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Designated according to Article 29 of Regulation (EU) No 305/2011

Member of EOTA
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European Technical Assessment ETA-21/0545 of 15.07.2024

General Part

Technical Assessment Body issuing the European Technical Assessment:	LUXEMBOURG INSTITUTE FOR BUILDING AND TECHNOLOGY
Trade name of the construction product	Fastening screws of Sheh Kai Precision Co., LTD
Product family to which the construction product belongs	Fastening screws for metal members and sheeting
Manufacturer	**Sheh Kai Precision Co., LTD** No.1 Ben Gong 1st RD Ben Chou Industrial Park Gang Shan Dist. Kaohsiung 820 Taiwan
Manufacturing plant(s)	Plants of Sheh Kai Precision Co., LTD
This European Technical Assessment contains	20 pages including 16 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	EAD 330046-01-0602 Fastening screws for metal members and sheeting

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Specific parts

1. Technical description of the product

The products are fastening screws for metal members and sheeting manufactured by the company Sheh Kai Precision Co., LTD. The screws are made of austenitic stainless steel A2 or A4 according to EN 3506-1:2018 with a drill bit made of hardened carbon steel. The screws are completed with a sealing washer. The washers are made of stainless steel 1.4301 according to DIN EN 10088-3:2014 with an 2.0 mm EPDM sealing.

The following table summarizes the products of this ETA.

Table 1: Fastening screws for metal members and sheeting

Fastener	Application	Annex
4.8xL#1 Hex with sealing washer ≥ Ø 14.0 mm	steel/steel	3
5.5xL#1 Hex with sealing washer ≥ Ø 16.0 mm	steel/steel	4
5.5xL#3 Hex with sealing washer ≥ Ø 16.0 mm	steel/steel	5
5.5xL#5 Hex with sealing washer ≥ Ø 16.0 mm	steel/steel	6
6.5xL#1 Hex with sealing washer ≥ Ø 16.0 mm	steel/steel	7
6.3xL#3 Hex with sealing washer ≥ Ø 16.0 mm	steel/steel	8
4.8xL#1 Pan with sealing washer ≥ Ø 12.0 mm	steel/steel	9
5.5xL#1 Pan with sealing washer ≥ Ø 12.0 mm	steel/steel	10-11
5.5xL#3 Pan with sealing washer ≥ Ø 12.0 mm	steel/steel	12-13
5.5xL#5 Pan with sealing washer ≥ Ø 12.0 mm	steel/steel	14
4.8xL#2A Hex with sealing washer ≥ Ø 14.0 mm	steel/steel	15
6.0xL#2A Hex with sealing washer ≥ Ø 16.0 mm	steel/steel	16

2. Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

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 field of application of the screws are shown in the Annexes of this ETA.

According to EAD 330046-01-0602 a working life of the fastening screws for metal members and sheeting of at least 25 years is assumed. 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

Mechanical resistance and stability (BWR1)	
Essential characteristic	**Performance**
Shear resistance of the connection	See Annex 3-16
Tension resistance of the connection	See Annex 3-16
Design resistance in combination of tension and shear forces (interaction)	See Annex 3-16
Check of deformation capacity in case of constraining forces due to temperature	No performance determined (NPD)
Durability	See Annex 3-16 for material specification

Safety in case of fire (BWR2)	
Essential characteristics	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 (hereinafter 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 AVCP-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 LUXIB.

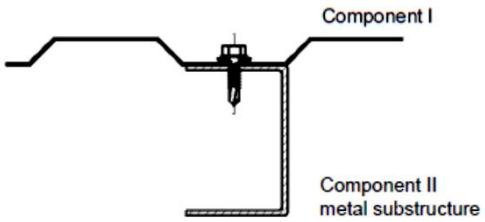
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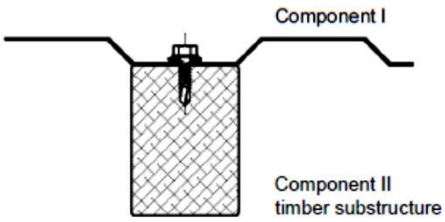


Thierry Kohnen

General Manager

Examples of execution of a connection





Terms for materials

Fastener	Fastening screw
Washer	Sealing washer
Component I	Metal member or sheeting
Component II	Substructure

Terms for dimensions

t_I	Thickness of metal member or sheeting
t_{II}	Thickness of metal substructure
$\Sigma(t_i)$	Sum of the thicknesses of all components
l_{ef}	Effective screw-in length in timber substructure (without drill point)
d_{dp}	Pre-drill diameter of metal member or sheeting and substructure
$d_{dp,I}$	Pre-drill diameter of metal member or sheeting

Terms for performances

$V_{R,k}$	Characteristic value of shear resistance of the connection
$N_{R,k}$	Characteristic value of tension resistance of the connection
$V_{R,I,k}$	Characteristic value of shear resistance of metal member or sheeting
$N_{R,I,k}$	Characteristic value of tension resistance (pull-through) of metal member or sheeting
$N_{R,II,k}$	Characteristic value of tension resistance (pull-out) of the substructure

Additionally for timber substructure the following terms are used:

$M_{y,Rk}$	Characteristic value of yield moment
$f_{ax,k}$	Characteristic value of withdrawal strength
$f_{h,k}$	Characteristic value of embedding strength

Used terms in the Annexes	**Annex 1**
Fastening screws for metal members and sheeting	

Recommendation for design

The design value of tension and shear resistance can be determined as follows:

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

The characteristic values $N_{R,k}$ and $V_{R,k}$ are given in the Annexes. For intermediate dimensions of metal member or sheeting or substructures, the characteristic value can be determined by linear interpolation.

The recommended partial safety factor is $\gamma_M = 1{,}33$ if no partial safety factor is given in national regulations or national Annexes to Eurocode 3.

For asymmetric metal substructures with thickness $t_{II} < 5$ mm (for instance Z- or C-shaped profiles), the characteristic value $N_{R,k}$ given in the Annexes shall be reduced to 70%.

In case of combined tension and shear forces the following interaction-equation shall be taken into account:

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

$N_{S,d}$ and $V_{S,d}$ indicates the design values of applied tension and shear forces.

Installation conditions

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

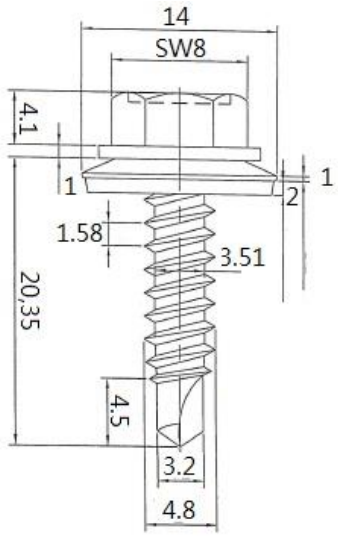
The fastening screws are screwed-in with electric screwdriver. The use of impact wrenches is not allowed.

The fastening screws are fixed rectangular to the surface of the metal member or sheeting.

The thickness (or minimum thickness) of metal substructure needs to be covered by the clamping length of the fastening screw. Otherwise only the screwed-in clamping length of the fastening screw may be considered.

Recommendation for design	**Annex 2**
Fastening screws for metal members and sheeting	

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Materials

Fastener: stainless steel A2 or A4 - EN ISO 3506
galvanized or with ruspert coating

washer: stainless steel A2 or A4 - EN ISO 3506

Component I: S280GD, S320GD or S350GD - EN 10346

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

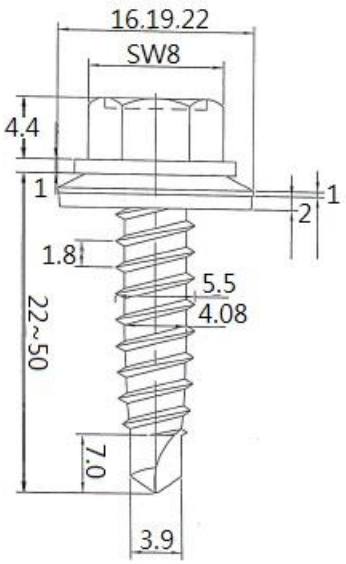
Drill-capacity $\Sigma t_i \leq 2.00$ mm

	t_I [mm]	t_{II} [mm]							
		0.63	0.75	0.88	1.00	1.25	1.50	1.75	2.00
$V_{R.k}$ [kN]	0.50	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
	0.55	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
	0.63	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
	0.75	1.55	2.27	2.27	2.27	2.27	2.27	2.27	2.27
	0.88	1.55	2.27	2.48	2.48	2.48	2.48	2.48	2.48
	1.00	1.55	2.27	2.48	2.68	2.68	2.68	2.68	2.68
	1.25	1.55	2.27	2.48	2.68	3.82	3.82	3.82	-
	1.50	1.55	2.27	2.48	2.68	3.82	4.97	-	-
$N_{R.k}$ [kN]	0.50	0.82	1.08	1.27	1.44	1.64	1.64	1.64	1.64
	0.55	0.82	1.08	1.27	1.44	1.82	1.82	1.82	1.82
	0.63	0.82	1.08	1.27	1.44	2.11	2.11	2.11	2.11
	0.75	0.82	1.08	1.27	1.44	2.15	2.55	2.55	2.55
	0.88	0.82	1.08	1.27	1.44	2.15	2.74	2.74	2.74
	1.00	0.82	1.08	1.27	1.44	2.15	2.85	2.93	2.93
	1.25	0.82	1.08	1.27	1.44	2.15	2.85	2.93	-
	1.50	0.82	1.08	1.27	1.44	2.15	2.85	-	-
$N_{R,II,k}$ [kN]		0.82	1.08	1.27	1.44	2.15	2.85	3.32	3.80

4.8xL#1
with hexagon head and sealing washer ≥ Ø14.0 mm

Annex 3

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Materials

Fastener: stainless steel A2 or A4 - EN ISO 3506
galvanized or with ruspert coating

washer: stainless steel A2 or A4 - EN ISO 3506

Component I: S280GD, S320GD or S350GD - EN 10346

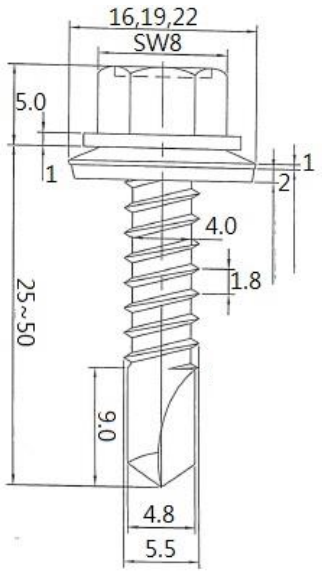
Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drill-capacity $\Sigma t_i \leq 3.00$ mm

	t_I [mm]	t_{II} [mm]							
		0.63	0.75	0.88	1.00	1.25	1.50	1.75	2.00
$V_{R.k}$ [kN]	0.50	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
	0.55	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32
	0.63	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
	0.75	1.45	2.02	2.02	2.02	2.02	2.02	2.02	2.02
	0.88	1.45	2.02	2.21	2.21	2.21	2.21	2.21	2.21
	1.00	1.45	2.02	2.21	2.39	2.39	2.39	2.39	2.39
	1.25	1.45	2.02	2.21	2.39	3.72	3.72	3.72	-
	1.50	1.45	2.02	2.21	2.39	3.72	5.04	-	-
$N_{R.k}$ [kN]	0.50	0.94	1.11	1.35	1.47	1.47	1.47	1.47	1.47
	0.55	0.94	1.11	1.35	1.57	1.84	1.84	1.84	1.84
	0.63	0.94	1.11	1.35	1.57	2.26	2.43	2.43	2.43
	0.75	0.94	1.11	1.35	1.57	2.26	2.94	3.32	3.32
	0.88	0.94	1.11	1.35	1.57	2.26	2.94	3.36	3.59
	1.00	0.94	1.11	1.35	1.57	2.26	2.94	3.36	3.77
	1.25	0.94	1.11	1.35	1.57	2.26	2.94	3.36	-
	1.50	0.94	1.11	1.35	1.57	2.26	2.94	-	-
$N_{R,II,k}$ [kN]		0.94	1.11	1.35	1.57	2.26	2.94	3.36	3.77

5.5xL#1
with hexagon head and sealing washer ≥ Ø16.0 mm

Annex 4



Materials

Fastener: stainless steel A2 or A4 - EN ISO 3506
galvanized or with ruspert coating

washer: stainless steel A2 or A4 - EN ISO 3506

Component I: S280GD, S320GD or S350GD - EN 10346

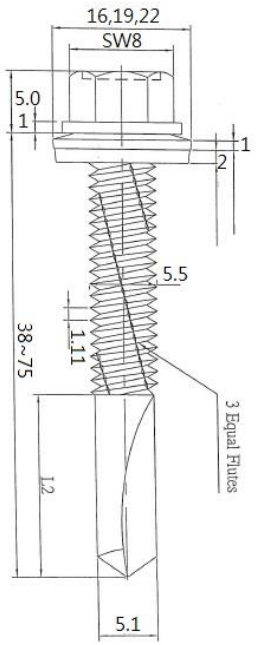
Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drill-capacity $\Sigma t_i \leq 5.50$ mm

t_I [mm]		t_{II} [mm]						
		1.50	1.75	2.00	2.50	3.00	3.50	4.00
$V_{R.k}$ [kN]	0.50	1.41	1.41	1.41	1.41	1.41	1.41	1.41
	0.55	1.58	1.58	1.58	1.58	1.58	1.58	1.58
	0.63	1.84	1.84	1.84	1.84	1.84	1.84	1.84
	0.75	2.23	2.23	2.23	2.23	2.23	2.23	2.23
	0.88	2.32	2.32	2.32	2.32	2.32	2.32	2.32
	1.00	2.39	2.39	2.39	2.39	2.39	2.39	2.39
	1.25	3.72	3.72	3.72	3.72	3.72	3.72	3.72
	1.50	5.04	5.04	5.04	5.04	5.04	5.04	5.04
	2.00	5.04	5.04	5.04	5.04	5.04	5.04	-
$N_{R.k}$ [kN]	0.50	1.38	1.47	1.47	1.47	1.47	1.47	1.47
	0.55	1.38	1.73	1.84	1.84	1.84	1.84	1.84
	0.63	1.38	1.73	2.08	2.43	2.43	2.43	2.43
	0.75	1.38	1.73	2.08	3.00	3.32	3.32	3.32
	0.88	1.38	1.73	2.08	3.00	3.59	3.59	3.59
	1.00	1.38	1.73	2.08	3.00	3.84	3.84	3.84
	1.25	1.38	1.73	2.08	3.00	3.92	4.84	5.44
	1.50	1.38	1.73	2.08	3.00	3.92	4.84	5.76
	2.00	1.38	1.73	2.08	3.00	3.92	4.84	-
$N_{R,II,k}$ [kN]		1.38	1.73	2.08	3.00	3.92	4.84	5.76

5.5xL#3
with hexagon head and sealing washer ≥ Ø16.0 mm

Annex 5



Materials

Fastener: stainless steel A2 or A4 - EN ISO 3506
galvanized or with ruspert coating

washer: stainless steel A2 or A4 - EN ISO 3506

Component I: S280GD, S320GD or S350GD - EN 10346

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

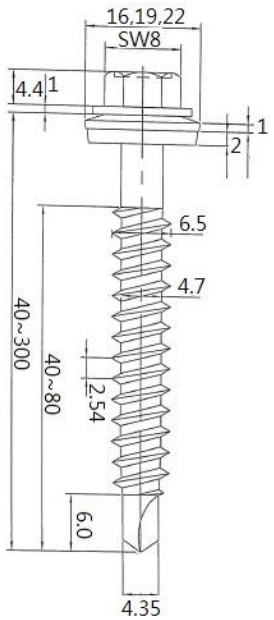
Drill-capacity $\Sigma t_i \leq 12.00$ mm

t_I [mm]		t_{II} [mm]						
		4.00	5.00	6.00	7.00	8.00	9.00	10.00
$V_{R.k}$ [kN]	0.50	1.68	1.68	1.68	1.68	1.68	1.68	1.68
	0.55	2.06	2.06	2.06	2.06	2.06	2.06	2.06
	0.63	2.68	2.68	2.68	2.68	2.68	2.68	2.68
	0.75	3.60	3.60	3.60	3.60	3.60	3.60	3.60
	0.88	3.85	3.85	3.85	3.85	3.85	3.85	3.85
	1.00	4.08	4.08	4.08	4.08	4.08	4.08	4.08
	1.25	4.56	4.56	4.56	4.56	4.56	4.56	4.56
	1.50	5.04	5.04	5.04	5.04	5.04	5.04	5.04
	2.00	5.04	5.04	5.04	5.04	5.04	5.04	5.04
$N_{R.k}$ [kN]	0.50	1.38	1.38	1.38	1.38	1.38	1.38	1.38
	0.55	1.77	1.77	1.77	1.77	1.77	1.77	1.77
	0.63	2.39	2.39	2.39	2.39	2.24	2.39	2.39
	0.75	3.20	3.32	3.32	3.32	2.24	2.93	3.32
	0.88	3.20	3.59	3.59	3.43	2.24	2.93	3.59
	1.00	3.20	3.84	3.84	3.43	2.24	2.93	3.62
	1.25	3.20	3.91	4.61	3.43	2.24	2.93	3.62
	1.50	3.20	3.91	4.61	3.43	2.24	2.93	3.62
	2.00	3.20	3.91	4.61	3.43	2.24	2.93	3.62
$N_{R.II.k}$ [kN]		3.20	3.91	4.61	3.43	2.24	2.93	3.62

5.5xL#5
with hexagon head and sealing washer ≥ Ø16.0 mm

Annex 6

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Materials

Fastener: stainless steel A2 or A4 - EN ISO 3506
galvanized or with ruspert coating

washer: stainless steel A2 or A4 - EN ISO 3506

Component I: S280GD, S320GD or S350GD - EN 10346

Component II:timber ≥ C24 - EN 14081

Drill-capacity $\Sigma t_I \leq 2.00$ mm

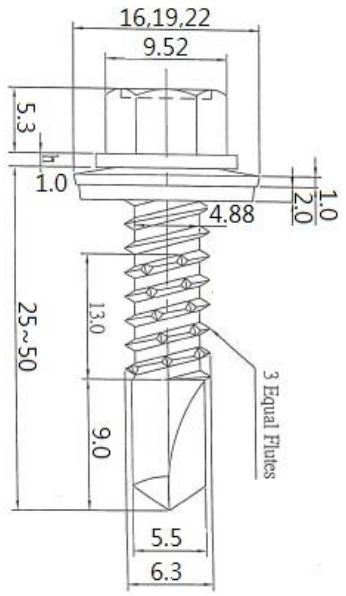
For Timber substructures

$M_{y,Rk}$ = 12.90 Nm
$f_{ax,k}$ = 15.36 N/mm² für lef ≥ 30.0 mm

		l_{ef} [mm]					Failure of component I	
		30	35	40	45	50		
$V_{R.k}$ [kN]	0.50	1.05	1.05	1.05	1.05	1.05	1.05	$V_{R.I.k}$ [kN]
	0.55	1.14	1.14	1.14	1.14	1.14	1.14	
	0.63	1.29	1.29	1.29	1.29	1.29	1.29	
	0.75	1.29	1.29	1.29	1.29	1.29	1.29	
	0.88	1.29	1.29	1.29	1.29	1.29	1.29	
	1.00	1.29	1.29	1.29	1.29	1.29	1.29	
	1.25	1.29	1.29	1.29	1.29	1.29	1.29	
	1.50	1.29	1.29	1.29	1.29	1.29	1.29	
	2.00	1.29	1.29	1.29	1.29	1.29	1.29	
$N_{R.k}$ [kN]	0.50	1.37	1.37	1.37	1.37	1.37	1.37	$N_{R.I.k}$ [kN]
	0.55	1.71	1.71	1.71	1.71	1.71	1.71	
	0.63	2.25	2.25	2.25	2.25	2.25	2.25	
	0.75	3.00	3.05	3.05	3.05	3.05	3.05	
	0.88	3.00	3.50	3.53	3.53	3.53	3.53	
	1.00	3.00	3.50	3.97	3.97	3.97	3.97	
	1.25	3.00	3.50	3.97	3.97	3.97	3.97	
	1.50	3.00	3.50	3.97	3.97	3.97	3.97	
	2.00	3.00	3.50	3.97	3.97	3.97	3.97	
$N_{R.II.k}$ [kN]		3.00	3.50	3.99	4.49	4.99	-	

6.5xL#1
with hexagon head and sealing washer ≥ Ø16.0 mm

Annex 7



Materials

Fastener: stainless steel A2 or A4 - EN ISO 3506
galvanized or with ruspert coating

washer: stainless steel A2 or A4 - EN ISO 3506

Component I: S280GD, S320GD or S350GD - EN 10346

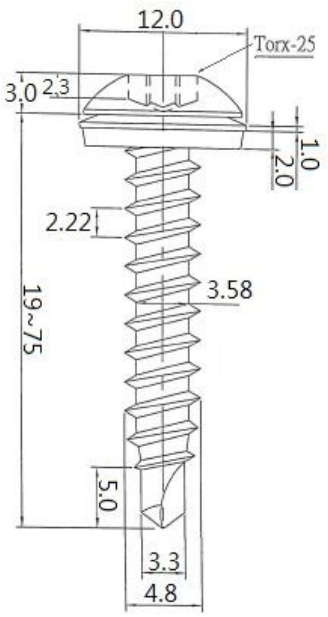
Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drill-capacity $\Sigma t_i \leq 6.00$ mm

t_I [mm]		t_{II} [mm]						
		1.50	1.75	2.00	2.50	3.00	3.50	4.00
$V_{R.k}$ [kN]	0.50	1.43	1.43	1.43	1.43	1.43	1.43	1.43
	0.55	1.60	1.60	1.60	1.60	1.60	1.60	1.60
	0.63	1.88	1.88	1.88	1.88	1.88	1.88	1.88
	0.75	2.29	2.29	2.29	2.29	2.29	2.29	2.29
	0.88	2.44	2.44	2.44	2.44	2.44	2.44	2.44
	1.00	2.57	2.57	2.57	2.57	2.57	2.57	2.57
	1.25	3.80	3.80	3.80	3.80	3.80	3.80	3.80
	1.50	5.03	5.03	5.03	5.03	5.03	5.03	5.03
	2.00	5.03	5.03	5.03	5.03	5.03	5.03	5.03
$N_{R.k}$ [kN]	0.50	1.62	1.62	1.62	1.62	1.62	1.62	1.62
	0.55	1.72	1.93	1.93	1.93	1.93	1.93	1.93
	0.63	1.72	2.20	2.43	2.43	2.43	2.43	2.43
	0.75	1.72	2.20	2.69	3.19	3.19	3.19	3.19
	0.88	1.72	2.20	2.69	3.72	3.72	3.72	3.72
	1.00	1.72	2.20	2.69	3.74	4.21	4.21	4.21
	1.25	1.72	2.20	2.69	3.74	4.79	6.10	6.10
	1.50	1.72	2.20	2.69	3.74	4.79	6.22	7.65
	2.00	1.72	2.20	2.69	3.74	4.79	6.22	7.65
$N_{R.II.k}$ [kN]		1.72	2.20	2.69	3.74	4.79	6.22	7.65

6.3xL#3
with hexagon head and sealing washer ≥ Ø16.0 mm

Annex 8



Materials

Fastener: stainless steel A2 or A4 - EN ISO 3506
galvanized or with ruspert coating

washer: stainless steel A2 or A4 - EN ISO 3506

Component I: S280GD, S320GD or S350GD - EN 10346

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

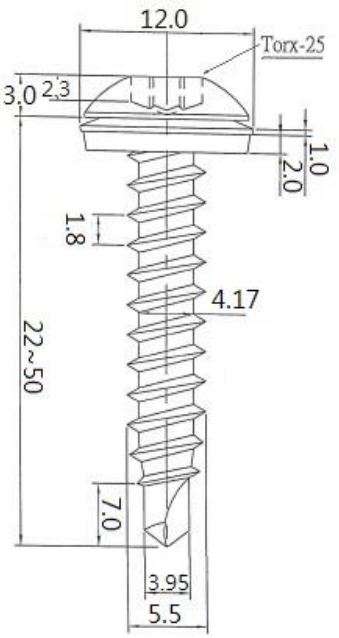
Drill-capacity $\Sigma t_i \leq 2.75$ mm

	t_I [mm]	t_{II} [mm]							
		0.63	0.75	0.88	1.00	1.25	1.50	1.75	2.00
$V_{R.k}$ [kN]	0.63	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
	0.75	1.58	2.34	2.34	2.34	2.34	2.34	2.34	2.34
	0.88	1.58	2.34	2.55	2.55	2.55	2.55	2.55	-
	1.00	1.58	2.34	2.55	2.75	2.75	2.75	2.75	-
	1.25	1.58	2.34	2.55	2.75	3.49	3.49	-	-
	1.50	1.58	2.34	2.55	2.75	3.49	-	-	-
	1.75	1.58	2.34	2.55	2.75	-	-	-	-
	2.00	1.58	2.34	2.55	-	-	-	-	-
$N_{R.k}$ [kN]	0.63	0.81	0.97	1.23	1.46	2.11	2.14	2.14	2.14
	0.75	0.81	0.97	1.23	1.46	2.11	2.75	3.11	3.23
	0.88	0.81	0.97	1.23	1.46	2.11	2.75	3.11	-
	1.00	0.81	0.97	1.23	1.46	2.11	2.75	3.11	-
	1.25	0.81	0.97	1.23	1.46	2.11	2.75	-	-
	1.50	0.81	0.97	1.23	1.46	2.11	-	-	-
	1.75	0.81	0.97	1.23	1.46	-	-	-	-
	2.00	0.81	0.97	1.23	-	-	-	-	-
$N_{R.II.k}$ [kN]		0.81	0.97	1.23	1.46	2.11	2.75	3.11	3.46

4.8xL#1
with pan head and sealing washer ≥ Ø12.0 mm

Annex 9

LUXEMBOURG INSTITUTE FOR LUXIB BUILDING AND TECHNOLOGY



Materials

Fastener: stainless steel A2 or A4 - EN ISO 3506
galvanized or with ruspert coating

washer: stainless steel A2 or A4 - EN ISO 3506

Component I: S280GD, S320GD or S350GD - EN 10346

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

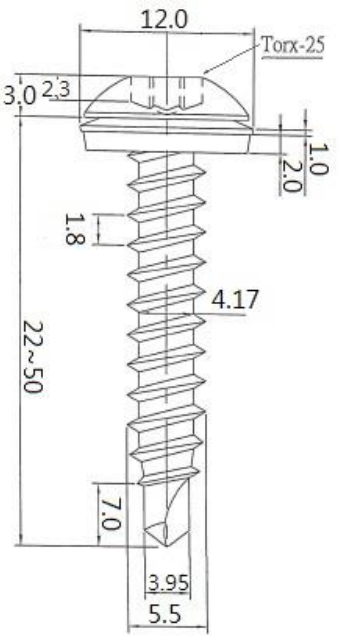
Drill-capacity $\Sigma t_i \leq 3.00$ mm

t_I [mm]		t_{II} [mm]						
		0.63	0.75	0.88	1.00	1.25	1.50	1.75
$V_{R.k}$ [kN]	0.63	1.86	1.86	1.86	1.86	1.86	1.86	1.86
	0.75	1.86	1.90	1.90	1.90	1.90	1.90	1.90
	0.88	1.86	1.90	1.94	1.94	1.94	1.94	1.94
	1.00	1.86	1.90	1.94	1.98	1.98	1.98	1.98
	1.25	1.86	1.90	1.94	1.98	3.72	3.72	3.72
	1.50	1.86	1.90	1.94	1.98	3.72	5.47	-
	1.75	1.86	1.90	1.94	1.98	3.72	-	-
	2.00	1.86	1.90	1.94	1.98	-	-	-
$N_{R.k}$ [kN]	0.63	0.94	1.11	1.35	1.57	2.26	2.48	2.48
	0.75	0.94	1.11	1.35	1.57	2.26	2.94	3.21
	0.88	0.94	1.11	1.35	1.57	2.26	2.94	3.36
	1.00	0.94	1.11	1.35	1.57	2.26	2.94	3.36
	1.25	0.94	1.11	1.35	1.57	2.26	2.94	3.36
	1.50	0.94	1.11	1.35	1.57	2.26	2.94	-
	1.75	0.94	1.11	1.35	1.57	2.26	-	-
	2.00	0.94	1.11	1.35	1.57	-	-	-
$N_{R.II.k}$ [kN]		0.94	1.11	1.35	1.57	2.26	2.94	3.36

5.5xL#1
with pan head and sealing washer ≥ Ø12.0 mm

Annex 10

LUXEMBOURG INSTITUTE FOR LUXIB BUILDING AND TECHNOLOGY



Materials

Fastener: stainless steel A2 or A4 - EN ISO 3506
galvanized or with ruspert coating

washer: stainless steel A2 or A4 - EN ISO 3506

Component I: S280GD, S320GD or S350GD - EN 10346

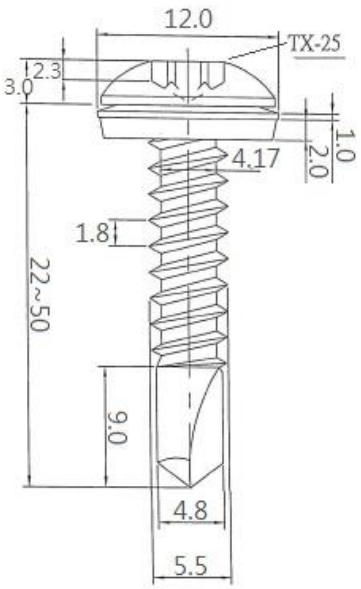
Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drill-capacity $\Sigma t_i \leq 3.00$ mm

t_I [mm]		t_{II} [mm]				
		2x0.63	2x0.75	2x0.88	2x1.00	2x1.25
$V_{R.k}$ [kN]	0.63	1.93	1.93	1.93	1.93	-
	0.75	1.93	2.48	2.48	2.48	-
	0.88	1.93	3.01	3.01	3.01	-
	1.00	1.93	3.49	3.49	3.49	-
	1.25	1.93	3.49	3.49	-	-
	1.50	1.93	3.49	-	-	-
	1.75	1.93	-	-	-	-
	2.00	-	-	-	-	-
$N_{R.k}$ [kN]	0.63	1.67	2.15	2.48	2.48	-
	0.75	1.67	2.15	2.68	3.17	-
	0.88	1.67	2.15	2.68	3.17	-
	1.00	1.67	2.15	2.68	3.17	-
	1.25	1.67	2.15	2.68	-	-
	1.50	1.67	2.15	-	-	-
	1.75	1.67	-	-	-	-
	2.00	-	-	-	-	-
$N_{R.II.k}$ [kN]		1.67	2.15	2.68	3.17	3.17

5.5xL#1
with pan head and sealing washer ≥ Ø12.0 mm

Annex 11



Materials

Fastener: stainless steel A2 or A4 - EN ISO 3506
galvanized or with ruspert coating

washer: stainless steel A2 or A4 - EN ISO 3506

Component I: S280GD, S320GD or S350GD - EN 10346

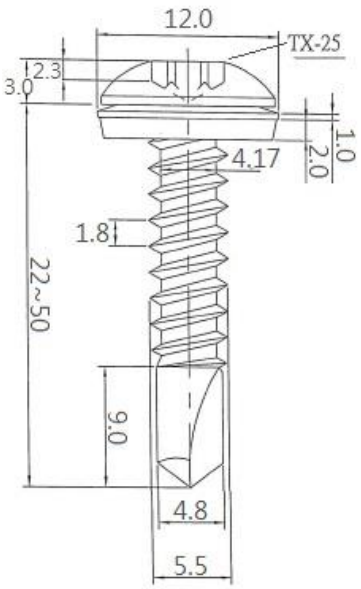
Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drill-capacity $\Sigma t_i \leq 5.50$ mm

	t_I [mm]	t_{II} [mm]			
		0.75	0.88	1.00	1.25
$V_{R.k}$ [kN]	0.63	1.41	1.41	1.41	1.41
	0.75	1.64	1.64	1.64	1.64
	0.88	1.64	1.82	1.82	1.82
	1.00	1.64	1.82	1.98	1.98
	1.25	1.64	1.82	1.98	1.98
	1.50	1.64	1.82	1.98	1.98
	1.75	1.64	1.82	1.98	1.98
	2.00	1.64	1.82	1.98	1.98
$N_{R.k}$ [kN]	0.63	0.65	0.73	0.79	0.97
	0.75	0.65	0.73	0.79	0.97
	0.88	0.65	0.73	0.79	0.97
	1.00	0.65	0.73	0.79	0.97
	1.25	0.65	0.73	0.79	0.97
	1.50	0.65	0.73	0.79	0.97
	1.75	0.65	0.73	0.79	0.97
	2.00	0.65	0.73	0.79	0.97
$N_{R.II.k}$ [kN]		0.65	0.73	0.79	0.97

5.5xL#3
with pan head and sealing washer ≥ Ø12.0 mm

Annex 12



Materials

Fastener: stainless steel A2 or A4 - EN ISO 3506
galvanized or with ruspert coating

washer: stainless steel A2 or A4 - EN ISO 3506

Component I: S280GD, S320GD or S350GD - EN 10346

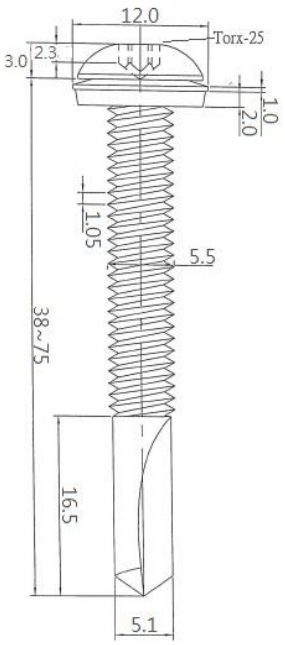
Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drill-capacity $\Sigma t_i \leq 5.50$ mm

	t_I [mm]	t_{II} [mm]			
		2x0.75	2x0.88	2x1.00	2x1.25
$V_{R.k}$ [kN]	0.63	1.70	1.70	1.70	1.70
	0.75	2.07	2.07	2.07	2.07
	0.88	2.16	2.16	2.16	2.16
	1.00	2.23	2.23	2.23	2.23
	1.25	3.25	3.25	3.25	3.25
	1.50	4.28	4.28	4.28	4.28
	1.75	4.28	4.28	4.28	4.28
	2.00	4.28	4.28	4.28	4.28
$N_{R.k}$ [kN]	0.63	1.66	1.79	1.91	2.48
	0.75	1.66	1.79	1.91	2.72
	0.88	1.66	1.79	1.91	2.72
	1.00	1.66	1.79	1.91	2.72
	1.25	1.66	1.79	1.91	2.72
	1.50	1.66	1.79	1.91	2.72
	1.75	1.66	1.79	1.91	2.72
	2.00	1.66	1.79	1.91	2.72
$N_{R.II.k}$ [kN]		1.66	1.79	1.91	2.72

5.5xL#3
with pan head and sealing washer ≥ Ø12.0 mm

Annex 13



Materials

Fastener: stainless steel A2 or A4 - EN ISO 3506
galvanized or with ruspert coating

washer: stainless steel A2 or A4 - EN ISO 3506

Component I: S280GD, S320GD or S350GD - EN 10346

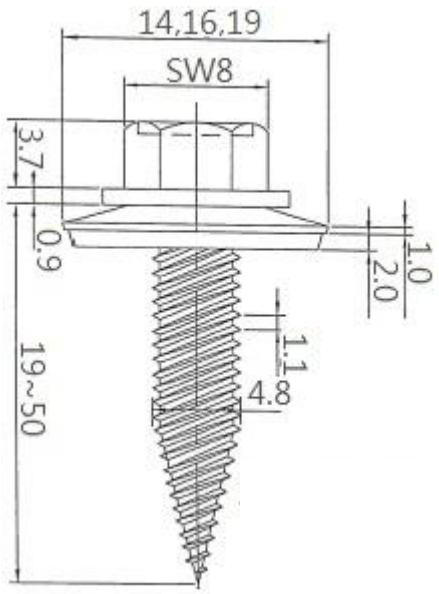
Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drill-capacity $\Sigma t_i \leq 5.50$ mm

t_I [mm]		t_{II} [mm]						
		4.00	5.00	6.00	7.00	8.00	9.00	10.00
$V_{R.k}$ [kN]	0.63	1.34	1.34	1.34	1.34	1.34	1.34	1.34
	0.75	2.33	2.33	2.33	2.33	2.33	2.33	2.33
	0.88	2.55	2.55	2.55	2.55	2.55	2.55	2.55
	1.00	2.75	2.75	2.75	2.75	2.75	2.75	2.75
	1.25	3.49	3.49	3.49	3.49	3.49	3.49	3.49
	1.50	4.23	4.23	4.23	4.23	4.23	4.23	4.23
	2.00	4.23	4.23	4.23	4.23	4.23	4.23	4.23
$N_{R.k}$ [kN]	0.63	2.23	2.23	2.23	2.23	2.23	2.23	2.23
	0.75	2.89	2.89	2.89	2.89	2.24	2.89	2.89
	0.88	3.20	3.31	3.31	3.31	2.24	2.93	3.31
	1.00	3.20	3.71	3.71	3.43	2.24	2.93	3.62
	1.25	3.20	3.91	4.54	3.43	2.24	2.93	3.62
	1.50	3.20	3.91	4.61	3.43	2.24	2.93	3.62
	2.00	3.20	3.91	4.61	3.43	2.24	2.93	3.62
$N_{R.II.k}$ [kN]		3.20	3.91	4.61	3.43	2.24	2.93	3.62

5.5xL#5
with pan head and sealing washer ≥ Ø12.0 mm

Annex 14



Materials

Fastener: stainless steel A2 or A4 - EN ISO 3506
galvanized or with ruspert coating

washer: stainless steel A2 or A4 - EN ISO 3506

Component I: S280GD, S320GD or S350GD - EN 10346

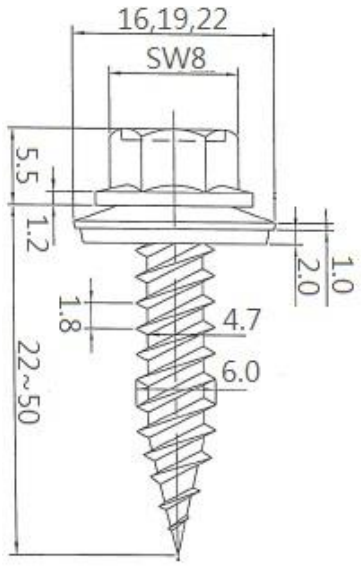
Component II: S235 - EN 10025-1
S280GD, S320GD or S350GD - EN 10346

Drill-capacity $\Sigma t_i \leq 2.00$ mm

t_I [mm]		t_{II} [mm]				
		0.63	0.75	0.88	1.00	1.25
$V_{R.k}$ [kN]	0.50	1.44	1.44	1.44	1.44	1.44
	0.55	1.61	1.61	1.61	1.61	1.61
	0.63	1.88	1.88	1.88	1.88	1.88
	0.75	1.88	2.97	2.97	2.97	2.97
	0.88	1.88	2.97	3.27	3.27	-
	1.00	1.88	2.97	3.27	3.55	-
	1.25	1.88	2.97	-	-	-
$N_{R.k}$ [kN]	0.50	0.96	1.25	1.56	1.62	1.62
	0.55	0.96	1.25	1.56	1.78	1.89
	0.63	0.96	1.25	1.56	1.78	2.23
	0.75	0.96	1.25	1.56	1.78	2.23
	0.88	0.96	1.25	1.56	1.78	-
	1.00	0.96	1.25	1.56	1.78	-
	1.25	0.96	1.25	-	-	-
$N_{R.II.k}$ [kN]		0.96	1.25	1.56	1.78	2.23

4.8xL#2A
with hexagon and sealing washer ≥ Ø14.0 mm

Annex 15



Materials

Fastener: stainless steel A2 or A4 - EN ISO 3506
galvanized or with ruspert coating

washer: stainless steel A2 or A4 - EN ISO 3506

Component I: S280GD, S320GD or S350GD - EN 10346

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

Drill-capacity $\Sigma t_i \leq 2.00$ mm

t_I [mm]		t_{II} [mm]				
		0.63	0.75	0.88	1.00	1.25
$V_{R.k}$ [kN]	0.50	1.36	1.36	1.36	1.36	1.36
	0.55	1.65	1.65	1.65	1.65	1.65
	0.63	2.13	2.13	2.13	2.13	2.13
	0.75	2.13	3.09	3.09	3.09	3.09
	0.88	2.13	3.09	3.09	3.09	-
	1.00	2.13	3.09	3.09	3.09	-
	1.25	2.13	3.09	-	-	-
$N_{R.k}$ [kN]	0.50	1.21	1.38	1.38	1.38	1.38
	0.55	1.21	1.56	1.63	1.63	1.63
	0.63	1.21	1.56	1.95	2.03	2.03
	0.75	1.21	1.56	1.95	2.22	2.64
	0.88	1.21	1.56	1.95	2.22	-
	1.00	1.21	1.56	1.95	2.22	-
	1.25	1.21	1.56	-	-	-
$N_{R.II.k}$ [kN]		1.21	1.56	1.95	2.22	2.77

6.0xL#2A
with hexagon and sealing washer ≥ Ø16.0 mm

Annex 16