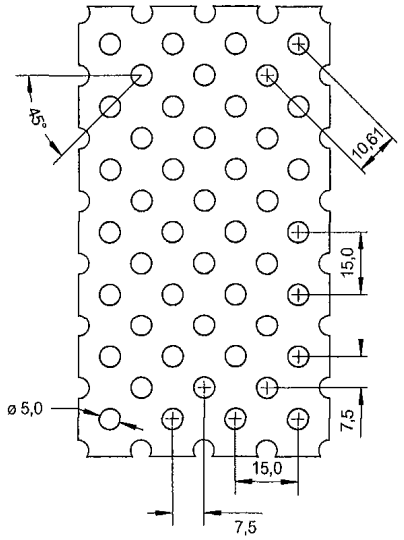


Hole pattern II

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

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

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

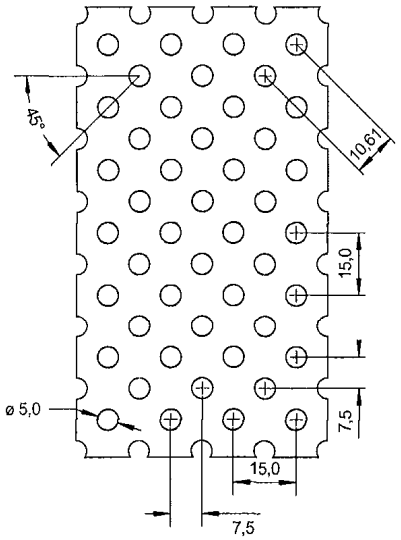
For intermediate values of the washer diameter the characteristic values for the washer with the smaller diameter shall be used.

Fastening screws SFS

Fastening of perforated sheets

Annex 3

Deutsches Institut für Bautechnik



Hole pattern II

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

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

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

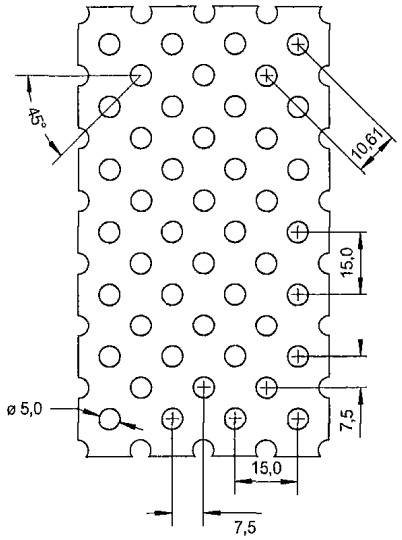
For intermediate values of the washer diameter the characteristic values for the washer with the smaller diameter shall be used.

Fastening screws SFS

Fastening of perforated sheets

Annex 4

Deutsches Institut für Bautechnik DIBt



Hole pattern II

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

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

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

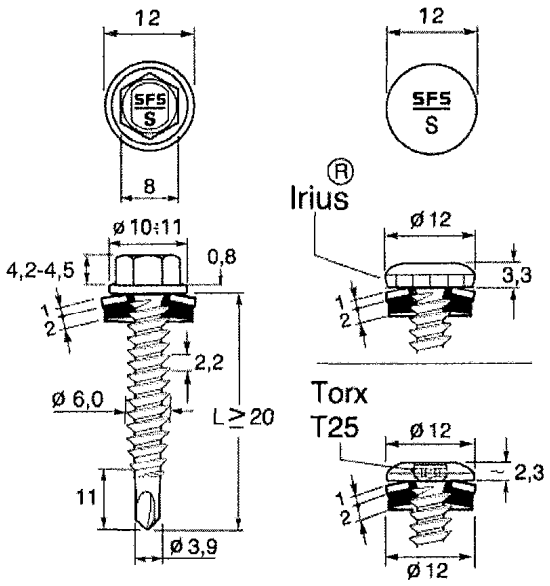
For intermediate values of the washer diameter the characteristic values for the washer with the smaller diameter shall be used.

Fastening screws SFS

Fastening of perforated sheets

Annex 5

Deutsches Institut für Bautechnik DIBt



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

Timber substructures

no performance determined

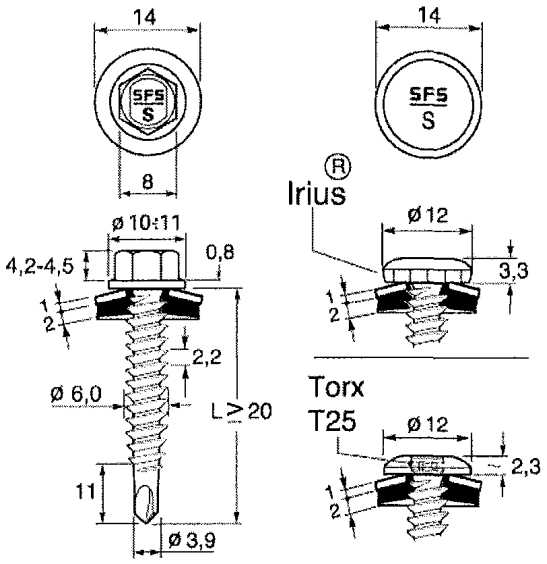
	$t_{N,II}$ =	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75	2,00
	$M_{t,nom}$ =									
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,98[a] —	1,20[a] ac	1,45[a] ac	1,61[a] ac	1,69[a] ac	1,76[a] ac	1,90[a] ac	1,90[a] ac	1,90[a] ac
	0,55	1,03[a] —	1,25[a] ac	1,53[a] ac	1,68[a] ac	1,80[a] ac	1,91[a] ac	2,13[a] ac	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 ≥ Ø12 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 $\Sigma t_i \leq 3{,}00$ 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	
	$M_{I,nom}$ =																		
$V_{R,k}$ [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%.

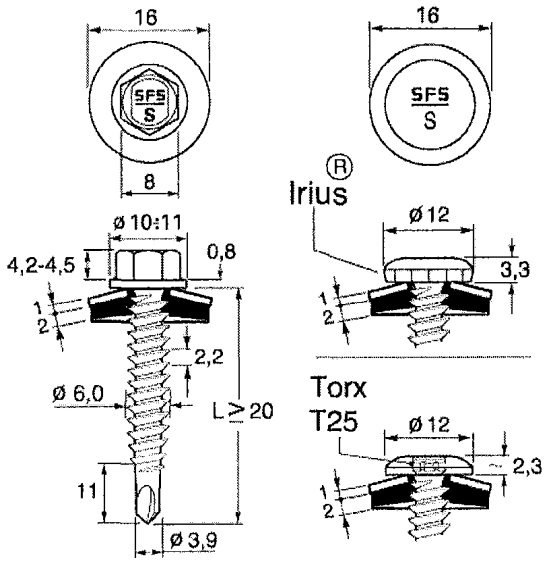
Self drilling screw

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 ≥ Ø14 mm

Annex 7

Deutsches Institut für Bautechnik DIBt



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 $\Sigma t_i \leq 3{,}00$ 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%.

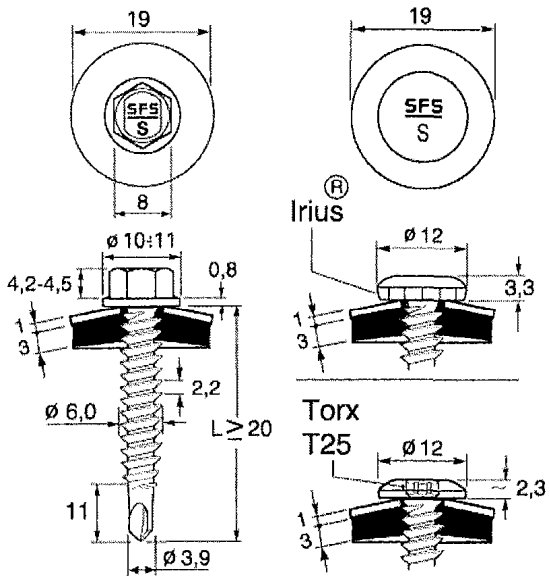
Self drilling screw

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 ≥ Ø16 mm

Annex 8

Deutsches Institut für Bautechnik DIBt



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 $\Sigma t_i \leq 3{,}00$ 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	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%.

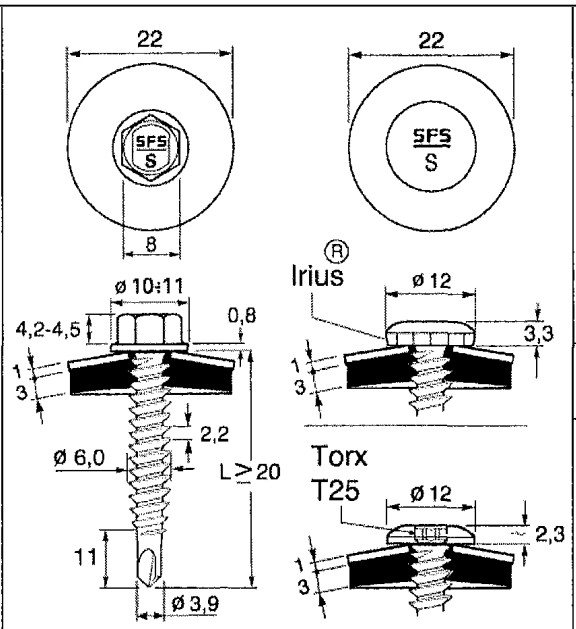
Self drilling screw

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 ≥ Ø19 mm

Annex 9

Deutsches Institut für Bautechnik



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 $\Sigma t_I \leq 3{,}00$ 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%.

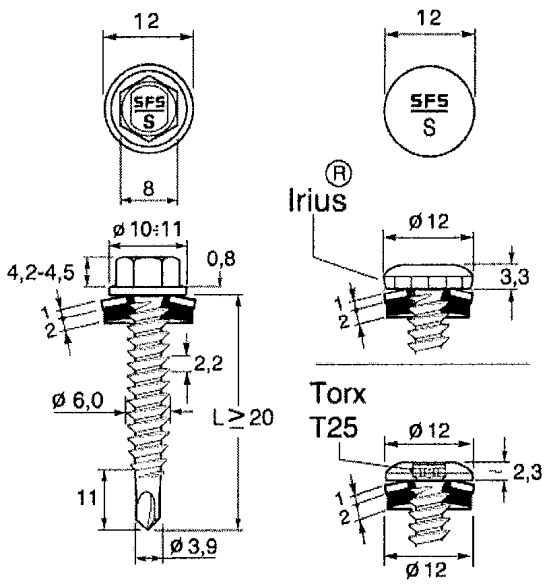
Self drilling screw

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 ≥ Ø22 mm

Annex 10

Deutsches Institut für Bautechnik DIBt



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 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

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

Timber substructures

no performance determined

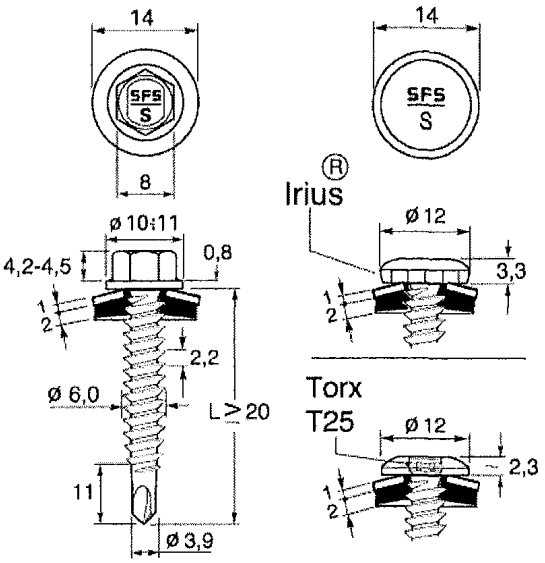
$t_{N,II}$ =		2 x 0,63		2 x 0,75		2 x 0,88		2 x 1,00		2 x 1,13		2 x 1,25		2 x 1,50		2 x 1,75	
$M_{t,nom}$ =																	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,88[a]	ac	1,87[a]	ac	1,89[a]	ac	1,91[a]	ac	1,91[a]	ac	1,91[a]	ac	1,91[a]	ac	—	—
	0,55	0,98[a]	ac	2,01[a]	ac	2,05[a]	ac	2,08[a]	ac	2,10[a]	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 ≥ Ø12 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 $\Sigma t_i \leq 4{,}00$ 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	1,34	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	—	—
	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]	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]	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]	a	—	—
	0,88	1,40	—	1,98	—	2,61	—	3,19	ac	3,78	ac	4,00[a]	a	4,00[a]	a	—	—
	1,00	1,40	—	1,98	—	2,61	—	3,19	ac	3,78	a	4,37	a	4,84[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%.

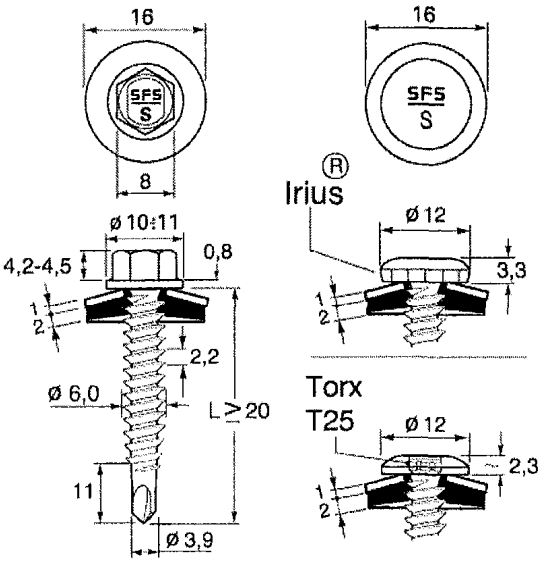
Self drilling screw

SFS SX3 - 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 12

Deutsches Institut für Bautechnik DIBt



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 $\Sigma t_i \leq 4{,}00$ 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%.

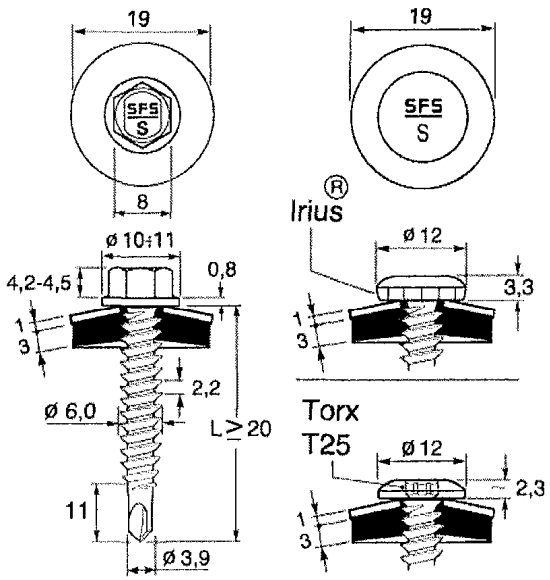
Self drilling screw

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 ≥ Ø16 mm

Annex 13

Deutsches Institut für Bautechnik DIBt



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 $\Sigma t_i \leq 4{,}00$ 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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

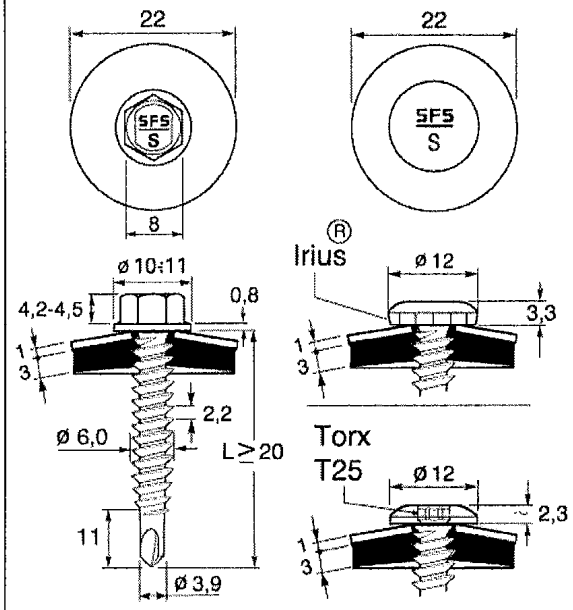
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

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 ≥ Ø19 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 $\Sigma t_i \leq 4{,}00$ 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]	—	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [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%.

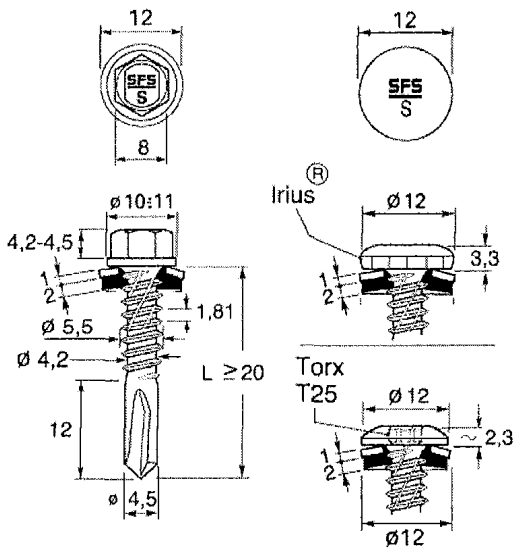
Self drilling screw

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 ≥ Ø22 mm

Annex 15

Deutsches Institut für Bautechnik DIBt



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 $\Sigma t_i \leq 5{,}00$ 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	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	—	—
$N_{R,k}$ [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
	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	—	—

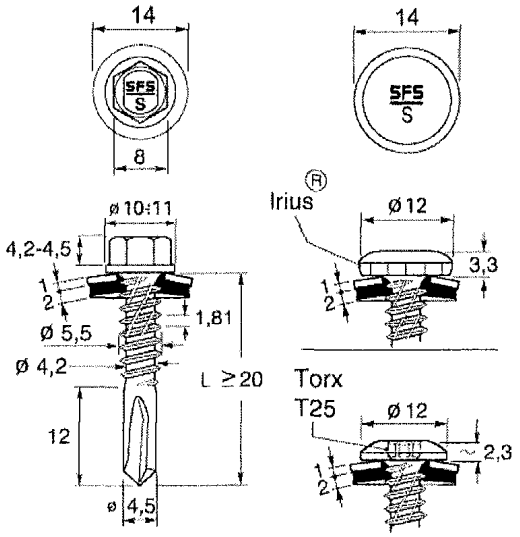
Index a: If component I is made of S320GD or S350GD the value may be increased by 8,0%.

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 ≥ Ø12 mm

Annex 16

Deutsches Institut für Bautechnik DIBt



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	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	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	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	1,69[a]	ac	1,69[a]	ac	1,69[a]	ac	1,69[a]	ac	1,69[a]	ac	1,69[a]	a
	0,63	2,09	ac	2,25[a]	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]	ac	3,09[a]	a
	0,88	2,09	ac	2,69	ac	3,28	ac	4,00	ac	4,00[a]	ac	4,00[a]	a
	1,00	2,09	ac	2,69	ac	3,28	ac	4,15	ac	4,84	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%.

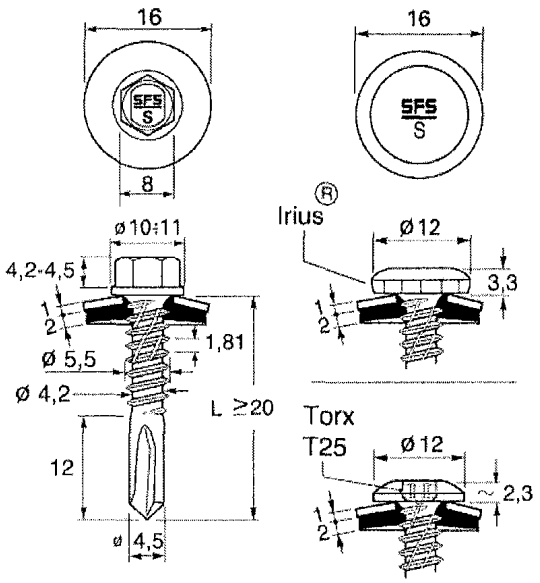
Self drilling screw

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 ≥ Ø14 mm

Annex 17

Deutsches Institut für Bautechnik DIBt



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	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	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	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	1,91[a]	ac	1,91[a]	ac	1,91[a]	ac	1,91[a]	ac	1,91[a]	ac	1,91[a]	a
	0,63	2,09	ac	2,69	ac	2,70[a]	ac	2,70[a]	ac	2,70[a]	ac	2,70[a]	a
	0,75	2,09	ac	2,69	ac	3,09	ac	3,50[a]	ac	3,50[a]	ac	3,50[a]	a
	0,88	2,09	ac	2,69	ac	3,28	ac	4,15	ac	4,52[a]	ac	4,52[a]	a
	1,00	2,09	ac	2,69	ac	3,28	ac	4,15	ac	5,02	ac	5,47[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%.

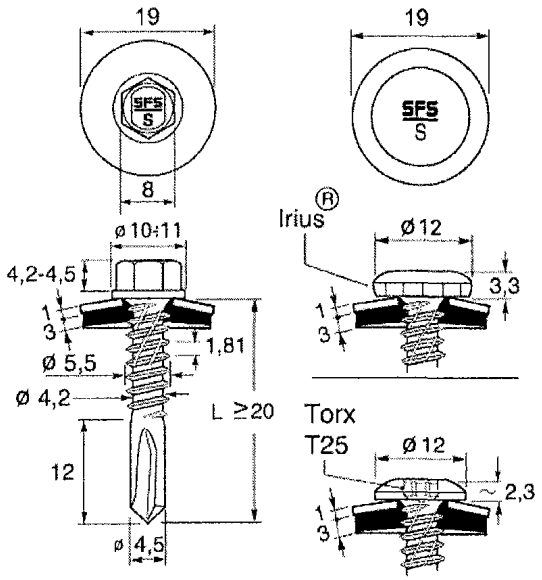
Self drilling screw

SFS SX5 - 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 ≥ Ø16 mm

Annex 18

Deutsches Institut für Bautechnik DIBt



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	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	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,87[a]	ac	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]	ac	2,36[a]	a
	0,63	2,09	ac	2,69	ac	3,14	ac	3,14[a]	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]	ac	4,31[a]	a
	0,88	2,09	ac	2,69	ac	3,28	ac	4,15	ac	5,02	ac	5,57[a]	a
	1,00	2,09	ac	2,69	ac	3,28	ac	4,15	ac	5,02	ac	6,74[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%.

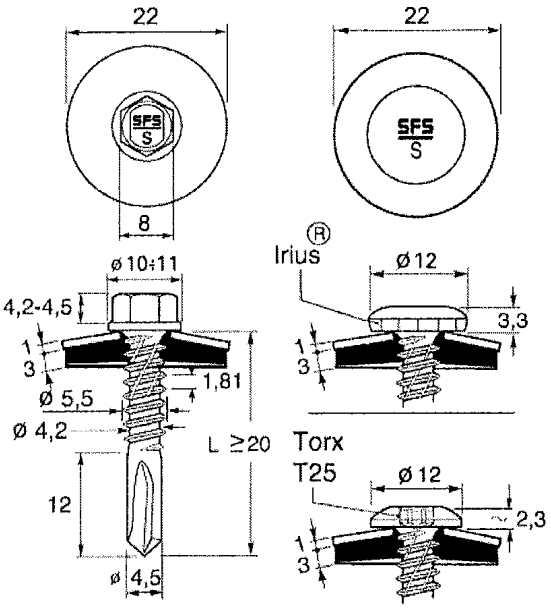
Self drilling screw

SFS SX5 - 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 ≥ Ø19 mm

Annex 19

Deutsches Institut für Bautechnik DIBt



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	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	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	2,09	ac	2,33[a]	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]	ac	2,94[a]	a
	0,63	2,09	ac	2,69	ac	3,28	ac	3,91	ac	3,91[a]	ac	3,91[a]	a
	0,75	2,09	ac	2,69	ac	3,28	ac	4,15	ac	5,02	ac	5,37[a]	a
	0,88	2,09	ac	2,69	ac	3,28	ac	4,15	ac	5,02	ac	6,95[a]	a
	1,00	2,09	ac	2,69	ac	3,28	ac	4,15	ac	5,02	ac	8,32	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%.

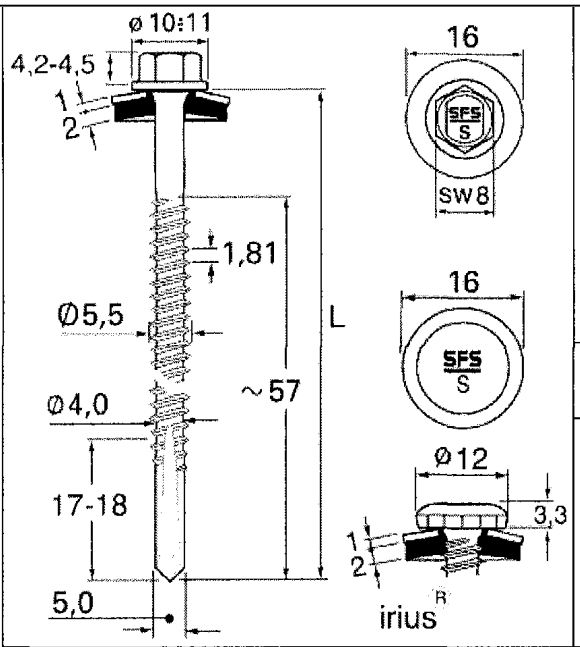
Self drilling screw

SFS SX5 - 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 ≥ Ø22 mm

Annex 20

Deutsches Institut für Bautechnik DIBt



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 $\Sigma t_i \leq 14{,}00$ 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%.

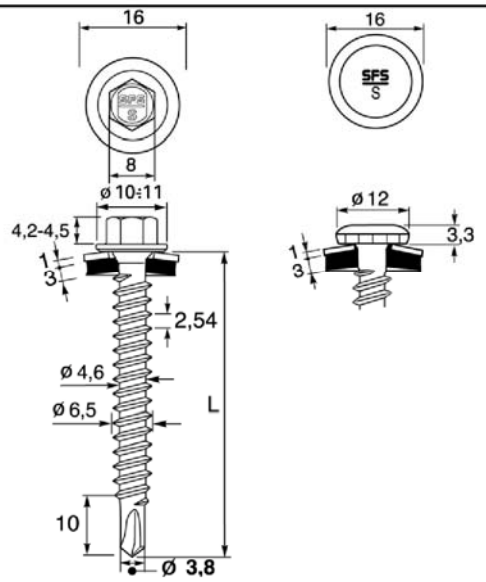
Self drilling screw

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

with hexagon head or irius® Drive and sealing washer ≥ Ø16 mm

Annex 21

Deutsches Institut für Bautechnik DIBt



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

Timber substructures

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

L_{ef} =		26		32		39		60		64		71		78			
$M_{t,nom}$ =																	
$V_{R,k}$ [KN] for $t_{N,I}$ [mm]	0,50	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	bearing resistance of component I
	0,55	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	0,63	1,06	–	1,31	–	1,60	–	2,45	–	2,61	–	2,90	–	2,90	–	2,90	
	0,75	1,06	–	1,31	–	1,60	–	2,45	–	2,61	–	2,90	–	3,19	–	3,50	
	0,88	1,06	–	1,31	–	1,60	–	2,45	–	2,61	–	2,90	–	3,19	–	4,00	
	1,00	1,06	–	1,31	–	1,60	–	2,45	–	2,61	–	2,90	–	3,19	–	4,50	
	1,13	1,06	–	1,31	–	1,60	–	2,45	–	2,61	–	2,90	–	3,19	–	5,00	
	1,25	1,06	–	1,31	–	1,60	–	2,45	–	2,61	–	2,90	–	3,19	–	5,40	
	1,50	1,06	–	1,31	–	1,60	–	2,45	–	2,61	–	2,90	–	3,19	–	5,70	
	1,75	1,06	–	1,31	–	1,60	–	2,45	–	2,61	–	2,90	–	3,19	–	5,70	
	2,00	1,06	–	1,31	–	1,60	–	2,45	–	2,61	–	2,90	–	3,19	–	5,70	
$N_{R,k}$ [KN] for $t_{N,I}$ [mm]	0,50	1,30	–	1,46	–	1,46	–	1,46	–	1,46	–	1,46	–	1,46	–	1,46	pull-through resistance component I
	0,55	1,30	–	1,60	–	1,84	–	1,84	–	1,84	–	1,84	–	1,84	–	1,84	
	0,63	1,30	–	1,60	–	1,95	–	2,70	–	2,70	–	2,70	–	2,70	–	2,70	
	0,75	1,30	–	1,60	–	1,95	–	3,00	–	3,20	–	3,40	–	3,40	–	3,40	
	0,88	1,30	–	1,60	–	1,95	–	3,00	–	3,20	–	3,56	–	3,91	–	4,10	
	1,00	1,30	–	1,60	–	1,95	–	3,00	–	3,20	–	3,56	–	3,91	–	4,80	
	1,13	1,30	–	1,60	–	1,95	–	3,00	–	3,20	–	3,56	–	3,91	–	5,50	
	1,25	1,30	–	1,60	–	1,95	–	3,00	–	3,20	–	3,56	–	3,91	–	5,60	
	1,50	1,30	–	1,60	–	1,95	–	3,00	–	3,20	–	3,56	–	3,91	–	5,60	
	1,75	1,30	–	1,60	–	1,95	–	3,00	–	3,20	–	3,56	–	3,91	–	5,60	
	2,00	1,30	–	1,60	–	1,95	–	3,00	–	3,20	–	3,56	–	3,91	–	5,60	

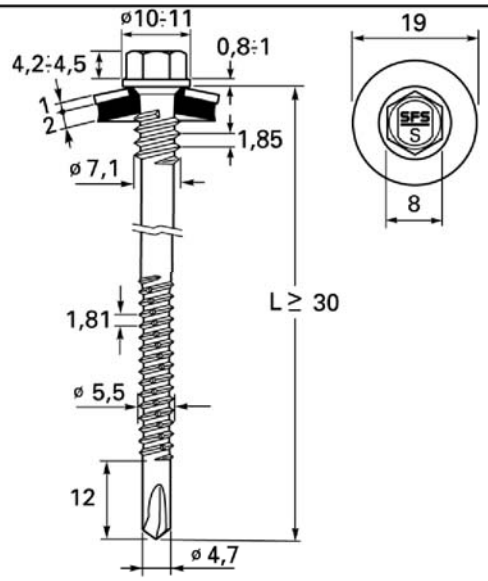
- The values listed above in dependence on the screw-in length l_{ef} are valid for k_{mod} = 0,90 and timber strength grade C24 (ρ_a = 350 kg/m³). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.

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 ≥ Ø16 mm

Annex 22

Deutsches Institut für Bautechnik



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

Timber substructures

no performance determined

$t_{N,II}$ =		1,50		2,00		2,50		3,00		4,00		—		—		—	
$M_{t,nom}$ =		—															
$V_{R,k}$ [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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [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 $N_{R,k}$ [kN] may be increased by 8,3%.

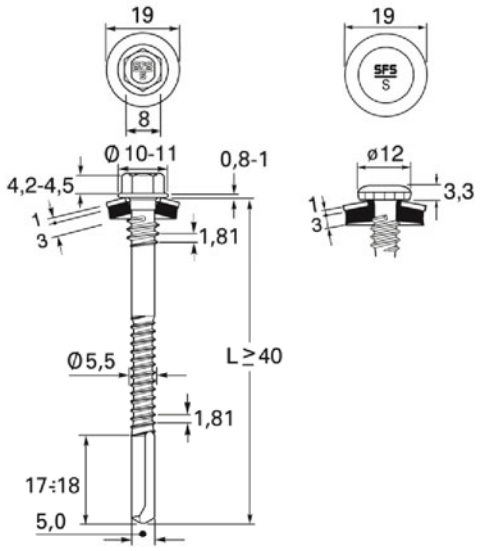
Self-drilling screw

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 ≥ Ø19 mm

Annex 23

Deutsches Institut für Bautechnik DIBt



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

Timber substructures

no performance determined

$t_{N,II}$ =	—	—	—	>= 4,0	—	—	—	—
$M_{t,nom}$ =	—							
$V_{R,k}$ [kN] for $t_{N,I}$ [mm] 0,40	— —	— —	— —	— —	— —	— —	— —	— —
0,50	— —	— —	— —	— —	— —	— —	— —	— —
0,55	— —	— —	— —	— —	— —	— —	— —	— —
0,60	— —	— —	— —	— —	— —	— —	— —	— —
0,63	— —	— —	— —	— —	— —	— —	— —	— —
0,70	— —	— —	— —	— —	— —	— —	— —	— —
0,75	— —	— —	— —	— —	— —	— —	— —	— —
0,88	— —	— —	— —	— —	— —	— —	— —	— —
1,00	— —	— —	— —	— —	— —	— —	— —	— —
1,13	— —	— —	— —	— —	— —	— —	— —	— —
1,25	— —	— —	— —	— —	— —	— —	— —	— —
$N_{R,k}$ [kN] for $t_{N,I}$ [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%.

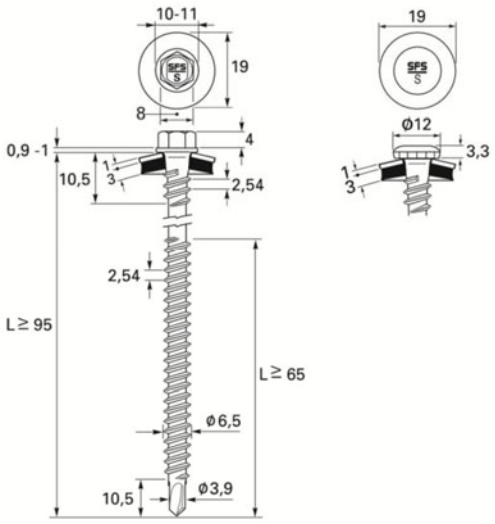
Self-drilling screw

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 ≥ Ø19 mm

Annex 24

Deutsches Institut für Bautechnik DIBt



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 Nm
$f_{ax,k}$ = 8,575 N/mm² for $l_{ef} \geq 35,0$ mm

	$t_{N,II}$ =	—	—	—	—	—	—	—	—
	$M_{t,nom}$ =	—	—	—	—	—	—	—	—
$V_{R,k}$ [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	— —	— —	— —	— —	— —	— —	— —	— —
$N_{R,k}$ [kN] for $t_{N,I}$ [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 —	— —	— —	— —	— —

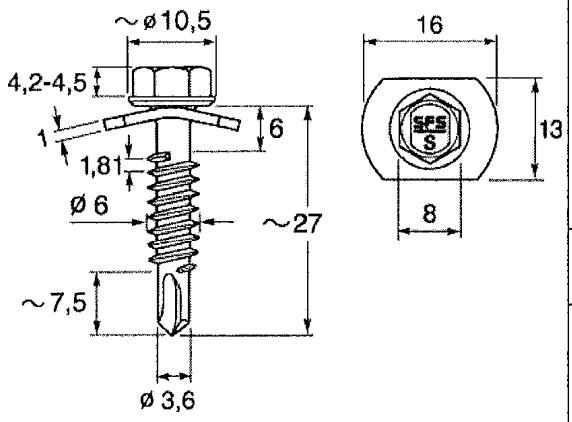
- If component I is made of S350GD the values $N_{R,k}$ [kN] may be increased by 8,3%.The values listed above in dependence on the screw-in length l_{ef} are valid for k_{mod} = 0,90 and timber strength grade C24 (ρ_a = 350 kg/m³). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.

Self-drilling screw

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 ≥ Ø19 mm

Annex 25

Deutsches Institut für Bautechnik DIBt



Materials

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

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%.

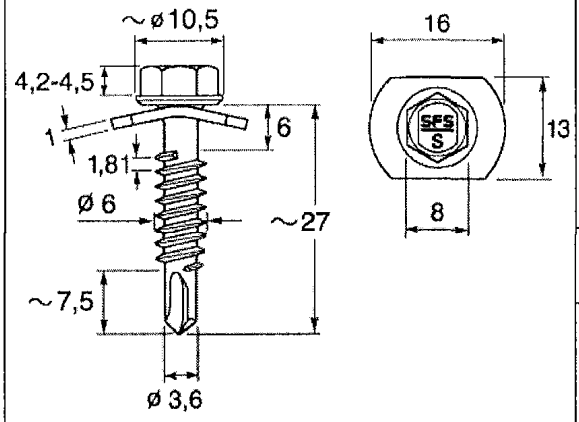
Self drilling screw

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

Deutsches Institut für Bautechnik DIBt



Materials

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

Drilling capacity $\Sigma t_i \leq 3{,}80$ 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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	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	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [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%.

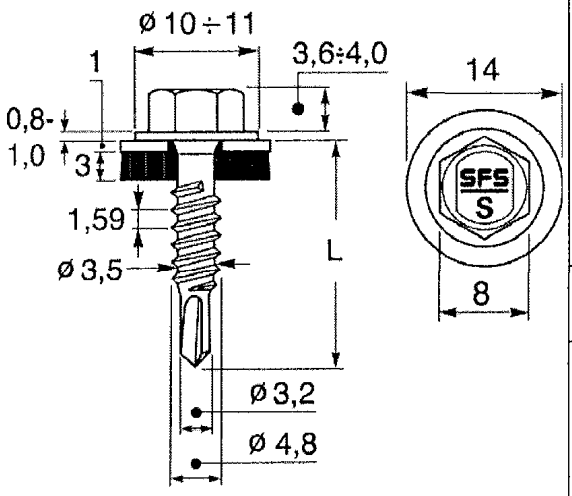
Self drilling screw

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

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: stainless steel (1.4301) - EN 10088
Washer: stainless steel (1.4301) - EN 10088
Component I: S280GD, S320GD or S350GD - EN 10346
Component II: 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	0,58	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	0,69
	0,55	0,58	0,69	0,80	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	0,98	—
	0,75	0,58	0,69	0,80	0,98	1,26	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	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,30	0,42	0,49	0,59	0,76	0,96	1,07	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	1,16
	0,55	0,30	0,42	0,49	0,59	0,76	0,96	1,16	1,16	1,16	—
	0,63	0,30	0,42	0,49	0,59	0,76	0,96	1,16	1,16	1,16	—
	0,75	0,30	0,42	0,49	0,59	0,76	0,96	1,16	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	—	—	—	—	—	—	—	—	—	—

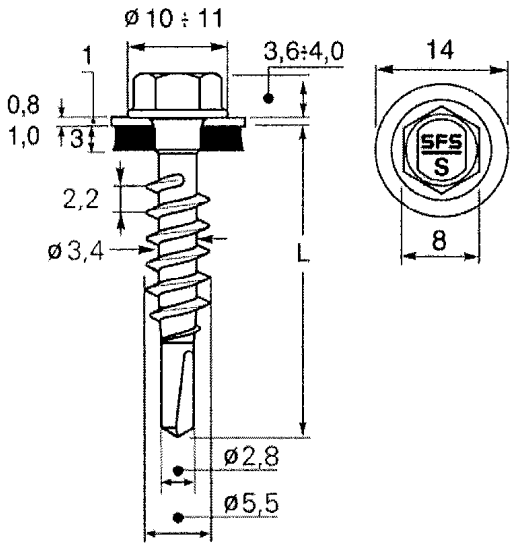
Self drilling screw

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

with thread free zone, Hexagon head and Sealing washer ≥ Ø14 mm

Annex 28

Deutsches Institut für Bautechnik DIBt



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	0,48
	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	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	—	—	—	—	—	—	—	—	—	—

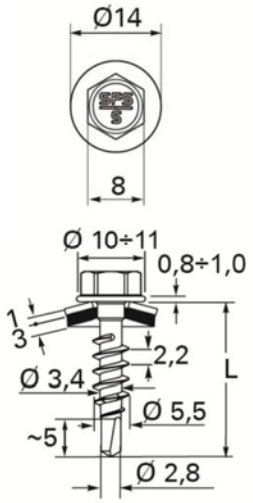
Self drilling screw

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

with thread free zone, Hexagon head and Sealing washer ≥ Ø14 mm

Annex 29

Deutsches Institut für Bautechnik DIBt



Materials

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

Washer: aluminium alloy AW-AlMg3 – 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: $\Sigma t_i \leq 2{,}50$ 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	
	$M_{s,nom}$ =	–																			
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,48	-	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	-	0,75	-
	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 $t_{N,I}$ [mm]	0,50	0,43	-	0,57	-	0,65	-	0,79	-	1,03	-	1,32	-	1,37	-	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	-	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

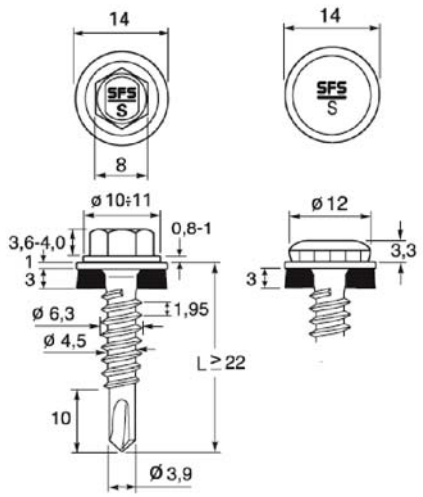
Self-drilling screw

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

with hexagon head and sealing washer ≥ ∅ 14 mm

Annex 30

Deutsches Institut für Bautechnik DIBt



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: $\Sigma t_i \leq 2{,}00$ 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	0,57	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	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,57	0,74	0,84	0,99	1,23	1,28	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%.

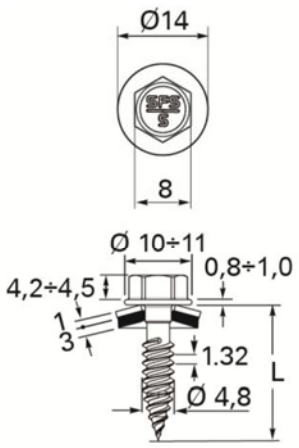
Self-drilling screw

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 ≥ Ø14 mm

Annex 31

Deutsches Institut für Bautechnik DIBt



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: $\Sigma t_i \leq 1{,}80$ 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 $t_{N,I}$ [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 $t_{N,I}$ [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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

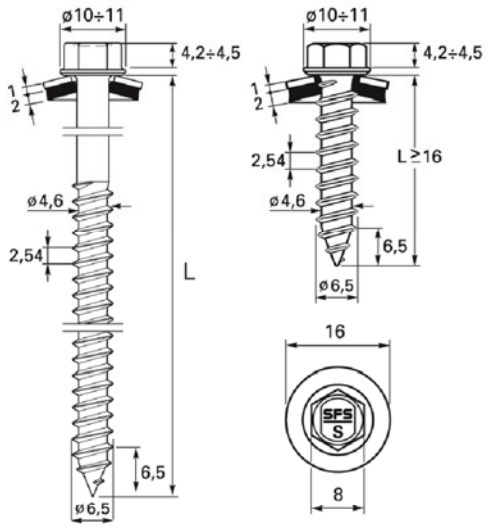
Self-tapping screw

SFS SLG – S – S14 – 4,8 x L

with hexagon head and sealing washer ≥ Ø14 mm

Annex 32

Deutsches Institut für Bautechnik DIBt



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	—	—
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	—	—
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	—	—
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	—	—
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	—	—
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	—	—
1,13	—	—	2,67[a]	—	3,16[a]	—	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	—	—
1,50	—	—	2,67[a]	—	3,18[a]	—	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]	—	—	—
2,00	—	—	2,67[a]	—	3,18[a]	—	3,68[a]	—	3,68[a]	—	3,68[a]	—	3,68[a]	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm] 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	—	—
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	—	—
0,63	—	—	2,18[b]	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	—	—
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	—	—
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	—	—
1,13	—	—	2,18[b]	—	2,77[b]	—	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	—	—
1,50	—	—	2,18[b]	—	2,77[b]	—	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]	—	—	—
2,00	—	—	2,18[b]	—	2,77[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%.

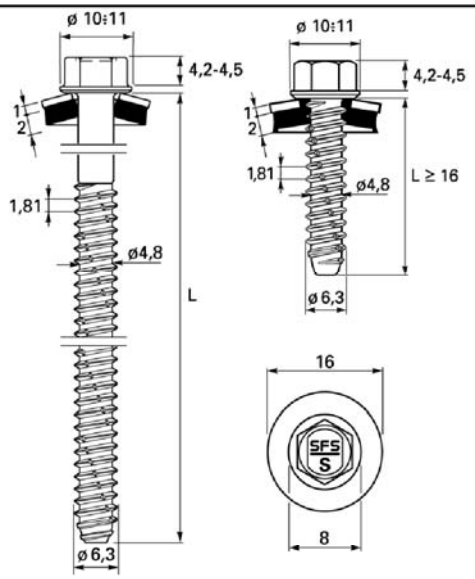
Self-tapping screw

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

with hexagon head and sealing washer ≥ Ø16 mm

Annex 33

Deutsches Institut für Bautechnik DIBt



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%.

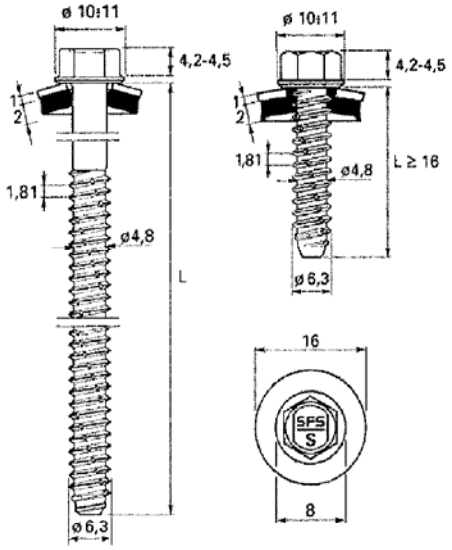
Self-tapping screw

SFS TDB - S - S16 - 6,3 x L

with hexagon head and sealing washer ≥ Ø16 mm

Annex 34

Deutsches Institut für Bautechnik DIBt



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 $R_m \leq 630$ N/mm² - EN 10025

Pre-drill diameter: see table

Timber substructures

no performance determined

	$t_{N,II}$ =	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.

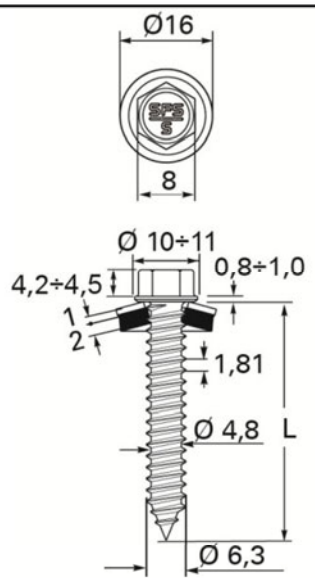
Self-tapping screw

SFS TDB – S – S16 – 6,3 x L, SFS TDB – S – S16 – 6,3 x L – W 38

with hexagon head and sealing washer ≥ ∅ 16 mm (W38 with wax coating)

Annex 35

Deutsches Institut für Bautechnik



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

	$t_{N,II}$ =	1,25		1,50		2,00		3,00		4,00	
	$d_{p,d}$ =	Ø5,0				Ø5,3					
	$M_{t,nom}$ =										
$V_{R,k}$ [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
	0,55	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
	0,75	2,60	ac	3,10	ac	3,30	abcd	3,60	abcd	3,70	abcd
	0,88	2,80	ac	3,20	ac	3,80	ac	4,10	abcd	4,30	abcd
	1,00	3,20	ac	3,60	ac	4,10	ac	4,80	abcd	4,90	abcd
	1,13	3,40	ac	4,00	ac	4,60	ac	5,40	ac	5,60	ac
	1,25	3,60	ac	4,20	ac	5,00	ac	6,10	ac	6,30	ac
	1,50	3,70	ac	4,40	ac	5,70	ac	6,80	ac	7,10	ac
	1,75	3,70	ac	4,70	ac	6,20	ac	7,60	ac	7,70	ac
	2,00	5,00	-	6,50	-	8,80	-	10,3	-	10,6	-
$N_{R,k}$ [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
	0,55	2,00	ac	2,05[a]	ac	2,05[a]	abcd	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
	0,75	2,00	ac	2,70	ac	3,60	ac	3,60	abcd	3,60	abcd
	0,88	2,00	ac	2,70	ac	3,60	ac	4,29	abcd	4,29	abcd
	1,00	2,00	ac	2,70	ac	3,60	ac	4,85	abcd	4,85	abcd
	1,13	2,00	ac	2,70	ac	3,60	ac	4,85	ac	4,85	ac
	1,25	2,00	ac	2,70	ac	3,60	ac	4,90	ac	4,90	ac
	1,50	2,00	ac	2,70	ac	3,60	ac	5,90	ac	5,90	ac
	1,75	2,00	ac	2,70	ac	3,60	ac	6,00	ac	7,10	ac
	2,00	2,00	-	2,70	-	3,60	-	6,00	-	7,30	-

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

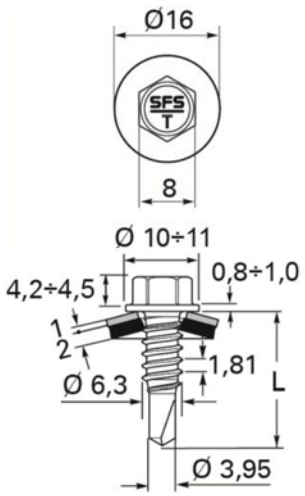
Self-tapping screw

SFS TDC – S – S16 – 6,3 x L

with hexagon head and sealing washer ≥ ∅ 16 mm

Annex 36

Deutsches Institut für Bautechnik DIBt



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

Timber substructures

no performance determined

$t_{N,II}$ [mm] =		0,75		0,88		1,00		1,13		1,50		1,75		2,00	
$M_{t,nom}$ =		–													
$\gamma_{R,k}$ [kN] for $t_{N,I}$ [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	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$\gamma_{R,k}$ [kN] for $t_{N,I}$ [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	-	-	-	-	-	-	-	-	-	-	-	-	-	-

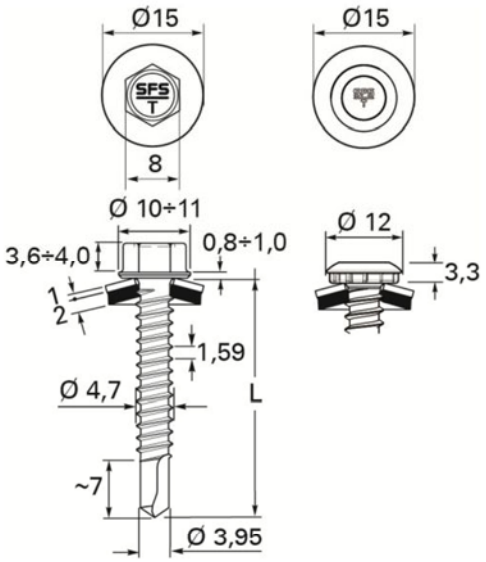
Self-drilling screw

SFS SD2 - T16 - 6,3 x L

with hexagon head or irius® drive system and sealing washer ≥ ∅ 16 mm

Annex 37

Deutsches Institut für Bautechnik DIBt



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

Timber substructures

no performance determined

$t_{N,II}$ [mm] =		1,00		1,25		1,50		2,00		2,50	
$M_{t,nom}$ =		–									
$V_{R,k}$ [kN] for $t_{N,I}$ [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	-	-	-	-	-	-	-
$N_{R,k}$ [kN] for $t_{N,I}$ [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	-	-	-	-	-	-	-

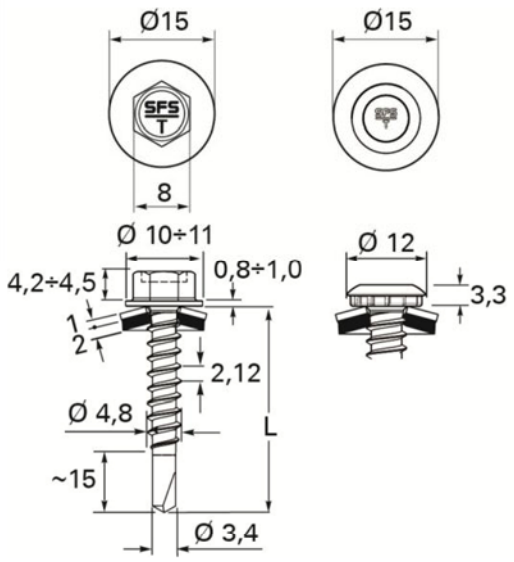
- Index a): for component I of S320GD the indicated values can be increased by 8,3 %.

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 ≥ ∅ 15 mm

Annex 38

Deutsches Institut für Bautechnik DIBt



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

Timber substructures

no performance determined

$t_{N,II}$ [mm] =		2x 0,63		2x 0,88		2x 1,00		2x 1,13		2x 1,25	
$M_{t,nom}$ =		–									
$V_{R,k}$ [kN] for $t_{N,I}$ [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	-	-	-	-	-	-	-	-	-	-
$N_{R,k}$ [kN] for $t_{N,I}$ [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	-	-	-	-	-	-	-	-	-	-

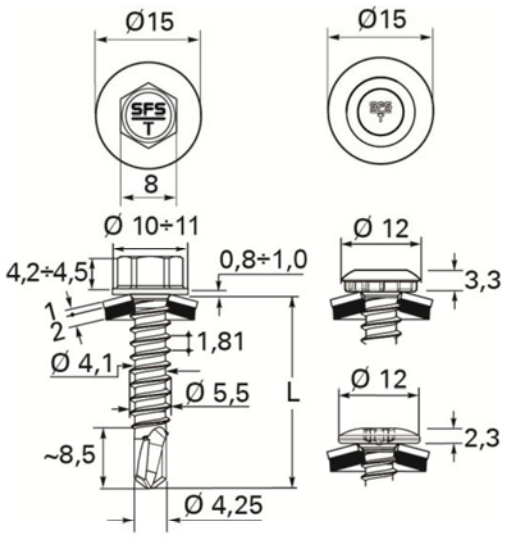
Self-drilling screw

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 ≥ ∅ 15 mm

Annex 39

Deutsches Institut für Bautechnik DIBt



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

Timber substructures

no performance determined

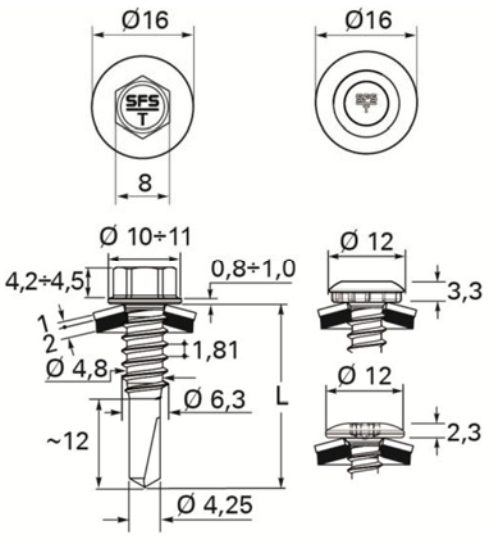
	$t_{N,II}$ [mm] =	1,00		1,25		1,50		2,00		2,50	
	$M_{t,nom}$ =	–									
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	-	-	1,19	ac	1,19	ac	1,19	ac	1,19	ac
	0,55	-	-	1,30	-	1,30	-	1,30	ac	1,30	ac
	0,63	-	-	1,47	-	1,47	-	1,47	ac	-	-
	0,75	-	-	1,72	-	1,72	-	1,72	ac	-	-
	0,88	-	-	2,49	-	2,62	-	2,87	ac	-	-
	1,00	-	-	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	-	-	-	-	-	-	-
$N_{R,k}$ [kN] for $t_{N,I}$ [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 ≥ ∅ 15 mm

Annex 40

Deutsches Institut für Bautechnik DIBt



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

Timber substructures

no performance determined

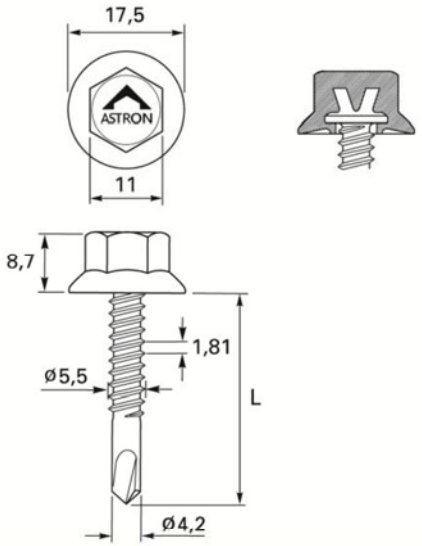
$t_{N,II}$ [mm] =		1,00		1,25		1,50		2,00		2,50	
$M_{t,nom}$ =		–									
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	-	-	1,61	ac	1,61	ac	1,61	ac	1,61	ac
	0,55	-	-	1,86	-	1,86	-	1,86	-	1,86	-
	0,63	-	-	2,27	-	2,27	-	2,27	-	-	-
	0,75	-	-	2,88	-	2,88	-	2,88	-	-	-
	0,88	-	-	3,42	-	3,65	-	4,10	-	-	-
	1,00	-	-	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	-	-	-	-	-	-	-
$N_{R,k}$ [kN] for $t_{N,I}$ [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 ≥ ∅ 16 mm

Annex 41

Deutsches Institut für Bautechnik DIBt



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: $\Sigma t_i \leq 3{,}22$ 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	
$M_{t,nom}$ =																	
$V_{R,k}$ [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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

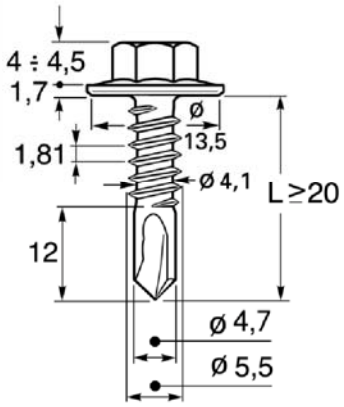
- If both components I and II are made of S350GD all values may be increased by 17,0%.

Self-drilling screw

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

Annex 42

Deutsches Institut für Bautechnik



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	—	—	—	—	—	—	—	—	—

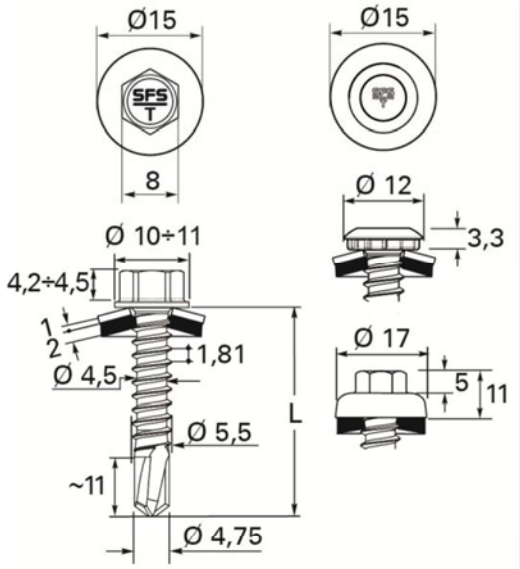
Self-drilling screw

SFS SD5 - H15 - 5,5 x L

hexagon flange head Ø15 mm

Annex 43

Deutsches Institut für Bautechnik DIBt



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

Timber substructures

no performance determined

$t_{N,II}$ [mm] =		1,50		2,00		2,50		3,00		4,00		5,00	
$M_{t,nom}$ =		–											
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,57	ac	1,76	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	ac	1,86	a
	0,63	1,94	ac	2,03	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	ac	2,28	a
	0,88	2,86	ac	2,86	ac	3,04	ac	3,27	ac	3,27	ac	3,27	a
	1,00	3,43	ac	3,43	ac	3,74	ac	4,18	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	-	-
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,53	ac	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	ac	1,71	a
	0,63	2,20	ac	1,98	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	ac	2,41	a
	0,88	2,20	ac	2,86	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	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	-	-

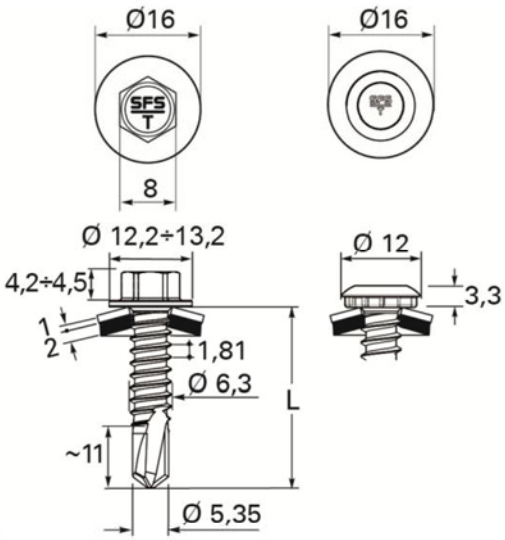
- For component I made of S320GD or S350GD the indicated values of $V_{R,k}$ can be increased by 8,0 %.

Self-drilling screw

SFS SD6–T15(S16)–5,5xL, SFS SD6–L12–T15(S16)–5,5xL, SFS SDZ6–T15(S16)–5,5xL
with hexagon head, irius® drive system or Zamac head and sealing washer ≥ ∅ 15 mm

Annex 44

Deutsches Institut für Bautechnik DIBt



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

Timber substructures

no performance determined

$t_{N,II}$ [mm] =		1,50		2,00		2,50		3,00		4,00		5,00	
$M_{t,nom}$ =		–											
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,97	ac	1,97	-	1,97	-	1,99	-	1,99	-	1,99	-
	0,55	1,99	-	2,05	-	2,13	-	2,19	-	2,19	-	2,19	-
	0,63	2,27	-	2,35	-	2,44	-	2,51	-	2,51	-	2,51	-
	0,75	2,71	-	2,80	-	2,90	-	2,99	-	2,99	-	2,99	-
	0,88	3,18	-	3,36	-	3,54	-	3,72	-	3,72	-	3,72	-
	1,00	3,61	-	3,87	-	4,13	-	4,39	ac	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	-	-
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,95	ac	1,95	-	1,95	-	1,95	-	1,95	-	1,95	-
	0,55	2,13	-	2,33	-	2,33	-	2,33	-	2,33	-	2,33	-
	0,63	2,13	-	2,93	-	2,93	-	2,93	-	2,93	-	2,93	-
	0,75	2,13	-	3,20	-	3,83	-	3,83	-	3,83	-	3,83	-
	0,88	2,13	-	3,20	-	4,59	-	4,59	-	4,59	-	4,59	-
	1,00	2,13	-	3,20	-	4,63	-	5,29	ac	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	-	-

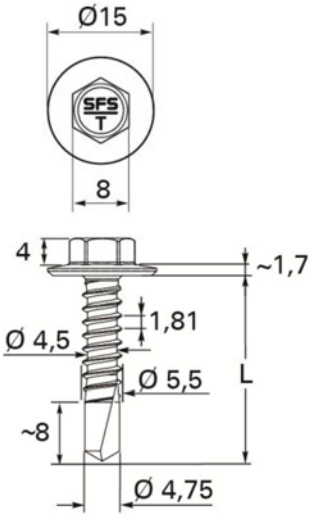
Self-drilling screw

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 ≥ ∅ 16 mm

Annex 45

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD – EN 10346

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

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

Timber substructures

no performance determined

$t_{N,II}$ [mm] =		1,50		2,00		2,50		3,00		4,00		5,00	
$M_{t,nom}$ =		–											
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,57	ac	1,76	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	ac	1,86	a
	0,63	1,94	ac	2,03	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	ac	2,28	a
	0,88	2,86	ac	2,86	ac	3,04	ac	3,27	ac	3,27	ac	3,27	a
	1,00	3,43	ac	3,43	ac	3,74	ac	4,18	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	-	-
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,15	ac	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	ac	1,28	a
	0,63	1,80	ac	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	ac	3,20	a
	0,88	2,20	ac	3,20	ac	3,20	ac	4,00	ac	4,00	ac	4,00	a
	1,00	2,20	ac	3,20	ac	3,20	ac	4,80	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	-	-

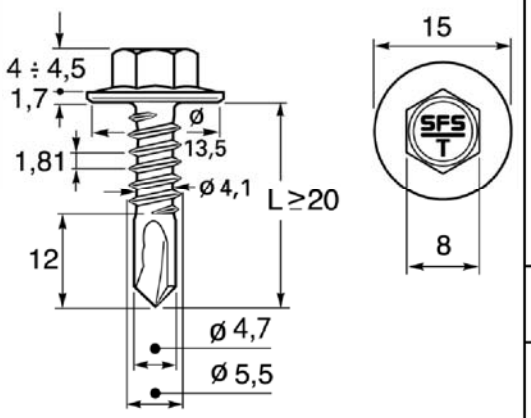
Self-drilling screw

SFS SD6 – H15 – 5,5 x L

with hexagon flange head Ø15 mm

Annex 46

Deutsches Institut für Bautechnik DIBt



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 $\Sigma t_i \leq 8{,}00$ 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	ac	3,00	ac	3,00	ac	3,00	—
	0,75	2,40	ac	2,80	ac	2,80	ac	3,20	ac	3,40	ac	3,40	ac	3,60	ac	3,60	—
	0,88	2,60	—	3,20	—	3,20	—	3,80	ac	4,00	ac	4,20	ac	4,20	ac	4,20	—
	1,00	3,00	—	3,80	—	3,80	—	4,40	—	4,60	ac	4,80	ac	4,80	ac	4,80	—
	1,13	3,40	—	4,20	—	4,20	—	5,00	—	5,20	—	5,40	—	5,40	a	—	—
	1,25	3,80	—	4,80	—	4,80	—	5,60	—	5,80	—	6,00	—	6,40	—	—	—
	1,50	4,60	—	5,20	—	5,20	—	5,80	—	6,40	—	7,00	—	7,20	—	—	—
	1,75	4,60	—	5,20	—	5,20	—	5,80	—	6,40	—	7,00	—	7,20	—	—	—
	2,00	4,60	—	5,20	—	5,20	—	5,80	—	6,40	—	7,00	—	7,20	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,80	ac	1,80	ac	1,80	ac	1,80	ac	5,80	ac	1,80	ac	1,80	ac	1,80	—
	0,75	2,20	ac	3,20	ac	3,20	ac	3,20	ac	3,20	ac	3,20	ac	3,20	ac	3,20	—
	0,88	2,20	—	3,20	—	3,20	—	4,00	ac	4,00	ac	4,00	ac	4,00	ac	4,00	—
	1,00	2,20	—	3,20	—	3,20	—	4,80	—	4,80	ac	4,80	ac	4,80	ac	4,80	—
	1,13	2,20	—	3,20	—	3,20	—	5,20	—	5,20	—	5,20	—	5,20	a	—	—
	1,25	2,20	—	3,20	—	3,20	—	5,40	—	5,60	—	5,60	—	5,60	—	—	—
	1,50	2,20	—	3,20	—	3,20	—	5,40	—	5,80	—	6,00	—	6,00	—	—	—
	1,75	2,20	—	3,20	—	3,20	—	5,40	—	5,80	—	6,00	—	6,00	—	—	—
	2,00	2,20	—	3,20	—	3,20	—	5,40	—	5,80	—	6,00	—	6,00	—	—	—

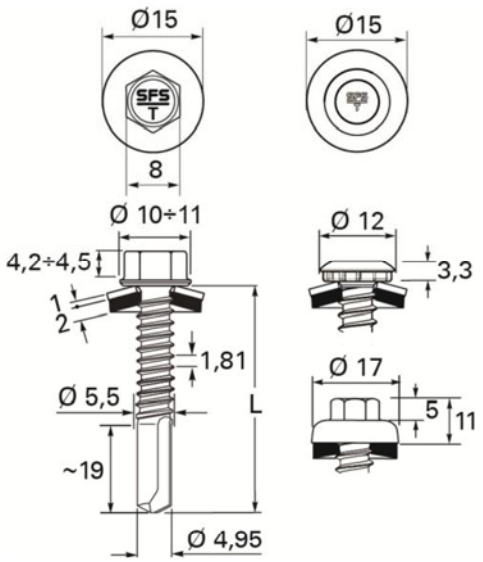
Self-drilling screw

SFS SD8 - H15 - 5,5 x L

hexagon flange head Ø15 mm

Annex 47

Deutsches Institut für Bautechnik DIBt



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

Timber substructures

no performance determined

$t_{N,II}$ [mm] =		4,00		5,00		6,00		8,00		10,00		12,00	
$M_{t,nom}$ =		–											
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,75	-	0,75	-	0,75	-	0,75	-	0,75	-	0,75	-
	0,55	0,88	-	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	2,63	ac
	0,75	5,25	ac	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	ac	6,49	a
	1,00	7,19	ac	7,46	ac	7,72	ac	7,72	ac	7,72	ac	7,72	a
	1,13	7,19	-	7,46	-	7,72	-	7,97	-	7,97	-	7,97	-
	1,25	7,19	-	7,46	-	7,72	-	8,22	-	8,22	-	8,22	-
	1,50	7,19	-	7,46	-	7,72	-	8,72	-	8,72	-	8,72	-
	2,00	7,19	-	7,46	-	7,72	-	8,72	-	8,72	-	8,72	-
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,53	-	1,53	-	1,53	-	1,53	-	1,53	-	1,53	-
	0,55	1,71	-	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	1,98	ac
	0,75	2,41	ac	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	ac	2,86	a
	1,00	3,29	ac	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	-	3,73	-
	1,25	4,10	-	4,10	-	4,10	-	4,10	-	4,10	-	4,10	-
	1,50	5,00	-	5,00	-	5,00	-	5,00	-	5,00	-	5,00	-
	2,00	6,77	-	6,77	-	6,77	-	6,77	-	6,77	-	6,77	-

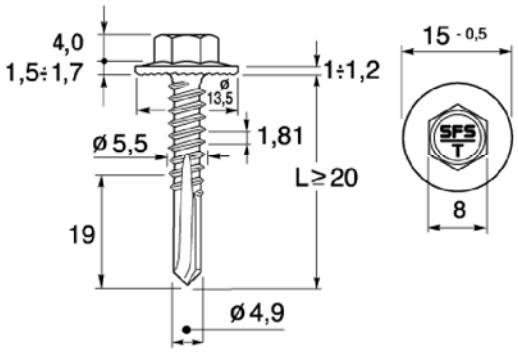
- For component I of S320GD or S350GD the indicated values of $V_{R,k}$ can be increased by 8,0 %.

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 ≥ ∅ 15 mm

Annex 48

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drilling capacity $\Sigma t_i \leq 14{,}00$ 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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	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]	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]	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	6,49[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	7,72[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	—	—	—	—	—
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	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]	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]	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	3,62[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	4,33[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%.

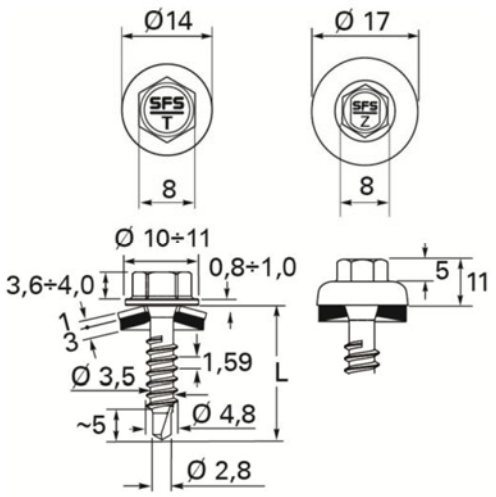
Self-drilling screw

SFS SD14 – H15 – 5,5 x L

hexagon flange head Ø15 mm

Annex 49

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: aluminium alloy AW-AlMg3 – 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 $\Sigma t_i \leq 2{,}00$ mm

Timber substructures

no performance determined

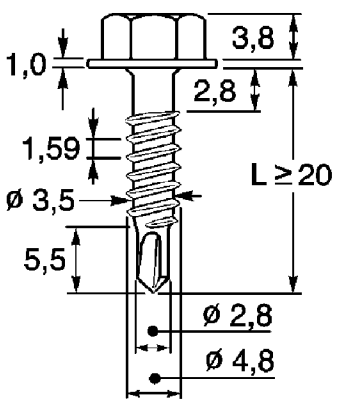
	$t_{N,II}$ [mm] =	0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50
	$M_{t,nom}$ =	—									
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,58 -	0,58 -	0,58 -	0,58 -	0,58 -	0,58 -	0,58 -	0,58 -	0,58 -	0,58 -
	0,50	0,58 -	0,69 -	0,69 -	0,69 -	0,69 -	0,69 -	0,69 -	0,69 -	0,69 -	0,69 -
	0,55	0,58 -	0,69 -	0,80 -	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 -	0,98 -	- -
	0,75	0,58 -	0,69 -	0,80 -	0,98 -	1,26 -	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 -	- -	- -	- -	- -	- -	- -	- -	- -
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,40	0,30 -	0,42 -	0,49 -	0,80 -	1,00 -	1,09 -	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 -	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 ≥ ∅ 14 mm

Annex 50

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

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

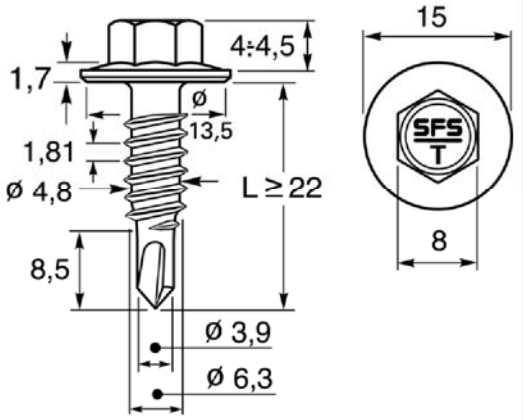
Self-drilling screw

SFS SL2 – 4,8 x L

with threadfree zone and hexagon flange head Ø15 mm

Annex 51

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

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

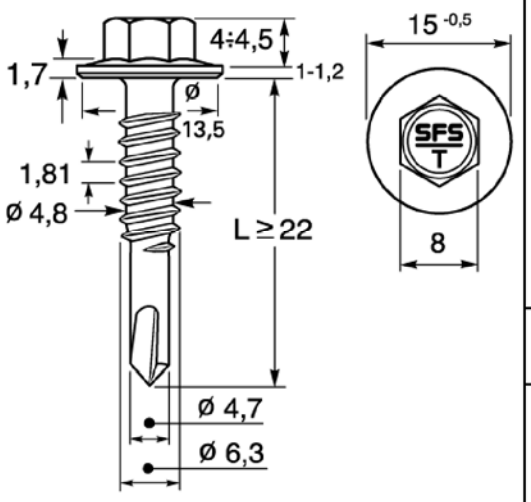
Self-drilling screw

SFS SL2 – H15 – 6,3 x L

with threadfree zone and hexagon flange head Ø15 mm

Annex 52

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity $\Sigma t_i \leq 3{,}00$ 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	
$M_{t,nom}$ =		—															
$V_{R,k}$ [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	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [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	—	—	—	—	—	—	—	—	—	—	—

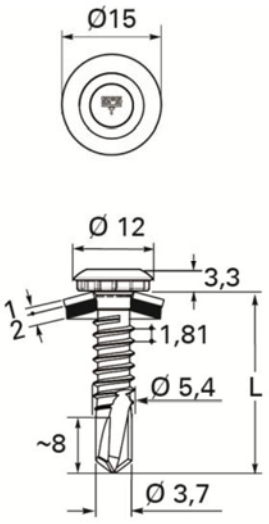
Self-drilling screw

SFS SL3 - H15 - 6,3 x L

with threadfree zone and hexagon flange head Ø15 mm

Annex 53

Deutsches Institut für Bautechnik



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

Timber substructures

no performance determined

	$t_{N,II}$ [mm] =	1,25		1,50		2,00		2,50	
	$M_{t,nom}$ =	–							
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,79	ac	1,79	ac	1,79	ac	1,79	ac
	0,55	1,92	ac	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	-	-	-	-	-
	1,25	3,72	-	3,72	-	-	-	-	-
	1,50	4,33	-	4,33	-	-	-	-	-
	2,00	4,33	-	-	-	-	-	-	-
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,90	ac	1,90	ac	1,90	ac	1,90	ac
	0,55	2,12	ac	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	-	-	-	-	-
	1,25	2,18	-	2,93	-	-	-	-	-
	1,50	2,18	-	2,93	-	-	-	-	-
	2,00	2,18	-	2,93	-	-	-	-	-

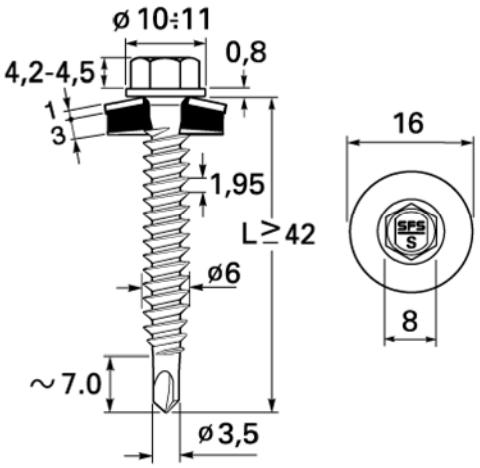
Self-drilling screw

SFS SDL3 – L12 – T15 – 5,5 x L

with irius® drive system and sealing washer ≥ ∅ 15 mm

Annex 54

Deutsches Institut für Bautechnik DIBt



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 Nm

$f_{ax,k}$ = 9,800 N/mm² for l_{ef} ≥ 24,0 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	– –	– –	– –	– –	– –	– –	– –	– –	– –	–
											bearing resistance of component I
$N_{R,k}$ [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] –	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	– –	– –	– –	– –	– –	– –	– –	– –	– –	–
											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 (ρ_a = 350 kg/m³). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.

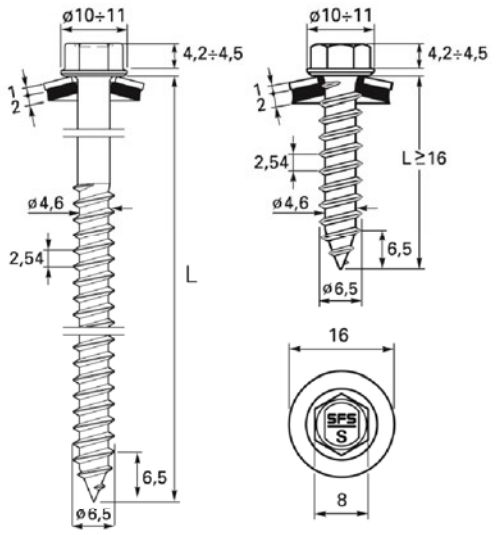
Self-drilling screw

SFS SW2 - S - S16 - 6 x 42

with hexagon head and sealing washer ≥ Ø16 mm

Annex 55

Deutsches Institut für Bautechnik DIBt



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 Nm

$f_{ax,k}$ = 8,575 N/mm² for $l_{ef} \geq 26{,}0$ 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] ac	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
bearing resistance of comp. I											
$N_{R,k}$ 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
pull-through resistance of comp. I											

- Index a: If predrill diameter d_{pd} = 4,0 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 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 (ρ_a = 350 kg/m³). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.

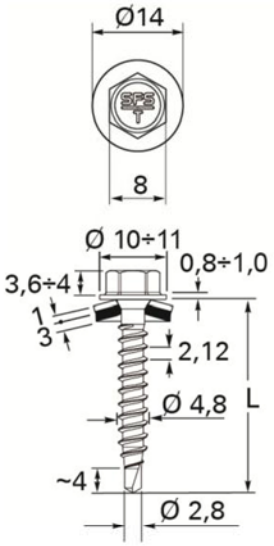
Self-tapping screw

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

with hexagon head and sealing washer ≥ Ø16 mm

Annex 56

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: aluminium alloy AW-AlMg3 – EN 485
with vulcanized EPDM seal

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: Timber – EN 14081

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

Timber substructures

Performance determined with

$M_{y,Rk}$ = 6,070 Nm

$f_{ax,k}$ = 13,31 N/mm² for $l_{ef} \geq 24{,}0$ mm

L_{ef} =		24	29	38	48	58		
$M_{t,nom}$ =								
$V_{R,k}$ [KN] for $t_{N,I}$ [mm]	0,50	0,87 —	1,05 —	1,19 —	1,19 —	1,19 —	— —	1,19
	0,55	0,87 —	1,05 —	1,28 —	1,28 —	1,28 —	— —	1,28
	0,63	0,87 —	1,05 —	1,37 —	1,42 —	1,42 —	— —	1,42
	0,75	0,87 —	1,05 —	1,37 —	1,63 —	1,63 —	— —	1.63
	0,88	0,87 —	1,05 —	1,37 —	1,72 —	1,72 —	— —	1,72
	1,00	0,87 —	1,05 —	1,37 —	1,73 —	1,81 —	— —	1,81
	1,13	0,87 —	1,05 —	1,37 —	1,73 —	1,81 —	— —	1,81
	1,25	0,87 —	1,05 —	1,37 —	1,73 —	1,81 —	— —	1,81
	1,50	0,87 —	1,05 —	1,37 —	1,73 —	1,81 —	— —	1,81
	1,75	0,87 —	1,05 —	1,37 —	1,73 —	1,81 —	— —	1,81
	2,00	0,87 —	1,05 —	1,37 —	1,73 —	1,81 —	— —	1,81
$N_{R,k}$ [KN] for $t_{N,I}$ [mm]	0,50	1,38 —	1,66 —	1,92 —	1,92 —	1,92 —	— —	1.92
	0,55	1,38 —	1,66 —	2,14 —	2,14 —	2,14 —	— —	2.14
	0,63	1,38 —	1,66 —	2,18 —	2,49 —	2,49 —	— —	2.49
	0,75	1,38 —	1,66 —	2,18 —	2,76 —	3,02 —	— —	3.02
	0,88	1,38 —	1,66 —	2,18 —	2,76 —	3,33 —	— —	3.62
	1,00	1,38 —	1,66 —	2,18 —	2,76 —	3,33 —	— —	4.18
	1,13	1,38 —	1,66 —	2,18 —	2,76 —	3,33 —	— —	4.18
	1,25	1,38 —	1,66 —	2,18 —	2,76 —	3,33 —	— —	4.18
	1,50	1,38 —	1,66 —	2,18 —	2,76 —	3,33 —	— —	4.18
	1,75	1,38 —	1,66 —	2,18 —	2,76 —	3,33 —	— —	4.18
	2,00	1,38 —	1,66 —	2,18 —	2,76 —	3,33 —	— —	4.18

bearing resistance of component I

pull-through resistance component I

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

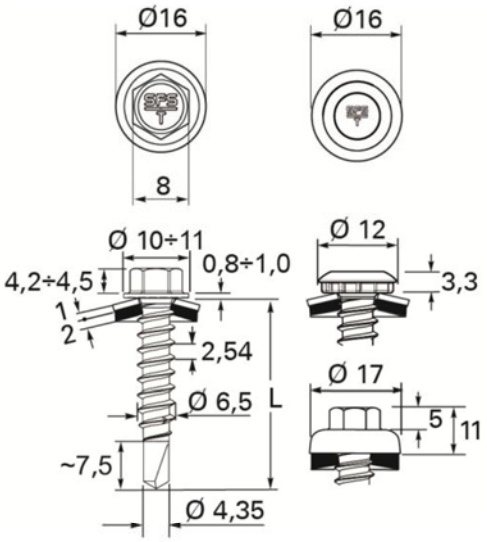
Self-drilling screw

SFS SW – T – A14 – 4,8 x L

with hexagon head and sealing washer ≥ Ø 14 mm

Annex 57

Deutsches Institut für Bautechnik DIBt



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

Timber substructures

performance determined with

$M_{y,Rk}$ = 14,94 Nm

$f_{ax,k}$ = 13,18 N/mm² for $l_{ef} \geq 32{,}0$ mm

L_{ef} =		32	39	60	64	71	78	
$M_{t,nom}$ =								
$V_{R,k}$ [KN] for $t_{N,I}$ [mm]	0,50	1,57 —	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
	0,63	1,57 —	1,91 —	1,97 —	1,97 —	1,97 —	1,97 —	1,97
	0,75	1,57 —	1,91 —	2,33 —	2,33 —	2,33 —	2,33 —	2,33
	0,88	1,57 —	1,91 —	2,33 —	2,33 —	2,33 —	2,33 —	2,33
	1,00	1,57 —	1,91 —	2,33 —	2,33 —	2,33 —	2,33 —	2,33
	1,13	1,57 —	1,91 —	2,33 —	2,33 —	2,33 —	2,33 —	2,33
	1,25	1,57 —	1,91 —	2,33 —	2,33 —	2,33 —	2,33 —	2,33
	1,50	1,57 —	1,91 —	2,33 —	2,33 —	2,33 —	2,33 —	2,33
	1,75	1,57 —	1,91 —	2,33 —	2,33 —	2,33 —	2,33 —	2,33
	2,00	1,57 —	1,91 —	2,33 —	2,33 —	2,33 —	2,33 —	2,33
bearing resistance of component I								
$N_{R,k}$ [KN] for $t_{N,I}$ [mm]	0,50	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
	0,63	2,41 —	2,41 —	2,41 —	2,41 —	2,41 —	2,41 —	2,41
	0,75	2,46 —	3,00 —	3,13 —	3,13 —	3,13 —	3,13 —	3,13
	0,88	2,46 —	3,00 —	3,91 —	3,91 —	3,91 —	3,91 —	3,91
	1,00	2,46 —	3,00 —	4,62 —	4,68 —	4,68 —	4,68 —	4,68
	1,13	2,46 —	3,00 —	4,62 —	4,68 —	4,68 —	4,68 —	4,68
	1,25	2,46 —	3,00 —	4,62 —	4,68 —	4,68 —	4,68 —	4,68
	1,50	2,46 —	3,00 —	4,62 —	4,68 —	4,68 —	4,68 —	4,68
	1,75	2,46 —	3,00 —	4,62 —	4,68 —	4,68 —	4,68 —	4,68
	2,00	2,46 —	3,00 —	4,62 —	4,68 —	4,68 —	4,68 —	4,68
pull-through resistance component I								

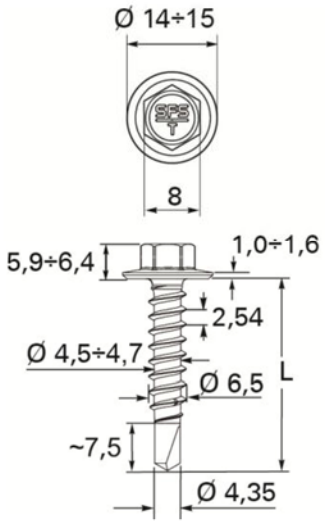
- The values listed above in dependence on the screw-in length l_{ef} are valid for k_{mod} = 0,90 and timber strength grade C24 (ρ_a = 350 kg/m³). For other combinations of k_{mod} and timber strength grades see chapter 4.2.2.

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 ≥ ∅ 16 mm

Annex 58

Deutsches Institut für Bautechnik DIBt



Materials

Fastener: carbon steel
case hardened and galvanized

Washer: none

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: Timber – EN 14081

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

Timber substructures

performance determined with

$M_{y,Rk}$ = 14,94 Nm

$f_{ax,k}$ = 13,18 N/mm² for $l_{ef} \geq 32{,}0$ mm

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

bearing resistance of component I

pull-through resistance component I

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

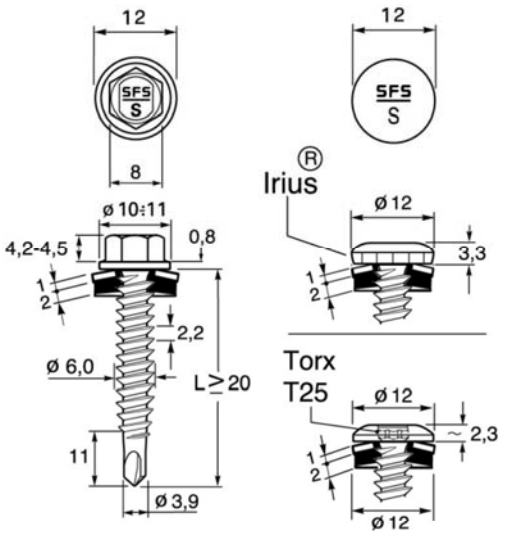
Self-drilling screw

SFS SW3 – T – H15 – 6,5 x L

with hexagon head with flange ∅ 15 mm

Annex 59

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

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

Timber substructures

no performance determined

$t_{N,II}$ =	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	0,65 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	–	–	–	–

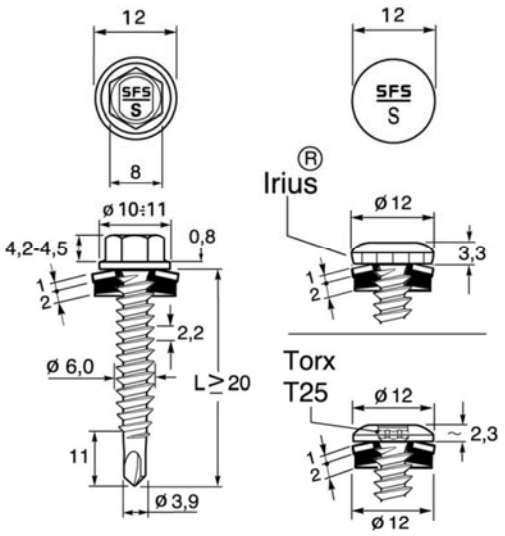
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

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 ≥ ∅ 12 mm

Annex 60

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

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

Timber substructures

no performance determined

$t_{N,II}$ =		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		–		–		–		–	

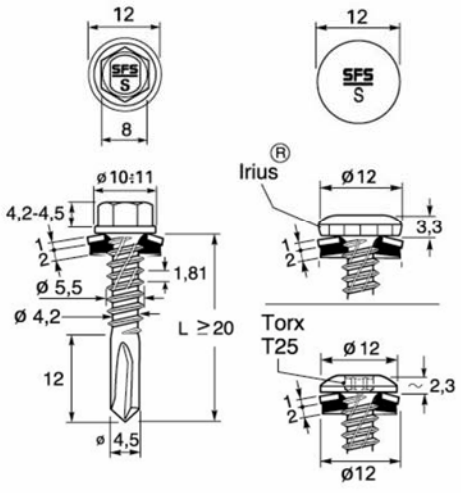
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

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 ≥ ∅ 12 mm

Annex 61

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

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	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	– –	– –	– –
	0,60	0,83 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 a	– –	– –	– –
	0,80	1,06 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 a	1,60 a	– –	– –	– –
	1,00	1,30 ac	1,57 ac	1,63 ac	1,69 ac	1,75 a	1,80 a	– –	– –	– –
	1,20	1,30 ac	1,74 ac	1,86 ac	1,97 a	2,09 a	– –	– –	– –	– –
	1,50	1,30 ac	1,74 ac	1,86 a	1,97 a	2,09 a	– –	– –	– –	– –
	2,00	1,30 a	1,74 a	1,86 a	1,97 a	2,09 a	– –	– –	– –	– –
$N_{R,II,k}$ =		1,00	1,13	1,74	2,35	3,12	3,88	–	–	–

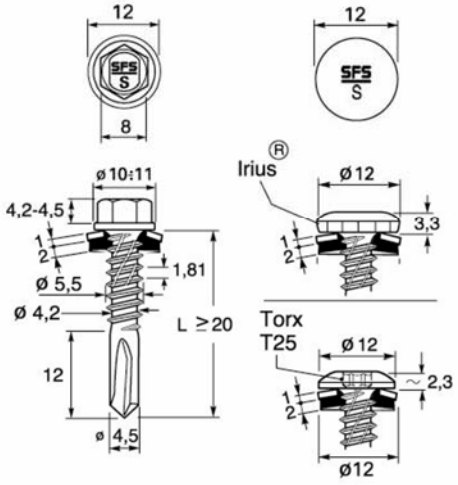
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

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 ≥ ∅ 12 mm

Annex 62

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

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		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		–		–		–	

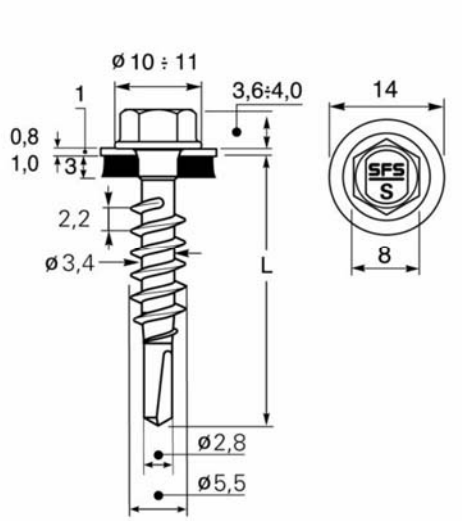
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

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 ≥ ∅ 12 mm

Annex 63

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

Drilling capacity $\Sigma t_i \leq 2{,}00$ 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
$M_{t,nom}$ =										
$V_{R,k}$ for $t_{N,I}$ =	0,40	0,17 –	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 –	0,31 –
	0,60	0,17 –	0,31 –	0,45 –	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 –	0,59 –	– –
	0,80	0,17 –	0,31 –	0,45 –	0,59 –	0,73 –	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

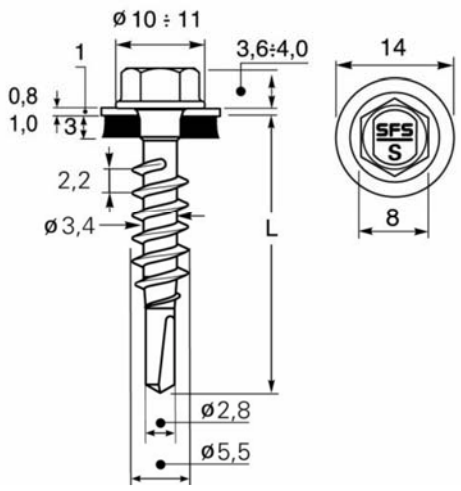
Self-drilling screw

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

with threadfree zone and hexagon head and sealing washer ≥ ∅ 14 mm

Annex 64

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

Drilling capacity $\Sigma t_i \leq 2{,}00$ 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
$M_{t,nom}$ =										
$V_{R,k}$ for $t_{N,I}$ =	0,40	0,22 –	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

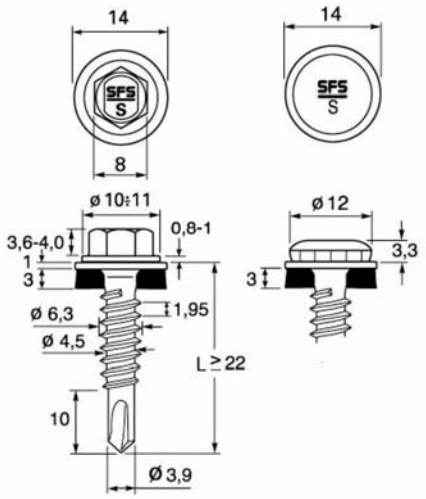
Self-drilling screw

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

with threadfree zone and hexagon head and sealing washer ≥ ∅ 14 mm

Annex 65

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

Drilling capacity $\Sigma t_i \leq 2{,}00$ 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
$M_{t,nom}$ =										
$V_{R,k}$ for $t_{N,I}$ =	0,40	0,10 –	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 –	0,28 –
	0,60	0,10 –	0,28 –	0,45 –	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 –	0,62 –	– –
	0,80	0,10 –	0,28 –	0,45 –	0,62 –	0,79 –	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

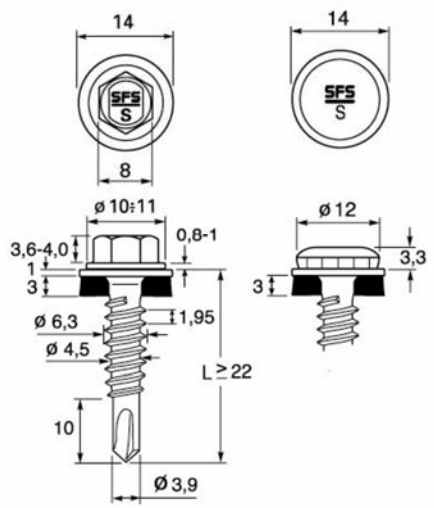
Self-drilling screw

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 ≥ ∅ 14 mm

Annex 66

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

Drilling capacity $\Sigma t_i \leq 2{,}00$ 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
$M_{t,nom}$ =										
$V_{R,k}$ for $t_{N,I}$ =	0,40	0,13 –	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 –	0,36 –
	0,60	0,13 –	0,36 –	0,58 –	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 –	0,81 –	– –
	0,80	0,13 –	0,36 –	0,58 –	0,81 –	1,03 –	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	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

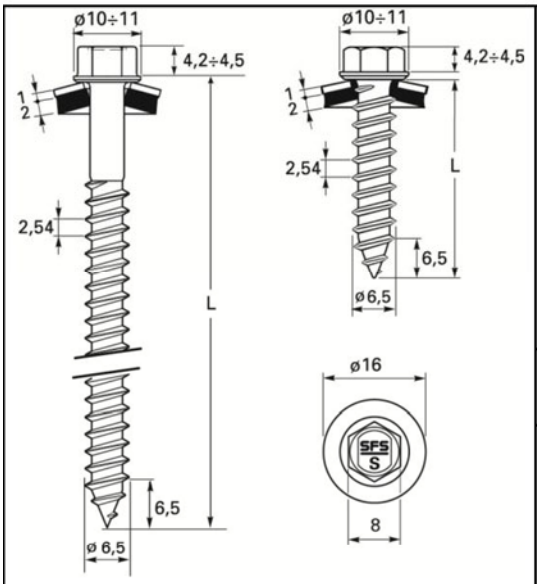
Self-drilling screw

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 ≥ ∅ 14 mm

Annex 67

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

Drilling capacity see table below

Timber substructures

see Annex 56

$t_{N,II}$ =	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
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,24 –	0,40 –	0,49 –	0,57 –	0,65 –	0,82 –	0,86 –	0,86 –	0,86 –
0,60	0,24 –	0,40 –	0,49 –	0,57 –	0,65 –	0,82 –	1,03 –	1,03 –	1,03 –
0,70	0,24 –	0,40 –	0,49 –	0,57 –	0,65 –	0,82 –	1,03 –	1,20 –	1,20 –
0,80	0,24 –	0,40 –	0,49 –	0,57 –	0,65 –	0,82 –	1,03 –	1,37 –	1,37 –
0,90	0,24 –	0,40 –	0,49 –	0,57 –	0,65 –	0,82 –	1,03 –	1,37 –	1,54 –
1,00	0,24 –	0,40 –	0,49 –	0,57 –	0,67 –	0,82 –	1,03 –	1,37 –	1,72 –
1,20	0,24 –	0,40 –	0,49 –	0,57 –	0,67 –	0,88 –	1,08 –	1,41 –	2,06 –
1,50	0,24 –	0,40 –	0,49 –	0,57 –	0,67 –	0,88 –	1,24 –	1,53 –	2,13 –
2,00	0,24 –	0,40 –	0,49 –	0,57 –	0,67 –	0,88 –	1,24 –	1,90 –	2,40 –
$N_{R,II,k}$ =	–	–	–	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

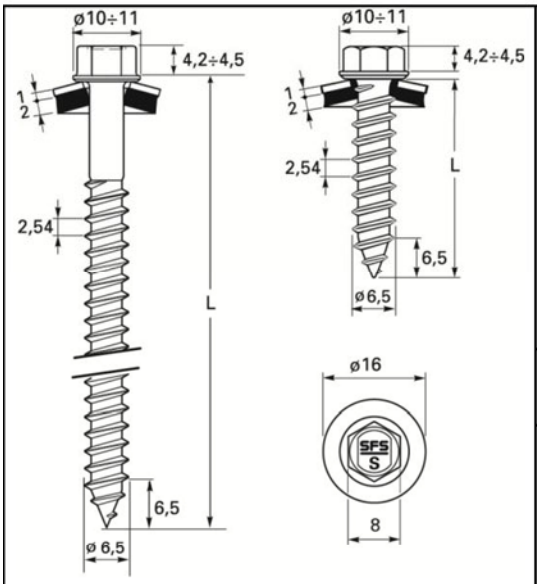
Self-tapping screw

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

with hexagon head and sealing washer ≥ ∅ 16 mm

Annex 68

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

Drilling capacity see table below

Timber substructures

see Annex 56

$t_{N,II}$ =		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
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,31 –	0,53 –	0,63 –	0,74 –	0,85 –	1,06 –	1,12 –	1,12 –	1,12 –
	0,60	0,31 –	0,53 –	0,63 –	0,74 –	0,85 –	1,06 –	1,34 –	1,34 –	1,34 –
	0,70	0,31 –	0,53 –	0,63 –	0,74 –	0,85 –	1,06 –	1,34 –	1,57 –	1,57 –
	0,80	0,31 –	0,53 –	0,63 –	0,74 –	0,85 –	1,06 –	1,34 –	1,79 –	1,79 –
	0,90	0,31 –	0,53 –	0,63 –	0,75 –	0,85 –	1,06 –	1,34 –	1,78 –	2,01 –
	1,00	0,31 –	0,53 –	0,63 –	0,75 –	0,88 –	1,06 –	1,34 –	1,78 –	2,24 –
	1,20	0,31 –	0,53 –	0,63 –	0,75 –	0,88 –	1,15 –	1,41 –	1,83 –	2,68 –
	1,50	0,31 –	0,53 –	0,63 –	0,75 –	0,88 –	1,15 –	1,61 –	2,00 –	2,77 –
	2,00	0,31 –	0,53 –	0,63 –	0,75 –	0,88 –	1,15 –	1,61 –	2,48 –	3,14 –
$N_{R,II,k}$ =		–	–	–	0,47	0,55	0,71	1,01	1,55	2,85

- 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

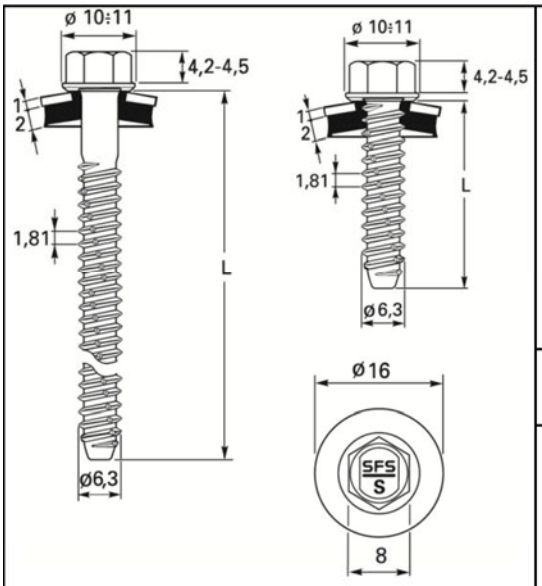
Self-tapping screw

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

with hexagon head and sealing washer ≥ ∅ 16 mm

Annex 69

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

Drilling capacity see table below

Timber substructures

no performance determined

$t_{N,II}$ =	1,20	1,50	2,00	2,50	3,00	4,00	5,00	6,00	≥ 7,00
d_{pd} =	Ø 4,5		Ø 5,0			Ø 5,3		Ø 5,5	
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,79 –	0,83 –	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 –	1,00 –
0,70	0,79 –	1,00 –	1,16 –	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 –	1,33 –
0,90	0,79 –	1,00 –	1,33 –	1,50 –	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 –	1,66 –
1,20	0,87 –	1,06 –	1,37 –	1,68 –	2,00 –	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 –	2,49 –
2,00	0,87 –	1,22 –	1,87 –	2,12 –	2,36 –	2,84 –	3,33 –	3,33 –	3,33 –
$N_{R,II,k}$ =	0,54	0,76	1,17	1,64	2,15	4,21	4,63	6,09	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

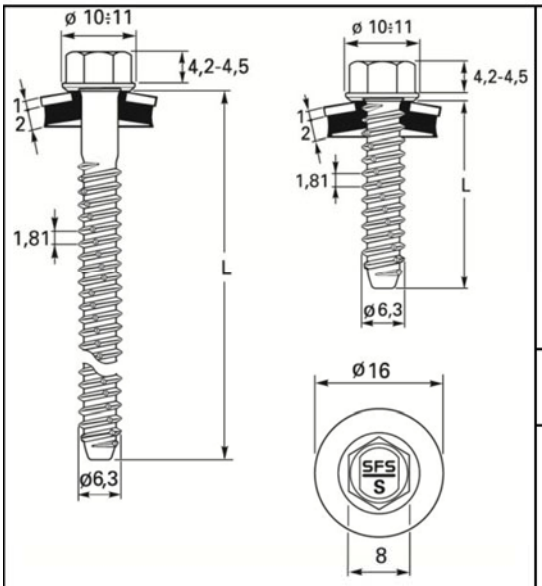
Self-tapping screw

SFS TDB - S - S16 - 6,3 x L

with hexagon head and sealing washer ≥ ∅ 16 mm

Annex 70

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

Drilling capacity see table below

Timber substructures

no performance determined

$t_{N,II}$ =	1,20	1,50	2,00	2,50	3,00	4,00	5,00	6,00	≥ 7,00
d_{pd} =	Ø 4,5		Ø 5,0			Ø 5,3		Ø 5,5	
$V_{R,k}$ for $t_{N,I}$ = 0,50	1,03 –	1,08 –	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 –	1,30 –
0,70	1,03 –	1,30 –	1,52 –	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 –	1,73 –
0,90	1,03 –	1,30 –	1,73 –	1,95 –	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 –	2,17 –
1,20	1,14 –	1,38 –	1,79 –	2,19 –	2,60 –	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 –	3,25 –
2,00	1,14 –	1,59 –	2,44 –	2,76 –	3,07 –	3,70 –	4,33 –	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

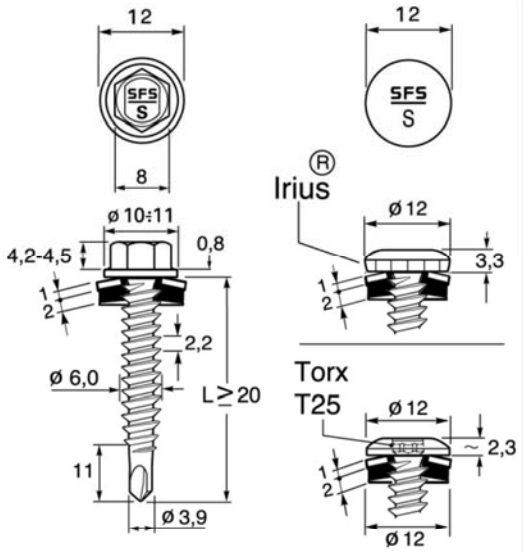
Self-tapping screw

SFS TDB - S - S16 - 6,3 x L

with hexagon head and sealing washer ≥ ∅ 16 mm

Annex 71

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

Drilling capacity $\Sigma t_i \leq 3{,}00$ 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		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	

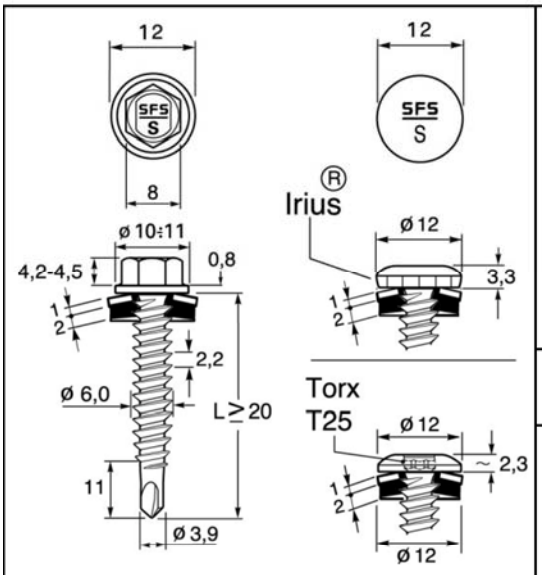
- Index a: If component t_{II} is made of S320GD or S350GD the value may be increased by 8,0%
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

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 ≥ ∅ 12 mm

Annex 72

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

Drilling capacity $\Sigma t_i \leq 3{,}00$ 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		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	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
$N_{R,II,k}$ =		1,14 a)		1,66 a)		1,81 a)		2,10		2,38		3,14		3,86		4,57		5,71	

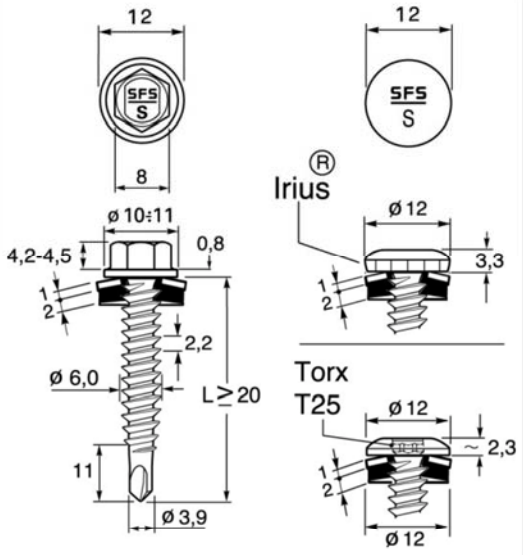
- Index a: If component t_{II} is made of S320GD or S350GD the value may be increased by 8,0%
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

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 ≥ ∅ 12 mm

Annex 73

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

Component II: S280GD, S320GD or S350GD - EN 10346

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

Timber substructures

no performance determined

$t_{N,II}$ =	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	0,65 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	–	–

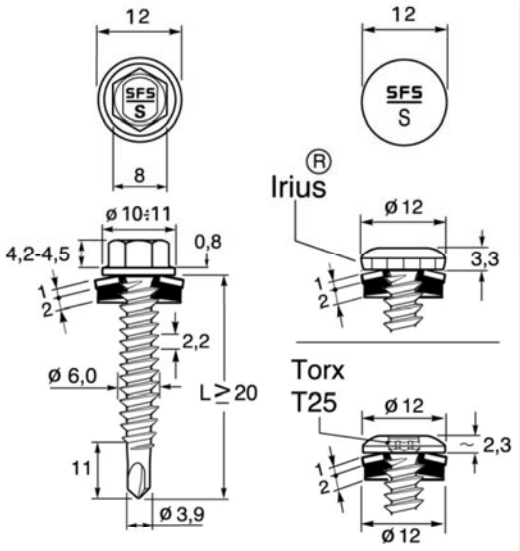
- Index a: If component t_{II} is made of S320GD or S350GD the value may be increased by 8,0%
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

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 ≥ ∅ 12 mm

Annex 74

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

Component II: S280GD, S320GD or S350GD - EN 10346

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

Timber substructures

no performance determined

$t_{N,II}$ =	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	–	–

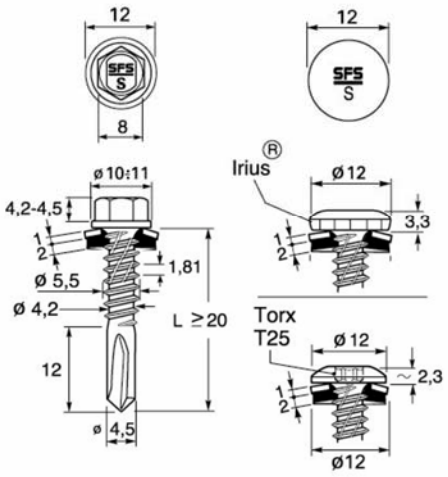
- Index a: If component t_{II} is made of S320GD or S350GD the value may be increased by 8,0%
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

Self-drilling screw

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 ≥ ∅ 12 mm

Annex 75

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

Component II: S235, S275, 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		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		–		–		–	

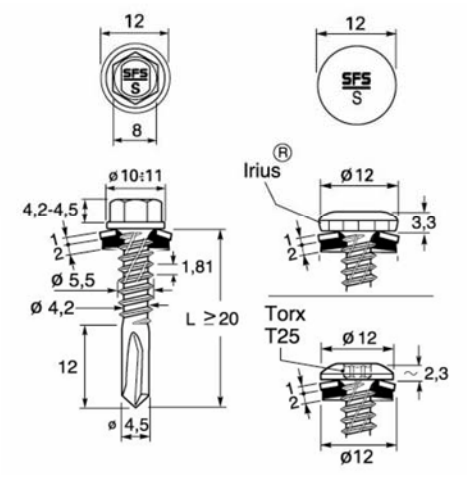
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

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 ≥ ∅ 12 mm

Annex 76

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

Component II: S235, S275, 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		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		–		–		–	

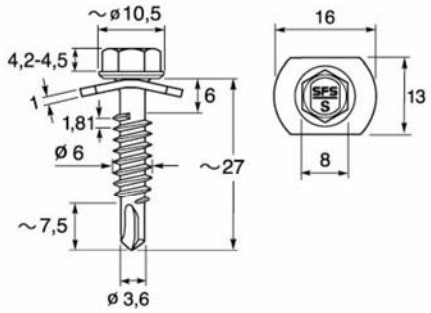
- Pull-through of component I according to EN 1999-1-4, chapter 8.3.3.1 or according to the recommendations of the aluminium profile producers

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 ≥ ∅ 12 mm

Annex 77

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

Drilling capacity $\Sigma t_i \leq 3{,}90$ 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	1,40	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

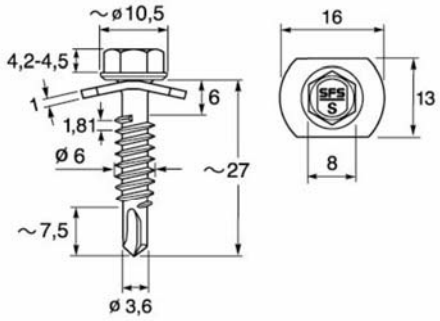
Self-drilling screw

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

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

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

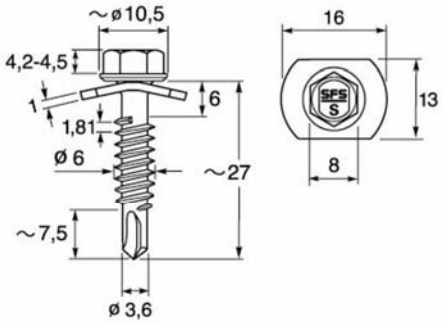
Self-drilling screw

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

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

Drilling capacity $\Sigma t_i \leq 3{,}90$ 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 $t_{N,I}$ =	0,80	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1,00	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1,20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1,50	–	–	–	–	1,40	ac	1,57	ac	1,74	ac	1,76	ac	1,77	ac	–	–	–	–
	2,00	–	–	–	–	1,83	ac	2,04	ac	2,25	ac	2,41	ac	2,57	ac	–	–	–	–
	2,50	–	–	–	–	1,83	ac	2,43	ac	2,43	ac	2,50	ac	2,57	ac	–	–	–	–
	3,00	–	–	–	–	2,01	ac	2,81	ac	–	–	–	–	–	–	–	–	–	–
	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

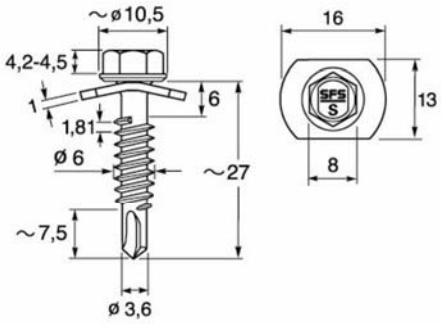
Self-drilling screw

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

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

Annex 80

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

Drilling capacity $\Sigma t_i \leq 3{,}90$ 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 $t_{N,I}$ = 0,80	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1,00	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1,20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1,50	–	–	–	–	1,60	ac	1,93	ac	2,26	ac	2,28	ac	2,30	ac	–	–	–	–
2,00	–	–	–	–	1,83	ac	2,35	ac	2,87	ac	3,09	ac	3,31	ac	–	–	–	–
2,50	–	–	–	–	1,83	ac	2,58	ac	2,87	ac	3,09	ac	3,31	ac	–	–	–	–
3,00	–	–	–	–	2,01	ac	2,81	ac	–	–	–	–	–	–	–	–	–	–
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

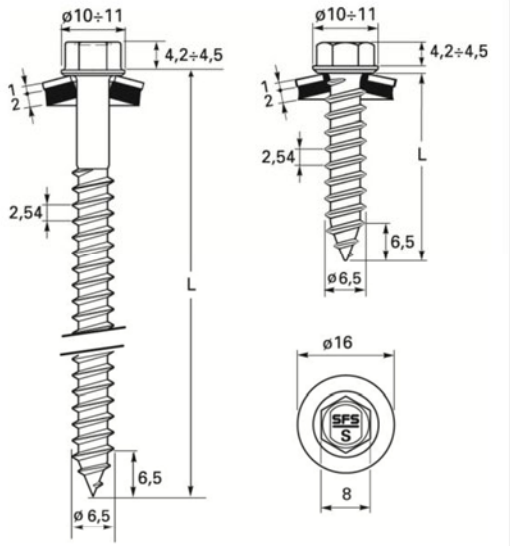
Self-drilling screw

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

Deutsches Institut für Bautechnik DIBt



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 N/mm² – 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		
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,35 –	0,44 –	0,55 –	0,65 –	0,76 –	0,86 –	0,86 –	0,86 –	0,86 –
	0,60	0,35 –	0,44 –	0,55 –	0,65 –	0,76 –	0,86 –	1,03 –	1,03 –	1,03 –
	0,70	0,35 –	0,44 –	0,55 –	0,65 –	0,76 –	0,86 –	1,03 –	1,20 –	1,20 –
	0,80	0,35 –	0,44 –	0,55 –	0,65 –	0,76 –	0,86 –	1,03 –	1,37 –	1,37 –
	0,90	0,35 –	0,44 –	0,56 –	0,65 –	0,76 –	0,86 –	1,03 –	1,37 –	1,54 –
	1,00	0,35 –	0,44 –	0,56 –	0,67 –	0,76 –	0,86 –	1,03 –	1,37 –	1,72 –
	1,20	0,35 –	0,44 –	0,56 –	0,67 –	0,81 –	0,92 –	1,08 –	1,41 –	2,06 –
	1,50	0,35 –	0,44 –	0,56 –	0,67 –	0,81 –	0,94 –	1,24 –	1,53 –	2,13 –
	2,00	0,35 –	0,44 –	0,56 –	0,67 –	0,81 –	0,94 –	1,24 –	1,90 –	2,40 –
$N_{R,II,k}$ =		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 mm the values $N_{R,II,k}$ may be increased by 7,0%
- Index 2): If predrill diameter d_{pd} = 4,5 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

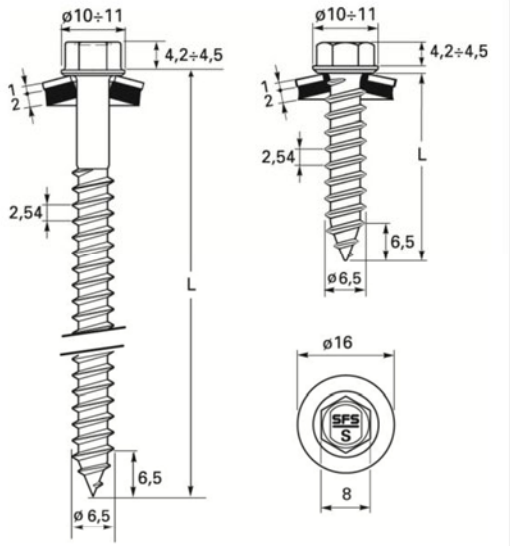
Self-tapping screw

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

with hexagon head and sealing washer ≥ ∅ 16 mm

Annex 82

Deutsches Institut für Bautechnik DIBt



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 N/mm² – 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		
$V_{R,k}$ for $t_{N,I}$ =	0,50	0,45 –	0,58 –	0,72 –	0,85 –	0,99 –	1,12 –	1,12 –	1,12 –	1,12 –
	0,60	0,45 –	0,58 –	0,72 –	0,85 –	0,99 –	1,12 –	1,34 –	1,34 –	1,34 –
	0,70	0,45 –	0,58 –	0,72 –	0,85 –	0,99 –	1,12 –	1,34 –	1,57 –	1,57 –
	0,80	0,45 –	0,58 –	0,72 –	0,85 –	0,99 –	1,12 –	1,34 –	1,79 –	1,79 –
	0,90	0,45 –	0,58 –	0,72 –	0,85 –	0,99 –	1,12 –	1,34 –	1,78 –	2,01 –
	1,00	0,45 –	0,58 –	0,72 –	0,88 –	1,05 –	1,12 –	1,34 –	1,78 –	2,24 –
	1,20	0,45 –	0,58 –	0,72 –	0,88 –	1,05 –	1,20 –	1,41 –	1,83 –	2,68 –
	1,50	0,45 –	0,58 –	0,72 –	0,88 –	1,05 –	1,23 –	1,61 –	2,00 –	2,77 –
	2,00	0,45 –	0,58 –	0,72 –	0,88 –	1,05 –	1,23 –	1,61 –	2,48 –	3,14 –
$N_{R,II,k}$ =		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 mm the values $N_{R,II,k}$ may be increased by 7,0%
- Index 2): If predrill diameter d_{pd} = 4,5 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

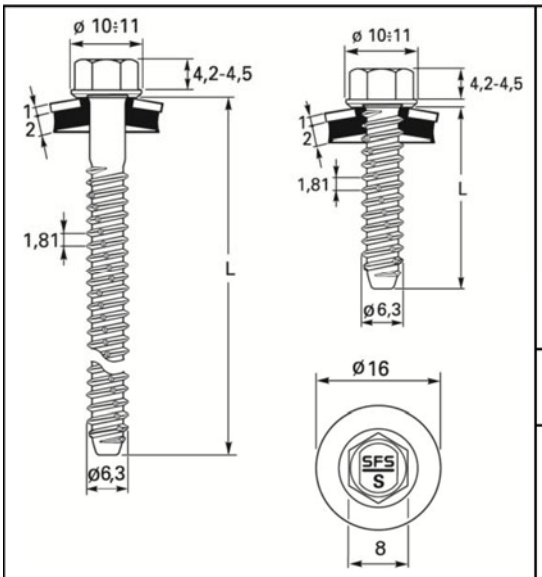
Self-tapping screw

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

with hexagon head and sealing washer ≥ ∅ 16 mm

Annex 83

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

Drilling capacity see table below

Timber substructures

no performance determined

$t_{N,II}$ =	1,25	1,50	2,00	2,50	3,00	4,00	5,00	6,00	8,0 - 10,0	≥ 10,00[a]
d_{pd} =	Ø 5,0		Ø 5,3					Ø 5,5	Ø 5,7	Ø 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

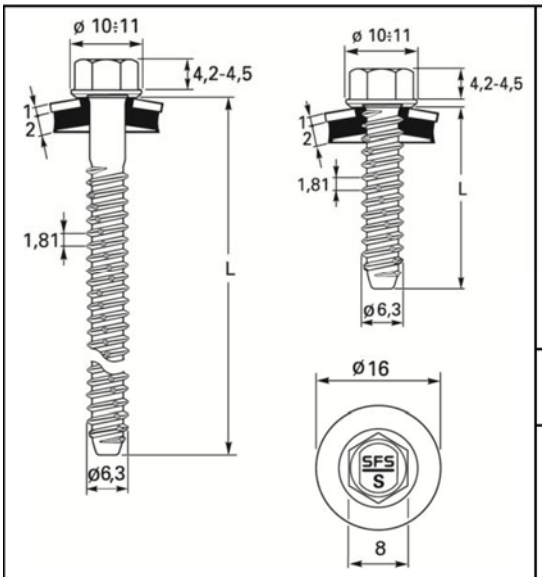
Self-tapping screw

SFS TDB - S - S16 - 6,3 x L

with hexagon head and sealing washer ≥ ∅ 16 mm

Annex 84

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

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

Drilling capacity see table below

Timber substructures

no performance determined

$t_{N,II}$ =		1,25	1,50	2,00	2,50	3,00	4,00	5,00	6,00	8,0 - 10,0	≥ 10,00[a]
d_{pd} =		Ø 4,5		Ø 5,3					Ø 5,5	Ø 5,7	Ø 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 –
$N_{R,II,k}$ =		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

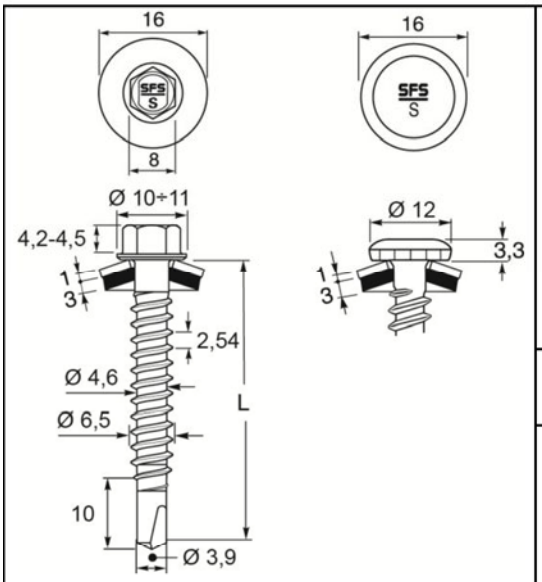
Self-tapping screw

SFS TDB - S - S16 - 6,3 x L

with hexagon head and sealing washer ≥ ∅ 16 mm

Annex 85

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

Component II: structural timber - EN 14081

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

Timber substructures

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

l_{ef} =	26	32	39	45	52	58	64	71	78	
$M_{t,nom}$ =										
$V_{R,k}$ for $t_{N,I}$ = 0,50	0,86 –	0,86 –	0,86 –	0,86 –	0,86 –	0,86 –	0,86 –	0,86 –	0,86 –	0,86
0,60	1,03 –	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 –	1,20
0,80	1,06 –	1,31 –	1,37 –	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 –	1,54
1,00	1,06 –	1,31 –	1,60 –	1,72 –	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 –	2,06
1,50	1,06 –	1,31 –	1,60 –	1,84 –	2,13 –	2,37 –	2,46 –	2,55 –	2,57 –	2,57
2,00	1,06 –	1,31 –	1,60 –	1,84 –	2,13 –	2,37 –	2,46 –	2,55 –	2,64 –	3,43
$N_{R,II,k}$ =	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 (ρ_a = 350 kg/m³). 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

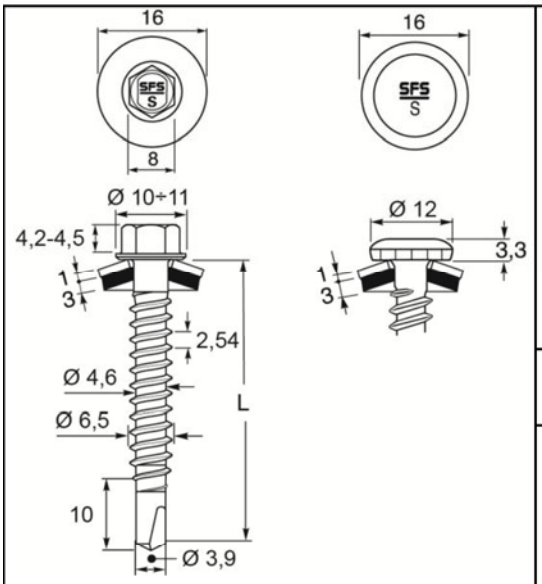
Self-drilling screw

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 ≥ ∅ 16 mm

Annex 86

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

Component II: structural timber - EN 14081

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

Timber substructures

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

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	

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 (ρ_a = 350 kg/m³). 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

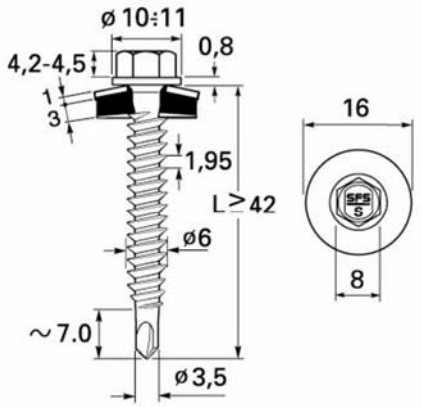
Self-drilling screw

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 ≥ ∅ 16 mm

Annex 87

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

Component II: structural timber - EN 14081

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

Timber substructures

performance determined with

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

$f_{ax,k}$ = 9,800 N/mm² for $l_{ef} \geq 24{,}0$ 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
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 (ρ_a = 350 kg/m³). 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

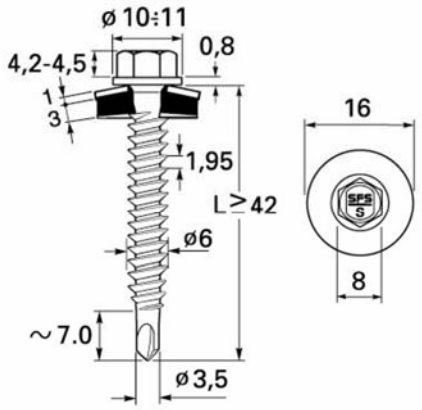
Self-drilling screw

SFS SW2 - S - S16 - 6 x L

with hexagon head and sealing washer ≥ ∅ 16 mm

Annex 88

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

Component II: structural timber - EN 14081

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

Timber substructures

performance determined with

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

$f_{ax,k}$ = 9,800 N/mm² for $l_{ef} \geq 24{,}0$ 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 –	0,70 –	0,70 –	0,70 –	0,70
	0,60	0,80 –	0,93 –	0,93 –	0,93 –	0,93 –	0,93 –	0,93 –	0,93 –	0,93 –	0,93
	0,70	0,96 –	1,00 –	1,04 –	1,08 –	1,12 –	1,16 –	1,16 –	1,16 –	1,16 –	1,16
	0,80	0,96 –	1,00 –	1,04 –	1,08 –	1,12 –	1,16 –	1,20 –	1,24 –	1,26 –	1,34
	0,90	0,96 –	1,00 –	1,04 –	1,08 –	1,12 –	1,16 –	1,20 –	1,24 –	1,26 –	1,52
	1,00	0,96 –	1,00 –	1,04 –	1,08 –	1,12 –	1,16 –	1,20 –	1,24 –	1,26 –	1,52
	1,20	0,96 –	1,00 –	1,04 –	1,08 –	1,12 –	1,16 –	1,20 –	1,24 –	1,26 –	1,52
	1,50	0,96 –	1,00 –	1,04 –	1,08 –	1,12 –	1,16 –	1,20 –	1,24 –	1,26 –	1,52
	2,00	0,96 –	1,00 –	1,04 –	1,08 –	1,12 –	1,16 –	1,20 –	1,24 –	1,26 –	1,52
$N_{R,II,k}$ =		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 (ρ_a = 350 kg/m³). 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

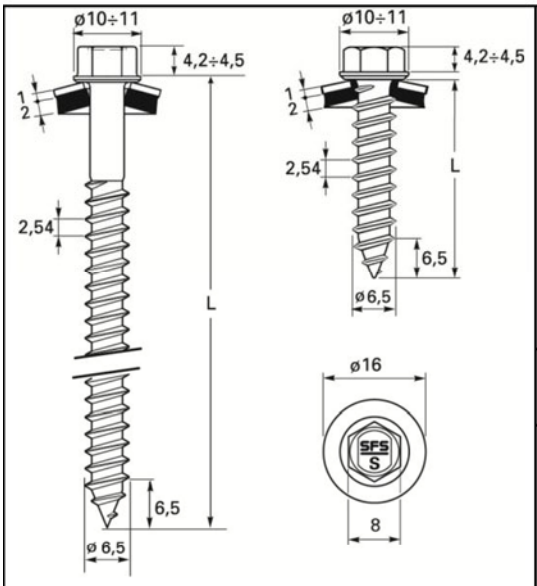
Self-drilling screw

SFS SW2 - S - S16 - 6 x L

with hexagon head and sealing washer ≥ ∅ 16 mm

Annex 89

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

Component II: structural timber - EN 14081

Drilling capacity see table below

Timber substructures

performance determined with

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

$f_{ax,k}$ = 8,575 N/mm² for $l_{ef} \geq$ 32,0 mm

$t_{N,II}$ =	32	39	60	64	71	78	–
d_{pd} =	Ø 4,8						
$V_{R,k}$ for $t_{N,I}$ = 0,50	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
0,70	1,20 –	1,20 –	1,20 –	1,20 –	1,20 –	1,20 –	1,20
0,80	1,37 –	1,37 –	1,37 –	1,37 –	1,37 –	1,37 –	1,37
0,90	1,54 –	1,54 –	1,54 –	1,54 –	1,54 –	1,54 –	1,54
1,00	1,57 –	1,72 –	1,72 –	1,72 –	1,72 –	1,72 –	1,72
1,20	1,57 –	1,91 –	2,06 –	2,06 –	2,06 –	2,06 –	2,06
1,50	1,57 –	1,91 –	2,27 –	2,31 –	2,38 –	2,45 –	2,57
2,00	1,57 –	1,91 –	2,27 –	2,31 –	2,38 –	2,45 –	3,43
$N_{R,II,k}$ =	1,60	1,90	3,00	3,20	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 (ρ_a = 350 kg/m³). 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

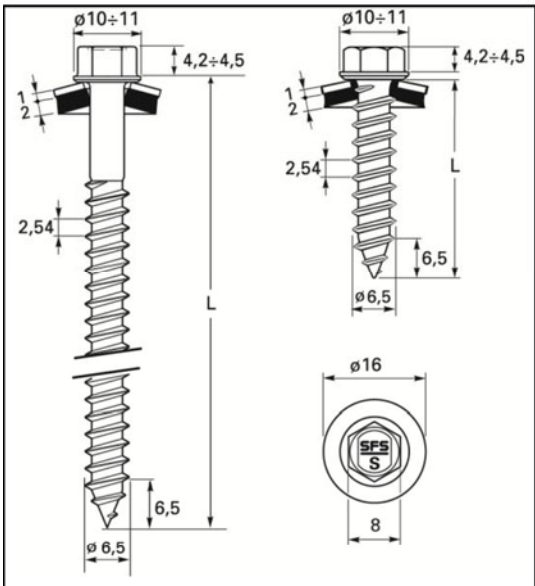
Self-tapping screw

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

with hexagon head and sealing washer ≥ ∅ 16 mm

Annex 90

Deutsches Institut für Bautechnik DIBt



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 N/mm² – EN 573

Component II: structural timber - EN 14081

Drilling capacity see table below

Timber substructures

performance determined with

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

$f_{ax,k}$ = 8,575 N/mm² for $l_{ef} \geq$ 32,0 mm

$t_{N,II}$ =		32	39	60	64	71	78	–
d_{pd} =		Ø 4,8						
$V_{R,k}$ for $t_{N,I}$ =	0,50	1,12 –	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 –	1,34
	0,70	1,57 –	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 –	1,79
	0,90	1,57 –	1,91 –	2,01 –	2,01 –	2,01 –	2,01 –	2,01
	1,00	1,57 –	1,91 –	2,24 –	2,24 –	2,24 –	2,24 –	2,24
	1,20	1,57 –	1,91 –	2,27 –	2,31 –	2,38 –	2,45 –	2,68
	1,50	1,57 –	1,91 –	2,27 –	2,31 –	2,38 –	2,45 –	3,35
	2,00	1,57 –	1,91 –	2,27 –	2,31 –	2,38 –	2,45 –	4,47
$N_{R,II,k}$ =		1,60	1,90	3,00	3,20	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 (ρ_a = 350 kg/m³). 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 ≥ ∅ 16 mm

Annex 91