

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

**ETA-13/0183**  
**of 29 June 2017**

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

Fastening Screws SFS SX, SXC, SXCW, SDT, SDTW,  
SXW, TDA, TDB

Product family  
to which the construction product belongs

Fastening screws for sandwichpanels

Manufacturer

SFS intec AG  
Rosenbergsaustraße 10  
9435 HEERBRUGG  
SCHWEIZ

Manufacturing plant

Factory 1  
Factory 5  
Factory 7  
Factory 16  
Factory 18

This European Technical Assessment  
contains

34 pages including 29 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

European Assessment Document (EAD)  
330047-00-0602, "Fastening Screws for Sandwich  
Elements", Version 1

This version replaces

ETA-13/0183 issued on 14 June 2013

**European Technical Assessment**

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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 completed with sealing washers consisting of metal washer and EPDM-seal.

**Table 1 – Fastening screws for sandwich panels**

Annex	Fastening screw	Product description	Application
4	SXC5-S16-5,5 x L SXC5-L12-S16-5,5 x L	Self-drilling screw made of stainless steel with sealing washer Ø 16 mm	Sandwich / Steel
5	SXC5-S19-5,5 x L SXC5-L12-S19-5,5 x L	Self-drilling screw made of stainless steel with sealing washer ≥ Ø 19 mm	Sandwich / Steel
6	SXC14-S16-5,5 x L SXC14-L12-S16-5,5 x L	Self-drilling screw made of stainless steel with sealing washer Ø 16 mm	Sandwich / Steel
7	SXC14-S19-5,5 x L SXC14-L12-S19-5,5 x L	Self-drilling screw made of stainless steel with sealing washer ≥ Ø 19 mm	Sandwich / Steel
8	SX5-S16-5,5 x L SX5-L12-S16-5,5 x L	Self-drilling screw made of stainless steel with sealing washer Ø 16 mm	Sandwich / Steel
9	SX5-S19-5,5 x L SX5-L12-S19-5,5 x L	Self-drilling screw made of stainless steel with sealing washer ≥ Ø 19 mm	Sandwich / Steel
10	SX14-S16-6,5 x L SX14-L12-S16-6,5 x L	Self-drilling screw made of stainless steel with sealing washer Ø 16 mm	Sandwich / Steel
11	SX14-S19-6,5 x L SX14-L12-S19-6,5 x L	Self-drilling screw made of stainless steel with sealing washer ≥ Ø 19 mm	Sandwich / Steel
12	TDB-S-S16-6,3 x L	Self-tapping screw made of stainless steel with sealing washer Ø 16 mm	Sandwich / Steel
13	TDB-S-S19-6,3 x L	Self-tapping screw made of stainless steel with sealing washer ≥ Ø 19 mm	Sandwich / Steel
14	SDT5-S16-5,5 x L SDT5-L12-S16-5,5 x L	Self-drilling screw made of carbon steel with sealing washer Ø 16 mm	Sandwich / Steel
15	SDT5-S19-5,5 x L SDT5-L12-S19-5,5 x L	Self-drilling screw made of carbon steel with sealing washer ≥ Ø 19 mm	Sandwich / Steel
16	SDT5-A16-5,5 x L SDT5-L12-A16-5,5 x L	Self-drilling screw made of carbon steel with sealing washer Ø 16 mm	Sandwich / Steel
17	SDT5-A19-5,5 x L SDT5-L12-A19-5,5 x L	Self-drilling screw made of carbon steel with sealing washer Ø 19 mm	Sandwich / Steel
18	SDT14-S16-5,5 x L SDT14-L12-S16-5,5 x L	Self-drilling screw made of carbon steel with sealing washer Ø 16 mm	Sandwich / Steel
19	SDT14-S19-5,5 x L SDT14-L12-S19-5,5 x L	Self-drilling screw made of carbon steel with sealing washer ≥ Ø 19 mm	Sandwich / Steel
20	SDT14-A16-5,5 x L SDT14-L12-A16-5,5 x L	Self-drilling screw made of carbon steel with sealing washer Ø 16 mm	Sandwich / Steel
21	SDT14-A19-5,5 x L SDT14-L12-A19-5,5 x L	Self-drilling screw made of carbon steel with sealing washer Ø 19 mm	Sandwich / Steel

Table 1 - continued

Annex	Fastening screw	Product description	Application
22	SXCW-S16-6,5 x L SXCW-L12-S16-6,5 x L	Self-drilling screw made of stainless steel with sealing washer Ø 16 mm	Sandwich / Timber
23	SXCW-S19-6,5 x L SXCW-L12-S19-6,5 x L	Self-drilling screw made of stainless steel with sealing washer ≥ Ø 19 mm	Sandwich / Timber
24	SXW-S16-6,5 x L SXW-L12-S16-6,5 x L	Self-drilling screw made of stainless steel with sealing washer Ø 16 mm	Sandwich / Timber
25	SXW-S19-6,5 x L SXW-L12-S19-6,5 x L	Self-drilling screw made of stainless steel with sealing washer ≥ Ø 19 mm	Sandwich / Timber
26	TDA-S-S16-6,5 x L	Self-tapping screw made of stainless steel with sealing washer Ø 16 mm	Sandwich / Timber
27	TDA-S-S19-6,5 x L	Self-tapping screw made of stainless steel with sealing washer ≥ Ø 19 mm	Sandwich / Timber
28	SDTW-S16-6,5 x L SDTW-L12-S16-6,5 x L	Self-drilling screw made of carbon steel with sealing washer Ø 16 mm	Sandwich / Timber
29	SDTW-S19-6,5 x L SDTW-L12-S19-6,5 x L	Self-drilling screw made of carbon steel with sealing washer ≥ Ø 19 mm	Sandwich / Timber

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

The fastening screws are intended to be used for fastening sandwich panels to metal or timber substructures. The sandwich panel can either be used as wall or roof cladding or as load bearing wall and roof element. 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 (1-29).

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



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

#### 3.1 Mechanical resistance and stability (BWR 1)

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

#### 3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Performance Class A1 in accordance with EC decision 96/603/EC (as amended)

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

In accordance with EAD No. 330047-01-0602, the applicable European legal act is: Commission Decision 1998/214/EC, amended by 2001/596/EC.

The system to be applied is: 2+

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

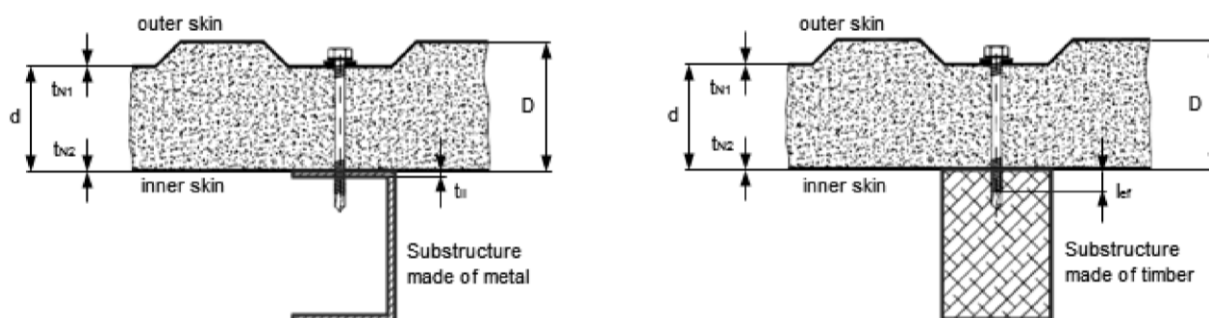
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

Issued in Berlin on 29 June 2017 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow  
Head of Department

*beglaubigt:*  
Schult

### Examples of execution of a connection



### Materials and dimensions

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

Fastener	Material of the fastening screw
Washer	Material of the sealing washer
Component I	Material of the sandwich panel (outer skin and inner skin)
Component II	Material of the substructure

$D, d$	Thickness of component I
$t_{N1}$	Thickness of the outer skin of component I
$t_{N2}$	Thickness of the inner skin of component I
$t_{II}$	Thickness of component II made of metal
$l_{ef}$	Effective screw-in length in component II made of timber (without drill point)
$d_{dp}$	Pre-drill diameter of component I and component II

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

### Performance characteristics

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

$N_{R,k}$	Characteristic value of tension resistance
$V_{R,k}$	Characteristic value of shear resistance
$u$	Maximum allowed head displacement of the fastening screw

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

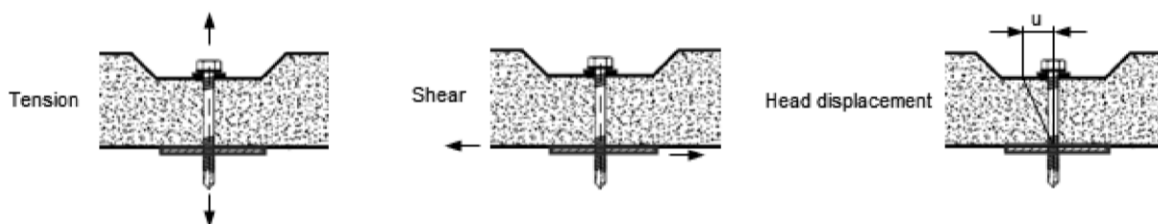
$N_{R,I,k}$	Characteristic value of pull-through resistance for the outer skin of component I
$N_{R,II,k}$	Characteristic value of pull-out resistance for component II
$V_{R,I,k}$	Characteristic value of hole bearing resistance for the inner skin of component I
$V_{R,II,k}$	Characteristic value of hole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

### Terms and explanations

Fastening screws for sandwich panels

### Annex 1

### Occurred loadings of a connection



### Design values

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

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

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

$N_{R,d}$  Design value of tension resistance

$V_{R,d}$  Design value of shear resistance

$\gamma_M$  Partial safety factor

The recommended partial safety factor  $\gamma_M$  is 1.33, provided no partial safety factor is given in national regulations or national Annexes to Eurocode 3.

### Special conditions

If the component thickness  $t_{N1}$ ,  $t_{N2}$  or  $t_{II}$  lies in between two indicated component thicknesses, the characteristic value may be calculated by linear interpolation.

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

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

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

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

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

### Head displacement

The head displacement of the fastening screw as a result of thermal expansion of the outer skin of the sandwich panel may not exceed the maximum allowed head displacement of the fastening screw.

### Installation conditions

The installation is carried out according to manufacturer's instruction.

The load-bearing screw-in length of the fastening screw specified by the manufacturer has to be taken into account.

The fastening screws have to be processed with suitable drill driver (e.g. cordless drill driver with depth stop). The use of impact wrench is not allowed.

The fastening screws have to be fixed rectangular to the surface of the component.

Component I and component II have to be in direct contact to each other. The use of compression resistant thermal insulation strips up to a thickness of 3 mm is allowed.

### Design and installation

Fastening screws for sandwich panels

### Annex 2

### Component II made of timber

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

$$N_{R,k} = \min \left\{ \begin{array}{l} N_{R,I,k} \\ N_{R,II,k} * k_{mod} \end{array} \right. \quad V_{R,k} = \min \left\{ \begin{array}{l} V_{R,I,k} \\ V_{R,II,k} * k_{mod} \end{array} \right.$$

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

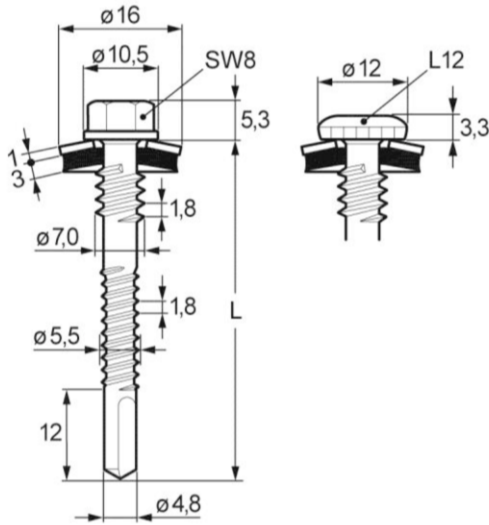
$N_{R,II,k}$  is determined according to EN 1995-1-1:2004 + A1:2008, equation (8.40a), with  $f_{ax,k}$  given in the Annex of the fastening screw.

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

### Additional provisions

Fastening screws for sandwich panels

### Annex 3



#### 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 HX300LAD to HX460LAD - EN 10346

#### Drilling-capacity

$$\Sigma(t_{N1} + t_{N2} + t_{II}) \leq 6.00 \text{ mm}$$

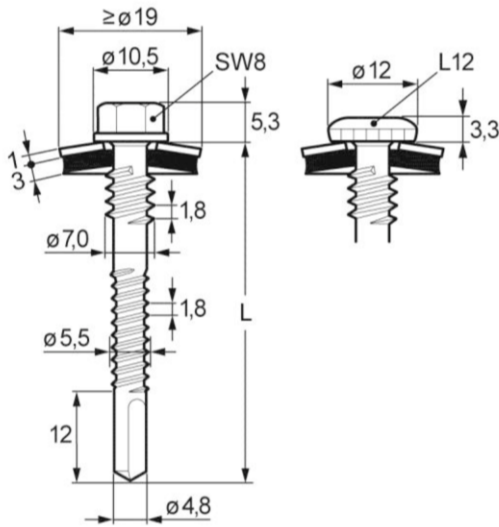
		$t_{II}$ [mm]						
		1.25	1.50	1.75	2.00	2.50	3.00	4.00
$V_{R,k}$ [kN]	0.40	0.96	0.96	0.96	0.96	0.96	0.96	0.96
	0.45	1.26	1.26	1.26	1.26	1.26	1.26	1.26
	0.50	1.56	1.56	1.56	1.56	1.56	1.56	1.56
	0.55	1.67	1.67	1.67	1.67	1.67	1.67	1.67
	0.60	1.78	1.78	1.78	1.78	1.78	1.78	1.78
	0.63	1.85	1.85	1.85	1.85	1.85	1.85	1.85
	0.70	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	$\geq 0.75$	2.11	2.11	2.11	2.11	2.11	2.11	2.11
$N_{R,k}$ [kN]	0.40	1.26	1.27	1.27	1.27	1.27	1.27	1.27
	0.45	1.26	1.42	1.42	1.42	1.42	1.42	1.42
	0.50	1.26	1.56	1.56	1.56	1.56	1.56	1.56
	0.55	1.26	1.82	1.86	1.86	1.86	1.86	1.86
	0.60	1.26	1.82	2.16	2.16	2.16	2.16	2.16
	0.63	1.26	1.82	2.34	2.34	2.34	2.34	2.34
	0.70	1.26	1.82	2.41	2.76	2.76	2.76	2.76
	$\geq 0.75$	1.26	1.82	2.41	3.00	3.06	3.06	3.06
$N_{R,II,k}$ [kN]		1.26	1.82	2.41	3.00	4.31	5.61	10.77
$u$ [mm]	40	3.0						
	60	4.5						
	80	6.0						
$D, d$ [mm]		7.5						
$\geq 100$		7.5						

#### No additional definitions

Self-drilling screw with sealing washer  $\varnothing 16$  mm

SXC5-S16-5,5 x L, SXC5-L12-S16-5,5 x L

Annex 4



#### 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 HX300LAD to HX460LAD - EN 10346

#### Drilling-capacity

$$\Sigma(t_{N1} + t_{N2} + t_{II}) \leq 6.00 \text{ mm}$$

		$t_{II} \text{ [mm]}$						
		1.25	1.50	1.75	2.00	2.50	3.00	4.00
$V_{R,k} \text{ [kN]}$	0.40	0.96	0.96	0.96	0.96	0.96	0.96	0.96
	0.45	1.26	1.26	1.26	1.26	1.26	1.26	1.26
	0.50	1.56	1.56	1.56	1.56	1.56	1.56	1.56
	0.55	1.67	1.67	1.67	1.67	1.67	1.67	1.67
	$t_{N2} \text{ [mm]}$							
	0.60	1.78	1.78	1.78	1.78	1.78	1.78	1.78
	0.63	1.85	1.85	1.85	1.85	1.85	1.85	1.85
	0.70	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	$\geq 0.75$	2.11	2.11	2.11	2.11	2.11	2.11	2.11
$N_{R,k} \text{ [kN]}$	0.40	1.26	1.56	1.56	1.56	1.56	1.56	1.56
	0.45	1.26	1.77	1.77	1.77	1.77	1.77	1.77
	0.50	1.26	1.82	1.98	1.98	1.98	1.98	1.98
	0.55	1.26	1.82	2.35	2.35	2.35	2.35	2.35
	$t_{N1} \text{ [mm]}$							
	0.60	1.26	1.82	2.41	2.72	2.72	2.72	2.72
	0.63	1.26	1.82	2.41	2.95	2.95	2.95	2.95
	0.70	1.26	1.82	2.41	3.00	3.47	3.47	3.47
	$\geq 0.75$	1.26	1.82	2.41	3.00	3.85	3.85	3.85
$N_{R,II,k} \text{ [kN]}$		1.26	1.82	2.41	3.00	4.31	5.61	10.77
$u \text{ [mm]}$	40	3.0						
	60	4.5						
	80	6.0						
$D, d \text{ [mm]}$		7.5						
$\geq 100$								

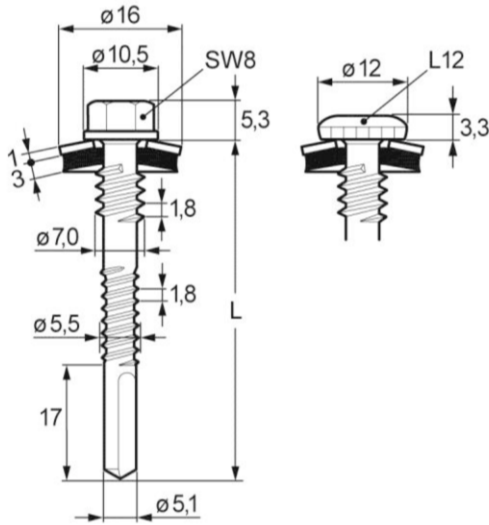
No additional definitions

Self-drilling screw with sealing washer  $\geq \varnothing 19 \text{ mm}$

SXC5-S19-5,5 x L, SXC5-L12-S19-5,5 x L

Annex 5





#### 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 HX300LAD to HX460LAD - EN 10346

#### Drilling-capacity

$$\Sigma(t_{N1} + t_{N2} + t_{II}) \leq 14.00 \text{ mm}$$

		$t_{II}$ [mm]					
		4.00	5.00	6.00	8.00	10.00	12.00
$V_{R,k}$ [kN]	0.40	0.74	0.74	0.74	0.74	0.74	0.74
	0.45	0.95	0.95	0.95	0.95	0.95	0.95
	0.50	1.16	1.16	1.16	1.16	1.16	1.16
	0.55	1.36	1.36	1.36	1.36	1.36	1.36
	$t_{N2}$ [mm]						
	0.60	1.56	1.56	1.56	1.56	1.56	1.56
	0.63	1.69	1.69	1.69	1.69	1.69	1.69
	0.70	1.97	1.97	1.97	1.97	1.97	1.97
	$\geq 0.75$	2.17	2.17	2.17	2.17	2.17	2.17
$N_{R,k}$ [kN]	0.40	1.39	1.39	1.39	1.39	1.39	1.39
	0.45	1.53	1.53	1.53	1.53	1.53	1.53
	0.50	1.66	1.66	1.66	1.66	1.66	1.66
	0.55	2.02	2.02	2.02	2.02	2.02	2.02
	$t_{N1}$ [mm]						
	0.60	2.37	2.37	2.37	2.37	2.37	2.37
	0.63	2.59	2.59	2.59	2.59	2.59	2.59
	0.70	3.09	3.09	3.09	3.09	3.09	3.09
	$\geq 0.75$	3.45	3.45	3.45	3.45	3.45	3.45
$N_{R,II,k}$ [kN]		4.97	6.41	7.84	10.71	10.71	10.71
$u$ [mm]	40	3.0					
	60	4.5					
	80	6.0					
$D, d$ [mm]		7.5					
$\geq 100$							

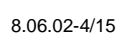
No additional definitions

Self-drilling screw with sealing washer Ø 16 mm

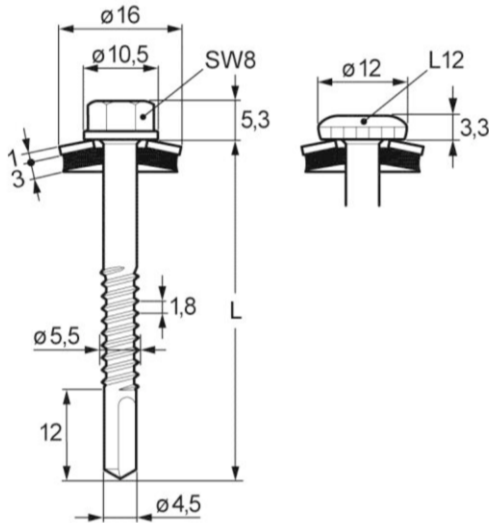
SXC14-S16-5,5 x L, SXC14-L12-S16-5,5 x L

Annex 6

electronic copy of the eta by dibt: eta-13/0183







#### 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 HX300LAD to HX460LAD - EN 10346

#### Drilling-capacity

$$\Sigma(t_{N1} + t_{N2} + t_{II}) \leq 6.00 \text{ mm}$$

		$t_{II}$ [mm]					
		1.50	1.75	2.00	2.50	3.00	4.00
$V_{R,k}$ [kN]	0.40	0.81 <sup>a</sup>	0.81 <sup>a</sup>	0.81 <sup>a</sup>	0.81 <sup>a</sup>	0.81 <sup>a</sup>	0.81 <sup>a</sup>
	0.45	0.98 <sup>a</sup>	0.98 <sup>a</sup>	0.98 <sup>a</sup>	0.98 <sup>a</sup>	0.98 <sup>a</sup>	0.98 <sup>a</sup>
	0.50	1.14 <sup>a</sup>	1.14 <sup>a</sup>	1.14 <sup>a</sup>	1.14 <sup>a</sup>	1.14 <sup>a</sup>	1.14 <sup>a</sup>
	0.55	1.29 <sup>a</sup>	1.31 <sup>a</sup>	1.32 <sup>a</sup>	1.35 <sup>a</sup>	1.38 <sup>a</sup>	1.38 <sup>a</sup>
	$t_{N2}$ [mm]	0.60	1.44 <sup>a</sup>	1.47 <sup>a</sup>	1.50 <sup>a</sup>	1.56 <sup>a</sup>	1.63 <sup>a</sup>
	0.63	1.53 <sup>a</sup>	1.57 <sup>a</sup>	1.61 <sup>a</sup>	1.69 <sup>a</sup>	1.77 <sup>a</sup>	1.77 <sup>a</sup>
	0.70	1.74 <sup>a</sup>	1.80 <sup>a</sup>	1.87 <sup>a</sup>	1.99 <sup>a</sup>	2.11 <sup>a</sup>	2.11 <sup>a</sup>
	$\geq 0.75$	1.89 <sup>a</sup>	1.97 <sup>a</sup>	2.05 <sup>a</sup>	2.20 <sup>a</sup>	2.36 <sup>a</sup>	2.36 <sup>a</sup>
$N_{R,k}$ [kN]	0.40	1.15 <sup>a</sup>	1.15 <sup>a</sup>	1.15 <sup>a</sup>	1.15 <sup>a</sup>	1.15 <sup>a</sup>	1.15 <sup>a</sup>
	0.45	1.34 <sup>a</sup>	1.34 <sup>a</sup>	1.34 <sup>a</sup>	1.34 <sup>a</sup>	1.34 <sup>a</sup>	1.34 <sup>a</sup>
	0.50	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>
	0.55	1.88	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>
	$t_{N1}$ [mm]	0.60	1.88	2.31	2.31 <sup>a</sup>	2.31 <sup>a</sup>	2.31 <sup>a</sup>
	0.63	1.88	2.38	2.55 <sup>a</sup>	2.55 <sup>a</sup>	2.55 <sup>a</sup>	2.55 <sup>a</sup>
	0.70	1.88	2.38	2.87	3.10 <sup>a</sup>	3.10 <sup>a</sup>	3.10 <sup>a</sup>
	$\geq 0.75$	1.88	2.38	2.87	3.50 <sup>a</sup>	3.50 <sup>a</sup>	3.50 <sup>a</sup>
$N_{R,II,k}$ [kN]		1.88	2.38	2.87	4.34	5.81	7.28
$u$ [mm]	40	3.0					
	60	4.5					
	80	6.0					
$D, d$ [mm]		$\geq 100$					
		7.5					

#### Additional definitions

Index <sup>a</sup>: For component I made of S320GD to S450GD the indicated values may be increased by 8.3%

Self-drilling screw with sealing washer Ø 16 mm

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

Annex 8

	<p><b>Materials</b></p> <p>Fastener: Stainless steel A2 or A4 - EN ISO 3506</p> <p>Washer: Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal</p> <p>Component I: S280GD to S450GD - EN 10346</p> <p>Component II: S235 to S355 - EN 10025 S280GD to S450GD - EN 10346 HX300LAD to HX460LAD - EN 10346</p> <p><b>Drilling-capacity</b> <math>\Sigma(t_{N1} + t_{N2} + t_{II}) \leq 6.00 \text{ mm}</math></p>
--	--

		$t_{II} [\text{mm}]$					
		1.50	1.75	2.00	2.50	3.00	4.00
$V_{R,k} [\text{kN}]$	0.40	0.81 <sup>a</sup>	0.81 <sup>a</sup>	0.81 <sup>a</sup>	0.81 <sup>a</sup>	0.81 <sup>a</sup>	0.81 <sup>a</sup>
	0.45	0.98 <sup>a</sup>	0.98 <sup>a</sup>	0.98 <sup>a</sup>	0.98 <sup>a</sup>	0.98 <sup>a</sup>	0.98 <sup>a</sup>
	0.50	1.14 <sup>a</sup>	1.14 <sup>a</sup>	1.14 <sup>a</sup>	1.14 <sup>a</sup>	1.14 <sup>a</sup>	1.14 <sup>a</sup>
	0.55	1.29 <sup>a</sup>	1.31 <sup>a</sup>	1.32 <sup>a</sup>	1.35 <sup>a</sup>	1.38 <sup>a</sup>	1.38 <sup>a</sup>
	0.60	1.44 <sup>a</sup>	1.47 <sup>a</sup>	1.50 <sup>a</sup>	1.56 <sup>a</sup>	1.63 <sup>a</sup>	1.63 <sup>a</sup>
	0.63	1.53 <sup>a</sup>	1.57 <sup>a</sup>	1.61 <sup>a</sup>	1.69 <sup>a</sup>	1.77 <sup>a</sup>	1.77 <sup>a</sup>
	0.70	1.74 <sup>a</sup>	1.80 <sup>a</sup>	1.87 <sup>a</sup>	1.99 <sup>a</sup>	2.11 <sup>a</sup>	2.11 <sup>a</sup>
	≥0.75	1.89 <sup>a</sup>	1.97 <sup>a</sup>	2.05 <sup>a</sup>	2.20 <sup>a</sup>	2.36 <sup>a</sup>	2.36 <sup>a</sup>
$N_{R,k} [\text{kN}]$	0.40	1.43 <sup>a</sup>	1.43 <sup>a</sup>	1.43 <sup>a</sup>	1.43 <sup>a</sup>	1.43 <sup>a</sup>	1.43 <sup>a</sup>
	0.45	1.65 <sup>a</sup>	1.65 <sup>a</sup>	1.65 <sup>a</sup>	1.65 <sup>a</sup>	1.65 <sup>a</sup>	1.65 <sup>a</sup>
	0.50	1.87	1.87 <sup>a</sup>	1.87 <sup>a</sup>	1.87 <sup>a</sup>	1.87 <sup>a</sup>	1.87 <sup>a</sup>
	0.55	1.88	2.36	2.36 <sup>a</sup>	2.36 <sup>a</sup>	2.36 <sup>a</sup>	2.36 <sup>a</sup>
	0.60	1.88	2.38	2.38 <sup>a</sup>	2.38 <sup>a</sup>	2.38 <sup>a</sup>	2.38 <sup>a</sup>
	0.63	1.88	2.38	2.87	3.14 <sup>a</sup>	3.14 <sup>a</sup>	3.14 <sup>a</sup>
	0.70	1.88	2.38	2.87	3.82	3.82	3.82
	≥0.75	1.88	2.38	2.87	4.31	4.31	4.31
$N_{R,II,k} [\text{kN}]$		1.88	2.38	2.87	4.34	5.81	7.28
$u [\text{mm}]$	40	3.0					
	60	4.5					
$D, d [\text{mm}]$	80	6.0					
	≥100	7.5					

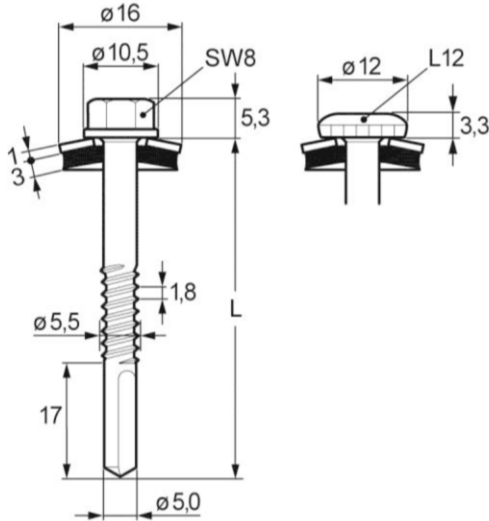
#### Additional definitions

Index <sup>a</sup>: For component I made of S320GD to S450GD the indicated values may be increased by 8.3%

Self-drilling screw with sealing washer  $\geq \varnothing 19 \text{ mm}$

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

Annex 9



#### 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 HX300LAD to HX460LAD - EN 10346

#### Drilling-capacity

$$\Sigma(t_{N1} + t_{N2} + t_{II}) \leq 14.00 \text{ mm}$$

		$t_{II}$ [mm]					
		4.00	5.00	6.00	8.00	10.00	12.00
$V_{R,k}$ [kN]	0.40	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>
	0.45	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>
	0.50	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>
	0.55	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>
	$t_{N2}$ [mm]						
	0.60	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>
	0.63	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>
	0.70	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>
	$\geq 0.75$	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>
$N_{R,k}$ [kN]	0.40	1.16 <sup>a</sup>	1.16 <sup>a</sup>	1.16 <sup>a</sup>	1.16 <sup>a</sup>	1.16 <sup>a</sup>	1.16 <sup>a</sup>
	0.45	1.41 <sup>a</sup>	1.41 <sup>a</sup>	1.41 <sup>a</sup>	1.41 <sup>a</sup>	1.41 <sup>a</sup>	1.41 <sup>a</sup>
	0.50	1.65 <sup>a</sup>	1.65 <sup>a</sup>	1.65 <sup>a</sup>	1.65 <sup>a</sup>	1.65 <sup>a</sup>	1.65 <sup>a</sup>
	0.55	1.96 <sup>a</sup>	1.96 <sup>a</sup>	1.96 <sup>a</sup>	1.96 <sup>a</sup>	1.96 <sup>a</sup>	1.96 <sup>a</sup>
	$t_{N1}$ [mm]						
	0.60	2.25 <sup>a</sup>	2.25 <sup>a</sup>	2.25 <sup>a</sup>	2.25 <sup>a</sup>	2.25 <sup>a</sup>	2.25 <sup>a</sup>
	0.63	2.43 <sup>a</sup>	2.43 <sup>a</sup>	2.43 <sup>a</sup>	2.43 <sup>a</sup>	2.43 <sup>a</sup>	2.43 <sup>a</sup>
	0.70	2.89 <sup>a</sup>	2.89 <sup>a</sup>	2.89 <sup>a</sup>	2.89 <sup>a</sup>	2.89 <sup>a</sup>	2.89 <sup>a</sup>
	$\geq 0.75$	3.21 <sup>a</sup>	3.21 <sup>a</sup>	3.21 <sup>a</sup>	3.21 <sup>a</sup>	3.21 <sup>a</sup>	3.21 <sup>a</sup>
$N_{R,II,k}$ [kN]		4.97	6.41	7.84	10.71	10.71	10.71
$u$ [mm]	40	3.0					
	60	4.5					
	80	6.0					
$D, d$ [mm]		7.5					
$\geq 100$							

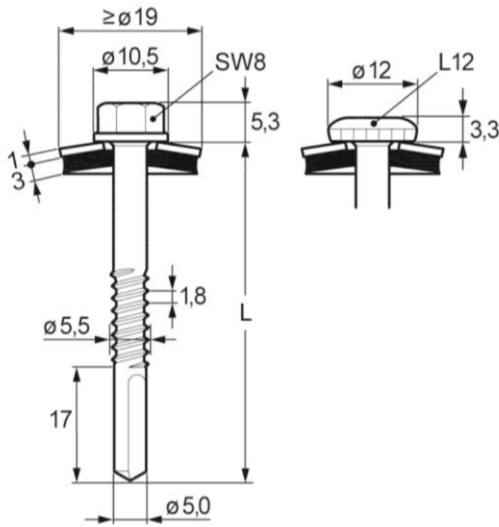
#### Additional definitions

Index <sup>a</sup>: For component I made of S320GD to S450GD the indicated values may be increased by 8.3%

Self-drilling screw with sealing washer Ø 16 mm

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

Annex 10



#### 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 HX300LAD to HX460LAD - EN 10346

#### Drilling-capacity

$$\Sigma(t_{N1} + t_{N2} + t_{II}) \leq 14.00 \text{ mm}$$

		$t_{II}$ [mm]					
		4.00	5.00	6.00	8.00	10.00	12.00
$V_{R,k}$ [kN]	0.40	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>
	0.45	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>
	0.50	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>
	0.55	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>
	$t_{N2}$ [mm]						
	0.60	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>
	0.63	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>
	0.70	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>
	$\geq 0.75$	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>
$N_{R,k}$ [kN]	0.40	1.24 <sup>a</sup>	1.24 <sup>a</sup>	1.24 <sup>a</sup>	1.24 <sup>a</sup>	1.24 <sup>a</sup>	1.24 <sup>a</sup>
	0.45	1.64 <sup>a</sup>	1.64 <sup>a</sup>	1.64 <sup>a</sup>	1.64 <sup>a</sup>	1.64 <sup>a</sup>	1.64 <sup>a</sup>
	0.50	2.04 <sup>a</sup>	2.04 <sup>a</sup>	2.04 <sup>a</sup>	2.04 <sup>a</sup>	2.04 <sup>a</sup>	2.04 <sup>a</sup>
	0.55	2.34 <sup>a</sup>	2.34 <sup>a</sup>	2.34 <sup>a</sup>	2.34 <sup>a</sup>	2.34 <sup>a</sup>	2.34 <sup>a</sup>
	$t_{N1}$ [mm]						
	0.60	2.64 <sup>a</sup>	2.64 <sup>a</sup>	2.64 <sup>a</sup>	2.64 <sup>a</sup>	2.64 <sup>a</sup>	2.64 <sup>a</sup>
	0.63	2.82 <sup>a</sup>	2.82 <sup>a</sup>	2.82 <sup>a</sup>	2.82 <sup>a</sup>	2.82 <sup>a</sup>	2.82 <sup>a</sup>
	0.70	3.23 <sup>a</sup>	3.23 <sup>a</sup>	3.23 <sup>a</sup>	3.23 <sup>a</sup>	3.23 <sup>a</sup>	3.23 <sup>a</sup>
	$\geq 0.75$	3.52 <sup>a</sup>	3.52 <sup>a</sup>	3.52 <sup>a</sup>	3.52 <sup>a</sup>	3.52 <sup>a</sup>	3.52 <sup>a</sup>
$N_{R,II,k}$ [kN]		4.97	6.41	7.84	10.71	10.71	10.71
$u$ [mm]	40	3.0					
	60	4.5					
	80	6.0					
$D, d$ [mm]	$\geq 100$	7.5					

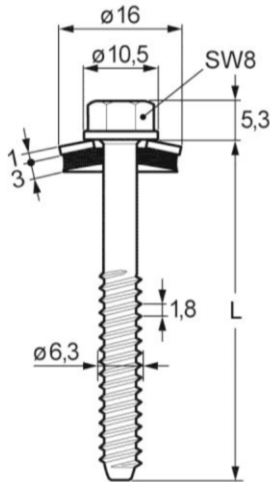
#### Additional definitions

Index <sup>a</sup>: For component I made of S320GD to S450GD the indicated values may be increased by 8.3%

Self-drilling screw with sealing washer  $\geq \varnothing 19$  mm

SX14-S19-5,5 x L, SX14-L12-S19-5,5 x L

Annex 11



#### Materials

Fastener:	Stainless steel A2, A4 or 1.4547 - 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 HX300LAD to HX460LAD - EN 10346

Drilling-capacity -

		$t_{li}$ [mm]								
		1.50	2.00	2.50	3.00	4.00	6.00	8.00	10.00	> 10.00 <sup>a</sup>
$d_{pd}$ [mm]		5.00	5.30				5.50	5.70		5.80
$V_{R,k}$ [kN]	0.40	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
	0.45	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
	0.50	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
	0.55	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37
	0.60	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66
	0.63	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84
	0.70	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
	$\geq 0.75$	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55
$N_{R,k}$ [kN]	0.40	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68
	0.45	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85
	0.50	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01
	0.55	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39
	0.60	2.57	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77
	0.63	2.57	3.01	3.01	3.01	3.01	3.01	3.01	3.01	3.01
	0.70	2.57	3.44	3.55	3.55	3.55	3.55	3.55	3.55	3.55
	$\geq 0.75$	2.57	3.44	3.93	3.93	3.93	3.93	3.93	3.93	3.93
$N_{R,II,k}$ [kN]		2.57	3.44	4.96	6.48	9.19	12.22	15.24	15.24	15.24
$u$ [mm]	40	3.0								
	60	4.5								
	80	6.0								
$D, d$ [mm]	$\geq 100$	7.5								

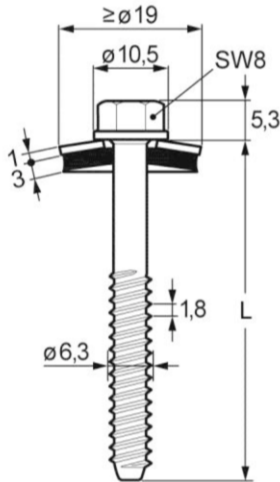
#### Additional definitions

Index <sup>a</sup>: Only valid for component II made of S235, S280GD or HX300LAD

Self-tapping screw with sealing washer Ø 16 mm

TDB-S-S16-6,3 x L

Annex 12



#### Materials

Fastener: Stainless steel A2, A4 or 1.4547 - 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  
HX300LAD to HX460LAD - EN 10346

Drilling-capacity -

		$t_{li}$ [mm]								
		1.50	2.00	2.50	3.00	4.00	6.00	8.00	10.00	> 10.00 <sup>a</sup>
$d_{pd}$ [mm]		5.00	5.30				5.50	5.70		5.80
$V_{R,k}$ [kN]	0.40	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
	0.45	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
	0.50	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
	0.55	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37
	0.60	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66
	0.63	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84
	0.70	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
	≥ 0.75	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55
$N_{R,k}$ [kN]	0.40	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
	0.45	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	0.50	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
	0.55	2.57	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72
	0.60	2.57	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19
	0.63	2.57	3.44	3.48	3.48	3.48	3.48	3.48	3.48	3.48
	0.70	2.57	3.44	4.13	4.13	4.13	4.13	4.13	4.13	4.13
	≥ 0.75	2.57	3.44	4.61	4.61	4.61	4.61	4.61	4.61	4.61
$N_{R,II,k}$ [kN]		2.57	3.44	4.96	6.48	9.19	12.22	15.24	15.24	15.24
$u$ [mm]	40	3.0								
	60	4.5								
	80	6.0								
$D, d$ [mm]	≥ 100	7.5								

#### Additional definitions

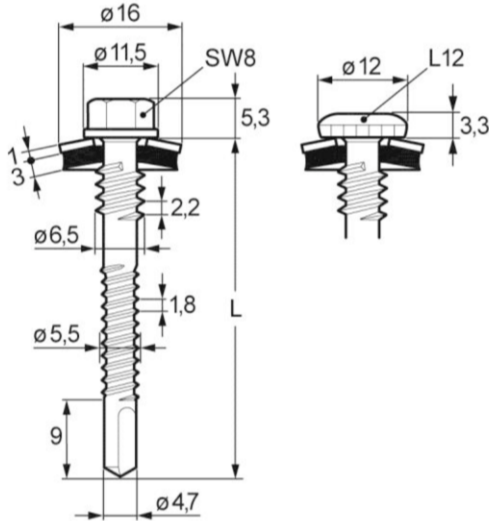
Index <sup>a</sup>: Only valid for component II made of S235, S280GD or HX300LAD

Self-tapping screw with sealing washer ≥ Ø 19 mm

TDB-S-S19-6,3 x L

Annex 13





#### Materials

Fastener:	Carbon steel with anticorrosion coating
Washer:	Stainless steel A2 - 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 HX300LAD to HX460LAD - EN 10346

#### Drilling-capacity

$$\Sigma(t_{N1} + t_{N2} + t_{II}) \leq 6.00 \text{ mm}$$

		$t_{II}$ [mm]					
		1.50	1.75	2.00	2.50	3.00	4.00
$V_{R,k}$ [kN]	0.40	0.67 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>
	0.45	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>
	0.50	1.12 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>
	0.55	1.34 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>
	$t_{N2}$ [mm]						
	0.60	1.57 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>
	0.63	1.70 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>
	0.70	1.70 <sup>a</sup>	1.93 <sup>a</sup>	1.93 <sup>a</sup>	1.93 <sup>a</sup>	1.93 <sup>a</sup>	1.93 <sup>a</sup>
	$\geq 0.75$	1.70 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>
$N_{R,k}$ [kN]	0.40	1.48 <sup>a</sup>	1.48 <sup>a</sup>	1.48 <sup>a</sup>	1.48 <sup>a</sup>	1.48 <sup>a</sup>	1.48 <sup>a</sup>
	0.45	1.64 <sup>a</sup>	1.64 <sup>a</sup>	1.64 <sup>a</sup>	1.64 <sup>a</sup>	1.64 <sup>a</sup>	1.64 <sup>a</sup>
	0.50	1.79	1.79 <sup>a</sup>	1.79 <sup>a</sup>	1.79 <sup>a</sup>	1.79 <sup>a</sup>	1.79 <sup>a</sup>
	0.55	1.82	2.04 <sup>a</sup>	2.04 <sup>a</sup>	2.04 <sup>a</sup>	2.04 <sup>a</sup>	2.04 <sup>a</sup>
	$t_{N1}$ [mm]						
	0.60	1.82	2.29	2.29 <sup>a</sup>	2.29 <sup>a</sup>	2.29 <sup>a</sup>	2.29 <sup>a</sup>
	0.63	1.82	2.41	2.46 <sup>a</sup>	2.46 <sup>a</sup>	2.46 <sup>a</sup>	2.46 <sup>a</sup>
	0.70	1.82	2.41	2.82	2.82 <sup>a</sup>	2.82 <sup>a</sup>	2.82 <sup>a</sup>
	$\geq 0.75$	1.82	2.41	3.00	3.07 <sup>a</sup>	3.07 <sup>a</sup>	3.07 <sup>a</sup>
$N_{R,II,k}$ [kN]		1.82	2.41	3.00	4.31	5.61	10.77
$u$ [mm]	40	2.0					
	60	4.0					
	80	5.7					
$D, d$ [mm]		$\geq 100$					
		7.1					

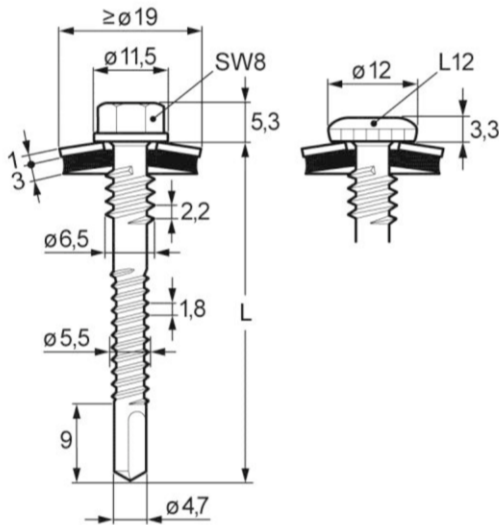
#### Additional definitions

Index <sup>a</sup>: For component I made of S320GD to S450GD the indicated values may be increased by 8.3%

Self-drilling screw with sealing washer Ø 16 mm

SDT5-S16-5,5 x L, SDT5-L12-S16-5,5 x L

Annex 14



#### Materials

Fastener:	Carbon steel with anticorrosion coating
Washer:	Stainless steel A2 - 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 HX300LAD to HX460LAD - EN 10346

#### Drilling-capacity

$$\Sigma(t_{N1} + t_{N2} + t_{II}) \leq 6.00 \text{ mm}$$

		$t_{II}$ [mm]					
		1.50	1.75	2.00	2.50	3.00	4.00
$V_{R,k}$ [kN]	0.40	0.67 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>
	0.45	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>
	0.50	1.12 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>
	0.55	1.34 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>
	$t_{N2}$ [mm]						
	0.60	1.57 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>
	0.63	1.70 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>
	0.70	1.70 <sup>a</sup>	1.93 <sup>a</sup>	1.93 <sup>a</sup>	1.93 <sup>a</sup>	1.93 <sup>a</sup>	1.93 <sup>a</sup>
	$\geq 0.75$	1.70 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>
$N_{R,k}$ [kN]	0.40	1.53 <sup>a</sup>	1.53 <sup>a</sup>	1.53 <sup>a</sup>	1.53 <sup>a</sup>	1.53 <sup>a</sup>	1.53 <sup>a</sup>
	0.45	1.69	1.69 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>
	0.50	1.82	1.84 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>
	0.55	1.82	2.10 <sup>a</sup>	2.10 <sup>a</sup>	2.10 <sup>a</sup>	2.10 <sup>a</sup>	2.10 <sup>a</sup>
	$t_{N1}$ [mm]						
	0.60	1.82	2.37	2.37 <sup>a</sup>	2.37 <sup>a</sup>	2.37 <sup>a</sup>	2.37 <sup>a</sup>
	0.63	1.82	2.41	2.53 <sup>a</sup>	2.53 <sup>a</sup>	2.53 <sup>a</sup>	2.53 <sup>a</sup>
	0.70	1.82	2.41	2.90	2.90 <sup>a</sup>	2.90 <sup>a</sup>	2.90 <sup>a</sup>
	$\geq 0.75$	1.82	2.41	3.00	3.17 <sup>a</sup>	3.17 <sup>a</sup>	3.17 <sup>a</sup>
$N_{R,II,k}$ [kN]		1.82	2.41	3.00	4.31	5.61	10.77
$u$ [mm]	40	2.0					
	60	4.0					
	80	5.7					
$D, d$ [mm]	$\geq 100$	7.1					

#### Additional definitions

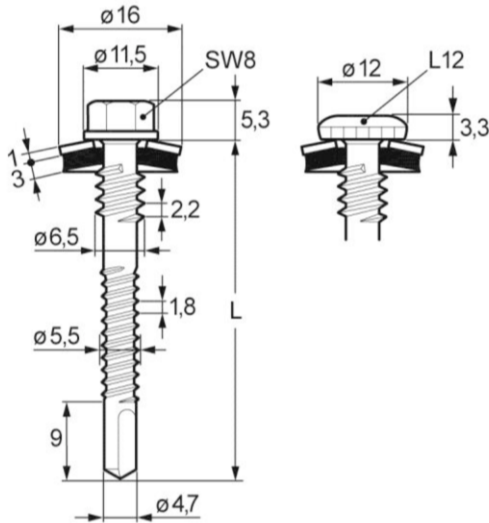
Index <sup>a</sup>: For component I made of S320GD to S450GD the indicated values may be increased by 8.3%

Self-drilling screw with sealing washer  $\geq \varnothing 19$  mm

SDT5-S19-5,5 x L, SDT5-L12-S19-5,5 x L

Annex 15





#### Materials

Fastener:	Carbon steel with anticorrosion coating
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 HX300LAD to HX460LAD - EN 10346

#### Drilling-capacity

$$\Sigma(t_{N1} + t_{N2} + t_{II}) \leq 6.00 \text{ mm}$$

		$t_{II}$ [mm]					
		1.50	1.75	2.00	2.50	3.00	4.00
$V_{R,k}$ [kN]	0.40	0.67 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>
	0.45	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>
	0.50	1.12 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>
	0.55	1.34 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>
	$t_{N2}$ [mm]	0.60	1.57 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>
	0.63	1.70 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>
	0.70	1.70 <sup>a</sup>	1.93 <sup>a</sup>	1.93 <sup>a</sup>	1.93 <sup>a</sup>	1.93 <sup>a</sup>	1.93 <sup>a</sup>
	$\geq 0.75$	1.70 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>
$N_{R,k}$ [kN]	0.40	0.78 <sup>a</sup>	0.78 <sup>a</sup>	0.78 <sup>a</sup>	0.78 <sup>a</sup>	0.78 <sup>a</sup>	0.78 <sup>a</sup>
	0.45	1.12 <sup>a</sup>	1.12 <sup>a</sup>	1.12 <sup>a</sup>	1.12 <sup>a</sup>	1.12 <sup>a</sup>	1.12 <sup>a</sup>
	0.50	1.46 <sup>a</sup>	1.46 <sup>a</sup>	1.46 <sup>a</sup>	1.46 <sup>a</sup>	1.46 <sup>a</sup>	1.46 <sup>a</sup>
	0.55	1.70	1.70 <sup>a</sup>	1.70 <sup>a</sup>	1.70 <sup>a</sup>	1.70 <sup>a</sup>	1.70 <sup>a</sup>
	$t_{N1}$ [mm]	0.60	1.82	1.94 <sup>a</sup>	1.94 <sup>a</sup>	1.94 <sup>a</sup>	1.94 <sup>a</sup>
	0.63	1.82	2.08 <sup>a</sup>	2.08 <sup>a</sup>	2.08 <sup>a</sup>	2.08 <sup>a</sup>	2.08 <sup>a</sup>
	0.70	1.82	2.41	2.42 <sup>a</sup>	2.42 <sup>a</sup>	2.42 <sup>a</sup>	2.42 <sup>a</sup>
	$\geq 0.75$	1.82	2.41	2.66 <sup>a</sup>	2.66 <sup>a</sup>	2.66 <sup>a</sup>	2.66 <sup>a</sup>
$N_{R,II,k}$ [kN]		1.82	2.41	3.00	4.31	5.61	10.77
$u$ [mm]	40	2.0					
	60	4.0					
	80	5.7					
$D, d$ [mm]		$\geq 100$					
		7.1					

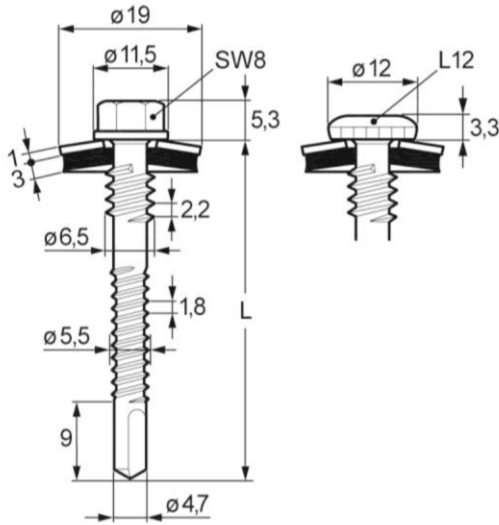
#### Additional definitions

Index <sup>a</sup>: For component I made of S320GD to S450GD the indicated values may be increased by 8.3%

Self-drilling screw with sealing washer Ø 16 mm

SDT5-A16-5,5 x L, SDT5-L12-A16-5,5 x L

Annex 16



#### Materials

Fastener:	Carbon steel with anticorrosion coating
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 HX300LAD to HX460LAD - EN 10346

#### Drilling-capacity

$$\Sigma(t_{N1} + t_{N2} + t_{II}) \leq 6.00 \text{ mm}$$

		$t_{II}$ [mm]					
		1.50	1.75	2.00	2.50	3.00	4.00
$V_{R,k}$ [kN]	0.40	0.67 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>	0.85 <sup>a</sup>
	0.45	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>	0.90 <sup>a</sup>
	0.50	1.12 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>	1.25 <sup>a</sup>
	0.55	1.34 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>
	$t_{N2}$ [mm]	0.60	1.57 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>	1.69 <sup>a</sup>
		0.63	1.70 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>	1.84 <sup>a</sup>
		0.70	1.70 <sup>a</sup>	1.93 <sup>a</sup>	1.93 <sup>a</sup>	1.93 <sup>a</sup>	1.93 <sup>a</sup>
	$\geq 0.75$	1.70 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>	1.99 <sup>a</sup>
$N_{R,k}$ [kN]	0.40	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>
	0.45	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>
	0.50	1.46 <sup>a</sup>	1.46 <sup>a</sup>	1.46 <sup>a</sup>	1.46 <sup>a</sup>	1.46 <sup>a</sup>	1.46 <sup>a</sup>
	0.55	1.70	1.70 <sup>a</sup>	1.70 <sup>a</sup>	1.70 <sup>a</sup>	1.70 <sup>a</sup>	1.70 <sup>a</sup>
	$t_{N1}$ [mm]	0.60	1.82	1.94 <sup>a</sup>	1.94 <sup>a</sup>	1.94 <sup>a</sup>	1.94 <sup>a</sup>
		0.63	1.82	2.08 <sup>a</sup>	2.08 <sup>a</sup>	2.08 <sup>a</sup>	2.08 <sup>a</sup>
		0.70	1.82	2.41	2.42 <sup>a</sup>	2.42 <sup>a</sup>	2.42 <sup>a</sup>
	$\geq 0.75$	1.82	2.41	2.66 <sup>a</sup>	2.66 <sup>a</sup>	2.66 <sup>a</sup>	2.66 <sup>a</sup>
$N_{R,II,k}$ [kN]		1.82	2.41	3.00	4.31	5.61	10.77
$u$ [mm]	40	2.0					
	60	4.0					
	80	5.7					
$D, d$ [mm]		$\geq 100$					
		7.1					

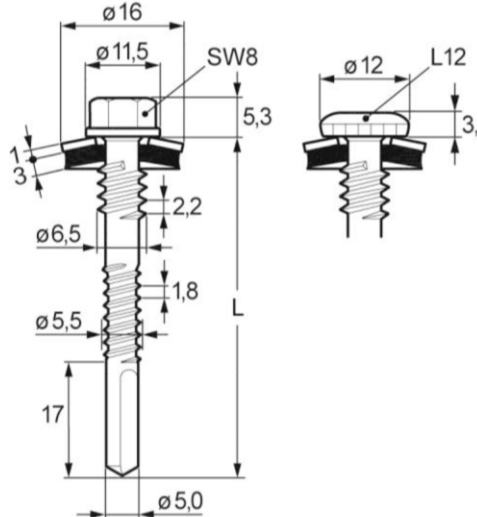
#### Additional definitions

Index <sup>a</sup>: For component I made of S320GD to S450GD the indicated values may be increased by 8.3%

Self-drilling screw with sealing washer Ø 19 mm

SDT5-A19-5,5 x L, SDT5-L12-A19-5,5 x L

Annex 17

	<p><b>Materials</b></p> <p>Fastener: Carbon steel with anticorrosion coating</p> <p>Washer: Stainless steel A2 - EN ISO 3506 with EPDM-seal</p> <p>Component I: S280GD to S450GD - EN 10346</p> <p>Component II: S235 to S355 - EN 10025 S280GD to S450GD - EN 10346 HX300LAD to HX460LAD - EN 10346</p> <p><b>Drilling-capacity</b> <math>\Sigma(t_{N1} + t_{N2} + t_{II}) \leq 14.00 \text{ mm}</math></p>
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		$t_{II} \text{ [mm]}$					
		4.00	5.00	6.00	8.00	10.00	12.00
$V_{R,k} \text{ [kN]}$	0.40	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>
	0.45	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>
	0.50	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>
	0.55	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>
	0.60	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>
	0.63	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>
	0.70	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>
	$\geq 0.75$	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>
$N_{R,k} \text{ [kN]}$	0.40	1.16 <sup>a</sup>	1.16 <sup>a</sup>	1.16 <sup>a</sup>	1.16 <sup>a</sup>	1.16 <sup>a</sup>	1.16 <sup>a</sup>
	0.45	1.41 <sup>a</sup>	1.41 <sup>a</sup>	1.41 <sup>a</sup>	1.41 <sup>a</sup>	1.41 <sup>a</sup>	1.41 <sup>a</sup>
	0.50	1.65 <sup>a</sup>	1.65 <sup>a</sup>	1.65 <sup>a</sup>	1.65 <sup>a</sup>	1.65 <sup>a</sup>	1.65 <sup>a</sup>
	0.55	1.96 <sup>a</sup>	1.96 <sup>a</sup>	1.96 <sup>a</sup>	1.96 <sup>a</sup>	1.96 <sup>a</sup>	1.96 <sup>a</sup>
	0.60	2.25 <sup>a</sup>	2.25 <sup>a</sup>	2.25 <sup>a</sup>	2.25 <sup>a</sup>	2.25 <sup>a</sup>	2.25 <sup>a</sup>
	0.63	2.43 <sup>a</sup>	2.43 <sup>a</sup>	2.43 <sup>a</sup>	2.43 <sup>a</sup>	2.43 <sup>a</sup>	2.43 <sup>a</sup>
	0.70	2.89 <sup>a</sup>	2.89 <sup>a</sup>	2.89 <sup>a</sup>	2.89 <sup>a</sup>	2.89 <sup>a</sup>	2.89 <sup>a</sup>
	$\geq 0.75$	3.21 <sup>a</sup>	3.21 <sup>a</sup>	3.21 <sup>a</sup>	3.21 <sup>a</sup>	3.21 <sup>a</sup>	3.21 <sup>a</sup>
$N_{R,II,k} \text{ [kN]}$		4.97	6.41	7.84	10.71	10.71	10.71
$u \text{ [mm]}$	40	1.8					
	60	3.3					
	80	4.6					
$D, d \text{ [mm]}$		$\geq 100$					
		5.7					

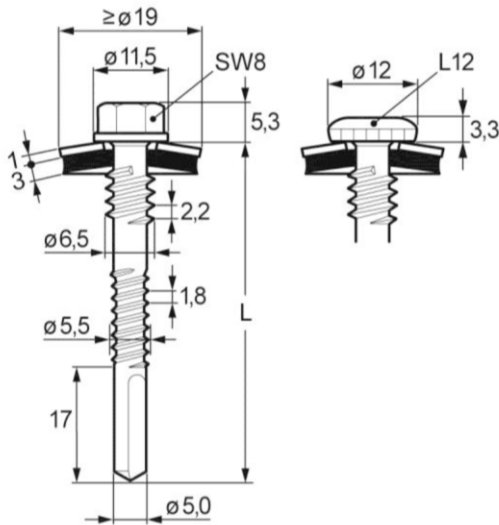
#### Additional definitions

Index <sup>a</sup>: For component I made of S320GD to S450GD the indicated values may be increased by 8.3%

Self-drilling screw with sealing washer Ø 16 mm

SDT14-S16-5,5 x L, SDT14-L12-S16-5,5 x L

Annex 18



#### Materials

Fastener:	Carbon steel with anticorrosion coating
Washer:	Stainless steel A2 - 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 HX300LAD to HX460LAD - EN 10346

#### Drilling-capacity

$$\Sigma(t_{N1} + t_{N2} + t_{II}) \leq 14.00 \text{ mm}$$

		$t_{II}$ [mm]					
		4.00	5.00	6.00	8.00	10.00	12.00
$V_{R,k}$ [kN]	0.40	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>
	0.45	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>
	0.50	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>
	0.55	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>
	$t_{N2}$ [mm]						
	0.60	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>
	0.63	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>
	0.70	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>
	$\geq 0.75$	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>
$N_{R,k}$ [kN]	0.40	1.24 <sup>a</sup>	1.24 <sup>a</sup>	1.24 <sup>a</sup>	1.24 <sup>a</sup>	1.24 <sup>a</sup>	1.24 <sup>a</sup>
	0.45	1.64 <sup>a</sup>	1.64 <sup>a</sup>	1.64 <sup>a</sup>	1.64 <sup>a</sup>	1.64 <sup>a</sup>	1.64 <sup>a</sup>
	0.50	2.04 <sup>a</sup>	2.04 <sup>a</sup>	2.04 <sup>a</sup>	2.04 <sup>a</sup>	2.04 <sup>a</sup>	2.04 <sup>a</sup>
	0.55	2.34 <sup>a</sup>	2.34 <sup>a</sup>	2.34 <sup>a</sup>	2.34 <sup>a</sup>	2.34 <sup>a</sup>	2.34 <sup>a</sup>
	$t_{N1}$ [mm]						
	0.60	2.64 <sup>a</sup>	2.64 <sup>a</sup>	2.64 <sup>a</sup>	2.64 <sup>a</sup>	2.64 <sup>a</sup>	2.64 <sup>a</sup>
	0.63	2.82 <sup>a</sup>	2.82 <sup>a</sup>	2.82 <sup>a</sup>	2.82 <sup>a</sup>	2.82 <sup>a</sup>	2.82 <sup>a</sup>
	0.70	2.89 <sup>a</sup>	2.89 <sup>a</sup>	2.89 <sup>a</sup>	2.89 <sup>a</sup>	2.89 <sup>a</sup>	2.89 <sup>a</sup>
	$\geq 0.75$	3.52 <sup>a</sup>	3.52 <sup>a</sup>	3.52 <sup>a</sup>	3.52 <sup>a</sup>	3.52 <sup>a</sup>	3.52 <sup>a</sup>
$N_{R,II,k}$ [kN]		4.97	6.41	7.84	10.71	10.71	10.71
$u$ [mm]	40	1.8					
	60	3.3					
	80	4.6					
$D, d$ [mm]		5.7					
$\geq 100$							

#### Additional definitions

Index <sup>a</sup>: For component I made of S320GD to S450GD the indicated values may be increased by 8.3%

Self-drilling screw with sealing washer  $\geq \varnothing 19$  mm

SDT14-S19-5,5 x L, SDT14-L12-S19-5,5 x L

Annex 19

	<p><b>Materials</b></p> <p>Fastener: Carbon steel with anticorrosion coating</p> <p>Washer: Aluminum alloy - EN 573 with EPDM-seal</p> <p>Component I: S280GD to S450GD - EN 10346</p> <p>Component II: S235 to S355 - EN 10025 S280GD to S450GD - EN 10346 HX300LAD to HX460LAD - EN 10346</p> <p><b>Drilling-capacity</b> <math>\Sigma(t_{N1} + t_{N2} + t_{II}) \leq 14.00 \text{ mm}</math></p>
--	---

		$t_{II} \text{ [mm]}$					
		4.00	5.00	6.00	8.00	10.00	12.00
$V_{R,k} \text{ [kN]}$	0.40	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>
	0.45	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>
	0.50	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>
	0.55	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>
	0.60	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>
	0.63	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>
	0.70	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>
	$\geq 0.75$	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>
$N_{R,k} \text{ [kN]}$	0.40	0.62 <sup>a</sup>	0.62 <sup>a</sup>	0.62 <sup>a</sup>	0.62 <sup>a</sup>	0.62 <sup>a</sup>	0.62 <sup>a</sup>
	0.45	0.98 <sup>a</sup>	0.98 <sup>a</sup>	0.98 <sup>a</sup>	0.98 <sup>a</sup>	0.98 <sup>a</sup>	0.98 <sup>a</sup>
	0.50	1.34 <sup>a</sup>	1.34 <sup>a</sup>	1.34 <sup>a</sup>	1.34 <sup>a</sup>	1.34 <sup>a</sup>	1.34 <sup>a</sup>
	0.55	1.60 <sup>a</sup>	1.60 <sup>a</sup>	1.60 <sup>a</sup>	1.60 <sup>a</sup>	1.60 <sup>a</sup>	1.60 <sup>a</sup>
	0.60	1.87 <sup>a</sup>	1.87 <sup>a</sup>	1.87 <sup>a</sup>	1.87 <sup>a</sup>	1.87 <sup>a</sup>	1.87 <sup>a</sup>
	0.63	2.03 <sup>a</sup>	2.03 <sup>a</sup>	2.03 <sup>a</sup>	2.03 <sup>a</sup>	2.03 <sup>a</sup>	2.03 <sup>a</sup>
	0.70	2.40 <sup>a</sup>	2.40 <sup>a</sup>	2.40 <sup>a</sup>	2.40 <sup>a</sup>	2.40 <sup>a</sup>	2.40 <sup>a</sup>
	$\geq 0.75$	2.66 <sup>a</sup>	2.66 <sup>a</sup>	2.66 <sup>a</sup>	2.66 <sup>a</sup>	2.66 <sup>a</sup>	2.66 <sup>a</sup>
$N_{R,II,k} \text{ [kN]}$		4.97	6.41	7.84	10.71	10.71	10.71
$u \text{ [mm]}$	40	1.8					
	60	3.3					
	80	4.6					
$D, d \text{ [mm]}$		$\geq 100$					
		5.7					

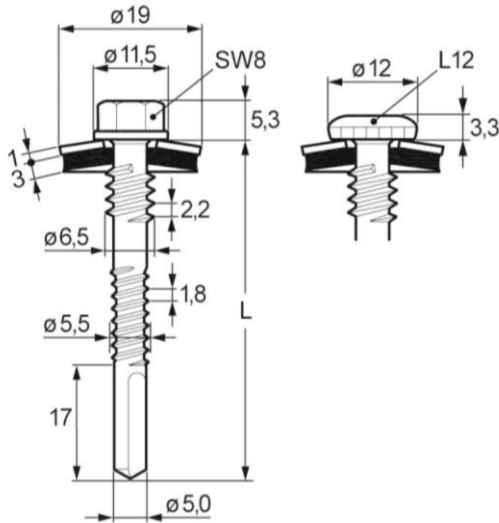
#### Additional definitions

Index <sup>a</sup>: For component I made of S320GD to S450GD the indicated values may be increased by 8.3%

Self-drilling screw with sealing washer Ø 16 mm

SDT14-A16-5,5 x L, SDT14-L12-A16-5,5 x L

Annex 20



#### Materials

Fastener: Carbon steel with anticorrosion coating

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  
HX300LAD to HX460LAD - EN 10346

Drilling-capacity  $\Sigma(t_{N1} + t_{N2} + t_{II}) \leq 14.00 \text{ mm}$

		$t_{II} \text{ [mm]}$					
		4.00	5.00	6.00	8.00	10.00	12.00
$V_{R,k} \text{ [kN]}$	0.40	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>	0.86 <sup>a</sup>
	0.45	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>	1.02 <sup>a</sup>
	0.50	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>	1.18 <sup>a</sup>
	0.55	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>	1.32 <sup>a</sup>
	$t_{N2} \text{ [mm]}$						
	0.60	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>	1.45 <sup>a</sup>
	0.63	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>	1.52 <sup>a</sup>
	0.70	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>	1.91 <sup>a</sup>
	$\geq 0.75$	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>	2.18 <sup>a</sup>
$N_{R,k} \text{ [kN]}$	0.40	0.94 <sup>a</sup>	0.94 <sup>a</sup>	0.94 <sup>a</sup>	0.94 <sup>a</sup>	0.94 <sup>a</sup>	0.94 <sup>a</sup>
	0.45	1.14 <sup>a</sup>	1.14 <sup>a</sup>	1.14 <sup>a</sup>	1.14 <sup>a</sup>	1.14 <sup>a</sup>	1.14 <sup>a</sup>
	0.50	1.34 <sup>a</sup>	1.34 <sup>a</sup>	1.34 <sup>a</sup>	1.34 <sup>a</sup>	1.34 <sup>a</sup>	1.34 <sup>a</sup>
	0.55	1.60 <sup>a</sup>	1.60 <sup>a</sup>	1.60 <sup>a</sup>	1.60 <sup>a</sup>	1.60 <sup>a</sup>	1.60 <sup>a</sup>
	$t_{N1} \text{ [mm]}$						
	0.60	1.87 <sup>a</sup>	1.87 <sup>a</sup>	1.87 <sup>a</sup>	1.87 <sup>a</sup>	1.87 <sup>a</sup>	1.87 <sup>a</sup>
	0.63	2.03 <sup>a</sup>	2.03 <sup>a</sup>	2.03 <sup>a</sup>	2.03 <sup>a</sup>	2.03 <sup>a</sup>	2.03 <sup>a</sup>
	0.70	2.40 <sup>a</sup>	2.40 <sup>a</sup>	2.40 <sup>a</sup>	2.40 <sup>a</sup>	2.40 <sup>a</sup>	2.40 <sup>a</sup>
	$\geq 0.75$	2.66 <sup>a</sup>	2.66 <sup>a</sup>	2.66 <sup>a</sup>	2.66 <sup>a</sup>	2.66 <sup>a</sup>	2.66 <sup>a</sup>
$N_{R,II,k} \text{ [kN]}$		4.97	6.41	7.84	10.71	10.71	10.71
$u \text{ [mm]}$	40	1.8					
	60	3.3					
	80	4.6					
$D, d \text{ [mm]}$		$\geq 100$					
		5.7					

#### Additional definitions

Index <sup>a</sup>: For component I made of S320GD to S450GD the indicated values may be increased by 8.3%

Self-drilling screw with sealing washer Ø 19 mm

SDT14-A19-5,5 x L, SDT14-L12-A19-5,5 x L

Annex 21



	<b>Materials</b>
	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: Timber (coniferous timber) - EN 14081
	<b>Drilling-capacity</b> $\Sigma(t_{N1} + t_{N2}) \leq 2.00 \text{ mm}$
	<b>Characteristics</b>
	$M_{y,Rk} = 12.1 \text{ Nm}$
	$f_{ax,k} = 13.2 \text{ N/mm}^2 (l_{ef} = 35 \text{ mm}, \rho_a = 350 \text{ kg/m}^3)$
	$f_{h,k} = 27.2 \text{ N/mm}^2 (\rho_a = 350 \text{ kg/m}^3)$

		l <sub>ef</sub> [mm]						
		35	45	55	65	75		
V <sub>R,k</sub> [kN]	0.40	0.81	0.81	0.81	0.81	0.81	0.81	V <sub>R,I,k</sub> [kN]
	0.45	0.98	0.98	0.98	0.98	0.98	0.98	
	0.50	1.15	1.15	1.15	1.15	1.15	1.15	
	0.55	1.24	1.24	1.24	1.24	1.24	1.24	
	t <sub>N2</sub> [mm]	0.60	1.33	1.33	1.33	1.33	1.33	
	0.63	1.39	1.39	1.39	1.39	1.39	1.39	
	0.70	1.51	1.51	1.51	1.51	1.51	1.51	
	≥ 0.75	1.61	1.61	1.61	1.61	1.61	1.61	
N <sub>R,k</sub> [kN]	0.40	1.56	1.56	1.56	1.56	1.56	1.56	N <sub>R,I,k</sub> [kN]
	0.45	1.61	1.61	1.61	1.61	1.61	1.61	
	0.50	1.66	1.66	1.66	1.66	1.66	1.66	
	0.55	1.96	1.96	1.96	1.96	1.96	1.96	
	t <sub>N1</sub> [mm]	0.60	2.26	2.26	2.26	2.26	2.26	
	0.63	2.45	2.45	2.45	2.45	2.45	2.45	
	0.70	2.70	2.87	2.87	2.87	2.87	2.87	
	≥ 0.75	2.70	3.18	3.18	3.18	3.18	3.18	
N <sub>R,II,k</sub> [kN]		2.70	3.47	4.25	5.02	5.79		
u [mm]	40	3.0						
	60	4.5						
D, d [mm]	80	6.0						
	≥ 100	7.5						

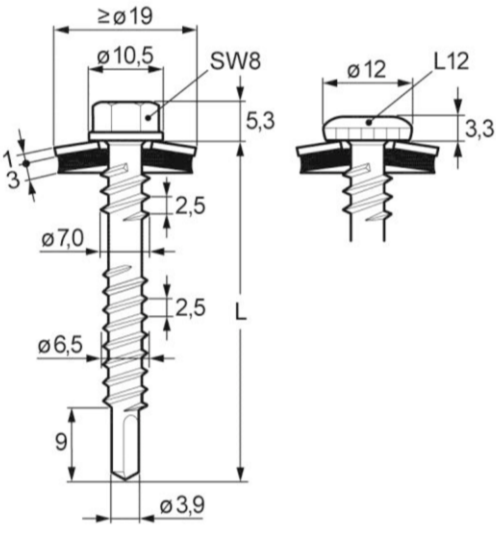
#### Additional definitions

The indicated values  $V_{R,k}$ ,  $N_{R,k}$  and  $N_{R,II,k}$  apply to  $k_{mod} = 0.9$  and  $\rho_k = 350 \text{ kg/m}^3$ . Values for other  $k_{mod}$  or  $\rho_k$  can be determined according to Annex 3.

Self-drilling screw with sealing washer  $\varnothing 16 \text{ mm}$

SXCW-S16-6,5 x L, SXCW-L12-S16-6,5 x L

Annex 22

	<b>Materials</b> 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: Timber (coniferous timber) - EN 14081
	<b>Drilling-capacity</b> $\Sigma(t_{N1} + t_{N2}) \leq 2.00 \text{ mm}$
	<b>Characteristics</b> $M_{y,Rk} = 12.1 \text{ Nm}$ $f_{ax,k} = 13.2 \text{ N/mm}^2 (l_{ef} = 35 \text{ mm}, \rho_a = 350 \text{ kg/m}^3)$ $f_{h,k} = 27.2 \text{ N/mm}^2 (\rho_a = 350 \text{ kg/m}^3)$

		l <sub>ef</sub> [mm]						
		35	45	55	65	75		
V <sub>R,k</sub> [kN]	0.40	0.81	0.81	0.81	0.81	0.81	0.81	V <sub>R,i,k</sub> [kN]
	0.45	0.98	0.98	0.98	0.98	0.98	0.98	
	0.50	1.15	1.15	1.15	1.15	1.15	1.15	
	0.55	1.24	1.24	1.24	1.24	1.24	1.24	
	t <sub>N2</sub> [mm]	0.60	1.33	1.33	1.33	1.33	1.33	
	0.63	1.39	1.39	1.39	1.39	1.39	1.39	
	0.70	1.51	1.51	1.51	1.51	1.51	1.51	
	≥ 0.75	1.61	1.61	1.61	1.61	1.61	1.61	
N <sub>R,k</sub> [kN]	0.40	1.62	1.62	1.62	1.62	1.62	1.62	N <sub>R,i,k</sub> [kN]
	0.45	1.86	1.86	1.86	1.86	1.86	1.86	
	0.50	2.10	2.10	2.10	2.10	2.10	2.10	
	0.55	2.37	2.37	2.37	2.37	2.37	2.37	
	t <sub>N1</sub> [mm]	0.60	2.64	2.64	2.64	2.64	2.64	
	0.63	2.70	2.81	2.81	2.81	2.81	2.81	
	0.70	2.70	3.18	3.18	3.18	3.18	3.18	
	≥ 0.75	2.70	3.46	3.46	3.46	3.46	3.46	
N <sub>R,II,k</sub> [kN]		2.70	3.47	4.25	5.02	5.79		
u [mm]	40	3.0						
	60	4.5						
D, d [mm]	80	6.0						
	≥ 100	7.5						

#### Additional definitions

The indicated values  $V_{R,k}$ ,  $N_{R,k}$  and  $N_{R,II,k}$  apply to  $k_{mod} = 0.9$  and  $\rho_k = 350 \text{ kg/m}^3$ . Values for other  $k_{mod}$  or  $\rho_k$  can be determined according to Annex 3.

Self-drilling screw with sealing washer  $\geq \varnothing 19 \text{ mm}$

SXCW-S19-6,5 x L, SXCW-L12-S19-6,5 x L

Annex 23



	<b>Materials</b> 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: Timber (coniferous timber) - EN 14081
	<b>Drilling-capacity</b> $\Sigma(t_{N1} + t_{N2}) \leq 2.00 \text{ mm}$
	<b>Characteristics</b> $M_{y,Rk} = 12.1 \text{ Nm}$ $f_{ax,k} = 13.2 \text{ N/mm}^2 (l_{ef} = 35 \text{ mm}, \rho_a = 350 \text{ kg/m}^3)$ $f_{h,k} = 27.2 \text{ N/mm}^2 (\rho_a = 350 \text{ kg/m}^3)$

		$l_{ef}$ [mm]						
		35	45	55	65	75		
$V_{R,k}$ [kN]	0.40	0.81	0.81	0.81	0.81	0.81	0.81	$V_{R,I,k}$ [kN]
	0.45	0.98	0.98	0.98	0.98	0.98	0.98	
	0.50	1.15	1.15	1.15	1.15	1.15	1.15	
	0.55	1.24	1.24	1.24	1.24	1.24	1.24	
	$t_{N2}$ [mm]	0.60	1.33	1.33	1.33	1.33	1.33	
	0.63	1.39	1.39	1.39	1.39	1.39	1.39	
	0.70	1.51	1.51	1.51	1.51	1.51	1.51	
	$\geq 0.75$	1.61	1.61	1.61	1.61	1.61	1.61	
$N_{R,k}$ [kN]	0.40	1.56	1.56	1.56	1.56	1.56	1.56	$N_{R,I,k}$ [kN]
	0.45	1.61	1.61	1.61	1.61	1.61	1.61	
	0.50	1.66	1.66	1.66	1.66	1.66	1.66	
	0.55	1.96	1.96	1.96	1.96	1.96	1.96	
	$t_{N1}$ [mm]	0.60	2.26	2.26	2.26	2.26	2.26	
	0.63	2.45	2.45	2.45	2.45	2.45	2.45	
	0.70	2.70	2.87	2.87	2.87	2.87	2.87	
	$\geq 0.75$	2.70	3.18	3.18	3.18	3.18	3.18	
$N_{R,II,k}$ [kN]		2.70	3.47	4.25	5.02	5.79		
$u$ [mm]	40	3.0						
	60	4.5						
$D, d$ [mm]	80	6.0						
	$\geq 100$	7.5						

#### Additional definitions

The indicated values  $V_{R,k}$ ,  $N_{R,k}$  and  $N_{R,II,k}$  apply to  $k_{mod} = 0.9$  and  $\rho_k = 350 \text{ kg/m}^3$ . Values for other  $k_{mod}$  or  $\rho_k$  can be determined according to Annex 3.

Self-drilling screw with sealing washer  $\varnothing 16 \text{ mm}$

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

Annex 24

	<b>Materials</b>
	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: Timber (coniferous timber) - EN 14081
<b>Drilling-capacity</b> $\Sigma(t_{N1} + t_{N2}) \leq 2.00 \text{ mm}$	
<b>Characteristics</b>	
$M_{y,Rk} = 12.1 \text{ Nm}$	
$f_{ax,k} = 13.2 \text{ N/mm}^2 (l_{ef} = 35 \text{ mm}, \rho_a = 350 \text{ kg/m}^3)$	
$f_{h,k} = 27.2 \text{ N/mm}^2 (\rho_a = 350 \text{ kg/m}^3)$	

		l <sub>ef</sub> [mm]							
		35	45	55	65	75			
V <sub>R,k</sub> [kN]	0.40	0.81	0.81	0.81	0.81	0.81	0.81	V <sub>R,I,k</sub> [kN]	
	0.45	0.98	0.98	0.98	0.98	0.98	0.98		
	0.50	1.15	1.15	1.15	1.15	1.15	1.15		
	0.55	1.24	1.24	1.24	1.24	1.24	1.24		
	t <sub>N2</sub> [mm]	0.60	1.33	1.33	1.33	1.33	1.33		1.33
	0.63	1.39	1.39	1.39	1.39	1.39	1.39		1.39
	0.70	1.51	1.51	1.51	1.51	1.51	1.51		1.51
	≥ 0.75	1.61	1.61	1.61	1.61	1.61	1.61		1.61
N <sub>R,k</sub> [kN]	0.40	1.62	1.62	1.62	1.62	1.62	1.62	N <sub>R,I,k</sub> [kN]	
	0.45	1.86	1.86	1.86	1.86	1.86	1.86		
	0.50	2.10	2.10	2.10	2.10	2.10	2.10		
	0.55	2.37	2.37	2.37	2.37	2.37	2.37		
	t <sub>N1</sub> [mm]	0.60	2.64	2.64	2.64	2.64	2.64		2.64
	0.63	2.70	2.81	2.81	2.81	2.81	2.81		2.81
	0.70	2.70	3.18	3.18	3.18	3.18	3.18		3.18
	≥ 0.75	2.70	3.46	3.46	3.46	3.46	3.46		3.46
N <sub>R,II,k</sub> [kN]		2.70	3.47	4.25	5.02	5.79			
u [mm]	40	3.0							
	60	4.5							
D, d [mm]	80	6.0							
	≥ 100	7.5							

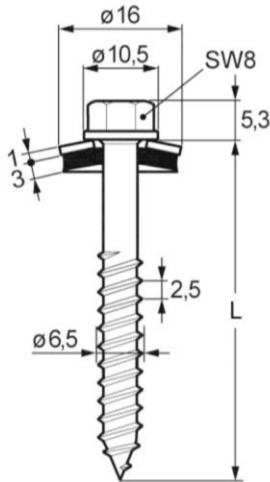
#### Additional definitions

The indicated values  $V_{R,k}$ ,  $N_{R,k}$  and  $N_{R,II,k}$  apply to  $k_{mod} = 0.9$  and  $\rho_k = 350 \text{ kg/m}^3$ . Values for other  $k_{mod}$  or  $\rho_k$  can be determined according to Annex 3.

Self-drilling screw with sealing washer  $\geq \varnothing 19 \text{ mm}$

SXW-S19-6,5 x L, SXW-L12-S19-6,5 x L

Annex 25



#### Materials

Fastener:	Stainless steel A2, A4 or 1.4547 - EN ISO 3506
Washer:	Stainless steel A2 or A4 - EN ISO 3506 with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	Timber (coniferous timber) - EN 14081

#### Drilling-capacity

-

#### Characteristics

$M_{y,Rk}$	=	13.9 Nm
$f_{ax,k}$	=	13.2 N/mm <sup>2</sup> ( $l_{ef} = 35$ mm, $\rho_a = 350$ kg/m <sup>3</sup> )
$f_{h,k}$	=	27.2 N/mm <sup>2</sup> ( $\rho_a = 350$ kg/m <sup>3</sup> )

		$l_{ef}$ [mm]				
		35	45	55	65	75
$d_{pd}$ [mm]		4.00				
$V_{R,k}$ [kN]	0.40	0.81	0.81	0.81	0.81	0.81
	0.45	0.98	0.98	0.98	0.98	0.98
	0.50	1.15	1.15	1.15	1.15	1.15
	0.55	1.24	1.24	1.24	1.24	1.24
	0.60	1.33	1.33	1.33	1.33	1.33
	0.63	1.39	1.39	1.39	1.39	1.39
	0.70	1.51	1.51	1.51	1.51	1.51
	$\geq 0.75$	1.61	1.61	1.61	1.61	1.61
$N_{R,k}$ [kN]	0.40	1.56	1.56	1.56	1.56	1.56
	0.45	1.61	1.61	1.61	1.61	1.61
	0.50	1.66	1.66	1.66	1.66	1.66
	0.55	1.96	1.96	1.96	1.96	1.96
	0.60	2.26	2.26	2.26	2.26	2.26
	0.63	2.45	2.45	2.45	2.45	2.45
	0.70	2.70	2.87	2.87	2.87	2.87
	$\geq 0.75$	2.70	3.18	3.18	3.18	3.18
$N_{R,II,k}$ [kN]		2.70	3.47	4.25	5.02	5.79
$u$ [mm]	40	3.0				
	60	4.5				
	80	6.0				
$D, d$ [mm]	$\geq 100$	7.5				

0.81	$V_{R,I,k}$ [kN]
0.98	
1.15	
1.24	
1.33	
1.39	
1.51	
1.61	
1.56	$N_{R,I,k}$ [kN]
1.61	
1.66	
1.96	
2.26	
2.45	
2.87	
3.18	

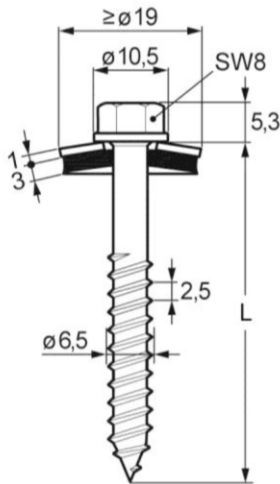
#### Additional definitions

The indicated values  $V_{R,k}$ ,  $N_{R,k}$  and  $N_{R,II,k}$  apply to  $k_{mod} = 0.9$  and  $\rho_k = 350$  kg/m<sup>3</sup>. Values for other  $k_{mod}$  or  $\rho_k$  can be determined according to Annex 3.

Self-tapping screw with sealing washer Ø 16 mm

TDA-S-S16-6,5 x L

Annex 26



#### 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:	Timber (coniferous timber) - EN 14081

#### Drilling-capacity

-

#### Characteristics

$M_{y,Rk}$	=	13.9 Nm
$f_{ax,k}$	=	13.2 N/mm <sup>2</sup> ( $l_{ef} = 35$ mm, $\rho_a = 350$ kg/m <sup>3</sup> )
$f_{h,k}$	=	27.2 N/mm <sup>2</sup> ( $\rho_a = 350$ kg/m <sup>3</sup> )

		$l_{ef}$ [mm]				
		35	45	55	65	75
$d_{pd}$ [mm]		4.00				
$V_{R,k}$ [kN]	0.40	0.81	0.81	0.81	0.81	0.81
	0.45	0.98	0.98	0.98	0.98	0.98
	0.50	1.15	1.15	1.15	1.15	1.15
	0.55	1.24	1.24	1.24	1.24	1.24
	0.60	1.33	1.33	1.33	1.33	1.33
	0.63	1.39	1.39	1.39	1.39	1.39
	0.70	1.51	1.51	1.51	1.51	1.51
	≥ 0.75	1.61	1.61	1.61	1.61	1.61
$N_{R,k}$ [kN]	0.40	1.62	1.62	1.62	1.62	1.62
	0.45	1.86	1.86	1.86	1.86	1.86
	0.50	2.10	2.10	2.10	2.10	2.10
	0.55	2.37	2.37	2.37	2.37	2.37
	0.60	2.64	2.64	2.64	2.64	2.64
	0.63	2.70	2.81	2.81	2.81	2.81
	0.70	2.70	3.18	3.18	3.18	3.18
	≥ 0.75	2.70	3.46	3.46	3.46	3.46
$N_{R,II,k}$ [kN]		2.70	3.47	4.25	5.02	5.79
$u$ [mm]	40	3.0				
	60	4.5				
	80	6.0				
$D, d$ [mm]	≥ 100	7.5				

0.81	$V_{R,I,k}$ [kN]
0.98	
1.15	
1.24	
1.33	
1.39	
1.51	
1.61	
1.62	$N_{R,I,k}$ [kN]
1.86	
2.10	
2.37	
2.64	
2.81	
3.18	
3.46	

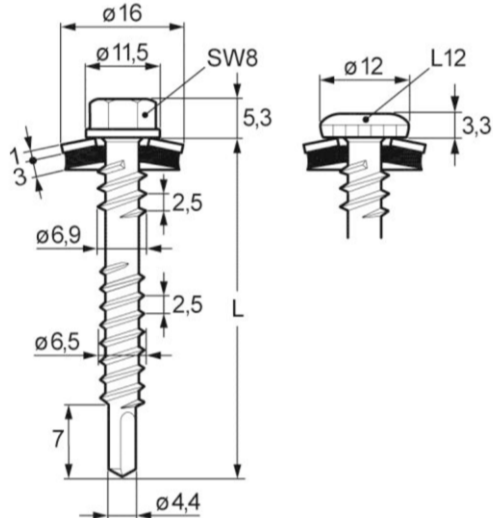
#### Additional definitions

The indicated values  $V_{R,k}$ ,  $N_{R,k}$  and  $N_{R,II,k}$  apply to  $k_{mod} = 0.9$  and  $\rho_k = 350$  kg/m<sup>3</sup>. Values for other  $k_{mod}$  or  $\rho_k$  can be determined according to Annex 3.

Self-tapping screw with sealing washer ≥ Ø 19 mm

TDA-S-S19-6,5 x L

Annex 27

		<p><b>Materials</b></p> <p>Fastener: Carbon steel with anticorrosion coating</p> <p>Washer: Stainless steel A2 - EN ISO 3506 with EPDM-seal</p> <p>Component I: S280GD to S450GD - EN 10346</p> <p>Component II: Timber (coniferous timber) - EN 14081</p>	
		<p><b>Drilling-capacity</b>     <math>\Sigma(t_{N1} + t_{N2}) \leq 2.00 \text{ mm}</math></p>	
		<p><b>Characteristics</b></p> <p><math>M_{y,Rk}</math>     =     15.4 Nm</p> <p><math>f_{ax,k}</math>     =     13.2 N/mm<sup>2</sup> (<math>l_{ef} = 35 \text{ mm}</math>, <math>\rho_a = 350 \text{ kg/m}^3</math>)</p> <p><math>f_{h,k}</math>     =     27.2 N/mm<sup>2</sup> (<math>\rho_a = 350 \text{ kg/m}^3</math>)</p>	

		$l_{ef} [\text{mm}]$						
		35	45	55	65	75		
$V_{R,k} [\text{kN}]$	0.40	n/a	n/a	n/a	n/a	n/a	n/a	$V_{R,I,k} [\text{kN}]$
	0.45	n/a	n/a	n/a	n/a	n/a	n/a	
	0.50	1.00 <sup>a</sup>	1.00 <sup>a</sup>	1.00 <sup>a</sup>	1.00 <sup>a</sup>	1.00 <sup>a</sup>	1.00 <sup>a</sup>	
	0.55	1.20 <sup>a</sup>	1.20 <sup>a</sup>	1.20 <sup>a</sup>	1.20 <sup>a</sup>	1.20 <sup>a</sup>	1.20 <sup>a</sup>	
	0.60	1.39 <sup>a</sup>	1.39 <sup>a</sup>	1.39 <sup>a</sup>	1.39 <sup>a</sup>	1.39 <sup>a</sup>	1.39 <sup>a</sup>	
	0.63	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	
	0.70	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	
	$\geq 0.75$	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	1.50 <sup>a</sup>	
$N_{R,k} [\text{kN}]$	0.40	n/a	n/a	n/a	n/a	n/a	n/a	$N_{R,I,k} [\text{kN}]$
	0.45	n/a	n/a	n/a	n/a	n/a	n/a	
	0.50	1.33 <sup>a</sup>	1.33 <sup>a</sup>	1.33 <sup>a</sup>	1.33 <sup>a</sup>	1.33 <sup>a</sup>	1.33 <sup>a</sup>	
	0.55	1.67 <sup>a</sup>	1.67 <sup>a</sup>	1.67 <sup>a</sup>	1.67 <sup>a</sup>	1.67 <sup>a</sup>	1.67 <sup>a</sup>	
	0.60	1.72 <sup>a</sup>	1.72 <sup>a</sup>	1.72 <sup>a</sup>	1.72 <sup>a</sup>	1.72 <sup>a</sup>	1.72 <sup>a</sup>	
	0.63	1.75 <sup>a</sup>	1.75 <sup>a</sup>	1.75 <sup>a</sup>	1.75 <sup>a</sup>	1.75 <sup>a</sup>	1.75 <sup>a</sup>	
	0.70	1.75 <sup>a</sup>	1.75 <sup>a</sup>	1.75 <sup>a</sup>	1.75 <sup>a</sup>	1.75 <sup>a</sup>	1.75 <sup>a</sup>	
	$\geq 0.75$	1.75 <sup>a</sup>	1.75 <sup>a</sup>	1.75 <sup>a</sup>	1.75 <sup>a</sup>	1.75 <sup>a</sup>	1.75 <sup>a</sup>	
$N_{R,II,k} [\text{kN}]$		2.70	3.47	4.25	5.02	5.79		
$u [\text{mm}]$	40	2.8						
	60	4.3						
$D, d [\text{mm}]$	80	5.7						
	$\geq 100$	7.1						

**Additional definitions**

Index <sup>a</sup>: For component I made of S320GD to S450GD the indicated values may be increased by 8.3%

The indicated values  $V_{R,k}$ ,  $N_{R,k}$  and  $N_{R,II,k}$  apply to  $k_{mod} = 0.9$  and  $\rho_k = 350 \text{ kg/m}^3$ . Values for other  $k_{mod}$  or  $\rho_k$  can be determined according to Annex 3.

<b>Self-drilling screw with sealing washer Ø 16 mm</b>		<b>Annex 28</b>
SDTW-S16-6,5 x L, SDTW-L12-S16-6,5 x L		

