Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

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European Technical Assessment

ETA-10/0198 of 7 September 2023

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	SX, SLG, SL, TDA, TDB, TDC, SD, SXW, SW, CX, CXLW, SDL, SXL
Product family to which the construction product belongs	Fastening screws for metal members and sheeting
Manufacturer	SFS Group Schweiz AG Rosenbergsaustraße 10 9435 HEERBRUGG SCHWEIZ
Manufacturing plant	SFS plants 5, 7, 32
This European Technical Assessment contains	76 pages including 69 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	330046-01-0602
This version replaces	ETA-10/0198 issued on 1 June 2022

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Specific Part

1 Technical description of the product

The fastening screws are self-drilling or self-tapping screws made of austenitic stainless steel or carbon steel with anticorrosion coating (listed in Table 1). The fastening screws are normally completed with sealing washers consisting of metal washer and EPDM-seal.

Table 1 – Fastening screws for metal members and sheeting

Annex	Fastening Screw	Description	Material Fastener	Material Component I / II
4 / 5	Fastening screws for perforated steel sheeting	Steel sheeting with hole pattern I Steel sheeting with hole pattern II	Stainless steel	Perfoated sheeting
6	CX-S16-5,5 x L	Self-drilling screw with sealing washer ≥ Ø 16 mm	Stainless steel	Steel / Steel
7				Alu / Alu
8 / 9	SX3-A11-6,0 x L SX3-L12-A11-6,0 x L SX3-D12-A11-6,0 x L SX3-D10-A11-6,0 x L	Self-drilling screw with sealing washer ≥ Ø 11 mm	Stainless steel	Steel / Steel
10 / 11	SX3-A11-6,0 x L SX3-L12-A11-6,0 x L SX3-D12-A11-6,0 x L SX3-D10-A11-6,0 x L SX3-S14-6,0 x L SX3-L12-S14-6,0 x L SX3-D12-S14-6,0 x L SX3-D10-S14-6,0 x L	Self-drilling screw with sealing washer ≥ Ø 11 mm	Stainless steel	Alu / Steel
12				Alu / Alu
13 / 14	SX3-S12-6,0 x L SX3-L12-S12-6,0 x L SX3-D12-S12-6,0 x L	Self-drilling screw with sealing washer ≥ Ø 12 mm	Stainless steel	Steel / Steel
15 / 16	SX3-S14-6,0 x L SX3-L12-S14-6,0 x L SX3-D12-S14-6,0 x L SX3-D10-S14-6,0 x L	Self-drilling screw with sealing washer ≥ Ø 14 mm	Stainless steel	Steel / Steel
17 / 18	SX3-S16-6,0 x L SX3-L12-S16-6,0 x L SX3-D12-S16-6,0 x L SX3-D10-S16-6,0 x L	Self-drilling screw with sealing washer ≥ Ø 16 mm	Stainless steel	Steel / Steel
19 / 20	SX3-S19-6,0 x L SX3-L12-S19-6,0 x L SX3-D12-S19-6,0 x L SX3-D10-S19-6,0 x L	Self-drilling screw with sealing washer ≥ Ø 19 mm	Stainless steel	Steel / Steel
21	SX5-A11-5,5 x L SX5-L12-A11-5,5 x L SX5-D12-A11-5,5 x L SX5-D10-A11-5,5 x L	Self-drilling screw with sealing washer ≥ Ø 11 mm	Stainless steel	Steel / Steel
22	SX5-A11-5,5 x L SX5-L12-A11-5,5 x L SX5-D12-A11-5,5 x L SX5-D10-A11-5,5 x L SX5-S14-5,5 x L SX5-L12-S14-5,5 x L SX5-D12-S14-5,5 x L SX5-D10-S14-5,5 x L	Self-drilling screw with sealing washer ≥ Ø 11 mm	Stainless steel	Alu / Steel
23				Alu / Alu

Table 1 – Continued

Annex	Fastening Screw	Description	Material Fastener	Material Component I / II
24	SX5-S12-5,5 x L SX5-L12-S12-5,5 x L SX5-D12-S12-5,5 x L	Self-drilling screw with sealing washer ≥ Ø 12 mm	Stainless steel	Steel / Steel
25	SX5-S14-5,5 x L SX5-L12-S14-5,5 x L SX5-D12-S14-5,5 x L SX5-D10-S14-5,5 x L	Self-drilling screw with sealing washer ≥ Ø 14 mm	Stainless steel	Steel / Steel
26	SX5-S16-5,5 x L SX5-L12-S16-5,5 x L SX5-D12-S16-5,5 x L SX5-D10-S16-5,5 x L	Self-drilling screw with sealing washer ≥ Ø 16 mm	Stainless steel	Steel / Steel
27				Steel / Alu
28	SX5-S19-5,5 x L SX5-L12-S19-5,5 x L SX5-D12-S19-5,5 x L SX5-D10-S19-5,5 x L	Self-drilling screw with sealing washer ≥ Ø 19 mm	Stainless steel	Steel / Steel
29	SX14-A11-5,5 x L SX14-L12-A11-5,5 x L SX14-D10-A11-5,5 x L	Self-drilling screw with sealing washer ≥ Ø 11 mm	Stainless steel	Steel / Steel
30	SX14-S14-5,5 x L SX14-L12-S14-5,5 x L SX14-D10-S14-5,5 x L	Self-drilling screw with sealing washer ≥ Ø 14 mm	Stainless steel	Steel / Steel
31	SX14-S16-5,5 x L SX14-L12-S16-5,5 x L SX14-D12-S16-5,5 x L SX14-D10-S16-5,5 x L	Self-drilling screw with sealing washer ≥ Ø 16 mm	Stainless steel	Steel / Steel
32	SX20-S16-5,5 x L	Self-drilling screw with sealing washer ≥ Ø 16 mm	Stainless steel	Steel / Steel
33	SW2-S-S16-6.0 x L SW2-S-L12-S16-6.0 x L SXW-S16-6.0 x L SXW-L12-S16-6.0 x L	Self-drilling screw with sealing washer ≥ Ø 16 mm	Stainless steel	Steel / Timber
34				Alu / Timber
35	SXW-S16-6.5 x L SXW-L12-S16-6.5 x L	Self-drilling screw with sealing washer ≥ Ø 16 mm	Stainless steel	Steel / Timber
36				Alu / Timber
37 / 38	TDA-S-S16-6,5 x L TDA-S16-6,5 x L	Self-tapping screw with sealing washer ≥ Ø 16 mm	Stainless steel	Steel / Steel
39				Alu / Steel
40				Alu / Alu
41				Steel / Timber
42				Alu / Timber
43	TDB-S-S16-6,3 x L TDB-S16-6,3 x L	Self-tapping screw with sealing washer ≥ Ø 16 mm	Stainless steel	Steel / Steel
44				Alu / Steel
45				Alu / Alu
46	TDC-S-S16-6,3 x L TDC-S16-6,3 x L	Self-tapping screw with sealing washer ≥ Ø 16 mm	Stainless steel	Steel / Steel

Table 1 - Continued

Annex	Fastening Screw	Description	Material Fastener	Material Component I / II
47	CXLW-D10-A11-4,8 x L	Self-drilling screw with sealing washer ≥ Ø 11 mm	Stainless steel	Steel / Steel
48				Alu / Alu
49				Steel / Timber
50	CXLW-AV14-4,8 x L	Self-drilling screw with sealing washer ≥ Ø 14 mm	Stainless steel	Steel / Steel
51				Alu / Alu
52				Steel / Timber
53	SD1-D7-4,8 x L SX2-D7-4,8 x L	Self-drilling screw	Stainless steel	Steel / Steel
54	SDL1-D10-A11-4,8 x L	Self-drilling screw with sealing washer ≥ Ø 11 mm	Stainless steel	Steel / Steel
55	SDL1-AV14-4,8 x L	Self-drilling screw with sealing washer ≥ Ø 14 mm	Stainless steel	Steel / Steel
56	SXL2-AV14-6,3 x L SXL2-L12-AV14-6,3 x L	Self-drilling screw with sealing washer ≥ Ø 14 mm	Stainless steel	Steel / Steel
57				Alu / Alu
58	SLG-S-6,5 x L	Self-drilling screw	Stainless steel	Steel / Steel
59				Alu / Steel
60 / 61	SL3/2-5-S-SV16-6,0 x L SXL3-SV16-6,0 x L	Self-drilling screw with washer 13x16 mm	Stainless steel	Steel / Steel
62 / 63				Alu / Steel
64	SL2-S-S14-4.8 x L	Self-drilling screw with sealing washer ≥ Ø 14 mm	Stainless steel	Steel / Steel
65	SL2-S-S14-5.5 x L	Self-drilling screw with sealing washer ≥ Ø 14 mm	Stainless steel	Steel / Steel
66				Alu / Alu
67	SL2-S-S14-6.3 x L SL2-S-L12-S14-6.3 x L	Self-drilling screw with sealing washer ≥ Ø 14 mm	Stainless steel	Steel / Steel
68				Alu / Alu
69	SLG-S-S14-4.8 x L	Self-drilling screw with sealing washer ≥ Ø 14 mm	Stainless steel	Steel / Steel

2 Specification of the intended use in accordance with the applicable European Assessment Document

The fastening screws are intended to be used for fastening metal sheeting to metal or timber substructures. The sheeting can either be used as wall or roof cladding or as load bearing wall and roof element. The fastening screws can also be used for the fastening of any other thin gauge metal members. The intended use comprises fastening screws and connections for indoor and outdoor applications. Fastening screws which are intended to be used in external environments with ≥ C2 corrosion according to the standard EN ISO 12944-2 are made of stainless steel. Furthermore the intended use comprises connections with predominantly static loads (e.g. wind loads, dead loads). The fastening screws are not intended for re-use.

The performances given in Section 3 are only valid if the fastening screws are used in compliance with the specifications and conditions given in Annex (1-69).

The verification and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the fastening screws of at least 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

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

3.1 Mechanical resistance and stability (BWR 1)

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

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1

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

In accordance with EAD 330046-01-0602, the applicable European legal act is: Commission Decision 1998/214/EC, amended by 2001/596/EC.

The system to be applied is: 2+

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

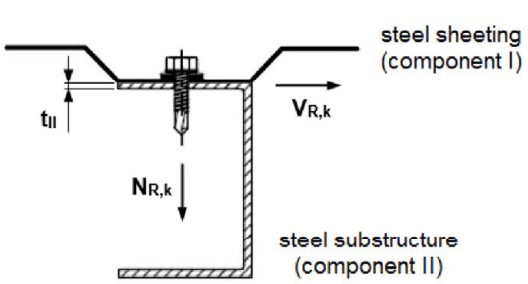
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

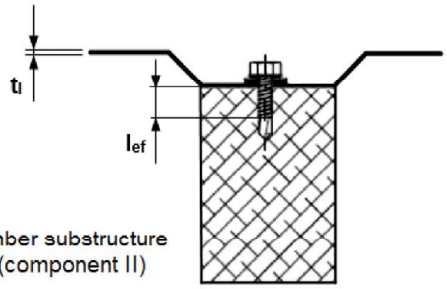
Issued in Berlin on 7 September 2023 by Deutsches Institut für Bautechnik

BD Dr.-Ing. Ronald Schwuchow
Head of Section

beglaubigt:
Hahn

Examples of connections





Description of the components

Component I Metal members or sheeting made of steel or aluminium

Component II Substructure made of steel, aluminium or timber

Dimensions of the components

t_I	Nominal thickness of metal member or sheeting
t_{II}	Nominal thickness of steel or aluminium substructure
l_{ef}	Screw-in length in timber substructure (without drill point)
l_p	Screw-in length in timber substructure (including thread point)
$d_{dp,I}$	Pre-drill diameter of metal member or sheeting
d_{dp}	Pre-drill diameter of the connection

Assessed performance characteristics

$N_{R,k}$	Characteristic value of tension resistance of the connection
$V_{R,k}$	Characteristic value of shear resistance of the connection
$V_{R,I,k}$	Characteristic value of hole bearing resistance of the metal member or sheeting
$N_{R,I,k}$	Characteristic value of pull-through resistance of the metal member or sheeting
$N_{R,II,k}$	Characteristic value of pull-out resistance of the substructure
$f_{ax,k}$	Characteristic value of withdrawal strength of the fastening screw
$M_{y,Rk}$	Characteristic value of yield moment of the fastening screw

Fastening screws for metal members and sheeting	**Annex 1**
Basics	

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Assessment of performance characteristics

The declared performance characteristics have been assessed according to EAD 330047-01-0602.

The characteristic value of tension resistance of a connection ($N_{R,k}$) results from the minimum of the tension resistance of the fastening screw (N_{screw}), the pull-through resistance of the metal member or sheeting ($N_{R,I,k}$) and the pull-out resistance of the substructure ($N_{R,II,k}$). The pull-through resistance includes a reduction factor 2/3 to take the influence of repeated wind loads into account.

$$N_{Rk} = min\{N_{screw};\ N_{R,I,k};\ N_{R,II,k}\}$$

The characteristic value of shear resistance of a connection ($V_{R,k}$) results from the minimum of the shear resistance of the fastening screw (V_{screw}) and the shear resistance of the connection between metal member or sheeting and substructure ($V_{R,I/II,k}$).

$$V_{Rk} = min\{V_{screw};\ V_{R,I/II,k}\}$$

The characteristic values consider minimum thicknesses (t_{min}) of the declared nominal thicknesses ($t_{nom} = t_I, t_{II}$) according following table:

	t_{nom} [mm]	t_{min} [mm]	t_{nom} [mm]	t_{min} [mm]	t_{nom} [mm]	t_{min} [mm]	t_{nom} [mm]	t_{min} [mm]
Steel components	0.40	0.33	1.00	0.91	3.00	2.85	10.00	8.50
	0.50	0.42	1.25	1.13	4.00	3.40	12.00	10.20
	0.63	0.55	1.50	1.38	5.00	4.25	15.00	12.75
	0.75	0.67	2.00	1.87	6.00	5.10	18.00	15.30
	0.88	0.79	2.50	2.36	8.00	6.80		

	t_{nom} [mm]	t_{min} [mm]	t_{nom} [mm]	t_{min} [mm]	t_{nom} [mm]	t_{min} [mm]	t_{nom} [mm]	t_{min} [mm]
Aluminium components	0.50	0.44	0.90	0.82	2.00	1.85	5.00	4.75
	0.60	0.53	1.00	0.91	2.50	2.35	6.00	5.70
	0.70	0.63	1.20	1.10	3.00	2.85		
	0.80	0.72	1.50	1.35	4.00	3.80		

The characteristic values consider a minimum tensile strength of 360 N/mm² of the declared steel materials (S280GD, S235), a minimum tensile strength of 165 N/mm² and 215 N/mm² of the declared aluminium materials resp. the minimum density of 350 kg/m³, 550 kg/m³ resp. 500 kg/m³ of the declared timber materials (C24, OSB3 resp. P5).

Characteristic values for component thicknesses (t_I, t_{II}) or screw-in lengths (l_{ef}, l_p) that are between two declared component thicknesses or screw-in lengths may be determined by linear interpolation.

The characteristic values may be applied for further steel materials according to EN 1993-1-1 (table 3.1) and EN 1993-1-3 (table 3.1) as long as the material properties corresponds to declared materials.

Fastening screws for metal members and sheeting	**Annex 2**
Basics	

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Recommendation for design values

Provisions for the design of a connection are given in Eurocode 0 (EN 1990: Basis of structural design), Eurocode 3 (EN 1993: Design of steel structures) Eurocode 5 (EN 1995: Design of timber structures) and Eurocode 9 (EN 1999: Design of aluminium structures).

The design value of tension and shear resistance of a connection ($N_{R,d}$ resp. $V_{R,d}$) shall be determined by taking into account a partial safety factor (γ_M). Recommended is γ_M = 1.33 unless otherwise stated in National Regulations or National Annexes of Eurocode 0, Eurocode 3, Eurocode 5 or Eurocode 9.

$$N_{R,d} = \frac{N_{R,k}}{\gamma_M} \qquad V_{R,d} = \frac{V_{R,k}}{\gamma_M}$$

Application specific conditions shall be taken into account:

- In case of combined tension and shear load of a connection, the condition according to EN 1993-1-3 (equation 8.2) resp. EN 1999-1-4 (equation 8.1) shall be fulfilled.
- In case of timber substructure, a modification factor (k_{mod}) according to EN 1995-1-1 (table 3.1) shall be applied at pull-out resistance ($N_{R,II,k}$).
- In case of eccentric fastening of metal members or sheeting or asymmetrical steel or aluminium substructure, a reduction of tension resistance ($N_{R,k}$) according to EN 1090-4 (section B.5) and EN 1993-1-3 (section 8.3) resp. EN 1090-5 (section B.4) and EN 1999-1-4 (section 8.3) shall be applied.

Installation requirements

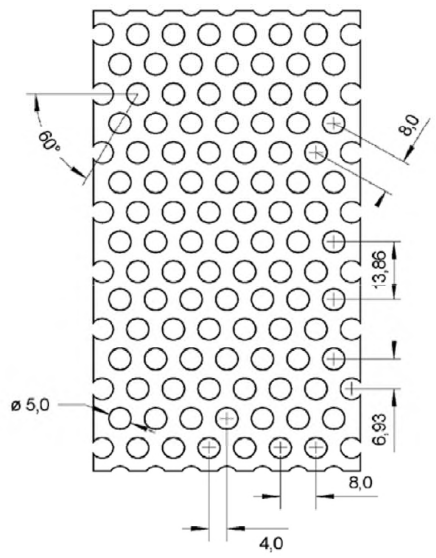
The installation has to be carried out according to the manufacturer's instructions.

Installation instructions given in corresponding European Standards shall be taken into account:

- Requirements on the installation of fastening screws are given in EN 1090-2 (section 8.8) and EN 1090-4 (section 8.1 and 8.2) resp. EN 1090-3 (section 8.5) and EN 1090-5 (section 8.1 and 8.2).
- Requirements on minimum distances between fastening screws and minimum distances to component edges and ends are given in EN 1090-4 (section 8.7) and EN 1993-1-3 (section 8.3), EN 1090-5 (section 8.6) and EN 1999-1-4 (section 8.1) resp. EN 1995-1-1 (section 8.7).

Requirements on the minimum screw-in depth in steel substructures are given in EN 1090-4 (section 8.5).

Fastening screws for metal members and sheeting	**Annex 3**
Basics	



Fastening screws:

Self-drilling screws Ø 5.5 to 6.3 mm made of stainless steel with sealing washer made of stainless steel

Self-tapping screws Ø 6.3 to 6.5 mm made of stainless steel with sealing washer made of stainless steel

Materials:

Fastener:	According to Annex of the fastening screw
Washer:	According to Annex of the fastening screw
Component I:	S280GD to S450GD - EN 10346
Component II:	According to Annex of the fastening screw

		Sealing washer Ø [mm]		
		16	19	≥ 22
$V_{R,I,k}$ [kN]	0.75	2.16	2.22	2.24
	0.88	2.56	2.64	2.64
t_I [mm]	1.00	2.92	3.04	3.02
	1.25	3.70	3.88	3.80
	1.50	4.46	4.74	4.56
$N_{R,I,k}$ [kN]	0.75	1.40	1.94	2.14
	0.88	1.82	2.34	2.62
t_I [mm]	1.00	2.24	2.74	3.06
	1.25	3.24	3.58	4.08
	1.50	4.36	4.46	5.12

Additional definitions

The characteristic values $N_{R,k}$ and $V_{R,k}$ can be determined according to Annex 3

For component I made of S320GD the indicated values may be increased by 8.3%

For component I made of S350GD to S450GD the indicated values may be increased by 16.6%

The thickness t_I shall be at least 1 mm if component I is exposed to wind loads

Steel sheeting with hole pattern I	**Annex 4**
Fastening screws for perforated steel sheeting	

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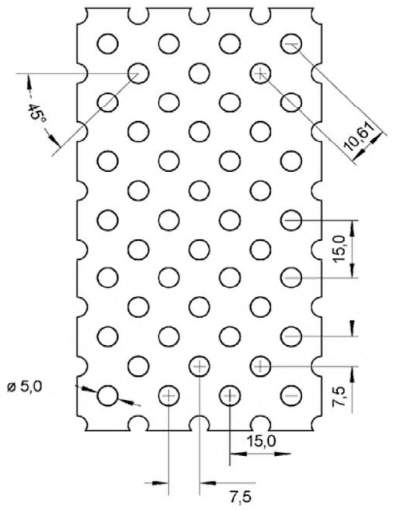


Fastening screws:

Self-drilling screws Ø 5.5 to 6.3 mm made of stainless steel with sealing washer made of stainless steel

Self-tapping screws Ø 6.3 to 6.5 mm made of stainless steel with sealing washer made of stainless steel

Materials:

Fastener:	According to Annex of the fastening screw
Washer:	According to Annex of the fastening screw
Component I:	S280GD to S450GD - EN 10346
Component II:	According to Annex of the fastening screw

		Sealing washer Ø [mm]		
		16	19	≥ 22
$V_{R,I,k}$ [kN] t_I [mm]	0.75	2.38	2.52	2.84
	0.88	3.02	3.12	3.42
	1.00	3.56	3.70	3.84
	1.25	4.68	4.84	4.92
	1.50	5.76	6.04	5.90
$N_{R,I,k}$ [kN] t_I [mm]	0.75	2.86	3.16	3.24
	0.88	3.40	3.72	3.76
	1.00	3.90	4.28	4.28
	1.25	4.94	5.42	5.42
	1.50	6.00	6.60	6.60

Additional definitions

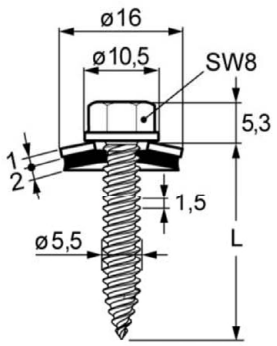
The characteristic values $N_{R,k}$ and $V_{R,k}$ can be determined according to Annex 3

For component I made of S320GD the indicated values may be increased by 8.3%

For component I made of S350GD to S450GD the indicated values may be increased by 16.6%

The thickness t_I shall be at least 1 mm if component I is exposed to wind loads

Steel sheeting with hole pattern II	**Annex 5**
Fastening screws for perforated steel sheeting	



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 1.80$ mm

		t_{II} [mm]					
		0.40	0.50	0.55	0.63	0.75	0.88
$V_{R,k}$ [kN] t_I [mm]	0.40	0.81	0.81	0.81	0.81	0.81	0.81
	0.50	0.81	1.35	1.35	1.35	1.35	1.35
	0.55	0.81	1.35	1.49	1.49	1.49	1.49
	0.63	0.81	1.35	1.49	1.71	1.71	1.71
	0.75	0.81	1.35	1.49	1.71	2.05	2.05
	0.88	0.81	1.35	1.49	1.71	2.05	2.75
$N_{R,k}$ [kN] t_I [mm]	0.40	0.44	0.77	0.85	0.98	1.04	1.04
	0.50	0.44	0.77	0.85	0.98	1.17	1.25
	0.55	0.44	0.77	0.85	0.98	1.17	1.51
	0.63	0.44	0.77	0.85	0.98	1.17	1.54
	0.75	0.44	0.77	0.85	0.98	1.17	1.54
	0.88	0.44	0.77	0.85	0.98	1.17	1.54
$N_{R,II,k}$ [kN]		0.44	0.77	0.85	0.98	1.17	1.54

Additional definitions

For component I and component II made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-tapping screw with sealing washer Ø ≥ 16 mm	**Annex 6**
CX-S16-5,5xL	

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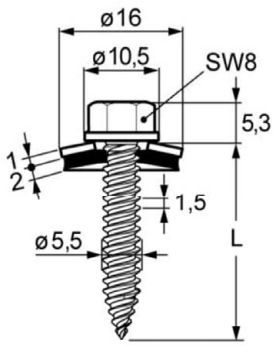

Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	Aluminum alloy with - EN 573

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 4.00$ mm

Component I $R_m \geq 165$ N/mm²		t_{II} [mm]								
		0.50	0.60	0.70	0.80	0.90	1.00	1.20	1.50	2.00
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
	0.60	0.61	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
	0.70	0.61	0.84	1.06	1.06	1.06	1.06	1.06	1.06	1.06
	0.80	0.61	0.84	1.06	1.29	1.29	1.29	1.29	1.29	1.29
	0.90	0.61	0.84	1.06	1.29	1.38	1.38	1.38	1.38	1.38
	1.00	0.61	0.84	1.06	1.29	1.38	1.47	1.47	1.47	1.47
	1.20	0.61	0.84	1.06	1.29	1.38	1.47	1.64	1.64	1.64
	1.50	0.61	0.84	1.06	1.29	1.38	1.47	1.64	1.89	1.89
	2.00	0.61	0.84	1.06	1.29	1.38	1.47	1.64	1.89	2.63
$N_{R,II,k}$ [kN]		0.32	0.42	0.52	0.61	0.72	0.83	1.02	1.32	1.89

Component I $R_m \geq 215$ N/mm²		t_{II} [mm]								
		0.50	0.60	0.70	0.80	0.90	1.00	1.20	1.50	2.00
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
	0.60	0.80	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
	0.70	0.80	0.96	1.12	1.12	1.12	1.12	1.12	1.12	1.12
	0.80	0.80	0.96	1.12	1.29	1.29	1.29	1.29	1.29	1.29
	0.90	0.80	0.96	1.12	1.29	1.60	1.60	1.60	1.60	1.60
	1.00	0.80	0.96	1.12	1.29	1.60	1.92	1.92	1.92	1.92
	1.20	0.80	0.96	1.12	1.29	1.60	1.92	2.14	2.14	2.14
	1.50	0.80	0.96	1.12	1.29	1.60	1.92	2.14	2.46	2.46
	2.00	0.80	0.96	1.12	1.29	1.60	1.92	2.14	2.46	3.43
$N_{R,II,k}$ [kN]		0.41	0.48	0.55	0.61	0.85	1.08	1.33	1.72	2.46

Additional definitions

The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-tapping screw with sealing washer Ø ≥ 16 mm

CX-S16-5,5xL

Annex 7

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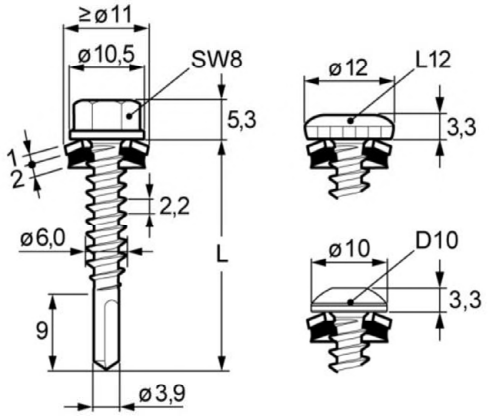

Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 3.00$ mm

		t_{II} [mm]							
		0.63	0.75	0.88	1.00	1.25	1.50	1.75	2.00
V_{Rk} [kN] t_I [mm]	0.50	0.98[1)] -	1.20[1)] -	1.45[1)] -	1.61[1)] -	1.76[1)] -	1.90[1)] -	1.90[1)] -	1.90[1)] -
	0.55	1.03[1)] -	1.25[1)] -	1.53[1)] -	1.68[1)] -	1.91[1)] -	2.13[1)] -	2.13[1)] -	2.13[1)] -
	0.63	1.11[1)] -	1.34[1)] -	1.66[1)] -	1.79[1)] -	2.15[1)] -	2.50[1)] -	2.50[1)] -	2.50[1)] -
	0.75	1.11[1)] -	1.47[1)] -	1.85[1)] -	1.96[1)] -	2.51[1)] -	3.06[1)] -	3.06[1)] -	3.06[1)] -
	0.88	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.05 -	2.79 -	3.53 -	3.66 -	3.79 -
	1.00	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.14 -	3.05 -	3.96 -	4.21 -	4.46 -
	1.25	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.32 -	3.59 -	4.86 -	5.36 -	- -
	1.50	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.32 -	3.59 -	4.86 -	- -	- -
N_{Rk} [kN] t_I [mm]	0.50	0.89 -	1.14 -	1.59 -	1.59[1)] -	1.59[1)] -	1.59[1)] -	1.59[1)] -	1.59[1)] -
	0.55	0.89 -	1.14 -	1.66 -	1.70 -	1.70[1)] -	1.70[1)] -	1.70[1)] -	1.70[1)] -
	0.63	0.89 -	1.14 -	1.66 -	1.81 -	1.87[1)] -	1.87[1)] -	1.87[1)] -	1.87[1)] -
	0.75	0.89 -	1.14 -	1.66 -	1.81 -	2.12[1)] -	2.12[1)] -	2.12[1)] -	2.12[1)] -
	0.88	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	2.67[1)] -	2.67[1)] -	2.67[1)] -
	1.00	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.17[1)] -	3.17[1)] -
	1.25	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86 -	- -
	1.50	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	- -	- -
$N_{R,II,k}$ [kN]		0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86	4.57 -

Additional definitions

Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 11 mm

SX3-A11-6,0xL, SX3-L12-A11-6,0xL, SX3-D12-A11-6,0xL, SX3-D10-A11-6,0xL

Annex 8

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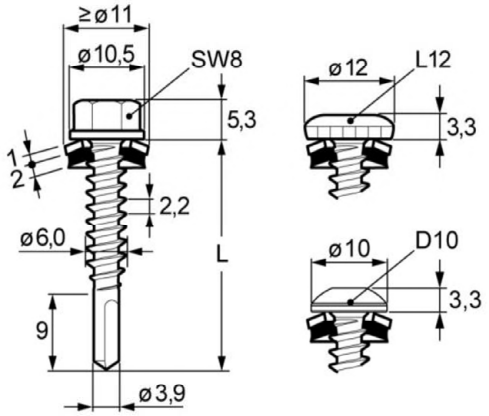


Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

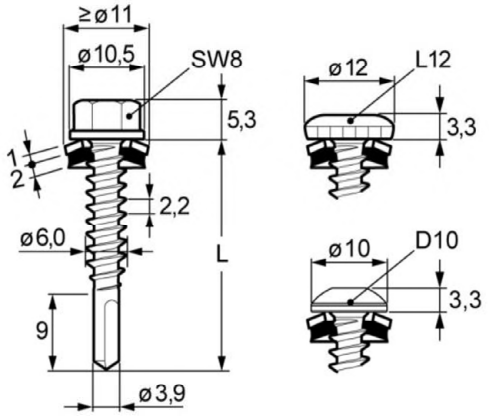
Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 4.00$ mm

		t_{II} [mm]					
		2 x 0.63	2 x 0.75	2 x 0.88	2 x 1.00	2 x 1.25	2 x 1.50
$V_{R,k}$ [kN] t_I [mm]	0.50	0.88[1)] -	1.87[1)] -	1.89[1)] -	1.91[1)] -	1.91[1)] -	1.91[1)] -
	0.55	0.98[1)] -	2.01[1)] -	2.05[1)] -	2.08[1)] -	2.12[1)] -	2.12[1)] -
	0.63	1.15[1)] -	2.24[1)] -	2.30[1)] -	2.36[1)] -	2.45[1)] -	2.45[1)] -
	0.75	1.39[1)] -	2.58[1)] -	2.68[1)] -	2.77[1)] -	2.96[1)] -	2.96[1)] -
	0.88	1.66 -	2.67 -	3.30 -	3.36 -	3.66 -	3.79 -
	1.00	1.90 -	2.75 -	3.36 -	4.01 -	4.01 -	4.01 -
	1.25	2.41 -	2.92 -	3.47 -	4.01 -	5.05 -	- -
	1.50	2.41 -	2.92 -	3.47 -	4.01 -	5.05 -	- -
$N_{R,k}$ [kN] t_I [mm]	0.50	1.40 -	1.59[1)] -	1.59[1)] -	1.59[1)] -	1.59[1)] -	1.59[1)] -
	0.55	1.40 -	1.70[1)] -	1.70[1)] -	1.70[1)] -	1.70[1)] -	1.70[1)] -
	0.63	1.40 -	1.87 -	1.87[1)] -	1.87[1)] -	1.87[1)] -	1.87[1)] -
	0.75	1.40 -	1.98 -	2.12[1)] -	2.12[1)] -	2.12[1)] -	2.12[1)] -
	0.88	1.40 -	1.98 -	2.61 -	2.67[1)] -	2.67[1)] -	2.67[1)] -
	1.00	1.40 -	1.98 -	2.61 -	3.17 -	3.17[1)] -	3.17[1)] -
	1.25	1.40 -	1.98 -	2.61 -	3.19 -	4.27 -	-
	1.50	1.40 -	1.98 -	2.61 -	3.19 -	4.37 -	-
$N_{R,II,k}$ [kN]		1.40	1.98	2.61	3.19	4.37	5.82

Additional definitions

Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 11 mm	**Annex 9**
SX3-A11-6,0xL, SX3-L12-A11-6,0xL, SX3-D12-A11-6,0xL, SX3-D10-A11-6,0xL	



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy - EN 573 Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 3.00$ mm

Component I $R_m \geq 165$ N/mm²		t_{II} [mm]						
		0.75	0.88	1.00	1.25	1.50	1.75	2.00
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.56 -	0.73 -	0.78 -	0.78 -	0.78 -	0.78 -	0.78 -
	0.60	0.76 -	0.86 -	0.92 -	0.93 -	0.97 -	0.98 -	0.98 -
	0.70	0.96 -	0.98 -	1.06 -	1.07 -	1.16 -	1.17 -	1.18 -
	0.80	1.06 -	1.11 -	1.20 -	1.22 -	1.35 -	1.37 -	1.38 -
	0.90	1.06 -	1.24 -	1.34 -	1.37 -	1.54 -	1.57 -	1.59 -
	1.00	1.06 -	1.36 -	1.48 -	1.51 -	1.73 -	1.76 -	1.79 -
	1.20	1.06 -	1.36 -	1.48 -	1.80 -	2.11 -	2.15 -	- -
	1.50	1.06 -	1.36 -	1.48 -	1.80 -	2.11 -	- -	- -
$N_{R,II,k}$ [kN]		1.14	1.66	1.81	2.38	3.14	3.86	4.57

Component I $R_m \geq 215$ N/mm²		t_{II} [mm]						
		0.75	0.88	1.00	1.25	1.50	1.75	2.00
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.74 -	0.95 -	1.02 -	1.02 -	1.02 -	1.02 -	1.02 -
	0.60	0.99 -	1.11 -	1.20 -	1.21 -	1.27 -	1.27 -	1.28 -
	0.70	1.25 -	1.28 -	1.38 -	1.40 -	1.51 -	1.53 -	1.54 -
	0.80	1.37 -	1.44 -	1.57 -	1.59 -	1.76 -	1.78 -	1.80 -
	0.90	1.37 -	1.61 -	1.75 -	1.78 -	2.01 -	2.04 -	2.07 -
	1.00	1.37 -	1.77 -	1.93 -	1.96 -	2.26 -	2.29 -	2.33 -
	1.20	1.37 -	1.77 -	1.93 -	2.34 -	2.75 -	2.80 -	- -
	1.50	1.37 -	1.77 -	1.93 -	2.34 -	2.75 -	- -	- -
$N_{R,II,k}$ [kN]		1.14	1.66	1.81	2.38	3.14	3.86	4.57

Additional definitions

The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-drilling screw with sealing washer ≥ Ø 11 mm

SX3-A11-6,0xL, SX3-L12-A11-6,0xL, SX3-D12-A11-6,0xL, SX3-D10-A11-6,0xL, SX3-S14-6,0xL, SX3-L12-S14-6,0xL, SX3-D12-S14-6,0xL, SX3-D10-S14-6,0xL

Annex 10

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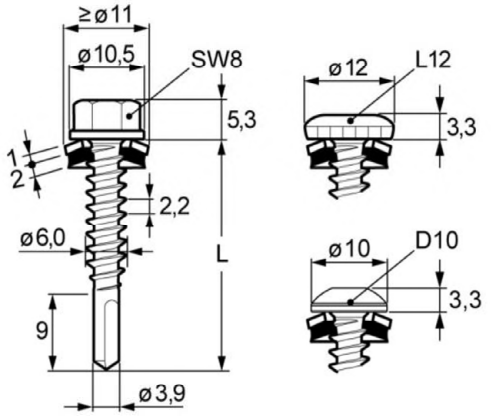


Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy - EN 573 Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 4.00$ mm

Component I $R_m \geq 165$ N/mm²		t_{II} [mm]					
		2 x 0.63	2 x 0.75	2 x 0.88	2 x 1.00	2 x 1.25	2 x 1.50
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.65 -	0.70 -	0.75 -	0.78 -	0.78 -	0.78 -
	0.60	0.65 -	1.02 -	1.07 -	1.10 -	1.10 -	1.10 -
	0.70	0.65 -	1.18 -	1.39 -	1.42 -	1.42 -	1.42 -
	0.80	0.65 -	1.18 -	1.71 -	1.74 -	1.74 -	1.74 -
	0.90	0.65 -	1.18 -	1.71 -	1.90 -	1.90 -	1.90 -
	1.00	0.65 -	1.18 -	1.71 -	2.06 -	2.06 -	2.06 -
	1.20	0.65 -	1.18 -	1.71 -	2.06 -	2.06 -	- -
	1.50	0.65 -	1.18 -	1.71 -	2.06 -	2.06 -	- -
$N_{R,II,k}$ [kN]		1.40	1.98	2.61	3.19	4.37	5.82

Component I $R_m \geq 215$ N/mm²		t_{II} [mm]					
		2 x 0.63	2 x 0.75	2 x 0.88	2 x 1.00	2 x 1.25	2 x 1.50
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.85 -	0.92 -	0.98 -	1.02 -	1.02 -	1.02 -
	0.60	0.85 -	1.33 -	1.40 -	1.44 -	1.44 -	1.44 -
	0.70	0.85 -	1.33 -	1.81 -	1.85 -	1.85 -	1.85 -
	0.80	0.85 -	1.33 -	2.22 -	2.27 -	2.27 -	2.27 -
	0.90	0.85 -	1.33 -	2.22 -	2.48 -	2.48 -	2.48 -
	1.00	0.85 -	1.33 -	2.22 -	2.68 -	2.68 -	2.68 -
	1.20	0.85 -	1.33 -	2.22 -	2.68 -	2.27 -	- -
	1.50	0.85 -	1.33 -	2.22 -	2.68 -	2.27 -	- -
$N_{R,II,k}$ [kN]		1.40	1.98	2.61	3.19	4.37	5.82

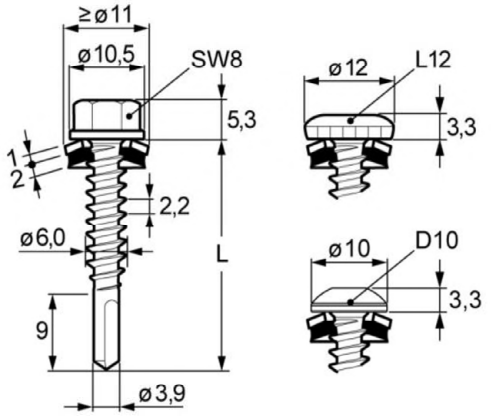
Additional definitions

The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-drilling screw with sealing washer ≥ Ø 11 mm

SX3-A11-6,0xL, SX3-L12-A11-6,0xL, SX3-D12-A11-6,0xL, SX3-D10-A11-6,0xL, SX3-S14-6,0xL, SX3-L12-S14-6,0xL, SX3-D12-S14-6,0xL, SX3-D10-S14-6,0xL

Annex 11



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy - EN 573 Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	Aluminum alloy - EN 573

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 4.00$ mm

Component I and II $R_m \geq 165$ N/mm²		t_{II} [mm]									
		1.00		1.20		1.50		2.00		≥2.50	
$V_{R,k}$ [kN] t_I [mm]	0.50	0.65	-	0.69	-	0.69	-	0.69	-	0.69	-
	0.60	0.80	-	0.80	-	0.86	-	0.97	-	0.97	-
	0.70	0.99	-	0.99	-	1.04	-	1.25	-	1.25	-
	0.80	1.19	-	1.19	-	1.21	-	1.53	-	1.53	-
	0.90	1.31	-	1.31	-	1.38	-	1.81	-	1.81	-
	1.00	1.42	-	1.42	-	1.55	-	2.08	-	2.08	-
	1.20	1.42	-	1.45	-	1.90	-	2.08	-	2.08	-
	1.50	1.42	-	1.45	-	1.90	-	2.08	-	2.08	-
$N_{R,II,k}$ [kN]		0.72		0.82		1.26		1.85		2.65	

Component I and II $R_m \geq 215$ N/mm²		t_{II} [mm]									
		1.00		1.20		1.50		2.00		≥2.50	
$V_{R,k}$ [kN] t_I [mm]	0.50	0.85	-	0.90	-	0.90	-	0.90	-	0.90	-
	0.60	1.04	-	1.04	-	1.12	-	1.26	-	1.26	-
	0.70	1.30	-	1.30	-	1.35	-	1.63	-	1.63	-
	0.80	1.55	-	1.55	-	1.57	-	1.99	-	1.99	-
	0.90	1.70	-	1.70	-	1.80	-	2.35	-	2.36	-
	1.00	1.85	-	1.85	-	2.02	-	2.71	-	2.71	-
	1.20	1.85	-	1.89	-	2.47	-	2.71	-	2.71	-
	1.50	1.85	-	1.89	-	2.47	-	2.71	-	2.71	-
$N_{R,II,k}$ [kN]		0.93		1.06		1.64		2.41		3.45	

Additional definitions

The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-drilling screw with sealing washer ≥ Ø 11 mm

SX3-A11-6,0xL, SX3-L12-A11-6,0xL, SX3-D12-A11-6,0xL, SX3-D10-A11-6,0xL, SX3-S14-6,0xL, SX3-L12-S14-6,0xL, SX3-D12-S14-6,0xL, SX3-D10-S14-6,0xL

Annex 12

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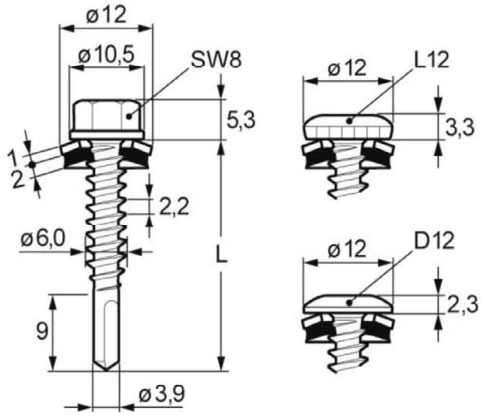


Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 3.00$ mm

		t_{II} [mm]							
		0.63	0.75	0.88	1.00	1.25	1.50	1.75	2.00
V_{Rk} [kN] t_I [mm]	0.50	0.98[1)] -	1.20[1)] -	1.45[1)] -	1.61[1)] -	1.76[1)] -	1.90[1)] -	1.90[1)] -	1.90[1)] -
	0.55	1.03[1)] -	1.25[1)] -	1.53[1)] -	1.68[1)] -	1.91[1)] -	2.13[1)] -	2.13[1)] -	2.13[1)] -
	0.63	1.11[1)] -	1.34[1)] -	1.66[1)] -	1.79[1)] -	2.15[1)] -	2.50[1)] -	2.50[1)] -	2.50[1)] -
	0.75	1.11[1)] -	1.47[1)] -	1.85[1)] -	1.96[1)] -	2.51[1)] -	3.06[1)] -	3.06[1)] -	3.06[1)] -
	0.88	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.05 -	2.79 -	3.53 -	3.66 -	3.79 -
	1.00	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.14 -	3.05 -	3.96 -	4.21 -	4.46 -
	1.25	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.32 -	3.59 -	4.86 -	5.36 -	- -
	1.50	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.32 -	3.59 -	4.86 -	- -	- -
N_{Rk} [kN] t_I [mm]	0.50	0.89 -	1.14 -	1.22[1)] -	1.22[1)] -	1.22[1)] -	1.22[1)] -	1.22[1)] -	1.22[1)] -
	0.55	0.89 -	1.14 -	1.54 -	1.54[1)] -	1.54[1)] -	1.54[1)] -	1.54[1)] -	1.54[1)] -
	0.63	0.89 -	1.14 -	1.66 -	1.81 -	2.04[1)] -	2.04[1)] -	2.04[1)] -	2.04[1)] -
	0.75	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	2.80[1)] -	2.80[1)] -	2.80[1)] -
	0.88	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.63 -	3.63 -
	1.00	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86 -	4.39 -
	1.25	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86 -	- -
	1.50	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	- -	- -
$N_{R,II,k}$ [kN]		0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86	4.57 -

Additional definitions

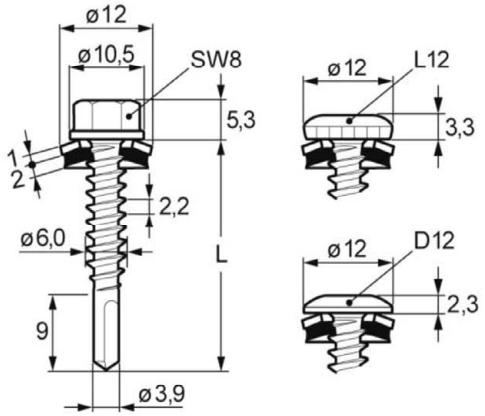
Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 12 mm

SX3-S12-6,0xL, SX3-L12-S12-6,0xL, SX3-D12-S12-6,0xL

Annex 13

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 4.00$ mm

		t_{II} [mm]					
		2 x 0.63	2 x 0.75	2 x 0.88	2 x 1.00	2 x 1.25	2 x 1.50
$V_{R,k}$ [kN] t_I [mm]	0.50	0.88[1)] -	1.87[1)] -	1.89[1)] -	1.91[1)] -	1.91[1)] -	1.91[1)] -
	0.55	0.98[1)] -	2.01[1)] -	2.05[1)] -	2.08[1)] -	2.12[1)] -	2.12[1)] -
	0.63	1.15[1)] -	2.24[1)] -	2.30[1)] -	2.36[1)] -	2.45[1)] -	2.45[1)] -
	0.75	1.39[1)] -	2.58[1)] -	2.68[1)] -	2.77[1)] -	2.96[1)] -	2.96[1)] -
	0.88	1.66 -	2.67 -	3.30 -	3.36 -	3.66 -	3.79 -
	1.00	1.90 -	2.75 -	3.36 -	4.01 -	4.01 -	4.01 -
	1.25	2.41 -	2.92 -	3.47 -	4.01 -	5.05 -	- -
	1.50	2.41 -	2.92 -	3.47 -	4.01 -	5.05 -	- -
$N_{R,k}$ [kN] t_I [mm]	0.50	1.22[1)] -	1.22[1)] -	1.22[1)] -	1.22[1)] -	1.22[1)] -	1.22[1)] -
	0.55	1.40 -	1.54[1)] -	1.54[1)] -	1.54[1)] -	1.54[1)] -	1.54[1)] -
	0.63	1.40 -	1.98 -	2.04[1)] -	2.04[1)] -	2.04[1)] -	2.04[1)] -
	0.75	1.40 -	1.98 -	2.61 -	2.80[1)] -	2.80[1)] -	2.80[1)] -
	0.88	1.40 -	1.98 -	2.61 -	3.19 -	3.63 -	3.63 -
	1.00	1.40 -	1.98 -	2.61 -	3.19 -	4.37 -	4.39 -
	1.25	1.40 -	1.98 -	2.61 -	3.19 -	4.37 -	- -
	1.50	1.40 -	1.98 -	2.61 -	3.19 -	4.37 -	- -
$N_{R,II,k}$ [kN]		1.40	1.98	2.61	3.19	4.37	5.82

Additional definitions

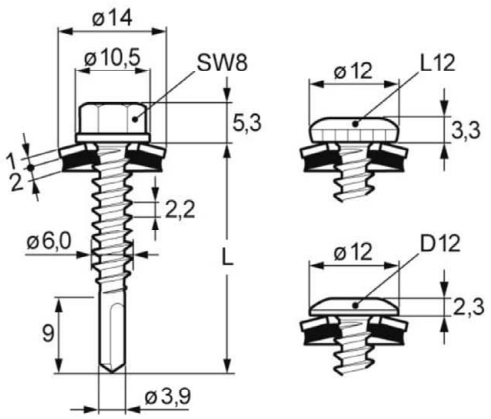
Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 12 mm

SX3-S12-6,0xL, SX3-L12-S12-6,0xL, SX3-D12-S12-6,0xL

Annex 14

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 3.00$ mm

		t_{II} [mm]							
		0.63	0.75	0.88	1.00	1.25	1.50	1.75	2.00
V_{Rk} [kN] t_I [mm]	0.50	0.98[1)] -	1.20[1)] -	1.45[1)] ac	1.61[1)] ac	1.76[1)] ac	1.90[1)] ac	1.90[1)] ac	1.90[1)] ac
	0.55	1.03[1)] -	1.25[1)] -	1.53[1)] -	1.68[1)] ac	1.91[1)] ac	2.13[1)] ac	2.13[1)] ac	2.13[1)] a
	0.63	1.11[1)] -	1.34[1)] -	1.66[1)] -	1.79[1)] ac	2.15[1)] ac	2.50[1)] ac	2.50[1)] a	2.50[1)] a
	0.75	1.11[1)] -	1.47[1)] -	1.85[1)] -	1.96[1)] ac	2.51[1)] ac	3.06[1)] ac	3.06[1)] a	3.06[1)] a
	0.88	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.05 -	2.79 -	3.53 -	3.66 -	3.79 a
	1.00	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.14 -	3.05 -	3.96 -	4.21 -	4.46 a
	1.25	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.32 -	3.59 -	4.86 -	5.36 -	- -
	1.50	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.32 -	3.59 -	4.86 -	- -	- -
N_{Rk} [kN] t_I [mm]	0.50	0.89 -	1.14 -	1.34[1)] ac	1.34[1)] ac	1.34[1)] ac	1.34[1)] ac	1.34[1)] ac	1.34[1)] ac
	0.55	0.89 -	1.14 -	1.66 -	1.69 ac	1.69[1)] ac	1.69[1)] ac	1.69[1)] ac	1.69[1)] a
	0.63	0.89 -	1.14 -	1.66 -	1.81 ac	2.25 ac	2.25[1)] ac	2.25[1)] a	2.25[1)] a
	0.75	0.89 -	1.14 -	1.66 -	1.81 ac	2.38 ac	3.09 ac	3.09[1)] a	3.09[1)] a
	0.88	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86 -	4.00 a
	1.00	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86 -	4.57 a
	1.25	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86 -	- -
	1.50	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	- -	- -
$N_{R,II,k}$ [kN]		0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86	4.57 -

Additional definitions

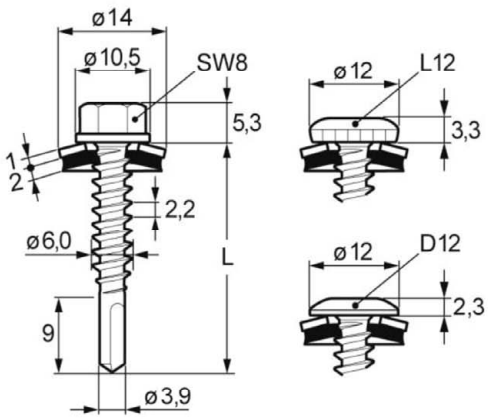
Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 14 mm

SX3-S14-6,0xL, SX3-L12-S14-6,0xL, SX3-D12-S14-6,0xL, SX3-D10-S14-6,0xL

Annex 15

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 4.00$ mm

		t_{II} [mm]					
		2 x 0.63	2 x 0.75	2 x 0.88	2 x 1.00	2 x 1.25	2 x 1.50
$V_{R,k}$ [kN] t_I [mm]	0.50	0.88[1)] ac	1.87[1)] ac	1.89[1)] ac	1.91[1)] ac	1.91[1)] ac	1.91[1)] ac
	0.55	0.98[1)] ac	2.01[1)] ac	2.05[1)] ac	2.08[1)] ac	2.12[1)] ac	2.12[1)] a
	0.63	1.15[1)] ac	2.24[1)] ac	2.30[1)] ac	2.36[1)] ac	2.45[1)] ac	2.45[1)] a
	0.75	1.39[1)] ac	2.58[1)] ac	2.68[1)] ac	2.77[1)] ac	2.96[1)] ac	2.96[1)] a
	0.88	1.66 -	2.67 -	3.30 -	3.36 ac	3.66 a	3.79 a
	1.00	1.90 -	2.75 -	3.36 -	4.01 ac	4.01 a	4.01 a
	1.25	2.41 -	2.92 -	3.47 -	4.01 -	5.05 a	- -
	1.50	2.41 -	2.92 -	3.47 -	4.01 -	5.05 a	- -
$N_{R,k}$ [kN] t_I [mm]	0.50	1.34 ac	1.34[1)] ac	1.34[1)] ac	1.34[1)] ac	1.34[1)] ac	1.34[1)] ac
	0.55	1.40 ac	1.69[1)] ac	1.69[1)] ac	1.69[1)] ac	1.69[1)] ac	1.69[1)] a
	0.63	1.40 ac	1.98 ac	2.25[1)] ac	2.25[1)] ac	2.25[1)] ac	2.25[1)] a
	0.75	1.40 ac	1.98 ac	2.61 ac	3.09 ac	3.09[1)] ac	3.09[1)] a
	0.88	1.40 -	1.98 -	2.61 -	3.19 ac	4.00 a	4.00 a
	1.00	1.40 -	1.98 -	2.61 -	3.19 ac	4.37 a	4.84 a
	1.25	1.40 -	1.98 -	2.61 -	3.19 -	4.37 a	- -
	1.50	1.40 -	1.98 -	2.61 -	3.19 -	4.37 a	- -
$N_{R,II,k}$ [kN]		1.40	1.98	2.61	3.19	4.37	5.82

Additional definitions

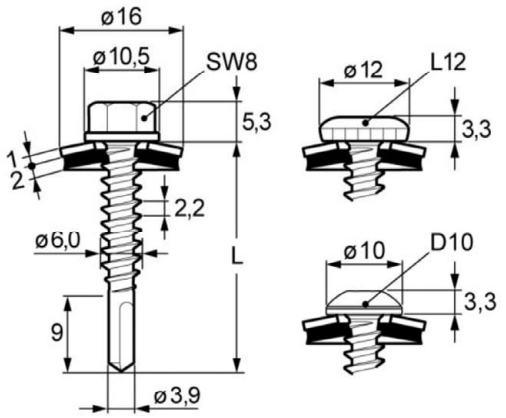
Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 14 mm

SX3-S14-6,0xL, SX3-L12-S14-6,0xL, SX3-D12-S14-6,0xL, SX3-D10-S14-6,0xL

Annex 16

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 3.00$ mm

		t_{II} [mm]							
		0.63	0.75	0.88	1.00	1.25	1.50	1.75	2.00
V_{Rk} [kN] t_I [mm]	0.50	0.98[1)] -	1.20[1)] -	1.45[1)] ac	1.61[1)] ac	1.76[1)] ac	1.90[1)] ac	1.90[1)] ac	1.90[1)] ac
	0.55	1.03[1)] -	1.25[1)] -	1.53[1)] -	1.68[1)] ac	1.91[1)] ac	2.13[1)] ac	2.13[1)] ac	2.13[1)] a
	0.63	1.11[1)] -	1.34[1)] -	1.66[1)] -	1.79[1)] ac	2.15[1)] ac	2.50[1)] ac	2.50[1)] a	2.50[1)] a
	0.75	1.11[1)] -	1.47[1)] -	1.85[1)] -	1.96[1)] ac	2.51[1)] ac	3.06[1)] ac	3.06[1)] a	3.06[1)] a
	0.88	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.05 -	2.79 -	3.53 -	3.66 -	3.79 a
	1.00	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.14 -	3.05 -	3.96 -	4.21 -	4.46 a
	1.25	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.32 -	3.59 -	4.86 -	5.36 -	- -
	1.50	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.32 -	3.59 -	4.86 -	- -	- -
N_{Rk} [kN] t_I [mm]	0.50	0.89 -	1.14 -	1.52 ac	1.52[1)] ac	1.52[1)] ac	1.52[1)] ac	1.52[1)] ac	1.52[1)] ac
	0.55	0.89 -	1.14 -	1.66 -	1.81 ac	1.91[1)] ac	1.91[1)] ac	1.91[1)] ac	1.91[1)] a
	0.63	0.89 -	1.14 -	1.66 -	1.81 ac	2.38 ac	2.70[1)] ac	2.70[1)] a	2.70[1)] a
	0.75	0.89 -	1.14 -	1.66 -	1.81 ac	2.38 ac	3.14 ac	3.50[1)] a	3.50[1)] a
	0.88	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86 -	4.52 a
	1.00	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86 -	4.57 a
	1.25	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86 -	- -
	1.50	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	- -	- -
$N_{R,II,k}$ [kN]		0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86	4.57 -

Additional definitions

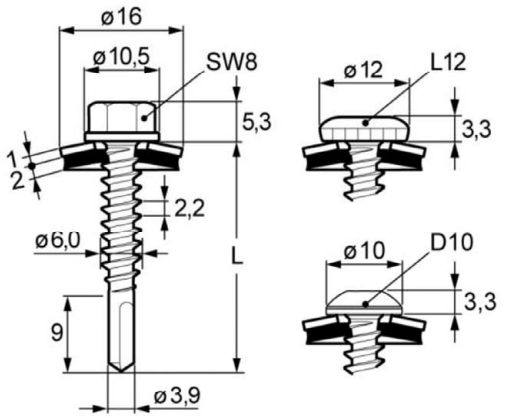
Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 16 mm

SX3-S16-6,0xL, SX3-L12-S16-6,0xL, SX3-D12-S16-6,0xL, SX3-D10-S16-6,0xL

Annex 17

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 4.00$ mm

		t_{II} [mm]					
		2 x 0.63	2 x 0.75	2 x 0.88	2 x 1.00	2 x 1.25	2 x 1.50
$V_{R,k}$ [kN] t_I [mm]	0.50	0.88[1)] ac	1.87[1)] ac	1.89[1)] ac	1.91[1)] ac	1.91[1)] ac	1.91[1)] ac
	0.55	0.98[1)] ac	2.01[1)] ac	2.05[1)] ac	2.08[1)] ac	2.12[1)] ac	2.12[1)] a
	0.63	1.15[1)] ac	2.24[1)] ac	2.30[1)] ac	2.36[1)] ac	2.45[1)] ac	2.45[1)] a
	0.75	1.39[1)] ac	2.58[1)] ac	2.68[1)] ac	2.77[1)] ac	2.96[1)] ac	2.96[1)] a
	0.88	1.66 -	2.67 -	3.30 -	3.36 ac	3.66 a	3.79 a
	1.00	1.90 -	2.75 -	3.36 -	4.01 ac	4.01 a	4.01 a
	1.25	2.41 -	2.92 -	3.47 -	4.01 -	5.05 a	- -
	1.50	2.41 -	2.92 -	3.47 -	4.01 -	5.05 a	- -
$N_{R,k}$ [kN] t_I [mm]	0.50	1.40 ac	1.52[1)] ac	1.52[1)] ac	1.52[1)] ac	1.52[1)] ac	1.52[1)] ac
	0.55	1.40 ac	1.91 ac	1.91[1)] ac	1.91[1)] ac	1.91[1)] ac	1.91[1)] a
	0.63	1.40 ac	1.98 ac	2.61 ac	2.70[1)] ac	2.70[1)] ac	2.70[1)] a
	0.75	1.40 ac	1.98 ac	2.61 ac	3.19 ac	3.50[1)] ac	3.50[1)] a
	0.88	1.40 -	1.98 -	2.61 -	3.19 ac	4.37 a	4.52 a
	1.00	1.40 -	1.98 -	2.61 -	3.19 ac	4.37 a	5.47 a
	1.25	1.40 -	1.98 -	2.61 -	3.19 -	4.37 a	- -
	1.50	1.40 -	1.98 -	2.61 -	3.19 -	4.37 a	- -
$N_{R,II,k}$ [kN]		1.40	1.98	2.61	3.19	4.37	5.82

Additional definitions

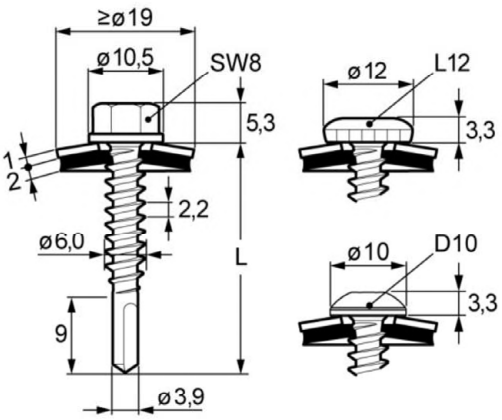
Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 16 mm

SX3-S16-6,0xL, SX3-L12-S16-6,0xL, SX3-D12-S16-6,0xL, SX3-D10-S16-6,0xL

Annex 18

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 3.00$ mm

		t_{II} [mm]							
		0.63	0.75	0.88	1.00	1.25	1.50	1.75	2.00
V_{Rk} [kN] t_I [mm]	0.50	0.98[1)] -	1.20[1)] -	1.45[1)] ac	1.61[1)] ac	1.76[1)] ac	1.90[1)] ac	1.90[1)] ac	1.90[1)] ac
	0.55	1.03[1)] -	1.25[1)] -	1.53[1)] -	1.68[1)] ac	1.91[1)] ac	2.13[1)] ac	2.13[1)] ac	2.13[1)] a
	0.63	1.11[1)] -	1.34[1)] -	1.66[1)] -	1.79[1)] ac	2.15[1)] ac	2.50[1)] ac	2.50[1)] a	2.50[1)] a
	0.75	1.11[1)] -	1.47[1)] -	1.85[1)] -	1.96[1)] ac	2.51[1)] ac	3.06[1)] ac	3.06[1)] a	3.06[1)] a
	0.88	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.05 -	2.79 -	3.53 -	3.66 -	3.79 a
	1.00	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.14 -	3.05 -	3.96 -	4.21 -	4.46 a
	1.25	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.32 -	3.59 -	4.86 -	5.36 -	- -
	1.50	1.11[1)] -	1.47[1)] -	1.85[1)] -	2.32 -	3.59 -	4.86 -	- -	- -
N_{Rk} [kN] t_I [mm]	0.50	0.89 -	1.14 -	1.66 ac	1.81 ac	1.87[1)] ac	1.87[1)] ac	1.87[1)] ac	1.87[1)] ac
	0.55	0.89 -	1.14 -	1.66 -	1.81 ac	2.36 ac	2.36[1)] ac	2.36[1)] ac	2.36[1)] a
	0.63	0.89 -	1.14 -	1.66 -	1.81 ac	2.38 ac	3.14 ac	3.14[1)] a	3.14[1)] a
	0.75	0.89 -	1.14 -	1.66 -	1.81 ac	2.38 ac	3.14 ac	3.86 a	4.31 a
	0.88	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86 -	4.57 a
	1.00	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86 -	4.57 a
	1.25	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86 -	- -
	1.50	0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	- -	- -
$N_{R,II,k}$ [kN]		0.89 -	1.14 -	1.66 -	1.81 -	2.38 -	3.14 -	3.86	4.57 -

Additional definitions

Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 19 mm

SX3-S19-6,0xL, SX3-L12-S19-6,0xL, SX3-D12-S19-6,0xL, SX3-D10-S19-6,0xL

Annex 19

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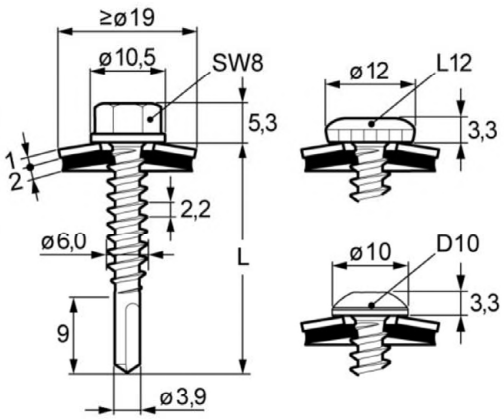


Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 4.00$ mm

		t_{II} [mm]					
		2 x 0.63	2 x 0.75	2 x 0.88	2 x 1.00	2 x 1.25	2 x 1.50
$V_{R,k}$ [kN] t_I [mm]	0.50	0.88[1)] ac	1.87[1)] ac	1.89[1)] ac	1.91[1)] ac	1.91[1)] ac	1.91[1)] ac
	0.55	0.98[1)] ac	2.01[1)] ac	2.05[1)] ac	2.08[1)] ac	2.12[1)] ac	2.12[1)] a
	0.63	1.15[1)] ac	2.24[1)] ac	2.30[1)] ac	2.36[1)] ac	2.45[1)] ac	2.45[1)] a
	0.75	1.39[1)] ac	2.58[1)] ac	2.68[1)] ac	2.77[1)] ac	2.96[1)] ac	2.96[1)] a
	0.88	1.66 -	2.67 -	3.30 -	3.36 ac	3.66 a	3.79 a
	1.00	1.90 -	2.75 -	3.36 -	4.01 ac	4.01 a	4.01 a
	1.25	2.41 -	2.92 -	3.47 -	4.01 -	5.05 a	- -
	1.50	2.41 -	2.92 -	3.47 -	4.01 -	5.05 a	- -
$N_{R,k}$ [kN] t_I [mm]	0.50	1.40 ac	1.87 ac	1.87[1)] ac	1.87[1)] ac	1.87[1)] ac	1.87[1)] ac
	0.55	1.40 ac	1.98 ac	2.36[1)] ac	2.36[1)] ac	2.36[1)] ac	2.36[1)] a
	0.63	1.40 ac	1.98 ac	2.61 ac	3.14 ac	3.14[1)] ac	3.14[1)] a
	0.75	1.40 ac	1.98 ac	2.61 ac	3.19 ac	4.31 ac	4.31 a
	0.88	1.40 -	1.98 -	2.61 -	3.19 ac	4.37 a	5.57 a
	1.00	1.40 -	1.98 -	2.61 -	3.19 ac	4.37 a	5.82 a
	1.25	1.40 -	1.98 -	2.61 -	3.19 -	4.37 a	- -
	1.50	1.40 -	1.98 -	2.61 -	3.19 -	4.37 a	- -
$N_{R,II,k}$ [kN]		1.40	1.98	2.61	3.19	4.37	5.82

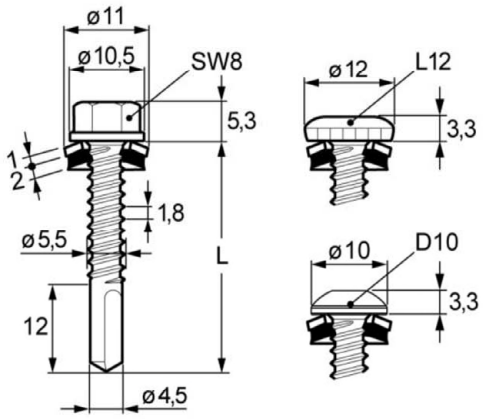
Additional definitions

Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 19 mm

SX3-S19-6,0xL, SX3-L12-S19-6,0xL, SX3-D12-S19-6,0xL, SX3-D10-S19-6,0xL

Annex 20



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S235 to S355 - EN 10025 S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 5.00$ mm

		t_{II} [mm]						
		1.25	1.50	1.75	2.00	2.50	3.00	4.00
$V_{R,k}$ [kN] t_I [mm]	0.50	1.09[1)] -	1.57[1)] -	1.67[1)] -	1.76[1)] -	1.76[1)] -	1.76[1)] -	1.76[1)] -
	0.55	1.09[1)] -	1.71[1)] -	1.79[1)] -	1.86[1)] -	1.86[1)] -	1.86[1)] -	1.86[1)] -
	0.63	1.09[1)] -	1.94[1)] -	1.99[1)] -	2.03[1)] -	2.03[1)] -	2.03[1)] -	2.03[1)] -
	0.75	1.09[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -
	0.88	1.09[1)] -	2.86[1)] -	2.86[1)] -	2.86[1)] -	3.04[1)] -	3.27[1)] -	3.27[1)] -
	1.00	1.09[1)] -	3.43 -	3.43 -	3.43 -	3.74 -	4.18 -	4.18 -
	1.25	1.09[1)] -	3.43 -	3.87 -	4.31 -	5.20 -	6.08 -	- -
	1.50	1.09[1)] -	3.43 -	3.87 -	4.31 -	5.20 -	6.08 -	- -
$N_{R,k}$ [kN] t_I [mm]	0.50	1.39[2)] -	1.59[1)] -	1.59[1)] -	1.59[1)] -	1.59[1)] -	1.59[1)] -	1.59[1)] -
	0.55	1.39[2)] -	1.70[1)] -	1.70[1)] -	1.70[1)] -	1.70[1)] -	1.70[1)] -	1.70[1)] -
	0.63	1.39[2)] -	1.87[1)] -	1.87[1)] -	1.87[1)] -	1.87[1)] -	1.87[1)] -	1.87[1)] -
	0.75	1.39[2)] -	2.09 -	2.12[1)] -	2.12[1)] -	2.12[1)] -	2.12[1)] -	2.12[1)] -
	0.88	1.39[2)] -	2.09 -	2.67 -	2.67[1)] -	2.67[1)] -	2.67[1)] -	2.67[1)] -
	1.00	1.39[2)] -	2.09 -	2.69 -	3.17 -	3.17[1)] -	3.17[1)] -	3.17[1)] -
	1.25	1.39[2)] -	2.09 -	2.69 -	3.28 -	4.15 -	4.27[1)] -	- -
	1.50	1.39[2)] -	2.09 -	2.69 -	3.28 -	4.15 -	4.88 -	- -
$N_{R,II,k}$ [kN]		1.39[2)]	2.09	2.69	3.28	4.15	5.02	8.32

Additional definitions

Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Index [2)]: For component II made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 11 mm

SX5-A11-5,5xL, SX5-L12-A11-5,5xL, SX5-D12-A11-5,5xL, SX5-D10-A11-5,5xL, SX5-S14-5,5xL, SX5-L12-S14-5,5xL, SX5-D12-S14-5,5xL, SX5-D10-S14-5,5xL

Annex 21

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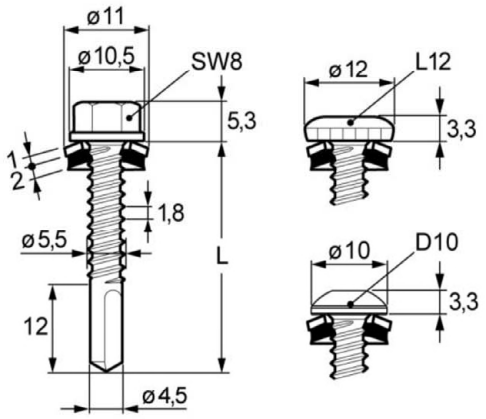


Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy - EN 573 Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	S235 to S355 - EN 10025 S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 5.00$ mm

Component I $R_m \geq 165$ N/mm²		t_{II} [mm]					
		1.50	1.75	2.00	2.50	3.00	4.00
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.70 -	0.80 -	0.89 -	0.89 -	0.89 -	0.89 -
	0.60	0.95 -	1.01 -	1.07 -	1.07 -	1.07 -	1.07 -
	0.70	1.19 -	1.23 -	1.26 -	1.26 -	1.26 -	1.26 -
	0.80	1.44 -	1.44 -	1.44 -	1.44 -	1.44 -	1.44 -
	0.90	1.55 -	1.55 -	1.55 -	1.55 -	1.58 -	1.63 -
	1.00	1.66 -	1.66 -	1.66 -	1.66 -	1.72 -	1.82 -
	1.20	1.66 -	1.72 -	1.77 -	1.88 -	1.99 -	- -
	1.50	1.66 -	1.72 -	1.77 -	1.88 -	1.99 -	- -
$N_{R,II,k}$ [kN]		2.09	2.69	3.28	4.15	5.02	8.32

Component I $R_m \geq 215$ N/mm²		t_{II} [mm]					
		1.50	1.75	2.00	2.50	3.00	4.00
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.91 -	1.03 -	1.16 -	1.16 -	1.16 -	1.16 -
	0.60	1.23 -	1.31 -	1.40 -	1.40 -	1.40 -	1.40 -
	0.70	1.56 -	1.60 -	1.64 -	1.64 -	1.64 -	1.64 -
	0.80	1.88 -	1.88 -	1.88 -	1.88 -	1.88 -	1.88 -
	0.90	2.03 -	2.03 -	2.03 -	2.03 -	2.06 -	2.13 -
	1.00	2.17 -	2.17 -	2.17 -	2.17 -	2.24 -	2.38 -
	1.20	2.17 -	2.24 -	2.31 -	2.46 -	2.60 -	- -
	1.50	2.17 -	2.24 -	2.31 -	2.46 -	2.60 -	- -
$N_{R,II,k}$ [kN]		2.09	2.69	3.28	4.15	5.02	8.32

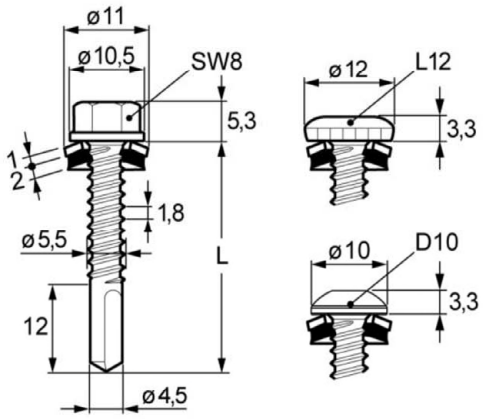
Additional definitions

The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-drilling screw with sealing washer ≥ Ø 11 mm

SX5-A11-5,5xL, SX5-L12-A11-5,5xL, SX5-D12-A11-5,5xL, SX5-D10-A11-5,5xL, SX5-S14-5,5xL, SX5-L12-S14-5,5xL, SX5-D12-S14-5,5xL, SX5-D10-S14-5,5xL

Annex 22



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy - EN 573 Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	Aluminum alloy - EN 573

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 7.00$ mm

Component I and II $R_m \geq 165$ N/mm²		t_{II} [mm] 1.50	2.00	2.50	3.00	≥4.00
$V_{R,k}$ [kN]	0.50	0.71 -	0.89 -	0.89 -	0.89 -	0.89 -
	0.60	0.83 -	1.06 -	1.06 -	1.06 -	1.06 -
	0.70	0.95 -	1.23 -	1.23 -	1.23 -	1.23 -
	0.80	1.06 -	1.40 -	1.40 -	1.40 -	1.40 -
t_I [mm]	0.90	1.18 -	1.49 -	1.52 -	1.55 -	1.60 -
	1.00	1.30 -	1.57 -	1.63 -	1.69 -	1.80 -
	1.20	1.30 -	1.74 -	1.86 -	1.97 -	1.97 -
	1.50	1.30 -	1.74 -	1.86 -	1.97 -	1.97 -
$N_{R,II,k}$ [kN]		0.62	1.02	1.74	2.02	3.65

Component I and II $R_m \geq 215$ N/mm²		t_{II} [mm] 1.50	2.00	2.50	3.00	≥4.00
$V_{R,k}$ [kN]	0.50	0.76 -	1.16 -	1.16 -	1.16 -	1.16 -
	0.60	0.90 -	1.38 -	1.38 -	1.38 -	1.38 -
	0.70	1.04 -	1.60 -	1.61 -	1.61 -	1.61 -
	0.80	1.18 -	1.82 -	1.83 -	1.83 -	1.83 -
t_I [mm]	0.90	1.32 -	1.93 -	1.98 -	2.02 -	2.09 -
	1.00	1.46 -	2.04 -	2.13 -	2.20 -	2.35 -
	1.20	1.46 -	2.26 -	2.42 -	2.57 -	2.57 -
	1.50	1.46 -	2.26 -	2.42 -	2.57 -	2.57 -
$N_{R,II,k}$ [kN]		0.81	1.33	2.28	3.91	4.76

Additional definitions

The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-drilling screw with sealing washer ≥ Ø 11 mm

SX5-A11-5,5xL, SX5-L12-A11-5,5xL, SX5-D12-A11-5,5xL, SX5-D10-A11-5,5xL, SX5-S14-5,5xL, SX5-L12-S14-5,5xL, SX5-D12-S14-5,5xL, SX5-D10-S14-5,5xL

Annex 23

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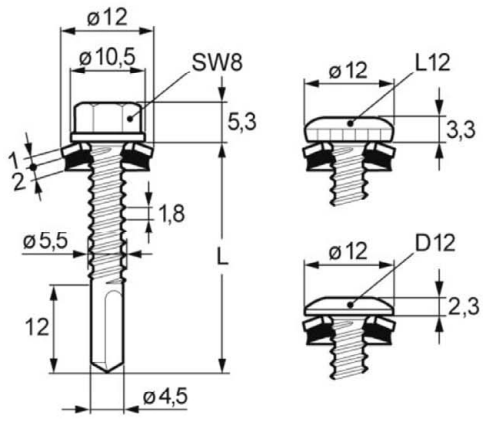


Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S235 to S355 - EN 10025 S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 5.00$ mm

		t_{II} [mm]						
		1.25	1.50	1.75	2.00	2.50	3.00	4.00
$V_{R,k}$ [kN] t_I [mm]	0.50	1.09[1)] -	1.57[1)] -	1.67[1)] -	1.76[1)] -	1.76[1)] -	1.76[1)] -	1.76[1)] -
	0.55	1.09[1)] -	1.71[1)] -	1.79[1)] -	1.86[1)] -	1.86[1)] -	1.86[1)] -	1.86[1)] -
	0.63	1.09[1)] -	1.94[1)] -	1.99[1)] -	2.03[1)] -	2.03[1)] -	2.03[1)] -	2.03[1)] -
	0.75	1.09[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -
	0.88	1.09[1)] -	2.86[1)] -	2.86[1)] -	2.86[1)] -	3.04[1)] -	3.27[1)] -	3.27[1)] -
	1.00	1.09[1)] -	3.43 -	3.43 -	3.43 -	3.74 -	4.18 -	4.18 -
	1.25	1.09[1)] -	3.43 -	3.87 -	4.31 -	5.20 -	6.08 -	- -
	1.50	1.09[1)] -	3.43 -	3.87 -	4.31 -	5.20 -	6.08 -	- -
$N_{R,k}$ [kN] t_I [mm]	0.50	1.22[1)] -	1.22[1)] -	1.22[1)] -	1.22[1)] -	1.22[1)] -	1.22[1)] -	1.22[1)] -
	0.55	1.39[2)] -	1.54[1)] -	1.54[1)] -	1.54[1)] -	1.54[1)] -	1.54[1)] -	1.54[1)] -
	0.63	1.39[2)] -	2.04 -	2.04[1)] -	2.04[1)] -	2.04[1)] -	2.04[1)] -	2.04[1)] -
	0.75	1.39[2)] -	2.09 -	2.69 -	2.80[1)] -	2.80[1)] -	2.80[1)] -	2.80[1)] -
	0.88	1.39[2)] -	2.09 -	2.69 -	3.28 -	3.63 -	3.63 -	3.63 -
	1.00	1.39[2)] -	2.09 -	2.69 -	3.28 -	4.15 -	4.39 -	4.39 -
	1.25	1.39[2)] -	2.09 -	2.69 -	3.28 -	4.15 -	5.02 -	- -
	1.50	1.39[2)] -	2.09 -	2.69 -	3.28 -	4.15 -	5.02 -	- -
$N_{R,II,k}$ [kN]		1.39[2)]	2.09	2.69	3.28	4.15	5.02	8.32

Additional definitions

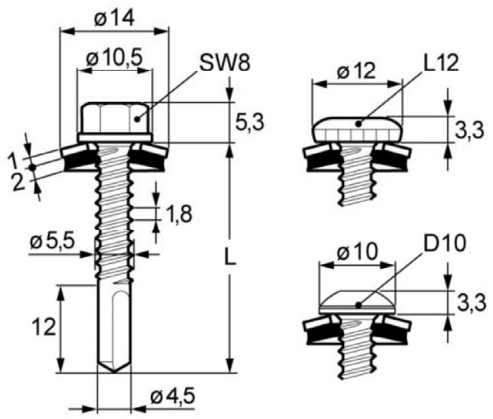
Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Index [2)]: For component II made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 12 mm

SX5-S12-5,5xL, SX5-L12-S12-5,5xL, SX5-D12-S12-5,5xL

Annex 24



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S235 to S355 - EN 10025 S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 5.00$ mm

		t_{II} [mm]						
		1.25	1.50	1.75	2.00	2.50	3.00	4.00
$V_{R,k}$ [kN] t_I [mm]	0.50	1.09[1)] -	1.57[1)] -	1.67[1)] -	1.76[1)] -	1.76[1)] -	1.76[1)] -	1.76[1)] -
	0.55	1.09[1)] -	1.71[1)] -	1.79[1)] -	1.86[1)] -	1.86[1)] -	1.86[1)] -	1.86[1)] -
	0.63	1.09[1)] -	1.94[1)] -	1.99[1)] -	2.03[1)] -	2.03[1)] -	2.03[1)] -	2.03[1)] -
	0.75	1.09[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -
	0.88	1.09[1)] -	2.86[1)] -	2.86[1)] -	2.86[1)] -	3.04[1)] -	3.27[1)] -	3.27[1)] -
	1.00	1.09[1)] -	3.43 -	3.43 -	3.43 -	3.74 -	4.18 -	4.18 -
	1.25	1.09[1)] -	3.43 -	3.87 -	4.31 -	5.20 -	6.08 -	- -
	1.50	1.09[1)] -	3.43 -	3.87 -	4.31 -	5.20 -	6.08 -	- -
$N_{R,k}$ [kN] t_I [mm]	0.50	1.34[1)] -	1.34[1)] ac	1.34[1)] ac	1.34[1)] ac	1.34[1)] ac	1.34[1)] ac	1.34[1)] ac
	0.55	1.39[2)] -	1.69[1)] ac	1.69[1)] ac	1.69[1)] ac	1.69[1)] ac	1.69[1)] ac	1.69[1)] a
	0.63	1.39[2)] -	2.09 ac	2.25[1)] ac	2.25[1)] ac	2.25[1)] ac	2.25[1)] ac	2.25[1)] a
	0.75	1.39[2)] -	2.09 ac	2.69 ac	3.09 ac	3.09[1)] ac	3.09[1)] ac	3.09[1)] a
	0.88	1.39[2)] -	2.09 ac	2.69 ac	3.28 ac	4.00 ac	4.00 ac	4.00 a
	1.00	1.39[2)] -	2.09 ac	2.69 ac	3.28 ac	4.15 ac	4.84 ac	4.84 a
	1.25	1.39[2)] -	2.09 -	2.69 -	3.28 -	4.15 -	5.02 a	- -
	1.50	1.39[2)] -	2.09 -	2.69 -	3.28 -	4.15 -	5.02 -	- -
$N_{R,II,k}$ [kN]		1.39[2)]	2.09	2.69	3.28	4.15	5.02	8.32

Additional definitions

Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

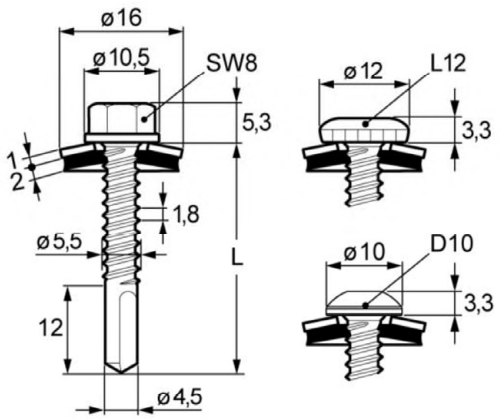
Index [2)]: For component II made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 14 mm

SX5-S14-5,5xL, SX5-L12-S14-5,5xL, SX5-D12-S14-5,5xL, SX5-D10-S14-5,5xL

Annex 25

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S235 to S355 - EN 10025 S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 5.00$ mm

		t_{II} [mm]						
		1.25	1.50	1.75	2.00	2.50	3.00	4.00
$V_{R,k}$ [kN] t_I [mm]	0.50	1.09[1] -	1.57[1] -	1.67[1] -	1.76[1] -	1.76[1] -	1.76[1] -	1.76[1] -
	0.55	1.09[1] -	1.71[1] -	1.79[1] -	1.86[1] -	1.86[1] -	1.86[1] -	1.86[1] -
	0.63	1.09[1] -	1.94[1] -	1.99[1] -	2.03[1] -	2.03[1] -	2.03[1] -	2.03[1] -
	0.75	1.09[1] -	2.28[1] -	2.28[1] -	2.28[1] -	2.28[1] -	2.28[1] -	2.28[1] -
	0.88	1.09[1] -	2.86[1] -	2.86[1] -	2.86[1] -	3.04[1] -	3.27[1] -	3.27[1] -
	1.00	1.09[1] -	3.43 -	3.43 -	3.43 -	3.74 -	4.18 -	4.18 -
	1.25	1.09[1] -	3.43 -	3.87 -	4.31 -	5.20 -	6.08 -	- -
	1.50	1.09[1] -	3.43 -	3.87 -	4.31 -	5.20 -	6.08 -	- -
$N_{R,k}$ [kN] t_I [mm]	0.50	1.39[1] -	1.52[1] ac	1.52[1] ac	1.52[1] ac	1.52[1] ac	1.52[1] ac	1.52[1] ac
	0.55	1.39[2] -	1.91[1] ac	1.91[1] ac	1.91[1] ac	1.91[1] ac	1.91[1] ac	1.91[1] a
	0.63	1.39[2] -	2.09 ac	2.69 ac	2.70[1] ac	2.70[1] ac	2.70[1] ac	2.70[1] a
	0.75	1.39[2] -	2.09 ac	2.69 ac	3.09 ac	3.50[1] ac	3.50[1] ac	3.50[1] a
	0.88	1.39[2] -	2.09 ac	2.69 ac	3.28 ac	4.15 ac	4.52 ac	4.52 a
	1.00	1.39[2] -	2.09 ac	2.69 ac	3.28 ac	4.15 ac	5.02 ac	5.47 a
	1.25	1.39[2] -	2.09 -	2.69 -	3.28 -	4.15 -	5.02 a	- -
	1.50	1.39[2] -	2.09 -	2.69 -	3.28 -	4.15 -	5.02 -	- -
$N_{R,II,k}$ [kN]		1.39[2]	2.09	2.69	3.28	4.15	5.02	8.32

Additional definitions

Index [1]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

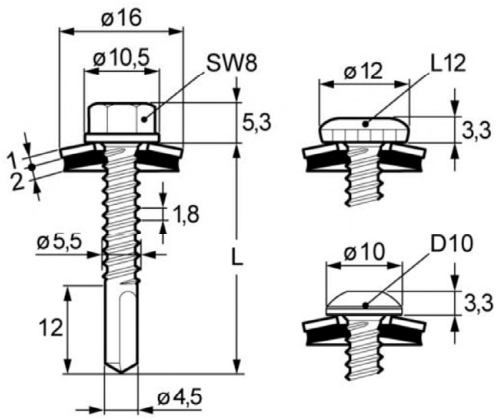
Index [2]: For component II made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 16 mm

SX5-S16-5,5xL, SX5-L12-S16-5,5xL, SX5-D12-S16-5,5xL, SX5-D10-S16-5,5xL

Annex 26

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	Aluminum alloy - EN 573

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 7.00$ mm

Component II $R_m \geq 165$ N/mm²		t_{II} [mm]											
		1.50		2.00		3.00		4.00		5.00		6.00	
$V_{R,k}$ [kN] t_I [mm]	0.50	1.48	-	1.54	-	1.54	-	1.54	-	1.54	-	1.54	-
	0.63	1.48	-	1.73	-	1.73	-	1.73	-	1.73	-	1.73	-
	0.75	1.48	-	1.90	-	1.90	-	1.90	-	1.90	-	1.90	-
	0.88	1.50	-	2.00	-	2.00	-	2.00	-	2.00	-	2.00	-
	1.00	1.52	-	2.09	-	2.90	-	3.26	-	3.26	-	3.26	-
	1.25	1.52	-	2.09	-	2.90	-	3.26	-	3.26	-	-	-
	1.50	1.52	-	2.09	-	2.90	-	3.26	-	3.26	-	-	-
$N_{R,k}$ [kN] t_I [mm]	0.50	0.62[1)]	-	1.02[1)]	-	1.52	-	1.52	-	1.52	-	1.52	-
	0.63	0.62[1)]	-	1.02[1)]	-	2.02[1)]	-	2.70	-	2.70	-	2.70	-
	0.75	0.62[1)]	-	1.02[1)]	-	2.02[1)]	-	3.50	-	3.50	-	3.50	-
	0.88	0.62[1)]	-	1.02[1)]	-	2.02[1)]	-	3.65	-	4.52	-	4.52	-
	1.00	0.62[1)]	-	1.02[1)]	-	2.02[1)]	-	3.65[1)]	-	5.38	-	5.47	-
	1.25	0.62[1)]	-	1.02[1)]	-	2.02[1)]	-	3.65[1)]	-	5.38	-	-	-
	1.50	0.62[1)]	-	1.02[1)]	-	2.02[1)]	-	3.65[1)]	-	5.38	-	-	-
$N_{R,II,k}$ [kN]		0.62[1)]		1.02[1)]		2.02[1)]		3.65[1)]		5.38[1)]		7.11[1)]	

Additional definitions

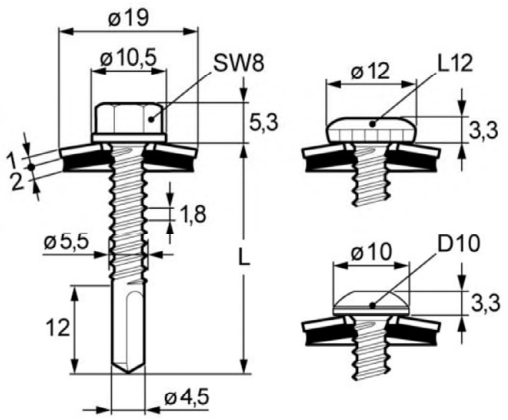
Index [1)]: For component II made of aluminium alloy with $R_m \geq 215$ N/mm² the resistance value may be increased by 30.3%.

Self-drilling screw with sealing washer ≥ Ø 16 mm

SX5-S16-5,5xL, SX5-L12-S16-5,5xL, SX5-D12-S16-5,5xL, SX5-D10-S16-5,5xL

Annex 27

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S235 to S355 - EN 10025 S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 5.00$ mm

		t_{II} [mm]						
		1.25	1.50	1.75	2.00	2.50	3.00	4.00
$V_{R,k}$ [kN] t_I [mm]	0.50	1.09[1)] -	1.57[1)] -	1.67[1)] -	1.76[1)] -	1.76[1)] -	1.76[1)] -	1.76[1)] -
	0.55	1.09[1)] -	1.71[1)] -	1.79[1)] -	1.86[1)] -	1.86[1)] -	1.86[1)] -	1.86[1)] -
	0.63	1.09[1)] -	1.94[1)] -	1.99[1)] -	2.03[1)] -	2.03[1)] -	2.03[1)] -	2.03[1)] -
	0.75	1.09[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -	2.28[1)] -
	0.88	1.09[1)] -	2.86[1)] -	2.86[1)] -	2.86[1)] -	3.04[1)] -	3.27[1)] -	3.27[1)] -
	1.00	1.09[1)] -	3.43 -	3.43 -	3.43 -	3.74 -	4.18 -	4.18 -
	1.25	1.09[1)] -	3.43 -	3.87 -	4.31 -	5.20 -	6.08 -	- -
	1.50	1.09[1)] -	3.43 -	3.87 -	4.31 -	5.20 -	6.08 -	- -
$N_{R,k}$ [kN] t_I [mm]	0.50	1.39[2)] -	1.87[1)] ac	1.87[1)] ac	1.87[1)] ac	1.87[1)] ac	1.87[1)] ac	1.87[1)] ac
	0.55	1.39[2)] -	2.09 ac	2.36[1)] ac	2.36[1)] ac	2.36[1)] ac	2.36[1)] ac	2.36[1)] a
	0.63	1.39[2)] -	2.09 ac	2.69 ac	3.14 ac	3.14[1)] ac	3.14[1)] ac	3.14[1)] a
	0.75	1.39[2)] -	2.09 ac	2.69 ac	3.28 ac	4.15 ac	4.31 ac	4.31 a
	0.88	1.39[2)] -	2.09 ac	2.69 ac	3.28 ac	4.15 ac	5.02 ac	5.57 a
	1.00	1.39[2)] -	2.09 ac	2.69 ac	3.28 ac	4.15 ac	5.02 ac	6.74 a
	1.25	1.39[2)] -	2.09 -	2.69 -	3.28 -	4.15 -	5.02 a	- -
	1.50	1.39[2)] -	2.09 -	2.69 -	3.28 -	4.15 -	5.02 -	- -
$N_{R,II,k}$ [kN]		1.39[2)]	2.09	2.69	3.28	4.15	5.02	8.32

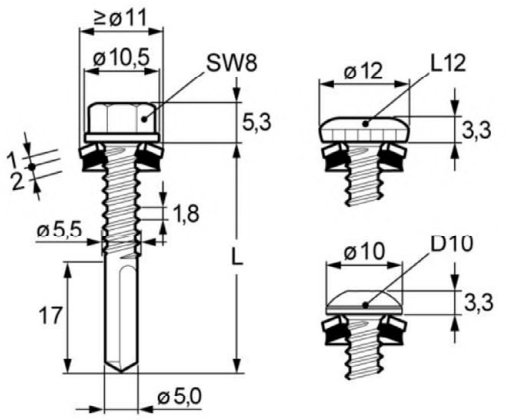
Additional definitions
Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.
Index [2)]: For component II made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 19 mm

SX5-S19-5,5xL, SX5-L12-S19-5,5xL, SX5-D12-S19-5,5xL, SX5-D10-S19-5,5xL

Annex 28

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S235 to S355 - EN 10025 S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 14.00$ mm

		t_{II} [mm]											
		4.00		5.00		6.00		8.00		10.00		12.00	
$V_{R,k}$ [kN] t_I [mm]	0.50	2.20	ac	2.20	ac	2.20	ac	2.20	ac	2.20	ac	2.20	ac
	0.55	2.50	ac	2.50	ac	2.50	ac	2.50	ac	2.50	ac	2.50	ac
	0.63	2.80	ac	2.80	ac	2.80	ac	2.80	ac	2.80	ac	2.80	ac
	0.75	3.40	ac	3.40	ac	3.40	ac	3.40	ac	3.40	ac	3.40	ac
	0.88	4.00	ac	4.00	ac	4.00	ac	4.00	ac	4.00	ac	4.00	ac
	1.00	4.50	ac	4.50	ac	4.50	ac	4.50	ac	4.50	ac	4.50	ac
	1.25	5.60	ac	5.60	ac	5.60	ac	5.60	ac	5.60	ac	5.60	ac
	1.50	6.40	ac	6.40	ac	6.40	ac	6.40	ac	6.40	ac	6.40	ac
$N_{R,k}$ [kN] t_I [mm]	0.50	1.59[1)]	ac	1.59[1)]	ac	1.59[1)]	ac	1.59[1)]	ac	1.59[1)]	ac	1.59[1)]	ac
	0.55	1.70[1)]	ac	1.70[1)]	ac	1.70[1)]	ac	1.70[1)]	ac	1.70[1)]	ac	1.70[1)]	ac
	0.63	1.87[1)]	ac	1.87[1)]	ac	1.87[1)]	ac	1.87[1)]	ac	1.87[1)]	ac	1.87[1)]	ac
	0.75	2.12[1)]	ac	2.12[1)]	ac	2.12[1)]	ac	2.12[1)]	ac	2.12[1)]	ac	2.12[1)]	ac
	0.88	2.67[1)]	ac	2.67[1)]	ac	2.67[1)]	ac	2.67[1)]	ac	2.67[1)]	ac	2.67[1)]	ac
	1.00	3.17[1)]	ac	3.17[1)]	ac	3.17[1)]	ac	3.17[1)]	ac	3.17[1)]	ac	3.17[1)]	ac
	1.25	4.27[1)]	ac	4.27[1)]	ac	4.27[1)]	ac	4.27[1)]	ac	4.27[1)]	ac	4.27[1)]	ac
	1.50	4.88[1)]	ac	4.88[1)]	ac	4.88[1)]	ac	4.88[1)]	ac	4.88[1)]	ac	4.88[1)]	ac
$N_{R,II,k}$ [kN]		7.10		10.90		10.90		10.90		10.90		10.90	

Additional definitions

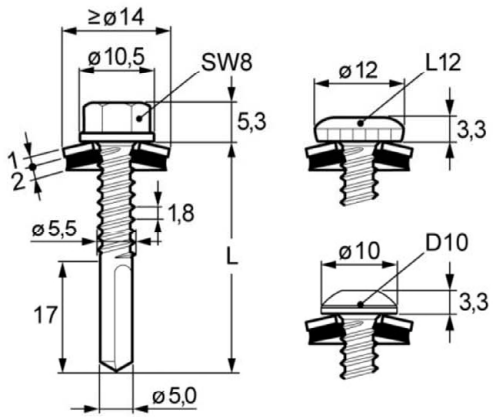
Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 11 mm

SX14-A11-5,5xL, SX14-L12-A11-5,5xL, SX14-D10-A11-5,5xL

Annex 29

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S235 to S355 - EN 10025 S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 14.00$ mm

		t_{II} [mm]											
		4.00		5.00		6.00		8.00		10.00		12.00	
$V_{R,k}$ [kN] t_I [mm]	0.50	2.20	ac	2.20	ac	2.20	ac	2.20	ac	2.20	ac	2.20	ac
	0.55	2.50	ac	2.50	ac	2.50	ac	2.50	ac	2.50	ac	2.50	ac
	0.63	2.80	ac	2.80	ac	2.80	ac	2.80	ac	2.80	ac	2.80	ac
	0.75	3.40	ac	3.40	ac	3.40	ac	3.40	ac	3.40	ac	3.40	ac
	0.88	4.00	ac	4.00	ac	4.00	ac	4.00	ac	4.00	ac	4.00	ac
	1.00	4.50	ac	4.50	ac	4.50	ac	4.50	ac	4.50	ac	4.50	ac
	1.25	5.60	ac	5.60	ac	5.60	ac	5.60	ac	5.60	ac	5.60	ac
	1.50	6.40	ac	6.40	ac	6.40	ac	6.40	ac	6.40	ac	6.40	ac
$N_{R,k}$ [kN] t_I [mm]	0.50	1.73[1)]	ac	1.73[1)]	ac	1.73[1)]	ac	1.73[1)]	ac	1.73[1)]	ac	1.73[1)]	ac
	0.55	1.85[1)]	ac	1.85[1)]	ac	1.85[1)]	ac	1.85[1)]	ac	1.85[1)]	ac	1.85[1)]	ac
	0.63	2.03[1)]	ac	2.03[1)]	ac	2.03[1)]	ac	2.03[1)]	ac	2.03[1)]	ac	2.03[1)]	ac
	0.75	2.31[1)]	ac	2.31[1)]	ac	2.31[1)]	ac	2.31[1)]	ac	2.31[1)]	ac	2.31[1)]	ac
	0.88	2.90[1)]	ac	2.90[1)]	ac	2.90[1)]	ac	2.90[1)]	ac	2.90[1)]	ac	2.90[1)]	ac
	1.00	3.44[1)]	ac	3.44[1)]	ac	3.44[1)]	ac	3.44[1)]	ac	3.44[1)]	ac	3.44[1)]	ac
	1.25	4.64[1)]	ac	4.64[1)]	ac	4.64[1)]	ac	4.64[1)]	ac	4.64[1)]	ac	4.64[1)]	ac
	1.50	5.31[1)]	ac	5.31[1)]	ac	5.31[1)]	ac	5.31[1)]	ac	5.31[1)]	ac	5.31[1)]	ac
$N_{R,II,k}$ [kN]		7.10		10.90		10.90		10.90		10.90		10.90	

Additional definitions

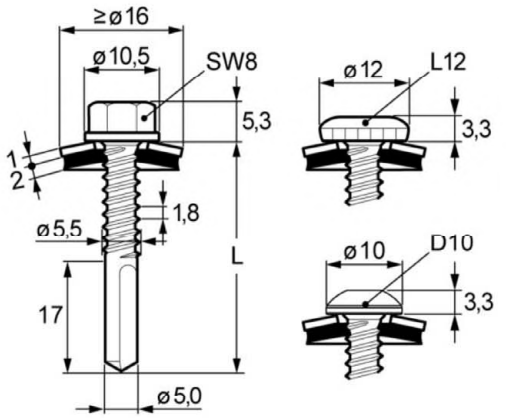
Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 14 mm

SX14-S14-5,5xL, SX14-L12-S14-5,5xL, SX14-D10-S14-5,5xL

Annex 30

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S235 to S355 - EN 10025 S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 14.00$ mm

		t_{II} [mm]					
		4.00	5.00	6.00	8.00	10.00	12.00
$V_{R,k}$ [kN] t_I [mm]	0.50	2.20 ac	2.20 ac	2.20 ac	2.20 ac	2.20 ac	2.20 ac
	0.55	2.50 ac	2.50 ac	2.50 ac	2.50 ac	2.50 ac	2.50 ac
	0.63	2.80 ac	2.80 ac	2.80 ac	2.80 ac	2.80 ac	2.80 ac
	0.75	3.40 ac	3.40 ac	3.40 ac	3.40 ac	3.40 ac	3.40 ac
	0.88	4.00 ac	4.00 ac	4.00 ac	4.00 ac	4.00 ac	4.00 ac
	1.00	4.50 ac	4.50 ac	4.50 ac	4.50 ac	4.50 ac	4.50 ac
	1.25	5.60 ac	5.60 ac	5.60 ac	5.60 ac	5.60 ac	5.60 ac
	1.50	6.40 ac	6.40 ac	6.40 ac	6.40 ac	6.40 ac	6.40 ac
$N_{R,k}$ [kN] t_I [mm]	0.50	1.80 ac	1.80 ac	1.80 ac	1.80 ac	1.80 ac	1.80 ac
	0.55	2.10 ac	2.10 ac	2.10 ac	2.10 ac	2.10 ac	2.10 ac
	0.63	2.40 ac	2.40 ac	2.40 ac	2.40 ac	2.40 ac	2.40 ac
	0.75	3.00 ac	3.00 ac	3.00 ac	3.00 ac	3.00 ac	3.00 ac
	0.88	3.60 ac	3.60 ac	3.60 ac	3.60 ac	3.60 ac	3.60 ac
	1.00	4.20 ac	4.20 ac	4.20 ac	4.20 ac	4.20 ac	4.20 ac
	1.25	6.60 ac	6.60 ac	6.60 ac	6.60 ac	6.60 ac	6.60 ac
	1.50	7.10 ac	10.90 ac	10.90 ac	10.90 ac	10.90 ac	10.90 ac
$N_{R,II,k}$ [kN]		7.10	10.90	10.90	10.90	10.90	10.90

Additional definitions

Self-drilling screw with sealing washer ≥ Ø 16 mm

SX14-S16-5,5xL, SX14-L12-S16-5,5xL, SX14-D12-S16-5,5xL, SX14-D10-S16-5,5xL

Annex 31

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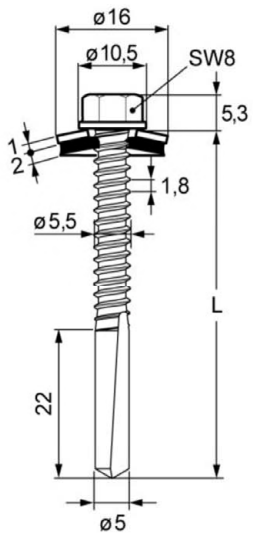

Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S235 to S355 - EN 10025 S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 20.00$ mm

		t_{II} [mm]							
		3.00	4.00	5.00	6.00	8.00	10.00	12.00	18.00
V_{Rk} [kN] t_I [mm]	0.50	1.08[1)] -	1.08[1)] -	1.43[1)] -	1.43[1)] -	1.43[1)] -	1.43[1)] -	1.43[1)] -	1.43[1)] -
	0.55	1.21[1)] -	1.21[1)] -	1.60[1)] -	1.60[1)] -	1.60[1)] -	1.60[1)] -	1.60[1)] -	1.60[1)] -
	0.63	1.42[1)] -	1.42[1)] -	1.88[1)] -	1.88[1)] -	1.88[1)] -	1.88[1)] -	1.88[1)] -	1.88[1)] -
	0.75	1.74[1)] -	1.74[1)] -	2.30[1)] -	2.30[1)] -	2.30[1)] -	2.30[1)] -	2.30[1)] -	2.30[1)] -
	0.88	2.22[1)] -	2.22[1)] -	2.94[1)] -	2.94[1)] -	2.94[1)] -	2.94[1)] -	2.94[1)] -	2.94[1)] -
	1.00	2.66[1)] -	2.66[1)] -	3.52[1)] -	3.52[1)] -	3.52[1)] -	3.52[1)] -	3.52[1)] -	3.52[1)] -
	1.25	3.23[1)] -	3.23[1)] -	4.28[1)] -	4.28[1)] -	4.28[1)] -	4.28[1)] -	4.28[1)] -	4.28[1)] -
	1.50	3.80[1)] -	3.80[1)] -	5.03[1)] -	5.03[1)] -	5.03[1)] -	5.03[1)] -	5.03[1)] -	5.03[1)] -
	2.00	4.81[1)] -	4.81[1)] -	6.37[1)] -	6.37[1)] -	6.37[1)] -	6.37[1)] -	6.37[1)] -	6.37[1)] -
N_{Rk} [kN] t_I [mm]	0.50	1.60[1)] -	1.60[1)] -	1.62[1)] -	1.62[1)] -	1.62[1)] -	1.62[1)] -	1.62[1)] -	1.62[1)] -
	0.55	1.82[1)] -	1.82[1)] -	1.87[1)] -	1.87[1)] -	1.87[1)] -	1.87[1)] -	1.87[1)] -	1.87[1)] -
	0.63	2.18[1)] -	2.18[1)] -	2.26[1)] -	2.26[1)] -	2.26[1)] -	2.26[1)] -	2.26[1)] -	2.26[1)] -
	0.75	2.72[1)] -	2.72[1)] -	2.85[1)] -	2.85[1)] -	2.85[1)] -	2.85[1)] -	2.85[1)] -	2.85[1)] -
	0.88	3.24[1)] -	3.24[1)] -	3.57[1)] -	3.57[1)] -	3.57[1)] -	3.57[1)] -	3.57[1)] -	3.57[1)] -
	1.00	3.65 -	4.23 -	4.23[1)] -	4.23[1)] -	4.23[1)] -	4.23[1)] -	4.23[1)] -	4.23[1)] -
	1.25	3.65 -	5.08 -	5.30[1)] -	5.30[1)] -	5.30[1)] -	5.30[1)] -	5.30[1)] -	5.30[1)] -
	1.50	3.65 -	5.08 -	6.08 -	6.38 -	6.38[1)] -	6.38[1)] -	6.38[1)] -	6.38[1)] -
	2.00	3.65 -	5.08 -	6.08 -	6.38 -	6.38[1)] -	6.38[1)] -	6.38[1)] -	6.38[1)] -
$N_{R,II,k}$ [kN]		3.65[2)]	5.08[2)]	6.08[2)]	6.62[2)]	7.17[2)]	7.72[2)]	7.72[2)]	7.72[2)]

Additional definitions

Index [1)]: For component I made of S320GD the resistance value may be increased by 8.3% and for component I made of S350GD to S450GD the resistance value may be increased by 16.6%.

Index [2)]: For component II made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with sealing washer ≥ Ø 16 mm

SX20-S16-5.5xL

Annex 32

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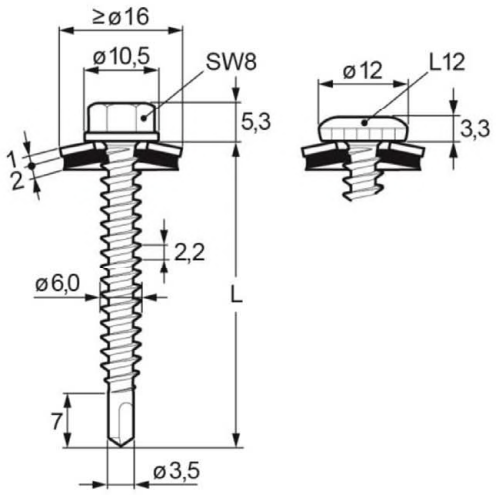

Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	Coniferous timber ≥ C24 - EN 14081

Drilling-capacity:	$\Sigma(t_I) \leq 2.00$ mm
Characteristics:	$M_{y,Rk} = 7.9$ Nm $f_{ax,k} = 13.2$ N/mm² ($l_{ef} = 25$ mm, $\rho_a = 350$ kg/m³)

		l_{ef} [mm]					Failure of component I	
		25	30	35	40	45		
$V_{R,k}$ [kN]	0.50	1.02	1.02	1.02	1.02	1.02	1.02	$V_{R,I,k}$ [kN]
	0.55	1.02	1.10	1.10	1.10	1.10	1.10	
	0.63	1.02	1.21	1.21	1.21	1.21	1.21	
	0.75	1.02	1.23	1.40	1.40	1.40	1.40	
t_I [mm]	0.88	1.02	1.23	1.40	1.40	1.40	1.40	
	1.00	1.02	1.23	1.40	1.40	1.40	1.40	
	1.25	1.02	1.23	1.40	1.40	1.40	1.40	
	1.50	1.02	1.23	1.40	1.40	1.40	1.40	
$N_{R,k}$ [kN]	0.50	1.59	1.59	1.59	1.59	1.59	1.59	$N_{R,I,k}$ [kN]
	0.55	1.93	1.93	1.93	1.93	1.93	1.93	
	0.63	1.98	2.38	2.44	2.44	2.44	2.44	
	0.75	1.98	2.38	2.77	3.17	3.28	3.28	
t_I [mm]	0.88	1.98	2.38	2.77	3.17	3.28	3.28	
	1.00	1.98	2.38	2.77	3.17	3.28	3.28	
	1.25	1.98	2.38	2.77	3.17	3.28	3.28	
	1.50	1.98	2.38	2.77	3.17	3.28	3.28	
$N_{R,II,k}$ [kN]		1.98	2.38	2.77	3.17	3.56	-	

Self-drilling screw with sealing washer ≥ Ø 16 mm

SXW-S16-6,0xL, SXW-L12-S16-6,0xL
SW2-S-S16-6,0xL, SW2-S-L12-S16-6,0xL

Annex 33

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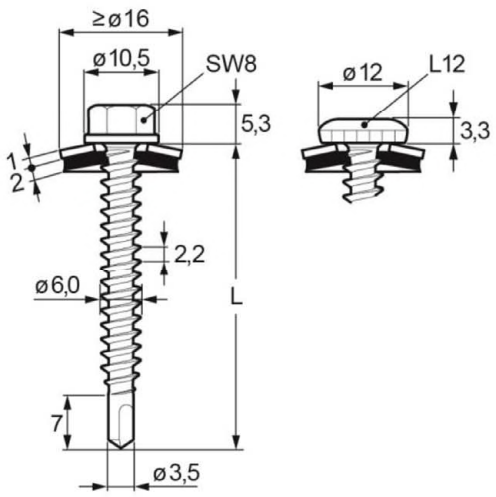

Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	Coniferous timber ≥ C24 - EN 14081

Drilling-capacity:	$\Sigma(t_I) \leq 2.00$ mm
Characteristics:	$M_{y,Rk} = 7.9$ Nm $f_{ax,k} = 13.2$ N/mm² ($l_{ef} = 25$ mm, $\rho_a = 350$ kg/m³)

Component I $R_m \geq 165$ N/mm²		l_{ef} [mm] 25	30	35	40	45	Failure of component I	
$V_{R,k}$ [kN] t_I [mm]	0.50	0.59	0.59	0.59	0.59	0.59	0.59	**$V_{R,I,k}$ [kN]**
	0.60	0.80	0.80	0.80	0.80	0.80	0.80	
	0.70	1.01	1.01	1.01	1.01	1.01	1.01	
	0.80	1.02	1.14	1.14	1.14	1.14	1.14	
	0.90	1.02	1.23	1.26	1.26	1.26	1.26	
	1.00	1.02	1.23	1.26	1.26	1.26	1.26	
	1.20	1.02	1.23	1.26	1.26	1.26	1.26	
	1.50	1.02	1.23	1.26	1.26	1.26	1.26	
$N_{R,II,k}$ [kN]		1.98	2.38	2.77	3.17	3.28	-	

Component I $R_m \geq 215$ N/mm²		l_{ef} [mm] 25	30	35	40	45	Failure of component I	
$V_{R,k}$ [kN] t_I [mm]	0.50	0.70	0.70	0.70	0.70	0.70	0.70	**$V_{R,I,k}$ [kN]**
	0.60	0.93	0.93	0.93	0.93	0.93	0.93	
	0.70	1.02	1.16	1.16	1.16	1.16	1.16	
	0.80	1.02	1.23	1.34	1.34	1.34	1.34	
	0.90	1.02	1.23	1.43	1.52	1.52	1.52	
	1.00	1.02	1.23	1.43	1.52	1.52	1.52	
	1.20	1.02	1.23	1.43	1.52	1.52	1.52	
	1.50	1.02	1.23	1.43	1.52	1.52	1.52	
$N_{R,II,k}$ [kN]		1.98	2.38	2.77	3.17	3.56	-	

Additional definitions

The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-drilling screw with sealing washer ≥ Ø 16 mm

SXW-S16-6,0 x L, SXW-L12-S16-6,0 x L
SW2-S-S16-6,0 x L, SW2-S-L12-S16-6,0 x L

Annex 34

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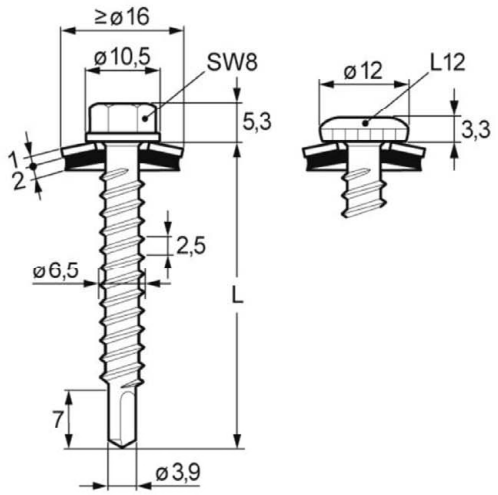

Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	Coniferous timber ≥ C24 - EN 14081

Drilling-capacity:	$\Sigma(t_I) \leq 2.00$ mm
Characteristics:	$M_{y,Rk} = 12.1$ Nm $f_{ax,k} = 13.2$ N/mm² ($l_{ef} = 35$ mm, $\rho_a = 350$ kg/m³)

		l_{ef} [mm]					Failure of component I	
		35	45	55	65	75		
$V_{R,k}$ [kN]	0.50	1.55	1.55	1.55	1.55	1.55	1.55	$V_{R,I,k}$ [kN]
	0.55	1.71	1.71	1.71	1.71	1.71	1.71	
	0.63	1.73	2.23	2.73	2.90	2.90	2.90	
	0.75	1.73	2.23	2.73	3.14	3.34	3.50	
	0.88	1.73	2.23	2.73	3.14	3.34	4.00	
	1.00	1.73	2.23	2.73	3.14	3.34	4.50	
	1.25	1.73	2.23	2.73	3.14	3.34	5.40	
	1.50	1.73	2.23	2.73	3.14	3.34	5.70	
$N_{R,k}$ [kN]	0.50	1.68	1.68	1.68	1.68	1.68	1.68	$N_{R,I,k}$ [kN]
	0.55	1.88	1.88	1.88	1.88	1.88	1.88	
	0.63	2.70	2.70	2.70	2.70	2.70	2.70	
	0.75	3.00	3.40	3.40	3.40	3.40	3.40	
	0.88	3.00	3.86	4.10	4.10	4.10	4.10	
	1.00	3.00	3.86	4.72	4.80	4.80	4.80	
	1.25	3.00	3.86	4.72	5.58	5.60	5.60	
	1.50	3.00	3.86	4.72	5.58	5.60	5.60	
$N_{R,II,k}$ [kN]		3.00	3.86	4.72	5.58	6.44	-	

Self-drilling screw with sealing washer ≥ Ø 16 mm

SXW-S16-6,5xL, SXW-L12-S16-6,5xL

Annex 35

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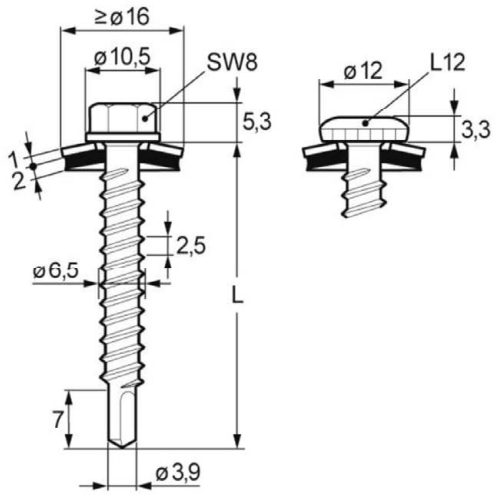


Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	Coniferous timber ≥ C24 - EN 14081

Drilling-capacity:	$\Sigma(t_I) \leq 2.00$ mm
Characteristics:	$M_{y,Rk} = 12.1$ Nm $f_{ax,k} = 13.2$ N/mm² ($l_{ef} = 35$ mm, $\rho_a = 350$ kg/m³)

Component I $R_m \geq 165$ N/mm²		l_{ef} [mm] 35	45	55	65	75	Failure of component I	
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.86	0.86	0.86	0.86	0.86	0.86	$V_{R,I,k}$ [kN]
	0.60	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	
	0.80	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	
	1.00	1.72	1.72	1.72	1.72	1.72	1.72	
	1.20	1.73	2.06	2.06	2.06	2.06	2.06	
	1.50	1.73	2.23	2.57	2.57	2.57	2.57	
$N_{R,II,k}$ [kN]		3.00	3.86	4.72	5.58	6.44	-	

Component I $R_m \geq 215$ N/mm²		l_{ef} [mm] 35	45	55	65	75	Failure of component I	
$V_{R,k}$ [kN] / t_I [mm]	0.50	1.12	1.12	1.12	1.12	1.12	1.12	$V_{R,I,k}$ [kN]
	0.60	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	
	0.80	1.73	1.79	1.79	1.79	1.79	1.79	
	0.90	1.73	2.01	2.01	2.01	2.01	2.01	
	1.00	1.73	2.23	2.24	2.24	2.24	2.24	
	1.20	1.73	2.23	2.68	2.68	2.68	2.68	
	1.50	1.73	2.23	2.73	3.22	3.35	3.35	
$N_{R,II,k}$ [kN]		3.00	3.86	4.72	5.58	6.44	-	

Additional definitions

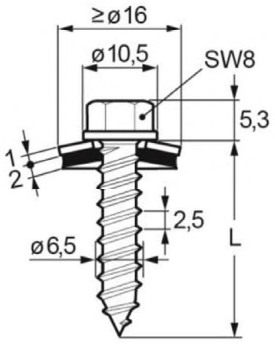
The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-drilling screw with sealing washer ≥ Ø 16 mm

SXW-S16-6,5xL, SXW-L12-S16-6,5xL

Annex 36

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506 Stainless steel 1.4547 - EN 10088-1
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Predrill-diameter: d_{pd} = see table

		t_{II} [mm]							
		0.63	0.75	0.88	1.00	1.25	1.50	2.00	3.00
d_{pd} [mm]		3.5	4.0	4.5			5.0		
V_{Rk} [kN] / t_I [mm]	0.50	0.82 -	1.07[1] -	1.35[1] -	1.60[1] ac	1.60[1] ac	1.60[1] ac	1.60[1] ac	1.60[1] ac
	0.55	1.00 -	1.24 -	1.52 -	1.75 ac	1.95 ac	2.10 ac	2.10 ac	2.10 ac
	0.63	1.30 -	1.50 -	1.80 -	2.00 ac	2.50 ac	2.90 ac	2.90 ac	2.90 ac
	0.75	1.40 -	1.60 -	1.90 -	2.20 ac	2.70 ac	3.10 ac	3.40 ac	3.50 ac
	0.88	1.50 -	1.70 -	2.00 -	2.30 -	2.80 ac	3.20 ac	3.90 ac	4.00 ac
	1.00	1.60 -	1.80 -	2.10 -	2.50 -	3.10 -	3.60 -	4.40 -	4.50 ac
	1.25	1.60 -	1.82 -	2.30 -	2.70 -	3.30 -	4.00 -	4.70 -	5.40 -
	1.50	1.60 -	1.83 -	2.40 -	2.80 -	3.50 -	4.00 -	4.90 -	5.70 -
N_{Rk} [kN] / t_I [mm]	0.50	1.00 -	1.20 -	1.40 -	1.50 ac	1.68[1] ac	1.68[1] ac	1.68[1] ac	1.68[1] ac
	0.55	1.00 -	1.20 -	1.40 -	1.50 ac	1.88[1] ac	1.88[1] ac	1.88[1] ac	1.88[1] ac
	0.63	1.00 -	1.20 -	1.40 -	1.50 ac	1.90 ac	2.30 ac	2.70 ac	2.70 ac
	0.75	1.00 -	1.20 -	1.40 -	1.50 ac	1.90 ac	2.30 ac	3.40 ac	3.40 ac
	0.88	1.00 -	1.20 -	1.40 -	1.50 -	1.90 ac	2.30 ac	3.80 ac	4.10 ac
	1.00	1.00 -	1.20 -	1.40 -	1.50 -	1.90 -	2.30 -	3.80 -	4.80 ac
	1.25	1.00 -	1.20 -	1.40 -	1.50 -	1.90 -	2.30 -	3.80 -	5.60 -
	1.50	1.00 -	1.20 -	1.40 -	1.50 -	1.90 -	2.30 -	3.80 -	5.60 -
$N_{R,II,k}$ [kN]		1.00	1.20	1.40	1.50	1.90	2.30	3.80	5.60

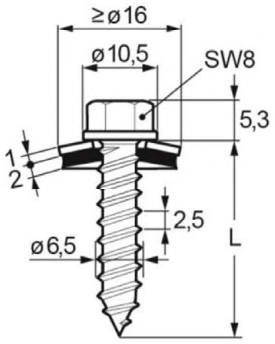
Additional definitions

Index [1]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-tapping screw with sealing washer ≥ Ø 16 mm

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

Annex 37



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506 Stainless steel 1.4547 - EN 10088-1
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Predrill-diameter: d_{pd} = see table

		t_{II} [mm]									
		2 x 0.75		2 x 0.88		2 x 1.00		2 x 1.25		2 x 1.50	
d_{pd} [mm]		4.0						4.5			
$V_{R,k}$ [kN]	0.50	1.36[1)]	ac	1.48[1)]	ac	1.60[1)]	ac	1.60[1)]	ac	1.60[1)]	ac
	0.55	1.54[1)]	ac	1.72[1)]	ac	1.90[1)]	ac	1.90[1)]	ac	1.90[1)]	ac
	0.63	1.83[1)]	ac	2.10[1)]	ac	2.37[1)]	ac	2.37[1)]	ac	2.37[1)]	ac
	0.75	2.30[1)]	ac	2.72[1)]	ac	3.14[1)]	ac	3.14[1)]	ac	3.14[1)]	ac
	0.88	2.49[1)]	-	2.94[1)]	-	3.40[1)]	ac	3.40[1)]	ac	3.40[1)]	ac
t_I [mm]	1.00	2.67[1)]	-	3.16[1)]	-	3.65	ac	3.65	ac	3.65	ac
	1.25	2.67[1)]	-	3.17[1)]	-	3.67	-	3.67	-	3.67	-
	1.50	2.67[1)]	-	3.18[1)]	-	3.68	-	3.68	-	3.68	-
$N_{R,k}$ [kN]	0.50	1.68[1)]	ac	1.68[1)]	ac	1.68[1)]	ac	1.68[1)]	ac	1.68[1)]	ac
	0.55	1.88[1)]	ac	1.88[1)]	ac	1.88[1)]	ac	1.88[1)]	ac	1.88[1)]	ac
	0.63	2.18	ac	2.70	ac	2.70	ac	2.70	ac	2.70	ac
	0.75	2.18	ac	2.77	ac	3.36	ac	3.36	ac	3.36	ac
	0.88	2.18	-	2.77	-	3.36	ac	3.36	ac	3.36	ac
t_I [mm]	1.00	2.18	-	2.77	-	3.36	ac	3.36	ac	3.36	ac
	1.25	2.18	-	2.77	-	3.36	-	3.36	-	3.36	-
	1.50	2.18	-	2.77	-	3.36	-	3.36	-	3.36	-
$N_{R,II,k}$ [kN]		2.18		2.77		3.36		3.36		3.36	

Additional definitions

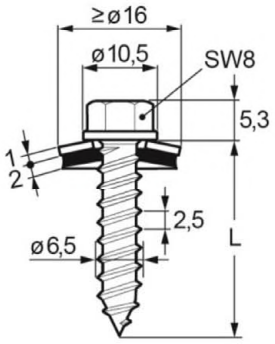
Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-tapping screw with sealing washer ≥ Ø 16 mm

TDA-S-S16-6,5xL, TDA-S16-6,5xL

Annex 38

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2, A4 - EN ISO 3506 Stainless steel 1.4547- EN 10088-1
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	S280GD to S450GD - EN 10346

Predrill-diameter: d_{pd} = see table

Component I $R_m \geq 165$ N/mm²		t_{II} [mm]							
		0.63	0.75	0.88	1.00	1.25	1.50	2.00	3.00
d_{pd} [mm]		3.5	4.0	4.5			5.0		
$V_{R,k}$ [kN] t_I [mm]	0.50	0.35 -	0.44 -	0.55 -	0.65 -	0.86 -	0.86 -	0.86 -	0.86 -
	0.60	0.35 -	0.44 -	0.55 -	0.65 -	0.86 -	1.03 -	1.03 -	1.03 -
	0.70	0.35 -	0.44 -	0.55 -	0.65 -	0.86 -	1.03 -	1.20 -	1.20 -
	0.80	0.35 -	0.44 -	0.55 -	0.65 -	0.86 -	1.03 -	1.37 -	1.37 -
	0.90	0.35 -	0.44 -	0.56 -	0.65 -	0.86 -	1.03 -	1.37 -	1.54 -
	1.00	0.35 -	0.44 -	0.56 -	0.67 -	0.86 -	1.03 -	1.37 -	1.72 -
	1.20	0.35 -	0.44 -	0.56 -	0.67 -	0.92 -	1.08 -	1.41 -	2.06 -
	1.50	0.35 -	0.44 -	0.56 -	0.67 -	0.94 -	1.24 -	1.53 -	2.13 -
$N_{R,II,k}$ [kN]		1.00	1.20	1.40	1.50	1.90	2.30	3.80	5.60

Component I $R_m \geq 215$ N/mm²		t_{II} [mm]							
		0.63	0.75	0.88	1.00	1.25	1.50	2.00	3.00
d_{pd} [mm]		3.5	4.0	4.5			5.0		
$V_{R,k}$ [kN] t_I [mm]	0.50	0.45 -	0.58 -	0.72 -	0.85 -	1.12 -	1.12 -	1.12 -	1.12 -
	0.60	0.45 -	0.58 -	0.72 -	0.85 -	1.12 -	1.34 -	1.34 -	1.34 -
	0.70	0.45 -	0.58 -	0.72 -	0.85 -	1.12 -	1.34 -	1.57 -	1.57 -
	0.80	0.45 -	0.58 -	0.72 -	0.85 -	1.12 -	1.34 -	1.79 -	1.79 -
	0.90	0.45 -	0.58 -	0.72 -	0.85 -	1.12 -	1.34 -	1.78 -	2.01 -
	1.00	0.45 -	0.58 -	0.72 -	0.88 -	1.12 -	1.34 -	1.78 -	2.24 -
	1.20	0.45 -	0.58 -	0.72 -	0.88 -	1.20 -	1.41 -	1.83 -	2.68 -
	1.50	0.45 -	0.58 -	0.72 -	0.88 -	1.23 -	1.61 -	2.00 -	2.77 -
$N_{R,II,k}$ [kN]		1.00	1.20	1.40	1.50	1.90	2.30	3.80	5.60

Additional definitions

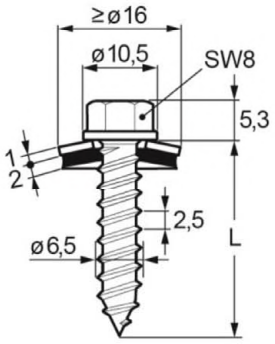
The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-tapping screw with sealing washer ≥ Ø 16 mm

TDA-S-S16-6,5xL, TDA-S16-6,5xL

Annex 39

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2, A4 - EN ISO 3506 Stainless steel 1.4547- EN 10088-1
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	Aluminum alloy - EN 573

Predrill-diameter: d_{pd} = see table

Component I and II $R_m \geq 165$ N/mm²		t_{II} [mm] 1.00	1.20	1.50	2.00	2.50	3.00
d_{pd} [mm]		4.5			5.0		5.3
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.65 -	0.82 -	0.86 -	0.86 -	0.86 -	0.86 -
	0.60	0.65 -	0.82 -	1.03 -	1.03 -	1.03 -	1.03 -
	0.70	0.65 -	0.82 -	1.03 -	1.20 -	1.20 -	1.20 -
	0.80	0.65 -	0.82 -	1.03 -	1.37 -	1.37 -	1.37 -
	0.90	0.65 -	0.82 -	1.03 -	1.37 -	1.46 -	1.54 -
	1.00	0.67 -	0.82 -	1.03 -	1.37 -	1.55 -	1.72 -
	1.20	0.67 -	0.88 -	1.08 -	1.41 -	1.74 -	2.06 -
	1.50	0.67 -	0.88 -	1.24 -	1.53 -	1.83 -	2.13 -
$N_{R,II,k}$ [kN]		0.42	0.55	0.77	1.19	1.69	2.19

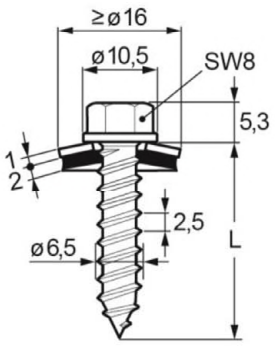
Component I and II $R_m \geq 215$ N/mm²		t_{II} [mm] 1.00	1.20	1.50	2.00	2.50	3.00
d_{pd} [mm]		4.5			5.0		5.3
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.85 -	1.06 -	1.12 -	1.12 -	1.12 -	1.12 -
	0.60	0.85 -	0.06 -	1.34 -	1.34 -	1.34 -	1.34 -
	0.70	0.85 -	1.06 -	1.34 -	1.57 -	1.57 -	1.57 -
	0.80	0.85 -	1.06 -	1.34 -	1.79 -	1.79 -	1.79 -
	0.90	0.85 -	1.06 -	1.34 -	1.78 -	1.90 -	2.01 -
	1.00	0.88 -	1.06 -	1.34 -	1.78 -	2.01 -	2.24 -
	1.20	0.88 -	1.15 -	1.41 -	1.83 -	2.26 -	2.68 -
	1.50	0.88 -	1.15 -	1.61 -	2.00 -	2.39 -	2.77 -
$N_{R,II,k}$ [kN]		0.55	0.71	1.01	1.55	2.20	2.85

Additional definitions

The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-tapping screw with sealing washer ≥ Ø 16 mm	**Annex 40**
TDA-S-S16-6,5xL, TDA-S16-6,5xL	

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	Coniferous timber ≥ C24 - EN 14081

Predrill-diameter:	d_{pd} = see table
Characteristics:	$M_{y,Rk}$ = 13.9 Nm $f_{ax,k}$ = 13.2 N/mm² (l_{ef} = 29 mm, ρ_a = 350 kg/m³)

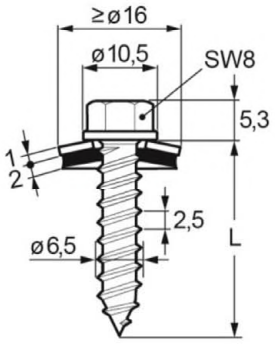
		l_{ef} [mm]						Failure of component I	
		29	35	45	55	65	75		
d_{pd} [mm]		4.0						4.0	
$V_{R,k}$ [kN] t_I [mm]	0.50	1.55	1.55	1.55	1.55	1.55	1.55	1.55	**$V_{R,I,k}$ [kN]**
	0.55	1.71	1.71	1.71	1.71	1.71	1.71	1.71	
	0.63	1.73	1.73	2.23	2.73	2.90	2.90	2.90	
	0.75	1.73	1.73	2.23	2.73	3.14	3.34	3.50	
	0.88	1.73	1.73	2.23	2.73	3.14	3.34	4.00	
	1.00	1.73	1.73	2.23	2.73	3.14	3.34	4.50	
	1.25	1.73	1.73	2.23	2.73	3.14	3.34	5.40	
	1.50	1.73	1.73	2.23	2.73	3.14	3.34	5.70	
$N_{R,k}$ [kN] t_I [mm]	0.50	1.68	1.68	1.68	1.68	1.68	1.68	1.68	**$N_{R,I,k}$ [kN]**
	0.55	1.88	1.88	1.88	1.88	1.88	1.88	1.88	
	0.63	2.49	2.70	2.70	2.70	2.70	2.70	2.70	
	0.75	2.49	3.00	3.40	3.40	3.40	3.40	3.40	
	0.88	2.49	3.00	3.86	4.10	4.10	4.10	4.10	
	1.00	2.49	3.00	3.86	4.72	4.80	4.80	4.80	
	1.25	2.49	3.00	3.86	4.72	5.58	5.60	5.60	
	1.50	2.49	3.00	3.86	4.72	5.58	5.60	5.60	
$N_{R,II,k}$ [kN]		2.49	3.00	3.86	4.72	5.58	6.44	-	

Self-tapping screw with sealing washer ≥ Ø 16 mm

TDA-S-S16-6,5xL, TDA-S16-6,5xL

Annex 41

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2, A4 - EN ISO 3506 Stainless steel 1.4547- EN 10088-1
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	Coniferous timber ≥ C24 - EN 14081

Predrill-diameter:	d_{pd} = 4.0 mm
Characteristics:	$M_{y,Rk}$ = 13.9 Nm $f_{ax,k}$ = 13.2 N/mm² (l_{ef} = 29 mm, ρ_a = 350 kg/m³)

Component I $R_m \geq 165$ N/mm²		l_{ef} [mm]						Failure of component I	
		29	35	45	55	65	75		
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.86	0.86	0.86	0.86	0.86	0.86	0.86	$V_{R,I,k}$ [kN]
	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	1.72	1.72	1.72	1.72	1.72	1.72	1.72	
	1.20	1.73	1.73	2.06	2.06	2.06	2.06	2.06	
	1.50	1.73	1.73	2.23	2.57	2.57	2.57	2.57	
$N_{R,II,k}$ [kN]		2.49	3.00	3.86	4.72	5.58	6.44	-	

Component I $R_m \geq 215$ N/mm²		l_{ef} [mm]						Failure of component I	
		29	35	45	55	65	75		
$V_{R,k}$ [kN] / t_I [mm]	0.50	1.12	1.12	1.12	1.12	1.12	1.12	1.12	$V_{R,I,k}$ [kN]
	0.60	1.34	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	1.73	1.73	1.79	1.79	1.79	1.79	1.79	
	0.90	1.73	1.73	2.01	2.01	2.01	2.01	2.01	
	1.00	1.73	1.73	2.23	2.24	2.24	2.24	2.24	
	1.20	1.73	1.73	2.23	2.68	2.68	2.68	2.68	
	1.50	1.73	1.73	2.23	2.73	3.22	3.35	3.35	
$N_{R,II,k}$ [kN]		2.49	3.00	3.86	4.72	5.58	6.44	-	

Additional definitions

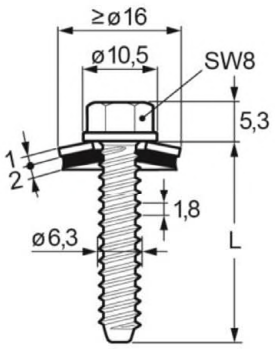
The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-tapping screw with sealing washer ≥ Ø 16 mm

TDA-S-S16-6,5xL, TDA-S16-6,5xL

Annex 42

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2, A4 - EN ISO 3506 Stainless steel 1.4547- EN 10088-1
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S235 to S355 - EN 10025 S280GD to S450GD - EN 10346

Predrill-diameter: d_{pd} = see table

		t_{II} [mm]								
		1.25	1.50	2.00	3.00	4.00	6.00	8.00	10.00	> 10.00[2]
d_{pd} [mm][3]		5.0		5.3			5.5	5.7		5.8
$V_{R,k}$ [kN]	0.50	1.84[1] ac	1.84[1] ac	1.84[1] ac	1.84[1] ac	1.84[1] ac	1.84[1] ac	1.84[1] ac	1.84[1] ac	1.84[1] ac
	0.55	2.06[1] ac	2.06[1] ac	2.06[1] ac	2.06[1] ac	2.06[1] ac	2.06[1] ac	2.06[1] ac	2.06[1] ac	2.06[1] ac
	0.63	2.50 ac	2.70 ac	2.90 ac	3.00 ac	3.10 ac	3.10 ac	3.10 ac	3.10 ac	3.10 ac
	0.75	2.60 ac	3.10 ac	3.30 ac	3.60 ac	3.70 ac	3.70 ac	3.70 ac	3.70 ac	3.70 ac
	0.88	2.80 ac	3.20 ac	3.80 ac	4.10 ac	4.30 ac	4.40 ac	4.40 ac	4.40 ac	4.40 ac
t_I [mm]	1.00	3.20 -	3.60 -	4.10 -	4.80 ac	4.90 ac	5.10 ac	5.10 ac	5.10 ac	5.10 ac
	1.25	3.60 -	4.20 -	5.00 -	6.10 -	6.30 -	6.50 -	6.50 -	6.50 -	6.50 -
	1.50	3.70 -	4.40 -	5.70 -	6.80 -	7.10 -	7.30 -	7.30 -	7.30 -	7.30 -
$N_{R,k}$ [kN]	0.50	1.84[1] ac	1.84[1] ac	1.84[1] ac	1.84[1] ac	1.84[1] ac	1.84[1] ac	1.84[1] ac	1.84[1] ac	1.84[1] ac
	0.55	2.00 ac	2.05[1] ac	2.05[1] ac	2.05[1] ac	2.05[1] ac	2.05[1] ac	2.05[1] ac	2.05[1] ac	2.05[1] ac
	0.63	2.00 ac	2.70 ac	2.80 ac	2.80 ac	2.80 ac	2.80 ac	2.80 ac	2.80 ac	2.80 ac
	0.75	2.00 ac	2.70 ac	3.60 ac	3.60 ac	3.60 ac	3.60 ac	3.60 ac	3.60 ac	3.60 ac
	0.88	2.00 ac	2.70 ac	3.60 ac	4.29 ac	4.29 ac	4.29 ac	4.29 ac	4.29 ac	4.29 ac
t_I [mm]	1.00	2.00 -	2.70 -	3.60 -	4.85 ac	4.85 ac	4.85 ac	4.85 ac	4.85 ac	4.85 ac
	1.25	2.00 -	2.70 -	3.60 -	4.90 -	4.90 -	4.90 -	4.90 -	4.90 -	4.90 -
	1.50	2.00 -	2.70 -	3.60 -	5.90 -	5.90 -	5.90 -	5.90 -	5.90 -	5.90 -
$N_{R,II,k}$ [kN]		2.00	2.70	3.60	6.48	9.19	12.22	15.24	15.24	15.24

Additional definitions

Index [1]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Index [2]: Only valid for component II made of S235 or S280GD

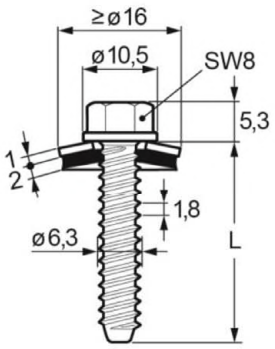
Index [3]: The pre-drill diameter d_{pd} for not indicated thicknesses t_{II} is defined as follows:
d_{pd} = 5.3 mm for t_{II} = 1.6 to 4.0 mm, d_{pd} = 5.5 mm for t_{II} = 4.1 to 6.0 mm, d_{pd} = 5.7 mm for t_{II} = 6.1 to 10.0 mm

Self-tapping screw with sealing washer ≥ Ø 16 mm

TDB-S-S16-6,3xL, TDB-S16-6,3xL

Annex 43

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506 Stainless steel 1.4547 – EN 10088
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	S235 to S355 - EN 10025 S280GD to S450GD - EN 10346

Predrill-diameter: d_{pd} = see table

Component I $R_m \geq 165$ N/mm²		t_{II} [mm]								
		1.25	1.50	2.00	3.00	4.00	6.00	8.00	10.00	> 10.00[1]
d_{pd} [mm][2]		5.0		5.3			5.5	5.7		5.8
$V_{R,k}$ [kN] t_I [mm]	0.50	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 -
	0.70	0.83 -	1.00 -	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 -
	0.90	0.83 -	1.00 -	1.33 -	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 -
	1.20	0.90 -	1.06 -	1.37 -	2.00 -	2.00 -	2.00 -	2.00 -	2.00 -	2.00 -
	1.50	0.93 -	1.22 -	1.50 -	2.07 -	2.49 -	2.49 -	2.49 -	2.49 -	2.49 -
$N_{R,II,k}$ [kN]		2.00	2.70	3.60	6.00	9.19	12.22	15.24	15.24	15.24

Component I $R_m \geq 215$ N/mm²		t_{II} [mm]								
		1.25	1.50	2.00	3.00	4.00	6.00	8.00	10.00	> 10.00[1]
d_{pd} [mm][2]		5.0		5.3			5.5	5.7		5.8
$V_{R,k}$ [kN] t_I [mm]	0.50	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 -
	0.70	1.08 -	1.30 -	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 -
	0.90	1.08 -	1.30 -	1.73 -	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 -
	1.20	1.18 -	1.38 -	1.79 -	2.60 -	2.60 -	2.60 -	2.60 -	2.60 -	2.60 -
	1.50	1.21 -	1.59 -	1.96 -	2.70 -	3.25 -	3.25 -	3.25 -	3.25 -	3.25 -
$N_{R,II,k}$ [kN]		2.00	2.70	3.60	6.00	9.19	12.22	15.24	15.24	15.24

Additional definitions

The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Index [1]: Only valid for component II made of S235 or S280GD.

Index [2]: The pre-drill diameter d_{pd} for not indicated thicknesses t_{II} is defined as follows:
d_{pd} = 5.3 mm for t_{II} = 1.6 to 4.0 mm, d_{pd} = 5.5 mm for t_{II} = 4.1 to 6.0 mm, d_{pd} = 5.7 mm for t_{II} = 6.1 to 10.0 mm

Self-tapping screw with sealing washer ≥ Ø 16 mm

TDB-S-S16-6,3xL, TDB-S16-6,3xL

Annex 44

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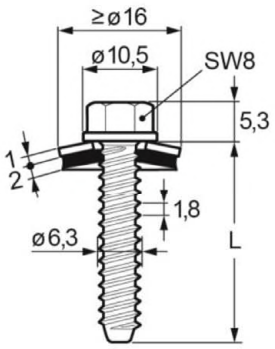

Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506 Stainless steel 1.4547 – EN 10088
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	Aluminum alloy - EN 573

Predrill-diameter: d_{pd} = see table

Component I and II $R_m \geq 165$ N/mm²		t_{II} [mm]					
		1.50	2.00	2.50	3.00	4.00	≥ 6.00
d_{pd} [mm]		4.5	5.0			5.3	5.5
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.83 -	0.83 -	0.83 -	0.83 -	0.83 -	0.83 -
	0.60	1.00 -	1.00 -	1.00 -	1.00 -	1.00 -	1.00 -
	0.70	1.00 -	1.16 -	1.16 -	1.16 -	1.16 -	1.16 -
	0.80	1.00 -	1.33 -	1.33 -	1.33 -	1.33 -	1.33 -
	0.90	1.00 -	1.33 -	1.50 -	1.50 -	1.50 -	1.50 -
	1.00	1.00 -	1.33 -	1.66 -	1.66 -	1.66 -	1.66 -
	1.20	1.06 -	1.37 -	1.68 -	2.00 -	2.00 -	2.00 -
	1.50	1.22 -	1.50 -	1.79 -	2.07 -	2.49 -	2.49 -
$N_{R,II,k}$ [kN]		0.76	1.17	1.64	2.15	4.21	6.09

Component I and II $R_m \geq 215$ N/mm²		t_{II} [mm]					
		1.00	1.20	1.50	2.00	2.50	3.00
d_{pd} [mm]		4.5	5.0			5.3	5.5
$V_{R,k}$ [kN] / t_I [mm]	0.50	1.08 -	1.08 -	1.08 -	1.08 -	1.08 -	1.08 -
	0.60	1.30 -	1.30 -	1.30 -	1.30 -	1.30 -	1.30 -
	0.70	1.30 -	1.52 -	1.52 -	1.52 -	1.52 -	1.52 -
	0.80	1.30 -	1.73 -	1.73 -	1.73 -	1.73 -	1.73 -
	0.90	1.30 -	1.73 -	1.95 -	1.95 -	1.95 -	1.95 -
	1.00	1.30 -	1.73 -	2.17 -	2.17 -	2.17 -	2.17 -
	1.20	1.38 -	1.79 -	2.19 -	2.60 -	2.60 -	2.60 -
	1.50	1.59 -	1.96 -	2.33 -	2.70 -	3.25 -	3.25 -
$N_{R,II,k}$ [kN]		0.99	1.53	2.13	2.80	5.48	7.93

Additional definitions

The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-tapping screw with sealing washer ≥ Ø 16 mm	**Annex 45**
TDB-S-S16-6,3xL, TDB-S16-6,3xL	

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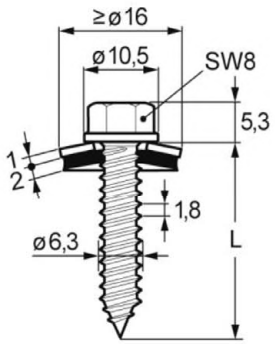


Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506 Stainless steel 1.4547 – EN 10088
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S235 to S355 - EN 10025 S280GD to S450GD - EN 10346

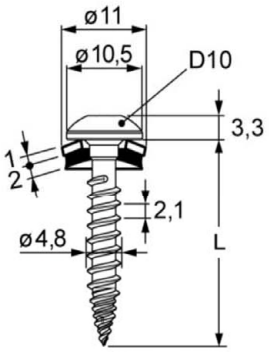
Predrill-diameter: d_{pd} = see table

		t_{II} [mm]									
		1.25		1.50		2.00		3.00		4.00	
d_{pd} [mm]		5.0				5.3					
$V_{R,k}$ [kN]	0.50	1.84[1)]	ac	1.84[1)]	ac	1.84[1)]	ac	1.84[1)]	ac	1.84[1)]	ac
	0.55	2.06[1)]	ac	2.06[1)]	ac	2.06[1)]	ac	2.06[1)]	ac	2.06[1)]	ac
	0.63	2.50	ac	2.70	ac	2.90	ac	3.00	ac	3.10	ac
	0.75	2.60	ac	3.10	ac	3.30	ac	3.60	ac	3.70	ac
	0.88	2.80	ac	3.20	ac	3.80	ac	4.10	ac	4.30	ac
t_I [mm]	1.00	3.20	-	3.60	-	4.10	-	4.80	ac	4.90	ac
	1.25	3.60	-	4.20	-	5.00	-	6.10	-	6.30	-
	1.50	3.70	-	4.40	-	5.70	-	6.80	-	7.10	-
$N_{R,k}$ [kN]	0.50	1.84[1)]	ac	1.84[1)]	ac	1.84[1)]	ac	1.84[1)]	ac	1.84[1)]	ac
	0.55	2.00	ac	2.05[1)]	ac	2.05[1)]	ac	2.05[1)]	ac	2.05[1)]	ac
	0.63	2.00	ac	2.70	ac	2.80	ac	2.80	ac	2.80	ac
	0.75	2.00	ac	2.70	ac	3.60	ac	3.60	ac	3.60	ac
	0.88	2.00	ac	2.70	ac	3.60	ac	4.29	ac	4.29	ac
t_I [mm]	1.00	2.00	-	2.70	-	3.60	-	4.85	ac	4.85	ac
	1.25	2.00	-	2.70	-	3.60	-	4.90	-	4.90	-
	1.50	2.00	-	2.70	-	3.60	-	5.90	-	5.90	-
$N_{R,II,k}$ [kN]		2.00		2.70		3.60		6.48		9.19	

Additional definitions

Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-tapping screw with sealing washer ≥ Ø 16 mm	**Annex 46**
TDC-S-S16-6,3xL, TDC-S16-6,3xL	



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 2.50$ mm

		t_{II} [mm]							
		0.40	0.50	0.55	0.63	0.75	0.88	1.00	1.25
V_{Rk} [kN] t_I [mm]	0.40	0.34 -	0.34 -	0.34 -	0.34 -	0.34 -	0.34 -	0.34 -	0.34 -
	0.50	0.34 -	0.66 -	0.66 -	0.66 -	0.66 -	0.66 -	0.66 -	0.66 -
	0.55	0.34 -	0.66 -	0.77 -	0.77 -	0.77 -	0.77 -	0.77 -	0.77 -
	0.63	0.34 -	0.66 -	0.77 -	0.96 -	0.96 -	0.96 -	0.96 -	0.96 -
	0.75	0.34 -	0.66 -	0.77 -	0.96 -	1.25 -	1.25 -	1.25 -	1.25 -
	0.88	0.34 -	0.66 -	0.77 -	0.96 -	1.25 -	1.66 -	1.66 -	1.66 -
	1.00	0.34 -	0.66 -	0.77 -	0.96 -	1.25 -	1.66 -	2.04 -	2.04 -
	1.25	0.34 -	0.66 -	0.77 -	0.96 -	1.25 -	1.66 -	2.04 -	3.06 -
N_{Rk} [kN] t_I [mm]	0.40	0.43 -	0.70 -	0.82 -	1.03 -	1.04 -	1.04 -	1.04 -	1.04 -
	0.50	0.43 -	0.70 -	0.82 -	1.03 -	1.33 -	1.35 -	1.35 -	1.35 -
	0.55	0.43 -	0.70 -	0.82 -	1.03 -	1.33 -	1.52 -	1.54 -	1.54 -
	0.63	0.43 -	0.70 -	0.82 -	1.03 -	1.33 -	1.52 -	1.70 -	1.83 -
	0.75	0.43 -	0.70 -	0.82 -	1.03 -	1.33 -	1.52 -	1.70 -	2.28 -
	0.88	0.43 -	0.70 -	0.82 -	1.03 -	1.33 -	1.52 -	1.70 -	2.61 -
	1.00	0.43 -	0.70 -	0.82 -	1.03 -	1.33 -	1.52 -	1.70 -	2.71 -
	1.25	0.43 -	0.70 -	0.82 -	1.03 -	1.33 -	1.52 -	1.70 -	2.71 -
$N_{R,II,k}$ [kN]		0.43	0.70	0.82	1.03	1.33	1.52	1.70	2.71

Additional definitions

For component I and component II made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-tapping screw with sealing washer ≥ Ø 11 mm

CXLW-D10-A11-4,8xL

Annex 47

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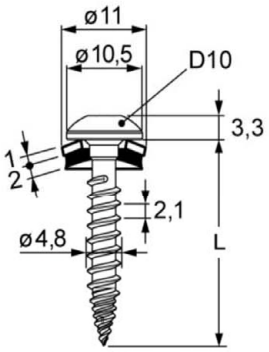


Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	Aluminum alloy - EN 573

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 4.00$ mm

Component I and II $R_m \geq 165$ N/mm²		t_{II} [mm]								
		0.50	0.60	0.70	0.80	0.90	1.00	1.20	1.50	2.00
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
	0.60	0.24	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
	0.70	0.24	0.30	0.37	0.37	0.37	0.37	0.37	0.37	0.37
	0.80	0.24	0.30	0.37	0.43	0.43	0.43	0.43	0.43	0.43
	0.90	0.24	0.30	0.37	0.43	0.57	0.57	0.57	0.57	0.57
	1.00	0.24	0.30	0.37	0.43	0.57	0.72	0.72	0.72	0.72
	1.20	0.24	0.30	0.37	0.43	0.57	0.72	0.99	0.99	0.99
	1.50	0.24	0.30	0.37	0.43	0.57	0.72	0.99	1.40	1.40
	2.00	0.24	0.30	0.37	0.43	0.57	0.72	0.99	1.40	2.22
$N_{R,II,k}$ [kN]		0.30	0.37	0.44	0.51	0.67	0.82	1.01	1.28	1.86

Component I and II $R_m \geq 215$ N/mm²		t_{II} [mm]								
		0.50	0.60	0.70	0.80	0.90	1.00	1.20	1.50	2.00
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
	0.60	0.32	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	0.70	0.32	0.40	0.48	0.48	0.48	0.48	0.48	0.48	0.48
	0.80	0.32	0.40	0.48	0.56	0.56	0.56	0.56	0.56	0.56
	0.90	0.32	0.40	0.48	0.56	0.75	0.75	0.75	0.75	0.75
	1.00	0.32	0.40	0.48	0.56	0.75	0.94	0.94	0.94	0.94
	1.20	0.32	0.40	0.48	0.56	0.75	0.94	1.29	1.29	1.29
	1.50	0.32	0.40	0.48	0.56	0.75	0.94	1.29	1.83	1.83
	2.00	0.32	0.40	0.48	0.56	0.75	0.94	1.29	1.83	2.89
$N_{R,II,k}$ [kN]		0.39	0.48	0.58	0.67	0.87	1.07	1.31	1.67	2.42

Additional definitions

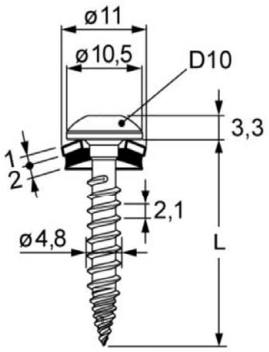
The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-tapping screw with sealing washer ≥ Ø 11 mm

CXLW-D10-A11-4,8xL

Annex 48

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	OSB3 (ρ ≥ 550 kg/m2) – EN 300 Particle board (ρ ≥ 500 kg/m2) - EN 312 Coniferous timber (≥ C24, ρ ≥ 350 kg/m2) - EN 14081

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 1.50$ mm

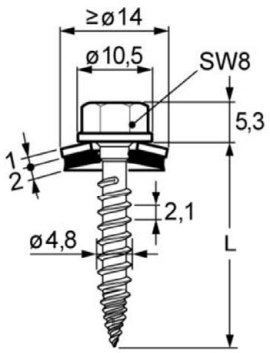
		Component II			Failure of component I	
		OSB3	Particle board	Timber ≥ C24		
		l_{ef} [mm] ≥ 18	l_{ef} [mm] ≥ 18	l_{ef} [mm] ≥ 25		
$V_{R,k}$ [kN] t_I [mm]	0.40	0.63	0.63	0.63	0.63	**$V_{R,I,k}$ [kN]**
	0.50	0.63	0.63	0.63	0.63	
	0.55	0.70	0.70	0.70	0.70	
	0.63	0.81	0.81	0.81	0.81	
	0.75	0.97	0.90	0.97	0.97	
	0.88	1.02	0.90	1.02	1.02	
	1.00	1.05	0.90	1.05	1.05	
	1.25	1.30	0.90	1.05	1.30	
	1.50	1.30	0.90	1.05	1.30	
$N_{R,k}$ [kN] t_I [mm]	0.40	0.88	0.70	1.04	1.04	**$N_{R,I,k}$ [kN]**
	0.50	0.88	0.70	1.35	1.35	
	0.55	0.88	0.70	1.37	1.54	
	0.63	0.88	0.70	1.37	1.83	
	0.75	0.88	0.70	1.37	2.28	
	0.88	0.88	0.70	1.37	2.61	
	1.00	0.88	0.70	1.37	2.92	
	1.25	0.88	0.70	1.37	4.54	
	1.50	0.88	0.70	1.37	4.54	
$N_{R,II,k}$ [kN]		0.88	0.70	1.37	-	

Self-tapping screw with sealing washer ≥ Ø 11 mm

CXLW-D10-A11-4,8xL

Annex 49

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 or Stainless steel A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 2.50$ mm

		t_{II} [mm]							
		0.40	0.50	0.55	0.63	0.75	0.88	1.00	1.25
V_{Rk} [kN] t_I [mm]	0.40	0.43 -	0.43 -	0.43 -	0.43 -	0.43 -	0.43 -	0.43 -	0.43 -
	0.50	0.43 -	0.71 -	0.71 -	0.71 -	0.71 -	0.71 -	0.71 -	0.71 -
	0.55	0.43 -	0.71 -	0.87 -	0.87 -	0.87 -	0.87 -	0.87 -	0.87 -
	0.63	0.43 -	0.71 -	0.87 -	1.12 -	1.12 -	1.12 -	1.12 -	1.12 -
	0.75	0.43 -	0.71 -	0.87 -	1.12 -	1.51 -	1.51 -	1.51 -	1.51 -
	0.88	0.43 -	0.71 -	0.87 -	1.12 -	1.51 -	1.94 -	1.94 -	1.94 -
	1.00	0.43 -	0.71 -	0.87 -	1.12 -	1.51 -	1.94 -	2.34 -	2.34 -
	1.25	0.43 -	0.71 -	0.87 -	1.12 -	1.51 -	1.94 -	2.34 -	3.10 -
N_{Rk} [kN] t_I [mm]	0.40	0.43 -	0.70 -	0.82 -	1.03 -	1.22 -	1.22 -	1.22 -	1.22 -
	0.50	0.43 -	0.70 -	0.82 -	1.03 -	1.33 -	1.52 -	1.70 -	1.72 -
	0.55	0.43 -	0.70 -	0.82 -	1.03 -	1.33 -	1.52 -	1.70 -	1.93 -
	0.63	0.43 -	0.70 -	0.82 -	1.03 -	1.33 -	1.52 -	1.70 -	2.26 -
	0.75	0.43 -	0.70 -	0.82 -	1.03 -	1.33 -	1.52 -	1.70 -	2.71 -
	0.88	0.43 -	0.70 -	0.82 -	1.03 -	1.33 -	1.52 -	1.70 -	2.71 -
	1.00	0.43 -	0.70 -	0.82 -	1.03 -	1.33 -	1.52 -	1.70 -	2.71 -
	1.25	0.43 -	0.70 -	0.82 -	1.03 -	1.33 -	1.52 -	1.70 -	2.71 -
$N_{R,II,k}$ [kN]		0.43	0.70	0.82	1.03	1.33	1.52	1.70	2.71

Additional definitions

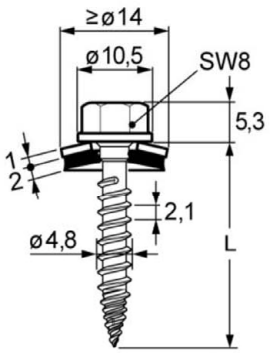
For component I and component II made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-tapping screw with sealing washer ≥ Ø 14 mm

CXLW-AV14-4,8xL

Annex 50

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 or Stainless steel A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	Aluminum alloy - EN 573

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 4.00$ mm

Component I and II $R_m \geq 165$ N/mm²		t_{II} [mm]								
		0.50	0.60	0.70	0.80	0.90	1.00	1.20	1.50	2.00
$V_{R,k}$ [kN]	0.50	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
	0.60	0.28	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
	0.70	0.28	0.41	0.54	0.54	0.54	0.54	0.54	0.54	0.54
	0.80	0.28	0.41	0.54	0.67	0.67	0.67	0.67	0.67	0.67
	0.90	0.28	0.41	0.54	0.67	0.79	0.79	0.79	0.79	0.79
t_I [mm]	1.00	0.28	0.41	0.54	0.67	0.79	0.92	0.92	0.92	0.92
	1.20	0.28	0.41	0.54	0.67	0.79	0.92	1.23	1.23	1.23
	1.50	0.28	0.41	0.54	0.67	0.79	0.92	1.23	1.68	1.68
	2.00	0.28	0.41	0.54	0.67	0.79	0.92	1.23	1.68	2.67
$N_{R,II,k}$ [kN]		0.30	0.37	0.44	0.51	0.67	0.82	1.01	1.28	1.86

Component I and II $R_m \geq 215$ N/mm²		t_{II} [mm]								
		0.50	0.60	0.70	0.80	0.90	1.00	1.20	1.50	2.00
$V_{R,k}$ [kN]	0.50	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
	0.60	0.37	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
	0.70	0.37	0.51	0.64	0.64	0.64	0.64	0.64	0.64	0.64
	0.80	0.37	0.51	0.64	0.78	0.78	0.78	0.78	0.78	0.78
	0.90	0.37	0.51	0.64	0.78	0.99	0.99	0.99	0.99	0.99
t_I [mm]	1.00	0.37	0.51	0.64	0.78	0.99	1.20	1.20	1.20	1.20
	1.20	0.37	0.51	0.64	0.78	0.99	1.20	1.60	1.60	1.60
	1.50	0.37	0.51	0.64	0.78	0.99	1.20	1.60	2.19	2.19
	2.00	0.37	0.51	0.64	0.78	0.99	1.20	1.60	2.19	3.48
$N_{R,II,k}$ [kN]		0.39	0.48	0.58	0.67	0.87	1.07	1.31	1.67	2.42

Additional definitions

The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-tapping screw with sealing washer ≥ Ø 14 mm

CXLW-AV14-4,8xL

Annex 51

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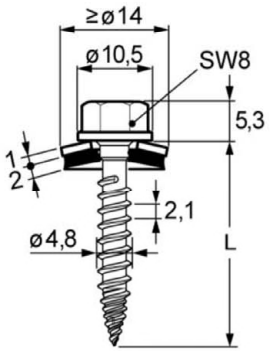


Materials:

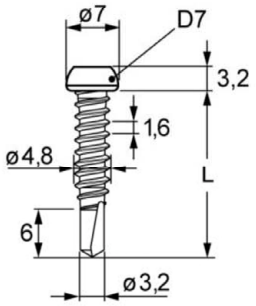
Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 or Stainless steel A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	OSB3 (ρ ≥ 550 kg/m2) – EN 300 Particle board (ρ ≥ 500 kg/m2) - EN 312 Coniferous timber (≥ C24, ρ ≥ 350 kg/m2) - EN 14081
Drilling-capacity:	$\Sigma(t_I + t_{II}) \leq 1.50$ mm

		Component II			Failure of component I	
		OSB3	Particle board	Timber ≥ C24		
		l_{ef} [mm] ≥ 18	l_{ef} [mm] ≥ 18	l_{ef} [mm] ≥ 25		
$V_{R,k}$ [kN] t_I [mm]	0.40	0.63	0.63	0.63	0.63	**$V_{R,I,k}$ [kN]**
	0.50	0.63	0.63	0.63	0.63	
	0.55	0.70	0.70	0.70	0.70	
	0.63	0.81	0.81	0.81	0.81	
	0.75	0.97	0.90	0.97	0.97	
	0.88	1.02	0.90	1.02	1.02	
	1.00	1.05	0.90	1.05	1.05	
	1.25	1.30	0.90	1.05	1.30	
	1.50	1.30	0.90	1.05	1.30	
$N_{R,k}$ [kN] t_I [mm]	0.40	0.88	0.70	1.04	1.22	**$N_{R,I,k}$ [kN]**
	0.50	0.88	0.70	1.35	1.72	
	0.55	0.88	0.70	1.37	1.93	
	0.63	0.88	0.70	1.37	2.26	
	0.75	0.88	0.70	1.37	2.76	
	0.88	0.88	0.70	1.37	3.35	
	1.00	0.88	0.70	1.37	3.88	
	1.25	0.88	0.70	1.37	4.49	
	1.50	0.88	0.70	1.37	4.49	
$N_{R,II,k}$ [kN]		0.88	0.70	1.37	-	

Self-tapping screw with sealing washer ≥ Ø 14 mm

CXLW-AV14-4,8xL

Annex 52



Materials:

Fastener: Stainless steel A2 or A4 - EN ISO 3506

Washer: -

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 2.00$ mm

		t_{II} [mm]						
		0.40	0.50	0.55	0.63	0.75	0.88	1.00
$V_{R,k}$ [kN] t_I [mm]	0.40	0.62 -	0.62 -	0.62 -	0.62 -	0.62 -	0.62 -	0.62 -
	0.50	0.62 -	1.06 -	1.06 -	1.06 -	1.06 -	1.06 -	1.06 -
	0.55	0.62 -	1.06 -	1.14 -	1.14 -	1.14 -	1.14 -	1.14 -
	0.63	0.62 -	1.06 -	1.14 -	1.26 -	1.26 -	1.26 -	1.26 -
	0.75	0.62 -	1.06 -	1.14 -	1.26 -	1.45 -	1.45 -	1.45 -
	0.88	0.62 -	1.06 -	1.14 -	1.26 -	1.45 -	1.99 -	1.99 -
	1.00	0.62 -	1.06 -	1.14 -	1.26 -	1.45 -	1.99 -	2.18 -
$N_{R,k}$ [kN] t_I [mm]	0.40	0.28 -	0.50 -	0.53 -	0.53 -	0.53 -	0.53 -	0.53 -
	0.50	0.28 -	0.50 -	0.58 -	0.69 -	0.87 -	0.93 -	0.93 -
	0.55	0.28 -	0.50 -	0.58 -	0.69 -	0.87 -	1.02 -	1.02 -
	0.63	0.28 -	0.50 -	0.58 -	0.69 -	0.87 -	1.11 -	1.16 -
	0.75	0.28 -	0.50 -	0.58 -	0.69 -	0.87 -	1.11 -	1.34 -
	0.88	0.28 -	0.50 -	0.58 -	0.69 -	0.87 -	1.11 -	1.34 -
	1.00	0.28 -	0.50 -	0.58 -	0.69 -	0.87 -	1.11 -	1.34 -
$N_{R,II,k}$ [kN]		0.28	0.50	0.58	0.69	0.87	1.11	1.34

Additional definitions

For component I and component II made of S320GD to S450GD the resistance values may be increased by 8.3%.

Self-drilling screw	**Annex 53**
SD1-D7-4,8xL SX2-D7-4,8xL	

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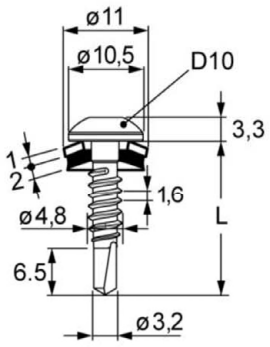

Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 2.50$ mm

		t_{II} [mm]								
		0.40	0.50	0.55	0.63	0.75	0.88	1.00	1.25	1.50
$V_{R,k}$ [kN] t_I [mm]	0.40	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
	0.50	0.34	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
	0.55	0.34	0.66	0.77	0.77	0.77	0.77	0.77	0.77	0.77
	0.63	0.34	0.66	0.77	0.96	0.96	0.96	0.96	0.96	0.96
	0.75	0.34	0.66	0.77	0.96	1.25	1.25	1.25	1.25	1.25
	0.88	0.34	0.66	0.77	0.96	1.25	1.66	1.66	1.66	1.66
	1.00	0.34	0.66	0.77	0.96	1.25	1.66	2.04	2.04	2.04
	1.25	0.34	0.66	0.77	0.96	1.25	1.66	2.04	2.35	-
	1.50	0.34	0.66	0.77	0.96	1.25	1.66	2.04	-	-
$N_{R,k}$ [kN] t_I [mm]	0.40	0.30	0.42	0.49	0.59	0.76	0.96	1.04	1.04	1.04
	0.50	0.30	0.42	0.49	0.59	0.76	0.96	1.16	1.16	1.16
	0.55	0.30	0.42	0.49	0.59	0.76	0.96	1.16	1.16	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	1.16	1.16
	1.00	0.30	0.42	0.49	0.59	0.76	0.96	1.16	1.16	1.16
	1.25	0.30	0.42	0.49	0.59	0.76	0.96	1.16	1.16	-
	1.50	0.30	0.42	0.49	0.59	0.76	0.96	1.16	-	-
$N_{R,II,k}$ [kN]		0.30	0.42	0.49	0.59	0.76	0.96	1.16	1.16	1.16

Self-drilling screw with sealing washer ≥ Ø 11 mm

SDL1-D10-A11-4,8xL

Annex 54

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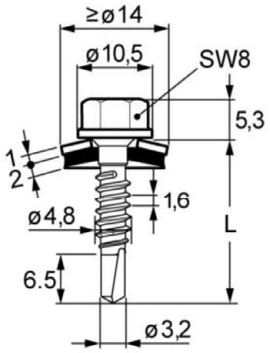

Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 or Stainless steel A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 2.50$ mm

		t_{II} [mm]								
		0.40	0.50	0.55	0.63	0.75	0.88	1.00	1.25	1.50
$V_{R,k}$ [kN] t_I [mm]	0.40	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
	0.50	0.52	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
	0.55	0.52	0.71	0.84	0.84	0.84	0.84	0.84	0.84	0.84
	0.63	0.52	0.71	0.84	1.05	1.05	1.05	1.05	1.05	1.05
	0.75	0.52	0.71	0.84	1.05	1.36	1.36	1.36	1.36	1.36
	0.88	0.52	0.71	0.84	1.05	1.36	1.77	1.77	1.77	1.77
	1.00	0.52	0.71	0.84	1.05	1.36	1.77	2.15	2.15	2.15
	1.25	0.52	0.71	0.84	1.05	1.36	1.77	2.15	3.16	-
	1.50	0.52	0.71	0.84	1.05	1.36	1.77	2.15	-	-
$N_{R,k}$ [kN] t_I [mm]	0.40	0.30	0.42	0.49	0.59	0.76	0.96	1.07	1.07	1.07
	0.50	0.30	0.42	0.49	0.59	0.76	0.96	1.16	1.16	1.16
	0.55	0.30	0.42	0.49	0.59	0.76	0.96	1.16	1.16	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	1.16	1.16
	1.00	0.30	0.42	0.49	0.59	0.76	0.96	1.16	1.16	1.16
	1.25	0.30	0.42	0.49	0.59	0.76	0.96	1.16	1.16	-
	1.50	0.30	0.42	0.49	0.59	0.76	0.96	1.16	-	-
$N_{R,II,k}$ [kN]		0.30	0.42	0.49	0.59	0.76	0.96	1.16	1.16	1.16

Self-drilling screw with sealing washer ≥ Ø 14 mm

SDL1-AV14-4,8xL

Annex 55

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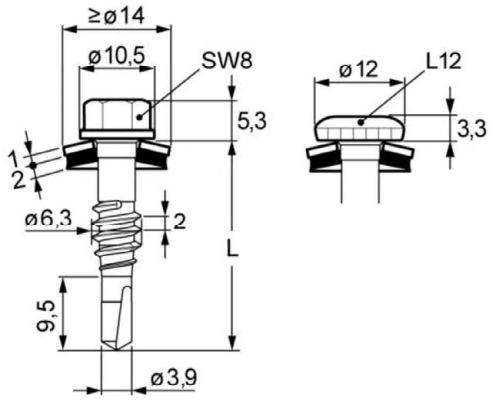


Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 or Stainless steel A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

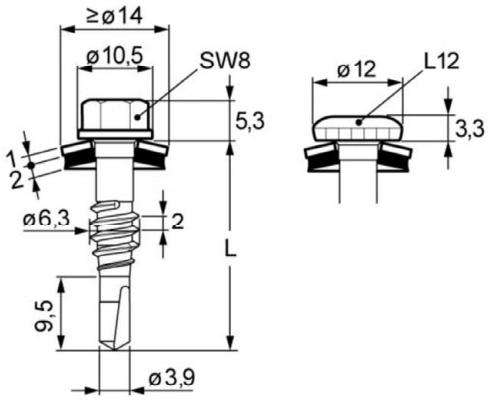
Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 2.50$ mm

		t_{II} [mm]								
		0.40	0.50	0.55	0.63	0.75	0.88	1.00	1.25	1.50
$V_{R,k}$ [kN] t_I [mm]	0.40	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
	0.50	0.57	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
	0.55	0.57	0.69	0.81	0.81	0.81	0.81	0.81	0.81	0.81
	0.63	0.57	0.69	0.81	0.99	0.99	0.99	0.99	0.99	0.99
	0.75	0.57	0.69	0.81	0.99	1.27	1.27	1.27	1.27	1.27
	0.88	0.57	0.69	0.81	0.99	1.27	1.69	1.69	1.69	1.69
	1.00	0.57	0.69	0.81	0.99	1.27	1.69	2.07	2.07	2.07
	1.25	0.57	0.69	0.81	0.99	1.27	1.69	2.07	3.21	-
	1.50	0.57	0.69	0.81	0.99	1.27	1.69	2.07	-	-
$N_{R,k}$ [kN] t_I [mm]	0.40	0.57	0.74	0.84	0.99	1.22	1.22	1.22	1.22	1.22
	0.50	0.57	0.74	0.84	0.99	1.23	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	1.98
	1.00	0.57	0.74	0.84	0.99	1.23	1.61	1.98	1.98	1.98
	1.25	0.57	0.74	0.84	0.99	1.23	1.61	1.98	1.98	-
	1.50	0.57	0.74	0.84	0.99	1.23	1.61	1.98	-	-
$N_{R,II,k}$ [kN]		0.57	0.74	0.84	0.99	1.23	1.61	1.98	1.98	1.98

Self-drilling screw with sealing washer ≥ Ø 14 mm

SXL2-AV14-6,3xL, SXL2-L12-AV14-6,3xL

Annex 56



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 or Stainless steel A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	Aluminum alloy - EN 573

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 2.50$ mm

Component I and II $R_m \geq 165$ N/mm²		t_{II} [mm]							
		0.50	0.60	0.70	0.80	0.90	1.00	1.20	1.50
$V_{R,k}$ [kN]	0.50	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	0.60	0.25	0.42	0.42	0.42	0.42	0.42	0.42	0.42
	0.70	0.25	0.42	0.59	0.59	0.59	0.59	0.59	0.59
	0.80	0.25	0.42	0.59	0.76	0.76	0.76	0.76	0.76
t_I [mm]	0.90	0.25	0.42	0.59	0.76	0.85	0.85	0.85	0.85
	1.00	0.25	0.42	0.59	0.76	0.85	0.94	0.94	0.94
	1.20	0.25	0.42	0.59	0.76	0.85	0.94	1.28	-
	1.50	0.25	0.42	0.59	0.76	0.85	0.94	-	-
$N_{R,II,k}$ [kN]		0.35	0.44	0.54	0.63	0.75	0.87	0.87	0.87

Component I and II $R_m \geq 215$ N/mm²		t_{II} [mm]							
		0.50	0.60	0.70	0.80	0.90	1.00	1.20	1.50
$V_{R,k}$ [kN]	0.50	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
	0.60	0.32	0.51	0.51	0.51	0.51	0.51	0.51	0.51
	0.70	0.32	0.51	0.70	0.70	0.70	0.70	0.70	0.70
	0.80	0.32	0.51	0.70	0.88	0.88	0.88	0.88	0.88
t_I [mm]	0.90	0.32	0.51	0.70	0.88	1.06	1.06	1.06	1.06
	1.00	0.32	0.51	0.70	0.88	1.06	1.23	1.23	1.23
	1.20	0.32	0.51	0.70	0.88	1.06	1.23	1.66	1.66
	1.50	0.32	0.51	0.70	0.88	1.06	1.23	1.66	2.31
$N_{R,II,k}$ [kN]		0.46	0.58	0.70	0.82	0.98	1.14	1.14	1.14

Additional definitions

The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-drilling screw with sealing washer ≥ Ø 14 mm

SXL2-AV14-6,3xL, SXL2-L12-AV14-6,3xL

Annex 57

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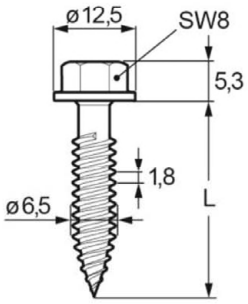

Materials:

Fastener: Stainless steel A2 or A4 - EN ISO 3506

Washer: -

Component I: S235 to S355 - EN 10025
S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_{II}) \leq 1.25$ mm

		t_{II} [mm]									
		0.63		0.75		0.88		1.00		1.25	
$d_{pd,I}$ [mm]		Ø 6.50 - 7.20 mm									
$V_{R,k}$ [kN] t_I [mm]	1.00	0.91	-	0.91	-	0.91	-	0.91	-	0.91	-
	1.25	0.91	-	0.91	-	0.91	-	0.91	-	0.91	-
	1.50	1.10	-	1.37	-	1.66	-	1.73		1.81	-
	2.00	1.49	-	2.29	-	3.16	-	3.38	-	3.62	-
	2.50	1.49	-	2.29	-	3.16	-	3.38	-	3.62	-
	3.00	1.49	-	2.29	-	3.16	-	3.38	-	3.62	-
	3.50	1.49	-	2.29	-	3.16	-	3.38	-	3.62	-
	4.00	1.49	-	2.29	-	3.16	-	3.38	-	-	-
$N_{R,k}$ [kN] t_I [mm]	1.00	1.07	-	1.48	-	1.93	-	2.19	-	2.47	-
	1.25	1.07	-	1.48	-	1.93	-	2.19	-	2.47	-
	1.50	1.07	-	1.48	-	1.93	-	2.19	-	2.47	-
	2.00	1.07	-	1.48	-	1.93	-	2.19	-	2.47	-
	2.50	1.07	-	1.48	-	1.93	-	2.19	-	2.47	-
	3.00	1.07	-	1.48	-	1.93	-	2.19	-	2.47	-
	3.50	1.07	-	1.48	-	1.93	-	2.19	-	2.47	-
	4.00	1.07	-	1.48	-	1.93	-	2.19	-	-	-
$N_{R,II,k}$ [kN]		1.07		1.48		1.93		2.19		2.47	

Additional definitions

Self-drilling screw

SLG-S-6,5xL

Annex 58

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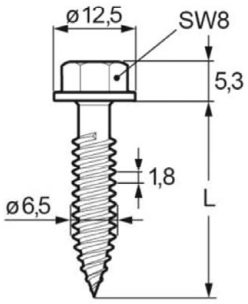

Materials:

Fastener: Stainless steel A2 or A4 - EN ISO 3506

Washer: -

Component I: Aluminum alloy - EN 573

Component II: S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_{II}) \leq 1.25$ mm

Component I $R_m \geq 165$ N/mm²		t_{II} [mm] 0.63	0.75	0.88	1.00	1.25
$d_{pd,I}$ [mm]		Ø 6.50 - 7.20 mm				
$V_{R,k}$ [kN] t_I [mm]	1.00	0.74 -	0.74[1] -	0.74[1] -	0.74[1] -	0.74[1] -
	1.50	0.74[1] -	0.96[1] -	0.96[1] -	0.96[1] -	0.96[1] -
	2.00	0.74[1] -	0.96[1] -	1.48[1] -	1.96[1] -	1.96[1] -
	2.50	0.74[1] -	0.96[1] -	1.48[1] -	1.96[1] -	1.96[1] -
	3.00	0.74[1] -	0.96[1] -	1.48[1] -	1.96[1] -	1.96[1] -
	3.50	0.74[1] -	0.96[1] -	1.48[1] -	1.96[1] -	1.96[1] -
	4.00	0.74[1] -	0.96[1] -	1.48[1] -	1.96[1] -	1.96[1] -
$N_{R,k}$ [kN] t_I [mm]	1.00	1.07 -	1.48 -	1.79 -	1.79 -	1.79[1] -
	1.50	1.07 -	1.48 -	1.93 -	2.19 -	2.32 -
	2.00	1.07 -	1.48 -	1.93 -	2.19 -	2.47 -
	2.50	1.07 -	1.48 -	1.93 -	2.19 -	2.47 -
	3.00	1.07 -	1.48 -	1.93 -	2.19 -	2.47 -
	3.50	1.07 -	1.48 -	1.93 -	2.19 -	2.47 -
	4.00	1.07 -	1.48 -	1.93 -	2.19 -	- -
$N_{R,II,k}$ [kN]		1.07	1.48	1.93	2.19	2.47

Additional definitions

Index[1]: For component I made of aluminium alloy with $R_m \geq 215$ N/mm² the resistance value may be increased by 30.3%.

Self-drilling screw	**Annex 59**
SLG-S-6,5xL	

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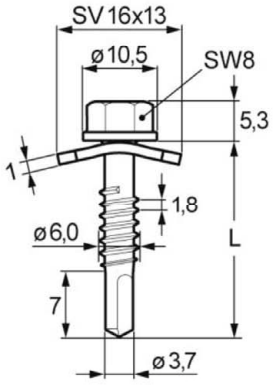

Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 3.00$ mm

		t_{II} [mm]							
		0.40	0.50	0.63	0.75	0.88	1.00	1.25	1.50
$V_{R,k}$ [kN] t_I [mm]	1.00	-	-	-	-	1.88	1.88	2.01	2.01
	1.25	-	-	1.03	1.46	1.88	2.22	2.97	2.97
	1.50	0.44[1)]	0.82[1)]	1.03	1.46	1.88	2.22	2.97	2.97
	1.75	0.44[1)]	0.82[1)]	1.03	1.46	1.88	2.22	2.97	-
	2.00	0.44[1)]	0.82[1)]	1.03	1.46	1.88	2.22	-	-
$N_{R,k}$ [kN] t_I [mm]	1.00	-	-	-	-	1.49	1.82	2.51	3.21
	1.25	-	-	0.82	1.15	1.49	1.82	2.51	3.21
	1.50	0.34[1)]	0.51[1)]	0.82	1.15	1.49	1.82	2.51	3.21
	1.75	0.34[1)]	0.51[1)]	0.82	1.15	1.49	1.82	2.51	-
	2.00	0.34[1)]	0.51[1)]	0.82	1.15	1.49	1.82	-	-
$N_{R,II,k}$ [kN]		0.34[1)]	0.51[1)]	0.82	1.15	1.49	1.82	2.51	3.21

Additional definitions

Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

Self-drilling screw with SV-washer 13x16 mm	**Annex 60**
SL3/2-5-S-SV16-6,0xL, SXL3-SV16-6,0xL	

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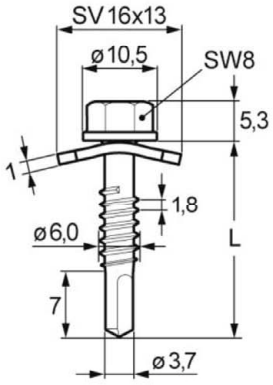


Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 3.00$ mm

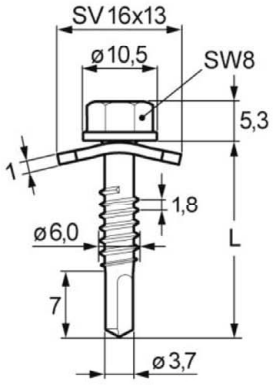
		t_{II} [mm]			
		2 x 0.75	2 x 0.88	2 x 1.00	2 x 1.25
$V_{R,k}$ [kN] t_I [mm]	1.00	2.10	2.23	2.35	3.23
	1.25	2.60	2.92	3.24	4.01
	1.50	3.09	3.61	4.12	4.12
	1.75	3.09	3.61	4.12	-
	2.00	3.09	3.61	4.12	-
$N_{R,k}$ [kN] t_I [mm]	1.00	2.43	2.94	3.45	3.69
	1.25	2.43	2.94	3.45	4.38
	1.50	2.43	2.94	3.45	4.38
	1.75	2.43	2.94	3.45	-
	2.00	2.43	2.94	3.45	-
$N_{R,II,k}$ [kN]		2.43	2.94	3.45	4.38

Self-drilling screw with SV-washer 13x16 mm

SL3/2-5-S-SV16-6,0xL, SXL3-SV16-6,0xL

Annex 61

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener: Stainless steel A2 or A4 - EN ISO 3506

Washer: Stainless steel A2 or A4 - EN ISO 3506

Component I: Aluminum alloy - EN 573

Component II: S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 4.00$ mm

Component I $R_m \geq 165$ N/mm²		t_{II} [mm]							
		0.40	0.50	0.63	0.75	0.88	1.00	1.25	1.50
$V_{R,k}$ [kN] t_I [mm]	1.50	0.62	0.85	1.20	1.40	1.57	1.74	1.77	1.77
	2.00	0.62	0.85	1.20	1.83	2.04	2.25	2.57	2.88
	2.50	0.62	0.85	1.20	1.83	2.43	2.43	2.57	2.88
	3.00	0.62	0.85	1.20	2.01	2.81	2.81	-	-
$N_{R,II,k}$ [kN]		0.34[1)]	0.51[1)]	0.82	1.15	1.49	1.82	2.51	3.21

Component I $R_m \geq 215$ N/mm²		t_{II} [mm]							
		0.40	0.50	0.63	0.75	0.88	1.00	1.25	1.50
$V_{R,k}$ [kN] t_I [mm]	1.50	0.62	0.85	1.20	1.60	1.93	2.26	2.30	2.30
	2.00	0.62	0.85	1.20	1.83	2.35	2.87	3.31	3.75
	2.50	0.62	0.85	1.20	1.83	2.58	2.87	3.31	3.75
	3.00	0.62	0.85	1.20	2.01	2.81	2.87	-	-
$N_{R,II,k}$ [kN]		0.34[1)]	0.51[1)]	0.82	1.15	1.49	1.82	2.51	3.21

Additional definitions

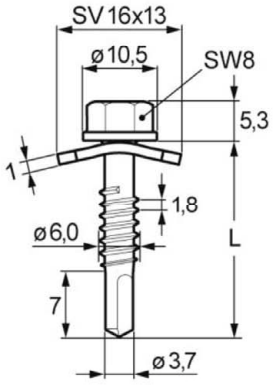
Index [1)]: For component I made of S320GD to S450GD the resistance value may be increased by 8.3%.

The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-drilling screw with SV-washer 13x16 mm

SL3/2-5-S-SV16-6,0xL, SXL3-SV16-6,0xL

Annex 62



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506
Component I:	Aluminum alloy - EN 573
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 4.00$ mm

Component I $R_m \geq 165$ N/mm²		t_{II} [mm]			
		2 x 0.75	2 x 0.88	2 x 1.00	2 x 1.25
$V_{R,k}$ [kN] / t_I [mm]	1.50	1.40	1.57	1.74	1.77
	2.00	1.83	2.04	2.25	-
	2.50	1.83	-	-	-
	3.00	-	-	-	-
$N_{R,II,k}$ [kN]		2.43	2.94	3.45	4.38

Component I $R_m \geq 215$ N/mm²		t_{II} [mm]			
		2 x 0.75	2 x 0.88	2 x 1.00	2 x 1.25
$V_{R,k}$ [kN] / t_I [mm]	1.50	1.60	1.93	2.26	2.30
	2.00	1.83	2.35	2.87	-
	2.50	1.83	-	-	-
	3.00	-	-	-	-
$N_{R,II,k}$ [kN]		2.43	2.94	3.45	4.38

Additional definitions

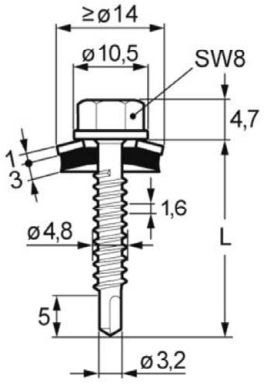
The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-drilling screw with SV-washer 13x16 mm

SL3/2-5-S-SV16-6,0xL, SXL3-SV16-6,0xL

Annex 63

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Aluminum alloy – EN 573 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 2.50$ mm

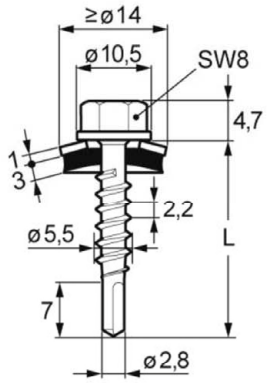
		t_{II} [mm]								
		0.40	0.50	0.55	0.63	0.75	0.88	1.00	1.25	1.50
$V_{R,k}$ [kN] t_I [mm]	0.40	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58
	0.50	0.58	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
	0.55	0.58	0.69	0.80	0.80	0.80	0.80	0.80	0.80	0.80
	0.63	0.58	0.69	0.80	0.98	0.98	0.98	0.98	0.98	0.98
	0.75	0.58	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	1.82	1.82
	1.00	0.58	0.69	0.80	0.98	1.26	1.82	2.35	2.35	2.35
	1.25	0.58	0.69	0.80	0.98	1.26	1.82	2.35	2.35	-
	1.50	0.58	0.69	0.80	0.98	1.26	1.82	2.35	-	-
$N_{R,k}$ [kN] t_I [mm]	0.40	0.30	0.42	0.49	0.59	0.76	0.96	1.07	1.07	1.07
	0.50	0.30	0.42	0.49	0.59	0.76	0.96	1.16	1.16	1.16
	0.55	0.30	0.42	0.49	0.59	0.76	0.96	1.16	1.16	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	1.16	1.16
	1.00	0.30	0.42	0.49	0.59	0.76	0.96	1.16	1.16	1.16
	1.25	0.30	0.42	0.49	0.59	0.76	0.96	1.16	1.16	-
	1.50	0.30	0.42	0.49	0.59	0.76	0.96	1.16	-	-
$N_{R,II,k}$ [kN]		0.30	0.42	0.49	0.59	0.76	0.96	1.16	1.16	1.16

Self-drilling screw with sealing washer ≥ Ø 14 mm

SL2-S-S14-4,8xL

Annex 64

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

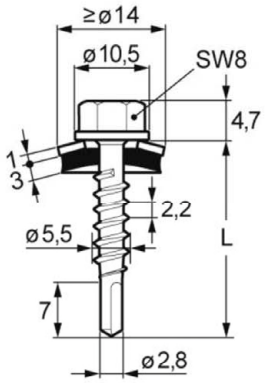
Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 2.50$ mm

		t_{II} [mm]								
		0.40	0.50	0.55	0.63	0.75	0.88	1.00	1.25	1.50
$V_{R,k}$ [kN] t_I [mm]	0.40	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
	0.50	0.48	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
	0.55	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	1.73	1.73
	1.00	0.48	0.75	0.90	1.13	1.48	1.73	1.97	1.97	1.97
	1.25	0.48	0.75	0.90	1.13	1.48	1.73	1.97	1.97	-
	1.50	0.48	0.75	0.90	1.13	1.48	1.73	1.97	-	-
$N_{R,k}$ [kN] t_I [mm]	0.40	0.43	0.57	0.65	0.79	1.00	1.00	1.00	1.00	1.00
	0.50	0.43	0.57	0.65	0.79	1.03	1.32	1.61	1.61	1.61
	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	1.61	1.61
	1.00	0.43	0.57	0.65	0.79	1.03	1.32	1.61	1.61	1.61
	1.25	0.43	0.57	0.65	0.79	1.03	1.32	1.61	1.61	-
	1.50	0.43	0.57	0.65	0.79	1.03	1.32	1.61	-	-
$N_{R,II,k}$ [kN]		0.43	0.57	0.65	0.79	1.03	1.32	1.61	1.61	1.61

Self-drilling screw with sealing washer ≥ Ø 14 mm

SL2-S-S14-5,5xL

Annex 65



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	Aluminum alloy - EN 573

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 2.50$ mm

Component I and II $R_m \geq 165$ N/mm²		t_{II} [mm]							
		0.50	0.60	0.70	0.80	0.90	1.00	1.20	1.50
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
	0.60	0.31	0.45	0.45	0.45	0.45	0.45	0.45	0.45
	0.70	0.31	0.45	0.59	0.59	0.59	0.59	0.59	0.59
	0.80	0.31	0.45	0.59	0.73	0.73	0.73	0.73	0.73
	0.90	0.31	0.45	0.59	0.73	0.82	0.82	0.82	0.82
	1.00	0.31	0.45	0.59	0.73	0.82	0.91	0.91	0.91
	1.20	0.31	0.45	0.59	0.73	0.82	0.91	0.91	-
	1.50	0.31	0.45	0.59	0.73	0.82	0.91	-	-
$N_{R,II,k}$ [kN]		0.26	0.36	0.47	0.57	0.67	0.77	0.77	0.77

Component I and II $R_m \geq 215$ N/mm²		t_{II} [mm]							
		0.50	0.60	0.70	0.80	0.90	1.00	1.20	1.50
$V_{R,k}$ [kN] / t_I [mm]	0.50	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	0.60	0.40	0.58	0.58	0.58	0.58	0.58	0.58	0.58
	0.70	0.40	0.58	0.77	0.77	0.77	0.77	0.77	0.77
	0.80	0.40	0.58	0.77	0.95	0.95	0.95	0.95	0.95
	0.90	0.40	0.58	0.77	0.95	1.07	1.07	1.07	1.07
	1.00	0.40	0.58	0.77	0.95	1.07	1.18	1.18	1.18
	1.20	0.40	0.58	0.77	0.95	1.07	1.18	1.18	-
	1.50	0.40	0.58	0.77	0.95	1.07	1.18	-	-
$N_{R,II,k}$ [kN]		0.34	0.48	0.61	0.75	0.88	1.00	1.00	1.00

Additional definitions

The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculate according to EN 1999-1-4:2007, equation (8.13).

Self-drilling screw with sealing washer ≥ Ø 14 mm

SL2-S-S14-5,5xL

Annex 66

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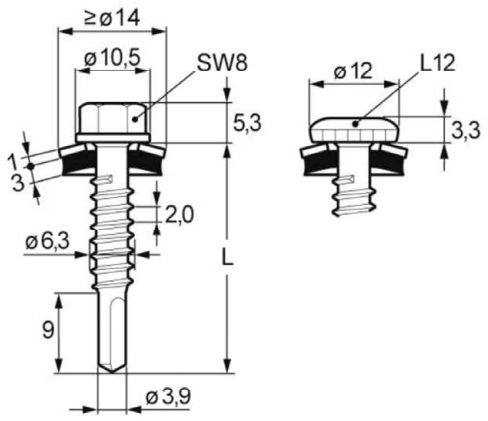


Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

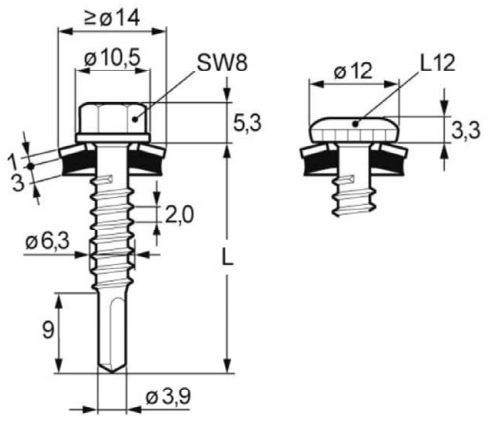
Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 2.50$ mm

		t_{II} [mm]								
		0.40	0.50	0.55	0.63	0.75	0.88	1.00	1.25	1.50
$V_{R,k}$ [kN] t_I [mm]	0.40	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
	0.50	0.57	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
	0.55	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	2.27
	1.00	0.57	0.80	0.95	1.18	1.55	2.27	2.98	2.98	2.98
	1.25	0.57	0.80	0.95	1.18	1.55	2.27	2.98	2.98	-
	1.50	0.57	0.80	0.95	1.18	1.55	2.27	2.98	-	-
$N_{R,k}$ [kN] t_I [mm]	0.40	0.57	0.74	0.84	0.99	1.23	1.28	1.28	1.28	1.28
	0.50	0.57	0.74	0.84	0.99	1.23	1.36	1.36	1.36	1.36
	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	1.98
	1.00	0.57	0.74	0.84	0.99	1.23	1.61	1.98	1.98	1.98
	1.25	0.57	0.74	0.84	0.99	1.23	1.61	1.98	1.98	-
	1.50	0.57	0.74	0.84	0.99	1.23	1.61	1.98	-	-
$N_{R,II,k}$ [kN]		0.57	0.74	0.84	0.99	1.23	1.61	1.98	1.98	1.98

Self-drilling screw with sealing washer ≥ Ø 14 mm

SL2-S-S14-6,3xL, SL2-S-L12-S14-6,3xL

Annex 67



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	Aluminum alloy - EN 573
Component II:	Aluminum alloy - EN 573

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 2.50$ mm

Component I and II $R_m \geq 165$ N/mm²		t_{II} [mm]							
		0.50	0.60	0.70	0.80	0.90	1.00	1.20	1.50
$V_{R,k}$ [kN] t_I [mm]	0.50	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
	0.60	0.28	0.45	0.45	0.45	0.45	0.45	0.45	0.45
	0.70	0.28	0.45	0.62	0.62	0.62	0.62	0.62	0.62
	0.80	0.28	0.45	0.62	0.79	0.79	0.79	0.79	0.79
	0.90	0.28	0.45	0.62	0.79	0.97	0.97	0.97	0.97
	1.00	0.28	0.45	0.62	0.79	0.97	1.15	1.15	1.15
	1.20	0.28	0.45	0.62	0.79	0.97	1.15	1.15	-
	1.50	0.28	0.45	0.62	0.79	0.97	1.15	-	-
$N_{R,II,k}$ [kN]		0.35	0.44	0.54	0.63	0.75	0.87	0.87	0.87

Component I and II $R_m \geq 215$ N/mm²		t_{II} [mm]							
		0.50	0.60	0.70	0.80	0.90	1.00	1.20	1.50
$V_{R,k}$ [kN] t_I [mm]	0.50	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
	0.60	0.36	0.58	0.58	0.58	0.58	0.58	0.58	0.58
	0.70	0.36	0.58	0.81	0.81	0.81	0.81	0.81	0.81
	0.80	0.36	0.58	0.81	1.03	1.03	1.03	1.03	1.03
	0.90	0.36	0.58	0.81	1.03	1.26	1.26	1.26	1.26
	1.00	0.36	0.58	0.81	1.03	1.26	1.49	1.49	1.49
	1.20	0.36	0.58	0.81	1.03	1.26	1.49	1.49	-
	1.50	0.36	0.58	0.81	1.03	1.26	1.49	-	-
$N_{R,II,k}$ [kN]		0.46	0.58	0.70	0.82	0.98	1.14	1.14	1.14

Additional definitions

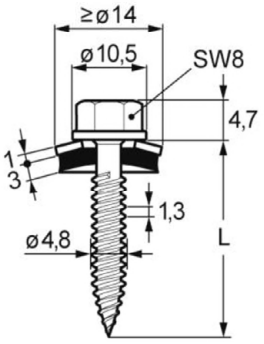
The resistance value $N_{R,k}$ can be determined as follows: $N_{R,k} = \min \{ N_{R,I,k} \mid N_{R,II,k} \}$. $N_{R,I,k}$ has to be calculated according to EN 1999-1-4:2007, equation (8.13).

Self-drilling screw with sealing washer ≥ Ø 14 mm

SL2-S-S14-6,3xL, SL2-S-L12-S14-6,3xL

Annex 68

Deutsches Institut für Bautechnik DIBt



Materials:

Fastener:	Stainless steel A2 or A4 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling-capacity: $\Sigma(t_I + t_{II}) \leq 2.00$ mm

		t_{II} [mm]						
		0.40	0.50	0.55	0.63	0.75	0.88	1.00
$V_{R,k}$ [kN] t_I [mm]	0.40	0.66	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	0.80
	0.55	0.66	0.80	0.98	0.98	0.98	0.98	0.98
	0.63	0.66	0.80	0.98	1.28	1.28	1.28	1.28
	0.75	0.66	0.80	0.98	1.28	1.72	1.72	1.72
	0.88	0.66	0.80	0.98	1.28	1.72	1.72	1.72
	1.00	0.66	0.80	0.98	1.28	1.72	1.72	1.72
$N_{R,k}$ [kN] t_I [mm]	0.40	0.52	0.73	0.82	0.95	0.95	0.95	0.95
	0.50	0.52	0.73	0.82	0.97	1.20	1.20	1.20
	0.55	0.52	0.73	0.82	0.97	1.20	1.20	1.20
	0.63	0.52	0.73	0.82	0.97	1.20	1.20	1.20
	0.75	0.52	0.73	0.82	0.97	1.20	1.20	1.20
	0.88	0.52	0.73	0.82	0.97	1.20	1.20	1.20
	1.00	0.52	0.73	0.82	0.97	1.20	1.20	1.20
$N_{R,II,k}$ [kN]		0.52	0.73	0.82	0.97	1.20	1.20	1.20

Self-drilling screw with sealing washer ≥ Ø 14 mm

SLG-S-S14-4,8xL

Annex 69